VLIR Vlaamse Interuniversitaire Raad
UOS University Development Cooperation

IUC Programme
Institutional University Cooperation

Final Evaluation of the IUC partner programme with Hanoi University of Technology (HUT) Vietnam

October 2008

Background and disclaimer

The VLIR-UOS Programme for Institutional University Cooperation (IUC), which started in 1997, is an interuniversity cooperation programme of the Flemish universities [1]. Based on a system of programme funding provided by the Belgian Government, the Programme is directed at a limited number of carefully selected partner universities in the South. Each partnership, covering nowadays a maximum period of ten years, consists of a coherent set of interventions geared toward the development of the teaching, research, and service functions of the partner university, as well as its institutional management.

Every three to five years, the cooperation with a partner is evaluated. All ongoing cooperation programmes are evaluated by an external, independent evaluation commission. The country visits of these commissions, usually composed of an international and a local expert, are preceded by an extensive self assessment process. All evaluation commissions have produced an evaluation report that, in principle, is meant to be self-contained, i.e. containing the essential factual information, as well as conclusions and recommendations.

This report represents the views of the members of the commission that evaluated the IUC Programme with the Hanoi University of Technology (HUT); it does not necessarily reflect the opinions of VLIR-UOS. The evaluation commission bears sole responsibility for the report in terms of its content, as well as its structure.

The Evaluation Commission

The external evaluation commission for the partnership programme with the Hanoi University of Technology was composed of two individuals with extensive experience with regard to higher education matters. *Mr. Paul G. de Nooijer*, team leader, is senior education consultant with SPAN Consultants from the Netherlands. He has long-term experience in undertaking evaluation research, in particular in the field of higher education and inter-institutional cooperation programmes, including programmes that have similarities with the VLIR-UOS IUC Programme. He has conducted similar assignments in Vietnam for the Netherlands cooperation in higher education. *Mr. Nguyen Van Thang* is senior trainer/consultant at Transformation & Change Management Consulting Co. Ltd. and senior lecturer of Strategic Management at the Business School of the National Economics University of Vietnam. He has extensive experience in conducting research and project evaluation in Vietnam. Most recently he conducted a monitoring assignment of a Netherlands funded higher education cooperation project.

[1] For more details on VLIR and the IUC Programme, please refer to Appendix 2.

Acronyms and abbreviations - see at the back of this page >

Acronyms and abbreviations

AP	Annual Programme
B.Sc.	Bachelor of Science
CECEM	Centre for Community Empowerment
EFA	Education For All
EU	European Union
GDP	Gross Domestic Product
HE	Higher education
HR	Human Resources
HUT	Hanoi University of Technology
ICOS	Institutional Coordinator for University Development Cooperation
ICT	Information and Communications Technology
IT	Information Technology
IUC	Institutional University Co-operation (programme)
JSCM	Joint Steering Committee
KULeuven	Catholic University of Leuven
MoET	Vietnamese Ministry of Education and Training
MoST	Vietnamese Ministry of Science and Technology
M.Sc	Master of Science
NGO	Non Governmental Organisation
PCM	Project Cycle Management
Ph.D.	Doctor of Philosophy
RIP	Research Initiative Programme (post-IUC)
S&T	Science and Technology
ToR	Terms of Reference
UGent	University of Gent
VLIR	Vlaamse Interuniversitaire Raad (Flemish Inter-university Council)
VLIR-UOS	VLIR-University Development Cooperation
VUB	Vrije Universiteit Brussel (Free University Brussels)

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Executive Summary

This report reflects the outcomes of the external, final evaluation commission of the IUC that was undertaken in the period 1998-2008 with Hanoi University of Technology (HUT), Vietnam's biggest national technical university. The evaluation was commissioned by the Flemish Interuniversity Council (VLIR) in the framework of its Institutional University Co-operation (IUC) programme and conducted in Hanoi in the period from 20 to 28 October 2008. In the 1st phase of the collaboration (1998-2002), which focused on strengthening of teaching and research infrastructure and staff development, was operational in the fields of electronics and telecommunications, chemistry, basic physics, biomedical engineering, mechatronics and powder and composite materials. In the 2nd phase, based on recommendations of the mid-term review, the programme was reorganized into three projects: Human resources and institutional programme management; Consolidation of VLIR Ph.D. trainees and a VLIR-HUT Research Fund. The budget for the IUC with HUT was 50% of the budget of a regular IUC; total funding for the period 1998 to 2007 was some € 3.4 million.

The evaluation methodology used followed the VLIR-UOS methodology for evaluation, with an iterative evaluation process allowing for participation of the various IUC stakeholders. Maximum use was made of available documents (e.g. self-assessment reports, annual planning and progress reports, etc.) and information from meetings with VLIR-UOS (Brussels), staff of HUT and the Flemish universities involved in the cooperation and visits to HUT facilities.

The evaluation confirmed the contribution of the IUC to HUT's strategic aim of becoming an academic institution of excellence providing high quality training, scientific research and transfer of technology services for the development of the Vietnamese university education system and for the socio-economic development of the country. This was realised through activities in the field of academic development (Ph.D. training (7)), capacity building for technical and administrative support staff, English language (11 courses, 299 participants) and project cycle management training (4 courses, 127 participants), improvement of teaching and research infrastructure (equipment, academic literature), and introduction/improvement of curricula and courses. Particular attention was furthermore paid to stimulating research by making available small grants for multi-annual research projects, publication of research results and participation of HUT staff in national and international research seminars.

The training provided young researchers with the necessary supportive skills for applying for grants, as well as managing and conducting high-level research. In addition, grants provided to returning Ph.Ds and VLIR-HUT competitive research grants have stimulated research interest and competencies. Key outstanding results include limited research outreach and limited use of research for improving the quality of educa-

tion. Development of research policy was also less effective. While the word "research culture" was used frequently in the programme, there was no clear indicator for that concept.

The research grants provided under the IUC have resulted in a total of 26 A-publications in international, peer-reviewed journals, 65 publications in national B-publications and close to 120 conference proceedings (full texts and abstracts). Even though the number of A-publications was somewhat below expectations, researchers and managers were made aware of the potential trade-off between A-publication and relevance of research for Vietnamese society.

IUC programme management was entrusted to two programme steering committees, one at HUT and one in the North, that were set up to coordinate the implementation of the partnership programme. In addition, joint meetings of the committees were held with participation of project leaders from both sides and the two Flemish and HUT coordinators. In line with the recommendations of the mid-term review, major part of programme administration was transferred to HUT during the 2nd phase and was handled well. The programme was efficient, as reflected by a generally good use of limited resources and there have been no problems in management of funds at the level of individual research projects.

A well-designed and transparent system was designed, under the auspices of a VLIR-HUT Research Council for collecting and ranking of research proposals and reporting, monitoring and evaluation of research implementation. Through this system, which has, as yet untapped, potential for further institutionalisation at HUT, HUT management was exposed to international practices of selecting and managing research projects.

The VLIR programme has convinced many HUT management and staff that younger aca-demics can get money for research and can indeed do a proper job both in terms of research and managing research projects. The research projects have also prompted people to look outside for additional research funding rather than passively wait for university's limited fund; the information available indicates that they have been quite successful in doing so. This is an important element for future sustainability of the research efforts initiated with support of the IUC.

Sustainability of the programme lies furthermore in the programme's success in retaining of project participants (Ph.Ds and researchers) who have been involved in the research and management. About 10% of HUT's academic staff (of over 1,200) effectively participated in the projects, and it is expected that their experience will continue to serve their research projects in the future. However, sustainability of the cooperation with Flemish universities still depends to a large part on personal relations, and institutional relations are not evidently strong.

The proposed ex-post/phase out programme, includes four workshops/courses (entrepreneurship, intellectual property rights, valorisation of research results and writing of scientific papers), activities for the selection of Vietnamese Ph.D. students to study at Flemish universities ('screening programme' and video conferencing) and the organisation of an exchange visit to Can To University in southern Vietnam.

The Evaluation Commission's main recommendations, with respect to the VLIR HUT-IUC and to the IUC programme as a whole can be summarised as follows:

HUT-IUC specific

* Consider support for research strategy development at University and faculty level, e.g. in relation to Decision 3180 on the rewards of research and think about a more specific niche for HUT research within the Vietnamese context;
* Institutionalise the approach of the Research Council and Research Fund mechanisms introduced under the IUC at HUT but which, to date, has remained outside the HUT system. Disseminate and market more the VLIR approach and results, amongst others by making further use of the brochure and film that were prepared for the IUC closing event;
* Strengthen and institutionalise the information provision on (international) research grants, fellowships at University level;
* Factor Vietnamese realities into the workshops planned for the phase out in order to make them more relevant to rapidly evolving Vietnamese context. In the selection of participants in the training on scientific writing, which requires a good command of English, focus on those academics that were trained during the 2nd phase;
* Share information within HUT on available HUT facilities and research activities (who knows what is where in terms of equipment, what research, what publications);
* Arrange/clarify the supervision of research projects that started in AP2007.

IUC Programme level

* Examine possibilities for support to universities in developing countries to gain or maintain access to international E-libraries – not on a personal basis but on a more institutionalised level;
* Review the appropriateness of the system of self-assessment and see whether it would not be more appropriate to replace the current system by a properly structured final report which captures the evolution of the IUC over 10 years;
* Examine the current database that has been set up within VLIR-UOS. In case of the IUC with Hanoi University of Technology, obviously a lot of effort has been made in providing the data – however, the data is not always clear, not up-to-date, nor very well structured and difficult to assess and interpret for purposes of reporting.

Foreword

Effective final programme evaluation should yield valuable information that can be used by programme stakeholders and funding agencies about whether the programme has indeed realised what it set out to do in the beginning and about lessons learned that could be useful for the future.

For such an evaluation to be successful, active participation of all key stakeholders is a sine qua non. In the case of the partnership with the Hanoi University of Technology (HUT), the evaluation process was therefore designed to be iterative and participatory, involving three distinct opportunities for input from and involvement by the partners: during the self assessment, during the visit of the evaluation commission from 20 to 28 October 2008 and during the review of the commission's draft final report.

As indicated in the Terms of Reference, the focus of the final evaluation was as follows:

- the 'global state of implementation of the programme', realisation of objectives;
- the quality, efficiency, efficacy, impact, development relevance and sustainability of the programme and programme management;
- the position of the IUC programme within the international cooperation activities of HUT and 'the added value of the IUC Programme ... in comparison to other ongoing donor cooperation programmes';
- the follow up plan of the programme as elaborated in the self assessment report.

The evaluation focused on the 2nd phase of the cooperation, which officially lasted from 2003 to March 2008. Where appropriate and feasible, the results of the 1st phase, which officially lasted from 1998 to 2002, but which was entirely different in terms of set up (projects at faculty level, see chapter 4) and which was evaluated in October 2002, were incorporated.

Based on these Terms of Reference, the structure of the report is as follows:

- Chapter 1 briefly describes the evaluation process, sources of information and indicators used during the process as well as the limitations of the evaluation exercise;
- Chapter 2 provides some background on the context of the partnership, including some data on Vietnam's socio-economic status and developments as well as the country's overall and higher education system;
- Chapter 3 provides some general information on HUT;
- Chapter 4 provides a brief on the overall VLIR-UOS IUC Programme with HUT, including basic data on the projects that were undertaken in the two phases of the Programme.

Rather than presenting reporting on each project, the evaluation commission decided, in order to enhance readability of the report, to present its findings on key issues addressed and activities undertaken by the Programme. As a result:

* Chapter 5 deals with the overall management of the Programme and pays attention to the role and functioning of the Steering Committees, development of institutional capacity at HUT and financial management;
* Chapter 6 deals with VLIR Ph.Ds and provides some information on their return to HUT after completion of their studies and specific capacity development activities in the areas of project cycle management (PCM) and English language;
* Chapter 7 deals with the core of the Programme – promotion of research. It provides information on the VLIR-HUT Research Council, selection criteria and procedures as well as research funding and management. It also captures what research was effectively undertaken and conference attendance funded under the Programme. The commission would like to stress in this respect that it is not in a position to judge the scientific quality of these research projects;
* Chapter 8 provides information on issues of publication of research results, and the use of the experience gained in terms of attracting other project funding, outreach and the use of research for improving educational quality;
* Chapter 9 finally provides an assessment of the VLIR-UOS IUC Programme with the Hanoi University of Technology as a whole.

The appendices to the report include the following:

* Appendix 1: Mission Terms of Reference;
* Appendix 2: Flemish Interuniversity Council and IUC Programme;
* Appendix 3: References;
* Appendix 4: People interviewed;
* Appendix 5: Higher education policies in Vietnam;
* Appendix 6: Summary of phase 1 realisations;
* Appendix 7: Details on VLIR Ph.Ds (projects, publications, other sources of funding, conference attendance);
* Appendix 8: Details on open call research projects (promoters, projects, publications, conference attendance...);
* Appendix 9: Additional statistics.

1 The evaluation exercise

This chapter provides some information on the scope of the evaluation, the way in which the evaluation was conducted and evaluation criteria and indicators used as well as the limitations of the evaluation exercise.

Terms of Reference for the evaluation

Terms of Reference (ToR) for the final evaluation of the partnership with Hanoi University of Technology were issued in May 2008 and are provided in Appendix 1 to this report. According to these ToR (page 9), issued for three final evaluations simultaneously, this final evaluation was meant to generate conclusions that would allow:

- 'the identification of strengths and weaknesses of each specific IUC collaboration with the three institutions in particular, and of the IUC programme in general;
- VLIR-UOS to identify departments and/or research groups that have received substantial support from the IUC programme in Phase II and thus can present proposals for the "IUC Research Initiative Projects";
- the formulation of recommendations to all stakeholders in terms of the follow up plan that has been elaborated by the Northern and Southern project leaders;
- to identify and comment upon possible venues for the future of the involved projects in view of establishing sustainability'.

According to the ToR (page 9-10), the scope of the evaluation was to be as follows:

- the 'present implementation of the programme', i.e. evaluating 'the **global state of implementation** of the programme, both at the level of the overall programme and the constituent projects', 'whether the activities, per project, have met the **objectives**, that had been defined by the actors involved, within the given timeframe and with the given means', as well as the **management** of the programme, both in Flanders and locally, and formulating, if necessary, recommendations that could be of interest for the partnerships that are still ongoing;
- the nature of the programme, which implied evaluating '**the quality, efficiency, efficacy, impact, development relevance** and **sustainability** of the programme in the light of the overall goal of the IUC Programme, being institutional capacity-building of the local university, as situated in the context of the needs of the local society' and 'the **cooperation** between all parties involved, and formulating, if necessary, recommendations that could be of interest for the partnerships that are still ongoing';
- the position of the IUC programme within the international cooperation activities of the partner university, i.e. 'evaluating the **added value of the IUC Programme** for the partner university, in comparison to other ongoing donor cooperation programmes';

- the follow up plan of the programme, i.e. 'evaluating the follow up plan as elaborated in the self assessment report …, in view of the continuation of the different activities that have started up within the framework of the IUC programme (Phase I) and the consolidation of the results as aimed for in Phase 2'.

Evaluation approach and methodology

General

The methodology used for this final evaluation is based on the VLIR-UOS methodology for evaluation. Use was made of:

- The self-assessment forms that were prepared;
- Other documentation, including annual planning and progress reports and programme documents, information on Vietnam's economy and (higher) education as well as HUT;
- Meetings with VLIR-UOS (Brussels);
- Meetings with HUT faculty who had been involved in the IUC;
- Meetings with current and former project leaders;
- On-site campus visits to HUT laboratories.

A formal debriefing meeting was held on 27 October 2008, which was attended by representatives from HUT, the Flemish universities as well as VLIR-UOS.

Self assessment forms

The forms were prepared - sometimes in consultation between Flemish and Vietnamese partners, though not always - by mid 2008, i.e. several months after the Programme has come to an end.

Document review

In preparation for the evaluation, the commission reviewed all available documentation (both paper documents and electronic versions) and financial data on the IUC and HUT. Information on Vietnam's education sector was reviewed as well. An overview of references used is given in Appendix 3.

Interviews

At HUT, meetings were held with the current rector, project leaders from HUT and the Flemish universities, the Programme Manager, former Ph.D. students and promoters of research projects funded under the IUC.

In Brussels, the team leader held meetings with staff of VLIR-UOS as well as Flemish project coordinators and experts on 15 and 16 September 2008. Appendix 4 provides information on the people with whom interviews were held.

In the interviews a pre-prepared checklist of questions was utilised as well as open-ended questions, based on programme documents and internal assessment forms.

Evaluation criteria and indicators

In assessing the programme and its constituent projects, the following main criteria were used as per the Terms of Reference:

* Development relevance;
* Effectiveness;
* Impact and;
* Sustainability - or '(the) continuation of benefits from a development intervention after major development assistance has been completed' [2] (financial and institutional sustainability).

Quality was not treated as a separate criterion.

Under the above headings, the evaluation commission looked amongst others into the following issues:

* Relevance – extent to which the programme and the projects addressed real needs and issues outside the academic community; relationship with relevant development policies;
* Effectiveness – formulation of objectives and results; outputs realised, and the quality thereof, and related activities;
* Efficiency – funding of the collaboration activities; use made of the funding; costs and benefits of inputs; programme and project (financial) management;
* Sustainability - co-funding by the partner university; availability of resources for continuation of operations and maintenance of physical infrastructure; capacity to attract new funds through consultancy and research; staff retention; commitment of Flemish universities to continue the collaboration; continuation perspectives of ongoing research projects; presence and quality of follow-up plans;
* Impact – (potential) impact at the level of the private sector; involvement in providing policy advice, university wide impact, i.e. outside the faculties in which the programme operated; the extent to which academics, involved in the IUC programme, are called upon by the government for policy advice, etc.

Evaluation limitations

A one-week evaluation mission to assess a 10-year programme is bound to be affected by a lack of time to fully grasp its evolution over the years. Time constraints were compounded by the following factors:

* The quality of the internal assessment forms proved to be variable, one reason being that they are structured in such a way that they do not incite to give a comprehensive overview of what was accomplished over the Programme's lifetime. The lack of information in the assessment forms required a more substantial use of other programme documentation;
* While the evaluation commission was also expected to review 'the follow up plan of the programme as elaborated in the self assessment report', perusal of the available documentation indicated that there was no such overall plan, although some of the files contained a preliminary SWOT analysis. Instead, the mission has reverted to the various RIP proposals that were prepared earlier this year and have been submitted for VLIR-UOS funding. In addition, the mission was presented with a phasing out programme (year 11).

2 Glossary of Key Terms in Evaluation and Results Based Management, 2002, page 36.

2 Vietnam: socio-economic and higher education context

Social - Political characteristics of the Economy

Vietnam, which currently ranks 101 out of 162 countries in terms of the Human Development Index, is going through a transition from a centrally planned to a socialist-oriented market economy. It has a population estimated at just over 84 million and is divided into 8 regions, 63 provinces, 560 districts and 10,320 communes. The annual population growth rate is officially estimated at 1.31% per year[3]. Due to the finite supply of arable land and the lack of non-agricultural employment opportunities in rural areas, rural-urban migration is on the rise. Since launching key reforms through its doi moi or "renovation" policy in 1986, the country has made remarkable progress across a broad range of socio-economic development indicators: GDP has more than doubled, inflation has come down to low single digit figures, life expectancy increased to 68 years, primary school enrolment increased to nearly 95% in 1998-1999 while mortality rates of under 5 children declined to 42 per 1,000 live births.

Macro - Economic Framework

Land reforms, agricultural deregulation, and price liberalisation have turned Vietnam from a country with extreme food insecurity into one of the world's largest exporters of rice, coffee and other agricultural commodities. The country's poverty rate declined from 58% in 1993 to 29% of the population by 2002. Poverty mainly declined because of the economic growth of the early 1990s (8-9% per year) and Vietnam's strong agricultural performance since the late 1980s Per capita GDP is some US$ 839 at present compared with US$ 289 in 1999. At the same time, the poverty incidence still varies considerably between regions, with the Northern Uplands, Central Highlands and North Central regions, i.e. areas with a large ethnic minority population, having the highest incidence and severity of poverty. The Gini coefficient, which measures inequality of income distribution, has risen significantly from 35.6 in 1995 to over 40 in recent years. 95% of the poor live in Vietnam's rural areas where average per capita in-come equals only 50% of that in urban areas.

In response to these developments, the Government of Vietnam has developed several generic and targeted poverty reduction programmes since the mid 1990s. Currently, the most relevant generic programmes are the "**Socio-Economic Development Strategy 2001-2010**" (SEDS), and the "**Comprehensive Poverty Reduction and Growth Strategy**" (CPRGS) of May 2002. The general objective of the SEDS is to "(reduce) the number of poor households, eliminate falling back to poverty, in order to implement the objective of "Prosperous population, powerful country, fair, democratic and civilized society"; to help the majority of the poor reach the basic social services;

3 According to the EFA Action Plan 2003-2015, the population growth rate was 1.42% in 2000, down from 2.23% in 1990.

basically implement the objectives of helping the communes with especially difficult circumstances; expand opportunities for the poor to enjoy special support policies and social welfare"[4]. The CPRGS is a more practical action plan for poverty reduction and economic growth within the broader framework of the SEDS and the 5 year Socio-Economic Development Plan (2001-2005). Its strategic objectives are to develop: (a) an environment for growth; and (b) sectoral policies and measures for the poor (covering the key economic and social sectors, income generation and social safety net programmes (including emergency relief) and policies aimed at narrowing the gap in terms of regional differences, ethnic minorities and gender equality). General policy aims are supplemented by a range of "major policies and measures" and a series of (national target) programmes has been implemented (e.g. the Programme on Socio-economic Development in Especially Disadvantaged Communes in Mountainous, Isolated and Remote Areas (also known as "Programme 135"[5]).

One measure to further develop the economy is enhancing science and technology (S&T) research. In its "Vietnam Science and Technology Development Strategy, 2006 – 2010", the Government recognized that Science and Technology development together with education and training development are national priorities. The S&T strategy specifies some priority areas for research such as natural and technology science that are particularly relevant to HUT. For natural science, the priorities are e.g. mathematics, physics, chemistry, mechanics, life science, etc. For technology science, the priorities are Information – Communication technology, biology technology, advanced material technology, automation, mechanics and machinery technology, technology in the energy field, preserving and processing technology of agricultural products and foods and space technology

In the past, the Ministry of Science and Technology (MOST) was responsible for development of science and technology research policy and management of all national-level research projects. In March 2008, the Vietnam National Science Foundation was established under the umbrella of the MOST. The Foundation, which is being set up and envisaged to be operational by the end of 2008, is expected to manage part of the research projects.

Policy and Structure of Education System

Children enter primary education at age six. Primary school (*Truong Tieu Hoc Cap I*, sometimes referred to as *Truòng Co So Cap I* (General Education Level I)) is from grade 1 through grade 5. For the training of pre-primary and primary/basic schoolteachers, 2-year courses are conducted at Teacher Training Colleges. Lower secondary education (LSE) is a 4-year programme from grade 6 to grade 9. At the end of LSE, students take a national examination that is prepared and administered by MoET. Completion of LSE is the general entrance requirement for vocational, technical, and academic upper secondary education. LSE teachers are trained (3 years) in Junior Teacher Training Colleges (*Truong Cao Dang Su Pham*) in the provinces. Upper secondary school (*Truong Pho Thong Trung Hoc*) covers grades 10 through 12. Admission to this level requires successful completion of LSE and passing of an admission examination. At the completion of upper secondary school, students take a national examination; those who pass receive a diploma called *Bang Tot nghiep Pho thong Trung hoc*. Upper secondary school teachers are

4 Poverty Alleviation Strategy 2001-2010, Hanoi, May 2001, page 12.
5 Programme 135 is the largest Government poverty alleviation program designed specifically for mountainous and remote areas where most of Vietnam's ethnic minorities live. Launched in 1998, Program 135 supports small-scale infrastructure development in the poorest communes, including school construction.

trained in Teacher Training Colleges, universities with education faculties, or in colleges or universities in the regular undergraduate programme. For admission, students must complete upper secondary school and pass the entrance examination.

The Ministry of Education and Training (MoET) has overall policy responsibility for the sector. Broadly, the Ministry manages higher institutions. Provinces manage upper-secondary schools; and districts and communes manage lower-secondary, primary and pre-primary facilities. In practice this pattern varies around the country. Service provision has become increasingly decentralized.

Vietnam has accomplished notable progress in the field of education as is evident from the table below for the period 1995-1996 to 2004-2005.

Schools	-	-	-	-	-	-	-	-	-	-
Primary	11701	12145	12764	13259	13517	13859	13903	14163	14346	14518
Lower Secondary	5902	6340	6258	7164	7417	7741	8096	8396	8745	9041
Upper Secondary	644	703	894	962	1101	1258	1396	1532	1664	2224
Classes (000)	-	-	-	-	-	-	-	-	-	-
Kindergarten	66,9	74,1	79,8	82,6	84,5	87,1	87,3	87,4	88,7	93,2
Primary	310,3	317,9	323,4	327,3	322,4	320,1	314,5	308,8	299,4	288,9
Lower Secondary	104,3	117,2	124,9	133,4	139,5	144,4	153,7	161,3	165,7	170,9
Upper Secondary	21,8	24,6	28,6	33,9	39,3	45,1	50,2	52,1	55,8	59,7
Pupils (000)	-	-	-	-	-	-	-	-	-	-
Kindergarten	1931,6	2092,7	2257,7	2248,2	2199,5	2212,0	2171,8	2143,9	2172,9	2332,8
Primary	10228,8	10352,7	10383,6	10223,9	10033,5	9741,1	9315,3	8815,7	8346,0	7773,5
Lower Secondary	4312,7	4839,7	5204,6	5514,3	5694,8	5863,6	6259,1	6429,7	6569,8	6670,7
Upper Secondary	1019,5	1155,6	1382,0	1652,9	1957,0	2171,4	2301,2	2454,2	2589,6	2802,1

The *National Education for All (EFA) Action Plan 2003-2015* provides a strategic framework for long-term education development and brings together the overarching national education goals and targets of the SEDS, the CPRGS, the Education Development Strategic Plan for 2001-2010 and the Vietnam Millennium Development Goals. The EFA Action Plan aims at "consolidating the education progress achieved and guiding education reforms and development programmes for the EFA components of the education sector in order to enable them to strongly and effectively support the attainment" of the national development goals of "maintaining high economic growth through continued transition to a market economy, applying an equitable, socially inclusive and sustainable pattern of growth, putting in place a modern public administration and governance system and strengthening the integration of the country within the world economy and the international community"[6] .

6 EFA Action Plan 2003-2015, page i, xxv and 24. *The CPRGS in this respect states: "Renovate the management of education in the direction of raising the effectiveness of state management; strongly decentralize with a view to promoting initiative and responsibility at the local level, at the grassroots education level; prevent and curb negative behaviour"* (page 101).

Higher Education (HE) in Vietnam

Between 1999 and 2007, the number of universities increased more than doubled and by 2007, there were 139 universities, of which 30 (27.5%) were 'non-public' (see table 2).

Total	69	74	77	81	87	93	104	139
- Public	52	57	60	64	68	71	79	109
-Non-public	17	17	17	17	19	22	25	30

In the period 1999 – 2007, the number of students increased by 62.9% (see table 3). Full-time students accounted for 57% in 2007. Non-public students accounted for about 13% in 2007. It is expected that the share of non-public students will gradually increase in the coming years.

-Students (total)	719842	731505	763256	805123	898767	1046291	1016276	1173147
- Public	624423	642041	680663	713955	787113	933352	949511	1015977
- Non-Public	95419	89464	82593	91168	111654	112939	138302	157170
- Full-time training	376401	403568	411721	437903	470167	501358	546927	677409
- In-service training	205906	223837	251600	259396	285726	311659	410753	495738
- Other training	137535	104100	99935	107824	142874	233274	58596	
Graduates	90791	117353	121804	113763	110110	134508	143017	161411

Since late 2004, a series of HE policy initiatives has been launched. Chronologically these include the following (for more details please refer to Appendix 5 to this report):

- MoET decision No 38/2004/QD-BGD&DT of 2 December 2004 concerning the adoption of the '*Provisional Higher Education Quality Accreditation regulation*'. The decision concerns HE quality issues and implies universities, academies and other types of HE institutions. It identifies self-assessment and external review as key elements in the quality assurance (QA) process.
- Government Resolution 14/2005/NQ-CP of 2 November 2005 on 'Substantial and Comprehensive Renewal of Vietnam's Tertiary Education in the 2006-2020 period'. Resolution 14 aims to 'substantially and comprehensively renew tertiary education and make substantial changes in education quality, efficiency and scale, thus satisfying the requirements of national industrialization and modernization, international economic integration and people's learning demands. The Resolution refers inter alia to the importance of linking HE with overall socio-economic development, autonomy of university management and the role of HE institutions in the renewal of the HE provision.
- The *Higher Education Reform Agenda 2006-2020* (HERA 2020) approved by the Government in July 2005. The Agenda, amongst others refers to the importance of networking of HE institutions, expansion of HE and the advancement of

scientific and technological research, including contract research.

- MoET Regulation on *Regular (full-time) training programmes of universities and colleges* (promulgated together with decision No 25/2006/QD-BGD-DT of 26 June 2006). The Regulation refers to curricula, teaching loads and credit system.
- The *Education law* of 14 June 2006 replacing the Education Law of 2 December 1998. The Law regulates amongst others the credit system to be used in HE, emphasises the importance of QA and distinguishes different types of institutions and various levels of HE. The Law furthermore stipulates that HE institutions have a responsibility for the design of their own programmes, based on the core programmes set by MoET.
- MoET regulation on Master-level Education (promulgated together with decision No 45/2008/QBDGT of 5 August 2008, which sets amongst others the requirements for Master level education in terms of human resources, teaching infrastructure, etc.
- Recent campaigns on HE based on society's needs and 'Say no against irregularities in education', that promote amongst others closer relations with the World of Work and the proposed merger between national examinations: the graduate exam for upper secondary education and the university level entrance examinations.

Other interventions in higher education

In Vietnam, the World Bank has been active in higher education through its Higher Education Projects (HEP): HEP-1 (extended up to June 2007) and HEP-2. HEP-1 aimed to: '(i) increase coherence, flexibility and responsiveness of higher education to the changing demands of society and the market economy; (ii) improve efficiency and resource utilization...; and (iii) improve the quality of curriculum, teaching, learning and research in higher education'[7]. The project had components at system level, provided finances for university investments through grants to selected universities and for strengthening of MoET's project management and implementation capacity[8]. HEP-2, currently ongoing, aims to 'increase the relevance and raise the standards of higher education, in response to changing economic and social needs' and includes capacity building for HE policy development and development of HE teaching and research capacity to improve the quality and relevance of university teaching and research, improve institutional management and QA, and support integration between university teaching and research[9].

7 World Bank, Project Appraisal Report, 28 July 1998, page 2.
8 System level support focused on improvement of governance, building oversight, planning, management and administration of the HE system; institutional-level functions of planning, management and monitoring and the development of higher education institutions' computerized networks, information sharing and administrative management.
9 The aim of this component 'is to meet labour market needs and development goals of Vietnam more effectively by improving the quality and relevance of higher education training programs in MoET managed HEIs, increasing opportunities for original research, improving linkages and integration between teaching and research, and encouraging collaboration with industry, and with national and international researchers'.

3 Hanoi University of Technology

General

HUT, one of Vietnam's leading public universities, was established on 6 March 1956 (Decree No. 147) and became operational in October 1956 when the first batch of students was admitted in four faculties (Mechanics/Electricity, Mining/Metallurgy, Construction and Chemistry). Currently, the University comprises 16 faculties (including the Marxism-Leninism and Foreign Language Faculties)[10] as well as 33 research centres and institutes[11]. In addition, the University's structure comprises a range of administrative and support services such as Personnel, International Relations, Scientific Research and Technology Transfer, Post-graduate Training and Planning and Accounting.

The mission of the University is 'to provide society and community with high-quality level trainings, scientific research and technology transfer in order to contribute actively to the socio-economic development of the country and the development of the Vietnamese university education system' (Proposal, November 2003, page 8) to provide society and community with high-quality level trainings, scientific research and technology transfer in order to contribute actively to the socio-economic development of the country and the development of the Vietnamese university education system.

The HUT is recognized as the "cradle" for Vietnamese qualified scientists and technicians and has been at the basis for the current system of industrial, technical universities in the entire country[12].

10 Faculties are the following: Faculty of Applied Mathematics and Informatics; Faculty of Chemical Technology; Faculty of Economics and Management; Faculty of Electrical Engineering; Faculty of Electronics and Telecommunications; Faculty of Engineering Education; Faculty of Foreign Languages; Faculty of Information Technology; Faculty of Material Science and Technology; Faculty of Mechanical Engineering; Faculty of Part-time Training; Faculty of Social Science; Faculty of Textile, Garment Technology and Fashion Design. The Department is the Department of Physical education.
11 Institute of Biological and Food technology; Institute of Engineering Physics; Institute for Environmental Science and Technology; Institute of Heat Engineering and Refrigeration; International Training Institute for Materials Science; Automation centre; Computer centre; Network-Communication centre; Biomedical Electronics centre; Corrosion and Protection research centre; Polymer centre; Inorganic materials research centre; Materials Science centre; Centre for Research and Development of high Technology; Precise machinery Research centre; Renewable Energy research centre; Polytechnology co. Ltd; High Performance Parallel Computing Centre; Kitech-Hut Centre; Centre for Internetwork Security Software and Solutions; Centre of Development and Application of software and Solutions; Chromatography Centre; Multimedia Information, Communication and Application Centre.
12 Offspring includes: University of Construction and the University of Mining and Geology, Thai Nguyen Technical University (part of Thai Nguyen University) and the Ho Chi Minh City Polytechnic University (part of Ho Chi Minh City National University).

Students and graduates

Since its establishment, HUT has trained about 65,000 students in almost all branches of industry, science-technology and management.

In the last years, HUT has admitted about 3,700 regular students, 2,000 in-service students and 1,200 master and doctoral students per year; in 2007 total student enrolment was close to 22,000. HUT teaching particularly focuses on the under-graduate level, with almost half of the students enrolled as regular under-graduate students. Under-graduate in-service training is also quite extensive with almost one fourth of all HUT students on in-service training. Post-graduate training (both masters and Ph.D.) accounts for less than 4 % of all students. An overview of student enrolment is provided in table 4.

2000	15,258	11	8	353
2001	19,105	12	10	466
2002	18,978	13	9	650
2003	20,077	13	10	840
2004	20,435	14	10	1,123
2005	20,778	14	10	1,185
2006	20,899	10	10	1,107
2007	21,984	11	11	1,083

Average annual enrolment in some of the faculties that were involved more substantially in the IUC is as follows:

* Faculty of Chemical Technology 500
* Faculty of Electrical Engineering 1,000
* Faculty of Electronics and Telecommunication 800

Since its opening, more than 35,000 engineers have graduated and over 200 doctors and 700 masters have successfully defended their thesis at the HUT.

Training provision

HUT offers more than 37 formal regular training courses and 32 in-service courses in subjects such as mechanics-automation, electronics-telecommunication, energy, information technology, bio-technology, material technology, petro-chemical technology, etc. HUT trains engineers in 90 specialized disciplines (of which 31 training disciplines), masters in 35 disciplines and doctors in 13 disciplines. Training areas (Post-graduate) of key faculties involved in the IUC can be found in the overview below.

* Faculty of Chemical Technology Basic Chemistry
  - Organic chemistry & petrochemical technology
  - Technology of electrochemistry and metal protection

- Technology of inorganic chemistry
- Technology of silicate materials
- Technology of pharmaceutical chemistry
- Cellulose and paper technology
- Equipment and machinery for chemical industry
- Printing engineering
- Polyme technology
- Chemical and food engineering

* Faculty of Electrical Engineering
  - Electric power system
  - Electrical equipment
  - Industrial automation
  - Automatic control
  - Instrumental and industrial informatics
* Faculty of Electronics and Telecommunication
  - Electronics-Telecommunication
  - Electronics-Informatics
  - Bio-medical electronics
  - Aero-Electronics

Teaching staff

HUT's teaching staff includes about 1,200 professionals out of a total of about 1,600 employees. Of this teaching staff, 400 are professors or associate professors, 703 are at Ph.D. and 1,200 at Master level. An overview of staff evolution is provided in table 5. Around 37% of the academic staff is female.

1997	946	627	1,573			448	74	36
1998	952	634	1,586	31	213	427	70	40
1999	966	596	1,562	30	201	427	65	36
2000	1,073	574	1,647	28	193	440	62	36
2001	1,065	553	1,618	23	173	439	60	40
2002	1,096	623	1,719	42	184	397	57	39
2003	1,126	669	1,795	34	130	384	49	36
2004	1,160	759	1,919	38	136	397	49	37
2005	1,183	769	1,952	39	137	427	51	38
2006	1,258	798	2,056	45	166	473	54	37
2007	1,274	843	2,117	41	163	466	53	37

The staffing profile of some of the key faculties involved in the IUC is provided in table 6 (data on the Faculty of Mechanical Engineering were not provided).

Faculty of Chemical Technology	156	5	13	44	40
Faculty of Electrical Engineering	155	4	28	29	39
Faculty of Electronics and Telecommu-nication	126	5		22	20

While in first instance HUT is an academic education institute, it also effectively conducts scientific research and engages in technology transfer activities to industry and society as a whole. As indicated in its 1999-2005 medium-term development plan, HUT pursues a development direction of becoming a multi-disciplinary university. In addition to technical faculties, HUT already also offers courses in other disciplines as economics-management, technical pedagogic and specialized foreign languages.

Infrastructure

HUT has a total area of approximately 32 hectares divided into 2 campuses. The old campus (14.54 ha) contains the buildings for in-service training, practical workshops, sports gymnasium and student dormitories. The new campus (17.4 ha), which was constructed in 1961 and includes the buildings for training, scientific research and administration, was planned to accommodate the training of 2,500 students. Since then, the training scope has increased 7 times whereas the teaching infrastructure only increased about 2.5 times in the same time.

HUT has 8,410 m² of classrooms and even bigger surface of 11,153 m² of laboratories plus 6,549 m² of workshops. While in terms of surface these are impressive figures indeed, the state of the premises is not always of equal quality, with much of the teaching infrastructure still dating from the 1960s and 1970s. HUT is renovating its buildings but the challenges are still very substantive and in some instances the basic utilities are lacking (e.g. under the IUC chemistry project, running water supply was installed in a laboratory).

In accordance with the national strategy of developing and expanding Vietnamese higher educational institutions, Hanoi University of Technology has been assigned by the Ministry of Education and Training (MoET) to build a new "University town" in the suburbs of Hanoi where different institutions for higher education will be brought together. Moreover, a renewal operation is planned for developing the current campus in the city centre.

Research

In 1998, at the start of the cooperation, a total of 104 research projects were under execution at HUT. Since then, this number increased more than 3-fold by 2006, when a total of 327 research projects were financed by external sources (see table 7).

State level projects	44	45	37	42	48	56	59	67	62
Ministerial level projects	25	25	35	55	67	66	87	115	145
College level projects	35	35	101	100	81	81	100	100	120
Total	104	105	173	197	196	203	246	285	327

As indicated in its medium-term plan (see below), strengthening of its research capacity and capabilities is a priority strategic objective for HUT, as well as strengthening the link between research and education, particularly in graduate education. HUT also prioritizes strengthening of research and outreach links for income generation purposes. As far as S&T priority orientations are concerned, the following five fields were identified:

* Information technology;
* Telecommunications – electronics;
* Material technology;
* Biology technology;
* Mechanics – automation.

To encourage academic staff to engage in research activities, HUT's President issued Decision 3180 (dated 12/08/2005) on the calculation of research time. According to the Decision, time for research is converted into standard working hours (equivalent to teaching time) depending on the levels of projects (i.e. Institutional, Ministerial, and National), positions in the projects (i.e. promoter, co-promoter, or members), and results of the projects (in terms of publications, patents, etc.)[13]. Once a staff member passes the standard working time per year, he/she would get extra payment for every extra hour he/she puts in.

Over the years HUT has established a broad network with national and international organisations and institutes (including nearly 100 universities and research institutes all over the world) and different national and foreign joint venture companies operating in Vietnam.

