Cooperation

between

Faculty of Science, Stockholm University, Stockholm, Sweden

and the

International Science Programme (ISP), Uppsala University, Uppsala, Sweden

2011-2015

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Overview and Results Summary
January 2011 – June 2015

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1 Summary

According to an Agreement of Cooperation, signed in December 2010, the Faculty of Science, Stockholm University (SU) has contributed with 1 million SEK yearly to the International Science Programme (ISP) at Uppsala University 2011-2015. A Management Committee, established 2011, has monitored the cooperation. The contribution has been a very important factor in negotiating the current Uppsala University (UU) agreement with Sida, demonstrating that ISP has attracted additional financial support for the core program, besides from UU and Sida.

The expenditures of the contributed funding has been used for:

1) Development of the Pan African Centre for Mathematics (PACM), a cooperation between Stockholm University and University of Dar es Salaam, Tanzania. Despite considerable development efforts, PACM yet remains to be consolidated.

2) Support to research groups in chemistry, mathematics and physics at the Faculty of Science, National University of Laos (NUOL), Vientiane, Laos. The Stockholm University contribution has allowed for a favorable, continued development from 2012, when Sida funding was no longer available for the support.

3) Asian Network for research on Food and Environmental Contaminants (ANFEC). The network was launched in 2011, as a collaboration between ISP environmental chemistry partners in Bangladesh, Cambodia, and Laos, and organizes a yearly training workshop facilitated by Stockholm University staff.

4) Other activities, mainly regarding interregional contact development, and chemistry laboratory and instrument maintenance, have implied important opportunities and facilitated use of equipment.

5) Coordination of the cooperation and the activities, including a welcome contribution to the ISP 50th Anniversary seminar in Uppsala.

6) Indirect costs, which in Uppsala University’s financial management system are the costs of the administrative support and premises, as generated by the operation of the core activities.

Until 30 June 2015, 80% of the total five-year contribution has been used.

During the agreement period, 21 Stockholm University staff members have to various extents been engaged in ISP collaboration, 16 of them serving as host supervisors to students from ISP partners in Africa and Asia.

ISP hopes for a favorable evaluation by Faculty of Science at Stockholm University, allowing for an agreement of a next period of Stockholm University contribution to the ISP core program, after 2015.
2 Overview

This report regards the contribution by the Faculty of Science, Stockholm University (SU), to the International Science Programme (ISP) at Uppsala University 2011-2015, and the management, use, activities and results of the use of the allocated funds in the period 1 January 2011 to 30 June 2015, in accordance with the Agreement signed in December 2010 (Appendix 1). The contribution has been 1 million SEK per year during the 5-year agreement period. According to the notice 1 September 2010 about the Faculty decision, by the Head of Office of the Faculty of Science, Åsa Borin, a possibly continued cooperation is to be considered after evaluation of the activities. The current report may provide information useful for the evaluation.

2.1 Management of the contribution

According to the agreement, “a Management Committee shall be appointed; comprising two members of each of the Parties, and be responsible for the implementation of the collaboration and ensuring accomplishment of the activities envisaged.” Four meetings were held in 2011, and the Management Committee was established in the second of these meetings. One meeting was held each year 2012-2014. (Appendix 2)

In a first meeting, (4 February 2011), attended by Anders Karlhede (SU), Åsa Borin (SU), Leif Abrahamsson (ISP), Paul Vaderlind (SU), and Peter Sundin (ISP), it was decided that the Management Committee should provisionally be comprised of Anders Karlhede (SU), Leif Abrahamsson (ISP), Peter Sundin (ISP), and Stefan Nordlund (SU). In this meeting, the general distribution of the contribution was decided, including part-time employment of Paul Vaderlind at ISP, particularly intended for his engagement as coordinator of the Pan African Centre for Mathematics (PACM; see Use of the contribution).

In the second meeting (29 April 2011), the appointment of the members of the Management Committee was confirmed and established. Other issues regarded operational activities. Two more meetings were held in 2011, (20 September and 31 October).

In 2012 to 2014, one meeting was held each year (22 March 2012, 12 June 2013 and 19 May 2014). The minutes of the meeting in 2014 remain to be signed. No meeting has, as of yet, been held in 2015.

