

ANNUAL REPORT

VLIR-UOS 2015



FEATURED IN THIS ANNUAL REPORT:

Supercomputers do the job in seconds	2
Mushrooms strengthen the immune system	4
Building up an open university in Cuba	5
Artificial intelligence for genetic diseases	6
Transforming water engineers into change agents	8
'Sometimes you are blind to your own valuable context'	10
From mangroves to NASA	12
Mountains of the Moon Radio: dreams in a sea container	15
Mirror, mirror in my hand	18
'We are an extinct generation'	19
Have you found your wow factor yet?	21
VLIR-UOS in figures	25
VLIR-UOS budget 2015	28

SUSTAINABLE DEVELOPMENT GOALS

In September 2015, 193 countries reached agreement on 17 Sustainable Development Goals (SDGs). The goals established by the United Nations will be in effect between 2015 and 2030 and will replace the Millennium Goals. Read more at globalgoals.org.

VLIR-UOS stands squarely behind the SDGs. Each of the cases we present in this annual report are linked to one of the 17 goals.



'In crisis situations we crave solutions. Rather than going for quick superficial fixes we must tackle the root of the problem. That goes not only for terrorism, but also for global challenges like climate change, water management and food production.'

FOREWORD

'We are facing global challenges that concern us all and we can only solve them together.' This sentence from our presentation leaflet turns out to be as topical as ever. We received concerned expressions of sympathy from all over the world in March 2016 after the terror attacks on the airport and metro in Brussels. Bombs killed over thirty people and injured many more.

In crisis situations we crave solutions. Rather than going for quick superficial fixes we must tackle the root of the problem. That goes not only for terrorism, but also for global challenges like climate change, water management and food production. Universities and university colleges can provide the knowledge and methods needed to identify and implement solutions. But that requires time and a multidisciplinary cross-border cooperation between institutions and continents. That is exactly what VLIR-UOS works for.

Our experience in Cuba shows that this approach works. In this annual report we review our cooperation with this island nation, which is currently pursuing an historic rapprochement with the United States. After twenty years of intense cooperation between VLIR-UOS and a number of Cuban universities, a great deal of education and research capacity has been built. Our Cuban partners are increasingly taking the lead in regional development, in synergy with governments,

businesses and the local community. Both Cuban and Belgian governments recognise and value VLIR-UOS and the Flemish knowledge institutions for the results of that cooperation.

If one theme catches the eye in this cooperation with Cuba, it is digitalisation. Minister of Development Cooperation Alexander De Croo made 'Digitalisation for Development' (D4D), a policy spearhead. Through the ICT Network in Cuba, VLIR-UOS brings together expertise from Cuban and Flemish universities and university colleges. It is not just about improving the infrastructure, but also about the application of ICT in research for and service to society.

In this annual report we provide insight into our fascinating and richly filled portfolio of cooperation projects on the basis of stories from some of the students, researchers and professors involved. All parties give of their best, joining forces to build solid local universities that are

rooted in society, with a mission that addresses and provides solutions to global and local problems. By combining forces and expertise we can make our world better, safer, sustainable and united... which is more necessary than ever.



Paul Janssen,
VLIR-UOS chair

Kristien Verbruggen,
VLIR-UOS director



Universidad de Oriente's new data centre (Photo: Hans Van de Water)

SUPERCOMPUTERS DO THE JOB IN SECONDS

Digitalisation is one of the biggest challenges for Cuba, not only in higher education but in business and government too. The economic embargo going back many years made it very difficult to purchase essential computer equipment. Since 1998 VLIR-UOS has invested strongly in digitising Cuban universities. The focus is not only on infrastructure, such as computers and internet connections, but also on training and ICT applications in research, education and service provision.

UNIVERSIDAD DE ORIENTE

A better ICT infrastructure is one of the goals of the institutional cooperation between Universidad de Oriente (UO) in Cuba and the five Flemish universities. As Flemish project leader and Ghent University (UGent) datacentre coordinator Dieter Roefs says, 'At the start of the project we faced three challenges that ICT could provide a response to: limited internet access, a lack of a central datacentre and a dearth of powerful computers to make complex calculations.'

Scarcely three years later UO has a robust internet connection, the datacentre is in place and scientists are able to make complex calculations. Plus a young team has been trained to respond to the ICT challenges.

COMPUTER HEART

Local project leader José Cuza Freire takes us along to the new data centre, UO's computer heart. 'This is where we manage the emails, websites and hosting for the whole university.' And yes, he's proud: 'In Cuba there are scarcely any other universities with a datacentre like this. Other universities in the region can also use it.'

'The impact of het national supercomputing centre will be huge.'

Robert Reina Valladares is UO's Computerisation director. He tells us about the impact of the data-centre: *'The university's individual mailboxes used to have a capacity of 10 MB. Two high-resolution photos and the mailbox was full. We now offer 1 GB, which is a hundred times bigger. And internet is now 20 to 40 times faster – 10 megabits per second rather than 0.5, and soon it will be 20.'*

A NEW LIFE

The computer infrastructure at UO has been significantly augmented since 2013, thanks to resources from the VLIR-UOS programme, as well as donations from universities like UGent. *'When equipment warranties expire Flemish universities often opt to dispose of them, even though they still work perfectly,'* says Dieter Roefs. *'We give that equipment a new lease of life in Cuba.'*

Dieter Roefs gives some figures regarding the installed infrastructure:

- 14 equipped PC classes at UO and one at the university in Moa
- 500 computers shipped from Flanders to UO
- 120 computers donated to nine youth clubs in the region in association with Belgian organisation Close The Gap.