Finances

In 2007, the budget of HUT was the equivalent of some € 5.2 million of which 55% was financed by MoET. The annual budget per student increased from € 148 in 2000 to € 239 in 2007. An overview of HUT funding is provided in table 8.

2000	2,256,200	1,084,200	48	148
2001	3,237,700	1,427,500	44	169
2002	3,616,300	1,744,600	48	191
2003	4,258,400	2,175,400	51	212
2004	4,593,300	2,506,700	55	257
2005	5,208,600	2,923,300	56	251
2006	5,078,200	2,745,600	54	243
2007	5,252,000	2,889,100	55	239

13 According to the Decision, the main scientific research activities that can be converted into standard teaching hours are the following: Scientific research projects at all levels; Contracts of transferring technology; Publication of scientific articles; Supervision of undergraduate students doing scientific research; Writing books, textbooks, course notes; Patents and exclusivity certificates; andSupervision of M.Sc. and Ph.D. students.

To date, MoET remains the largest source of funding. HUT's own income originates from tuition fees and related sources, training contracts, as well as scientific research and services. HUT plans to further strengthen its financial sustainability, with higher reliance on self-generated resources. With only 12.6 % of all financial resources on average in the period 1997-2000 coming from international aid and donors, HUT is relatively independent from foreign support.

Strategic plans

In accordance with a standard format for all HEI's provided by the Ministry of Education and Training (MoET), Hanoi University of Technology prepared in 1999 a mid-term strategic plan covering the period 1999 – 2005.

Both in its mission and development goals, HUT stresses its pursuit of becoming an academic institution of excellence providing high quality training, scientific research and transfer of technology services for the development of the Vietnamese university education system and for the socio-economic development of the country. Its intention is to become a multi-disciplinary university with science and technology as the leading drive.

HUT intends to rationalize its organisational structure based on a limited number of colleges (six) and research concentrated in an umbrella Research Institute for Scientific and Technological Development.

To more adequately meet the demands of a changing society and economy, HUT envisages to diversify its training offerings (including distance education) and emphasises enhancing the quality of its training and strengthening the practical training component. It also intends to create/strengthen a chain network among training – basic research – applied research – test production. Furthermore, strong emphasis is placed on strengthening the relevance and relationships of the university with the stakeholders of broader society, of the broader socio-economic environment. Staff development remains a top priority, enhancing the average academic qualifications as well as lowering the average age of HUT academic staff.

Recently, HUT developed a 'Comprehensive strategic plan for HUT, 2006 – 2030' according to which HUT aims to become a 'multi-disciplinary, multi-specialization, university with international recognition; a centre for modern science and technology research, integrated to regional and international higher education system…'. The strategic plan aims at the following key areas:

- Develop modern, attractive, flexible, and effective education approaches and programmes to provide high quality labour force in science and technology field.
- Develop a competent, committed, professional human resource that could solve real life problems effectively. Create a good working environment to keep and attract talents.
- Strengthen the research activities: Balance basic, academic and applied research; view research as a decisive factor for improving quality of the education, a measure of university's reputation and success. Research needs to be relevant to real life.

- Develop new technology that is knowledge-intensive, competitive, and relevant to the market.
- Invest and utilize efficiently infrastructure, especially national labs.
- Develop social capital, especially the relationships with other national and international universities, institutions, and firms; attract international professors and students to come teach and study at HUT.
- Improve management, and focus on administrative reform.

Specific measures envisaged in the plan include the following:

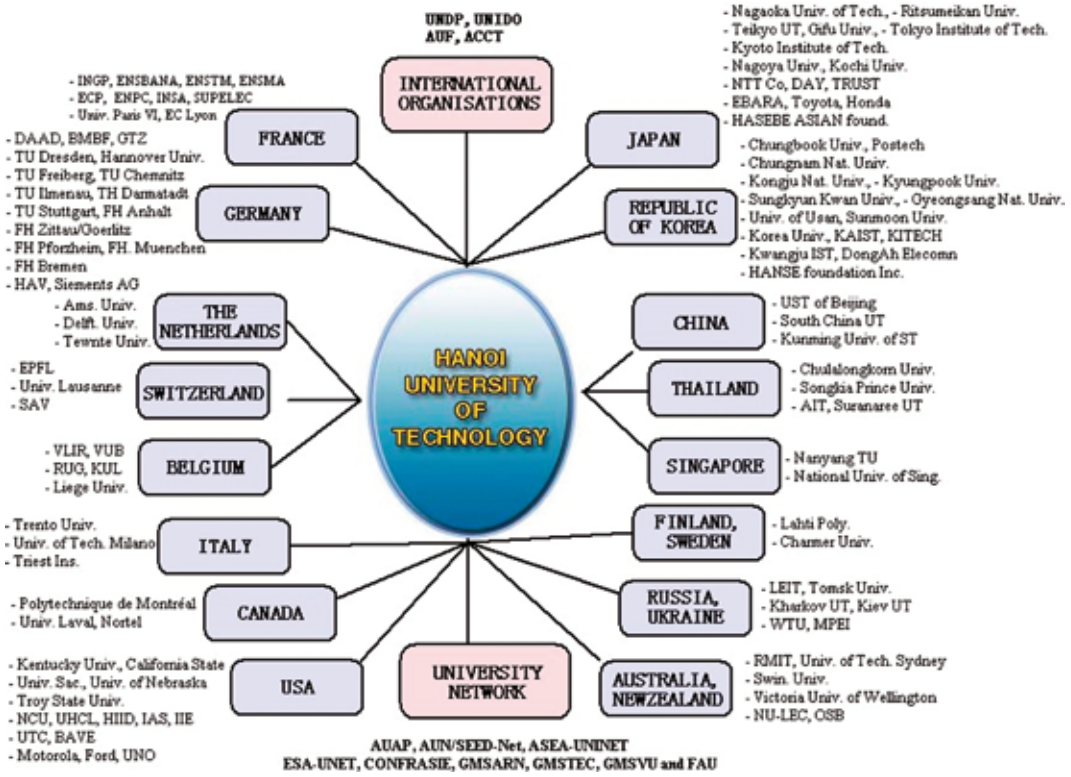
- Review and reform education programmes and methods. Apply some programmes of the universities in developed countries to the "talent classes".
- Apply the credit system. Increase the share of post-graduate students to 25% by 2010–2030.
- Make it clear that HUT is a research university where research is one of the two key fields.
- Besides restructuring some centres into competitive firms, HUT established some corporations that can do business in a large scale.
- Mobilize different sources of finance, especially from technology transfer and business. Look for external sources of finance, such as donations, development loans.
- Strengthen external and international relations, attracting more foreign researchers to teach and do research in the university through having multi-disciplinary labs and international education programmes.
- Develop young researchers.
- Develop internal policies that enhance accountability and authority.

Other support

The evaluation commission understands that over the years, donor support was provided by inter alia the Netherlands (International Institute for Materials Science (ITIMS)) and the Deutsche Akademische Austauschdienst (DAAD) (see also the figure below[14]). HUT is also one of the beneficiaries of HEP-1 and HEP-2 through the project "Enhancement of training and research capacities in Industrial Biotechnology at Hanoi University of Technology" (budget: US$ 3.5 million). Human resource development and investment in infrastructure for teaching, learning and research are important elements of the project.

In the period 1998 – 2002, with an average of US$ 350,000 per year, the IUC programme budget reportedly amounted to 31.18 % or almost one third of the total HUT external donor budget. This percentage declined to less than 10% in more recent times. No further details were available to the evaluation commission.

14 Source: HUT website.


UNDP, UNIDO
AUF, ACCT
INTERNATIONAL ORGANISATIONS
- Nagaoka Univ. of Tech., - Ritsumeikan Univ.
- Teikyo UT, Gifu Univ., - Tokyo Institute of Tech.
- Kyoto Institute of Tech.
- Nagoya Univ., Kochi Univ.
- NTT Co, DAY, TRUST
- EBARA, Toyota, Honda
- HASEBE ASIAN found.
JAPAN
- INGP, ENSBANA, ENSTM, ENSMA
- ECP, ENPC, INSA, SUPELEC
- Univ. Paris VI, EC Lyon
FRANCE
- DAAD, BMBF, GTZ
- TU Dresden, Hannover Univ.
- TU Freiberg, TU Chemnitz
- TU Ilmenau, TH Darmstadt
- TU Stuttgart, FH Anhalt
- FH Zittau/Goerlitz
- FH Pforzheim, FH. Muenchen
- FH Bremen
- HAV, Siements AG
GERMANY
REPUBLIC OF KOREA
- Chungbook Univ., Postech
- Chungnam Nat. Univ.
- Kongju Nat. Univ., - Kyungpook Univ.
- Sungkyun Kwan Univ., - Gyeongsang Nat. Univ.
- Univ. of Usan, Sunmoon Univ.
- Korea Univ., KAIST, KITECH
- Kwangju IST, DongAh Elecomn
- HANSE foundation Inc.
- Ams. Univ.
- Delft. Univ.
- Tewnte Univ.
THE NETHERLANDS
CHINA
- UST of Beijing
- South China UT
- Kunming Univ. of ST
- EPFL
- Univ. Lausanne
- SAV
SWITZERLAND
HANOI UNIVERSITY OF TECHNOLOGY
THAILAND
- Chulalongkorn Univ.
- Songkla Prince Univ.
- AIT, Suranaree UT
- VLIR, VUB
- RUG, KUL
- Liege Univ.
BELGIUM
SINGAPORE
- Nanyang TU
- National Univ. of Sing.
- Trento Univ.
- Univ. of Tech. Milano
- Triest Ins.
ITALY
FINLAND, SWEDEN
- Lahti Poly.
- Charmer Univ.
- Polytechnique de Montréal
- Univ. Laval, Nortel
CANADA
RUSSIA, UKRAINE
- LEIT, Tomsk Univ.
- Kharkov UT, Kiev UT
- WTU, MPEI
- Kentucky Univ., California State
- Univ. Sac., Univ. of Nebraska
- Troy State Univ.
- NCU, UHCL, HIID, IAS, IIE
- UTC, BAVE
- Motorola, Ford, UNO
USA
UNIVERSITY NETWORK
AUSTRALIA, NEWZEALAND
- RMIT, Univ. of Tech. Sydney
- Swin. Univ.
- Victoria Univ. of Wellington
- NU-LEC, OSB
AUAP, AUN/SEED-Net, ASEA-UNINET
ESA-UNET, CONFRASIE, GMSARN, GMSTEC, GMSVU and FAU

4 IUC Programme at HUT

General

The IUC Programme at HUT, consisted of two phases, i.e. from 1998 to 2002 and from 2003 to March 2008, and was coordinated by the Vrije Universiteit Brussel (VUB) in Belgium.

The relationship of Flemish Universities with HUT started with a VLIR supported "Own Initiatives" project involving VUB on the Belgian side. Nomination of HUT did not follow the patterns used by VLIR-UOS at present; unlike today, neither the identification of the institution, nor the preparation of the programme and projects went through the rigorous stages, lasting a minimum of a year, and the use of the Project Cycle Management (PCM) approach that characterise the IUC Programme today[15].

Phase 1

An agreement was signed between VUB and VLIR-UOS for 5 year IUC programme with HUT for the period 1998-2002. Depending on obtained results during the 1st phase, a 2nd and final IUC programme could be signed for another period of 5 years (2003-2007). The annual budget allocated at the time (equivalent of some € 372,000) was limited in comparison with other VLIR IUC programmes with universities elsewhere.

During the 1st phase, the composition of the IUC changed rather drastically from April 2001 onwards when to the original three projects (Telecommunications, Chemistry and Physics – see the overview below) were supplemented by three new ones (biomedical engineering, mechatronics and powder & composites) while the available budget remained the same.

The 1st phase of the programme comprised the following projects, with the first three present since the start of the IUC, the latter three officially started as of 1 April 2001:

15 As a result, the 2002 mid-term evaluation report highlights that the evaluators were 'not able to get hold of any IUC-HUT programme identification or formulation report or related document' while changes in key project management positions 'have resulted in a loss of institutional memory on the programme'.

Modernisation of Electronics and Telecommunication lab and workshop	Prof. Pham Minh Viet	VUB, Prof. R. Van Loon	Human Resource Development, Teaching and Infrastructure
Modernisation of the basic Chemistry labs	Prof. Vu Dao Thang	UGent, Prof. S. Hoste	Human Resource Development, Teaching, Research and Infrastructure
Modernisation of the basic Physics lab	Prof. Do Tran Cat	KU Leuven, Prof. J. Hellemans	Human Resource Development, Teaching and Infrastructure
Biomedical engineering	Faculty of Electronic and Telecommunications, Biomedical engineering department, Prof. Nguyen Doc Thuan	VUB, Prof. R. Van Loon	Human Resource Development, Teaching and Infrastructure
Mechatronics	Mechatronics Department, mechanical engineering faculty Prof. Tang Huy	KU Leuven, Prof. J. Duflou	Teaching, Research and Infrastructure
Powder and composite	Faculty of Metallurgy and Materials Technology, Prof. Do Minh Nghiep	UGent, Prof. S. Hoste	Teaching

A summary overview of realisations of these 1st phase projects is provided in the following table. For more details please see Appendix 6.

Chemistry	Start of 3 Ph.Ds Training of 4 technical/administrative staff	Provision of equipment for various chemistry laboratories Provision of academic literature	Lectures conducted by Flemish professors at HUT
Bio-electronics	Training of 3 technical/administrative staff Two HUT students participated in ITP	Provision of some laboratory and IT equipment	New bio-medical electronics curriculum and courses developed Lectures conducted by Flemish professor at HUT
Powders technology	Training of 2 technical and administrative staff Short-term staff training visits to Belgium	Provision of equipment Provision of academic literature	Lectures conducted by Flemish professor at HUT
Mechatronics	Start of 1 Ph.D. Training of 3 technical/administrative staff	Provision of equipment for mechatronics laboratory Provision of academic literature	Development of mechatronics curriculum, course outlines and lab course module
Engineering physics	Start of 2 Ph.Ds Training of 9 technical/administrative staff	Provision of equipment	Lectures conducted by Flemish professors at HUT
Electronics and telecommunications	Start of 2 Ph.Ds Training of 5 technical/administrative staff	Provision of equipment for 3 new laboratories Provision of academic literature	Development of curriculum and textbooks Lectures conducted by Flemish professor at HUT

A mid-term evaluation was carried out from 19 to 26 October 2002 (Ruddi Vaes and Paul Verlé, "Midterm evaluation of the Institutional University Cooperation with the Hanoi University of Technology, Vietnam, Final Report from the External Evaluation Commission"). The mid-term evaluation identified several weaknesses, in particular with respect to research and outreach, the number of projects and limited HUT involvement in IUC management.

16 No clear objectives, or results were apparently formulated for the first phase, neither at project nor at programme level – see the previous footnote.

The evaluation recommended in summary as follows (page 13 of the report):

* Assurance of strategic focus of the programme geared towards the effective production of concrete results in the pursuit of the overall programme goals and objectives, thus requiring the submission of a five-year strategic IUC-HUT plan, covering staff HRD, teaching, research, outreach, management and equipment components in an integrated manner;
* Concentration of the programme in maximum three, eventually four, academic sub-programmes (projects, components) with due attention given for strengthening their complementariness;
* Full integration of the programme into the HUT medium-term policies and plans, while at the same time maximizing the win-win academic relationship with the Flemish universities;
* Strengthening of programme co-ordination and management, including: incorporation in the programme of an explicit cross-cutting sub-programme on institutional and management strengthening, upgrading of Programme Co-ordination Office directly reporting to the HUT Rector, assignment of a professional external manager, and effective use of management tools including performance monitoring;
* A mid-term review of the second phase to be conducted before mid-2005 and
* The design and effective implementation of a gradual exit strategy.

Phase 2

Following formal and informal consultations among Vietnamese and Flemish stakeholders, an IUC partner programme for the 2nd phase (officially from 2003 to March 2008) was drafted in the course of 2003. This 2nd phase comprises the following projects:

Human resources and institutional programme management	VUB	The academic overall objective for HUT is to reach the level of a high quality centre in training, scientific research and technological transfer and to integrate itself into the national AND international scientific and technological development trend.	To enhance technological transfer of knowledge to the national socio-economic development and to contribute to the upgrading of the university education and research system in Vietnam	To improve HUT's academic and administrative staff qualifications in overall project management and research policy
Consolidation of VLIR Ph.D. trainees	KU Leuven	To assist Hanoi University of Technology in reaching the level of a high quality centre in training, scientific research and technology transfer and to provide a stronger position for the institute in the national and international scientific and technological development trend.	To enhance the technological transfer of knowledge to the national socio-economic development and to contribute to the upgrading of university education and research system in Vietnam.	The specific objective is to support VLIR Ph.Ds in new research projects to maintain their motivation and efficiency in research work and to succeed retiring professors at HUT.
VLIR-HUT Research Fund	UGent	To reach in HUT the level of a high quality centre in training, scientific research and technological transfer and to integrate in the national and international scientific and technological development trend	To enhance technological transfer of knowledge to the national socio-economic development and to contribute to the upgrading of university education and research system in Vietnam.	To improve research capacities of young staff to reach international standards of research at HUT or 'to upgrade research capacities of young HUT staff to international research standards'.

5 Programme Management and administration

Introduction

The mid-term review of October 2002 specifically recommended (1) a transfer of management and administration of the IUC to HUT and (2) strengthening of HUT's capacity to take up capacity of IUC and research management and administration. This chapter first of all examines issues of overall management of the IUC, including the role of the Steering Committees. It also deals with the initiatives that are mentioned under project 1 under intermediate result 4 'Institutional project management developed at HUT'[17] and in relation to intermediate result 3 concerning the establishment of a HUT Research Information Centre. The chapter concludes with observations on financial management.

General management and administration

Based on the principles of IUC programme management as articulated by VLIR-UOS[18], two programme steering committees, one at HUT and one in the North, were set up to coordinate the implementation of the partnership programme. In addition, joint meetings of the two steering committees were held with participation of project leaders from both sides and the two Flemish and HUT coordinators (the 'Joint Steering Committee'). In the period 2003-2008, the Joint Steering Committee met 10 times (2004:2, 2005: 3, 2006: 1, 2007: 3 and 2008: 1), with the last meeting mainly devoted to the preparations for the closing event.

The Flemish Steering Committee was composed of the programme co-ordinator and the project leaders of the three projects at HUT, as well as the ICOS of VUB, which dealt with issues of overall programme administration and financial management and reported to the coordinator. Meetings were regularly attended by representatives of VLIR-UOS and, occasionally, by a representative of the Belgian Directorate for Development Cooperation. The Committee met 13 times during years 2003-2007, with a first meeting on 23 September 2003 and a last one on 5 June 2007. The Steering Committee meetings served to discuss outcomes of missions undertaken to Vietnam, prepare activity plans and reports, exchange information on financial issues, etc. Outside these meetings, contacts among Steering Committee members have been regular and cordial, often through e-mail and telephone.

17 Indicators in the logframe: Availability of institutional management manual and guidelines.
18 'That VLIR is accountable to the Belgian Government and thereby responsible for the programming, monitoring and evaluation of the overall programme; the university of the Flemish coordinator and the partner university have the responsibility to jointly manage the implementation of the partner programme and the constituent activity programmes based on an agreement signed by the Flemish coordinating university, the partner university and VLIR; the partner university also has to nominate a local coordinator who functions as the key responsible person from local side; at the level of the partner university a full-time professional manager is appointed in order to support the local coordinator, being an academic charged with numerous other responsibilities, in the various management duties associated with the implementation of a complex programme; both in the North and the South a steering committee is established to coordinate the implementation of a partner programme. On an annual or bi annual basis both committees hold a Joint Steering Committee Meeting (JSCM)' (Mission Terms of Reference).

Discussions with members of the Steering Committee as well as the internal assessments have highlighted the following issues:

* Heavy administrative load in terms of financial management and reporting. Nevertheless, it proved to be possible to use VLIR instructions and guidelines, also at the level of the individual research projects. Promoters of these research projects highlighted that (financial) reporting requirements under the IUC were relatively easy in comparison with those of the Vietnamese. All stakeholders have recognised the importance of the support of the Programme secretary at HUT in complying with VLIR programme administration requirements;
* Regular changes in VLIR-UOS staff responsible for the IUC with HUT.

At HUT, a Steering Committee was set up as well. The Committee met 6 times during 2003-2007, with a first meeting on 26 June 2004 and a last one on 10 January 2007.

In line with the recommendations of the mid-term review, major part of programme administration was transferred to HUT rather than kept at the senior level of the Flemish coordinators. The Programme was fortunate in identifying and appointing a capable administrator, who received some training and briefing during visits to Belgium (see further below). All parties recognise that her involvement has allowed for a smooth programme administration. Efficient collaboration between the HUT programme administrator and with the Flemish ICOS (Mrs. Marleen Vereecken) was established which has contributed to the system of reporting, budgeting and planning that was put into place during the 2nd phase.

Regular exchange visits were undertaken by both Flemish and Vietnamese project leaders (planning of activities, review of realisations, participation in VLIR-HUT Research Council, etc.). In general these visits were appreciated.

Development of management manual and guidelines

The elaboration of an institutional programme management manual and guidelines, originally foreseen for November 2004 was completed ahead of schedule in April 2004. The manual by and large concerns financial guidelines for the management of the research grants, indicating e.g. what procedures should be followed in case of procurement of equipment, what travel costs are reimbursed, what are to be considered 'operational costs' and specify what personel costs can be financed, i.e. '(costs) relating to the scientific and technological research work of academic staff (promoter, co-promoter or eventually other scientists but only with motivation) who are bound by an employment contract to HUT and who are working within the department where the project is running, can be paid on the project budget'. The financial guidelines are in line with those used by VLIR but adapted to fit with Vietnamese financial (reporting) requirements. In addition, some guidelines are provided with respect to reporting requirements and publications.

Training of International Relations Office staff in management of projects in international context

According to the Programme Partnership document '(training) of International Co-operation Department staff in management of projects in international context: will be executed during the period from February to April 2004'[19].

19 Partner Programme, Project 1, page 7.

Effectively, a short training session for the HUT secretary (Mrs. Nguyen Mai Chi) on VLIR procedures and project management guidelines was held, earlier than planned, in March 2004 at VUB. Following this visit, the above-mentioned guidelines were developed. After several discussions and exchanges, a second training visit, originally planned for AP2005, was postponed until June 2006. The trip, which included short visits to the research coordination centres at KU Leuven, UGent and VUB (information search and dissemination), and was combined with a 2-day PCM training at VLIR-UOS, focusing on VLIR project management guidelines, and finalisation of the financial report on AP2005.

Most of the support to the Vietnamese secretary went through e-mail; collaboration with VUB in this respect was more intense in the past than in recent years.

HUT Research Information Centre for national and international Calls for proposals

According to the Partnership Programme document the '(set up) and put into operation of a HUT Research Information Centre for national and international Calls for proposals: start in March 2003 and finish in June 2004. Input will be given by Flemish Universities (Research and Development department)'[20]. This was apparently rescheduled for the period January -March 2005 but subsequently postponed to AP2006.

The 'Centre' currently comprises one person, i.e. the HUT programme secretary, who was trained in 'how to find and manage information regarding (inter)national calls for research proposals from different funding organisations at the R&D departments of VUB, UGent and KU Leuven in June 2006. She is and will remain part of HUT's Department for International Cooperation but is expected to go studying abroad (Master in international business) for one year in 2009. Information on research grants is circulated to the Deans of the faculties and heads of institutes and centres by e-mail. Information is furthermore advertised in a box outside the office.

Key in the research information activities is furthermore the website www.hut.edu.vn/vlir, with information on scholarships update to the HUT intranet (www.hut.edu.vn/content/ blogcategory/15/38). It was planned in this respect, according to AP2007, to give special attention 'to the improvement of the website, which provides information on international study scholarships and research possibilities' (visibility of possibilities in Flanders, etc.) and that the website would be re-evaluated during the Flemish mission to HUT in October 2007. It is recognised that website development is at an early stage, with limited links to possible sources of research and fellowship funds. Many of the interviewees were also not well aware of the site and its potential usefulness. Nevertheless, they are kept informed – by e-mail as mentioned above.

20 Partner Programme, Project 1, page 7.

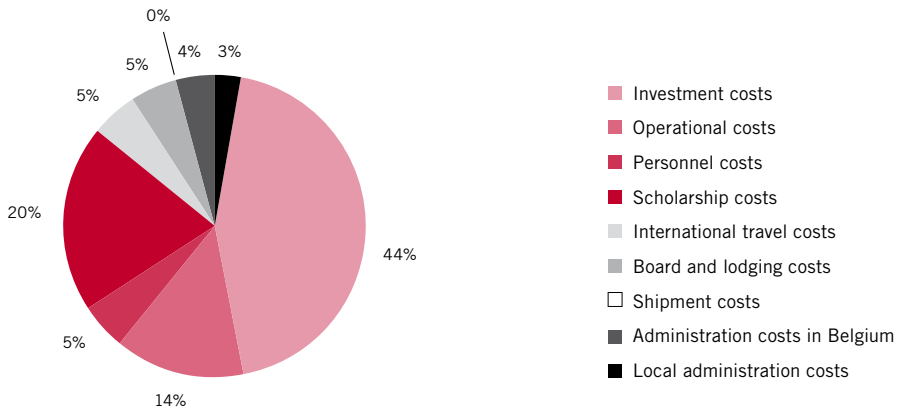
Programme funding and financial management

The available data indicate that total expenditure over the period 1998 to 2007[21] has been € 3,394,053 of which € 2,244,860 during the period 1998-2003 and € 1,149,193 during the period 2004-2007. An overview of total expenditures by main cost category is provided in table 9.

Investment costs	284,990	231,242	235,043	164,790	125,580	186,168	119,136	49,101	68,838	22,320	1,487,209
Operational costs	5,342	1,191	2,909	8,505	2,727	5,258	93,887	133,279	110,515	99,452	463,065
Personnel costs	4,865	7,438	6,152	8,823	8,447	1,986	24,821	40,861	33,433	22,147	158,972
Scholarship costs	36,842	73,723	76,602	118,518	178,405	115,493	62,972	15,015	0	0	677,569
International travel costs	10,653	12,845	11,499	25,099	22,718	20,272	17,992	29,009	18,167	16,435	184,688
Board and lodging costs	10,500	14,666	12,260	23,019	14,116	16,515	13,462	24,303	20,880	11,135	160,855
Shipment costs	3,504	5,543	444	22	2,584	211	501	344	0	403	13,554
Subtotal	**356,695**	**346,648**	**344,909**	**348,776**	**354,576**	**345,902**	**332,771**	**291,912**	**251,833**	**171,892**	**3,145,913**
Administration costs in Belgium	11,896	17,332	17,245	17,439	17,729	17,295	16,639	14,545	12,582	8,595	151,296
Local administration costs	4,335	7,506	9,232	9,907	8,370	9,069	11,941	12,985	14,000	9,500	96,844
Administration costs	16,230	24,838	26,478	27,345	26,099	26,364	28,579	27,530	26,582	18,095	248,140
Total	**372,925**	**371,486**	**371,387**	**376,121**	**380,675**	**372,266**	**361,350**	**319,442**	**278,415**	**189,986**	**3,394,053**

The share of the different cost categories as a percentage of total expenditures is shown in the pie-chart below; shipment costs equalled less than 0.5% of the expenses incurred.

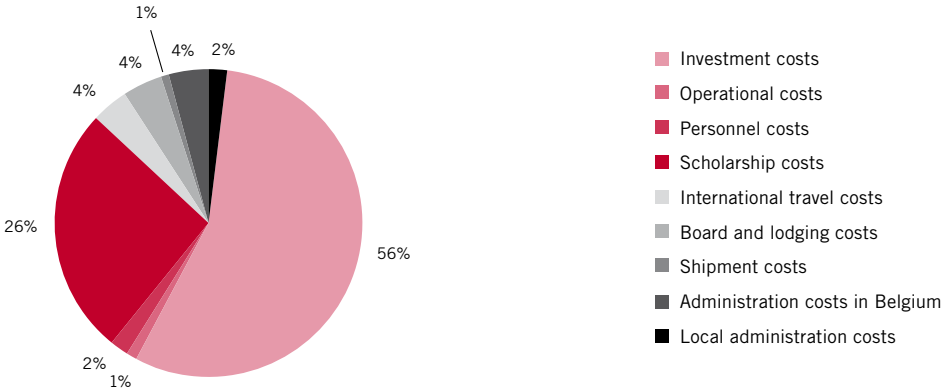
Share of categories of expenditures (1998-2007)



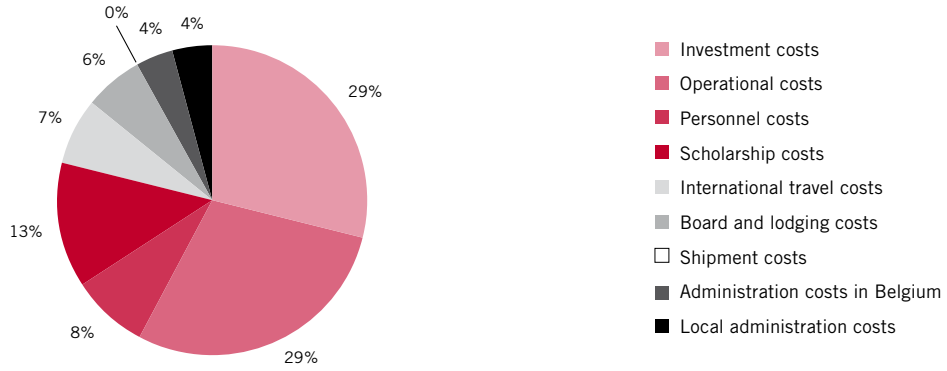
21 The figures for 2007 are provisional as these have not yet been approved by VLIR-UOS and the Belgian Department for Development Cooperation.

There is a marked difference between the first phase of the cooperation (1998-2002) and the second phase (2003-2007) in this respect; this is evident from the graphs below.

Share of categories of expenditures (Phase 1)



Share of categories of expenditures (Phase 2)



It is not entirely clear why the cooperation with HUT is at some 50% of a regular IUC, with budgets equalling some € 750,000 on annual basis for the first years. Discussions indicated that the following factors might have played a role:

* the fact that HUT is a technical and not a comprehensive university;
* VUB had already some programmes approved at the time (1998) and could not have too many in comparison with other Flemish universities, although this number was not larger than for others;
* restrictions on available budget for the IUC Programme as a whole.

In terms of funding, a particular issue that arose during the preparations for the 2nd phase and the proposed research grants, was the payment of the Vietnamese researchers. The Minutes of the steering committee meeting IUC-HUT of 23 June 2003 briefly state the situation as follows: 'How will personnel be paid: topping up, salary...?' (page 4). It took several months of negotiations with the Belgian Department General for Development Cooperation (DGDC) to come to an agreement on this issue[22]. Ultimately approval to pay HUT researchers a (small) salary for their research efforts was obtained.

22 On 25 March 2004, the then Director of VLIR-UOS proposed to DGDC '(gelet) op de noodzaak van de mogelijkheidsvoorwaarden tot stand te brengen waardoor de doelstellingen van het partnerprogramma haalbaar worden, stel ik derhalve voor om maximaal 15% van het effectief bestede operationele budget te voorzien voor de vergoeding van lokaal academische personeel'.

The 2002 evaluation mission report recommended that '(in) view of the above related programme quality and results and also for reasons of limited absorptive capacity, the Evaluation Commission recommends to maximally maintain the present scale equivalent to half of the budgetary resources of a fully fledged IUC programme. Eventually, upon positive developments and satisfactory accomplishments, the scale of the programme may be revisited on the occasion of the mid-term review of the second phase' (page 13 and 126)[23]. However, no such mid-term review, though recommended by the Evaluation Commission, was conducted, and no increase in budget approved.

With respect to financial management the following observations can be made:

* Under-spending in the case of the IUC with HUT occurred in AP2004 only; differences between budget and expenditures were minimal in subsequent years – for AP2007 this difference, based on the draft report on AP2007, is less than € 10. Unlike in other IUC programmes, almost no expenditures were rejected after control by VLIR-UOS and DGDC.
* VLIR-UOS rules and regulations differed from those in Vietnam. Nevertheless, in the financial instructions issued for the research grants, it has been possible to reconcile the two.

23 It is not explained in the report on what basis the mission had come to 'limited absorptive capacity'.

6 Capacity building at HUT

Introduction

Some weaknesses and challenges concerning institutional programme management at HUT, indicated in the 2002 report of the VLIR evaluation mission of the 1st phase of the IUC-programme, were recognised by both HUT and the Flemish universities. These are mentioned in the Partnership Programme document and include in particular:

- Weak institutional guidance and formal monitoring system of research activities
- Management development still remains at low level;
- Limitation of expertise and application of PCM methodology;
- Limited number of active/full time researchers at HUT;
- Insufficient (academic) English knowledge.

This was the main argumentation for the project 'Human Resources and institutional programme management' which intended to create a 'Research Culture' at HUT with an efficient administrative support by the improvement of HUT's academic and administrative staff qualifications in overall project management and research policy. Furthermore, as stated in the programme document (page 2): 'Project 1 aims at better arrange and manage the overall programme and institutional programme activities. It is foreseen that even when VLIR-HUT co-operation ends, these management mechanisms will still be helpful in co-operating with other partners and donors and allow HUT to score better in applications for research grants'. According to the same source, the specific objective in this area reads as: 'to enhance and improve HUT's academic and administrative staff qualifications in overall project management and research policy. The establishment at HUT of a research culture, managed by high qualified and well-trained staff, is a real sine qua non to reach the academic development goal as formulated in HUT's strategic plan. HUT will serve as an example for other national universities and positively and actively contribute to the upgrade of the university education and research system in Vietnam. Technological transfer of research results should be considered as an important part of the institution's research policy and promoting it will serve the socio-economic development of Vietnam' (page 6).

This chapter specifically concerns first of all the so-called VLIR Ph.Ds that were trained under the IUC; it thus deals with the following intermediate results: Project 1: Intermediate result 1. VLIR Ph.D. trainees with Belgian doctoral degree and Project 2: Intermediate result 1. VLIR Ph.Ds re-integrated and working at HUT and Intermediate result 3. VLIR Ph.Ds become head of department with the creation of new departments and as successors of retired professors at HUT. It subsequently deals with the HUT-level training activities that were undertaken in relation to Intermediate result 2 PCM

methodology introduced in HUT and used in preparation of project proposals and Intermediate result 6: English training courses conducted at HUT.

VLIR Ph.Ds

Training in Belgium

Activities related to Ph.D.-level training were completed in 2006 when all remaining Ph.Ds, who had started during the 1st phase, had returned to HUT.

Two Ph.D. candidates defended their doctoral thesis and obtained their degree in 2004 (Dr. Bui Viet Khoi (September), Dr. Truong Thi Ngoc Lien (December)), one in February 2005 (Dr. Le Minh Thang) and one in February 2006 (Dr. Nguyen Thi Hong Minh, KU Leuven).

Return to HUT

Only VLIR Ph.D., Dr. Ong Phuong Khuong, who was judged to be an excellent Ph.D. student comparable with Flemish Ph.D. students and who defended his thesis in 2003, did not return to HUT. The graduate, who was not requested to sign a commitment with HUT to return, left the institute for Ho Chi Minh City's University of Technology and subsequently for Singapore, mainly for personal reasons. This seems an (unavoidable) loss as the graduate was reported to have many A-publications, involved in international conferences and involved in a promising line of research.

The 7 VLIR-trained who did return are currently employed at the following four faculties where they have thus far supervised several undergraduate and post-graduate students[24]:

- Faculty of Chemical Technology (3)
- Faculty of Electronics & Telecommunications (2)
- Faculty of Mechanical Engineering (1)
- Institute of Engineering Physics (1).

Though salaries are modest (some US$ 200 per month), discussions with the Ph.Ds confirm that 'the financial conditions linked to a position as a researcher and/or junior faculty member at HUT' are still 'sufficiently attractive to assure that the VLIR Ph.Ds would opt for a continued, long term employment by the institute' – with only one exception as noted above.

Discussions with the Ph.Ds confirm that the research opportunities created through the project have added to their motivation to stay.

24 Project group lead by Dr. Bui Viet Khoi supervised six undergraduate students (K44 and K45) and two M.Sc. students who did their theses on his research project; Dr. Tran Ngoc Lan supervised three Master students and several undergraduate students on Multilayer Traffic Engineering (Master Thesises supervised: Phan Thi Ninh, "Using Multilayer Traffic Engineering to improve the quality of services in the network"; Nguyen Thu Nga, "Applying Generalized Multiprotocol Label Switching technology in Multilayer Traffic Engineering" and Nguyen Duc Hung, "Multilayer Traffic Engineering in Generalized Multiprotocol Label Switching networks"); Dr. Pham Thanh Huy supervised two M.Sc. students and two Ph.D. students (Vuong Son, Fabrication and Optical properties of the Si/SiO2 multi-layers structures, July-2004; Luu Van Tho, Light emitting devices based on silicon nanocrystals, October 2005; V.V. Thu, Synthesis of silicon nanostructures for light emitting devices, October 2007; N.N. Ha, The photonic properties of Si-derived novel structures N. N. Ha, to be finished in February 2009) ; Dr. Do Minh Nghiep supervised two M.Sc. thesises (Nguyen Hoang Viet, Preparation of alloys of W-C and Al-Ni systems by mechanical grinding technique, April, 2004 - March, 2005 and Nguyen Minh Duc, Synthesis of Nanocomposite Ag-CdO for electric materials, September, 2004 - October, 2005); Dr. Do Minh Nghiep supervised one M.Sc. thesis (Pham Hung Vuong, Formation of metastable phases of the Ni-Al system by mechanical milling, December, 2004 - April, 2006).

The evaluation findings thus confirm the assumption mentioned in the programme document that VLIR Ph.Ds 'do not take work opportunities outside HUT in case they get an appropriate position at the university and have the possibility to do good research…'.

In addition to the provision of a research budget, key to the Ph.Ds in taking up research was the agreement between the Flemish universities and HUT management to reduce their teaching load with 50%. This commitment, monitored by the Flemish professors involved in the IUC, has been honoured. Nevertheless, the Ph.Ds have found it difficult to combine their teaching, administrative and research duties – a common phenomenon worldwide.

A second point addressed in this respect was the payment of (small) salaries to the VLIR Ph.Ds and others involved in their research projects since a reduced teaching load, which is the basis for payment, would have led to a reduced income. Moreover, with HUT resolution 3180, for research output an equivalent teaching load was introduced according to which publications, and supervision of master and Ph.D. graduates result in higher remuneration (see further below). All Ph.D. promoters were considered for this new incentive scheme.

From a personal point of view, reintegration into a changing Vietnamese society and family life in general and into the institute in particular has not always been easy and caused, for one returning Ph.D., a (limited) delay in the submission of their research projects.

VLIR Ph.D. Careers

According to the programme document, 'it is anticipated that after the minimum post-doc period of 6 years, and depending on their performance as lecturers and research coordinators, the VLIR post-docs will be appointed as associate professor. After another period of minimum 3 years they can then become full professor'.

It is understood that two VLIR Ph.Ds (Dr. Nguyen Hong Lien and Dr. Nguyen Thi Hong Minh) have been appointed as Deputy Dean of the Faculties following a recent reshuffle of positions at HUT following the nomination of a new rector. It is assumed that Ph.D. training in Flanders and the undertaking of research projects has contributed to this development.

PCM methodology introduced in HUT and used in preparation of project proposals

From 2003 to 2007 four PCM training courses were conducted for 127 participants[25], of which 107 in the period 2004-2007. Training focused on the basic concepts of project cycle management, analysis of the steps in designing a project, the practice of designing a project, and analysis of the concepts and skills in implementing a project. It is understood that the number of applicants for the training exceeded the number of places available. An overview of the courses per AP and the number of participants is provided in table 10. For further details, please see table 1 in Appendix 8.

25 According to the document for the Ex-post Programme there were 153 participants.

2003	1	20
2004	2	47
2005	2	30
2006	1	30
Total	**6**	**127**

The available data indicates that 51 of the participants (almost 50%) were, one way or another (promoter, co-promoter, researcher, etc.), involved in one of the research grants funded under the Programme. Staff of the Faculty of Chemical Technology accounted for 25% of the participants.

