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International Science Programme (ISP)

On Internationalisation of Partner Institutions: Perspectives and Strategic Approaches

Assoc. Prof. **Peter Sundin,** PhD
Head of ISP, Director of the Chemistry Program

Expert workshop on Selective Internationality, University of Konstanz
16 November 2018

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International Science Programme (ISP)

- Program overview
- Operational model
- The Sandwich Program
- Some results

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International Science Programme (ISP)

- Core Program (40 Research groups in 12 countries; 20 Networks; Sida, UU, SU)

  Africa, Asia and Latin America

- Coordination Assignments by Sida

  Bolivia, Cambodia, Ethiopia, Mozambique, Rwanda, Tanzania, Uganda

- Other programs, e.g.

  PhD fellowship program with TRF/TICA;

  Postdoc program with AAS

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International Science Programme

Core Program

- Started at Uppsala University in 1961
- From fellowship program to capacity building program
- Build and strengthen research and higher education in non-OECD countries
- Research Groups and Scientific Networks
- Sida-funded since 1965

Physics: 1961

1961-62: First participants

Chemistry: 1970

Prof. Rune Liminga (right) 1st director

2002: Mathematics

Start-up conference in Arusha

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International Science Programme

Key features

- Long Term
- Local Ownership
- Collaborative Links
- Improved Conditions
- The Sandwich Model

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International Science Programme
"Internationalisation of Partner Institutions

General benefits "in the South"

- Staff development
- Development of facilities
- Acquirement of scientific instruments, operation, maintenance and repair
- Introduction of a research culture
- Introduction of local MSc and PhD programs

Particular benefits related to internationalisation:

- International contacts and recognition
- Scientific networking and cooperation

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"Internationalisation of Partner Institutions

General benefits "in the North"

- expand views and understanding,
- increase scientific network,
- learn new approaches
- obtain new perspectives
- diversify and increase scientific results

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International Science Programme

Core Program Funding

- Uppsala University, since start (from 2008 ≈ 300 k€/yr)
- Sida, since 1965 (2014-2018: = 3,200 k€/yr)*
- Stockholm University, since 2010 (= 100 k€/yr)
- Expenditures by groups and networks ≈ 80% of Sida funding
- Co-funding (*first measured 2015*); Total resources of 40 research groups and 20 scientific networks are from three sources:
  - Institutional "in kind" contributions (45%);
  - ISP funding (33%);
  - Other research funding (22%)

* Sida yearly bilateral, regional and program support to higher education and research development: 150 million €/yr

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International Science Programme

Key features

The Sandwich Model

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The Sandwich Model

Plan of action

Year	Africa	Int. Seminar in Uppsala	Actions
1968		Come to International Seminar	Prel. contacts Int. Sem.-resp. Physics Dept. "Project Manager", No. 1, appointed, also No. 2 in the project. E= research leader and future expert.
1969	Theoretical and admini-strational preparations	Research and planning	No. 1 joins the Seminar No. 2 starts preparations at home department
1970	Experimental preparations	Research and equipment construction	No. 2 joins the Seminar and the Africa equipment is set up. No. 1 trains No. 3 in the particular field, mainly literature studies.
1971		Research training	No. 3 joins the Seminar No. 1 and No. 2 receive the equipment and start to set it up.
1972			Swedish expert joins the group in Africa and research can start.
1973			Research and degree studies under way in Africa. No. 1 back to Uppsala for development studies

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The Sandwich Model

The sandwich student alternates between the home institution and a better resourced host institution.

Application:

- When no degree program is available at the home university – students are registered with the host.
- Once the home university establishes a degree program – students register at home, but train at a better resourced host.
- When a degree programs is well established at the home university, most students train there.

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The Sandwich Model

Key features:

- Primarily staff development
- Facilitates female participation
- Foreign exposure, while keeping contacts at home
- Accessing facilities not available at home
- Focus on local research problems
- Adaptable to all sciences
- Complementary activities at home and with host
- Mutual knowledge exchange and long lasting professional and and personal relationships
- High return rate of graduates
- Longer completion times?