2.2 Use of the contribution.

The expenditures of the contributed funding has been used for:

1) Development of the Pan African Centre for Mathematics (PACM), a cooperation between Stockholm University and University of Dar es Salaam, Tanzania.
2) Support to research groups in chemistry, mathematics and physics at the Faculty of Science, National University of Laos (NUOL), Vientiane, Laos.
3) Asian Network for research on Food and Environmental Contaminants (ANFEC).
4) Other activities, mainly regarding laboratory and instrument maintenance.
5) Coordination of the cooperation and the activities, including a contribution to the ISP 50th Anniversary seminar in Uppsala.
6) Indirect costs, which in Uppsala University’s financial management system are the costs of the administrative support and premises, as generated by the operation of the core activities.
Until 30 June 2015, 80% of the total five-year contribution has been used. Of that, 35% was spent on PACM development, 23% on support to NUOL, 9% on support to ANFEC, 12% on other activities, 1% on coordination and anniversary costs, and 19% on indirect costs (Figure 1, Appendix 3). In next section, the activities and results of 1), 2), 3) and 4) are accounted for in more detail.

![Figure 1. Distribution of expenditures from 1 January 2011 to 30 June 2015 of the contribution by the Faculty of Science, Stockholm University, to the International Science Programme, Uppsala University.](image)

### 3 Activities and Results

This section provides information about the efforts to develop the Pan African Centre for Mathematics, and accounts in more detail for the support to the Faculty of Science at the National University of Laos, the development and activities of the Asian Network for research on Food and Environmental Contaminants (ANFEC) as well as the nature of “Other activities”.

#### 3.1 Pan African Centre for Mathematics

The development of the Pan African Centre for Mathematics has during the agreement period met limited success, mainly because of the challenges to establish the center. Members of the Management Committee have closely monitored the development, and have together with the PACM coordinator taken various actions to facilitate the work to realize the center (partly accounted for in Appendix 2, further details are in email communications, separate meetings, etc., which are not accounted for in detail in this report). In brief:

- In 2011, a budget for PACM was proposed, and the distribution of responsibilities between Stockholm University and University of Dar es Salaam was determined.
- In 2011, it was decided to include the request for Sida support to PACM in ISP’s application to Sida for the next phase of its core program.
- In 2012, ISP’s core program application to Sida was submitted (30 March), including applying for Sida support to PACM. The Arab Bank for Economic Development in Africa (BADEA) awarded 300,000 USD to PACM.
- In 2013, Sida decided to consider possible support to PACM separately from ISP’s core program application.
• In 2014, Sida decided, as notified in an email to the Management Committee 27 June from Hannah Akuffo (then Acting Head of the Unit for Research Cooperation, Sida), that PACM will receive no support from Sida, for reasons given in the email notice.

The work is expected to continue, to pave the way for the establishment and consolidation of PACM despite the various challenges that have continued to delay the work.

The total expenditures during the period 1 January 2011 to 30 June 2015 were 1,414,076 SEK (Appendix 3)

3.2 Support to Faculty of Science at NOUL

The support to the Faculty of Science at the National University of Laos (NUOL) has been directed to a) chemistry, b) mathematics, and c) physics. The support was organized within the ISP core program otherwise funded by Sida. In the 2008 agreement with Sida, ISP was requested to discontinue support in Laos because it is not among the focus countries listed by the Swedish government in the new development support policy announced in 2007. A phase out period of three years was decided, allowing for continued support until 2011. The agreement with Stockholm University 2011-2015 made it possible to continue the support to the present without interruption. Because ISP support to chemistry and physics in Laos had started as late as 2005, the development until 2011 had been quite modest, and a premature phase-out following the Sida request would have jeopardized investments in staff competence development and instrumental facilities. In the period 2012 to 2015, the research activities in these chemistry and physics departments at NUOL have increased tangibly, as demonstrated by the reported results. Support to mathematics at NUOL started at a low level in 2012, not the least to secure the continued PhD study of a former Sida grantee (after Sida phased out support to NUOL in 2011).

3.2.1 Chemistry

ISP has supported the development of research and higher education at Department of Chemistry, National University of Laos (NUOL) since 2005, until 2011 using Sida funding, and 2012 to 2015 using Stockholm University funding. A bridging year of continued research group support was made available in 2012, and until 2015 the support was based on an ISP scientific reference group evaluation in 2012 of an application to ISP for the period 2013-2015, submitted by the current group leader Dr. Kesiny Phomkeona.¹

The group aims to continue its research activities on heavy metal and pesticide residues analysis, and to conduct further testing of such contaminants in foods and grains in the country. They also want to develop the methodology on residue analysis and to enhance the analytical techniques and skills of the chemistry department staff and students.