A first PCM training was conducted by the end of AP2003, a transitional year in the cooperation. 20 participants attended the training. An evaluation of training attendance and feedback from participants was conducted early 204 and confirmed the need for addition training. The Belgian Technical Cooperation (BTC) was contracted to conduct the training as it was realised that were few HUT staff members who had 'an idea of what PCM is all about' and had the necessary 'hands-on experience and the necessary training skills and confidence to train others'.

Since the need for an extra PCM training was reconfirmed during the Joint Steering Committee of November 2004, a second PCM training was organized in English by 'South Research' and supported by a Vietnamese consultant of the Centre for Community Empowerment (CECEM). The 5-day training took place in Hanoi in March 2005 and was attended by 47 trainees (of which 20 women). Trainees were mostly of the younger generations and generally had good knowledge of English to be able to participate effectively; some 2-3 participants needed more assistance from the Vietnamese consultant.

In terms of results, according to the participants, 'one of the main strengths of PCM was the systematic approach, the structure and inherent logic of PCM', which at the same time implied the risk that 'when people are too much focussed on the systematic, structured and logical way of thinking and acting that they loose a common sense of creativity, chaos, flexibility and realism'. Furthermore, basic understanding of PCM terminology and principles permitted enhancing communication with (international) partners, allowing them to 'play a more important role and become partners in the true sense of the word'. Feedback from participants showed that the Vietnamese consultant also played a considerable role in the success of the training course.

From 13 to 17 March, 2006 a 2nd PCM training was conducted by CECEM[26], this time in Vietnamese, with the objective to provide participants with (i) understanding about project cycle management and (ii) skills and techniques in project design and proposal writing (which was not included in the first training). Training was attended by 30, mostly young, participants, from different departments, institutes and centres at HUT and generally already involved in the implementation of research projects, however with little experience in project design and proposal writing and understanding of overall PCM. A 3rd PCM training was organized from 26 to 30 March 2007 under

26 CECEM was selected as the organisation had experience with HUT, knowledge of PCM, practical experience in managing projects funded by international non-government organizations, good training skills, and used participatory training methods and techniques.

AP2006. Trainers from CECEM conducted the course in Vietnamese. Training was preceded by a training needs assessment to allow CECEM to design a suitable course. 30 participants (with the same characteristics as the group of March 2006) attended the training. As in 2006, individual research proposals were also collected from participants, these were commented upon and suggestions for improvement of proposals were formulated. This proved a challenging task for the trainers as it required them to persuade the participants to apply new PCM principles in project proposal writing – which was not always easy.

Evaluation of the courses by CECEM (and summarised in the progress reports) indicates the following outcomes:

* Participants gained knowledge about concept of project cycle and PCM, were able to identify the different PCM stages, i.e. problem identification (including the 'problem tree'), project design (formulation of project goal(s), objectives, expected output and project activities, identification of assumptions), assessing project feasibility, proposal writing and M&E and have knowledge of the logic of a project proposal structure;
* Participants became familiar with the key tasks of project management (management of PCM stages, project finances, personnel, the importance of cooperation);
* Course attendance improved group working skills as a means 'for constructive cooperation in project/research implementation between different departments and institutions within and outside the university';
* It was not always easy/possible for participants to attend all training sessions because of their regular teaching and research responsibilities. Participants also had to get accustomed to the active learning and participatory training methods used.

Although the evaluations furthermore indicated that '(the) number of HUT staff interested in attending a PCM training is huge while the number of selected participants is restricted', and mentioned the need for additional training for which the University will continue to rely on outsiders, no more PCM training was held in AP2007 as 'HUT now considers to have enough internal trained people able to organise a PCM session, if needed'. At one point in time, for the longer term, it was recommended to have a 'methodological support person at the Department of International Cooperation' who, with proved experience in 'participatory project management', could provide individual advice to lecturers/researchers who are preparing projects that will be submitted to external funding agencies. However, this seems not to have been taken up.

From the interviews held at HUT it is first of all not evident that HUT has indeed this capacity to train its staff in PCM and where this capacity is situated. Secondly, they confirm that the assessment of the training has been positive: it was helpful in drafting proposals for the research fund and for managing projects. At the same time it was noted that PCM principles are not followed in the research programmes funded by MoET and MOST and different formats are used.

Intensive English training course for HUT young researchers and candidates who apply for scholarships in Belgium

In November 2004, the need to organize an intensive English training course for HUT young researchers and candidates who apply for scholarships in Flanders was discussed and agreed upon. The training would allow responding to the insufficient (academic) English knowledge (a common problem of many universities in Vietnam) that was also indicated in the report of the mid-term evaluation mission of October 2002. It was thought that this training would help to improve their English knowledge in general and report writing and presentation skills in particular and would help them to get access to other international research funds. The need for external language training was reinforced by the observation that though HUT has its own faculty of Foreign Languages, all its teachers were (and still are) Vietnamese and unable to reach international standards.

A summary overview of the number of courses organised from AP2004 to AP2007 is provided in table 11.

2004	1	24
2005	2	83
2006	3	88
2007	2	104
Total	**8**	**299**

Selection of candidates was done by HUT, on the basis of academic quality as main selection criterion. Moreover, the aim was to ensure a 'preferably' reasonable distribution over all the different HUT faculties. This seems to have been accomplished as is shown in the data on participants in the table above. Among the close to 300 participants, staff of the Faculty of Foreign Languages was included; this could contribute to improving the Faculty's longer term ability to provide better English language training to HUT students and staff. The Faculty of Chemical Technology, again, accounted for 25% of the participants. For more details on participants, please see table 2 of Appendix 8.

Due to the limited time left for AP2004, only one English course took place, i.e. a 100-hour course starting at Elementary 3 level, and moving through to Pre-Intermediate level 1. The training was organized by Language Link and attended by 18 trainees. The course was completed with a two-week intensive presentation skills' course (*English for Business Communication*). Two more courses were originally scheduled for AP2005 for young HUT researchers involved in VLIR projects and applicants to scholarships to study abroad (especially Belgium). However, in view of the high interest shown (90 candidates proposed by the various HUT departments) and after checking the availability of the AP2005 budget, it was agreed to contract Language Link to undertake the following four courses during AP2005:

- **English for International Communication** (100-hour course starting at Pre Intermediate 1 level). The evaluation made by the Language Link trainer: Classes were very enjoyable and the students lively. Some of the students are very motivated and capable (and remained committed to attending class), even though it sometimes conflicted with professional obligations. Unfortunately, there seems to have been an increase in their workloads of late, which has been reflected by falling attendance and some participants arriving in the middle of classes. This has also lead to reduced commitment outside of class. Homework was usually completed but not by all students. Additional study was only done by a small number of students. Students quickly grasped new grammatical structures such as "have to," relative pronouns, and the Present Perfect. They were soon able to use these structures with a fair amount of accuracy in speaking and writing. Pronunciation of voiced and unvoiced "th" sounds and final consonants improved.
- **English for International Communication** (100-hour course starting at Pre Intermediate 2 level). The evaluation made by the Language Link trainer: The students were generally engaged in class and ready to learn. It was clear that several students did considerable work outside of class, taking Easy Readers out from the library, and practising at home with their Listening and Speaking cassettes. However, there have been more absences due to business trips and personal holidays, and this slowed the progress of some students. There were some students who rarely attended class due to their busy work. Generally, students were conscientious about completing homework assignments, though the written assignments were occasionally turned in late. The top members of this class have few major remaining weaknesses, though all will need to work to consolidate improvements in pronunciation. Additionally, many students' writing still features small, simple errors, which detract from what is written. Some members of the group have fallen behind the rest of the class, and have weaknesses in more basic areas of grammar. The class members have shown a great deal of hard work, and would continue to make good progress at Pre-Intermediate 3 level.
- **English for International Communication** (100-hour course starting at Pre Intermediate 3 level). The evaluation made by the Language Link trainer: This was an animated and entertaining class with many strong and positive students. Most students were diligent about completing work in and outside of class. However, there were more absences, which kept some students from making as much progress as they might have. Generally, students were reliable about completing homework assignments, though several times in-class writing has been assigned to ensure work was received from each student. Students have learned several new grammatical structures including the first conditional, "look" versus "look like," and the Past Continuous. Most were quickly able to use these structures accurately in their spoken English
- **Listening & Speaking, Presentation skills** (100-hour course starting at Intermediate level). The evaluation made by the Language Link trainer: Students generally began the course with a high level of motivation and maintained this through the course. The most notable achievement has been the marked improvement in the students' speaking and listening skills. They are now far more confident when conversing with English language speakers, either face-to-face or on the telephone. The students need to consolidate and build on the speaking and listening skills developed through this course. They also need to continue to expand their vocabulary, especially in areas relevant to their work situations.

At the request of HUT staff and after checking the availability of the AP2006 budget, the following three English training courses were conducted by Language Link instead of the two that were originally planned:

* English for International Communication (100-hours, starting from Elementary 3 level);
* English for International Communication (100-hours, starting at Pre Intermediate 1 level);
* English for International Communication (100-hours, starting at Pre Intermediate 3 level).

According to the AP2005 progress report: "In general, the English level of HUT staff has improved significantly. VLIR is now well known within the University not only for Research funding but also for many courses related to Human Resources development (PCM and English courses)". This positive assessment is also confirmed in the reporting of the course provider according to which 'the majority of students have attained a level of English, which enables them to communicate confidently in almost all situations. They also worked on reducing the number of errors in written work, particularly focusing on the correct use of articles. The top members of this class have few major remaining weaknesses, though all will need to work to consolidate improvements in pronunciation. Additionally, many students "writing still features small, simple errors, which detract from what is written". Interviewees were generally positive about the usefulness of the language training as well though some remarked that it focused probably too much on verbal communication and presentation skills and too little on improving their writing skills – relevant for proposal writing, reporting and the preparation of scientific articles. Scientific writing did not feature in the training – it is understood that this will be taken up during the ex-post phase of the programme. Activities with respect to seeking and making available "(web-based) course material for future English training" as planned for AP2007 did not materialise.

7 VLIR-HUT IUC Research initiatives

Introduction

In the problem analysis for the 2nd phase, several weaknesses, mainly concerning the low level of research and outreach activities at HUT, especially among its younger staff members, were identified. The Programme document refers to issues such as lack of access to funds for further research and development of their academic career and they overload of teaching tasks. This is also highlighted in relation to the VLIR Ph.Ds, whereby the project 2 was based on the 'concern from the Flemish side whether the Ph.D. graduates, after their return to their country, will have the possibility to continue doing research or whether they will be overloaded with their teaching tasks, and what would be their position after some time working at HUT'[27]. Moreover, '(in) the present situation, young researchers have difficulties to obtain funds for new research and the existing funding at university is often insufficient for competing or cooperating with international groups'[28].

A decision was therefore made to include in the 2nd phase two research focused projects, one specifically designated to returning VLIR Ph.Ds, and another for establishing a competitive 'VLIR-HUT Research Fund'[29] that would allow 'young', 'interdisciplinary' research teams, preferably inter-departmental, to submit high quality project proposals, and gain experience in proposal writing and submitting on an international state-of-the-art level'[30].

Implementation of research would enable the publication of articles in international and national journals and scientific conferences and enable, in some cases, transfer of technology to industry. Eventually, young staff with the necessary experience would be in a position to take over from retiring professors. Preference would be given to research projects using the equipment already provided by the IUC co-operation during the 1st phase.

This chapter described what was undertaken in terms of funding of research and how research funding has been managed and administered, with particular attention for the role of the VLIR-HUT Research Council, which dealt with both the VLIR Ph.Ds. and the open call for research proposals. It subsequently deals with the following intermediate results and activities mentioned in the various programme documents:

27 Partner Programme, Project 2, page 1.
28 Partner Programme, Project 2, page 5.
29 Partner Programme, Project 3, page 1.
30 Partner Programme, Project 3, page 2.: 'Direct beneficiaries of the project will be young scientists with Ph.D. or MSc degree who were educated in Vietnam or in other foreign countries. These young scientists are overloaded with teaching tasks, have almost no time to do research neither access to funds for their further research and development of academic career. When they submit an excellent project proposal they will have a certain amount of funds necessary for them to start new research topic at their respective department or even to create an interdisciplinary research team. This would not be possible without support by the VLIR project. Undergraduate, MSc and Ph.D. students and respective faculties of HUT can also be considered as the direct beneficiaries of the project.

Project 1	Research culture and policy introduced and operational at HUT	• Set-up and put into operation of a VLIR-HUT Research Council; • VLIR-HUT Research Council develops a selection procedure for research project proposals; • Launch of yearly calls for VLIR-HUT Research Proposals
Project 2	VLIR Ph.Ds gain experience in writing and running research projects in an international context	• VLIR Ph.Ds write and submit research proposals as young, independent researchers at HUT; • VLIR-HUT Research Council evaluates, comments and steers research projects of VLIR Ph.Ds; • VLIR Ph.Ds set up and conduct research projects with links to Flemish teams; • The VLIR-HUT Research Council does a constant follow-up of t he projects; • VLIR Ph.Ds participate in national and international research conferences
Project 3	Young (interdisciplinary) research teams are formed and put into operation at HUT	• HUT (interdisciplinary) research teams write and submit proposals to VLIR-HUT Research Council; • Young researchers submit 6-monthly research progress reports to the VLUR-HUT RC for evaluation; • VLIR-HUT RC evaluations and selects proposals and provides feedback to all promoters; • HUT researchers set up and conduct research projects; • HUT researchers participate in (inter)national conferences; • VLIR-HUT RC evaluates periodically project progress and decides about continuation of project funding

Issues related to outcome of this pivotal initiative of promoting research at HUT in terms of publications, other research contracts, etc. are dealt with in chapter 8 of this report.

Institutional set-up: the VLIR-HUT Joint Research Council

A joint VLIR-HUT Research Council, chaired by a HUT representative, was set up. According to the 2006 and 2007 Call for project proposals, '(the) VLIR-HUT Research Fund is dedicated to support innovative and high quality research projects, on a competitive basis and without restriction of scientific field or speciality of HUT's education and research domains'[31].

The Council included representative members selected from HUT's main faculties (Metallurgy, Chemistry, Information Technology, Metallurgy and Materials science, Mechanical Engineering, Engineering Physics, Electronics and Telecommunications, Mechanics) and the HUT Programme coordinator. From the Flemish side, the Council included representatives from KU Leuven, UGent, VUB and the Flemish Programme coordinator (see the table below). External, non-voting experts could be called upon for advice as needed. Some of the members of the Council were also member of the Steering Committee, and have been involved in the preparation of the 2nd phase of the partner programme.

Prof. Dr. Hoang Ba Chu - TM academic	Prof. Em. R. Van Loon - TM academic (VUB)
Prof. Dr. Nguyen Duc Chien - TM academic	Prof. Dr. J Duflou - TM academic (KULeuven)
Prof. dr. Nguyen Hong Hai - TM academic	Prof. Dr. S Hoste - TM academic (UGent)
Dr. Nguyen Duc Thuan - TM academic	Administrative coordinator: Mrs. M. Vereecken (VUB)
Dr. Nguyen Xuan Toan - TM academic	
Dr. Huynh Quyet Thang - TM academic	
Dr. Doan Thai Hoa - TM academic	
Administrative co-ordinator: Ms. Nguyen Mai Chi	

31 According to the Annual Programme document for 2007, '(during) AP2007, …(the) RC will extend its tasks towards non-VLIR research matters by screening and supporting HUT proposals for IFS or other external funding organisations'. The draft report on AP2007, however, provides no information on the realisation of this initiative.

As mentioned, the Council played a role in relation to the research of the VLIR Ph.Ds. and for running the competitive research grants.

With respect to these latter grants, it was agreed that the maximum duration of the projects was 2 years, with a maximum budget of € 20,000, for which equipment could be imported during the first year of the project. Researchers could furthermore get only one project funded during 2004-2007 and members of the Research Council were not entitled to apply. Proposals were to be in English.

For the returning VLIR Ph.Ds. programme funding was set aside to finance small, 3-year research projects with a maximum budget of € 27,000. This research grant served to pay for operational costs and for small equipment additional to what had been acquired in Phase I of the project or specific to the research project and not available yet (limited to 50% of total budget and only in 1st year), operational costs, personnel costs (only for promoters' academic work), international travel, and board and lodging costs related to visits to Belgium and conference participation. The same funding principles applied with respect to the competitive research grants. As the start of these projects was not always in line with the start of a financial year, some projects had to spend the money for the first year during the first months, having several months at the end of their project with no more budget available.

According to the Partnership Programme document development of 'a selection procedure for research project proposals...'[32] was foreseen during AP2004. The procedures were effectively developed by the Council in the period January-March 2005, updated during the joint Research Council meeting of 2 November 2005 and further updated at the Council's meeting of November 2006.

(1) The level and quality of co-operation between two or more different departments of HUT (e.g. by sharing equipment and/or personnel). The work to be performed by each group should be clearly indicated and identifiable in the detailed description of research activities; (2) The level and quality of co-operation with another university or research institute, Vietnamese or international. The work to be performed by each group should be clearly indicated and identifiable in the detailed description of research activities; (3) The potential for application in Vietnamese economy. This potential must be described sufficiently clearly to allow assessment by a foreign referee; (4) The scientific excellence of the proposal when compared to the state of the art in the particular research field; (5) Added financial input from another source (university funds, governmental funds, industrial funds etc…); (6) The promotion of outreach; (7) The quality of the Objectives; (8) The quality of the Scientific justification; (9) The quality of the Detailed description of research activities; (10) The quality of the Plan of Action; (11) The quality of the expected results/ deliverables; (12) The overall feasibility of the proposed research

32 VLIR, Programme for Institutional University Cooperation (IUC), IUC Partner Programme Phase II, Hanoi University of Technology, Final version, November 2003, page 7.

In terms of criteria, the above mentioned calls for proposals, define two 'binary rejection' criteria ((a) proposals to be submitted by HUT researcher as promoter, who has a Ph.D. and is not older than 45 years and (b) the proposal template should be completed in English without changing titles, numbering or adding other items) and twelve 'scored criteria' that are scored from 0 (lowest) to 6 (highest) in the final evaluation (see box). Selection criteria for the 2006 and 2007 calls for proposals are identical.

A set of guidelines and templates was produced, e.g. for the project proposal, in which case a PCM-like format was used[33], in order to regulate the submission, the selection of projects and to evaluate their progress.

The operation of the VLIR-HUT Research council was developed in a yearly recurrent scheme that can be summarised as follows:

* May year X: Launch of project call;
* July year X: deadline for submission;
* August - October year X: evaluation of the projects by experts in HUT and in Flemish Universities;
* October Year X: VLIR-HUT research council convenes and selects projects;
* October Year X: VLIR-HUT research council evaluates projects from year X-1 through oral presentation by the responsible scientist and based upon a written report. The selected projects start immediately;
* April year X+1: all ongoing projects are evaluated (repeated every 6 months).

The launch of the call for VLIR-HUT Research proposals 2005 was planned for September 2004 the call for 2006 was launched in June 2005 and for 2007 in August 2006. During AP2007, no call was launched as VLIR funding had come to an end.

The total budget set aside for the competitive Research Fund was over € 560,000[34] up to the end of the programme in March 2008.

In order to launch the Call for Research Proposals 2007, HUT committed itself to finance the 2nd year of the projects approved in 2007 as VLIR funding came to an end in March 2008 while the projects continued into 2009. This commitment was approved by the rector of HUT for a total amount of € 42,000[35]; i.e. an average budget of € 5,000 per research project.

Research Council meetings have taken place throughout the 2nd phase. Sessions were held on 2 November 2005, 21 March and 16 and 17 October 2006, and 26 March 2007. These sessions served to decide on proposals submitted and monitor implementation of all approved research projects (including those of the VLIR Ph.Ds).

The evaluation commission understands that the Research Council dealt with VLIR financed initiatives only and will cease to exist once VLIR funding is completely over. The procedures, selection criteria, reporting mechanisms, etc. that were introduced were not institutionalised HUT-wide, even though they were appreciated by all parties involved.

33 The structure of the proposal form, based on the formats used by FWO in Flanders, was as follows. 1. Project proposal summary sheet (1 page): 1.1. Title: 1.2. Promoter-spokesperson: 1.3. Total funding requested (in Euro): 1.4. Project summary (Ob-jective of the project; Identification of the participating research group(s); Main activities and anticipated results). 2. General administrative data (2. 1 Promoter (spokesperson): 2.2 Co-promoters: 2.3 Former expertise and financing received by promoter and co-promoter (including projects funded, list of A and B publications). 3. Full project description (3.1 Objectives; 3.2 Scientific justification; 3.3 Detailed description of the research activities; 3.4 Co-operation with other groups; 3.5 Plan of action; 3.6 Expected results and deliverables; 3.7 Budget; 3.8 Equipment budget justification; 3.9 Personnel involved). 4. Signatures.

34 Expenditures were € 157,903 in AP2004, € 131,503 in AP2005, € 153,614 in AP2006 while for AP2007 € 120,000 was budgeted.

35 A similar commitment for € 7,000 was obtained to fund the 3rd year of Dr. Nguyen T. H. Minh's post doc project.

Research undertaken by returned VLIR Ph.Ds

By and large in line with the planning and assumptions mentioned in the programme document, with slight delays in some cases as a result of a longer period needed to settle in again, the seven Ph.Ds that returned to HUT have prepared and submitted research proposals. These proposals were assessed by two Vietnamese reviewers per proposal and commented upon by the Flemish promoters. Applicants were requested to modify/improve their proposals in two specific cases (Dr. Hoang Thi Kieu Nguyen and Dr. Bui Viet Khoi). In the case of Dr. Nguyen Thi Hong Minh, who submitted a proposal in August 2006 and started on her research in November 2006, agreement was reached with the HUT management that HUT funding for the last year would be made available (up to 31 March 2009[36]).

The following overview summarises the relevant data.

Dr Tran Thi Ngo Lan	November 2004	Multilayer Traffic Engineering: Performance Evaluation	Professor K. Steenhaut, Department of Electronics and telecommunications (ETRO), VUB
Dr. Nguyen Hong Lien	November 2004	Use of novel tools (DGT and DET) to study the ratio of non-labile to labile metal complexes in natural systems	Professor W. Baeyens of Dept of Analytical & Environmental Chemistry (ANCH), VUB
Dr Hoang Thi Kieu Nguyen	November 2004	Water-based ink using coloured fine particles for ink-jet printing	Professor R. Finsy of Department of Physical & Colloid Chemistry (FCOL), VUB
Dr Bui Viet Khoi	December 2004	Modelling and Simulation of Optically-interconnected multi-processor systems	Dr. Chr. de Baes, Department of Applied Physics and Photonics, VUB
Dr. Truong Thi Ngoc Lien	April 2005	Biosensors based on conducting polymer thin films for environmental and biomedical applications	Professor A. Stesmans, Semiconductors Laboratory, KU Leuven
Dr. Le Minh Thang	March 2005	Synergy effect in catalytic systems for the selective oxidation of propylene	Professor S. Hoste, Department of Inorganic and Physical Chemistry, UGent
Dr. Nguyen Thi Hong Minh	March 2006[37]	An Investigation of the Measuring Capabilities of the Touch-probe Based Measurements on CNC machine tools	Professor J. Duflou, Mechanical Engineering Department, KU Leuven

The VLIR Ph.Ds have been able to use facilities established under the 1st phase of the Programme. With the research budgets provided they were also in a position to make (limited) additional investments. Being fully responsible for 'their' project, they gained experience in assuring supplies of consumables, and spare parts, and had to take responsibility for assuring that the equipment remained operational.

Most VLIR Ph.Ds managed to involve other researchers (colleagues, local Ph.D. and M.Sc. students) in their projects – though this was not an easy task – allowing them to use also the facilities of other HUT departments. In this way, the research was to a certain extent 'interdisciplinary'. For their involvement, these other researchers would receive small fees.

36 The financial commitment to cover the related expenses, estimated at € 7,000, was confirmed HUT in an e-mail dated 15 June from Mr. Hoang Xuan Lan – Director International Cooperation Department.
laminar flow cabinet, microscopes, a variety of reagents and test kits.
37 Final defence of the dissertation (submitted end of 2005) was postponed several times due to scheduling problems: with the year end and the Vietnamese Tet festival interfering with the respective agendas of Flemish, Vietnamese and other international committee members.

The Ph.Ds were responsible for project management and administration (including the preparation of financial reports). Ample use was made in this respect of the administrative support from the HUT programme secretary. This support has been highly appreciated.

Formal and informal, individual follow-up meetings between the Ph.Ds and the Flemish project leader were held at HUT throughout the years (21 March and 31 October 2005, 17 and 19 October 2006, 27 March and 1 November 2007 and 26 March 2008). The meetings served to monitor 'the structural organisation of their research activities within HUT'. Further Contacts with VLIR Ph.D. promoters were maintained throughout the implementation of the research projects, either through visits to Belgium (discussions with Flemish staff, conduct tests[38], …) or through e-mail. In some cases these contacts have resulted in joint publications. Travel costs to Belgium were financed from the research budgets[39]. In addition, some Flemish students visited HUT[40].

The Ph.Ds have submitted their progress (and final reports) as planned and in accordance with the deadlines agreed upon. These reports were reviewed by the Council members. Reporting was supplemented by oral presentations on research progress to the Joint VLIR-HUT Research Council (November 2005, October 2006 and May 2008). Throughout the 2nd phase, while recommendations for improvement were formulated, 'No reason (was) found ... to discontinue any of the launched projects'.

Competitive research grants

Once the Research Fund was established, calls for proposals were launched and published on the programme's website. The number of projects submitted and subsequently evaluated and selected by the joint Research Council in the period 2004-2007 is reflected in table 12. The overview indicates that interest to participate outweighed the funding available, with a total of 35 out of 127 submitted proposals selected (27%). The number of applications showed little change over the years. In assessing proposals and subsequent progress reports, it is understood that the Research Council operated on the basis of discussions – no voting was needed and that no major disagreement between Flemish and HUT members of the Council were reported. Comments from the Research Council on proposals and reports were channelled to the researchers; this feedback has been appreciated as it was considered timely, helpful and specific. Interviewees appreciated the open, transparent and competitive character of the selection and response process.

38 For example, assisted by the aid of the department members, in particular Prof. Robert Finsy and Luc Deriemaeker, the emulsification and dispersion stability of produced inks were investigated by equipment available in the department laboratory (Dynamic light scattering, viscometer, homogenizer, homomixer, ultrasonic).

39 During AP2005: Dr. Tran Thi Ngoc Lan and Dr. Nguyen Hong Lien visited VUB in April and July 2005. Dr Bui Viet Khoi and one of his project team members bought an airticket on the budget AP2005 for a visit to Prof. Thienpont's lab at VUB in June –July 2006. The same applies for 2 researchers of Dr. Hoang Thi Kieu Nguyen's research team for a visit to Prof. Finsy's department (VUB) in June 2006. Dr. Nguyen Hong Lien visited the Lab of Analytical and Environmental Chemistry, VUB from 30 November to 10 December 2006, Dr. Bui Viet Khoi visited the Photonic Laboratory, Department of Applied Physics and Photonics (TONA) – Faculty of Applied Sciences, Vrije Universiteit Brussel (VUB) from 19 June to 19 July 2006 and from 19 to 31 March 2007. Dr. Nguyen Thi Hong Minh visited KUL, PMA lab, Mechanical Engineering department, Leuven from 21 to 29 September 2006.

40 E.g. Communication Engineering Department at HUT: Niels Festjens, Erasmushogeshool Brussel (EhB), research on sensor networks, September 2005; Walter Colitti, EhB, research on Multilayer Traffic engineering, October 2005, Tim Michiels and Vincent Spruyt, work on respectively ant algorithms and coding simulations for optical networks, March 2006.

2004	36	12
2005	32	7
2006	30	8
2007	29	8
Total	**127**	**35**

An overview of the number of operational research projects over the years is provided in table 13.

2004	12			
2005	12	7		
2006		7	8	
2007			8	8

According to the annual progress reports, 'we note that most of the projects have been successfully conducted. Although a few projects met some difficulties at the beginning due to the materials supply or the setting up of their research team, none of them have big problems in the implementation'. This was confirmed during the evaluation commission's discussions with the research promoters. In case there were administrative or financial issues to be addressed, the HUT secretary/administrator provided ample support. Only in one case (project Nr. AP05/Prj03/Nr07), it was decided to suspend project funding on the basis of the progress report that was received (plan of action not strictly followed, poor presentation and unsatisfactory scientific logic of data presented). The promoter was advised to submit a revised plan of action; the Council agreed to fund the balance 'only on the condition that your final report is accepted as satisfactory by the council'. When the response was not considered sufficient, it was decided that the budget set aside for operational costs would not be granted.

It is understood that financial delays in the planned expenditure occurred in 2004 and 2005 but that these delays diminished in subsequent years.

As was the case with respect to the VLIR Ph.Ds, six-monthly progress reports were prepared; oral presentations of the reports were organised during the sessions of the VLIR-HUT Research Council. Interviewees confirmed that the system of reporting and feedback pushed them to organise their research better and to adjust, at times, their activities and planning in order to ensure a timely completion of their project.

The Research Council has evaluated the progress of the research projects on the basis of the progress and final reports submitted by the promoters as planned. Assessments took place during the Council's sessions of 2 November 2005, 21 March and 16 and 17 October 2006, 26 March 2007 at which the promoters also gave oral presentations.

Detailed comments per project were incorporated into the Research Council's Minutes. It is at this stage not evident what the procedures will be in related researchers who will continue into 2009 and what role the Research Council will play.

Conference attendance

Within the framework of their respective research projects, the VLIR Ph.Ds, have attended a series of national and international conferences (see Appendix 6 for further details), i.e. 4 during AP2005, 7 in the course of AP2006 and 7 in the course of AP2007. At some conferences, the Ph.Ds have made presentations; according to the interviewees, participation in the conferences has enabled them to establish and/or strengthen their networks, particularly with fellow researchers, and follow the latest trends of research in the fields.

Over the years, promoters and members of research teams involved in the competitive research grants attended a range of national and international conferences. A comprehensive overview is provided in Appendix 7. A summary is provided in the table below. Conference attendance was financed within the framework of the research grants.

2005	5	-	5
2006	10	9	19
2007	9	8	17
Total	**24**	**17**	**41**

8 Research outcome – publications, new projects, outreach and education quality

Introduction

Stimulating research was seen as a key element in supporting HUT's strategy to become a more research oriented university. At the same time it was conceived as an important instrument to keep young researchers, including the VLIR Ph.Ds, at the institution, rather than opt for a different career. The outcome of the research, in particular research publications, would serve to strengthen the profile of the individual researchers and of HUT as a whole. In turn it was expected that this would result in more research funding, e.g. through new projects and contract research and that the research would contribute to the quality of education. This chapter deals with these issues and relates to intermediate result 4 of project 1 (Publication of results from research projects) and intermediate objectives 3 to 5 of project 2 (i.e. 3. Publication of research results; 4. Technology transfer and implementation of research results in industry; 5. Education quality improved by impact of research).

Research publications

The production of the number of the different types of research publications of the VLIR Ph.Ds in the period 2005-2008 is reflected in table 15.

Dr. Tran Ngoc Lan			4	
Dr. Nguyen Hong Lien	2	2	3	
Dr. Hoang Thi Kieu Nguyen	1 (submitted)	2	4	3
Dr. Bui Viet Khoi	1		2	
Dr. Truong Thi Ngoc Lien	1		8	2
Dr. Le Minh Thang	1	1	1	1
Dr. Nguyen Thi Hong Minh			3	
Total	**6**	**5**	**24**	**6**

In collaboration with their Flemish promoters, both during their stay in Belgium and thereafter, the Ph.Ds have also contributed to other publications as is shown in Appendix 6.

For the competitive research grants, the original aim was the publication of at least one scientific paper in a peer reviewed international journal ("A-papers") as deliverable of every selected research project. The following table provides an overview of the different kinds of publications that have actually resulted from the research projects in the period 2005-2007 (more details are provided in Appendix 7 to this report; a summary overview is provided in table 3 of Appendix 9). The data available that some 154 publications have resulted from the research projects, of which 20 A-publications, 60 B-publications, 80 conference proceedings (full texts) and 9 conference abstracts. A word of caution in interpreting the data is that on several occasions it was mentioned that a paper was submitted – it has not always been possible to verify whether the submitted articles were indeed accepted and effectively published.

The limited number of A-publications has been a matter of concern. Advice was provided by the Flemish members of the Research Council on how to work gradually towards internationally acceptable journal publications[41]. The progress reports in this respect observe the following: 'Typically publications in international journals with citation impact require some lead-time. Furthermore, such publications can only be launched based on completed research'. Moreover, as was confirmed in the interviews, such journal publication should be carefully planned and the choice between applied research that is of immediate relevance to Vietnam and academic, more fundamental research that can be published in A-journals, needs to be clear from the start of the project.

Other factors that have come into play: (a) a certain disdain amongst Western publishers of the quality of research coming from Vietnam (also because of language) and (b) the fact that in some cases, authors have to pay to get an article exceeding 3 pages published. Limited access to the latest scientific literature is another key factor that affects the possibility to do 'state-of-the-art' research and publish in internal peer-reviewed journals.

At the same time, the internal assessment observes with respect to the VLIR Ph.Ds that '(the) follow-up on publication activities, as can typically be expected from recently graduated Ph.Ds, could have been more intense. Since publication in international journals was not a routine activity for the returned Ph.Ds, launching new publications was not easily achieved. A closer cooperation between former promoters and graduates could have helped to achieve continuity in publication efforts. However, the non-systematic involvement of the former promoters in the VLIR IUC project did not allow this'. At the same time it is not evident that '(possibly) a strict requirement to demonstrate publication efforts as a pre-condition for release of part of the research project funding' would have indeed resulted in a higher scientific output.

According to the evaluation commission, the choice between applied research that is of immediate relevance to Vietnam and academic, more fundamental research that can be published in A-journals, needs to be clear from the start of the project – presently it is difficult to realise both simultaneously.

41 In October 2006, it was observed that although the Project Leader had provided the International Research Office with a list of international journals that belong to the A-category in 2005 there remained confusion about what were effectively A and B-type publications. Remedial actions suggested were: (a) the drafting of a brief written statement clarifying the international situation and the mechanism set up internationally to control the peer-reviewing process and quality control in scientific publications. This information was to be distributed, after agreement of the Research Council, within HUT; (b) a presentation on this subject. It is understood that no follow-up was given to this idea.

Access to other research funding

As is recognized in the progress reports, the project has been somewhat too optimistic in estimating possibilities for additional projects and research funding. First of all, running the projects proved more time consuming than envisaged, secondly, there is considerable competition for limited research funds that are available both nationally and abroad, with the newcomers often losing out against 'the establishment'. Moreover, a too high concentration of research funds in a particular research group was frowned upon within HUT.

Dr. Tran Ngoc Lan	1
Dr. Nguyen Hong Lien	2
Dr. Hoang Thi Kieu Nguyen	3
Dr. Bui Viet Khoi	-
Dr. Truong Thi Ngoc Lien	1
Dr. Le Minh Thang	3
Dr. Nguyen Thi Hong Minh	2
Total	**12**

Nevertheless, over time, based on the experience gained in terms of proposal writing and research management, VLIR Ph.Ds have been successful in submitting research proposals to funding agencies (including HUT itself, MoET, MOST) and a total of 12 projects have been run by them as promoters as shown in table 16. More comprehensive information is provided in Appendix 8. Also the promoters of the competitive research grants have been able to access other national and international sources of funding. The available data are difficult to quantify in terms of numbers of research grants, funding agency, research budgets. Appendix 7 provides information for at least part of the beneficiaries of the Research Fund. Some illustrative examples are provided below.

Dr. Nguyen Huu Lam, Institute of Engineering Physics	"Synthesis of Carbon Nanotubes by CVD for Field Emission Sources" (IUC project code AP06\Prj3\Nr06)	Promoter of the project: Project Title: "Carbon nanotubes synthesized by CVD method and some applications", Project duration: 2005-2006, Project reference: B2005-28-195 (Funded by Ministry of Education & Training), € 1,500 Fabrication and application nano materials on microelectronics and optoelectronics, Ministry of Science and Technology, € 25,000, 1/2006-12/2007 Fabrication and application of shape memory alloy thin film, Ministry of Education and Training, € 3,000, 1/2008-12/2009
Dr. Van Dinh Son Tho, Faculty of Chemical Technology	"Storage and formation of pure hydrogen mediated by the redox of modified iron oxides" (IUC project code AP06\Prj3\Nr08)	Promoter of the project: Title: Investigation on nanostructured nickel deposits with improved mechanical and corrosion resistance produced by electrochemical method, € 10.000 , Ministry of Science and Technology Rebirth of wasted agro-matters: New silica and carbon based nanomaterials prepared from rice husk as catalysts for the conversion of vegetable oil sludge to green fuels (biodiesel) and as adsorbent for the concentration of alcohols, Bilateral cooperation between Vietnnamese Ministry of Science and technology (MOST)and Federal Science Policy Office (SPO), € 65,000, (2007-2011)
Dr. Nguyen Huu Thanh, Faculty of Electronics and Telecommunications	Pre-Feasibility Study of an Advanced Communication System for Small and Medium Fishing Boats in Vietnam, AP07\Prj3\07	Quality of Service in IEEE802-family wireless networks, Ministry of Science and Technology, € 30,000, 2007 - 2009 German – Vietnamese Next Generation Network Services Research and Development Testbed, Ministry of Science and Technology, € 28,000, 2007 - 2009
Dr. Nguyen Thi Minh Tu, Institute of Biological and Food Technology	Legume and cereal flavor behavior in Vietnamese traditional cake processing, AP07\Prj3\08	Extraction and application of natural compounds from nature, Ministry of Education and Training, € 1,500, 1.2006- 12.2007 Application of Saponin flavonoid in experimental candy processing, Ministry of Education and Training, € 400, 4.2007-12.2007 Research of raw milk quality guarantee in sterilized milk manufacturing, Ministry of Education and Training, € 1,900, 1.2007-12.2008 Research of technology to extract polyphenol from Vietnam tea leaves and application in functional food manufacturing, Ministry of Education and Training, € 1,900, 2.2007-5.2009

In relation to the competitive research grants, according to the internal assessment document, '(many) research projects resulted in outreach either during the performance of the research project (outside partner) or afterwards (industrial contact, sales of products)'. The evaluation commission is not able to express its opinion on this issue as information is not systematically available. Some examples are mentioned in the Programme document for the Ex-Post programme (page 7):

> The promoter of the project "Application of organic complexion to convert kaolin into some common zeolites", (Project nr AP04\Prj03\Nr01) obtained an initial agreement with Dalat chicken raising joint-stock company for the large scale application of their products. Another initial agreement was signed with Tien Nong Thanh Hoa company (Thanh Hoa province) concerning the technological hand-over of the results of the research project; an order of Mabuchi Motor Vietnam Ltd. Was received for the purchase of technology developed at HUT. A proposal has been submitted to the Vietnamese Ministry of Science and Technology for a research budget of about US$ 120,000. This research budget as well as a corresponding budget of US$ 600,000 from Tien Nong enterprise (Thanh Hoa province) will be used to build the first factory to manufacture zeolite containing fertilizers in Vietnam.

Promoters of the 12 projects that had started in 2004 and finished in May 2006, participated in a 'poster session' that was held by the IUC programme at HUT on the occasion of HUT's 50th anniversary on 13 October 2006.

Research and the quality of HUT's education provision

According to the self-assessment form, there have been 'no or little repercussions' of research on quality of education. This observation was confirmed in the interviews held. The only impact that can be reported concerns the involvement of M.Sc. and Ph.D. students in the implementation of the research projects, which thus provided a framework for their research and thesis work[42].

42 According to an interviewee: 'A project is developing inside HUT where teaching excellence is a central theme. Several key laboratories have already been asked to lend their support in developing courses of an international level. During post-IUC phase, Flemish universities could certainly participate to such an initiative by e.g. asking for the support of a competitive VLIR grant. Precise data on this type of grant are however still unavailable. The three Flemish partners have expressed interest to participate in such an action'. The state of affairs in this respect is not known.