SUPERCOMPUTERS GET IT DONE IN A FEW SECONDS

The main attraction at the datacentre is the high performance computer. This number cruncher can make complex calculations at breakneck speed. *'We used to get an 'out of memory' message for a tumour cell calculation on a computer with 16 GB of RAM,'* says Robert Reina Valladares. *'The supercomputer does the job in three minutes. Other tasks that used to take days now take seconds.'*

'A supercomputer is in fact a chain of individual computers, which gives you a much bigger capacity,' says Dieter Roefs. *'This enables us to solve complex problems in any scientific field, such as medical tests, seismology or even making animations.'*

HUGE SCIENTIFIC IMPACT

But the ambitions of the project partners extend beyond the confines of the university. In association with VLIR-UOS ICT Network and the Flemish and Cuban universities in question, they are setting up a national supercomputing centre by analogy with the Flemish Super-

computer Centre. *'We are providing physical supercomputers at three locations in Cuba,'* says Dieter Roefs. *'All universities and research institutions in the country will be given access to those services. The scientific impact will be huge.'* Cuban society is also very interested in supercomputers, including hospitals and businesses.



From left to right: José Cuza Freire, Dieter Roefs and Robert Reina Valladares (Photo: Hans Van de Water)



'Ciber Expreso' makes computers available to young people thanks to a donation by Close The Gap (Photo: Dieter Roefs)



Youngsters at work in the 'Ciber Expreso' (Photo: Dieter Roefs)



MUSHROOMS STRENGTHEN THE IMMUNE SYSTEM



The Pleurotus oyster mushroom grows on coffee pulp. (Photo: Paul Cos)

The aim of the 'Biopharmaceutical products from natural sources in Eastern Cuba' project is to utilise Cuban biodiversity for medical ends. 'Cuba has a great wealth of natural products,' says Flemish project leader professor Paul Cos (University of Antwerp). 'We look for substances that have a curative effect, for bacterial or parasitic diseases, for instance.'

One of the natural products that have been studied is Pleurotus, the oyster mushroom. It turns out to have a positive effect on the immune system. Local hospitals have already experimented with it on HIV and undernourished patients. *'The immune system is very complex,'* says Paul Cos. *'We study what the mushrooms act on exactly.'*

The researchers test each natural product to identify which substances are responsible for a given effect.

pharmaceutical industry to turn it into a drug. *'It's not too difficult to bring a vegetable extract onto the market, but there are much stricter standards in place for drugs and you have to follow an extensive clinical study path,'* says Paul Cos.

COFFEE PULP

The project is not only oriented to medical goals, because attention is also given to the production and

PATENTS

The project has built up a research lab and trains local researchers. *'Our goal is that the Cubans themselves take measurements and have the instruments they need to do that,'* says Paul Cos. *'They can then apply for patents before they involve a foreign partner. In the past samples were often sent abroad for analysis. We can now do that here.'*

ENRICHING

The Flemish university also gains from the project, Paul Cos confirms: *'You create strong partners who can develop strong projects. Because in research you cannot do everything yourself. You have to cooperate. And the fact that we involve foreign researchers in our lab in Belgium is very enriching for our PhD students. If they end up at a pharma company they need to be able to work with people from different cultures.'*

'Waste material serves as raw material for a new product.'

'Once we have found the active substances we make an extract and improve it to get the maximum effect,' says Paul Cos.

DIETARY SUPPLEMENT

The long-term goal is to process the mushrooms into a dietary supplement and possibly to work with the

commercialisation of the mushrooms. *'We use coffee pulp for cultivation. It used to be thrown into the river. Fermentation caused the oxygen content in those rivers to fall and the fish died. So it's a nice example of a closed chain: waste material, like coffee pulp, serves as the raw material for a new product.'*

BUILDING UP AN OPEN UNIVERSITY IN CUBA

INSTITUTIONAL COOPERATION

Since 2013 the Flemish universities VUB, UGent, KU Leuven, UAntwerp and UHasselt have worked together in the Institutional University Cooperation (IUC) with Universidad de Oriente (UO) in Santiago de Cuba. *'We don't just want to strengthen the university, but the eastern region of Cuba, by utilising the region's natural and cultural resources in a sustainable way,'* says local programme coordinator professor Hipólito Carvajal Fals.

The programme comprises eight projects and corresponding interdisciplinary teams of Cuban and Flemish researchers. As well as strengthening the infrastructure at UO, by means of labs and ICT equipment, a great deal of attention is given to training. The research themes include sustainable agriculture, built heritage management, clean energy and biomedical imaging. *'The selected themes, such as renewable energy, are in line with Cuba's national priorities,'* says Flemish programme coordinator professor Hichem Sahli (VUB).

ORIENTED TO SOCIETY

UO wants to be an open university, oriented to society. Companies, governments and local communities are therefore closely involved in the IUC programme. During a dissemination conference in February 2016 not only the rectors of other regional universities were present, but also representatives of governments, businesses and hospitals. The participants were full of praise, including the contact person at the Chamber of Commerce: *'From now on, we will always invite UO when we receive international delegations.'*

During the conference the researchers provided a summary of the projects that are relevant to Cuban society, such as the supercomputer, the language centre and built heritage management. UO rector Martha Mesa Valenciano stresses the impact of the IUC programme: *'It is incredible how the university has changed and what achievements we can now make available to society.'*



UO rector Martha Mesa Valenciano: *'Incredible how the university has changed'* (Photo: Hans Van de Water)



Coordinators Hipólito Carvajal Fals and Hichem Sahli: *'We want to strengthen eastern Cuba'* (Photo: Hans Van de Water)



ARTIFICIAL INTELLIGENCE FOR GENETIC DISEASES



How do you detect genetic diseases? In her PhD research Isel Grau García from Cuba developed computer models to analyse huge quantities of data on human genes. If terms like 'bio informatics', 'artificial intelligence' and 'black box models' don't immediately ring a bell, you definitely need to read on.