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International Science Programme

Tracing PhD Graduates

period	# grad	# traced	% in home country	% in home region	% in OECD country
2008 – 2013	161	154 (28 F)	82	10	8
2014 – 2017	259	250 (76 F)	90	5	5

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Tracing PhD Graduates

period	model	# traced	% in home country	% in home region	% in OECD country	Dura-tion, years
2008 – 2013	SDW	69 (10F)	78	11	11*	4.8
	LOC	84 (18F)	87	10	3*	4.9
	FTA	1 (0F)			100*	7.5
2014 – 2017	SDW	70 (17F)	90	7	3*	5.0
	LOC	170(54F)	92	5	3**	4.8
	FTA	10 (5F)	40	10	50*	5.9

*1 Postdoc in each category; **All postdocs

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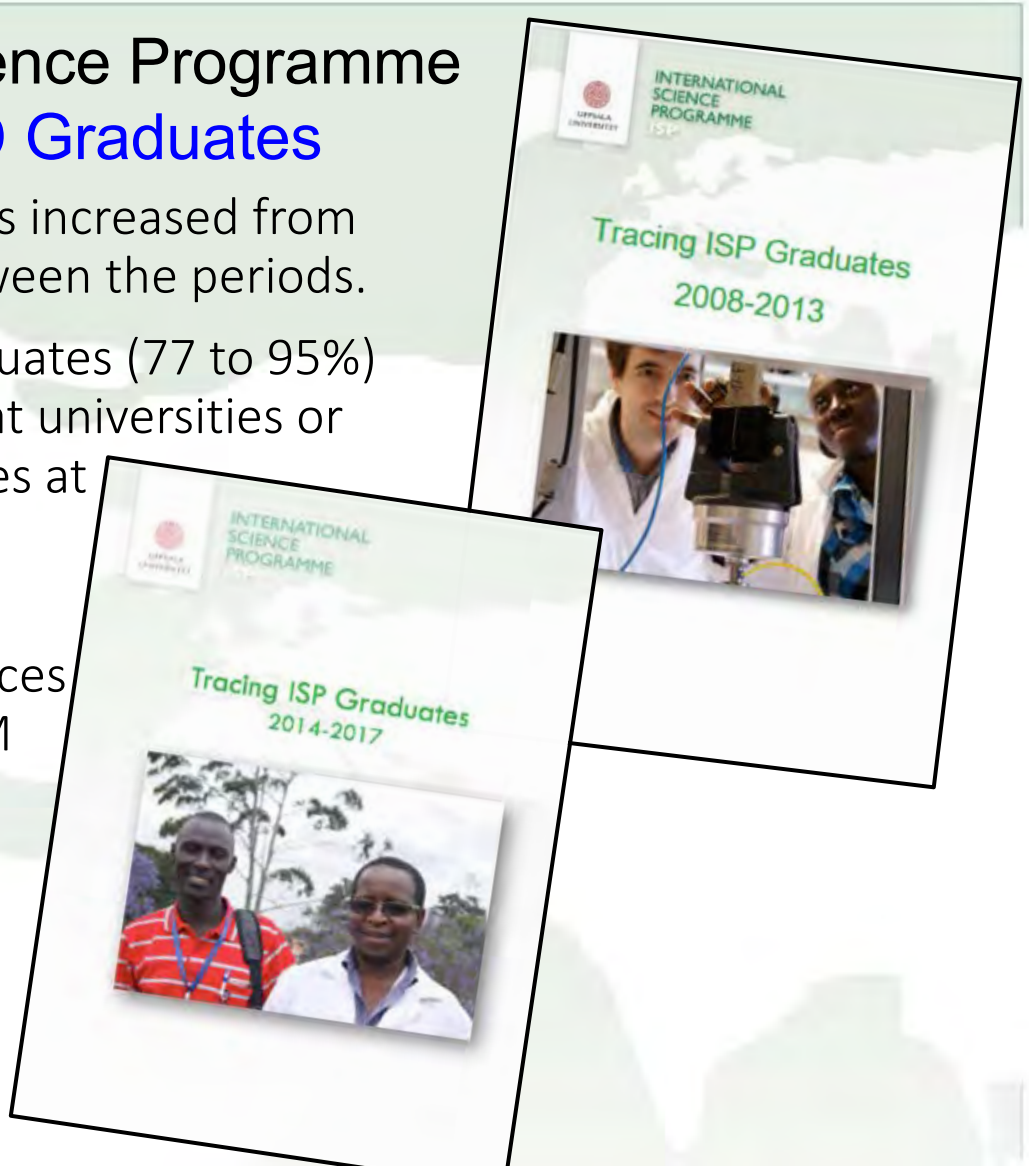
Tracing PhD Graduates