The funding was used for developing local research activities, staff training, participating in scientific conferences, and to cover the costs of visits by Mr. Michael Strandell, Stockholm University, to provide and maintain chemistry analytical instruments and train participating staff members. In 2014, the group requested to allocate some of the funding to support a staff member (Mr. Vanpaseuth Phouthavong) while on MSc-training in analytical chemistry 2014-2015 at Thammasat University, Thailand, which was granted.

The total expenditures during the period 1 January 2011 to 30 June 2015 were 386,733 SEK (Appendix 3).

The main activities and results, as reported to ISP, are as follows.

¹ http://www.isp.uu.se/isp-core-program/isp-chemistry/research-groups/laos/
Scientific publications

Contributions at Scientific Meetings

Arranged events
Training course on using GC-MS, on an instrument donated by Stockholm University through Mr. Michael Strandell, Department of Chemistry, NUOL, Vientiane, Laos, 31 January – 11 February 2011.
Mr. Michael Strandell from Stockholm University spent two weeks at Department of Chemistry, NUOL in the propose of giving training on the operation of GC-MS and data evaluation and also checking the instrument. October 31-November 14, 2011.
Training course on Analytical Instrumentation at Department of Chemistry, NUOL, Vientiane, Laos, 9-21 April 2012.
Theoretical and practical training course on analytical instruments, 18-30 March 2013, Dept. Chemistry, NUOL, Vientiane, Laos
Course on Instrumentation and Water sampling and analysis, Department of Chemistry, NUOL, Vientiane, Laos. 6-10 October 2014.

Other activities and results
In 2011, the group has provided laboratory facilities to six final-year undergraduate students (all of them are women). The students were given support in order to finish their final
projects on pesticide residue analysis. The support was given to two topics. First one is *Determination of DDT and Its Metabolite Products in Fruits* and the other is *Determination of Banned Organophosphorus Pesticides in Vegetables*.

Vanpaseuth Phouthavong attended a training course on *Analytical Skills Development* at Helsinki, Finland. May 27- June 10, 2011

Vanpaseuth Phouthavong was sent to attend the *Research Review meeting* as a representative for the ANFEC proposal defense and also the *ISP 50th Anniversary Seminar* at Uppsala University, Sweden during September 21-27, 2011.

Santi Kongmany and Vanpaseuth Phouthavong attended a training course on Quality Control and Quality Assurance in POPs Analysis, at Royal University of Phnom Penh, Cambodia. October 03-22, 2011.

Santi Kongmany attended a training course on Assess and Develop Capacity to Identify Foodborne Diseases at Women Union, Vientiane, Laos PDR. November 23-25, 2011.

Three group members attended a workshop on SPS Risk Evaluation in Lao PDR (Food Safety). Vientiane province, Lao PDR. December 12-16, 2011.

Vanpaseuth Phouthavong was sent to attend the first meeting about launching of the ANFEC network and also the *Seminar on Organic Pollutants in Food, Agricultural Products and Environment* at University of Dhaka, Bangladesh. January 16-18, 2012.

A Japanese internship student, Mr. Kazuyuki Tsuzuki spent two weeks working with the group. His internship program was granted by Toyohashi University of Technology, Japan. August 2-14, 2011.

A MFS Swedish student, Ms. Sofia Carlsson spent her internship program working on installation of the hydride generation system in AAS for arsenic analysis at the Department of Chemistry, June 10-August 15, 2011.

From 2014, the research group at Department of Chemistry, National University of Laos, provides services on sample testing to other sectors such as the National Institute of Medicinal Plants. Both group members and staff from the other sectors were given opportunities to take part in the laboratory works, allowing them to gain knowledge and experience. Results from the experiments provided them as supplementary information for issuing standards of Lao medicinal plants.

### 3.2.2 Mathematics

The Department of Mathematics at the National University of Laos was supported until 2011 within a Sida bilateral program. After the Sida program was concluded, ISP has used Stockholm university funds to secure, maintain, and further develop the achievements and activities that started during the bilateral program. Mr. Sirisack Sackmone is in charge of the activities.²

The funds have been used to support Mr. Sackmone’s for concluding his PhD studies at Linköping University, to facilitate regional contacts including conference participation, and to co-support a CIMPA³ school in Vientiane in 2014.

The total expenditures during the period 1 January 2011 to 30 June 2015 were 203,483 SEK (Appendix 3).

The main activities and results, as reported to ISP, are as follows.

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²[http://www.isp.uu.se/isp-core-program/isp-mathematics/research-groups-math/national-university-of-laos/]

³[Centre International de Mathématiques Pures et Appliquées (http://www.cimpa-icpam.org/)]
**Arranged events**
CIMPA School on Graph decomposition and Hamiltonian Cycles. Department of Mathematics, National University of Laos, Vientiane, Laos, 8-19 December 2014.