Isel Grau García: 'Despite the limitations Cubans manage to quickly find solutions' (Photo: Hans Van de Water)

I met Isel Grau García in Havana during Universidad 2016, the international conference on higher education, where she presented her research. Although I did not understand much of her calculation models, her enthusiasm was contagious. Could she explain exactly what it is about to a layman? She was happy to do so. She has been faced with bigger challenges in the past.

Isel Grau García began her PhD in December 2014 with a VLIR-UOS scholarship. She alternates her research between Vrije Universiteit Brussel (VUB) and Universidad Central "Marta Abreu" de Las Villas (UCLV) in Cuba. 'I had to prepare very well and learn a lot to be able to join a multidisciplinary bioinformatics group,' says Isel Grau García. 'But it was worth it.'

SEEKING SOLUTIONS

Despite the limitations imposed by the economic embargo, Grau García says Cubans manage to quickly accumulate new information and apply new techniques: 'There is a technological chasm with the rest of the

world, but even though we do not have the latest technology like they do in Belgium, we are always looking for solutions.' That being said, it is often difficult for Cuban doctors to work without the required equipment. 'They have to analyse patients based on visible characteristics and knowledge from thick books. Digital support would be very useful.'

But even in Belgium, says Isel Grau García, the recent classification at

important that our results contribute to the cooperation and that they are useful, in both Cuba and Belgium.'

ARTIFICIAL INTELLIGENCE FOR DUMMIES

Isel Grau García uses Brugada syndrome, a genetic disease that causes heart problems, as her research case. In doing so, she applies artificial intelligence techniques to create

'I find it very important that our results contribute to the cooperation and that they are useful, in both Cuba and Belgium.'

the Brussels' university hospital was largely carried out manually: 'They used Excel tables, but it takes a lot of time and errors can easily be introduced.' To respond to that, together with colleague researchers they developed a software that is able to process that data fast. 'I find it very

workable models. That requires some explanation.

Artificial intelligence

'We use computer models to map phenomena, drawing inspiration from human behaviour. For example, we examine how the brain works

when we are learning and translate that into a model.

Artificial intelligence is very useful in medical diagnosis. The computer can find connections among the data on symptoms and diagnoses among a large group of patients. The goal is for the computer to learn as it goes along and make predictions. We don't want to replace doctors but support them.'

Bioinformatics

'Bioinformatics looks for solutions to biological and medical problems through the computer. It is multidisciplinary research involving doctors, biologists, chemists and computer specialists.

Take the hospital scanners, for instance. The images generate a huge quantity of data. It is very difficult to analyse it. That goes just as much for the study of the human genome. A person can no longer analyse that data without digital aids.'

Black, white and grey box models

Isel Grau García is developing a 'grey box model', a combination of black and white boxes.

With white boxes you enter the data and the computer gives a given result based on a known underlying formula. For example: $A + B = C$. The disadvantage is that the model does not produce very accurate predictions of reality.

With the black box model you do not know how the computer arrives at a given solution. If the patient has a fever in combination with another complaint, a doctor does not immediately know what the disease is. But using a black box model the computer can learn from all the data on patients and make very accurate predictions based on that. It is only that we do not

know which underlying formula the computer uses to arrive at that result.

A grey box model combines the white and black models. It gives you a fairly accurate result that can be interpreted.

CUBA ICT NETWORK

The PhD project under supervisor professor Ann Nowé (VUB) is part of the VLIR-UOS ICT network in Cuba, which has united four Flemish and five Cuban universities since 2013. The goal is to strengthen ICT infrastructure, capacity and application by means of exchange and training.

The network builds on the expertise from past ICT projects in Cuba, including the institutional cooperation with Universidad Central "Marta Abreu" de Las Villas (UCLV).



Isel Grau García together with her supervisor Ann Nowé (Photo: Hans Van de Water)

TRANSFORMING WATER ENGINEERS INTO CHANGE AGENTS

6 CLEAN WATER
AND SANITATION



Water scarcity affects more than 40 per cent of the global population. The interuniversity Water Resources Engineering master's degree, jointly organised by KU Leuven and VUB, trains engineers to become top-level interdisciplinary water experts. 'The international students are very motivated and always open to interaction,' says professor Marijke Huysmans. 'They are very rewarding to teach.'

International students
doing field research
(Photo: Master in Water
Resources Engineering)



From left to right: Farida Ruma, Marijke Huysmans and Sheila Akullu (Photo: Hans Van de Water)

VLIR-UOS invited professor Marijke Huysmans (KU Leuven/ VUB) on the occasion of the visit of Queen Mathilde of Belgium at Hasselt University in February 2016, together with two master's students, Sheila Akullu from Uganda and Farida Ruma from Bangladesh. The Queen was clearly impressed by the students' testimonials: *'It was a great gift for me to see your passion and enthusiasm.'*

'We have top students in the master's programme,' says Marijke Huysmans. *'There is high demand for scholarships. Every year we receive more than 150 applications for only 16 scholarships.'*

ACCESS TO CLEAN WATER

The challenges are huge, says Marijke Huysmans: *'There is sufficient fresh water on the planet, but due to economic hardship or poor infrastructure, every year millions of people die from hunger, malnutrition and diseases associated with inadequate water supply, sanitation and hygiene.'*

In Sheila Akullu's home country Uganda, about 36% of the rural population lack access to clean, safe water. *'People therefore resort to unsafe water sources, which exposes them to water-borne diseases. The problem of access to safe water mainly affects women and children,'* says Sheila Akullu.