Female graduates increased from 18% to 30% between the periods.

Most of the graduates (77 to 95%) were employed at universities or research institutes at the time of the survey.

No large differences between F and M students with re-gard to employ-ment or rate of retention.



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Some more results

- Continued research after ISP funding?
- Graduations and dissemination





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Continued research after ISP funding?

2003-2011, funding was phased out to 39 research groups (RG) and 8 networks (NW), after on average 15 years (up to 32) of support.

In 2016, 38 (81%) had sustained, while 9 (19%) had no or unknown activities.

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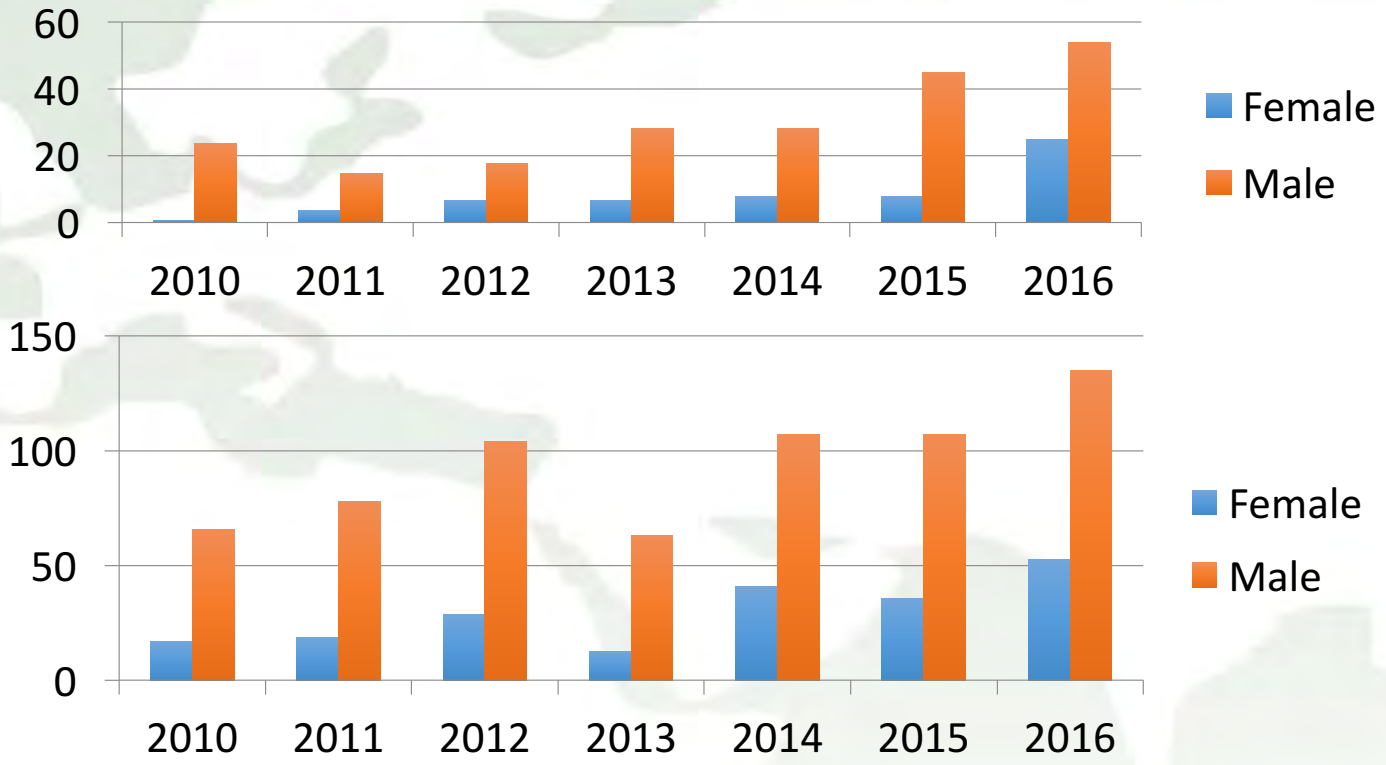
Graduations