**Other activities and results**
Two staff members participated in an international conference in Mandalay, Myanmar, in 2014. As a result of the regional activities, financed through the SU-funding, the Department of Mathematics at NUOL is from 2015 a member of the South East Asia Mathematics Network (SEAMaN). The other members are the departments of mathematics at Royal University of Phnom Penh and Mandalay University. SEAMaN is supported through the ISP core Sida funding starting from 2015.

### 3.2.3 Physics

ISP has supported the development of research and higher education in Geophysics, at the Department of Physics, National University of Laos (NUOL) since 2005, until 2011 using Sida funding, and from 2012 using Stockholm University funding. A bridging year of continued research group support was made available in 2012, and until 2015 the support was based on an ISP scientific reference group evaluation in 2012 of an application to ISP for the period 2013-2015, submitted by the current group leader Mr. Viengthong Xayavong.4

The purpose of the group is to develop research activities in Geophysics especially on groundwater quality, and on rock magnetism and palaeomagnetism. The aim of the research work on groundwater is to study the water quality by using geophysical methods to determine groundwater table, the thickness and continuity of shallow aquifers, to delineate fresh and saline water, and then to map good quality groundwater. The application of rock magnetic and palaeomagnetic studies aim to evaluate the postulated model of the Indochina and ShanThai blocks, palaeocurrent of Mesozoic sandstone and lava flow of basalts in Laos.

The group has also developed short- and long-term training in geophysics for staff and students at different level of study. A BSc programme in geophysics was launched in 2012 at NUOL

The total expenditures during the period 1 January 2011 to 30 June 2015 were 340,112 SEK (Appendix 3). In addition, a PhD student on sandwich training at Prince of Songkla University, Hat Yai, Thailand, was supported using Sida funding until graduation in 2014.

The main activities and results, as reported to ISP, are as follows.

**Academic Theses**
Sounthone Singsoupho, Rock magnetism and palaeomagnetism of the Mesozoic to Tertiary rocks in Lao PDR. (PhD, September 2014)

**Scientific publications**

**Contributions at Scientific Meetings**
V. Xayavong, S. Keophilavong, T. Sounsuardao, S. Xayheuangsa, S. Leungtakuon.
Application of Electrical Resistivity Survey for Groundwater Investigation in Phon Hong

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4 <http://www.isp.uu.se/isp-core-program/isp-physics/research-groups/laos/>


Other activities and results
Sountone Singsoupheo carried out research work at the Palaeomagnetic Lab, Lulea University of Technology, Sweden, April to June 2011 and the same months in 2012. In 2012 he also spent two weeks at Lund University, Sweden.

Viengthong Xayavong and Sonexay Xayheuangsy were trained on radiometric prospecting at Prince of Songkla University, Thailand, 15 November to 15 December 2011.

3.3 Asian Network of research on Food and Environmental Contaminants

In 2011, Stockholm University funding was provided to an emerging scientific network, Asian Network of Research on Food and Environment Contaminants (ANFEC), embracing ISP-supported environmental chemistry research groups in Bangladesh, Cambodia, and Laos, and coordinated from the Department of Chemistry at NUOL. The funding in 2011 was provided to facilitate initial meetings, and a workshop held in Phnom Penh, Cambodia, in October that year, facilitated by Mr. Michael Strandell, Stockholm University. The listed workshops were developed by Michael Strandell and Ulla Ericsson, Stockholm University, in consultation with ANFEC members.

The total expenditures during the period 1 January 2011 to 30 June 2015 were 343,327 SEK (Appendix 3).

The main activities and results, as reported to ISP, are as follows.

Arranged events
ANFEC Workshop on Quantification and Quality Assurance; Theory and practical training in extraction, cleanup and analysis of real samples and the evaluation of data, focused on samples of fish and looked for contamination with PCBs and DDTs. Department of Chemistry, Royal University of Phnom Penh, Cambodia, 3-21 October 2011.

ANFEC Steering Committee Meeting at Department of Chemistry, NUOL, Vientiane, 5-6 March 2012.

The first ANFEC training workshop on Environmental Contaminant Analysis. Department of Chemistry, Royal University of Phnom Penh (RUPP), Cambodia, 18-20 December 2012.

ANFEC Steering Committee Meeting at Department of Chemistry, NUOL, Vientiane, 5 September 2014.