9 Assessment

Relevance

The IUC has been relevant in that it has supported the Hanoi University of Technology in becoming a more research oriented university, that is internationally recognized as an excellent centre for technology education and research as indicated in HUT's strategic plan. It has done so by addressing several key development needs, i.e.:

* The need for staff capacity building
* The need for enhancing experience in actually doing research
* The need for exposure of HUT as a research institution

In terms of staff capacity building and rejuvenation of HUT academic staff, the Programme first of all supported Ph.D. students in key areas who have returned to HUT after their graduation and have assumed research and teaching responsibilities.

The Programme furthermore addressed the need to ameliorate the generally low level of English among HUT's academic staff as a means to (a) enhance communication between the University and the academic world outside Vietnam and, to a more limited extent (b) to improve staff capacity to write proposals for external research grants, articles for international journals, conference attendance, etc. Nevertheless, writing, especially writing science in English, remains an issue and it is understood that this will be addressed during the phase-out of the Programme.

The Programme supported HUT academic staff in gaining research experience and exposure to international forums through a system of research grants (both Ph.D. grants and Open Calls for research proposals), financing of participation in conferences, improved information on international funding opportunities for research and fellowships and training on the principles of project cycle management.

Financing of research projects under the IUC allowed younger academic to assume the role of promoters, and to actually manage sizable budgets. For researchers involved in Open Call projects, additional relevance is found in the competition and transparency elements of the management process. These elements stimulated researchers to pay more attention to quality and enhanced their perception of fairness in the selection. This is common practice throughout.

In terms of putting HUT on the international map as a research institution, funding of research under the Programme has contributed to a range of national and international publications. In this respect, there has been a debate of A-publications versus Applied Research within the framework of the collaboration. Participation in this debate has given HUT's researchers and managers some awareness of potential trade-off between the two and the need to find an appropriate balance.

At university level, the research focus of the cooperation fitted well within HUT's strategy to pay attention to research development and its policy to replace older generations by younger academics, thus reinforcing the capacity building character of the cooperation. The relevance is also confirmed by HUT's decision to continue 2nd year funding of research projects starting in 2007 and of one of the VLIR Ph.Ds. It is at the same time less evident how relevant these research projects have been for improving the quality of education.

Improved information on international research and fellowships helped to address difficulties experienced by HUT's staff to find out information on sources of funding, criteria, procedures, and formats are used. At the same time, more is however needed to insitutionalise the information flow. PCM training helped HUT academic staff to become familiar with project management principles that are not only applied by VLIR but by the international donor community at large. While for now this PCM approach may appear less relevant within the Vietnamese context, with MoST and MoET not closely following these principles, this may well change following the establishment of the Vietnam National Science Foundation which indicated that it intends to apply the principles of PCM, at least to some extent. Despite the numbers of staff training, it is not clear whether there is indeed sufficient capacity inside HUT to continue this kind of training.

Effectiveness

By and large the three projects have realised what was described in the programme document. Only in a few cases, did initiatives proposed in annual plans not materialise (web-based English language materials, evaluation research information services).

HUT academics got first hand experience through applying, managing, and running projects. It should in this respect be noted that the research grants were not 'small' in the Vietnamese context in comparison with money from MoET or MoST.

On the staff development perspective, two of the returning Ph.Ds got promoted recently – even though the programme document does not specify activities for this intermediate result.

Key outstanding issues remain the relation between research and outreach and the use of research for improving the quality of education. There are some examples of relations with Vietnamese enterprises but information available does not permit systematic assessment. Moreover, the Vietnamese context is different from those in developed countries, further complicating the transfer of resulted technology. In terms of education, some M.Sc. and Ph.D. students at HUT got exposure to research through their involvement in the research; at least for this group the Programme contributed somewhat to enhanced education quality.

An issue has been the level and number of publications. Especially in terms of A-publications, the number of accepted publications at the time of this evaluation is lower than expected. On one hand, the expectations may have been too high – given also the lead time needed to complete the projects and get an article accepted in an international refereed journal. On the other hand, support from the Flemish side on the publication process could have been more systemic.

Development of research policy is one area where the Programme has been less effective. Though Decision 3180 is a recognition of the importance attached to research – but there is still little policy or strategy. At all levels (i.e. university, faculty, and department), research strategies remain very broad. Research directions and activities are determined by and large by external stakeholders (mainly by MoST and MoET).

While the self assessments referred to "research culture" in several occasions, there were no indicators agreed upon by different people. Perhaps an awareness of research importance and interest in doing research have been stimulated, but what constitutes a strong research culture has not been clearly defined. This is clearly a longer-term effort, and it certainly goes beyond the timeline of Phase 2 in VLIR projects (e.g. research culture did not come in EU in a couple of years). However, VLIR has helped to lay a foundation for a research culture in a number of ways, such as:

* development of research capacity (human resources and infrastructure);
* support for the mobilization of external funding;
* introduction of transparent and competitive procedures, mechanisms and criteria in relation to the research grants;
* introduction of transparent reporting procedures and formats.

At the same time, the push for interdisciplinary character of research in VLIR projects gained limited results. Most research projects only went as far as cooperating with people from and using laboratories of other departments, faculties, or institutes.

Experience of HUT was supposed to be a model. This has received limited attention in the projects' activities though in 2006, during the celebration of HUT's 50th anniversary, poster sessions were held under the auspices of the IUC that highlighted the philosophy of the 2nd phase of the IUC. More 'marketing' of the experience in research would be useful to other Vietnamese universities and e.g. the new Vietnamese Foundation of Science, e.g. by making further use of the short film and brochure that were developed to capture the institutional impact and the results of phase 1 and phase 2 of the VLIR-HUT programme on the occasion of the closing event celebration that was held on 28-30 October 2008.

Efficiency

The projects showed a generally good use of limited resources. There have been no problems in management of funds at level of individual research projects. Substantial number of people trained in PCM and English, which was very cost-effective. There were some complaints about need for balancing research, training/education, and administration works – but this is common issue throughout academic world. With some variation, VLIR Ph.Ds had indeed less teaching hours as agreed upon. The future of this arrangement is uncertain for some.

Impact

VLIR projects have produced a changed mind-set among HUT's staff and management that younger people (below 45) can get money for research and do a proper job both in terms of research and managing research projects. The projects have also prompted people to look outside for additional research funding, and the information available indicates that some researchers have really been successful. In this respect, a familiarity with formats and PCM has helped. Conference attendance has also resulted

in some links, networking, partly building upon existing networks. Conference attendance has been used for some 'HUT promotion', positioning the University somewhat better in the academic research market.

Sustainability

System of institutional management of VLIR-HUT Research Fund – though appreciated by all – is something related to the VLIR-HUT IUC. It is not something incorporated yet into the HUT system, and it is uncertain if the VLIR-HUT procedure sustain after VLIR.

Some 10% of HUT's academic staff (of over 1,200) involved in the projects – quite high percentage. It is expected that their experience in VLIR will continue to serve their research projects in the future. There has been a series of successful applications for other sources of funding, national and international. This will help to secure research funding base for the years ahead. Participation in PCM training probably helped in this respect as all formats are quite similar one way or another.

Facilities provided under the IUC (1st and 2nd phase) are, as a result of the set up of the Programme dispersed, but seem maintained. In some departments, technicians were trained in phase 1 for operation and maintenance. The policy of University to focus more on research in the years ahead and reduce the numbers of undergraduate students will help in sustaining efforts to promote research. Sustainability of the cooperation with Flemish universities is another matter – there have been some initiatives for recruiting Vietnamese Ph.D. students (beneficial for both sides). One of the RIPs submitted has been approved. However, personal relations are still the key, and institutional relations are not evidently strong.

Management

VLIR helped to enhance management capacity and experience at different levels – the IUC, the individual researchers and HUT.

HUT and IUC as a whole

Suggestions to transfer project management responsibility to HUT in mid-term review were taken up. The system has worked well – at both sides, VUB and HUT, with competent and motivated people. As a result, communication appears to have been good at all levels. Reporting and financial management were found in order; and ample support was provided to HUT researchers in project administration. Available budget was used effectively with no rejected expenditure, virtually full use of all funding available (except for 2004). There were, however, some complaints as regards to strict VLIR requirements.

Good support provided by VLIR-UOS in allowing small payments for researchers should be acknowledged since it facilitated the management of research project significantly. Briefing and training in Flanders have helped have been supportive as well.

VLIR-HUT Research Council

The Research Council, despite different professional and cultural backgrounds, was well managed. The RC members generally engaged in debates and discussions to come to agreement. The members did not revert to use voting, as and indication of members

not being able to agree after discussion, in any case. Operating principles based on FWO but confirmed to be in line with international practice. The whole transparent set-up and system have been much appreciated.

Research projects

With possibly one exception, project management was done quite well throughout all stages – proposals, reporting, finances. Participation in PCM training considered helpful for promoters, co-promoters as well as researchers. VLIR administrative requirements were said to be relatively easy in comparison with those in Vietnam. Good relations of VLIR Ph.Ds with their former Flemish promoters were recognized by all Ph.Ds.

Assessment Phase out programme

According the Terms of Reference, the scope of the evaluation was to assess the 'follow up plan of the programme, i.e. 'evaluating the follow up plan as elaborated in the self assessment report …, in view of the continuation of the different activities that have started up within the framework of the IUC programme'.

An ex-post programme document for two years was prepared and submitted with a budget of € 95,000 for year 11 and € 20,000 for year 12.

This proposed programme includes four workshops/courses (entrepreneurship, intellectual property rights, valorisation of research results and writing of scientific papers), activities for the selection of Vietnamese Ph.D. students to study at Flemish unversities ('screening programme' and video conferencing) and the organisation of an exchange visit to Can To University in southern Vietnam.

The evaluation mission underscores the importance of the proposed workshops and courses as these evidently complement what was done so far. Some remarks and suggestions the mission permits itself are the following:

* Despite the country's impressive economic development over the last 20 years, the situation in Vietnam as regards (private) enterprise development and R&D is still incomparable with the situation in the West or more advanced Asian countries such as Korea, China and Singapore. The interplay between universities and business is different as well. At the same time, public research funding (MoET, MoST and the new Vietnam Science Foundation) remains important – also for linking universities, research and the enterprise sector. It is essential that these realities feature in the training programmes and workshops.
* Effective participation in scientific writing requires a good command of English; this implies the need for strict selection of participants. Rather than an open call for applicants, strengthening of the skills of those who already participated in the programme would be preferable.

Furthermore, though the importance of proper selection of candidates for Ph.D. training at Flemish universities is understood, it is questionable, in view of its aims, whether IUC programme funding should be set aside for purposes of Ph.D. student recruitment as is suggested.

There remain furthermore several areas in which the VLIR-HUT IUC has shown relative weaknesses and which could be picked up during the phase out (research strategy, research and fellowship information system, institutionalisation of the Research Council).

In addition to the proposed ex-post programme, for the 2009 Research Initiative Programme Call for Proposals two projects were submitted for evaluation by VLIR-UOS in October 2008. The following proposal was accepted for funding[43] and will start in April 2009:

> 'Development of different advanced organic and inorganic materials for heavy metal speciation and removal from aquatic systems', of HUT's Faculty of Chemical Technology, Department of Organic Synthesis and Petrochemical Technology – in cooperation with the Department of Analytical and Environmental Chemistry, Faculty of Sciences of VUB. With a proposed total budget of € 99,750, the project aims to come up with 'new synthesis methodologies, new organic and advanced inorganic materials to be used in DGTs and the reduction of heavy metals in aquatic systems'. The proposal was initiated by one of the VLIR Ph.Ds who graduated from VUB and has returned to HUT to work as a lecturer at the Faculty of Chemical Technology.

Recommendations

Recommendations with respect to the phase-out programme of the HUT-IUC are the following:

* Consider support for research strategy development at University and faculty level, e.g. in relation to Decision 3180 on the rewards of research and think about a more specific niche for HUT research within the Vietnamese context than is now the case (very broad research themes, much research virtually individual...).
* The IUC has introduced a system of granting, administrating, monitoring and evaluating research grants. This system is outside the regular HUT system and will disappear once the IUC is terminated. Every effort should be made to integrate/institutionalise the experiences gained – this will no doubt help in ensuring a transparent, effective and efficient management of HUT research resources. In the short-term, address the current uncertainty as regards the continuity of the VLIR-HUT Research Council in relation to assessment of the still on-going, IUC financed research activities. In line with this, arrange for/clarify the supervision of research projects that started in AP2007.
* Disseminate and market more the VLIR approach and results, amongst others by making further use of the brochure and film that were prepared for the IUC closing event.
* Strengthen and institutionalise the information provision on (international) research grants, fellowships at University level, taking into account also the fact that the current HUT administrator will take up further education

43 The following proposal was not accepted for funding: 'Unified Urban Transportation Information System for Hanoi City (U-TRAIN)', of HUT's Faculty of Electronics and Telecommunications – in cooperation with the Computational Modelling Lab of the Department of Computer Science and of the Faculty of Sciences and the Department of Electronics and Informatics of the Faculty of Applied Sciences of VUB. The proposal was initiated by one of the VLIR Ph.Ds who graduated from VUB and has returned to HUT to work as a lecturer in the above HUT faculty.

- Factor Vietnamese realities into the workshops planned for the phase out in order to make them more relevant to rapidly evolving Vietnamese context (relationships with enterprises, intellectual property rights, etc.). Similarly for phase out, effective participation in scientific writing requires a good command of English; this implies the need for strict selection of participants with focus on those that were trained.
- Support scientific writing, relations with enterprises, valorisation as planned but put Vietnam as a key reference.

Recommendations concerning the overall IUC Programme level are the following:

- Examine possibilities for support to universities in developing countries to gain or maintain access to international E-libraries – not on a personal basis but on a more institutionalised level.
- Review the appropriateness of the system of self-assessment and see whether it would not be more appropriate to replace the current system by a properly structured final report which captures the evolution of the IUC over 10 years
- Examine the current database that has been set up within VLIR-UOS. In case of the IUC with Hanoi University of Technology, obviously a lot of effort has been made in providing the data – however, the data is not always clear, not up-to-date, nor very well structured and difficult to assess and interpret for purposes of reporting.

APPENDICES

Appendix I : Terms of Reference

GENERAL PRINCIPLES OF THE PROGRAMME FOR INSTITUTIONAL UNIVERSITY COOPERATION

VLIR-UOS DECISION TO EVALUATE THE ONGOING COOPERATION WITH HUT, CTU, UoN AND UNZI

INTRODUCTION TO THE EVALUATION METHODOLOGY

OBJECTIVE AND SCOPE OF THE EVALUATION

EVALUATION CRITERIA

ACTORS INVOLVED

METHODOLOGY

ORGANISATION OF THE EVALUATION

TIMING OF THE EVALUATION

FOLLOW-UP TO THE EVALUATION

BUDGET

General principles of the Programme for Institutional University Cooperation

Background

The VLIR-UOS programme for Institutional University Cooperation (IUC) emanates from the Specific Agreement signed by the Belgian State Secretary for Development Cooperation and the VLIR-UOS on 16 May 1997. This agreement foresees a system of programme funding whereby, based on a Global Programme (1998-2002), the Belgian government provides each year funding for the implementation of an annual programme submitted by the VLIR-UOS. Once the government has approved the VLIR-UOS annual programme, it is the responsibility of the VLIR-UOS to implement the programme.

General description

The IUC programme is an inter-university cooperation programme of the Flemish universities, focused on the institutional needs and priorities of partner universities in the South. The IUC programme is in principle demand-oriented, and seeks to promote local ownership through the full involvement of the partner both in the design and implementation of the programme. The programme relates to only a few carefully selected partner universities in the South, hoping that synergy, added value and greater institutional impact can be achieved through the different IUC projects located in the same partner university.

Support is directed towards the institutional development of the partner university, the improvement of quality of local undergraduate and postgraduate education, and the encouragement of south-south academic and research linkages. Each partnership consists of different projects aiming at maximum institutional impact, apart from education and research-oriented projects. The partnership may also include some projects aimed at improving the organisation, administration and management of the university as a whole. The identification of the fields of cooperation is in principle demand-based, but demands can obviously only be met to the extent that Flemish expertise is available. Each partnership consists of a coherent set of interventions geared towards the development of the teaching and research capacity of the university, as well as its institutional management.

Objectives

The VLIR-UOS accepted as the core requirements for its IUC Programme the following :

* **long-term cooperation** : in order for institutional cooperation to be effective, long-term partnerships need to be developed. Institutional partnerships are to cover a period of at least ten years;
* **orientation on the institutional needs and priorities of the partner universities in the South** : donor support should start from the needs and priorities of the partner institution. Linkage projects and programmes need to fit well into the local policy environment of the Southern partner institution and therefore should respond to the priorities that have been identified by these institutions themselves. It is believed that only linkages based on projects to which the partner university attaches high priority, will be sustainable in the long run;

- **ownership** : apart from their required participation in the process of project identification, partner institutions from the South also need to be fully involved in the process of implementation at all levels. A lack of strong involvement from beneficiary institutions has a negative impact on the successful implementation as well as on the sustainability of cooperation projects;
- **concentration** : concentrating efforts in a limited number of partner institutions in the developing world leads to apparent advantages in terms of programme management, but concentration is also meant to allow for synergy between different projects of a same linkage in order to create an added value in terms of the expected broader institutional impact of the intervention;
- **donor coordination** : the VLIR-UOS is convinced of the usefulness of donor coordination.

The VLIR-UOS programme for IUC aims at the provision of substantial support to a limited number of carefully selected partner universities in the developing world. This support is geared towards

- the institutional development of the partner university;
- the improvement of the quality of local education;
- the development of local postgraduate education in the South;
- the encouragement of south-south linkages.

Each partnership is broad in orientation, and includes the following :

- different components (projects) make up the partnership;
- all projects aim at a maximum of institutional impact;
- the activities which are organised in the context of the partnership can involve all constituent parts of the university;
- apart from direct support to the improvement of education and research the partnership can also contain projects which are aimed at improving the organisation, the administration and the management of the university as a whole;
- the identification of the fields of cooperation within the partner programme is in principle based on the partner university's demands; these demands obviously can only be met in so far that the required expertise can be provided by the Flemish universities (demand driven approach);
- each partner programme consists of a coherent set of interventions geared towards the development of the teaching and research capacity of the partner university, as well as its institutional management.

Fixed budgets and annual funding

The annual budget per partner university is € 745.000. As part of the phase-out process, the fixed annual budget decreases to 85%, 75% and 50% of a full budget for the activity programmes of year 8, 9 and 10 respectively.

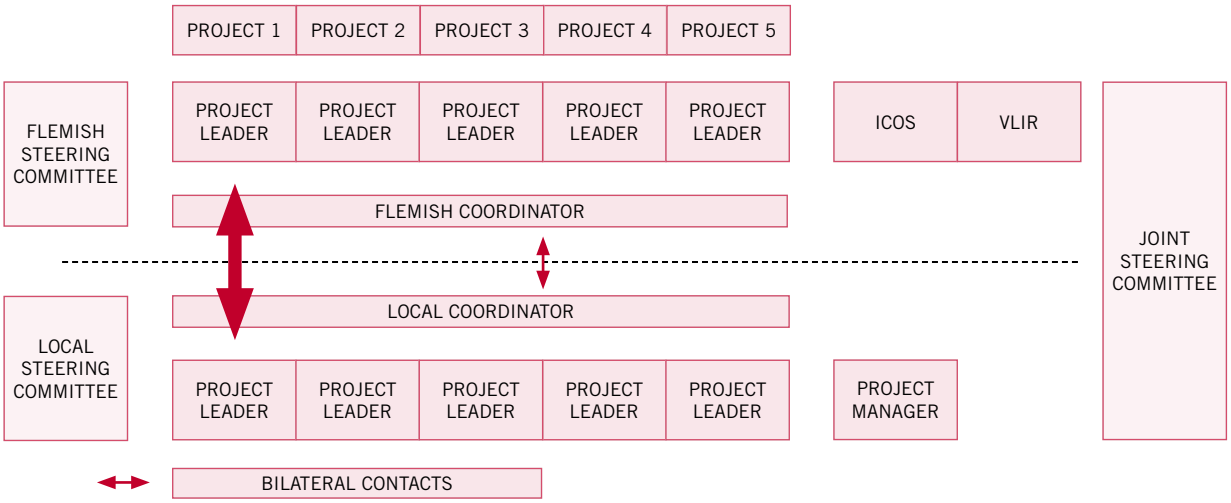
While the partner programme represents a 5 year framework actual funding is based on the approval of annual activity programmes with no possibility to roll over possible balances to the following budget year.

IUC management system at present

Summary outline of IUC management

The IUC management system is based on the following division of tasks:

- **VLIR** is responsible for the programming - including the selection of partner universities -, monitoring and evaluation of the overall programme. VLIR is accountable to the Belgian government;
- the implementation of a partner programme is delegated to a **Flemish university** which functions as the coordinating university in Flanders. The Flemish university of the VLIR appointed Flemish coordinator functions as the coordinating university in Flanders. Administratively, the university of the Flemish coordinator is responsible for the day-to-day management of the programme implementation based on an agreement signed by the Flemish coordinating university and the VLIR;
- the **university of the Flemish coordinator and the partner university** have the responsibility to jointly manage the implementation of the partner programme and the constituent activity programmes based on an agreement signed by the Flemish coordinating university, the partner university and the VLIR;
- the **partner university** also has to nominate a local coordinator who functions as the key responsible person from local side;
- at the level of the **partner university** a full time professional manager is appointed in order to support the local coordinator, being an academic charged with numerous other responsibilities, in the various management duties associated with the implementation of a complex programme;
- both in the North and the South a **steering committee** is established to coordinate the implementation of a partner programme. On a annual or bi annual basis both committees hold a **Joint Steering Committee Meeting** (JSCM).



Project Cycle Management (PCM)

In 2003, VLIR-UOS has introduced the PCM-methodology in VLIR-UOS funded activities. This approach has called for a much more focused approach framed by the formulation of a logical framework matrix spanning a 5-year period and including measurable indicators.

The present IUC partner universities

List of the IUC partner universities at present

AFRICA

* Tanzania : Sokoine University of Agriculture (SUA) (phased out)
* Zambia : University of Zambia (UNZA) (phased out)
* Kenya : University of Nairobi (UoN)
* Kenya : Moi University (MU-K)
* Zimbabwe : University of Zimbabwe (UNZI)
* South-Africa : University of the Western Cape (UWC)
* Ethiopia: Mekelle University (MU)
* Ethiopia :Jimma University (JU)
* Mozambique : University Eduardo Mondlane (UEM)

LATIN AMERICA

* Bolivia : Universidad Mayor de San Simón (UMSS) (phased out)
* Ecuador : Escuela Superior Politécnica Del Litoral (ESPOL)
* Ecuador: Universidad de Cuenca (UCuenca)
* Cuba: Universidad Central "Marta Abreu" de las Villas (UCLV)
* Suriname : Anton de Kom Universiteit van Suriname (ADEKUS)

ASIA

* Vietnam : Can Tho University (CTU)
* Vietnam : Hanoi University of Technology (HUT)
* the Philippines : the network of the Saint Louis University (SLU) and Benguet State University (BSU).

Take-off in different stages

- 1996 : preparation of the start of the IUC programme
- 1997 : SUA, UNZA and UMSS
- 1998 : UDSM, UON, UNZI, HUT and CTU
- 1999 : ESPOL and SLU/BSU
- 2003 : MU, UWC and UCLV
- 2007 : JU, MU-K, UCuenca
- 2008 : UEM, ADEKUS

IUC Programming cycle

Duration of the cooperation

1. In principle the cooperation with a partner university covers a period of maximum ten years: two time blocks of five years each. For each time block of five years a partner programme is to be drafted. Objectives have to be defined within a timeframe of five years.

2. Every three to five years the cooperation with a partner will be evaluated. Each year at least three partner universities will be evaluated. In 2000/2001, the IUC cooperation with the Universidad Mayor de San Simon (UMSS), Bolivia, the Hanoi University of Technology (HUT), Vietnam, and the University of Nairobi (UoN), Kenya, was evaluated, since these three universities were the first to start. It was jointly decided to accelerate the evaluation of the IUC cooperation with the University of Dar es Salaam (UDSM), Tanzania, with one year. Consequently, the IUC partnership

with UDSM was also evaluated in 2001. In 2002, the partner programmes with UoN, UNZI, ESPOL, SLU/BSU, HUT and CTU were evaluated. Following the inability to overcome the weaknesses brought out by the partnership with UDSM, VLIR-UOS decided to not enter into a second phase partner programme with UDSM.

3. On the condition of positive outcome of the evaluation exercise, a partner university can continue its cooperation for another five years. In case of negative outcome, the cooperation can be stopped, either immediately or after the first block of five years. Each evaluation is followed the next year by a control to check whether the results of the evaluation have been followed-up. Each evaluation can be followed by changes to the cooperation programme, both in terms of content and of budget. In terms of the Phase I and Phase II partner programme emphasis, the following can be observed:

* Phase I is meant to focus on capacity building
* Phase II is meant to focus on consolidation, application and phase-out

Partner Programme support opportunities

Following a period of 10 years of collaboration, limited funding is provided during a phase out process. More importantly however, is the possibility of IUC partner universities to submit proposals under the so called "IUC Research Iniciative Projects". In this way, support will be provided for quality research proposals undertaken by members of former IUC project teams. The modalities of this fund are currently being elaborated.

IUC Partner Programme support facilities

The support facilities explained underneath are funded by VLIR-UOS for the benefit of all ongoing and phasing out IUC partner universities.

Competitive funds

Apart from an annual budget, the partner programmes may respond to calls by VLIR to submit proposals under the ICT and **North South South Cooperation Fund** (NSSCF). Proposals are appraised on a competitive basis. Under the **ICT Fund** second hand pc's are availed to the partner universities free of charge within a certain conceptual framework. Under the NSSCF, two are more IUC partner universities may join hands in developing a proposal that includes the involvement of a Flemish academic and builds upon the achievements of the partner programmes within the framework of SS collaboration.

International Foundation for Science (IFS)

With VLIR funding, IFS is able to fund deserving research proposals of young researchers of any eligible academic of the IUC partner universities that are recommended following an IFS review but for which IFS does no have the funds. Put differently, VLIR will be addressing the IFS funding gap as far as proposals from IUC partner universities are concerned.

International Network for the Availability of Scientific Publications (INASP)

VLIR is funding INASP in order to develop a curricula for training on bandwidth management. Under this initiative, the IUC partner universities will benefit from training at various levels in order to optimise available bandwidth.

Cross cutting initiatives

Cross cutting initiatives are workshops, training activities, study visits and similar

activities on matters of common interest in which participants of IUC partner universities can participate.

A full 17 year programme cycle framed by a comprehensive IUC tool box

With reference to the tables underneath, please find herewith an outline of the programme cycle both at the level of responsibilities during the different programme phases (table 1) and the overall timeframe (table 2).

Table 1. Programme cycle at the level of responsibilities during the different programme phases

Phase	Activities	Actors	Outputs
PROGRAMMING	Definition policy framework. Broad outlines of partner/programme types and guidelines for elaboration.	VLIR-UOS /DGDC	Typology of fundable projects. Conditions for acceptance.
IDENTIFICATION	Elaboration of programme/project idea. Analysis whether idea is fundable and matching is feasible.	PARTNER UNIVERSITY	Preliminary proposals submitted to VLIR-UOS.
APPRAISAL MATCHMAKING	Analysis against VLIR-UOS policy. Flemish interest based negotiations.	VLIR-UOS	Projects admitted for formulation. Formalised matching.
FORMULATION	Collection of data, consultation, detailed formulation	PROJECT LEADERS	Project proposals.
FUNDING DECISION		VLIR-UOS	Funded programme.
IMPLEMENTATION AND MONITORING	Annual planning Annual implementation Adaptation as required	ALL ACTORS BUT MAINLY PROJECT PARTNERS	Implementation as planned. Adapted when necessary.
EVALUATION (every 3 to 5 years)	Evaluation activities	ALL PARTIES AND EXTERNAL ACTORS	Evaluation report. Lessons learnt fed back to cycle

Table 2.

		PP ident. and for		Phase I PP Capacity Building					Phase II PP: Consolidation and Phase-out					Post IUC support					
	Year	**0**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	
Partner Programmes	Partner 1																		PP Objectives
	Partner 2																		PP Objectives
Other IUC supporting initiatives	ICT Fund													?	?	?	?	?	PP Objectives
	IFS													?	?	?	?	?	PP Objectives
	INASP													?	?	?	?	?	PP Objectives
	NSSCF													?	?	?	?	?	PP Objectives
	IUC Research Fund																		
	Cross cutting initiatives													?	?	?	?	?	PP Objectives

Evaluation

The IUC programme terminology

Activity programme

An *activity programme* gives an outline of the activities that will be implemented within the framework of cooperation between the Flemish universities and a given partner university with regard to Institutional University Cooperation for a given year, i.e. within the period of maximum twelve months. The activity programme is composed of the activities of the different projects. An activity programme as well as a partner programme is made up of projects. Previously, these were referred to as '*projects*'.

In the framework of the activity programmes, VLIR-UOS was using a number of additional documents namely the '*Synthesis of the activity programme*' and the '*Detailed activity programme*'. From 2003 onwards, such documents have been replaced by internal monitoring systems to be applied by the various stakeholders involved in programme implementation.

Annual programme

In the framework of the IUC Programme VLIR-UOS will submit for approval by the Belgian Minister for Development Cooperation, annual programmes. An *annual programme* is composed of the activity programmes with the different partner institutions in Africa, Latin America and Asia.

Partner programme

A *partner programme* is composed of the successive activity programmes with a given partner university covering the entire period of cooperation (5-year period).

Global programme

A *global programme* is composed of the different partner programmes with all partner institutions in Africa, Latin America and Asia.

VLIR-UOS decision to evaluate the IUC partnership with HUT, CTU, UoN and UNZI

Taking into account the programming cycle of the IUC cooperation programmes, the 10 year cooperation based on earmarked funding with HUT, CTU and UoN and UNZI has come to an end in March 2007. As a consequence, these three institutions will be the first to be submitted to a final evaluation.

Introduction to the evaluation methodology

Since 2003, the new partnerships differed with the partnerships that had been evaluated earlier. These differences related mainly to the following:

* programme and project design based on the logical framework approach;
* a more coherent programme focus with an in-built opportunity for a synergetic programme approach;
* the introduction of a full time programme management position at the level of the partner university;

- a simplification of some financial (lump sum basis), compensations that are much more oriented towards the academics unit that are providing actual support and leadership.

Furthermore, VLIR-UOS has been developing more indicator based programmes and project files that elaborate upon the indicators developed earlier, and introduced the following additional dimensions:

- a three layered approach whereby the projects fit into the programme that fits into the partner institutions that fits into a country context;
- indicators that relate to broad based managerial issues;
- an evaluation model that takes the log frame as a reference.

Objective and scope of the evaluation

Objective of the evaluation

The final evaluation is meant to generate conclusions that will allow:

- the identification of strengths and weaknesses of each specific IUC collaboration with the three institutions in particular, and of the IUC programme in general;
- VLIR-UOS to identify departments and/or research groups that have received substantial support from the IUC programme in Phase II and thus can present proposals for the "IUC Research Iniciative Projects"
- the formulation of recommendations to all stakeholders in terms of the follow up plan that has been elaborated by the Northern and Southern project leaders
- to identify and comment upon possible venues for the future of the involved projects in view of establishing sustainability

Scope of the evaluation

the present implementation of the programme

- evaluating the **global state of implementation** of the programme, both at the level of the overall programme and the constituent projects;
- evaluating whether the activities, per project, have met the **objectives**, that had been defined by the actors involved, within the given timeframe and with the given means;
- evaluating the **management** of the programme, both in Flanders and locally, and formulating, if necessary, recommendations that could be of interest for the partnerships that are still ongoing;

the nature of the programme

- evaluating the **quality, efficiency, efficacy, impact, development relevance and sustainability** of the programme in the light of the overall goal of the IUC Programme, being institutional capacity-building of the local university, as situated in the context of the needs of the local society;

* evaluating the **cooperation** between all parties involved, and formulating, if necessary, recommendations that could be of interest for the partnerships that are still ongoing;

the position of the IUC programme within the international cooperation activities of the partner university

* evaluating the **added value of the IUC Programme** for the partner university, in comparison to other ongoing donor cooperation programmes;

the follow up plan of the programme

* evaluating the follow up plan as elaborated in the self assessment report (Format F1, self assessment per project), in view of the continuation of the different activities that have started up within the framework of the IUC programme (Phase I) and the consolidation of the results as aimed for in Phase 2.

Evaluation criteria

The logical framework

The logical framework will serve as the basic reference document in terms of the objectives and indicators specified to assess actual progress against the objectives and results formulated.

All project leaders will therefore in the framework of the self-assessment report against the key indicators as well as the assumptions formulated at project design stage.

Descriptive indicators of results

In order to allow the usage of some 'standard indicators', all projects will report against these indicators. Such a reporting will furthermore greatly contribute to documenting the actual outputs and retaining such information in a database that will be annually updated.

The evaluation will be focused on **seven areas of key (programme/project) results areas (KRAs)**, each one specified in terms of its corresponding indicators. Where possible, both quantitative and full descriptive data will be obtained and used as a basis for evaluation :

Key result areas	Indicators (quantitative and full descriptive data)
KRA 1: Research	• Articles in international peer reviewed journals • Articles in national peer reviewed journals • Conference proceedings (full paper) • Conference abstracts • Chapters in books (based on peer review) • Books with international distribution (author or editor) • Working/technical papers/popularising literature/articles in national journals, electronic journals etc. • Conference contributions (posters, lectures) • Patents. • Other

KRA 2: Teaching	• Number of courses/training programmes developed • New of substantially updated curriculum • Textbooks development • Learning packages developed (distance learning, CD-rom etc.) • Laboratory manuals • Excursion guides • Other
KRA 3: Extension and out-reach	• Leaflets, flyers or posters for extension • Manuals or technical guides • Workshop or training modules package • Audio visual extension materials • Consultancy / contract research • Policy advice/papers • Other
KRA 4: Management	• New institutional procedures / policies • Lab or departmental management inputs • Systems development (e-management, software etc.) • Research protocols • Other
KRA 5: Human resources development	• BSc. • MSc. • PhD. • Pre-doc • Training in Belgium • Other
KRA 6: Infrastructure Management	• Physical infrastructure (incl. land) • ICT-equipment • Library equipment (incl. books) • Laboratory equipment • Transport
KRA 7: Mobilisation of additional resources/opportunities	• Flemish travel grants • Flemish PhDs • Other PhDs • Spin off projects • Other
7. Other	

With input of the VLIR-UOS-secretariat and the concerned stakeholders, this table is to be completed for each project of each partner programme. In case it is impossible to complete the table in details, the evaluation commission can make its evaluation at the level of the main categories or subcategories.

Qualitative evaluation criteria

In addition to the primarily descriptive profile of results both per project and in general terms, the evaluation commission will be invited to evaluate these results in qualitative terms applying different qualitative criteria and a five-point scale.

Qualitative evaluation criteria

Per project

Criterion	Indicators
1. Quality	This is the main criterion, being the result of all other criteria. *Possible indicators of "quality":* • quality of **research** : the extent to which the results have been incorporated in local or international refereed journals • quality of **education** : the extent to which alumni easily get a job which fits their education profile; the number of fellowships acquired from foundations • quality of **rendering services to society** : the extent to which the university/faculty/department is involved in feasibility studies/consultancies • job opportunities • strategic vision
2. Effectiveness	the extent to which the specific objectives have been achieved (the level of the results)
3. Efficiency	The relationship between the objectives and the means used to reach the objectives. The degree to which the installed capacity (human/physical/financial) is used; goals/means ratio in human, physical and financial resources *Possible indicators of "efficiency":* At the level of the programme : the extent of flexibility in the programme implementation, e.g. reallocation of resources during implementation
4. Impact	Not just actual but also (given time limitations) potential impact (at level of goals), looking at consultancy, policy advise and accreditation models *Possible indicators of "impact":* • impact **at the level of the private sector** : the amount of money earned on the market • impact **at policy level** : the extent to which academics, involved in the IUC programme, are called upon by the government for policy advice • impact **at the level of the own university or other universities** : - renewed curriculum functions as example for other universities/departments - the new style of teaching has become a model for teaching (e.g. the systematic use of teaching in combination with laboratory work)
5. Development relevance	the extent to which the programme/project addresses immediate and significant problems of the community, looking at the amount of self-finance, demand from state and private actors
6. Sustainability	Especially financial and institutional sustainability *Possible indicators of institutional commitment in the South:* • co-funding by the partner university (matching funds) • incorporation of costs into the budget of the partner university • capacity to attract new funds • retention of highly qualified staff • the partner university sets aside funds for operations and maintenance of physical infrastructure *Possible indicators of mutual interest:* • do the Flemish universities commit their own university funds to the programme, for instance by giving fellowships or by allowing academics to go to the field ? • are Flemish academics personally committed (e.g. spend their holidays working in the partner university) ? • are there joint research projects which are interesting both to the Northern and Southern academics involved ? • do the partner universities also commit their own funds to the programme (matching funds)? • is there a good quality follow up plan for implementation after the 10 year period of partnership with earmarked funding ? (see self assessment reports)

A five-point evaluation scale

A five-point evaluation scale is to be used, both when judging the results in the above areas in general terms, and when evaluating the performance of the projects and the programme as a whole in terms of the qualitative criteria. The scale is as follows:

1 = (very) poor
2 = insufficient/low
3 = sufficient
4 = good/high
5 = excellent/very high.

These scores - expressing in quantitative terms an overall and synthetic yet differentiated qualitative judgement - should facilitate the task of evaluation.

In terms of collaboration at the level of the programme, the following criteria can be applied as a reference. No scores will be applied, only a qualitative elaboration.

Criterion	Indicators
1. Efficiency	The relationship between the objectives and the means used to reach the objectives. The use and application of the means earmarked for collaboration. The actual net result in terms of the achieved efficiency through collaboration. The extent to which collaboration can contribute to solving institutional needs and problems. *Possible indicators of "efficiency":* At the level of the programme : existence of systems for continuous alertness for opportunities to enhance efficiency through cost-sharing/economies of scale etc.
2. Impact	Not just actual but also (given time limitations) potential impact. *Possible indicators of "impact":* • impact **at the institutional level** : the extent to which the col-laboration has sparked other departments to initiate inter-university collaboration, joint capacity building, fund raising etc. • impact **at regional developmental level**: the extent to which the collaboration has led to joint developmental activities or similar collaborative models at the regional level • impact **at policy level** : the extent to which the collaboration has raised interest of policy makers and academics, and SLU/BSU are called upon or are pro-actively developing collaboration models that could be fed into policy advice
3. Development relevance	the extent to which the planned collaboration is addressing immediate and significant problems and needs of the concerned partners as well as regional and national policy makers.
4. Sustainability	Especially financial and institutional sustainability *Possible indicators of institutional commitment to collaboration:* • feedback and/or participation in each others strategic planning • strengths and weaknesses of two institutions in terms of institutionalising collaboration • intensification and/or formalisation of inter-university consultations • references in external and internal documents • joint proposals (fund raising, research) • collaboration and exchanges outside of VLIR-UOS-programme • presence of a detailed follow up plan (see self assessment reports)

The collaboration as a whole: management and related issues

A more elaborate list of indicators to review the management and cooperation aspects of the partnership will be provided to stakeholders and the external evaluators. This list is partly drawn from the TOR developed for the audit of the management of the IUC partnership with UoN, as well as the basic IUC concept.

More specifically, the following areas are among the issues to be reviewed:

* Overall assessment of the programme management (North and South)
* System development (manuals, synergy approach, interim monitoring and reporting etc.)
* Management issues related to actual implementation (financial information flow, procurement, facilitation of visits etc.)
* Financial management
* Academic cooperation
* PR and visibility
* Synergy and coherence of the programme

Actors involved

General

The following actors will be involved in the evaluation :

* the members of the evaluation commissions;
* the Northern stakeholders involved in the three ongoing IUC cooperation programmes;
* the Southern stakeholders involved in the three ongoing IUC cooperation programmes;
* the IUC Commission (still to be composed);
* the Bureau UOS of VLIR-UOS and the VLIR-UOS;
* the Direction General for Development Cooperation (DGDC), i.e. the Belgian government administration for international cooperation.