PhD and MSc graduations 2010-2016



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Dissemination

Publications in scientific journals 2010-2016

Polym. Bull. (2016) 73:1167–1183
DOI 10.1007/s00289-015-1541-y

ORIGINAL PAPER

An alternating copolymer of fluorene donor and quinoxaline acceptor versus a terpolymer consisting of fluorene, quinoxaline and benzothiadiazole building units: synthesis and characterization

Desta Gedefaw[1,2] · Zaifei Ma[3] · Endale Mulugeta[4] · Yang Zhao[3] · Fengling Zhang[3] · Mats R. Andersson[1,2] · Wendimagegn Mammo[4]

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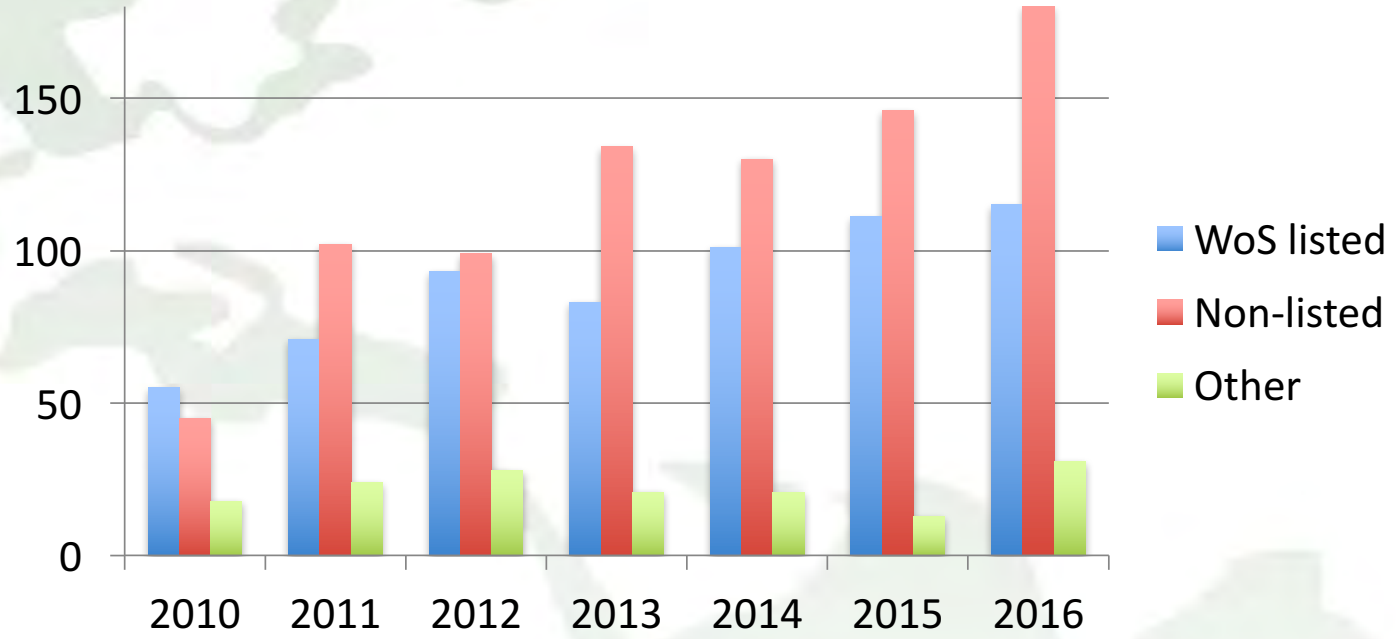
Abstract An alternating polyfluorene copolymer based on fluorene donor and quinoxaline acceptor (**P1**) and an alternating terpolymer (**P2**) with fluorene (50 %) donor and quinoxaline (25 %) and benzothiadiazole (25 %) acceptor units were designed and synthesized for use as photoactive materials in solar cells. The presence of benzothiadiazole unit