INTERDISCIPLINARY TRAINING

'To tackle these challenges, integrated water resources management must be implemented at all levels,' says Marijke Huysmans. *'So there is a growing need for water engineers that can deal with integrated water management with the latest tools. We provide our students with broad scientific knowledge in water sciences and engineering, as well as the specialised technical skills and competences needed to work in an interdisciplinary team.'*

Has the master's degree been worthwhile so far? *'Yes, definitely,'* Farida Ruma answers. *'I learn advanced water management techniques. Computer-based application in the field is especially relevant for me. I can apply this knowledge back home in Bangladesh.'*

APPLYING KNOWLEDGE

And what about the students' professional career after the master's degree? Both Sheila and Farida were working for government agencies in their home country before they came to Belgium. After graduating they will return to their previous job. *'After finishing the master's degree I will join a technical team that links policy-makers and beneficiaries,'* says Sheila Akullu. Farida Ruma had a clear remit: *'My organisation said: acquire*

the knowledge from abroad, so that you can apply it back home.'

'It's striking that employers in the developing world encourage their employees to study,' says Marijke Huysmans. *'We give priority to candidates that have a sort of guarantee to go back to their former job, as lecturers at universities, or working for governmental agencies or development NGOs.'*

'I REALISE THAT WE DO THINGS DIFFERENTLY'

What is the effect of studying in an international group? Sheila Akullu answers: *'The contact with the other students of different nationalities and with different backgrounds is very important, sharing ideas and realising we do things differently. Some ideas can work back home. For instance, in villages in most developing countries there is one water source. But rather than installing a hand pump, you could install a generator to pump the water into a reservoir and lay pipes to distribute it to households. You will spend a little bit more money, but many people will have much easier access to the water.'*

STUDENTS FROM TANZANIA AND FLANDERS DESIGN SUSTAINABLE ARCHITECTURE

'SOMETIMES YOU ARE BLIND TO YOUR OWN VALUABLE CONTEXT'

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Architecture students at Hasselt University and Ardhi University in Dar es Salaam have joined forces to look for answers to challenges such as sustainable tourism in Tanzania. Will that make them better architects? Els Hannes thinks so. She is internationalisation coordinator for UHasselt's architecture training: 'The international experience makes students more empathetic.'



10

The architecture students scout a Tanzanian residential area (Photo: UHasselt)

Els Hannes guides me through the scale models made by the Flemish and Tanzanian students. 'This is a bamboo house,' she remarks on one of them. 'Modern architecture is often considered to be skyscrapers in Dubai with lots of glass. We prefer to look for more context-bound architecture using natural materials, such as bamboo or building blocks in compressed earth. With glass, for instance, it's very difficult to control the heat, whereas traditional building methods have natural ventilation systems.'



TANZANIA

Why Tanzania? 'A former student went there to support a local school,' explains Els Hannes. 'Through him we were able to send students on placements with a VLIR-UOS travel grant and we came into contact with Ardhi University's School of Architecture and Design in Dar es Salaam.'

The result of the initial contacts was a VLIR-UOS South Initiative. For the second consecutive year 90 students from UHasselt and Ardhi University are working together on new architecture concepts for the development of urban eco-tourism in Dar es Salaam. That ranges from an urban development analysis and the design of a building to the preparation of a business plan for some of the projects. The Flemish students get to know the local context during a short research trip to Tanzania. Inversely, Tanzanian researchers occasionally come to UHasselt.

SEEKING SOLUTIONS TOGETHER

'We are not going to tell them what they have to do in Tanzania,' says Els Hannes. 'We endeavour to seek solutions together. And when design ideas are generated in Hasselt we check them with our Tanzanian colleagues. That leads to very interesting discussions; for instance about how to persuade the population to work with bamboo despite its image as a material for poor people.'

'A great many inspiring ideas are generated under the leadership of architects Peggy Winkels in Belgium and Shubira Kalugila in Tanzania,'

says Els Hannes. 'Students not only learn from each other, they also start to appreciate their own context. There is healthy competition among them, which benefits the quality of the projects at both universities. One of the Tanzanian students even won an African architecture prize with his project.'

SUSTAINABLE TOURISM

For the past two years the students have been working on the theme of sustainable tourism. Els Hannes explains: 'Tourism is Tanzania's second most important export product. That puts big pressure on construction. Due to a lack of care for built heritage, valuable buildings from the colonial past can be suddenly pulled down and new buildings put up in their place.'

'Unfortunately the local population sees scarcely any return from tourism. They only know the large-scale projects and developments. With our cooperation project we want to find points of departure in the local context to build tourism with the support of the population. An example is a sea laboratory highlighting the value of the sea but also used by us to train the local population to become tourism guides.'

LIFE CHANGING EXPERIENCE

Why do Flemish architecture students opt to do their final project in Tanzania? 'The students learn how to build Belgian houses in the bache-

lor's degree programme,' explains Els Hannes. 'During the master's course we want to give them the opportunity to get out of their comfort zone and explore new perspectives. When they become architects they don't all need to end up building houses here in Limburg. It is important for them to learn to challenge their own background and ideas.'

'Students that come back from an exchange have really changed; they are more confident and sincerely interested. By removing the fear of the unfamiliar you make people more tolerant and more open. It is a life-changing experience. After the final project one of the students said, 'It's only now I realise what sort of architect I want to be.'

AMBITIONS

The two-year funding from VLIR-UOS has given both architecture faculties the chance to set up a broader student cooperation. But Els Hannes has much bigger ambitions: 'We are looking for more structural funding, through Europe or a VLIR-UOS TEAM project. With the contacts we are also building in Vietnam, in the long run we hope to set up a cooperation between Flanders, Tanzania and Vietnam.'