The evaluation commission

Management, academic content and country context

Ideally, the following expertise would be represented in the evaluation commission:

* a development management expert who is familiar with processes of institutional/organisational development, capacity building and methodological issues in general;
* an academic expert regarding the core theme of the partner programme such that the academic quality may be assessed;
* a country expert who is familiar with the national issues at hand in terms of higher education and research in the country concerned.

In view however of the fact that:

* with each additional team member the evaluation process will be more costly and complex;

* VLIR-UOS wishes to maintain a balance between the self-assessment and external assessment of programme implementation;
* not in all the partnerships, a single academic theme can be identified around which expertise could be mobilised

it has been decided not to compose a three member commission but rather ensure that all the above field can be accommodated by the joined field of expertise of two members of the evaluation commission to be composed.

The experts should be neutral, and have no relation with the universities involved - neither the Flemish universities involved nor the partner university - or the IUC partnership.

The experts should have a proven experience and expertise with evaluation.

The Bureau UOS will decide on the composition of the evaluation commission, based on suggestions from the Flemish and the partner universities, as well as from the VLIR-UOS-secretariat.

Division of tasks among the members of the evaluation commissions

The evaluation is to be undertaken by both members of the evaluation commission who are expected to function as a team.

The international cooperation expert

The international cooperation expert will act as team leader (chairman). In this capacity he/she will lead the meetings that have been programmed and will coordinate the report drafting. He/she will be invited to use his/her experience with international cooperation in the field of higher education and research as reference for the evaluation, especially when formulating recommendations for improvement of the global set-up and management of the programme.

The country expert

The country expert will be invited to situate the partner university and its IUC Programme in its larger national context, taking into account local legislation relating to higher education, etc.

The Northern stakeholders involved in the three phasing out IUC cooperation programmes

What is meant by the Northern stakeholders is : all persons from the Flemish universities who are involved in one of the phasing out IUC cooperation programmes (SUA, UNZA and UMSS). This means : the top management of the Flemish coordinating university, the Flemish coordinator, the Flemish project leaders and team members, Ph.D. student promoters, the Institutional Coordinator for University Development Cooperation of the Flemish coordinating university (the so-called ICOS), the financial officer(s) of the Flemish coordinating university, the permanent expert(s) (if applicable), the IUC desk officer etc.

The Southern stakeholders involved in the three phasing out IUC cooperation programmes

What is meant by the Southern stakeholders is : all persons from the partner university and the local community who are involved in the respective IUC partnership. This means :

* *the Southern stakeholders within the partner university :*
  the top management of the partner university, the authorities at faculty level, the local coordinator, the programme manager, the local project leaders, their deputies (if applicable) and team members, the staff of the local coordinating unit of the IUC programme (secretaries, accountants, …), the bursar, the students funded by the programme, the student supervisors and/or promoters, technicians, staff from other donor-sponsored cooperation programmes being implemented at the partner university, etc.;
* *other Southern stakeholders :*
  representatives from central, regional and local government agencies and from civic society (e.g. local chambers of industry, employers' association, ...), officials of the Ministry of Education and of Foreign Affairs, and of the Belgian Embassy, ...

The IUC Commission

In order to have more systematic follow-up of the IUC partner programmes, especially relating to its academic content, an IUC Commission will be installed by VLIR-UOS. The IUC Commission will be an advisory body that will advise the Bureau of the VLIR-UOS on the IUC Programme.

The VLIR-UOS will create this commission in the coming months.

The final evaluation reports will be submitted, for discussion, to the IUC Commission.

The VLIR-UOS-secretariat

The VLIR-UOS-secretariat will function as organiser of the evaluations, as well as resource centre for the commission members.

DGDC

DGDC will be invited to have a separate discussion with the evaluation commission, if so desired, and to participate in debriefing meetings with the evaluation commission.

Methodology

Evaluation mission

An evaluation mission will be conducted by an external commission for each of the three phasing out IUC cooperation programmes. This evaluation commission will have discussions with

* the Northern stakeholders of the resp. phasing out IUC cooperation programme;
* the Southern stakeholders of the resp. phasing out IUC cooperation programme;

- the VLIR-UOS and the Direction General for International Cooperation (DGDC);
- the Belgian Embassy and DGDC section in the partner country;
- if possible but highly advised : the department for university education and/or research of the Ministry of Education/Research of the partner country and/or other actors in the field;
- any other relevant stakeholders.

The team will also visit all relevant facilities of the university.

Consistent with the mid-term evaluation methodology, VLIR-UOS has developed a final evaluation methodology. This includes a briefing of the international during a one day mission to Brussels. As to giving the opportunity to the evaluation commission members to have discussions about the resp. partnership with the Northern stakeholders, these discussions are planned to be held at the partner university at the end of the evaluation mission. Therefore, preferably, the Northern stakeholders or a delegation should be at the partner university at the very end of the evaluation mission, for two reasons :

- to have in-depth discussions with the evaluation commission, separately from the Southern stakeholders, to allow the evaluation commission to have a balanced view which takes into account the viewpoints of both parties;
- to discuss with the southern stakeholders how to react to and implement the evaluation commission's conclusions and recommendations, thereby focusing on the future. This discussion is to be held in the form of a joint steering committee meeting.

A representative of the VLIR-UOS-secretariat will also be present at the end of the mission to serve as resource centre and in order to elucidate in situ aspects of the programme which the commission members as outsiders would otherwise not capture well enough, and to clarify the expectations of VLIR-UOS vis-à-vis the commission in more detailed terms.

At the end of the mission the evaluation commission will present its draft conclusions and recommendations to all stakeholders.

Inputs

Input into the evaluation will be provided through :

- an analysis of *documents* by the evaluation commission, in particular programme documents (reports) and the self-assessment reports which will have to be prepared prior to the mission of the evaluation commission;
- *focused interviews* of the evaluation commission with various stakeholders;
- *visits* of the evaluation commission to the relevant facilities of the partner university and the site of development projects with a link to the IUC programme.

Documents

Programme documents

Prior to its mission the evaluation commission will receive from VLIR-UOS, apart from basic information on the IUC Programme, a number of documents relating to the respective IUC partnership, such as the university strategy paper, the IUC partner programme, annual reports, etc.

Self-assessment reports

The stakeholders in a given IUC partnership will be invited, prior to the mission of the evaluation commission, to make a self-assessment and to report on it to the commission in the form of a number of self-assessment reports.

Contrary to the evaluation process of 2001 and 2002, the VLIR-UOS-secretariat aims at producing project files that contains basic information (financial, scholars etc.)

The objective of the self-assessment is threefold :

* interim reporting against the **logical framework**;
* consolidation and/or completion of some **quantitative and qualitative information** to the evaluation commission to complement the information contained in the formal programme documents;
* stimulate the **internal quality assurance** by a strengths-weaknesses analysis by all parties involved;
* **internal preparation for the discussions with the evaluation commission** and its visit to the partner university.

The following formats were sent to the different stakeholders:

Format 1 or F1 : Self-assessment per project (See annex 1 to these ToR's)

This is a format that has to be completed for each project, by the Flemish and local project leader jointly, in consultation with their team members.

Through this format, reporting is done on the following:

* accomplishments in view of objectives and indicators;
* assumptions at the start of Phase II, the development over time and the action that has been taken in view of possible developments;
* KRA's as in the database;
* qualitative appreciation;
* self-scoring KRA's;
* self-scoring cooperation dynamics;
* definition of capacity building recipients;
* effects in the North;
* sustainability and overall outlook;
* follow-up plan;
* and others…..

Format 2 of F2 : Self assessment of the partnership (See annex 2 to these ToR's)

This format has to be completed separately by the Flemish and the local coordinator, jointly with the respective steering committee.

Through this format, reporting is done mainly on the following issues:

* main effects and assessment;
* lessons learned;
* hindsight;
* impact over the full 10 year period;
* synergy;
* SWOT;
* financial and overall management of the IUC programme;
* outlook and other recommendations;
* and others…

Focussed interviews with all stakeholders

The evaluation commission members will visit the partner university where they will have focused discussions with all stakeholders of the IUC partnership, both the Southern and Northern ones.

Visits

The evaluation commission will also visit all relevant facilities of the university, with special attention to infrastructure, the central offices involved in the programme, the classrooms and laboratories involved, research sites, field stations, development projects with a link to the IUC programme, …. .

Debriefing meeting of the evaluation mission with the stakeholders

At the end of the mission the evaluation commission will discuss its preliminary findings - general conclusions and recommendations - during a meeting with all stakeholders, both the Northern and the Southern ones.

Evaluation report

Each evaluation commission will draft an evaluation report, in English, based on the written material and the discussions and visits during the mission.

The draft report will be submitted, for comments, via the VLIR-UOS to the respective Flemish and local coordinator. It will be up to the two coordinators to coordinate the reactions to this draft report. The evaluation commission will decide, given its autonomy, whether or not to take into account the comments received. The final report will be submitted to the VLIR-UOS.

Organisation of the evaluation

* The evaluation commissions will be composed by the Bureau UOS of the VLIR-UOS, based on suggestions from the Flemish and the partner universities, as well as of the VLIR-UOS-secretariat.

* The evaluation commissions will receive from the VLIR-UOS, apart from basic information on the IUC Programme, a set of documents relating to the respective IUC partnership.

* The Northern and Southern stakeholders of each of the three IUC partnerships received the formats for the self-assessment reports end of December 2007. The reports will have to be submitted to the VLIR-UOS-secretariat at the latest on **30 June 2008**.

* The partner universities will be invited to draft the programme of the evaluation missions, taking into account the possible requests formulated by the resp. evaluation commission.

* The evaluation missions will be organised in October 2008 (HUT), December 2008 (CTU) and early 2009 (UoN and UNZI), each of them lasting at least one week.

- At the end of each mission, one or more days will be reserved for discussions between the evaluation commission and (a delegation of) the Northern stakeholders who will be invited to be on the spot at that moment.
- At the very end of the mission, the evaluation commission will discuss its preliminary conclusions and recommendations at length with the Southern and the Northern stakeholders. It is advised that this debriefing meeting be followed by a joint steering committee meeting. The evaluators are not supposed to participate in this joint steering committee meeting.
- The evaluation commission members will submit their report within three weeks after their return from the mission. This draft report will be submitted, for comments, via the VLIR-UOS to the respective Flemish and local coordinator. The commission will decide whether or not to change its final report based on the comments received.
- Submission of the final report by the evaluation commission to the VLIR-UOS.

Timing of the evaluation

Action	Actor	Time			
		HUT	CTU	UoN	UNZI
Phase Out Workshop (1 October 2007)	VLIR-UOS secretariat	1 October 2007			
Mailing of the formats for the self-assessment reports to the stakeholders	VLIR-UOS secretariat	21 December 2007			
Mailing of the database excel forms	VLIR-UOS secretariat	29 January 2008			
Mailing of the database contracts	VLIR-UOS secretariat	21/05/2008	21/05/2008	a.s.a.p.	a.s.a.p.
Mailing of the terms of reference to the stakeholders	VLIR-UOS secretariat	30/05/2008	30/05/2008		
Composition of the evaluation commissions	Bureau UOS of the VLIR-UOS, based on the suggestions of the resp. partner university, Flemish coordinating university, and the VLIR-UOS-UDC-secretariat	23 June 2008	23 June 2008	September 2008	September 2008
Mailing of the resp. IUC partnership documents to the members of the evaluation commission	VLIR-UOS secretariat	Week of 26 June 2008	Week of 26 June 2008	End of September 2008	End of September 2008

Action	Actor	Time			
		HUT	CTU	UoN	UNZI
Deadline for submission of the self-assessment reports to the VLIR-UOS-secretariat	• The general information report is to be submitted by the Flemish coordinator to the VLIR-UOS-secretariat • The compilation of self-assessment reports per project is to be submitted by the Flemish coordinator to the VLIR-UOS-secretariat • The collective self-assessment report of the Southern stakeholders within the partner university is to be submitted by the local coordinator to the VLIR-UOS-secretariat • The collective self-assessment report of the Northern stakeholders is to be submitted by the Flemish coordinator to the VLIR-UOS-secretariat	30 June 2008	30 June 2008	30 June 2008	30 June 2008
Preparation of the missions of the evaluation commissions (indicative dates)	VLIR-UOS-secretariat	July 2008	July 2008	October 2008	October 2008
Drafting of the programme for the evaluation commissions (indicative dates)	Partner universities	July 2008	July 2008	October 2008	October 2008
Contacts of Evaluation Commission Leader with Flemish PL (indicative dates)	• the evaluation commissions • the Northern stakeholders • VLIR-UOS and DGDC	August-September 2008	September-November 2008	November-December 2008	November-December 2008
Evaluation missions (indicative dates)	• the evaluation commissions • the Southern stakeholders • the Northern stakeholders • VLIR-UOS and DGDC	20/10/2008 up until 02/11/2008	01/12 up until 09/12/2008	To be defined	To be defined
Local debriefing	• the evaluation commissions • the Southern stakeholders • the Northern stakeholders • VLIR-UOS and DGDC	To be defined	To be defined	To be defined	To be defined
Joint Steering Committee Meeting	• the evaluation commissions • the Southern stakeholders • the Northern stakeholders • VLIR-UOS and DGDC	To be defined	To be defined	To be defined	To be defined
Submission of the draft evaluation reports to the Flemish and local coordinators	the evaluation commissions, via the VLIR-UOS-secretariat	4 weeks afterthe Evaluation Mission	4 weeks after the Evaluation Mission	4 weeks after the Evaluation Mission	4 weeks after the Evaluation Mission
Commenting on the draft evaluation report	• the Northern stakeholders, under the coordinatorship of the Flemish coordinator • the Southern stakeholders, under the coordinatorship of the local coordinator • VLIR-UOS	Within 4 weeks after reception of the draft report	Within 4 weeks after reception of the draft report	Within 4 weeks after reception of the draft report	Within 4 weeks after reception of the draft report
Finalising the evaluation report and Submission to VLIR-UOS	the evaluation commissions	Between 2 and 4 months after performance of the Evaluation	Between 2 and 4 months after performance of the Evaluation	Between 2 and 4 months after performance of the Evaluation	Between 2 and 4 months after performance of the Evaluation

Follow-up to the evaluation

Three years after the final evaluation and the closing of the 10 year IUC collaboration, VLIR-UOS intends to organize a follow up survey. This survey would allow :

* to determine whether the impact of the IUC programme still can be perceived in order of research activities, networking and capacity building activities among others ;
* to determine whether the follow up plan as elaborated in the self assessment reports has been used in order to establish continuation of the IUC programme after the earmarked funding ;
* to determine whether the observations and recommendations made by the evaluation commission on the follow up plan during the final evaluation have been taken into consideration by the different stakeholders.

Budget

All costs linked to the evaluation by the evaluators (fee, travel, board and lodging) - except the ones listed below - will be covered by the VLIR-UOS.

The organisation costs linked to the mission of the evaluation commissions (e.g. lunches, local transport, etc.) are to be covered by the partner universities. They can book these costs on their respective IUC budget.

The costs of the Flemish stakeholders and of VLIR-UOS participating in one or more of the missions will be born by VLIR-UOS.

The costs of the DGDC representatives participating in one or more of the missions will be born by DGDC.

Appendix II : Flemish Interuniversity Council and IUC Programme

VLIR

For over 30 years, the Vlaamse Interuniversitaire Raad (VLIR) (Flemish Interuniversity Council) has fostered the development of member universities. Beginning in the 1980s, the VLIR member universities began to participate in an advisory capacity in development cooperation programmes administered by the General Directorate for Development Cooperation (now the Directorate-General for Development Cooperation (DGDC).

During the past decade, VLIR-UOS has been given significantly greater responsibility for administering programmes and managing federal funds for University Development Cooperation (UOS) on behalf of the Flemish universities. VLIR-UOS operates under authority of the Minister for Development Cooperation based on an approved 5-year work plan. VLIR-UOS prepares and submits an UDC annual programme. Upon approval by the Government, funds are released to VLIR-UOS for the implementation of the annual programme.

Under this arrangement, Flemish universities may propose activities. If selected, they are charged with the responsibility for implementing the proposed activities. VLIR-UOS retains responsibility for selecting universities to implement activities, and for monitoring and evaluation. VLIR-UOS is also responsible for financial and programmatic accountability.

The IUC Programme

The VLIR-UOS programme for Institutional University Cooperation (IUC) finds its origin in the Specific Agreement signed by the Belgian State Secretary for Development Cooperation and VLIR-UOS on 16 May 1997. With this agreement, a system of programme funding was introduced whereby the Belgian Government would provide funding each year for the implementation of an annual programme submitted by VLIR-UOS. Once this annual programme is approved by the Government, VLIR-UOS is responsible for its implementation.

The IUC programme is an interuniversity cooperation programme of Flemish universities, focused on the institutional needs and priorities of carefully selected partner universities in the South. The general objective of the Programme reads as "Empowering the local university as institution to better fulfil its role as development actor in society".

It is in principle demand-oriented: the identification of the fields of cooperation within the partner programme is in principle based on the partner university's demands. At the same time, there is the understanding that demands can obviously only be met to the extent that Flemish expertise is available. The programme seeks to promote local ownership through the full involvement of the partner both in the design and in the implementation of the programme. Each partnership consists of a coherent set of interventions (projects) geared towards the development of the teaching and research capacity of the university, as well as its institutional management. Support is directed towards the institutional development of the partner university, the improvement of the quality of local undergraduate and postgraduate education, and the encouragement of South-

South academic and research linkages. The partnership may also include some projects aimed at improving the organisation, administration and management of the university as a whole. Activities organised in the context of the partnership can involve all constituent parts of the university. The programme anticipates that synergy, added value and greater institutional impact can be achieved through the different IUC projects located in the same partner university.

VLIR-UOS accepted the following as the core requirements for the IUC programme:

* **Long-term cooperation:** in order for institutional cooperation to be effective, long-term partnerships need to be developed. Institutional partnerships are to cover a period of at least ten years;
* **Orientation towards the institutional needs and priorities of the partner universities in the South:** donor support should start from the needs and priorities of the partner institution. Linkage projects and programmes need to fit well into the local policy environment of the Southern partner institution and therefore should respond to the priorities that have been identified by these institutions themselves. It is believed that only linkages based on projects to which the partner university attaches high priority, will be sustainable in the long run;
* **Ownership:** apart from their required participation in the process of project identification, partner institutions from the South also need to be fully involved in the process of implementation at all levels. A lack of strong involvement from beneficiary institutions has a negative impact on the successful implementation as well as on the sustainability of cooperation projects;
* **Concentration:** concentrating efforts in a limited number of partner institutions in the South leads to apparent advantages in terms of programme management, but concentration is also meant to allow for synergy between different projects with the same linkage in order to create added value in terms of the expected broader institutional impact of the intervention;
* **Donor coordination:** VLIR-UOS is convinced of the usefulness of donor coordination.

The IUC programme support is geared towards:

* the institutional development of the partner university;
* the improvement of the quality of local education;
* the development of local postgraduate education in the South;
* the encouragement of South-South linkages.

The IUC management system is based on the following division of tasks:

* VLIR-UOS is responsible for the programming - including the selection of partner universities - monitoring and evaluation of the overall programme. VLIR-UOS is accountable to the Belgian Government;
* implementation of a partner programme is delegated to a Flemish university that functions as the coordinating university in Flanders. This Flemish university appoints the Flemish coordinator who is responsible for the day-to-day management of the programme implementation, based on an agreement signed by the Flemish coordinating university and VLIR-UOS;
* the university of the Flemish coordinator and the partner university have the responsibility of jointly managing the implementation of the partner programme

and the constituent activity programmes based on an agreement signed by the Flemish coordinating university, the partner university and VLIR-UOS;
* the partner university also has to nominate a local coordinator who functions as the key responsible person from the local side;
* at the level of the partner university, a full-time professional manager (an academic) is appointed in order to support the local coordinator, charged with numerous other responsibilities regarding the various management duties associated with the implementation of a complex programme;
* both in the North and the South a steering committee is established to coordinate the implementation of a partner programme. On an annual or bi-annual basis, both committees hold a Joint Steering Committee Meeting (JSCM).

Currently, the IUC programme consists of the following 10 full-fledeged partnership programmes:

Africa
* Ethiopia: Mekelle University (MU)
* Ethiopia: Jimma University (JU)
* Kenya: Moi University (MU)
* Mozambique: Eduardo Mondlane University (EMU)
* South-Africa: University of the Western Cape (UWC)

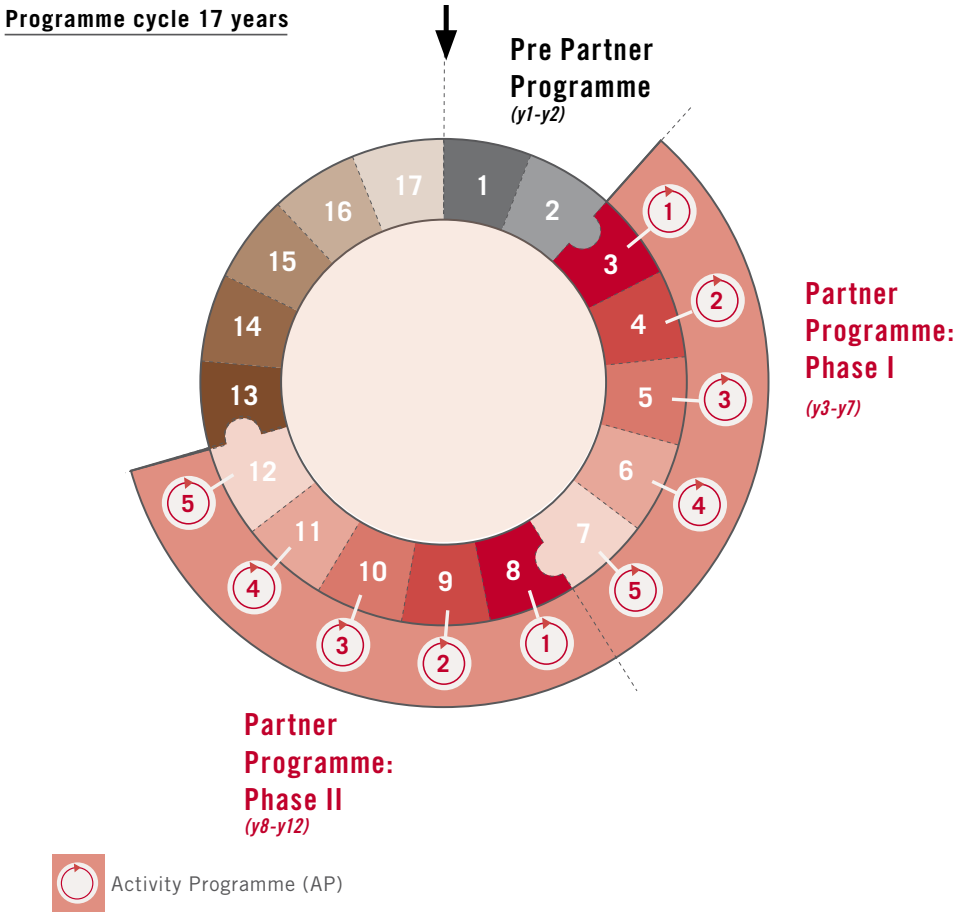
Latin America
* Cuba: Universidad Central ' Marta Abreu' de Las Villas (UCLV)
* Ecuador: Escuela Superior Politécnica Del Litoral (ESPOL)
* Ecuador: Cuenca University (CU)
* Surinam: Anton de Kom University of Surinam (ADEKUS)

Asia
* Philippines: the network of the Saint Louis University (SLU) and Benguet State University (BSU).

The partnership programmes with the University of Zambia, the Universidad Mayor de San Simon in Bolivia and the Sokoine University of Agriculture in Tanzania were phased out in 2006, having completed two phases of five years. The partnerships with the University of Nairobi in Kenya, the University of Zimbabwe and Can Tho University and Hanoi University of Technology in Vietnam were phased out in 2007.

Since the IUC Annual Programme for 2003, the annual investment for a fully-fledged university in the context of the IUC Programme has been € 745,000, i.e. for 100% of the costs, for a period of seven. As of year 8, funding will decline to 85% in year 8, 75% in year 9 and in year 10 to 50% of the former annual budget (i.e. a maximum of € 375,000). With this reduction in funding it should be clear to the partner universities that they will have to take over within the near future and that they will have to prepare themselves for this takeover. In the context of the IUC Programme support can be given to the partner in its search for new funds or partners. After a period of ten years the partner university can access a number of ex-post funds on a competitive basis and participate in transversal activities organised at the overall IUC Programme level.

Summarized, the programming cycle is the following:



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VUB, Draft minutes Joint Steering Committee Meeting IUC at HUT, 5 June 2007

Appendix IV : People Interviewed

Name	Faculty/institutions
Prof. Nguyen Trong Giang	President (Rector) (Accompanied by Prof. Nguyen Duc Chien, Prof. Hoang Xuan Lan –Director of the International Relations Dept., Ms. Nguyen Mai Chi)
Prof. Nguyen Duc Chien – Steering committee member	Director – Physics Institute
Research Council	
Prof. Nguyen Hong Hai	Deputy Dean – Faculty of Metallurgy and Materials Technolgy
Prof. Doan Thai Hoa	Deputy Dean – Faculty of Chemical Technology
Prof. Huynh Quyet Thang	Dean – Faculty of Information Technology
Participants of English training class (AP2007)	
Ms. Nguyen Thi Ngoc Minh	Faculty of Chemical Engineering
Mr. Duong Minh Tuan	Faculty of Mechanical Engineering
Pham Duc An	Faculty of Mechanical Engineering
Pham Kieu Trang	Foreign language
VLIR Ph.Ds.	
Dr. Tran Ngoc Lan	Faculty of Electronics and Communication
Dr. Nguyen Hong Lien	Faculty of Chemical Engineering
Dr. Hoang Thi Kieu Nguyen	Faculty of Chemical Engineering
Dr. Bui Viet Khoi	Faculty of Electronics and Telecommunication
Dr. Truong Thi Ngoc Lien	Institute for Engineering Physics
Dr. Nguyen Thi Hong Minh	Faculty of Mechanical Engineering
VLIR open research projects	
Dr. Nguyen Chan Hung	Faculty of Electronics and Telecommunication
Dr. To Kim Anh	Institute of Biological and Food Technology
Dr. Pham Thanh Huy	International Training Institute for Material Science
Dr. Van Dinh Son Tho	Faculty of Chemical Engineering
Dr. Le Thanh Huong	Faculty of Informatics Technology
Dr. Le Quang Hoa	Institute of Biological and Food Technology
Dr. Nguyen Huu Thanh (and his co-promotor)	Faculty of Electronics and Telecommunication
External stakeholders	
Mr. Phan Hong Son	Executive Director, Vietnam National Science Foundation (MOST)
Belgian Technical Cooperation Office	
Ms. Phan Thi Tuyet Thanh	Programme Officer, BTC
Mr. Jan van Lint	Programme Coordinator
Flemish representatives	
Professor Dr. R. van Loon	(former) VLIR Programme coordinator, VUB
Professor Dr. S. Hoste	Project leader, UGent
Professor J. Duflou	Project leader, KU Leuven
Professor Dr. W. Baeyens	VUB
Peter DeLannoy	VLIR-UOS
Christophe Goossens	VLIR-UOS

Appendix V : Higher education policies in Vietnam

MoET decision No: 38/2004/QD-BGD&DT

The Decision 'regulates higher education quality accreditation (hereinafter called quality accreditation - QA) that shall be realized in Universities, Academies and higher education institutions' (Article 1) and identifies three steps in this process, i.e. self-evaluation, external review and evaluation and 'Step 3: Decision recognizing that an institution meets the QA standards' (Article 4). In the Articles 5 to 14, the document explains standards with respect to ten different subjects, ranging from the missions and objectives of HEIs[44] to international cooperation and finance and financial management. Article 6 on organization and management refers inter alia to clearly defined '(duties) and authorities of Leadership and managerial staff, lecturers, and staff' and the importance of 'short-term, mid-term and long-term development strategies and development plans that are relevant to the socio-economic growth of the locality and the country'. In terms of curriculum, Article 7 mentions that the institution's curriculum for majors 'is developed based on the core curriculum produced by the MoET ...The curriculum is closely related to learners' needs and the human resource demands of the labour market' and that the HEIs 'should specify clear and specific curriculum objectives' that are in line with the need 'to provide human resources for the labour market'. Article 8 relates to the introduction of the credit-based system that replaces the 'annual training organization procedures' into credits' and the need for '(upgrading) teaching and learning methods to facilitate self-teaching, self-studying and team work among learners'. Article 9 states amongst others that the HEIs will need 'a plan to recruit, strengthen and develop the lecturers' and staff's capacities, and to appoint managerial staff who satisfy the objectives, functions, and duties that are relevant to the needs of the institution' and 'clear and transparent procedures and criteria for recruitment and appointment' of staff. The Article also provides guidelines on student/permanent lecturer ratios, the required skills and qualifications for lecturers, librarians and technicians and staff upgrading. Article 11 concerns scientific research and technology development and inter alia refers to the evaluation of research and technology development on the basis of 'quantity and quality of published work or effective application to practice' and the development and implementation of 'a scientific research and technology plan under the guidance of the Scientific and Technology Management Units'. Assessment criteria include the number of thesis produced and projects conducted and approved, the number of articles published, the link between education and research, the contribution of research and technology development to 'solving socio-economic development issues of the locality and the whole country' and its contribution to the institution's resources.

Government Resolution 14/2005/NQ-CP

Resolution 14 aims to 'substantially and comprehensively renew tertiary education and make substantial changes in education quality, efficiency and scale, thus satisfying the requirements of national industrialization and modernization, international economic integration and people's learning demands. By 2020, Vietnam's tertiary education shall attain the regional advanced standards, approach the world's advanced level, have a high competitiveness and suit the socialist-oriented market mechanism'.

44 According to Article 4, these 'must be clear and relevant to the functions, resources and development orientations of the institution... and closely related to socio-economic strategies of the locality and country' and 'satisfy local and national human resource needs'. Moreover '(training) objectives must be periodically reviewed and evaluated in terms of their relevance to actual practices so they can be adjusted and amended in a timely manner'.

Key guiding principles behind the Resolution include: (a) 'To closely combine the renewal of tertiary education with the socio-economic development strategy ... the country's demand for high-level human resource and the scientific and technological development trend'; (b) 'The renewal of tertiary education must be practical, effective and synchronous…; the renewal must be carried out thoroughly from educational objective, processes and contents to teaching and learning methods as well as methods of evaluating study results; ...' (c) '... to rationally and effectively combine the definite separation of state management functions and tasks with the assurance of the right to autonomy and enhancement of social responsibility and transparency of tertiary education institutions' and (d) 'To promote the activeness and initiative of tertiary education institutions in the cause of renewal with the contingent of lecturers and administrators playing the key role and the active response and participation of the entire society'. In terms of 'renewal tasks and solutions' the Resolution refers to inter alia: (a) renewal of training structure and improvement of the network of tertiary education institutions and of training contents, methods and processes, linking them with 'practical scientific research, technological and professional development in the society, satisfying the socio-economic development requirements of each branch or domains and approaching the advanced level the world'. Reference is also made to the importance of linking student enrolment with 'demands for human resources and the people's learning needs', and 'increasing the autonomy of tertiary education institutions'; (b) renewal of the organization of scientific and technological activities, which refers inter alia to the relationship between enterprises and research carried out in higher education institutions and diversification of university income (contract research, R&D, as well as 'service, production and business activities') and (c) renewal of the management mechanism, which refers decentralisation of HE management whereby universities 'shall have the full legal person status and the right to decide on, and bear responsibility for, training, research, organization, personnel and finance'. Reference is also made to the importance of quality assurance 'by the community' and the role of 'mass organizations, especially professional associations, in supervising the quality of tertiary education' and the importance of satisfying the country's human resource demand in each period'.

Resolution 14 also highlights the importance of collaboration of MoET with other government bodies in realising the reforms, including the Ministries of Science and Technology, Finance and Planning and Investment on 'formulating a mechanism for mobilizing investment resources at home and abroad for the tertiary education renewal' and on 'perfecting the financial policies towards tertiary education, and the financial autonomy mechanism applicable to tertiary education institutions'.

Higher Education Reform Agenda 2006-2020 (HERA 2020) (July 2005)

According to the Pre-Feasibility Study for World Bank's second Higher Education Project, the Reform Agenda has five broad objectives, i.e.:

* 'completion of the task of establishing of a national network of higher education institutions, offering a range of qualifications consistent with plans for the socio-economic development of Vietnam and its regions, and sustainable in terms of what can be afforded by the government
* full development of a higher education curriculum that supports research and provides students with career options, and that is effectively integrated, fully

responsive to quality assurance processes, and delivered by higher education institutions that are properly accredited and that meet international standards

* continued rapid expansion of the higher education system through the attainment of a rate of higher education participation by 2020 that is three to four times higher than the current level (that is, it will be in the order of 30 to 40 per cent of the relevant age group) and that reflects an increase in the importance of the non-public higher education sector
* the achievement of a marked increase in the number of qualified higher education staff and managers, sufficient to ensure that the higher education student-to-teacher ratio is below 20:1, and that, by 2020, there is an increase form 40 to at least 60 per cent of all academic staff who have a masters-level degree and at least 35 per cent have a doctoral degree
* the advancement of scientific and technological research and development activity within key higher education institutions, increasing from a current negligible level such that this activity generates 'at least 15 per cent of the total higher education institution revenue by 2010 and 25% by 2020'.

HERA also commits to a range of governance and administrative changes by 2020, granting autonomy to the universities, giving them 'the right to decide and be responsible for training, research, human resource management and budget planning', abolishing line ministry control, together with the implementation of 'a new strategy and on the development of a quality assurance and accreditation control for higher education'.

Regulation 25 on Regular (full-time) training programmes of universities and colleges

Regulation 25 'prescribes full-time education programmes of universities and colleges in terms of training, checking and examining units of study, graduation examination and recognition' for full-time university students. According to the regulation, the HE curriculum 'shall reflect higher education goal, standard regulation on knowledge and skills, scope and structure of higher education contents, training methods and form, evaluation methods of educational outcomes for each subject, field of study, and educational level of higher education' and shall be based on the 'standard curriculum promulgated by MOET'. Article 3 distinguishes compulsory and selective units of study and stipulates that '(credit) is used to count the study load of the student', with one credit being equal to '15 theoretical class hours, 30-45 hours of practice, experiment or discussion, 45-90 field hours at the companies, 45-60 hours of preparing/ writing term paper, project, graduation thesis… For theoretical, practical, or experimental units of study, in order to obtain 1 credit student must spend at least 15 hours for individual preparation'. The Regulation also defines the number of years a student has to study to complete programmes at college and university level, identifies 'evaluation units of study' for both theoretical and practical units of study and specifies arrangements for student testing, evaluation and graduation.

Education law of 14 June 2006

In the Education Law of 2006, the goals of education are formulated in terms of educating the Vietnamese 'to become comprehensive developed person who acquired the ethic, knowledge, health, profession, loyal to ideology of national independence and socialism, to shape and cultivate the dignity, civil qualification and competence, meet the demand of building and defending the fatherland'. One of the principles of this new law is that education activities must be tied together with practice, education tied with production, theory tied with practicability. Amongst others, the Law:

* Refers to the introduction of the credit system in higher education (Article 6)
* Identifies quality accreditation as the major measure to define how HE education objectives are achieved by the institution and stipulates that 'education quality accreditation' will be a responsibility of MoET and should conducted regularly for every institution (Article 17). Article 58 states in this respect that the universities have the to conduct quality self-evaluation and are subject to accreditation by competent quality accreditation agency
* Identifies different levels of HE (Article 38), i.e. college (2-3 year courses for upper secondary or professional and vocational secondary graduates and 1-2 year courses for those graduates in the same training area/discipline); undergraduate (which includes 4-6 year courses for upper secondary or professional and vocational secondary graduates); master (courses of 1-2 years for university graduates) and doctorate level (4 years for under-graduate university graduates and 2-3 years for master degree holders).
* Highlights the objectives of HE (Article 39) at the different levels mentioned above
* Indicates requirements concerning the content of HE whereby, overall, the content 'should have modern, developmental characteristics, rational balance between basic knowledge, foreign language, IT, professional knowledge and subject of Marxism-Leninism and Ho Chi Minh ideology'.
* Stipulates requirements with respect to education methodologies in higher education.
* Provides directives with respect to HE programmes (Article 41) that should reflect the objectives of HE. Article 41 also states that MOET will define the 'core programme for each field of education for university, including content structure of all subjects, duration of education, proportion of education among different subjects, of theory and practice, internship' and that all universities 'shall design their own programme based on the core programmes'. The Article also states that MoET shall be responsible for compilation and approval of syllabi for common use by universities

Campaign on education based on society's needs – 2007 to date

Since early 2007, a new campaign put forth by the Deputy Prime Minister and the Minister of Education and Training on education based on society's needs. The key focus of the campaign can be summarized as follows:

* Universities should establish more direct and stronger links with the "world of work" (WoW) to understand and respond better to the WoW's needs.
* Universities should work closely with the WoW to renew their education programmes to ensure that they are better tailored to the WoW's needs.
* Universities should try to have the WoW involved in the education process, such

as providing inputs on programmes, internship and jobs for students, etc.

* Faculty members' other activities, such as research and consulting, should also ty in with the WoW's needs.

Universities nation-wide have responded positively to the campaign with frequent conferences between and memorandums signed by universities and representatives of the WoW. However, there is also recognition that the links between universities and WoW in Vietnam is still rather loose, and that the WoW has not been very convinced by the value-added from universities. Discussion has been on various institutional measures to strengthen the links, such as providing tax incentives for the WoW when they are involved in education, or develop some guidelines on how to involve the WoW in educational services (e.g., guest lecturers. student assessment). To date, no specific policy has been issued.

MOET Decision No. 45/2008/QD-BGDDT (5 August 2008) on Education at Master Level

The Decision regulates education at master level in Vietnamese universities. The Decision specifies a number of preconditions for Master education (in terms of the institution's infrastructure, human resources), details the whole process of the programmes (from recruitment to graduation), and includes some requirements on the core curriculum of the programmes. A specific precondition for an institution to be eligible for running a master programme is to have at least 5 full-time faculty members who hold a doctoral degree, having at least 3 research publications each in their specialization in the last 5 years. Faculty members need to hold doctoral degrees to be eligible to teach in master programmes. This provides some incentives for young teachers to work on their Ph.D. and pay more attention to research.

Appendix VI : Summary Phase 1 realisations

Chemistry

Three Ph.D. students started during phase one (1999 and 2000) and completed their programme in the 2nd phase. In addition, four other people (technical, administrative) were trained at VUB and UGent in 2000 and 2001. Support was given for laboratory equipment for different chemistry labs. The equipment that was provided seems operational and, occasionally, heavily used. In addition, books (28) were provided in the fields of analytical, organic and physical chemistry). Flemish staff conducted lectures at HUT. Issues were observed in the course of AP2003 as regards the appropriateness of the laboratory facilities in which project funded equipment was installed. Equipment provided was transferred to another laboratory that had adequate air-conditioning. Problems also occurred in the installation of a glass blowing laboratory for which no adequate facilities were provided.

Bio-electronics

A new teaching programme of five semesters in the field of bio-medical electronics and ten curricula of bio-medical electronics specialisation were developed; the bio-electric engineering programme is reported to be 'fully operation'. Several seminars were given by the Flemish programme coordinator (e.g. on medical imaging and thera-

py (ionizing radiation) (e.g. April and June 2002, March 2003)). Training of three (technical, administrative) staff was undertaken at VUB and UGent in 2000 and 2003; two HUT students also participated in an ITP on medical imaging, radiation therapy and nuclear medicine in 2000, one medical doctor of Bach Mai hospital in 2001 and another one on Medical physics in 2003. Some laboratory equipment was provided as well, including IT equipment (notebook, printer, multi-media projector). Research started with local hospitals; some cooperation was established with the Shibaura Institute of Technology in Tokio.