in **P2** increased the optical absorption coverage in the range of 350–600 nm, which is an interesting property and a big potential for achieving improved photovoltaic performances with judicious optimization of the devices. Solar cells were fabricated from 1:4 blends of polymers-PCBM[70] using *o*-dichlorobenzene (*o*-DCB) as processing solvent, and **P1** showed a power conversion efficiency (PCE) of 3.18 %, with a short-circuit current density (J_{SC}) of 7.78 mA/cm^2, an open-circuit voltage (V_{OC}) of 0.82 V, and a fill factor (FF) of 50 % while **P2** showed an overall PCE of 2.14 % with corresponding J_{SC} of 5.97 mA/cm^2, V_{OC} of 0.84 V and FF of 42 %. In general, **P2** gave lower J_{SC} and *FF* presumably due to the fine domain sizes of the polymer–PCBM[70] blend as seen from the atomic force microscopy (AFM) image which might have affected the charge carrier transport.



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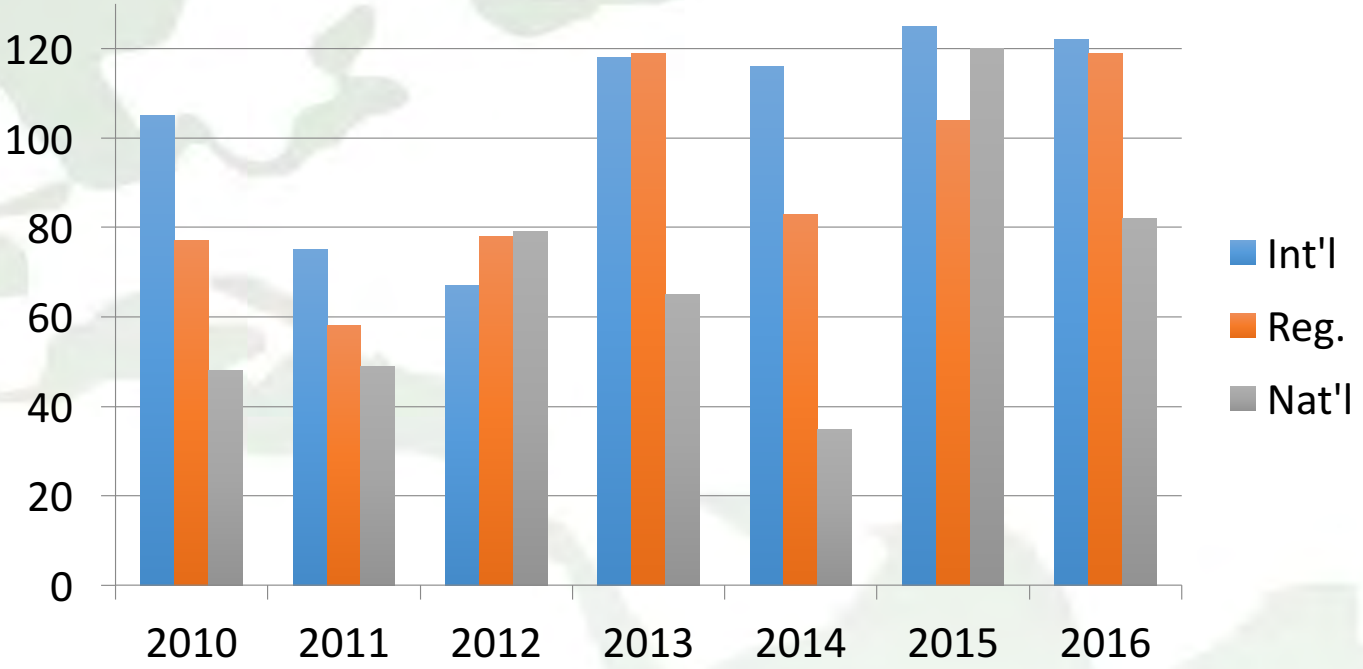
Dissemination