But first up is the international conference on sustainable tourism in developing countries at the end of July 2016 (ICST-DC). It will be held in Dar es Salaam, in association with Dar es Salaam University's business school and a Swedish university. 'We invite the tourism industry, present the students' work and show sustainable eco-tourism models,' says Els Hannes.



FROM MANGROVES TO NASA: TOM VAN DER STOCKEN'S ROAD MOVIE



Why does a geographer begin a PhD in biology? How does research into Kenyan mangroves get you to the NASA research centre in Los Angeles? We get the answer from Tom Van der Stocken (Vrije Universiteit Brussel, VUB). He studied mangroves from 2011 to 2015 with a VLADOC scholarship from VLIR-UOS.

When I interview Tom Van der Stocken he has just handed in his PhD, six months early. 'I've always been like that, as a student and in my job: if I have a deadline I always want to be ready in advance.' The tone of the interview is set. Tom Van der Stocken is a researcher who wants to map the world, not because of the publicity, but because it is his passion.

FROM GLACIERS TO MANGROVES

Before beginning his PhD in biology, Tom Van der Stocken studied geography. Mainly physical geography – glaciers in particular fascinated him immensely. 'Isn't it strange to be standing on a Swiss glacier one

moment and in a Kenyan mangrove forest the next?' I ask him.

'They are indeed two completely different environments,' says Tom Van der Stocken, 'but they also have a great deal in common. Both mangroves and glaciers are very susceptible to changes in the climate system. Plus they are very challenging environments for doing research.'

STRESS-BEATING MANGROVES

Over to the mangroves. These are ecosystems along tropical coastal areas on the boundary between land and sea. Tom Van der Stocken emphasises that it is a stressful environ-

ment, because most mangroves are influenced by the tides and have to survive in salt water. They have managed to adapt to their surroundings by means of aerial roots or salt separation systems, which is expressed as salt crusts on the leaves.

What do mangroves do? 'Many coastal communities depend on the mangroves for fish, wood and as a coastal stabiliser,' says Tom Van der Stocken. 'The root system is an ideal spawning ground for a lot of fish species. The dense mangrove forests also dampen a large proportion of the wave energy and so are able to significantly reduce the impact of tsunamis. Unfortunately, they are cut down on a large scale for the benefit of economic activities like aquaculture and tourism.'

SEEDS

The central research question in the PhD is how mangrove seeds are spread. They are important, because they contain the plant's genes. 'There are a great many seed types, some shaped like cannonballs, others elon-





Tom Van der Stocken shows his PhD thesis to Julie Poppe, VLIR UOS manager for VLADOC (Photo: Hans Van de Water)

gated, even up to forty centimetres long,' says Tom Van der Stocken.

'Mangrove fruit and seeds are spread through water. I was especially interested in the diversity of seed shapes and floating styles. I wanted to know the patterns the seeds used to spread themselves through the ocean current. That had never been studied before because no meaningful empirical data can be generated due to the enormous distances over which they can be transported.'

SURVIVAL MECHANISM

Why is such knowledge of seeds so important? Tom Van der Stocken says we need this information to study the

spread patterns of mangrove species in a meaningful way and to find answers to such questions as: where is a given species found, what areas provide seeds and fruits, and what areas do they receive them from?

'You have to remember that sending out genetic material through seeds and fruit is also a survival mechanism,' Tom Van der Stocken continues. *'By spreading your genes spatially you can survive a possible local extinction as a species when the climate or the environment changes drastically.'*

COOPERATION

Tom Van der Stocken went to Kenya to investigate the mangroves there.

He was assisted there by Hamisi Kirauni, field researcher at the Kenya Marine and Fisheries Research Institute, with which VUB has a close cooperation, with the support of VLIR-UOS. *'He would teach me things about the terrain and I would teach him scientific techniques. It was a very useful cooperation that ultimately ran for two years.'*

Through the cooperation Tom Van der Stocken found a cheaper manner to follow the mangrove seeds beyond the bay. *'We decided to train the local fishermen through Hamisi's network to identify the seeds in their nets at sea and keep a logbook. That generated a large dataset with very useful information.'*



Local Kenyan fishermen supported the research by identifying the mangrove seeds at sea (Photo: Tom Van der Stocken)

NASA

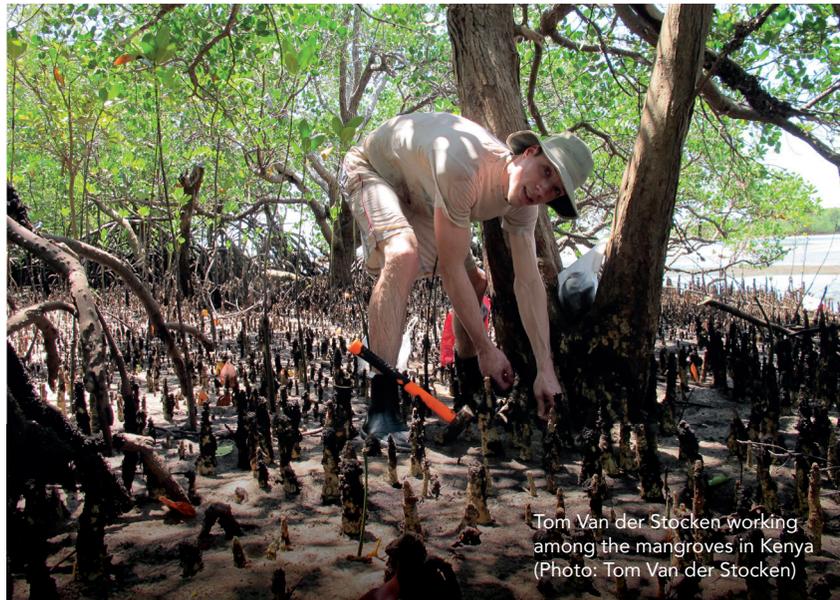
Tom Van der Stocken wanted to go further to develop a general model for the spread of fruit and seeds. For that he needed data on the ocean and the wind currents. Data that the NASA Jet Propulsion Laboratory in Los Angeles could supply. But how was he going to get access to it?