Powders Technology

Two (technical, administrative) staff were trained at UGent in 2003 and visited laboratories in chemistry and ferro and non-ferro metallurgy. Some equipment (planetary mill, Bath-type high temperature automatic vacuum furnace for sintering, etc.) was acquired as well as academic literature; the equipment installed and, according to the self-assessment report, 'maintained' in a 'suitably prepared environment'. Several academic staff visited KU Leuven and UGent in 2001 and 2003, amongst others for short-term training. Annual visits were undertaken by the Flemish promoter, during which also presentations were given. The Faculty of Mettalurgy has been able to attract considerable investments in equipment; attracting students may become an issue in the future.

Mechatronics

One Ph.D. student started in 2002 at KU Leuven and completed her programme during the 2nd phase. In addition, three (technical, administrative) staff members were trained at VUB in 2001. A pre-doctoral student completed his studies in 2003. Support was provided to improve HUT's mechatronics laboratory facilities (e.g. PCs, books, CMM machine, 6-axis industrial robot and dynamic measurement system). Short-term visits were undertaken by HUT staff to work on curriculum development. A mechatronics curriculum and related course outlines were prepared; four classes are conducted each year. A lab course module with lab manual for operating the robot system was prepared as well. Since no staff development was originally planned '(a) Ph.D. project and predoc training were financed respectively using KU Leuven project funding and a BTC scholarship'. A modest library for mechatronics, automation, CAD/CAM, CNC was built up as well.

Engineering physics

According to the information available, the IUC resulted in five A-publications in 2004 and 2005 and one conference proceedings (full paper). Two Ph.Ds who graduated during the 2nd phase started their training at KU Leuven in 1999 and 2000 – as mentioned, one of the graduates has left HUT for Singapore. Training of another Ph.D. student and an M.Sc. student was 'interrupted'. From 1998 to 2001, 9 (technical, administrative) staff were trained at KU Leuven and VUB. Facilities were further improved through the provision of equipment (PCs 'for robot simulation and design', printer, programmable lab tube furnace, etc.). Visits were undertaken by the Flemish promoter, amongst others for lectures on recent topics in solid state physics.

Electronics and Telecommunications

Two Ph.D. students who started their training at VUB during the 1st phase, graduated during the 2nd and returned to HUT. Seminars were conducted by Flemish profes-

sors at HUT. Three new laboratories were set up (microwave and antenna, computer and audio and video laboratory); the equipment continues to be used. Literature was provided as well. As a result of the cooperation, 10 new experiments were developed (microwave, antenna and computer networks). Support was given for curriculum development and the development of textbooks (5). Five other (technical, administrative) staff members were trained at VUB in the period 1999-2001.

Appendix VII : Information on VLIR Ph.Ds

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
Dr. Tran Ngoc Lan (Prof. Kris Steenhaut of Dept. of Electronics and telecommunications (ETRO) VUB)	AP04/Prj02/ Nr01, Multilayer Traffic Engineering: Performance Evaluation	Establishing the foundation for the Design and Development of an interconnected Open Testbed for academic and industrial prototyping of value added multimedia services in emerging Next Generation Networks in Vietnam and beyond - Building the back-ground for developing new service in NGNs, € 40,000), MOST, 2007-2009	**Conference proceedings (full text)** 1. W. Colitti, L. Tran, A. Nowe and K. Steenhaut, Multilayer Traffic Engineering based on Transmission Quality and Grooming in the Next Generation Optical Internet, International Joint Conference on Computer, Information and System sciences, and Engineering. December 10-20, 2005 2. T.N.L. Tran (Vietnam), K. Steenhaut, A. Nowe, and W. Colitti (Belgium) Complexity Analysis of an Efficient Heuristic for Shared Backup Tree Protection in MPIS Networks, IASTED Conference Networks and Communication Systems 2006, Chiang Mai, Thailand, March 29, 2006 to March 31, 2006 , p 379-384 3. W. Colitti, K. Steenhaut, A. Nowé (Belgium), and T.N.L. Tran (Vietnam) Integrated Multilayer Traffic Engineering in the GMPLS based IP over Optical Networks, IASTED Conference Networks and Communication Systems 2006, Chiang Mai, Thailand, March 29, 2006 to March 31, 2006, p 396-401 4. W. Colitti, K. Steenhaut, A. Nowe, E. Egorcue Monreal, L. Tran, Multilayer QoS in intergrated IP over Optical networks, IEEE/IEICE the First International Conference on Communications and Electronics, Hanoi 10,V 11, October 2006, p 1-6. ***Other publications according to VLIR database*** **Articles in international peer reviewed journals** Lan Tran, Kris Steenhaut, Ann Nowé, Mario Pickavet and Piet Demeester, " Efficient Usage of Capacity Resources in Survivable MPIS network", in Proceedings of QoS-IP 2003 (Lectures notes on Computer Science), 24 - 26 February 2003, Milan, Italy, LNCS 2601, p 204-217 (SCI 0.415) Adelbert Groebbens, Didier Colle, Sophie De Maesschalck, Ilse Lievens, Mario Pickavet, Piet Demeester, Lan Tran, Kris Steenhaut, and Ann Nowé, "Efficient Protection in MPIS Networks Using Backup Trees: Part One - Concepts and Heuristics", Journal Photonic Network Communications, November 2003. 6(3) p. 191-206 (SCI 0.510)	AICT 2005, Advanced Industrial Conference on Telecommunications, held by IEEE Computer Society, Lisbon, Portugal, July 17-20, 2005 IASTED Conference Networks and Communication Systems 2006, held by International Association of Science and Technology for Development, Chiang Mai, Thailand, March 29, 2006 to March 31, 2006 IEEE/IEICE the First International Conference on Communications and Electronics, held by HUT, Hanoi, Vietnam 10-11 Oct 2006

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			Adelbert Groebbens, Didier Colle, Sophie De Maesschalck, Ilse Lievens, Mario Pickavet, Piet Demeester, Lan Tran, Kris Steenhaut, and Ann Nowé, "Efficient Protection in MPIS Networks Using Backup Trees: Part Two - Simulations", Journal Photonic Network Communications, November 2003. 6(3), p. 207-222 (SCI 0.510) **Conference proceedings (full paper)** Lan Tran, Kris Steenhaut and Ann Nowé, "Load Balancing on Multicast Trees Using a Genetic Algorithm", in Proc. International Conference on Artificial Intelligence IC-AI'2001, 25-28 June 2001, Las Vegas Lan Tran, Kris Steenhaut and Ann Nowé, " Generation of multi low cost multicast trees for load balancing", in Proc. 5th WSES/IEEE WORLD MULTICONFERENCE ON Circuits, Systems, Communications & Computers (CSCC 2001), 08-15 July 2001, Greece Lan Tran, Kris Steenhaut and Ann Nowé, " Shared Backup Tree Protection in MPIS networks", in Proc. 8th IEEE International Conference on Communications Systems 2002 (ICCS 2002), 25 to 28 November 2002, Singapore Lan Tran, Kris Steenhaut, Ann Nowé and Mario Pickavet, "A Novel Heuristic for Shared Backup Tree Protection in MPIS Networks " in proceedings of The 7th IFIP Working Conference on Optical Network Design & Modelling (ONDM 2003), 3-5 February, 2003, Budapest, Hungary Vu Van Yem and Nguyen Huu Thanh, "Research on Communication and Localization Of Small and Medium Fishing Boats in Vietnam_ Ad-hoc Network Associated to Software Defined Radio Approach," IEEE International Conference on Communication and Electronics (ICCE'08), 4-6 June 2008, Hoi An, Vietnam.	

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			Conference abstracts Kris Steenhaut, Lan Tran and Ann Nowé, "An Efficient Heuristic for Generating Shared Backup Tree to Protect MPIS network", extended abstract to 12th IEEE Workshop on Local and Metropolitan Area Networks (LANMAN 2002), 11-13 August 2002 Vu Van Yem and Nguyen Huu Thanh, Vu Van Yem and Nguyen Huu Thanh, "Software Defined Radio Approach Applied to Direction Finding System, " the Electrical and Electronics Engineering Fieldwise Seminar (EEE-FWS, 2007), November 22-23, 2007, Bangkok, Thailand	
Dr. Nguyen Hong Lien (Prof. W. Baeyens of Dept of Analytical & Environmental Chemistry (ANCH), VUB)	AP04\PJ02\Nr02: Use of novel tools (DGT and DET) to study the ratio of non-labile to labile metal complexes in natural systems	Study on preparation of in situ techniques for speciation of heavy metals in natural water, € 6,500, MOST, 2006-2008 Study on the synthesis of catalysts based on zeolite for the treatment of volatile organic carbon compounds (VOC), € 2,500, MOST, 2007-2008	**Articles in international peer reviewed journals** *H.L.Nguyen, M. Leermakers, M. Braun, I. Szaloki, W. Baeyens*. Tracing the metal pollution history of Tisza River through the analysis of a sediment depth profile, submitted to Science of the Total Environment. *H.L.Nguyen, T.H.N.Chu, Y. Gao, M.Leermakers, W.Baeyens*. Effect of the hydrogel preparation conditions on the working performance of diffusive equilibrium technique (DET), submitted to Science of the Total Environment **Articles in national peer reviewed journals:** 1. Nguyen Hong Lien, Huynh Trung Hai, Yue Gao, Martine Leermakers, Willy Baeyens (2007). In situ metal speciation using a new technique. Journal of Science and Technology (Vietnamese Academy of Science and Technology) 45 (1B): 276-281. *Ha Thi Thuy Duong, Nguyen Hong Lien, Huynh Trung Hai, Martine Leermakers, Willy Baeyens*. Determine the labile to non-labile of metal ratios in natural waters of Hanoi using diffusive gradients in thin film techniques, submitted to Journal of Chemistry. **Conference proceedings (full text)** 2. Hong Lien Nguyen, Mihaly Braun, Martine Leermakers. Comparison of two digestion procedures used for trace metals extraction from reference sediments. Proceedings of the 12th Regional Symposium on Chemical Engineering " New Trends toward Sustainable Development", 30 November – 2 December 2005, Hanoi, VIETNAM	Regional Symposium on Chemical Engineering, "New Trends toward Sustainable Development", held by Hanoi University of Technology, 30 November – 2 December 2005, Hanoi, Vietnam Colloquium on "Modern Analytic Methods for Environmental Protection, Chemical and Food Technology", held by Centre for Education and Development of Chromatography, HUT, 24-25 May 2007, Hanoi, Vietnam The 10th EurAsia Conference on Chemical Sciences, "Beyond Borders", organized by Philippines Federation of Chemistry Societies and Philippines Chemical Society, 7-11 January 2008, Manila, Philippines

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			3. Nguyen Hong Lien, Chu Thi Hai Nam, Leermakers Martine, Baeyens Willy. Effect of the hydrogel composition on the metal diffusion in DET and DGT techniques. The 10th Eurasia Conference on Chemical Science, 7-11 January 2008, The Phillipines, (accepted). *Nguyen Hong Lien, Chu Thi Hai Nam*. Study on application of diffusive gradient in thin film technique for the determination of labile metals in water environments. Journal of Chemistry (Vietnamese Academy of Science and Technology), Vol 45, Special Issue, p. 48-51, 2007, in print ***Other publications according to VLIR database*** **Articles in international peer reviewed journals** Leermakers M, Nguyen HL, Kurunczi S, Vanneste B, Galletti S, Baeyens W. (2003). Determination of methylmercury in environmental samples using static headspace gas chromatography and atomic fluorescence detection after aqueous phase ethylation. Analytical and Bioanalytical Chemistry 377: 327-333 W. Baeyens, M. Leermakers, M. De Gieter, H.L. Nguyen, K. Parmentier, S. Panutrakul, M. Elskens (2005). Overview of trace metal contamination in the Scheldt estuary and effect of regulatory measures. Hydrobiologia 540: 141-154 H.L.Nguyen, M.Leermakers, J. Osán, S. Török, W. Baeyens. (2005). Heavy metals in the Lake Balaton: watercolumn, suspended matter, sediment and biota. Journal of The Science of the Total Environment 340: 213-230 H.L. Nguyen, M. Leermakers, S. Kurunczi, L. Bozo, W. Baeyens (2005). Mercury distribution and speciation in Lake Balaton, Hungary. Journal of The Science of the Total Environment 340: 231-246 Hong Lien Nguyen, Martine Leermakers, Marc Elskens, Fjo De Ridder, Thai Hoa Doan, Willy Baeyens (2005). Correlations, partitioning and bioaccumulation of heavy metals between different compartments of Lake Balaton. Journal of The Science of the Total Environment 341:211-226	

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			Conference abstracts I. Szaloki, M. Braun, M. Leermakers, B. Alfody, H.L. Nguyen, L. Samek, J. de Hoog, R. Van Grieken. Reconstruction of metal pollution events in the catchment area of the Tisza River by means of sediment-analysis. Book of Abstract. European Conference on Energy Dispersive X-Ray Spectrometry, 16-21 June 2002, Berlin, Germany H.L. Nguyen, M. Leermakers, M. Braun, I. Szaloki, W. Baeyens. Tracing the metal pollution history of the Tisza River through analysis of sediment depth profiles. Book of Abstract. SEDNET Workshop on Chemical Analysis and Risk Assessment of Emerging Contaminants in sediments and dredged material, 28-30 November 2002, Barcelona, Spain	
Dr. Hoang Thi Kieu Nguyen (Prof. R. Finsy of Dept of Physical & Colloid Chemistry (FCOL), VUB)	AP04\Prj02\Nr03: Water based ink using colored fine particles for ink-jet printing	Study of anti-foam additives for Flexo water based ink, € 250, HUT, 2005 Water based inks applied ink jet printers, € 300, HUT, 2006 Study to manufacture Flexo water based ink, € 2,500, MOST, 2006-2007 Study of detergent UV offset ink, € 300, HUT, 2006	**Articles in international peer reviewed journals:** **A publication** 1. Hoang Thi Kieu Nguyen*, Phung Anh Tuan, Nguyen Quang Hung Effect of polyme layers covering pigment particles on their aqueous dispersion stability. Journal of Dispersion science and technology, Submitted **Articles in national peer reviewed journals**: 2. Hoang Kieu Nguyen, Phung Anh Tuan, Tran Van Thang, Nguyen Quang Hung. An improvement in aqueous dispersion stability of organic pigment particles by covering them with polymers. Journal of Print media, Submitted Hoang Kieu Nguyen, Phung Anh Tuan, Nguyen Quang Hung. Influence of the mass ratio of pigment particles to monomers on the formation of coloured resin particles used in water-based inks. Journal of Chemistry and Application, Accepted No.2/2008 **Conference proceedings (full text)** Hoang Thi Kieu Nguyen, Tran Van Thang, Phung Anh Tuan, Nguyen Viet Cuong; Aqueous dispersions of dry pigments used in production process of colored resin particles;12th Regional symposium on chemical engineering RSCE, Hanoi, Vietnam 30/11 – 3/12/2005; p.330	12th Regional symposium on chemical engineering RSCE, Hanoi University of Technology, Hanoi, Vietnam 30/11 – 3/12/2005 Printing of functional materials conference, RSC, Manchester,UK, 12/6 - 14/6/2006 International Conference on Chemical Engineering (ICCE 2008), WASET, Paris, France, 4-6 July, 2008, Participants: Hoang Thi Kieu Nguyen 19th IUPAC Conference on Physical Organic Chemistry 2008, Spain, 13-18 July, 2008

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			Hoang Thi Kieu Nguyen, Phung Anh Tuan, Luc Deriemaeker, Robert Finsy. A study on polymer coated colour pigments for water-based ink. Proceedings of World Academy of Science, Engineering and Technology, Volume 30, July 2008, accepted *Hoang Thi Kieu Nguyen, Phung Anh Tuan, Luc Deriemaeker, Robert Finsy*. A study on polymer coated colour pigments for water-based ink. International Conference on Chemical Engineering (ICCE 2008), 7/2008, Paris, France, Accepted **Conference abstracts** 6. Phung Anh Tuan, Hoang Thi Kieu Nguyen, Tran Van Thang, Nguyen Trung Hieu; Coloured fine resin particles used for water-based ink-jet inks; Printing of functional materials conference, Manchester,UK, 12/6 - 14/6/2006 7. *Nguyen Quang Hung, Phung Anh Tuan, Hoang Thi Kieu Nguyen*. Influence of SDBS emulsifier on the formation of colored fine resin particles used water-based inks. the 10th Eurasia on chemical sciences conference, 1/2008, Manila, Philipines, Accepted Hoang Thi Kieu Nguyen, Phung Anh Tuan, Luc Deriemaeker, Robert Finsy. Aqueous dispersion stability of the organic pigment particles with polymeric encapsulation. 19th IUPAC Conference on Physical Organic Chemistry 2008, 7/2008, Santiago de Compostela, Spain, Accepted ***Other publications according to VLIR database*** **Articles in international peer reviewed journals** Hoang, T. K. N.; La, V. B.; Deriemaeker, L.; Finsy, R., Ostwald ripening of alkane emulsion stabilized by polyethylene glycol monolaurate, Langmuir 17, 2001, p. 5166 Hoang, T. K. N.; La, V. B.; Deriemaeker, L.; Finsy, R., Ostwald ripening of alkane emulsion stabilized by polyethylene (20) sorbitan monolaurate, Langmuir 18, 2002, p.1485 Hoang, T. K. N.; La, V. B.; Deriemaeker, L.; Finsy, R., Ostwald ripening of alkane emulsion stabilized by sodium dodecyl benzene sulphonate, Langmuir 18, 2002, p. 10086	

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			Hoang, T. K. N.; La, V. B.; Deriemaeker, L.; Finsy, R., Ostwald ripening of alkane emulsion stabilized by hexaethylene glycol dodecyl ether, Langmuir 19, 2003, p. 6019 Hoang, T. K. N.; La, V. B.; Deriemaeker, L.; Finsy, R., Ostwald ripening & solubilization in alkane emulsions stabilized by different surfactants, Phys. Chem. Chem. Phys. 6, 2004, p. 1413 Hoang, T. K. N.; Deriemaeker, L.; Finsy, R., Monitoring the simultaneous Ostwald ripening & solubilization of emulsion, Langmuir 20, 2004, p. 8966 **Conference proceedings (full paper)** Hoang, T. K. N.; La, V. B.; Deriemaeker, L.; Finsy, R., Ostwald ripening of alkane emulsion stabilized by an ionic and a non-ionic surfactant, SIS conference, Barcelona 2002 Hoang, T. K. N.; La, V. B.; Deriemaeker, L.; Finsy, R., Ostwald ripening of alkane emulsion stabilized by different surfactants, ECIS conference, Florence 2003	
Dr. Bui Viet Khoi (Dr. Christof de Baes, Dept of Applied Physics and Photonics, VUB)	AP04\Prj02\Nr04: Modelling and Simulation of Optically-interconnected multi-processor systems		**Articles in international peer reviewed journals** *Artundo, W. Heirman, K. Bui Viet, G. Vu Thi Huong, T. Pham Doan, C. Debaes, J. Dambre, J. Van Campenhout, H. Thienpont* . Performance Evaluation of Large Reconfigurable Interconnects for Distributed Shared-Memory Multiprocessors , in the IEEE/ACM Transactions on Networking journal (Manuscript No. TNET-00101-2008) **Conference proceedings (full text)** 1. Bui Viet Khoi , Pham Doan Tinh, Nguyen Nam Quan, Iñigo Artudo, Daniel Manjarres, Wim Heirman, Christof Debaes, Joni Dambre, Jan Van Campenhout and Hugo Thienpont , Reconfigurable interconnection networks in Distributed Shared Memory systems: a study on communication patterns, in Proceedings of the first International Conference on Communications and Electronics (ICCE), pp. 343 – 347, Hanoi 10-11 October 2006	1st International Conference on Communications and Electronics (ICCE 2006), held at Hanoi University of Technology from October 10-11, 2006 in Hanoi The International Symposium on Electrical & Electronics Engineering (ISEE2007), held by the Faculty of Electrical and Electronics Engineering, HCM City University of Technology in Ho Chi Minh city from 24th through 25th October 2007 The 2nd International Conference on Communications and Electronics (ICCE 2008), held by the Faculty of Electronics and Telecommunications, Hanoi University of Technology from 4th to 6th June 2008

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			2. Wim Heirman, Iñigo Artundo, Joni Dambre, Christof Debaes, Pham Doan Tinh, Bui Viet Khoi, Hugo Thienpont, Jan Van Campenhout, Performance Evaluation of large reconfigurable interconnects for multiprocessor systems , in Proceedings of the International Symposium Electrical – Electronics Engineering (ISEE2007)) , Ho Chi Minh city, 24-25 October 2007 ***Other publications according to VLIR database*** **Articles in international peer reviewed journals** R. Buczynski, K. Bui Viet, T. Szoplik, I. Veretennicoff, H. Thienpont, "Photonic systems for local image processing", Opto-electronics Review, vol. 9(3), pp. 215-228, 2001 **Conference proceedings (full paper)** R. Buczynski, O. Morell Tormo, K. Bui Viet, M. Taghizadeh, T. Szoplik, I. Veretennicoff, H. Thienpont, "Non-uniformity tolerance of diffractive optical interconnect elements for errorless local image processing", in Proceedings of the 2000 Symposium of the IEEE/LEOS Benelux Chapter, Netherlands, pp. 131-134, 2000.	
Dr. Truong Thi Ngoc Lien (Prof. Andre Stesmans, Semiconductors Laboratory, KULeuven)	AP05\Prj02\Nr01: Biosensors based on conducting polymer thin films for environmental and biomedical applications	Study on in situ speciation of trace metals in water environments using new thin film techniques, submitted to MOST, positive feedback received	**Articles in international peer reviewed journals :** **A publication (sSubmitted)** 1. Truong T N Lien, L. H. Bac, T. D. Lam, P. Q. Pho. Glucose sensor based on multi-wall carbon nanotubes doped polypyrrole. SpingerSpringer (accepted) **Conference proceedings (full text)** 2. Tam P. D, Lien T. T. N, Tuan M. A, Chien N. D (2005). Biosensor based on conduct metric for environmental monitoring. New trends in Technology towards sustainable development proceeding, p114-118 3. L. Truong, A. Stesmans (2006). The interface traps density (Dit) at the Si/HfO2 prior to and after passivation by hydrogen . Proceeding of National Physics, vol 3, p1321-1324	The International conference on Engineering Physics (ICEP), held at Hanoi University of Technology from October 10-11, 2006 in Hanoi. The International Workshop on Functional Materials – 1st IWOFM, To be organized jointly with: International Workshop on Nanophysics and Nanotechnology – 3rd IWONN, in H_ Long, Vietnam, from 6-9/12/2006

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			4. Hoang Duc Truong, Nguyen Tuan Hung, Nguyen Duc Thanh, Truong T N Lien (2006). Immobilization of DNA on polypyrrole membrane by electrochemical method. The International conference on Engineering Physics (ICEP), p218-222 5. Truong T N Lien, Luong Huu Bac (2006). Energy distribution of interface traps at the interfaces Si/SiO2 versus Si/high-k insulators (Al2O3, ZrO2). The International conference on Engineering Physics (ICEP), p355-359 6. Nguyen Tuan Hung, Hoang Duc Truong, Nguyen Duc Thanh, Truong T N Lien (2006). Incorporation of urease into polypyrrole membrane by electrochemical method. The International conference 1stIWOFM-3rdIWONN, p742-745 Conference abstracts/poster (submitted) 7. Truong T N Lien, N A P Duc, Tran Dai Lam, Phan Quoc Pho. Gas sensor based on conducting polymer thin films. Proceeding of National Solid Physics, 2007 8. Truong T N Lien, Phi Van Toan, Luong Huu Bac, Nguyen Duc Chien. Influence of interface layer composition on the interface trap density of epitaxial Gd2O3 thin films for high-_ application. Proceeding of National Solid Physics, 2007 Truong T N Lien, L. H. Bac, T. D. Lam, P. Q. Pho. Glucose sensor based on multi-wall carbon nanotubes doped polypyrrole. The 10th German -Vietnamese Seminar on Physics and Technology, 2007 **Conference abstracts/posters (submitted)** *Truong T N Lien, N A P Duc, Tran Dai Lam, Phan Quoc Pho.* Gas sensor based on conducting polymer thin films. Proceeding of National Solid Physics, 2007 *Truong T N Lien, Phi Van Toan, Luong Huu Bac, Nguyen Duc Chien.* Influence of interface layer composition on the interface trap density of epitaxial Gd2O3 thin films for high-_ application. Proceeding of National Solid Physics, 2007	

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
Dr. Le Minh Thang (Prof. S.Hoste, Department of Inorganic and Physical Chemistry, UGent)	AP05\Prj02\Nr02: Synergy effect in catalytic systems for the selective oxidation of propylene	Synthesis of acrylic acid and other intermediates to produce high quality paint in Vietnam, € 13,500, MOST, 2006-2007 Synthesis and Study the absorption of support materials for the petrochemical industry and Characterisation of Hierarchical Mesoporous materials from ZrO2 and MgO, , MOST, 2006-2009 Attractive Routes for Selective Oxidation of Propylene, Ministry of Foreign Affairs, Denmark, 2007-2010	**Articles in international peer reviewed journals:** **A publication (Accepted)** 1. Le Minh Thang, Luong Huu Bac, Isabel Van Driessche, Serge Hoste, Willy J.M. Van Well, The synergy effect between gamma and beta phase of bismuth molybdate catalysts: is there any relation between conductivity and catalytic activity?, Catalysis Today, in press, (Elsevier), Vol 131/1-4 (2008) pp 566-571 **Articles in national peer reviewed journals:** 2.Vo Hoang Tung, Nguyen Ha Hanh, Vu Dao Thang, Le Minh Thang, Synergy effect between gamma and beta phase of bismuth molybdate catalysts for selective oxidation of propylene to acrolein, Journal of Applied Chemistry, Vol. 2 (74)/2008in press **Conference proceedings (full text)** 3.Le Minh Thang, Vu Dao Thang, Le Cong Hoa, I. Van Driessche, S. Hoste, Study of the complexation process to synthesize bismuth molybdate catalysts, Proceedings of the 20th scientific conference on the occasion of the 50th Founding Anniversary of Hanoi University of Technology, Oct 2006 **Conference abstracts** *Minh Thang Le, Isabel Van Driessche, Serge Hoste, Willy JM Van Well, Ha Hanh Nguyen, Duc Duc Truong, Anders Riisager, Rasmus Fehrmann*, New insight in the synergy effect of the catalytic system containing bismuth molybdate for selective oxidation of propylene, 14th international Congress on Catalysis (ICC14), Seoul, Korea, 13-18/7/2008, poster presentation ***Other publications according to VLIR database*** **Articles in international peer reviewed journals** "Bismuth molybdate catalysts synthesized using Spray drying for the selective oxidation of propylene", M. T. Le, J. Van Craenenbroeck, I. Van Driessche, S. Hoste, Appl. Catal. A-Gen., 249, 2003, pp. 355-364.	4th Asia Pacific conference on catalysis (APCAT 4), 6-8/12/2006, Singapore: scope - international conference on catalysis in the Asia Pacific Region, held by the Asia Pacific Association of Catalysis

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			"Influence of organic species on surface area of bismuth molybdate catalysts in complexation and spray drying methods", M. T. Le, W. J. M. Van Well, I. Van Driessche, S. Hoste, Appl. Catal. A-Gen., 267, 2004, pp. 227-234. "Spray drying, a versatile synthetic method to control purity in single phases and mixed phases of bismuth molybdates", M. T. Le, W. J. M. Van Well, I. Van Driessche, S. Hoste, Can. J. Chem. Eng, 83(2), 2005, pp. 336-343. "Phase composition and charge transport in bismuth molybdates", M. Hartmanova, M. T. Le, I. Van Driessche, S. Hoste, F. Kundracik, Russ. J. Electrochem., 41(5), 2005, pp. 455-460. "Synergy effects between bismuth molybdate catalyst phases (Bi/Mo from 0.57 to 2) for the selective oxidation of propylene to arcrolein", M. T. Le, W. J. M. Van Well, P. Stoltze, I. Van Driessche, S. Hoste, Appl. Catal. A – Gen., 282 (2005) 189 - 194. "A time resolved in situ investigation into the formation of bismuth molybdate catalysts prepared by spray dried methods", A. M. Beale, M T. Le, S.Hoste, G. Sankar, SOLID STATE SCIENCES 7 (10), 2005, 1141-1148. "Pulsed laser deposition and dip coating techniques in the fabrication of bismuth molybdate gas sensors", M. T. Le, M. Kovanda, V. Myslik, M. Vrnata, I. Van Driessche, S. Hoste, Thin Solid Film, 197, 2006, pp. 284-291. The influence of the calcination conditions on the catalytic activity of Bi2MoO6 in the selective oxidation of propylene to acrolein, Willy J.M. van Well, Minh Thang Le, Niels Christian Schiodt, Serge Hoste, Per Stoltze, Journal of Molecular Catalysis A: Chemical 256 (2006) 1–8 **Conference proceedings (full paper)** M. Hartmanova, M. T. Le, I. Van Driessche, S. Hoste, F. Kundracik, Electrical conductivity of bismuth molybdates prepared by spray drying technique, Proceeding of the 9th Asian Conference on Solid State Ionics, pp. 677-684.	

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			"Synthesis of bismuth molybdate catalysts for the oxidation of propylene and influenced factors", Le Minh Thang, Le Cong Hoa, I. Van Driessche, S. Hoste, Proceedings of the scientific conference ' Petroleum Institute – 25th anniversary', 2001, pp.570-575) **Conference abstracts** Spray drying, an advanced method to synthesize bismuth molybdate catalysts", Le Minh Thang, I. Van Driessche, S. Hoste, poster presentation, European Workshop on Combinatorial Catalysis (EuroCombiCat 2002), Ischia- Italy, June 2002. Synthesis of bismuth molybdate catalysts using Spray drying" Le Minh Thang, I. Van Driessche, S. Hoste, oral presentation, the 5th International Conference of Solid State Chemistry (SSC 2002), Bratislava – Slovakia, July 2002. "The influence of organic species on surface area of bismuth molybdate catalysts", Le Minh Thang, I. Van Driessche, W. J.M. Van Well, S. Hoste, poster presentation, the 6th European Conference on Catalysis (EuropaCat 6), Innsbruck, Austria, August-September 2003.	
Dr. Nguyen Thi Hong Minh (prof. J. Duflou, Mechanical Engineering Department, KULeuven)	AP06\Prj02\Nr01: An Investigation of the Measuring Capabilities of the Touch-probe Based Measurements on CNC machine tools	"Design and prototype production of 5-axis milling machine with working volume less then 600x400x400", € 120,000, Vietnamese Government, starting date: April 2007 "Advanced Programme - Mechatronics Component", € 22,000 (nine components), Vietnamese Government	**Conference proceedings (full text)** 1. Nguyen, T.H.M., Duflou, J.R. and Kruth, J.-P., An application of ISO-GUM in the method for estimating the dimensional errors of bent parts, Proceedings of the Digital Enterprise Technology Conference, Setubal, 2006, ISBN 972-99824-1-4, 5 (CD).18-20th September 2006 2. Nguyen, T.H.M., Duflou, J.R. and Kruth, I. Stouten, J. Van Hecke, A. Van Bael, Tolerance Verification for Sheet Metal Bending: Factors Influencing Dimensional Accuracy of Bent Parts, Models for Computer Aided Tolerancing in Design and Manufacturing (Selected Conference Papers), Ed. J.K. Davidson, Springer, Dec 2006, 341-350. ISBN-10 1-4020-5437-8 (HB), ISBN-13 978-1-4020-5437-2 (HB), _ISBN-10 1-4020-5438-6 (e-book)	3rd International CIRP Sponsored Conference on Digital Enterprise Technology, held by Instituto Politécnico de Setúbal; Escola Superior de Tecnologia de Setúbal, in Setúbal, Portugal, 18-20 Sept. 2006 AUNSEED-net FWS seminar: Product Design and Development, Hanoi, August 2007 Other conference attendance included in the VLIR-HUT database for phase II: • 4th CIRP International Seminar on Intelligent Computation in Manufacturing Engineering: Lausanne, Switzerland, 2004 • 11th International Conference on Sheet Metal: Erlangen, Germany, 2005 • 9th International Seminar on Computer Aided Tolerancing: Arizona, USA, 2005

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			3. Nguyen Thi Hong Minh, Banh Tien Long, J.R. Duflou, J.P. Kruth, Tool selection problem in automatic process planning system for bent sheet metal parts/ Bài toán lua chon dung cu trong he thong tu dong lap ke hoach gia công cho quá trình gia công kim loai tam mong bang phuong pháp san, Proceeding of the 20th scientific conference of Hanoi University of Technology, ME section, Hanoi, Oct. 2007, pp. 59-64 ***Other publications included in the VLIR-HUT database*** **Articles in international peer reviewed journals** Bohez, E.L.J., Nguyen, T.H.M., Ben, K., Peeraphan, N., Huang, R-Y., and Le, T.S., The stencil buffer sweep plane algorithm for 5-axis CNC tool path verification, in: Journal of Computer-Aided Design, Vol. 35/12, October 2003, ISBN 1-85923-171-3, pp.1129-1142. Duflou, J.R., Nguyen, T.H.M., Kruth, J.-P. and Cattrysse, D., Automated Tool Selection for Computer-Aided Process Planning in Sheet Metal Bending, in: CIRP Annals 2005, Antalya, Turkey, 2005, ISSN 007-8506 (ISSN 1660-2773 for CD ROM), Vol. 54/1, pp. 451-454. **Conference proceedings (full paper)** Duflou, J.R., Nguyen, T.H.M., Kruth, J.-P. and Cattrysse, D., An optimisation system for automated workpiece layout generation for bent sheet metal parts, in: Proceedings of the 10th International Conference on Sheet Metal, Belfast, April 2003, ISBN 1-85923-171-3, pp. 235-244. Duflou, J.R., Nguyen, T.H.M., Kruth, J.-P., 2004, Geometric Reasoning for Tool Selection in Sheet Metal Bending Operations, in: Proceedings of the 5th International Conference on Integrated Design and Manufacturing in Mechanical Engineering, Bath, CD ROM, ISBN 1-85790-129-0. Duflou, J.R., Nguyen, T.H.M., Kruth, J.-P., 2004, Intelligent Tool Preselection - A Contribution To Automatic Process Planning For Sheet Metal Bending, in: Proceedings of the 4th International Symposium on Tools and Methods for Competitive Engineering, Lausanne, Millpress, ISBN 90-5966-018-8, pp. 671-682.	• 4th CIRP International Seminar on Intelligent Computation in Manufacturing Engineering: Sorrento, Italy, 2005 • Workshop attendance: International Workshop “Optical Measurement Techniques for Structures and Systems”, 2006

Promoter - (VLIR Ph.D.)	Project	Promoter/participant of projects	Publications	Conference attendance
			Nguyen, T.H.M., Duflou, J. R., Kruth, J.-P. and Cattrysse, D., Tool Optimization for Sheet Metal Bending Operations, in: Proceedings of the 4th CIRP International Seminar on Intelligent Computation in Manufacturing Engineering, Sorrento, 2004, CUES Fisciano Salerno, ISBN 88-87030-79-0, pp. 257-262. Nguyen, T.H.M., Duflou, J.R. and Kruth, J.-P., A Framework for Automatic Tool Selection in Integrated CAPP for Sheet Metal Bending, in: Proceedings of the 11th International Conference on Sheet Metal, Erlangen, April 5-8, 2005, in: Journal of Advanced Materials Research, Vols. 6-8, 2005, ISBN 0-87849-972-5, pp. 287-294. Cattrysse, D., Collin, P., Duflou, J.R., Nguyen, T.H.M., Van Oudheusden, D., The Integration of CAPP and Production Planning for Bent Sheet Metal Parts, in: Proceedings of the 11th International Conference on Sheet Metal, Erlangen, April 5-8, 2005, in: Journal of Advanced Materials Research Vols. 6-8, 2005, ISBN 0-87849-972-5, pp. 263-270 Nguyen, T. H. M., Duflou, J. R., Kruth, J.-P., Stouten, I., Van Hecke, J., and Van Bael, A., Tolerance Verification for Sheet Metal Bending: Factors Influencing Dimensional Accuracy of Bent Parts, in: Proceedings of the 9th International Seminar on Computer Aided Tolerancing, Tempe, Arizona, USA, April 10-12, 2005. Nguyen, T.H.M., Duflou, J.R. and Kruth, J.-P., An application of ISO-GUM in the method for estimating the dimensional errors of bent parts in: Proceedings of the Digital Enterprise Technology Conference, Setubal, 2006, ISBN 972-99824-1-4, 5 (CD).18-20th September 2006.	