The second ANFEC training workshop on Quality Assurance and Quality Control, RUPP, Cambodia, 2-20 January 2014.
3.4 Other Activities

Other Activities has comprised:

- Travel of African mathematicians, as resource persons and contributors, to conferences in Asia to link up with ISP partners there, including meeting and other local costs;
- Supplementary support to secure the PhD training of a staff member of the National Mathematical Centre, Abuja, Nigeria, at Luleå University of Technology, Luleå, Sweden;
- Maintenance, repair and training mission of Mr. Michael Strandell, Stockholm University, as engaged by ISP chemistry partners to visit Cambodia, Ethiopia, and Kenya;
- Sending Prof. Henrik KYlin, Linköping University, as a replacement for the ISP chemistry director Peter Sundin, to Hague, the Netherlands, as a facilitator in an OPCW,\(^5\) Workshop for laboratory managers in the Africa Region, 27-29 June 2012.

These activities have implied important meeting and training opportunities and facilitated the maintenance and use of equipment.

4 Conclusions

The Stockholm University, Faculty of Science contribution to the International Science Programme (ISP):

- Has been instrumental in the continuing work to establish the Pan African Centre for Mathematics (PACM), which, however, remains to be finally consolidated.
- Has secured the continued support to chemistry, mathematics, and physics at the Faculty of Science, National University of Laos, which has safeguarded previous investments, and allowed for a favorable, continued development.
- Has allowed for the preparatory meetings and initiation of the Asian Network of research on Food and Environmental Contaminants (ANFEC), linking together ISP partner working in these fields in Bangladesh, Cambodia, and Laos.
- Has allowed for important support actions, linking African and Asian mathematicians, has secured training of National Mathematical Centre (Abuja, Nigeria) staff in Sweden, has allowed for technical interventions to keep up chemistry instrumentation, and has allowed for participation in a OPCW meeting on African Region laboratory management.
- Has been an important to the formation of the regional network SEAMaN.

Further, the Stockholm University, Faculty of Science contribution to ISP has been a significant factor in negotiating the current Uppsala University (UU) agreement with Sida, for operating ISP 2014-2018, demonstrating that ISP has attracted additional financial support for the core program, besides from UU and Sida.

ISP hopes for a favorable evaluation by Faculty of Science at Stockholm University, allowing for an agreement of a next period of Stockholm University contribution to the ISP core program, after 2015.

\(^5\) Organization for the Prohibition of Chemical Weapons (http://www.opcw.org/)
5 Additional Information

5.1 Stockholm University staff engaged in ISP collaboration

The following 21 Stockholm University staff members has been engaged with ISP in the agreement period 2011-2015, 15 of them acting as hosting supervisors to students from ISP partners in Africa and Asia:

- Åke Bergman (member of the scientific reference group to the chemistry program; until resigned on own request in 2013)
- Anders Karlhede (member of Management Committee, and previously a member of the ISP board)
- Åsa Borin (secretary to start-up meeting)
- Boris Shapiro (host supervisor to ISP mathematics partner in Kenya)
- Daniel Thorburn (host supervisor to ISP mathematics partner in Cameroon)
- Elzbieta Glaser (member of the ISP board)
- Gunnar Svensson (host supervisor to ISP chemistry partner in Mali)
- Henrik Boström (host supervisor to ISP mathematics partner in Mozambique)
- Lars Asker (host supervisor to ISP mathematics partner in Mozambique)
- Lisbeth Hansson (host supervisor to ISP mathematics partner in Mozambique)
- Lennart Bergstöm (host supervisor to ISP chemistry partner in Mali)
- Matti Tedre (host supervisor to ISP mathematics partner in Mozambique)
- Michael Strandell (technical facilitator and trainer)
- Oliver Popov (host supervisor to ISP mathematics partner in Mozambique and Uganda)
- Paul Vaderlind (PACM coordinator and host supervisor to ISP mathematics partner in Burkina Faso, lecturer at regional courses in East Africa and South East Asia)
- Pavel Kurasov (host supervisor to ISP mathematics partner in Kenya)
- Rikard Bøgvad (host supervisor to ISP mathematics partners in Ethiopia, Mozambique and Uganda, lecturer at regional courses in East Africa and South East Asia)
- Jan-Erik Björk (host supervisor to ISP mathematics partner in Uganda)
- Stefan Nordlund (member of Management Committee)
- Tom Britton (member of the scientific reference group to the mathematics program, and host supervisor to ISP mathematics partner in Burkina Faso)
- Ulla Eriksson (technical facilitator and trainer)