After a salvo of emails he was given permission to submit a one-page project summary. His efforts were rewarded – his request was approved. *'I was over the moon. I immediately went to my supervisor, who asked: "Is your girlfriend pregnant? Are you getting married?" I said, "No, I'm going to NASA!"'*

FANTASTIC

Tom Van der Stocken is now back in Brussels after a *'fantastic experience'*. *'Because you are there in Los Angeles, among rocket scientists, first-rate boffins. It is very stressful, but above all hugely inspiring.'*

Tom Van der Stocken continues to dream of an integrated model that can be used to analyse and predict developments in nature. *'We have*



Tom Van der Stocken working among the mangroves in Kenya (Photo: Tom Van der Stocken)

the spread model but there is still a lot of work to be done and potential to be achieved. You could also use it for other organisms, like corals.' With that in mind, he may be heading off to Los Angeles soon to continue his research. Tom Van der Stocken's road movie is nowhere near done.

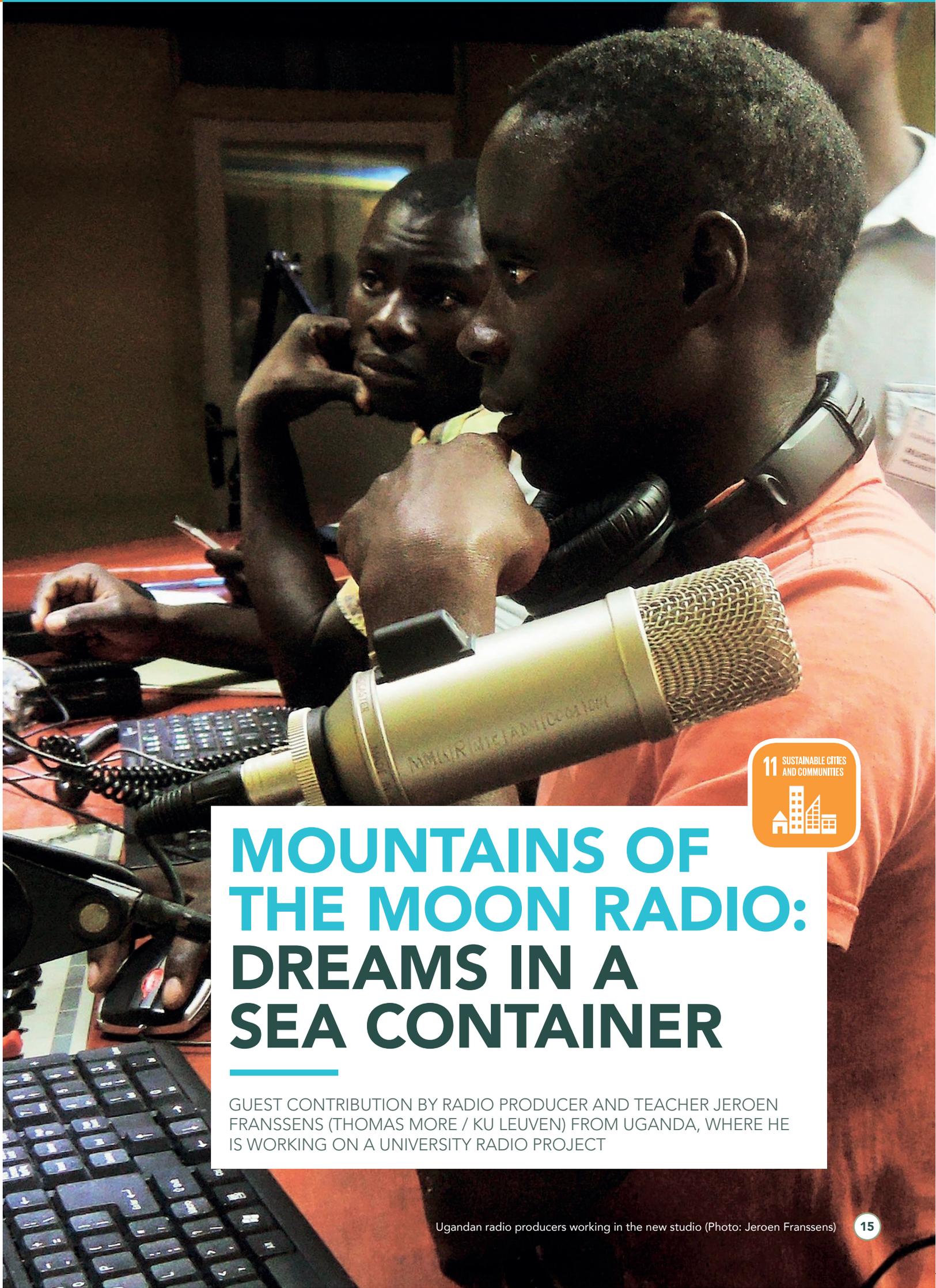
For more information about Tom Van der Stocken, see ecologicalgeographer.com.

The supervisor on the PhD research is professor Nico Koedam (VUB), with a major contribution from Dr Dimitris Menemenlis (NASA Jet Propulsion Laboratory).