Appendix VIII : Details on Open Call research projects

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Ta Ngoc Don, Faculty of Chemical Engineering	Application of organic complexion to convert kaolin into some common zeolites (VLIR IUC project code AP04\PJ03\Nr01)	Promoter of a scientific project financed by the Ministry of Education and Training: "Synthesis of Y zeolite from Vietnamese kaolin and Y zeolite-containing catalysts for the conversion of hydrocarbons" in 2004-2005. This project was defended successfully in 17/11/2005. Promoter of National Fundamental Research Project 55.10.04: "Study the alkylation and izomerization on Y zeolite catalysts dealuminated by organic compounds" in 2004-2005. This project was defended successfully in 01/2006. Promoter of Scientific Cultivating Project of the Ministry of Science and Technology and the Ministry of Education and Training 01/HD-UTCN2005-2006-§HBKHN: "Perfect the Technology to produce zeolite from Vietnamese minerals and gibbsite to apply in the cattle food and environment protection" from 5/2005 to 5/2007.		**Articles in international peer reviewed journals:A publication** Ta Ngoc Don, Vu Dao Thang, Pham Thanh Huyen, Pham Minh Hao, Nguyen Khanh Dieu Hong, "Y zeolite from kaolin taken in Yen Bai-Vietnam: synthesis, characterization and catalytic activity for the cracking of n-heptane", Studies in Surface Science and Catalysis, Elsevier B.V., 2006 (accepted) _(This paper was oral presented at the 4th Asia-Pacific Chemical Reaction Engineering Symposium, Gyeongju, Korea, 12-15 June 2005 and now it is accepted to publish in the book series "Studies in Surface Science and Catalysis", Elsevier B.V, 7-2006) **Conference Abstracts:.** Ta Ngoc Don, Pham Thanh Huyen, "Synthesis of zeolites in faujasite form (X and Y) from Vietnamese kaolin". Proceedings of the 13th International congress on Catalysis, Session 1. Catalyst preparation and characterization, Paris, 11-16 July, 2004. http://icc2004.catalyse.cnrs.fr/CDROM/P1-018.pdf. (2004) **Conference proceedings (full paper):** Ta Ngoc Don, Pham Thanh Huyen. "The disproportionation of toluene on Y zeolite-contaning catalysts synthesized from kaolin taken in Yen Bai- Vietnam", (OCA34). 12th regional Symposium on Chemical Engineering - RSCE 2005 "New Trends in Technology towards Sustainable Development", Volume 5: Organic Chemical Engineering, Nov. 30th - Dec. 2nd, 2005, Science and Technics Publishing House, Hanoi, Vietnam, pp. 164-168 (2005). **Conference proceedings (full paper):** Ta Ngoc Don, Trinh Xuan Bai, Pham Thanh Huyen, Pham Minh Hao,Chu Nhat Huy, Vu Dao Thang, Hoang Trong Yem, Nguyen Hong Phong, Le Van Hoa. Study the manufacture of soil promoter containing zeolite BK-ZAF2 and its applications in wet rice cultivation in Vietnam. Proceedings of the 20th Science congress HUT, 10/2005.
Dr. Ing. Bui Van Hanh, Faculty of Mechanical Engineering	Research to apply plasma powder surfacing for the manufacturing of cutting tools working under heavy impact and wear conditions (AP04\PJ03\Nr02)			**Articles in national peer reviewed journals:** Bui Van Hanh, Hardsufacing of wear and impact resistant layers with plasma powder weld, Journal of Science and Technology, No54/2005, page 13-16, Vietnam. Bui Van Hanh, Bui Ngoc Tuyen, Reseach on the failure of bamboo chopping knives which are manufactured by powder plasma surfacing, Journal of Science and Technology, No57/2006, Vietnam (submitedsubmitted).
Nguyen Linh Giang				**Articles in national peer reviewed journals** Nguyen Linh Giang, Finite Horizon Markov Decision Problem and Fuzzy Q-learning, Journal on IT Reseacrh & Development (Vietnam), Vol 14 No1, 2005 **Conference proceedings (full paper)** Hoang Nghia Phu, Nguyen Linh Giang, Building Single sign-on infrasture for web, web service, Proceeding ICT.rda'04 (Hanoi, Vietnam) Nguyen Linh Giang, A control mechanism in on-line learning system, Proceeding ICT.rda'04 (Hanoi, Vietnam)

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Pham Huy Hoang, International Training Institute for Materials Science (ITIMS)	Advanced open Source Web Service Platform and Applications in HUT (VLIR IUC project code AP04\PJ03\Nr03)	Project leader of a joint research project with Toshiba R&D Web Service Group on "Service composer for Web Services in UPnP devices", period 4/2005 - 3/2006, budget: 7000USD. Description: this project aims to contribute a tool (called Composer) allowing the user to easily define their own service by grouping several web services in his home's UPnP devices. For example, user can define a service such as when the phone ring; all multimedia devices in the home mut reduce the volume. Architecture and Technical Leader of HUT project "HUT Management System for Credit-based Training Program", start from 3/2006 & will be finished by 8/2007, budget: 12.500 Eur for the fist phase (requirement specification). Description: based on the successful result of applying BKMoodle (an open source e-learning platform based on Moodle) at the Faculty of Information Technology, HUT decide to build a management system (including not only e-learning but management aspects) and will be applied from the next school year (8/2007)		**Articles in national peer reviewed journals** **Nguyen Linh Giang, Finite Horizon Markov Decision Problem and Fuzzy Q-learning, Journal on IT Reseacrh & Development (Vietnam), Vol 14 No1, 2005** **Conference proceedings (full paper)** PHAM HUY Hoang, KAWAMURA Takahiro, How to make web sites talk together – Web Service Solution, The International World Wide Web Conference Committee (IW3C2), 10-14 May, 2005, Chiba, Japan Hoang Nghia Phu, Nguyen Linh Giang, Building Single sign-on infrasture for web, web service, Proceeding ICT.rda'04 (Hanoi, Vietnam) Nguyen Linh Giang, A contsol mechanism in on-line learning system, Proceeding ICT.rda'04 (Hanoi, Vietnam) Pham Huy Hoang, Dang Van Chuyet, Session Management to integrate web sites and web service, Proceeding ICT.rda'04 **Working/technical papers/popularising literature** Pham Huy Hoang, Nguyen The Dung, Moodle-based elearning system for Faculty of Information Technology Pham Huy Hoang, Hoang Son, Multimedia feature for Moodle platform Pham Huy Hoang, Dinh Manh Dat, Ha Quoc Trung, Messaging System for Faculty of Information Technology based on SPIP Pham Huy Hoang, Ho Hai Thanh, Equipment Management System for HUT Pham Huy Hoang, Ha Quoc Trung, Workflow-oriented Thesis Library System for Faculty of Information Technology
Dr. Pham Thanh Huy, Faculty of Metallurgy and Materials Technology	Towards the higher efficient light emitting devices based on nanoscale silicon structures (VLIR IUC project code AP04\PJ03\Nr04)	projectmanager of Programme of scientific and technological cooperation between Italy and the socialist republic of Vietnam, 2006-2008. projectmanager Ph.D Twining Programme with Faculty of Science, University of Amsterdam, The Netherlands. promoter of the program Training and research cooperation with Photonics & Electronics Material Programme, AMREC SIRIM Bhd, Malaysia.		**A publicatioArticles in international reviewed publication** n: Published:1. Structural and optical properties of Si-nanoclusters embedded in silicon dioxide; P. T. Huy, V. V. Thu, N. D. Chien, C. A. J. Ammerlaan, J. Weber, Physica B: Condensed Matter, Volumes 376-377, 1 April 2006, Pages 868-871; Submitted: 2. Modification of surface state of silicon nanocrystals by UV illumination, Duong P H1, Huy P T2, Lavallard P3, Chazalviel J-N4, and Itoh T5; Submitted for Publication in Physical Review B (paper code: BF10226). B **publication:Conference proceedings:** Optical propeties of nano silicon (full paper), P. T. Huy, P. H. Duong, N. D. Chien and N. T. Tuan, Proceedings of the 6th National Conference in Physics, Hanoi, Nov-2005. Fabrication of SiO2:nc Si thin films for light emitting devices, L. V. Tho, P. T Huy, H. V. Chung, and N. D. Chien Proceedings of the 6th National Conference in Physics, Hanoi, Nov-2005, pages 247-250 Visible photoluminescence from silicon nanocrystals in planar microcavities (full paper) V. V. Thu, P. T. Huy, and N. D. Chien, P. H. Duong, P.T. Huy, V. V. Thu, N. T. Khoi, Procceed. of the 9th Asia Pacific Physics Conference, October 2004, Pages 633-634.

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
				Fabrication of light emitting devices based on Si nanocrystals (full paper), V. V. Thu, L. V. Tho, N. D. Chien, P. T. Huy Proceedings of the First Vietnamese-Italian Symposium on Photonics and Nanotechnology, Hanoi, Nov-2005, Pages 133-138. Modification of surface state of silicon nanocrystals by UV illumination, P. T. Huy, and P. H. Duong Proceedings of the International Conference on Engineering Physics, Hanoi, October 9-12, 2006. Photonics and Nanotechnology, Proceeings of the First Vietnamese – Italian Symposium on Photonics and Nanotechnology, Hanoi, Nov 28-29, 2005 Edited by: P. T. Huy, M. Ferrari and N. D. Chien
Prof. Dr. Do Minh Nghiep, Faculty of Mechanical Engineering	Application of Mechanical Alloying (MA) and Mechanical Milling (MM) for preparation of fine powders with non-equilibrium structures used in powder metallurgy and hardening coating (AP04\PJ03\Nr05)			**Articles in international peer reviewed journalss:A publication** N. V. Chi, T. Q. Lap, N. H. Viet and N. M. Cu "Formation of metastable phases of the Ni-Al system by mechanical milling", ATM Vol. 6, No 2 (2004) **Articles in national peer reviewed journals:** Tran Quoc Lap, Nguyen Minh Duc, Do Minh Nghiep "Synthesis of Nano-Composite Ag-CdO for Electric Contact", Science and Technology of Metals, Hanoi No 4, January 2006; pp 25-30 Do Minh Nghiep, Tran Quoc Lap, Nguyen Hoang Viet, Nguyen Thi Hoang Oanh, Le Hong Thang, Pham Hung Vuong " The formation of intermetallic phases Ni-Al by mechanical alloying (MA) and its compaction by spark plasma sintering (SPS)", Science and Technology of Metals, Hanoi No 8,October 2006; pp 28-31
Dr. Nguyen Nam Quan, Faculty of Textile-Garment Technology and Fashion Design	Wavelet theory-based high resolution signal analysis, application to biomedical and communications (AP04\PJ03\Nr06)			**Articles in national peer reviewed journals:** Nguyen Duc Thuan, Nguyen Huu Trung, The architechture of wavelet frame CDMA based-on software radio technology, Journal of Science and technology, No 48+49, 2004. Nguyen Duc Thuan, Nguyen Huu Trung, The application of wavelet frames and bases to multicarrier modulation systems, Journal of Science and technology, No 50, 2005 Nguyen Duc Thuan, Nguyen Huu Trung, The design of high precision electrocardiogram signal amplifier, Journal of Science and technology, Accepted Nguyen Duc Thuan, Nguyen Huu Trung, Wavelet-based Eletrocardiogram signal Denoising, Journal of Science and technology, Accepted **Conference proceedings (full paper)** Nguyen Huu Trung, Nguyen Duc Thuan, Nguyen Nam Quan, Nguyen Thuy Anh, Analysis of High-Frequency, High-Resolution Electrocardiograms using Haar Wavelet footprints, Sixth Vietnam Conference on Automation (www.vica.vnn.vn).

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Nguyen Hong Quang, Faculty of Chemical Engineering	Robust tracking controller design and implementation for servo system of industrial robots or CNC machines (AP04\PJ03\Nr07)			**Articles in national peer reviewed journals:** Trieu Tuyen Hoang, Nguyen Hong Quang, New method on controlling of step motor", Vietnam Journal on Automation Today, pages 12-18, in September 2005. **Conference proceedings (full paper)** Tran Hoai Linh, Nguyen Hong Quang, Using Atmega 16 microcontroller for closed-loop control of laboratory DC motor has been published on Proceedings of Vietnam Automation Conference 2005 (VICA), held in Hanoi 12-14 April, 2005 Nguyen Hong Quang, Vu Van Ha, "Robust control of multi-degree of freedom manipulator", Conference Proceedings on Asia-Pacific Symposium on Applied Electromagnetics and Mechanics, pp 224-229, June 2006
Dr. Hoang Vinh Sinh, Institute of Biological and Food Technology	Research, design and manufacture the controller Electro-Discharge die sinking Machine in Vietnam conditions (VLIR IUC project code AP04\PJ03\Nr08)	National scale project No KC.05.28 "Design Manufacture the five axis CNC milling machine", budget: 120.000 Euro.		**Conference proceedings (full paper)** Hoang Vinh Sinh, A method to reduce the relative wear in EDM die sinking process by reversed pulse, ICMT2005 conference, Malaysia Hoang Vinh Sinh, A study on reversed pulse to optimize the EDM process, ICMT2006 conference, Mexico (sumitted)
Dr. Ngo Chi Trung, International Research Center MICa-HUT	Investigation in Upgrading Quality of Coating fabrics and Its Garment Products of Textile-Garment Industry in Vietnam (PJ09)			**Articles in international peer reviewed journals:A publication** Ngo Chi Trung, Hoang Thanh Thao, Lieva Van Langenhove; Investigation on creep phenomenon in coated fabrics; Indian Journal Fibre Textile Research, 2006 (will publish) **Articles in national peer reviewed journals:** Ngo Chi Trung, Tran Minh Nam, Hoang Thanh Thao, The Influence of some Technical Parameters of the Gray Fabric on Physico-Mechanical Properties of the Coated Fabric, Journal of Science&Technology 57/2006, p. 112-115, Vietnam Tran Minh Nam, Ngo Chi Trung, Methods for Upgrading Quality of Coated Fabrics, Vietnam Textile-Garment Journal_03/2006-ISSN 0868-3948, No. 224 - p. 59,60, Vietnam **Conference proceedings (full paper)** Ngo Chi Trung, Hoang Thanh Thao; Influence of Technological Parameters on Coated Fabric Properties, Proceedings - 3rd Advanced Materials and Their Processing, May 2005, Chungnam, S. Korea Ngo Chi Trung, Nguyen Thuy Ngoc, An Investigation on Seam Waterproof of Garment Products Based on Coated Fabrics, Proceedings - 20th Scientific conference HUT October 2006 - (will publish)

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Mai Thanh Tung, Faculty of Electrical Engineering	Electrochemical Fabrication of nanosized magnetic Multilayer Co/Cu with Giant Magneto resistance (GMR) effect for novel Magnetic Sensor (VLIR IUC project code AP04\PJ03\Nr10)	Project manager of "Fabrication of nanosized magnetic Materials with high resistivity and GMR and GMI effects by physico-chemical Methods and their Applications ", co Project Manager: Nguyen Hoang Nghi, Vietnamese Ministry of Science and Technology (2004-2006), budget: 22.000 EUR project manager of " Technology and equipments for electrodeposition of magnetic film on insulating sub-strate" Ministry of Education and Training (2005-2007), budget: 45.000 EUR		**Articles in national peer reviewed journals** Mai Thanh Tung, Nguyen Hoang Nghi "Electrodeposition of magnetic Multilayer Co/Cu with Giant Magnetoresistance Effect", Journal of Chemistry 43(6) 764-767 (2005), Vietnam Mai Thanh Tung, Nguyen Hoang Nghi, "Electrodeposition of the ultrathin magnetic film NiFe onto acrylon nitrilk butadiene (ABS) insulating substrate", Journal of Chemistry, 44(1) 96-99, 2006. Mai Thanh Tung, Nguyen Hoang Nghi "Electrodeposition of the Permalloy Film with Giant Magnetoimpedance on Insulating substarte", Journal of Science and Technology, 54(4)2005, tr. 107-109, Vietnam Mai Thanh Tung, Bui thi Khanh Nhung, "Influence of additives on the structure and magnetic properties of Electrodeposited magnetic film FeCoNi alloy", Journal of Chemistry, in print Mai Thanh Tung, Nguyen Hoang Nghi, "Influence of heat treatment on struc-ture and giant magnetoimpedance (GMI) effect of electrodeposited permalloy (80Ni20Fe)", Journal of Chemistry, in print Mai Thanh Tung, Nguyen Hoang Nghi, "Effect of electrodeposition Parameters on Giant Magnetoresistance (GMR) Effect of Multilayer Co/Cu", Journal of Chemistry, in print Bui Thi Khanh Nhung, Mai Thanh Tung, Nguyen Van Dung, Nguyen Hoang Nghi "Fabrication of Cu/CoP microwire with very high Magnetoimpedance effect", Journal of Chemistry, in print **Conference proceedings (full paper)** Mai Thanh Tung, Chu Van Thuan, Nguyen Hoang Nghi, " Influence of thermal treatment on structure and giant magnetoresistance (GMR) effect of elec-trodeposited Co/Cu nanosized multilayers" Proceeding of the 12th Regional Symposium for Chemical Engineering 2005, Vol.4, p.123-127 Mai Thanh Tung, Chu Van Thuan, Nguyen Hoang Nghi, J. W. Schultze, "Giant magnetoresistance effect of the multilayer Co/Cu fabricated by electrodepo-sition technique", Proceedings of International conference on Engineering Physics (ICPE) 2006, p167-170 Nguyen Thi Hong Tam, Bui Thi Khanh Nhung, Nguyen Van Dung, Mai Thanh Tung, Nguyen Hoang Nghi, "Effect of H3PO3 acid content on the composition of electrodeposited CoP layer and magneto impedance of the Cu/CoP wires", Proceedings of International conference on Engineering Physics (ICPE) 2006, p174-176

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Do Thi Hoa Vien, Faculty of Information Technology	Research on biotechnological solutions for production of some functional foods from Soybean (Glycine Max), Kudzu(Pueraria thompsonii Benth) and black chicken of Vietnam (AP04\PJ03\Nr11)			**Articles in national peer reviewed journals:** Do Thi Hoa Vien, Le Minh Chau, Research on the enrichment of isoflavone content in Soy Protein Concentrate, Vietnamese Journal of Science and Technology, Vol. 43, No. 5, 2005, pp. 41-46. Do Thi Hoa Vien, Research in vivo on estrogen activity of isoflavone from kudzu Pueraria thomsonii Benth., Vietnamese Journal of Science and Technology, Vol. 45, No. 2, 2006, pp. **Conference contributions (Poster, Oral presentation)** Do Thi Hoa Vien, Nguyen Kim Vu, Nguyen Thi Ha, Black chicken simmered with traditional medicines – a special functional food of Vietnam, Proceeding of the 6th International Conference and Exhibition on Nutraceutical and Functional Foods, 16 – 19 October 2005, Anaheim, California, US, pp 447. Do Thi Hoa Vien, Tran Thi Xuan, Research on isoflavones (phytoestrogens) in kudzu Pueraria thomsonii Benth. and uncultivated kuzu of Vietnam. Proceeding of Regional Symposium on Chemical Engineering (RSCE) 2005, Hanoi November 30th – December 2nd, 2005, pp. 18-23. (Oral presentation)
Dr. Pham Thi Ngoc Yen, Faculty of Electronics and Telecommunications	Communicating smart Electrocardiograph (VLIR IUC project code AP04\PJ03\Nr12)	Manager of the International project PCSIU AUF "Indexation et Reconnaissance d'Images par la Sémantique - IRIS", sponsor: Agence Universitaire de la Francophonie (AUF), budget: 20 000 Euros, duration: 2005-2006 Vietnamese Project Leader for the European project ASIA LINK "CONE" (Collaborative Open Network for Education), sponsor: European Commission, total budget: 300 000 Euros (5 partners), duration: 2004-2007		**Articles in international peer reviewed journals** PHAN D.H., E. CASTELLI & PHAM THI N.Y. (2006) Detection peaks R of Electrocardiograh Signal by Wavelet Transform. Revue vietnamienne « Science et Technologie » (ISBN 0868-3980), Vol 56/2006, pp 22-24 PHAN D.H., E. CASTELLI & PHAM THI N.Y. (2006) Denoising the Electrocardiograph Signal. Revue vietnamienne Science et Technologie » (ISBN 0868-3980), Vol 56/2006, pp 28-30 **Conference proceedings (full paper)** *International* NGUYEN C.P., PHAM THI N.Y. & CASTELLI E. (2006) First steps to an audio ontology-based classifier for telemedecine, ADMA 2006 The second international conference on advanced data mining and applications, Xi'An, China, August 14-16, 2006 (article acepted) NGUYEN C.P., PHAM THI N.Y. & CASTELLI E. (2005) Toward A Sound Analysis System for Telemedicine First International Conference on Natural Computation (ICNC'05) and the second International Conference on Fuzzy Systems and Knowledge Discovery (FSKD'05), Chagsha China, 27-29 August 2005,pp 352-361. TRAN H.L., CUNG T.L. (2005) A Modified TSK Network and Its Application in Classification, International Conference on Intelligent Computing (ICIC'05), China, August 2005, pp S. Osowski, T. Markiewicz, T.H.Linh, Ensemble Of Neural Networks For Improved Recognition And Classification Of Arrhythmia, XVIII IMEKO WORLD CONGRESS, Metrology for a Sustainable Development, Rio de Janeiro, Brazil, 2006

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
				National NGUYEN Q.C., NGUYEN THI L.H. & PHAM THI N.Y. (2005) Study and design of an electrocardiograph. In the proceedings of The 4th Vietnam Metrology conference, Hanoi, 10 & 11 November 2005, pp 2320-327. NGUYEN Q.C., NGUYEN THI L.H. & PHAM THI N.Y. (2005). Study and design of an electrocardiograph. Proceedings of the First Young Vietnamese Scientists Meeting (YVSM '05), Nha Trang, June 12-16, 2005 PHAN D.H., PHAM THI N.Y. & CASTELLI E. (2005) Project of filter by placing poles and zeros in order to remove noise of electrocardiographic signal. In the proceedings of The 4th Vietnam Metrology conference, Hanoi, 10 & 11 November 2005, pp 326-328. PHAN D.H. & NGUYEN THI L.H. (2005) To filter and post continuous signals with the Labview software. In the proceedings of The 4th Vietnam Metrology conference, Hanoi, 10 & 11 November 2005, pp 387-390. TRAN H.L. (2005), Application of neural networks in ECG signal recognition, In the proceedings of The 4th Vietnam Metrology conference, Hanoi, 10 & 11 November 2005, pp 354-358.
Dr. To Kim Anh, Institute of Biological and Food Technology	Development and validation of DNA-based kits for rapid detection of pathogen bacteria Listeria monocytogenes and Bacillius cereus applied in food safety control (VLIR IUC project code AP05\Prj3\Nr01)	The Coordinator of Vietnam partner in EU project No 036337- "HARMONY": Towards harmonisation regarding monitoring of hazards in the food supply chain, budget for the project is being negotiated, estimated at 60.000 Euro * 5 years. The project was approved and started on May 10, 2006. By May 2007, 26.000 EURO was transferred to the account of research group. cooperating with Vietnam Academy of Science and Technology (VAST) to implement the project "Develop field test for L. monocytogenes based on immunological reaction", 2006-2008. This is self co-financed project. The co-promoter of research project "Onsite test for Staphylococcal enterotoxin A in food", carrying out in cooperation with Vietnam Food Administration (VFA), from 2007-2008, funded by Ministry of Health, budget of the project is about 20.000 Euro The promoter of research project "Develop and application of DNA array for early detection of anti-multidrug Mucobaterium tuberculosis". The project is carried out in cooperation with The National Hospital of Lung diseases Vietnam financed, financed by MOET, 2007-2009, budget ranges from 15.000-25.000 Euros.	12th Regional Symposium on Chemical Engineering, Hanoi, Dec. 2005 organised by HUT under direction of Regional Committee, Participants: To Kim Anh, Nguyen Xuan Hung The 20th Hanoi University of Technology scientific conference, Hanoi Oct. 2006 International Symposium on Environmental biotechnology Leipzig, 2006, hosted by UFZ Centre for Environmental Research Leipzig-Halle in the Helmholtz Association (conference fee paid by Hannover University, Germany)	**Articles in international peer reviewed journals:A publication (submitted)** Trinh Thu Le, Tran Manh Hung, Nguyen Xuan Hung, Le Quang Huan, To Kim Anh, 2007. Specificity of single chain antibody fragment LmSvF-59 isolated by phage display against Listeria monocytogenes . J. Bioscience Biotechnology and Biochemistry (submitted) Articles in national peer reviewed journals Nguyen Kim Hoa, To Kim Anh, 2005, Application of polymerase chain reaction in rapid detection of Listeria monocytogenes. Vietnamese J. Science and Technology, 43 (4), 37-45 Nguyen Minh Thuc, Tran Manh Hung, Trinh Thu Le, To Kim Anh, 2007. Primary investigation of Listeria monocytogenes infection in foods in Hanoi market using polymerase chain reaction. Vietnamese J. Science & Technology (submitted) **Conference proceedings (full paper)** Xuan-Hung Nguyen, Xuan Sam Nguyen, Kim-Anh To, 2005. Simple DNA extraction for polymerase chain reaction (PCR) detection of pathogen Listeria monocytogenes in milk products, Proceeding of 12th regional symposium on Chemical Engineering, 1, 213-218, Hanoi, Nov. 2005. Conference abstracts Xuan-Hung Nguyen, Kim-Anh To, Quang-Huan Le, Generation of scFv antibody fragment specific for pathogenic Listeria monocytogenes by phage display, 12th Scientific workshop, HUT, Oct. 2006 (submitted)

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Nguyen Van Hieu, International Training Institute for Materials Science (ITIMS)	Carbon nanotubes/ nanostructured TiO2(SiO2) composite thin films for environmental gas-sensing applications (VLIR IUC project code AP05\Prj3\ Nr03)	Research team member and secretary of project entitled: Investigation of realization sensors based on microstructured and nanostructured materials and enclosing instruments for monitoring air and water environments, funded under the research program of the National science and technology research program on materials, budget: 100.000 Euro Project leader of project entitled: Improvement of gas sensing properties of SnO2 and TiO2 materials by co-doping metal elements and carbon nanotubes, funded under the research program of the Science and technology research program of the Ministry of Education and Training, budget: 1.500 Eur Promoter of submitted project proposal (2nd round) entitled: Developing instruments for monitoring of gaseous environment based on nanowires gas sensor, donor: Vietnam-Sweden Research Cooperation Program 2004 – 2007, budget: 29.000 Eur	The 5th Vietnam-Korea conference on nanotechology and nanomaterials, November, 2005 The International conference on Engineering Physics (ICEP), held at Hanoi University of Technology from October 10-11, 2006 in Hanoi	**Articles in international peer reviewed journals (A publication)** Nguyen Van Hieu and Nguyen Duc Chien, "Low Temperature Growth of Q1D-ZnO Nanostructures for Gas Sensing Application", Submitted Physical B, (minor revise) Nguyen Van Hieu, Luong Thi Bich Thuy, and Nguyen Duc Chien, "Highly Sensitive Thin Film NH3 Gas Sensor Operating at Room Temperature Based on SnO2/MWCNTs Composite", Submitted to Sensor and Actuator B: Chemical, (minor revise) **Conference proceedings (full paper):** Luong Thi Bich Thuy, Nguyen Van Hieu, Nguyen Duc Chien, "Synthesis and gas-sensing properties of carbon nanotubes/tin oxide nanocomposite", Proceedings of the International Conference on Engineering Physics, pp.185-190. Nguyen Van Hieu, Dao Trieu Truong An, Nguyen Duc Chien, "Low temperature growth of Q1D-ZnO nanostructures and their ethanol sensing properties", Proceedings of the International Conference on Engineering Physics, pp.191-196. Nguyen Van Duy, Nguyen Van Hieu, Nguyen Duc Chien, "Titanium dioxide doped with single-walled carbon nanotubes for ethanol sensing at low temperature", Proceedings of the International Conference on Engineering Physics, pp.197-201 Nguyen Anh Phuc Duc, Nguyen Van Hieu, Dang Duc Vuong, Nguyen Duc Chien, "Ethanol sensing properties of tin oxide doped with multiwalled carbon nanotubes (MWCNTs)", Proceeding of the International Conference on Engineering Physics, pp.202-207 Nguyen Van Hieu, Tran Nam Trung, Nguyen Quang Lich, Dang Duc Vuong, Nguyen Duc Chien, "Nanocomposites of Carbon Nanotubes/Metal Oxide Semiconductors as Gas-Sensing Materials", Proceeding of the first Vietnam-Italian Int. Joint Workshop, 2005, pp.14-19 T. N. Trung, Nguyen Van Hieu, Nguyen Quang Lich , Dang Duc Vuong, Nguyen Duc Chien, "An investigation of nanocomposites SiO2/carbon nanotubes for gas sensing materials", Proceeding of the 6th National Conference on Physics, Vietnam, September, 2005, pp.908-912 N. A. P. Duc, N. H. Quyet, D. D. Vuong, N. V. Hieu, N. D. Chien, "Gas sensor based on SnO2 doped CNTs", Proceeding of the National Conference on Physics, Vietnam, September, 2005, pp.779-782

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Tran Dai Lam, Faculty of Chemical Technology (FCT)	Development of nanoparticulate delivery system based on biodegradable and biocompatible chitosan for controlled drug release and drug targeting. Application for antimalarial drug (VLIR IUC Project code AP05\Prj3\Nr05)	Promoter of project 'Study to manufacture nanoparticulate delivery system based on biodegradable and biocompatible chitosan to produce anti-malarial drug', budget: 15.000 Eur, sponsor: National Fund for Research, duration: 1/2006 – 12/2007 Promoter of project 'Development of nanomaterials, used in pharmaceutical and bio-medical chemistry, sponsor: National Fund for Research, budget: 42.000 Euro Synthesis of biodegradable nanostructured chitosan for controlled drug release, Code: 6.056.06, period:2006-2007, Budget 5.000 Euro, Ministry of Sci. & Tech., VN Development of some nanostructured biocompatible materials for pharmaceutical chemistry, code: UTCN 14\2005-2006-DHBKHN, period: 2005-2006, budget: 40.000 Euro, Ministry of Training & Education, VN	The First Young Vietnamese Scientists Meeting YVSM'05, Nha Trang, 12-16 June 2005 ICTP-NCNST-ICTS Asian/Pacific Regional College on "Science at the Nanoscale", Beijing, China, from 14-25/8/2006	**Articles in national peer reviewed journals** Tran Dai Lam, Vu Dinh Hoang, Le Ngoc Lien, Nguyen Ngoc Thinh, Pham Gia Dien, Synthesis and characterization of chitosan nanoparticles used as drug carrier, J of Chemistry, Vol.44 (1), pp. 105-109, 2006 Tran Dai Lam, Nguyen Thi Thuy Nga, Vu Dinh Hoang, Tran Viet Hung, Study of biodegradation and in vitro controlled release behavior of artesunate-loaded chitosan nanoparticles, N01, 2006, pp. 73-80, Vietnam Journal of Analytical Sciences in Physics, Chemistry, Biology, ISSN 0868-3224 Tran Dai Lam, Bui Tien Trinh, Nguyen Duc Chien, Rapid electrochemical detection of single and double nucleotide mismatches (mutations) of sequences from HIV samples, N03, 2006, pp. 377-381, Vietnam Journal of Chemistry, 12873-ISSN 0866-7144 Tran Dai Lam, Phung Nguyen Hao, Synthesis, characterization and drug delivery application of nano chitosan particles, N3B,2006, pp. 70-74, 86, Vietnam Journal of Analytical Sciences in Physics, Chemistry, Biology, ISSN 0868-3224 Tran Dai Lam, Vu Dinh Hoang, Study of synthesis of Glucosamine sulphate sodium chloride from shrimp shell, N3, 2006, pp.57-60. Vietnam Journal of Analytical Sciences in Physics, Chemistry, Biology, ISSN 0868-322 Tran Dai Lam, Tran Vinh Hoang, Control of supersaturation degree by using surfactants in synthesis of nano precipitated calcium carbonate, N3, 2006, pp. 34-38,47, Vietnam Journal of Analytical Sciences in Physics, Chemistry, Biology, ISSN 0868-3224. Tran Dai Lam, Tran Vinh Hoang, Synthesis and characterization of nano precipitated calcium carbonate, submitted for publication in Vietnam Journal of Chemistry **Conference proceedings (full paper)** Tran Dai Lam, Tran Vinh Hoang, Synthesis of nano crystalline hydroxyapatite from Vietnamese seashells, accpeted for International Conference on Nanoscience & Technology, China NANO 2007, Beijing, 4 June 2007 - 6 June 2007

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Nguyen Phuc Duong, ITIMS	"Half-metallicity in ferromagnetic Heusler alloys: From materials to Spintronic devices" (VLIR IUC project code AP05\Prj3\Nr02)	Project title: Study on fabrication of ferrofluids, Code: B2006-01-67, Sponsor: Ministry of Science and Technology, Duration: Jan 2006 - Dec 2007, Position: Promoter,Total Fund: 3000. - USD Project title: Study on magnetic nanoparticles and thin films, Code: 4.049.06, Sponsor: Ministry of Science and Technology, Duration: 2006 – 2007, Position: Participant, Total Fund: 30,000. - USD	The third Korea-Vietnam International Joint Symposium on Advanced materials and their processing, held by ChungNam Unviersity, 23-26, May, 2005, ChungNam, Korea First Young Vietnamese Scientists Meeting (YVSM '05), held by College of Technology, Hanoi National University, Nha Trang June 12 16, 2005, Le Thanh Hung * The 6th National Physics Conference, held by Vietnamese Physical Society, Hanoi, 23-25/11/2005	**Articles in international peer reviewed journals (A publication)** N.P. Duong, L.T. Hung, T.D. Hien, N.P. Thuy, and E. Brück, Magnetic and magnetotransport properties of half-metallic semi Heusler Co1-xCuxMnSb compounds, submitted to Journal of Magnetism and Magnetic Materials. **Conference proceedings (full paper)** N.P. Duong, L.T. Hung, N.A. Tuan and T.D. Hien, Structural and magnetic characterizations of semi-Heusler Co1-xCuxMnSb compounds, The third Korea-Vietnam International Joint Symposium on Advanced materials and their processing, p. 101, 23-26, May, 2005, ChungNam, Korea. Le Thanh Hung, Nguyen Phuc Duong, NguyenAnh Tuan, Than Duc Hien, Magnetoresistance effect in half-Heusler CoMnSb, in press Proceedings of the 6th National Physics Conference, Hanoi, 23-25/11/2005. Nguyen Phuc Duong, Le Thanh Hung, Nguyen Thanh Trung, Than Duc Hien, Half-metallicity of Co1-xCuxMnSb alloys studied by magnetic measurements, in press Proceedings of the 6th National Physics Conference, Hanoi, 23-25/11/2005. N.A. Tuan, D.D. Dung, L.T. Hung, N.P. Duong, Preparation and characterization of Ni-Mn-Sb thin films by thermal evaporation, Proceedings of the International Conference on Engineering Physics ICEP-2006, p. 136-139 N.P. Duong, P.T.H. Van, L.T. Hung, T.D. Hien, N.A. Tuan, Magnetic properties of half Heusler compounds with nominal compositions CoMnSb0.9M0.1 (M = Al, Si, Sn and Bi), Proceedings of the International Conference on Engineering Physics ICEP-2006, p. 87-90 Nguyen Phuc Duong, Phung Thi Hong Van, Le Thanh Hung, Than Duc Hien, Nguyen Anh Tuan, Alloy-phase composition and magnetic properties of solid solutions CoMnSb1-xSnx (x = 0, 0.1, 0.3, 0.5, 0.7, 0.9, 1), Proceedings of The 1st International Workshop on Functional Materials and the 3rd International Workshop on Nanophysics and Nanotechnology, p. 337-339
Dr. Vu Thi Hong Khanh, Department of Textile material and Chemical	"The improvement studying of technology to prevent mal-odour for garment products such as underwear, sock, sport clothing made from PET, PA and its blend" (VLIR IUC project code AP05\Prj3\Nr04),	Project title: Research on technology to produce the antibacterial and waterproof fabric used in the hospital, Project code: 01C – 01/13 – 2007 – 3, Total funding received (in Euro): 25.000 Euro, Duration: 1/1/2007-30/3/2009, Funded by: the Program 01C -01 (Research on application of the advanced technology to create the high competitive products for Hanoi), Hanoi Department of Science and Technology.	The 20th Scientific Conference Hanoi University of Technology - held by HUT, at HUT, on the 12th Oct, 2006	**Articles in national peer reviewed journals** VU Thi Hong Khanh, Antibacterial treatment for textile material – No217(7/2005) – Vietnam Textile and Garment Journal VU Thi Hong Khanh, Antibacterial treatment technic for textile material – No218 (8/2005) – Vietnam Textile and Garment Journal Vu Thi Hong Khanh, Le Huu Chien, Dao Anh Tuan, Optimal Antibacterial Technology for PECO Woven Fabric by AEM 5772/5 – No 60/2007 Journal of Science & Technology Vu Thi Hong Khanh, Tran T Phuong Thao, The correlation between the quantity of Bromophenol Blue (BPB) on fabric and the Antibacterial Ability of fabric treated by quaternary ammonium antibacterial agent – No 60/2007 Journal of Science & Technology

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
				Conference proceedings (full paper) Vu Thi Hong Khanh, Le Huu Chien, Dao Anh Tuan, Antimicrobial Treatment for Fabric by Quaternary ammonium Antimicrobial – Proceedings of the 20th Scientific Conference Hanoi University of Technology Vu Thi Hong Khanh, Tran T Phuong Thao, Determination of Quaternary ammonium Antimicrobials on fabric by Spectrophotometric Method using Bromophenol Blue (BPB) – Proceedings of the 20th Scientific Conference Hanoi University of Technology
Dr. Pham Hoang Luong, Institute of Heat Engineering and Refrigeration (IHERE)	Promoting efficient and clean use of biomass fuels for energy production in Vietnam" (IUC project code AP05\Prj3\Nr06)	Potential of renewable resources for energy production in Vietnam, (October 2005-March 2007), Principle Investigator (PI) / Promoter, 15.000 USD, Ford Foundation (FF)-Vietnam (through Vietnam Union of Science and Technology Associations-VUSTA) Promoting energy conservation in small and medium enterprises in Vietnam – PECSME, (July 2006-November 2006), Principle Investigator (PI) / Promoter, 16.000 Euro, Global Environment Facility (GEF) Vietnam National targeted program on energy conservation (January 2007-December 2007), Principle Investigator (PI) / Promoter, 32.000 Euro,Vietnam Government (through Ministry of Industry) Research and development of fluidized bed and circulating fluidized bed (FB&CFB) technology in Vietnam (May 2005-May 2007), Principle Investigator (PI) / promoter, 40.000 Euro, Ministry of Science and Technology (through Ministry of Education and Training)	Organization of international conference: The first seminar on Research and Development of Fluidized bed and Circulating Fluidized Bed technology in the industry and power sector in Vietnam, December 16, Hanoi University of Technology The first South Est Asian Technological University Consorstium Symposium (SEATUC), organized by Shibura University (Japan) and King Monkut University (Thailand), from February 27-28, 2007	**Conference proceedings (full paper)** W. F. Fassinou, L. Van de Steen, E. Martin, F. Broust, J.S. Teglbjoerg and Hoang-Luong Pham. 'Char quality and tar formation interdependence: First experiments in a new two stages gasifier', to be published in the Proceedings of the 14th Conference and Exhibition on Biomass for Energy, Industry and Climate Protection, Paris 17-21 October, 2005 Pham Hoang Luong. Promoting biomass fuels based technologies for energy production in Vietnam, Proceedings of the 20th Scientific Conference - Section: Heat Engineering and Refrigeration, pages 49-54, Hanoi University of Technology, 14th October 2006, Vietnam 3. Hoang-Luong Pham and Nguyen Minh Tien. Potention of biomass gasification for small scale power generation in Vietnam, Proceedings of the first South Est Asian Technological University Consorstium Symposium (SEATUC), pages 3-8, February 26th - 28th, Bangkok, Thailand Articles in national journals 4. Pham Hoang Luong, Nguyen Xuan Quang and Do Van Quan. A study on small-scale biomass gasification for power production, Vietnam Thermal Science & Technology Review, no. 74 (March 2007), pages 15-19, Vietnam
Dr. Nguyen Chan Hung, Faculty of Electronics and Telecommunications (FET)	"Research and Development of communication gateway peer-to-peer network BKUMN" (IUC project code AP06\Prj3\Nr01)	Project 1: "Development of Zapping Service Generator for DVB-H", Funded by Panasonic Singapore Laboratory (PSL). The contract was signed on 15th September 2006 between PSL and the Faculty of Electronics and Telecommunications. Project value is 3000 USD and last 6 months from signed date., Budget: 3000 USD, Time: from 15th Sep 2006 to 30th March 2007, Role: Project Leader/Manager, Status: Successfully Completed Project 2: "SIMULATION AND EVALUATION CRITERIA FOR P2P OVERLAY NETWORKS" , Funded by Panasonic Singapore Laboratory (PSL), The contract was signed on 5th March 2007 between PSL and the Faculty of Electronics and Telecommunications, Budget: 3000 USD, Time: from 5th March 2007 to 1st August 2007, Role: Project Leader/Manager	International Conference on Communication and Electronics 2006, Hanoi - Vietnam - held by HUT in October 2006 International Conference on Communications and Electronics, ICCE2008, Hanoi, Vietnam	**Articles in national peer reviewed journals** Hung Nguyen Chan, Giang Ngo Hoang, Thang Le Quang, Tan Pek Yew, "Performance study of Chord, Kelips and Tapestry protocols on structured Peer-to-Peer Overlay networks" , Special issue of Post & Telecommunications & Information technology Journal, December 2007, issue 2, Vietnam **Conference proceedings (full paper)** *Hung Nguyen Chan, Khang Nguyen Van, Giang Ngo Hoang*, "Characterizing Chord, Kelips and Tapestry algorithms in P2P streaming applications over wireless network", Accepted for publishing on the Proceeding of International Conference on Communications and Electronics, ICCE2008, Hoi An, Vietnam. *Hung Nguyen Chan, Giang Ngo Hoang*, "Simulation of Distributed Hash Tables Mechanisms on P2P Networks", Proceeding of The 2nd Asia Pacific International Conference on Information Science and Technology (APIC-IST 2007) Dec 2007, Hanoi, Vietnam.