Contributions to scientific conferences 2010-2016



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ISP and the SDGs

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INTERNATIONAL SCIENCE PROGRAMME

ISP

Addressing local challenges

ISP and the Sustainable Development Goals

ISP's overall goal is to contribute to the strengthening of scientific research and postgraduate education within the basic sciences, and to promote their use to address development challenges. Our supported research groups and networks are, with their research and competence, contributing in several ways to the achievement of the United Nations Sustainable Development Goals (SDGs). Here are some examples.

Zero hunger

Chemistry Bangladesh. A research group at University of Dhaka has contributed to the "Bangladesh Food Act 2013". The act is now a food safety law ensuring people's right to access safe food. The group was also part in the creation of the "Formalin Control Act 2015", a licensing system for the import and use of the solvent Formalin, used to preserve fresh food in Bangladesh.

Chemistry Burkina Faso. A chemistry network laboratory at University of Ouagadougou has been chosen by the Government of Burkina Faso as a Center of Reference and Control for nutritional issues. The overall goal of the network is to improve the nutritional status of the Sub-Saharan African population, with special emphasis on vulnerable groups.

Good health and well-being

Physics Bangladesh. A research group in biomedical physics at University of Dhaka has developed and implemented instrumentation and software for a telemedicine-based rural healthcare system, using modern communication technology to provide remote access to clinical health care and medical services. A low-cost computerized pedograph for diabetic patients has also been developed, in 2011 listed by the World Health Organization as a new and emerging health technology.

Chemistry Zimbabwe. A research group at the African Institute of Biomedical Science and Technology in Zimbabwe has discovered a genetic variant common in African people, explaining why Africans show more side effects to some pharmaceutical drugs. The group has developed a test helping to adapt the medicine dosage to the genetic variant of the patients, reducing such side effects.

Mathematics Uganda. The results of infectious-disease modeling of malaria, HIV, hepatitis E, and sleeping sickness carried out by a research group supported at Makerere University, have been utilized by the Ugandan Medical Research Council to advice on the best investment strategy to fight infectious diseases.

2016-09-05

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www.isp.uu.se

www.facebook.com/isp.uu

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Research Groups

12 Countries with 40 ISP-supported Research Groups 2017

AFRICA

Burkina Faso
Ethiopia
Kenya
Mali
Rwanda
Uganda
Tanzania
Zambia
Zimbabwe

ASIA

Bangladesh
Cambodia
Laos
Myanmar

LATIN AMERICA

Bolivia

Formerly, Research Group support also in:

Cameroon
Colombia
Ecuador
Ghana
Malawi
Nigeria
Peru
Senegal
Sri Lanka
Thailand
Uruguay