'Coastal communities depend on the mangroves for fish, wood and as a coastal stabiliser'

Some mangrove seeds are forty centimetres long and are spread through the water (Photo: Brian Gratwicke)



11 SUSTAINABLE CITIES AND COMMUNITIES

MOUNTAINS OF THE MOON RADIO: DREAMS IN A SEA CONTAINER

GUEST CONTRIBUTION BY RADIO PRODUCER AND TEACHER JEROEN FRANSSENS (THOMAS MORE / KU LEUVEN) FROM UGANDA, WHERE HE IS WORKING ON A UNIVERSITY RADIO PROJECT

Ugandan radio producers working in the new studio (Photo: Jeroen Franssens)



Jeroen Franssens in the radio studio
(Photo: Herman Diels)

‘Gooooood moorning Illaaaadies and gentlemennnnn!!!! This is MMU rrrrrradioooo. Live from the Mountains of the Moon University... Join us now on this fffffffantastic rrrradiooo trip!’ Self-styled radio worshipper DJ Godie and his wildly enthusiastic co-presenter Frank Amantire hammer out the first couple of sentences through the mikes. They do that with an unbridled passion that pulverises the Western European rulebook. Despite a couple of power failures we left for a full day’s radio pleasure in a sea container at the foot of the Rwenzori mountains.

RADIO RULES

Fort Portal, western Uganda, two days earlier...

The van taking us up to the Mountains of the Moon University campus is chugging upwards. Boda bodas – motorcycle taxis for the poor – are adroitly manoeuvred round pot-holes that our rattling crate unfortunately cannot avoid. Rusty shock absorbers mean our bottoms are given a rough time of it, but we laugh off the pain, because we are in Uganda...

‘Well, it’s much better than expected at the moment,’ the ever-cheerful Ivo De Pauw (Howest) chortles. He has been here umpteen times as an ICT advisor and has a clear love of the Pearl of Africa. ‘The rainy season is on the way. The whole road here

turns into a kind of volcanic mud. Boda bodas have a lot of trouble trying to get up. That gives the students a problem. Then again, in Uganda they are used to a lot worse than a bit of mud on a mountain road!’

Like the rest of the full Belgian delegation, Ivo is determined to spend every penny invested on something useful. Everyone has been selected to give targeted assistance to the students and teachers of the Mountains of the Moon University: from accounting whizzes and farming specialists to engineering experts and radio fanatics like myself.

‘The radio studio is just part of everything we do here,’ Ivo explains. ‘That radio story is actually a fabulous addition to the other projects we are working on. We are doing

research on cultivation, milk production and fish farming here in the Rwenzori region. It’s important for us to be able to pass on that knowledge to the people in the region. It’s also a way to spread information and provide advice. HIV remains a pressing issue in this region. But it is also possible to fight other infectious diseases or just broadcast a weather forecast. The farmers could always use that. They also want to distribute teaching packages and provide dial-up interactive classes. There is no better way to do that than through the radio, with programmes made by the people at the university. Most Ugandans don’t own a computer. Even TVs are only for the happy few. But just about everyone has a radio receiver or a mobile phone.’

MOSES THE MAN

'Wow, they have built a paved path to the radio container,' whoops Dirk Van Merode (Thomas More), engineer, teacher and driving force behind the expansion of the radio studio here. 'Last year I had to put on my special mud boots to get there. This is brilliant. Come on, you have to see this!' Dirk races up to the container on the top of the hill with us behind him. 'We have put a huge amount of effort into this,' he says, taking off his shoes before entering the studio. 'They all do that here. It shows respect...'

'It is important for us to be able to pass on that knowledge to the people in the region.'

Dirk's eyes sparkle when he sees a young guy – also shorn of his footwear – concentrating hard at the mixing desk. 'Moses! My man! This is my dear friend Moses! The man who takes care of business here!' A little timid but clearly in good spirits, Moses takes a firm grip of Dirk's hefty hand. 'God bless you Dirk,' he beams, quickly straightening the collar of his jacket. 'You can certainly call him our treasurer here,' says Dirk, as he expertly sizes up the studio.

'All the equipment you see here was flown over from Belgium and set up by a couple of highly motivated students,' he continues. 'You cannot just go to the store to pick up spare parts here. So you have to be extremely careful with everything. And that's exactly how it is. Most of the equipment you see here is second-hand, some of it from the Flemish media company Vlaamse Media Maatschappij. To begin with they were not too mightily impressed to get second-hand stuff. But everything has been stringently tested and the people here now see that it works perfectly.'

105.2 DREAMING OF FM

Over the next week the impressions come thick and fast, as do the cultural misunderstandings and above all an invigorating passion for radio. We are not yet broadcasting on FM when Ghent University rector Anne De Paepe comes to cut the symbolic ribbon to open the radio studio. A transmitter still needs to be flown over. And, more pertinently, securing an FM licence is no walk in the park in Uganda. But we can practice as much as we want. For instance in interviews with studio guests who are not actually there, as stand-ins show

off their mimicry skills pretending to be president Museveni. Most people don't seem to mind. But, after all, we're not on air yet, and practice makes perfect.

It's inconceivable to think anyone could possibly show more passion for radio than the people at MMU. Young people who otherwise cannot

find any way to achieve their dreams flourish. 'This radio station makes my dreams come alive again,' sighs Godie during a group radio session. 'I don't have an easy life, like most of us. I went from one place to another. No goal. No future. But then I came volunteering here and once we will broadcast, people in the region will hear my voice. I will be a DJ, able to give people information they can use. I have never been as happy as I am now...' The reserved but sincere applause that follows is touching. It all turns out alright in the Mountains of the Moon sea container.

FIVE MONTHS LATER, 7 JANUARY 2016

While the world lives under a bank of black clouds whipped up by terrorism, uncompromising declarations of war and bone-chilled refugees in tents amid the mud, a heart-warming message twinkles in Ivo's mailbox. 'Dear Ivo, MMU Radio will be broadcasting on 105.2 FM frequency'. Let's get rolling, MMU!