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
		Project 3: "Development of low-cost medium sized FM Radio broadcast station for far and remote areas", Funded by Vietnamese Ministry of Education and Training (MOET), Budget: 2500 USD, Time: from 2007 to 2008, Role: Project Leader/Manager Project 4: "QoS Mechanisms for broadband wireless IEEE 802.n Networks", Funded by Vietnamese Ministry of Science and Technology (MOSTE), join research with the Polytechnic University of Torino, Italy, Budget: 56.000 USD (900,000,000 VND), Time: from 2007 to Dec 2008, Role: Project participant Performance Evaluation of P2P Overlay network, Panasonic Corp., € 2,500, 6 months (3/2007-9/2007) Performance Evaluation of P2P Overlay network (Phase 2), Panasonic Corp., € 2,900, 1 year (1/2008 - 12/2008) Research and Development of Ubiquitous & Mobile Computing Applications, Vietnamese Government, € 140,000, 2 year 2/2008-2/2010 QoS mechanisms for broadband wireless 802.1x, Vietnamese Government & Italian Government, € 40,000, 2007-2008	The 2nd Asia Pacific International Conference on Information Science and Technology (APIC-IST 2007) Dec 2007, Hanoi, Vietnam. Modeling of Complex System and Environment MCSE 2007 by ISSAT (International Society of Science and Applied Technologies Conference), Ho Chi Minh, Vietnam 12th European Conference on Networks & Optical Communications, 2007, Stockholm, Sweden. International Symposium on Electrical-Electronics Engineering –ISEE, 2007, Ho Chi MInh, Vietnam	*Nguyen Chan Hung, Ngo Hoang Giang, Tan Pek Yew*, "Performance Evaluation of Distributed Hash Table (DHT) Chord algorithm", MCSE 2007, Proceeding of Modeling of Complex System and Environment MCSE 2007 by ISSAT (International Society of Science and Applied Technologies Conference), Hochiminh, Vietnam *Nguyen Chan Hung, Ngo Hoang Giang, Le Quang Thang*, "Comparative study on Distributed Hash Table algorithms of P2P network", Proceeding NOC2007 12th European Conference on Networks & Optical Communications, 2007, Stockholm, Sweden. *Giang Ngo Hoang, Hung Nguyen Chan, Thang Le Quang*, "PERFORMANCE STUDY OF DISTRIBUTED HASH TABLE MECHANISMS ON P2P OVERLAY NETWORK UNDER EXTREME CONDITIONS", International Symposium on Electrical-Electronics Engineering – ISEE 2007, Hochiminh, Vietnam
Dr. Ta Tuan Anh, Faculty of Information Technology	"BKGRID: an open source platform for grid and high performance computing" (**IUC** project code AP06\Prj3\Nr03)	"Building a grid in Vietnam", a two year (2007-2008) national project financed by Ministry of Science and Technology of Vietnam. Hanoi University of Technology is one of the 5 partners in the project, € 150.000 Research and Development of Information Systems used in Education and Science, Ministry of Science and technology, € 150,000, 2007-2009	The International Symposium on Grid Computing 2007, held by Academia Sinica in Taipei, Taiwan March 27-29, 2007 The International Symposium on Grid Computing 2007, held by Academia Sinica in Taipei, Taiwan March 27-29, 2007 The 2007 International Conference on Grid Computing & Applications, held by WORLDCOMP in Las Vegas, USA, June 25-28, 2007	**Conference proceedings (full paper)** ThuyNT, AnhTT, and al. – Construction of a Data Grid For Meteorology in Vietnam. Proceedings of the 2007 International Conference on Grid Computing & Applications, Las Vegas, USA, June 25-28, 2007 AnhTT and al. – Grid-based services for accessing weather forecasting data. Proceeding of the 4th VAST-AIST Workshop on Science and Technology Cooperation, Hanoi, 4-5 Oct 2007 ThuyNT, AnhTT, ThanhDD, TungDT – Using a data grid to promote meteo-research in Vietnam. The Third National Symposium Fundamental and Applied Information Technology Research, Nha Trang, August 9-10, 2007 TrungNV, ThuyNT, MinhDT, HungLD – Online Grid Credential Management. In proceedings of the 2nd National Symposium on Information & Communication Technology: research, development and application (ICT.rda), Hanoi September 16-17, 2006 ManhND, TuTT, MinhDT, ThuyNT, HungLD – Admitting cluster to grids. In proceedings of the 2nd National Symposium on Information & Communication Technology: research, development and application (ICT.rda), Hanoi September 16-17, 2006 HuyCV, TuanNA, MinhDT, ThuyNT, HungLD – Developing grid services for WEKA application. In proceedings of the 2nd National Symposium on Information & Communication Technology: research, development and application (ICT.rda), Hanoi September 16-17, 2006

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Dr. Thai The Hung, Faculty of Mechanical Engineering	"Study on influencing factors to the strength and the durability of existing ferro-concrete structures reinforced by CFRP strips" (IUC project code AP06\Prj3\Nr02)	Project title: "Set up the norm of essays of metal, plastic and composite material", Funded by: Ministry of Education and Training, Project reference number: B2006-01-15, Amount: 1.500 EUROS, Role: project promoter, Duration: 2006- December 2007. Application of the industrial softwares in the simulation of the shell structures under the impact loads Ministry of Education and Training, € 1,200, 1/2006 to 12/2007	The 2006 International ANSYS Conference, USA, May 2-4, 2006 The 8th National Congress on Mechanics, Hanoi December, 5, 2007	**Articles in international journals (B publication)** Nguyen Viet Hung, Thai The Hung – "Concrete Beam Reinforced by CFRP Strips: Numerical Simulation and Experimental Validation", ANSYS Advantage Magazine, USA. (accepted) **Conference proceedings (full paper)** Nguyen Viet Hung, Thai The Hung, Luu Quang Thin, Bui Tran Trung, Luu Chi Hieu - Finite Element Analysis for various structures made of classic and composite material by using ANSYS software, 2006 International ANSYS Conference, USA, May 2-4, 2006. *Thai The Hung, Nguyen Viet Hung, Le Duy Long, Le Huy Nhu* - "Study on the Behavior Beam Reinforced by CFRP Laminates", Proceedings from the 8th National Mechanical Conference, Hanoi, Vietnam, 2007
Dr. Le Thanh Huong, Faculty of Information Technology	"NLI4DB: A Natural Language Interface for Querying Database and Automatically Generating Reports" (IUC project code AP06\Prj3\Nr04)	1. Project title: Developing a software using the Vietnamese language for quering databases and Automatically Generating Reports. Applying in Hanoi Heart Hospital, Project code: CNTT/03-2006-2, Duration: 01/2006 – 06/2007, Role: participant,Total budget: 17.000 EURO, Funded by the Department of Science and Technology 2. Project title: Construct an open source Vietnamese syntactic parser, Duration: 5/2007-5/2009, (A branch project in a national research project "Develop typical and indispensable products in speech and text processing.), Role: Promoter of a branch project, Total budget: 5.000 Euro, Funded by Vietnamese national research fund "Research and develop an open source Vietnamese syntactic parser for public usage" - a branch project in the project "Construct typical and essential products on Vietnamese text and speech processing", Vietnamese government, € 7,300 for the branch project / €132,750 for the total project, 2 years (5/2007 – 5/2009) "Develop a system using natural language to query database and automatically generate reports. Applying in managing patient's documents of the Hanoi Heart Hospital", Hanoi Department of Science and Technology, € 15,900 EUR (350millions VND), 1,5 years (1/2006 - 6/2007) "Constructing a natural language question-answering systems for relational databases", Ministry of Education and Training, € 910 EUR (20millions VND), 1 year (2007)	The 20th scientific conference of Hanoi University of Technology. Hanoi, Vietnam The Pacific Asia Conference on Language, Information and Computation (PACLIC) conference, international conference, held by Seoul National University, in Seoul, Korea. Nov. 1-3, 2007. The Fundamental and Applied Information-Technology Research (FAIR) conference, national conference, held by Nhatrang University, in Nhatrang city, Vietnam. Aug. 9 – 10, 2007	**Articles in national peer reviewed journals** Le Thanh Huong. 2007. An approach in automatically generating discourse structure of text. Journal of Informatics and Cybernetics, volume 23(3), pp. 212-230, 2007, Vietnam Le Thanh Huong. An approach to automatically generate different presentations of natural language paraphrases. Journal of Posts, Telecommunications and Information Technology, volume 18 (3), pp. 74-82, 2007, Vietnam. **Conference proceedings (full paper)** Huong Le Thanh, The Nguyen Quoc. A Case Study on Vietnamese Syntactic Parsing. The 23rd ACM Symposium on Applied Computing (SAC). March 16 – 20, 2008, Fortaleza, Ceará, Brazil (submitted) Nguyen Kim Anh. 2006. Phep dich cac truy van do thi khai niem thanh cac truy van SQ L(Translating the conceptual graph queries into SQL queries). Proceeding of the 20th scientific conference Hanoi University of Technology Nguyen Kim Anh, Pham Thi Thu Hoai. 2006. Truy van ngon ngu tu nhien khong hoan chinh doi voi cac Ca sa du lieu quan he (Imperfect natural language queries to relational databases). Proceeding of the 20th scientific conference Hanoi University of Technology Nguyen Kim Anh. 2006. Phep dich cac truy van logic thanh cach truy van SQL trong cac he truy van bang ngon ngu tu nhien (Translating the logical queries into SQL queries in natural language query systems). Proceeding of ICT.rda'06. Hanoi, Vietnam Huong Le Thanh. 2007. A frame-based approach to Text Generation. (accepted). PACLIC21 conference, Seoul, Korea, Nov. 1-3, 2007 Nguyen Quoc The, Le Thanh Huong. 2007. Phan tích cu phap tieng Viet su dung van pham phi ngu canh tu vung hoa ket hop xac suat (Vietnamese syntactic parsing using the Lexicalized Probabilistic Context-free Grammar). FAIR conference, Nha Trang, Vietnam, Aug. 9-10, 2007 Le Thanh Huong. 2007. Nghien cuu phuong phap sinh cau tra loi bang ngon ngu tu nhien tu bang ket qua truy van Co so du lieu (A study on generating natural language answers from query's result tables). FAIR conference, Nhatrang, Vietnam, Aug. 9-10, 2007

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				Vu Tuyet Trinh, Do thi Ngoc Quynh. Cai thien ket qua tìm kiem thong tin dua tren ngu canh (Improving search result based on context). FAIR conference, Nhatrang, Vietnam, Aug. 9-10, 2007 Anh Kim Nguyen, Huong Thanh Le. Natural Language Interface Construction using Semantic Grammars. Submitted in May 2008 to the International Conference PRICAI 2008 (The Tenth Pacific Rim International Conference on Artificial Intelligence), Hanoi,
Dr. Phan Bui Khoi, Faculty of Mechanical Engineering	"To manufacture Mechanism of Relative Manipulation-Autonomous Vehicle that was used to collect and clear sullage out of underground sewerage systems in Hanoi" (IUC project code AP06\Prj3\Nr05)	To manufacture and control sample of mini mobile robot for training students on mechatronics, Reference number: B2007-01-85, Funded by: Ministry of Education and Training, € 2,500 (approved May 2007) To manufacture mini mobile robot, Protection-Occupational Safety Centre, National Institute of Labour, Viettnam, € 80,000, 2007-2009 To manufacture welding mobile robot, Ministry of Science and Technology of Vietnam € 90, 000, 2007-2009		**Articles in national peer reviewed journals** *Phan Bui Khoi, Tran Minh Thuy, Bui Van Hanh. Tinh toan dong hoc robot han co nen di dong.* Tuyen tap bao cao hoi nghi co hoc toan quoc. December 2007, 280-293
Dr. Nguyen Huu Lam, Institute of Engineering Physics	"Synthesis of Carbon Nanotubes by CVD for Field Emission Sources" (IUC project code AP06\Prj3\Nr06)	Promoter of the project: Project Title: "Carbon nanotubes synthesized by CVD method and some applications", Project duration: 2005-2006, Project reference: B2005-28-195 (Funded by Ministry of Education & Training), € 1,500 Fabrication and application nano materials on microelectronics and optoelectronics, Ministry of Science and Technology, € 25,000, 1/2006-12/2007 Fabrication and application of shape memory alloy thin film, Ministry of Education and Training, € 3,000, 1/2008-12/2009	The 1st WOFM-3rd WONN 2006 Conference, Dec 6-9, 2006, Ha Long, Vietnam, was held by National Centre of Science and Technology The ICEP 2006 Conference, Oct 9-13, 2006, Hanoi, Vietnam, held by Institute of Engineering Physics – HUT The Asia-Pacific Physics Conf 10, 21-24 August 2007, Pohang, Korea, was held by the Korea Physics Society (oral presentation)	**Articles in international peer reviewed journals (A publication)** L. H. Nguyen, T. V. Phi, P. Q. Phan, H. N. Vu, C. Nguyen-Duc, and F. Fossard, Synthesis of multi-walled carbon nanotubes for NH3 gas detection, Physica E 37 (2007) 54 *Nguyen C. Tu, Nguyen H. Lam, Luong H. Bac, Phan Q. Pho and Nguyen D. Chien*, Investigation of Field Emission from Vertically Aligned Carbon Nanotubes, submitted to Journal of Experiment Nanosciences (JEN). **Conference proceedings (full paper)** N. Q. Lich, P. Q. Pho, L. H. Bac, N. H. Lam, Structural Characterization of Carbon Spheres and Carbon Nanotubes, Proc. of the 1stIWOFM-3rdIWONN 2006 Conference, Dec 6-9, 2006, Ha Long, Vietnam, p. 133 N. Q. Lich, L. H. Bac, P. V. Toan, P. Q. Pho, N. D. Chien and N. H. Lam, Influence of Growing Condition on the Formation of Multi-Walled Carbon Nanotubes (Oral presentation), Proc. of the ICEP 2006 Conference, Oct 9-13, 2006, Hanoi, Vietnam, p. 424 *Nguyen.C. Tu, Le D. Huy, Luong H, Bac, Phan Q. Pho, Nguyen D. Chien and Nguyen H.Lam*, Investigation of electron field emission from CNTs synthesized by CVD method, submitted to the 5 th National Conference on Condensed Matter, 12-14 Nov 2007, Vung tau, Vietnam. *Nguyen.C. Tu, Le D. Huy, Luong H, Bac, Phan Q. Pho, Nguyen D. Chien, Trinh X. Thang, Nguyen N. Trung and Nguyen H. Lam*, Synthesis of multi-walled and single-walled of CNTs by CVD method, submitted to the 11 th Vietnamese-German Workshop on Materials Science, 1-4 April 2008, Nha trang, Vietnam

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			The 1st Inter. Workshop. Nanotech. & Appl., 15-17 Nov 2007, VungTau, Vietnam, was held by Ho Chi Minh National University and MINATEC - France (oral presentation) The 5th National Conference on Condensed Matter, 12-14 Nov 2007, Vietnam, Vietnamese Physics Society (oral presentation The 11th Vietnamese German Workshop on Materials Science, 1-4 April 2008, Nha Trang, Vietnam, will be held by Institute of Engineering Physics and German Universities (poster presentation)	
Dr. Hoang Thi Bich Thuy, Corrosion and Protection Research Center	Corrosion control of reinforced concrete structures in marine environment by cathodic protection, AP06/Prj3/08	Investigation on nanostructured nickel deposits with improved mechanical and corrosion resistance produced by electrochemical method, Ministry of Science and Technology, € 10,000, 2006-2008	The 14th Asian Pacific Corrosion Control Conference, held by Chinese Society for Corrosion and Protection, Shanghai, Oct. 21st - 24th, 2006 The 20th Scientific Conference, Sub-section: Inorganic Chemical Technology. Held by Hanoi University of Technology, Hanoi, Oct. 10th - 12th, 2006 The 2nd National Conference "Corrosion and Metal Protection with Economicv Integration", held by Vietnam Corrosion and Metal Protection Association, Da nang, April 7th - 8th, 2007	**Articles in national peer reviewed journals** Hoang Thi Bich Thuy, Pham Ngoc Hieu. Influence of the chloride concentration, humidity and thickness of concrete on the corrosion of steel reinforcement. Building Science and Technology Journal, No. 2, 2007 *Bui Thi Thanh Huyen, Le Thu Quy, Hoang Thi Bich Thuy.* Manufacture and study electrochemical behaviour of sprayed zinc layer on concrete. Submitted to Building Science and Technology Journal *Phan Cong Thanh, Hoang Thi Bich Thuy.* Prediction of time to corrosion initiation of steel in marine concrete structures. Submitted to Journal of Science and Technology **Conference proceedings (full paper)** *Phan Cong Thanh, Pham Ngoc Hieu*. The analysis of potentiostatic transients to assess the corrosion of steel in concrete. Proceedings of the 19th Scientific Conference, Hanoi University of Technology, Hanoi, Oct. 12th, 2006 3. Hoang Thi Bich Thuy, Phan Luong Cam. Performance of the zinc sacrificial anode in concrete environment. Proceedings of the 14th Asian Pacific Corrosion Control Conference, Shanghai, Oct. 21st, 2006

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Van Dinh Son Tho, Faculty of Chemical Technology	"Storage and formation of pure hydrogen mediated by the redox of modified iron oxides" (IUC project code AP06\Prj3\Nr08)	Promoter of the project: Title: Investigation on nanostructured nickel deposits with improved mechanical and corrosion resistance produced by electrochemical method, € 10.000 , Ministry of Science and Technology Rebirth of wasted agro-matters: New silica and carbon based nanomaterials prepared from rice husk as catalysts for the conversion of vegetable oil sludge to green fuels (biodiesel) and as adsorbent for the concentration of alcohols, Bilateral cooperation between Vietnnamese Ministry of Science and technology (MOST)and Federal Science Policy Office (SPO), € 65,000, (2007-2011)	International Conference on Engineering Physics October 2006, at Hanoi University of Technology. Hanoi, Vietnam The 5th international conference on unsteady-state process in catalysis, held in November 2006, in Suita, Japan The 1st South East Asian Technical University Consortium Symposium, held in February 2007, in Bangkok, Thailand The 10th German-Vietnamese Seminar on Physics and Engineering , Boon University, Gemany, June 2007 Conference on Catalysis and Adsorbent 2008, HoChiMinh City, July 2007 The 1st international workshop on nanotechnology and application – IWNA-2007, Vungtau, Vietnam. Dec, 2007 The 11th Vietnamese-German Seminar on Physics and Engineering, 2008, NhaTrang, Vietnam, April 2008	**Articles in international peer reviewed journals (A publication)** *Luu Lan Anh, Nguyen Ngoc Trung, Van Dinh Son Tho* Investigation of the transformation of iron oxide structure during redox reaction. Springer publisher (Accepted) **Articles in national peer reviewed journals** *Van Dinh Son Tho, Nguyen Ngoc Trung, Luu Lan Anh*. Comparison of the hydrogen formation during redox reaction of iron oxide modified by Cu Cr and La.Journal of Chemistry (Accepted) **Conference proceedings (full paper)** Vo Thanh Huyen, Van Dinh Son Tho, Nguyen Ngoc Trung, Le Thi Hoai Nam; The influence of synthesis method on pore volume of iron oxide; Proceeding of the International Conference on Engineering Physics, Hanoi, 2006, p.123-126 Luu Lan Anh, Nguyen Ngoc Trung, Van Dinh Son Tho; Hydrogen from methane by means of redox reaction of Cu-La-FeOx; The South East Asian Technical University Consortium Symposium, Hybrid Twinning Progran, Bangkof, Thailand, 2006, p.119-123 Luu Lan Anh, Nguyen Ngoc Trung, Van Dinh Son Tho; Investigation of the transformation of iron oxide structure during redox reaction; The 10th German-Vietnamese seminar on Physic and Engineering, Bonn German, 2007 Van Dinh Son Tho, Nguyen Ha Hanh, Vu Dao Thang; Metal oxide catalysts for synthesis of filamentous carbon by decomposition of liquefied petroleum gas, Accepted by the First international workshop on nanotechnology and application – IWNA-2007 Van Dinh Son Tho, Luu Lan Anh, Nguyen Ngoc Trung; Comparison of the hydrogen formation during redox reaction of iron oxide modified by Cu Cr and La - Accepted by the First international workshop on nanotechnology and application – IWNA-2007 *Luu Lan Anh, Nguyen Ngoc Trung, Van Dinh Son Tho*; Investigation of the transformation of iron oxide structure during redox reaction; The 10th German-Vietnamese seminar on Physic and Engineering, Bonn German, 2007 *Van Dinh Son Tho, Nguyen Ha Hanh, Vu Dao Thang*; Metal oxide catalysts for synthesis of filamentous carbon by decomposition of liquefied petroleum gas, Accepted by the First international workshop on nanotechnology and application – IWNA-2007 5. *Van Dinh Son Tho, Luu Lan Anh, Nguyen Ngoc Trung*; Comparison of the hydrogen formation during redox reaction of iron oxide modified by Cu Cr and La - Accepted by the First international workshop on nanotechnology and application – IWNA-2007

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Tran Trung, Faculty of Chemical Engineering	M-TiO2 and M-TiO2-SiO2 Nanostructured and Mesoporous Materials and Photorelectrocatalytic Reactors, AP05\Prj3\Nr07			**Articles in international peer reviewed journals (A publication)** Tran Trung, Chang-Sik Ha, "Structural and Electronic Changes in Layered Polyaniline Films Containing Nickel Nanoclusters", Submitted to Synthetic Metals Articles in national peer reviewed journals Tran Trung, "FTIR Studies on the Role of Nickel-nanoclusters incorporated in Polyaniline films having Structure of Layer-by-Layer", Vietnamese Journal of Chemistry 44, No. 1 (2006) p 128-133 **Conference proceedings (full paper)** Tran Trung, Vu Thi Huong, Chang-Sik Ha, "Effect of Glycerol on the surface Morphology and electronic Structure of CdS Thin Films Prepared in Aquous Solutions" in Proceedings of 3th International Symposium on Advanced Materials in Asia-Pacific Rim, Organized May 12-13, Ulsan city, Korea.
Dr. Nguyen Phong Dien, Faculty of Mechanical Engineering	Fault diagnosis in complex geared transmission systems based on theory of parametric vibration and Wavelet transform, AP07\Prj3\01	Nonlinear dynamics of technical systems, The Vietnam Basic Research Program in Natural Science, € 2,500, Two years (2007-2008)	The international conference on "Material Theory and Nonlinear Dynamics" in Hanoi, 24-26 September 2007, held by Gesellschaft für Angewandte Mathematik und Mechanik e.V. (GAMM) and Vietnam Association of Mechanics (VAM),	**Articles in international peer reviewed journals (A publication)** *Nguyen Phong Dien.* "Damping identification in a spur gear-pair system using the wavelet-based demodulation method".submitted for publication in Journal of Sound and Vibration (JSV) **Articles in national peer reviewed journals** *Nguyen Phong Dien.* "Damping identification using the wavelet-based demodulation method: Application to gearbox signals".submitted for publication in a special issue of journal "Technische Mechanik" (published in Magdeburg, Germany) **Conference proceedings (full paper)** *Nguyen Phong Dien.* "Damping identification using the wavelet-based demodulation method: Application to gearbox signals". A scientific report was presented at the international conference on Material Theory and Nonlinear Dynamics in September 2007
Dr. Le Quang Hoa, Institute of Biotechnology and Food Technology	Development of a rapid molecular method for detection of H5N1 avian influenza virus			
Dr. Tran Thu Huong, Faculty of Chemical Technology	Screening and isolation of anticancer components from Sponges of the sea of Vietnam, AP07\Prj3\03	Study on isolation of anti-inflammatory and chemo-preventive compounds from Vietnamese plants in the search of new medicines for people health, Ministry of education and training, € 22,000, 2007-2008		**Articles in national peer reviewed journals** *Tran Thu Huong, Nguyen Tuan Anh, Tran Thuong Quang, Chu Nhat Huy, Tran Thi Minh, Chau Van Minh,Phan Van Kiem*; Study on Chemistry of the Sponge Petrosia niricans living in Vietnamese sea; Vietnam Journal of Chemistry, Vol.45 (Special issue), P.141-144, 2007, ISSN 0866-7144
Dr. Tran Trung Kien, Faculty of Chemical Technology	Study and optimization of Curcumin production process			**Articles in national peer reviewed journals** *Tran Trung Kien, Nghiem Xuan Son, Phung Lan Hunog, Pham Van Thiem.* "Nghien cuu tach curcumin tu cu nghe vang bang phuong phap trích ly sieu am". Tap chí Hoa hoc, tap 45, trang 52-57, so _B – 2007. (Study for isolation of curcumin from yellow turmeric by using ultrasonic extraction – Journal of Chemistry – Vol.45, p.52-57, Special issue 2007)

Promoter	Title	Involvement in other external funded projects	Conference attendance paid	Publications
Dr. Nguyen Kim Nga, Faculty of Chemical Technology (FCT)	Synthesis of mesoporous materials based on spinel type- oxide by sol-gel route for NO removal from industrial waste gases by hydrocarbon (HC-SCR), AP07\Prj3\05	Design of nanoporous materials for adsorption and catalysis, Ministry of Education & Training, € 2,000, 2006-2007	6th International Mesostructured Materials Symposium, from 8-11 September 2008 at Namur, Belgium. 4th National Symposium on Inorganic Chemistry, Hanoi University of Technology, Vietnam, April 2008	**Articles in national peer reviewed journals** *Nguyen Kim Nga, Dang Kim Chi, Hoang Trong Yem*, "Influence of synthesis conditions on structural properties of mesoporous nickel aluminate spinel", Article in press in Vietnam Journal of Chemistry, Vol 46 (2008) *Nguyen Kim Nga, Dang Kim Chi*, "Synthesis of Nickel Aluminate Spinel on Silica", submmited to Vietnam Journal of Chemistry *Nguyen Kim Nga, Tran Thi Hien, Dang Kim Chi,* "Influence of Silica Source on Structural Behavior of nanocompozite NiAl2O4/SiO2", Summited to Vietnam Journal of Chemistry
Dr. Pham Hong Thinh, Faculty of Electrical Engineering	Conception and realization of optimal multilayered electromagnetic shielding of conducting composites in the microwave band			**Conference proceedings (full paper)** *Pham Hong Thinh, Nguyen Thi Lan Huong and Hoang Ngoc Nhan*, "Conception and realization of multilayered composite electromagnetic shielding material at microwave frequency by using genetic algorithm", International Symposium on Electrical Insulating Material (ISEIM 2008), abstract submitted, September 7-11, 2008, Yokkaichi, Japan *Pham Hong Thinh, Nguyen Thi Lan Huong and Hoang Ngoc Nhan*, "Electromagnetic characterisation of Pani/PU in multilayered structure , application for EMI protection at microwave frequency", (full paper submitted) 2nd Internation Conference on Communication and Electronics (ICCE 2008), June 4-6, 2008, Hoi An Vietnam
Dr. Nguyen Huu Thanh, Faculty of Electronics and Telecommunications	Pre-Feasibility Study of an Advanced Communication System for Small and Medium Fishing Boats in Vietnam, AP07\Prj3\07	Quality of Service in IEEE802-family wireless networks, Ministry of Science and Technology, € 30,000, 2007 - 2009 German – Vietnamese Next Generation Network Services Research and Development Testbed, Ministry of Science and Technology, € 28,000, 2007 - 2009	The Electrical and Electronics Engineering Fieldwise Seminar (EEE-FWS, 2007) on Advances in systems and Information Technology, November 22-23, 2007, Bangkok, Thailand	**Articles in national peer reviewed journals** *Vu Van Yem and Nguyen Huu Thanh*, "Solution for communication and localisation of fishing boat in Vietnam," Posts, Telecommunication and Information Technology Journal, vol.1, January 2008 (in Vietnamese). **Conference proceedings (full paper)** *Vu Van Yem and Nguyen Huu Thanh*, "Software Defined Radio Approach Applied to Direction Finding System," the Electrical and Electronics Engineering Fieldwise Seminar (EEE-FWS, 2007) on Advances in systems and Information Technology, November 22-23, 2007, Bangkok, Thailand *Vu Van Yem and Nguyen Huu Thanh*, "Research on Communication and Localization Of Small and Medium Fishing Boats in Vietnam_ Ad-hoc Network Associated to Software Defined Radio Approach," submitted to IEEE International Conference on Communication and Electronics (ICCE'08), February 2008
Dr. Nguyen Thi Minh Tu, Institute of Biological and Food Technology	Legume and cereal flavor behavior in Vietnamese traditional cake processing, AP07\Prj3\08	Extraction and application of natural compounds from nature, Ministry of Education and Training, € 1,500, 1.2006- 12.2007 Application of Saponin flavonoid in experimental candy processing, Ministry of Education and Training, € 400, 4.2007-12.2007 Research of raw milk quality guarantee in sterilized milk manufacturing, Ministry of Education and Training, € 1,900, 1.2007-12.2008 Research of technology to extract polyphenol from Vietnam tea leaves and application in functional food manufacturing, Ministry of Education and Training, € 1,900, 2.2007-5.2009	The 13th ICC Cereal & Bread Congress - Cerworld 21st; "Cereals worldwide in the 21st century: present and future"; held by ICC: International Asocciation for Cereal Science Technology; Madrid, Spain 15th-18th June 2008	**Conference proceedings (abstract)** *Luong Hong Nga, Nguyen Thi Minh Tu*, STUDY ON NUTRITIONAL AND FLAVOUR CHARACTERISTICS OF SOME VIETNAMESE RICE VARIETIES, abstract have been accepted for poster presentation at the 13th ICC Cereal and Bread Congress Two

Appendix IX : Additional statistics

Table 1: Overview of PCM trainees by AP, HUT institution and beneficiary of Research Fund (VLIR)

	AP2004		AP2005		AP2006		Grand total
	VLIR	Total	VLIR	Total	VLIR	Total	
Centre for Education and Development of Chromatography				1		1	2
Centre for research and Consulting Management						1	1
Centre of Education and Development of Chromatography		1					1
Construction Management Office		1					1
Faculty of Social Sciences		1					1
Faculty Applied Mathematics				1			1
Faculty of Economics and Management		1					1
Faculty of Applied Mathematics and Informatics		1					1
Faculty of Chemical Technology	7	7	6	10	8	8	25
Faculty of Education Engineering		2					2
Faculty of Electronics and Telecommunication	3	5	1	2	1	1	8
Faculty of Engineering Education							0
Faculty of Foreign Languages		2		3			5
Faculty of Information Technology	1	2			2	2	4
Faculty of Material Science and Technology							0
Faculty of Mechanical Engineering	1	2	1	1	3	6	9
Faculty of Technology and Material Sciences	1	1		2			3
Faculty of Textile Engineering, Garment Technology and Fashion Design		1	1	1			2
Institute of Biological and Food Technology	2	3	1	3		2	8
Institute of Engineering Physics	1	1	2	3	2	3	7
Institute of Environmental Science and Technology		1		1		1	3
Institute of Refrigeration and Heat Engineering	1	1				1	2
International Training Institute for Material Sciences (ITIMS)	3	5				2	7
International Training Programme (ITP)		1					1
KITECH-HUT Centre		1					1
Library and Information Network Centre		2		1			3
Metal Corrosion and Protection Research Centre		1	1	1	1	1	3
Multi-media Information, Communication & Application Centre	1	1					1
Polymer Centre		1					1
Precise Machinery Research Centre		1				1	2
Project Planning and Development		1					1
Total	**21**	**47**	**13**	**30**	**17**	**30**	**107**

Table 2: Participants in English language training per faculty and AP (2004-2007)

Faculty	2004		2005		2006		2007		Total
	VLIR project	Total	VLIR project	Total	VLIR project	Total	VLIR project	Total	
Centre for Education and Development of Chromatography						1			1
Centre for research and Consulting Management						2			2
Centre of Chromatography								3	3
Corrosion and Protection Research Centre				1	3	4		1	6
Department of Internet Technology								6	6
Faculty of Applied Mathematics				2				2	4
Faculty of Chemical Technology	5	7	13	19	13	18	5	28	72
Faculty of Electrical Engineering	2	2	1	1	1	3		6	12
Faculty of Electronics and Telecommunication			3	3	2	3			6
Faculty of Engineering Education						2			2
Faculty of Foreign Languages								2	2
Faculty of Information Technology	1	1	3	3	3	11		1	16
Faculty of Material Science and Technology				3				5	8
Faculty of Mechanical Engineering	3	3	9	19	2	8	2	11	41
Faculty of Metallurgy and Materials Technology									0
Faculty of Textile, Garment Technology and Fashion Design	2	2	4	6			1	3	11
Institute of Biological and Food Technology	2	2	4	6	5	7	1	14	29
Institute of Engineering Physics			5	8	5	8	2	10	26
Institute of Environment Science and Technology						2			2
Institute of Refrigeration and Heat Engineering	1	1	2	2		3		1	7
Institution of Transportation Engineering								5	5
International Cooperation Department		1		2					3
International Training Institute for Material Sciences	3	3	4	4	2	4			11
KITECH-HUT Centre						3			3
Multimedia Information, Communication and Applications Centre	2	2	3	4		2		2	10
Network and computer technology Centre						4			4
Polime Centre						1		3	4
Precise Machinery Research Centre						2			2
Ta Quang Buu Library								1	1
Total	**21**	**24**	**51**	**83**	**36**	**88**	**11**	**104**	**299**

Table 3: Summary overview of research publications from projects funded by the VLIR-HUT Research Fund

Promoter	Title	International peer reviewed journals	National peer reviewed journals	Conference proceedings (full text)	Conference abstracts
Dr. Ta Ngoc Don, Faculty of Chemical Engineering	Application of organic complexion to convert kaolin into some common zeolites (VLIR IUC project code AP04\PJ03\Nr01)	1		2	1
Dr. Ing. Bui Van Hanh, Faculty of Mechanical Engineering	Research to apply plasma powder surfacing for the manufacturing of cutting tools working under heavy impact and wear conditions (AP04\PJ03\Nr02)		2		
Dr. Pham Huy Hoang, International Training Institute for Materials Science (ITIMS)	Advanced open Source Web Service Platform and Applications in HUT (VLIR IUC project code AP04\PJ03\Nr03)		1	3	
Dr. Pham Thanh Huy, Faculty of Metallurgy and Materials Technology	Towards the higher efficient light emitting devices based on nanoscale silicon structures (VLIR IUC project code AP04\PJ03\Nr04)	2		4	2
Prof. Dr. Do Minh Nghiep, Faculty of Mechanical Engineering	Application of Mechanical Alloying (MA) and Mechanical Milling (MM) for preparation of fine powders with non-equilibrium structures used in powder metallurgy and hardening coating (AP04\PJ03\Nr05)	1	2		
Dr.Nguyen Nam Quan, Faculty of Textile-Garment Technology and Fashion Design	Wavelet theory-based high resolution signal analysis, application to biomedical and communications (AP04\PJ03\Nr06)		3	1	1
Dr. Nguyen Hong Quang, Faculty of Chemical Engineering	Robust tracking controller design and implementation for servo system of industrial robots or CNC machines (AP04\PJ03\Nr07)		1	2	
Dr. Hoang Vinh Sinh, Institute of Biological and Food Technology	Research, design and manufacture the controller Electro-Discharge die sinking Machine in Vietnam conditions (VLIR IUC project code AP04\PJ03\Nr08)			1	
Dr. Ngo Chi Trung, International Research Center MICa-HUT	Investigation in Upgrading Quality of Coating fabrics and Its Garment Products of Textile-Garment Industry in Vietnam (PJ09)	1	2	2	
Dr. Mai Thanh Tung, Faculty of Electrical Engineering	Electrochemical Fabrication of nanosized magnetic Multilayer Co/Cu with Giant Magneto resistance (GMR) effect for novel Magnetic Sensor (VLIR IUC project code AP04\PJ03\Nr10)		7	3	
Dr. Do Thi Hoa Vien, Faculty of Information Technology	Research on biotechnological solutions for production of some functional foods from Soybean (Glycine Max), Kudzu(Pueraria thompsonii Benth) and black chicken of Vietnam (AP04\PJ03\Nr11)		2		2
Dr. Pham Thi Ngoc Yen, Faculty of Electronics and Telecommunications	Communicating smart Electrocardiograph (VLIR IUC project code AP04\PJ03\Nr12)		2	9	
Dr. To Kim Anh, Institute of Biological and Food Technology	Development and validation of DNA-based kits for rapid detection of pathogen bacteria Listeria monocytogenes and Bacillius cereus applied in food safety control (VLIR IUC project code AP05\Prj3\Nr01)	3		1	1
Dr. Nguyen Van Hieu, International Training Institute for Materials Science (ITIMS)	Carbon nanotubes/ nanostructured TiO2(SiO2) composite thin films for environmental gas-sensing applications (VLIR IUC project code AP05\Prj3\Nr03)	2		6	

Promoter	Title	International peer reviewed journals	National peer reviewed journals	Conference proceedings (full text)	Conference abstracts
Dr. Tran Dai Lam, Faculty of Chemical Technology (FCT)	Development of nanoparticulate delivery system based on biodegradable and biocompatible chitosan for controlled drug release and drug targeting. Application for antimalarial drug (VLIR IUC Project code AP05\Prj3\Nr05)		7	1	
Dr. Nguyen Phuc Duong, ITIMS	"Half-metallicity in ferromagnetic Heusler alloys: From materials to Spintronic devices" (VLIR IUC project code AP05\Prj3\Nr02)	1		6	
Dr. Vu Thi Hong Khanh, Department of Textile material and Chemical	"The improvement studying of technology to prevent mal-odour for garment products such as underwear, sock, sport clothing made from PET, PA and its blend" (VLIR IUC project code AP05\Prj3\Nr04),		4	2	
Dr. Pham Hoang Luong, Institute of Heat Engineering and Refrigeration (IHERE)	Promoting efficient and clean use of biomass fuels for energy production in Vietnam" (IUC project code AP05\Prj3\Nr06)		1	3	
Dr. Nguyen Chan Hung, Faculty of Electronics and Telecommunications (FET)	"Research and Development of communication gateway peer-to-peer network BKUMN" (IUC project code AP06\Prj3\Nr01)	1	1	5	
Dr. Ta Tuan Anh, Faculty of Information Technology	"BKGRID: an open source platform for grid and high performance computing" (IUC project code AP06\Prj3\Nr03)			6	
Dr. Thai The Hung, Faculty of Mechanical Engineering	"Study on influencing factors to the strength and the durability of existing ferro-concrete structures reinforced by CFRP strips" (IUC project code AP06\Prj3\Nr02)	1		2	
Dr. Le Thanh Huong, Faculty of Information Technology	"NLI4DB: A Natural Language Interface for Querying Database and Automatically Generating Reports" (IUC project code AP06\Prj3\Nr04)		2	8	
Dr. Phan Bui Khoi, Faculty of Mechanical Engineering	"To manufacture Mechanism of Relative Manipulation-Autonomous Vehicle that was used to collect and clear sullage out of underground sewerage systems in Hanoi" (IUC project code AP06\Prj3\Nr05)		1		
Dr. Nguyen Huu Lam, Institute of Engineering Physics	"Synthesis of Carbon Nanotubes by CVD for Field Emission Sources" (IUC project code AP06\Prj3\Nr06)	2		4	
Dr. Hoang Thi Bich Thuy, Corrosion and Protection Research Center	Corrosion control of reinforced concrete structures in marine environment by cathodic protection, AP06/Prj3/08		2	2	
Dr. Van Dinh Son Tho, Faculty of Chemical Technology	"Storage and formation of pure hydrogen mediated by the redox of modified iron oxides" (IUC project code AP06\Prj3\Nr08)	1		3	
Dr. Tran Trung, Faculty of Chemical Engineering	M-TiO2 and M-TiO2-SiO2 Nanostructured and Mesoporous Materials and Photorelectrocatalytic Reactors, AP05\Prj3\Nr07	1	2		
Dr. Nguyen Phong Dien, Faculty of Mechanical Engineering	Nonlinear dynamics of technical systems, The Vietnam Basic Research Program in Natural Science, € 2,500, Two years (2007-2008)	3			1
Dr. Le Quang Hoa, Institute of Biotechnology and Food Technology	Development of a rapid molecular method for detection of H5N1 avian influenza virus				
Dr. Tran Thu Huong, Faculty of Chemical Technology	Screening and isolation of anticancer components from Sponges of the sea of Vietnam, AP07\Prj3\03		1		
Dr. Tran Trung Kien, Faculty of Chemical Technology	Study and optimization of Curcumin production process		1		
Dr. Nguyen Kim Nga, Faculty of Chemical Technology (FCT)	Synthesis of mesoporous materials based on spinel type- oxide by sol-gel route for NO removal from industrial waste gases by hydrocarbon (HC-SCR), AP07\Prj3\05		2		
Dr. Pham Hong Thinh, Faculty of Electrical Engineering	Conception and realization of optimal multilayered electromagnetic shielding of conducting composites in the microwave band			2	

Promoter	Title	International peer reviewed	National peer reviewed journals	Conference proceedings (full text)	Conference abstracts
Dr. Nguyen Huu Thanh, Faculty of Electronics and Telecommunications	Pre-Feasibility Study of an Advanced Communication System for Small and Medium Fishing Boats in Vietnam, AP07\Prj3\07		1	2	
Dr. Nguyen Thi Minh Tu, Institute of Biological and Food Technology	Legume and cereal flavor behavior in Vietnamese traditional cake processing, AP07\Prj3\08				1
Total		**20**	**45**	**80**	**9**

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VLIR {Vlaamse Interuniversitaire Raad}
UOS {Universitaire Ontwikkelingssamenwerking}
Bolwerksquare 1a ~ 1050 Brussels ~ Belgium
T (32) (2) 289 05 50 **F** (32) (2) 514 72 77
www.vliruos.be
info@vliruos.be