UGent rector Anne De Paepe inaugurates the new radio studio (Photo: Jeroen Franssens)

ABOUT THE RADIO PROJECT

The radio project is part of the institutional university cooperation between the Mountains of the Moon University in Uganda on the one hand and UGent, VUB, KU Leuven, Thomas More and Howest on the other.

The driving force behind the university radio station at Mountains of the Moon is professor Chang Zhu of VUB. Thomas More University College and Howest got to work on the practical development. Students and teachers provide the appropriate support as regards technical aspects and content. But ultimately the Mountains of the Moon teachers and students are the ones who will keep the studio running.

Jeroen Franssens is a producer at Radio 1 and teaches about radio at Thomas More Mechelen and KU Leuven.



(Photo: Gerbrand Van Uytvanck)

GERBRAND VAN UYTVANCK FOCUSES ON
DISABLED CARE AND PSYCHIATRY IN RWANDA

MIRROR, MIRROR IN MY HAND



VRANCKX AND THE NOMADS

In 2014 Flemish television reporter Rudy Vranckx called on 'backpackers, adventurers, modern explorers' to become one of the 'Nomads'. The collective of promising young Flemish storytellers is given a platform for web reports, photos, texts, music and drawings. Through VLIR-UOS we spread the message among students who go to developed countries for research or a work placement with a travel grant.

Gerbrand Van Uytvanck, at the time a photography student at Karel de Grote University College in Antwerp, answered the call and registered as a Nomad. February through April 2015 he went to Rwanda to photograph the disabled care and psychiatry situation there. 'As documentary medium photography is very well suited to use in development work. While video can enlarge a bit more on a subject, photography has that power to immediately get to the crux of the matter in one or two pictures.'

Gerbrand Van Uytvanck wrote the following text to accompany the photo:

*Mirror, mirror on the wall,
mirror, mirror in my hand.
We know the rest.*

*At a time when the country is under the spell of the new
Miss Rwanda, this is the picture that this bedridden little
girl sees every day.
Herself, in bed. Just like yesterday, just like tomorrow.
And the days after that.
No glamour, not a scrap of narcissism.
Purely functional, to be able to brush her teeth.
To be able to look behind her for a moment.
A piece of glass as a reflection of her life.
No, things are not always crystal clear.*

**For more information,
see www.gerbrandvanuytvanck.com.**

PARASITOLOGIST JOZEF VERCRUYSSSE DRAWS LESSONS FROM HIS INTERNATIONAL RESEARCH CAREER

'WE ARE AN EXTINCT GENERATION'



I met professor Jozef Vercruyssse at the Veterinary Medicine Faculty in Ghent. For many years that was his regular place of work, until he moved to South Korea in 2014 to head up the Ghent University Global Campus there. Abroad has always been near. In his extensive career, the parasitologist has set up a great many international VLIR-UOS projects. Around 25, he estimates. 'You don't learn to cooperate with developing countries by going to the tropics for a week, but rather by living there, surviving, getting to know people.'

A PARADISE FOR PARASITES

Jozef Vercruyssse shares his passion for parasites with professor Pierre Dorny (UGent, Institute for Tropical Medicine). Together they have navigated a great many projects in the developing world. 'There is no better place than the tropics to study parasites,' says Jozef Vercruyssse.

Parasites like roundworms, tapeworms, fleas, ticks and lice are found in both animals and humans. According to the World Health Organization (WHO) around two billion people on the planet are infected with intestinal worms, mainly in the poorest regions. The worms can cause such conditions as diarrhoea, as well as stunting physical and mental development. Just about all domesticated farm animals are infected with parasites. The infections lead to reduced milk, meat and wool production.

LABS AND TRAINING

Most parasitic diseases are treatable, but research is needed first. Over the past few decades, professors Vercruyssse and Dorny have helped set up a host of laboratories and

train researchers in such countries as Vietnam, Cuba, Ethiopia, Cambodia, Zambia and Cameroon. 'The advantage of parasitology is that you can do a lot with simple equipment,' explains Jozef Vercruyssse. 'With 30,000 euros you can set up a fully fledged lab.'

Pierre Dorny stresses the importance of capacity building: 'You train people in new techniques that they can use in the lab. In many countries where we once ran projects we see that the labs we set up back then are still used.'

COLLECTING DATA IN DIFFICULT CIRCUMSTANCES

'Field studies to collect data in the tropics take lots of organising and good knowledge of the country,' says Jozef Vercruyssse. 'So if you want to take samples from a village in Vietnam, you first have to talk to different people, such as the head of the province, the head of the district or the mayor before you get permission. You only get results when you know the circuit.'

And that is where the shoe pinches for younger generations, says Jozef

Vercruyssse. Both he and Pierre Dorny have spent years in the tropics where they have acquired experience on the ground. Young researchers do not get that opportunity any more: 'We have become an extinct generation. Young scientists don't have an adequate understanding of the tropics. They often begin on a project from the perspective of a purely scientific question and give too little consideration to the local context of a given problem.'

TO THE ABATTOIRS AND THE LOCAL MARKET

How do you identify parasites? Sometimes by chance. For instance, Jozef Vercruyssse found that twenty per cent of the illegally slaughtered pigs at a local market in Zambia were infected with cysticerci. The parasite larvae become encysted in the muscles of the pigs, which is harmful not only to the animals themselves but also to the people who eat infected meat. 'With that study we showed for the first time the significance of that parasite in Africa.'

Another example is schistosomiasis, a chronic disease that develops when people come into contact with water infected with a parasitic worm. The WHO has recognised schistosomiasis as a neglected tropical disease. It affects 240 million people worldwide, but it is also found in cattle. 'In cooperation with institutes in Zambia, Mali and Senegal we discovered that the parasite species found in people and animals have started to interbreed,' says Jozef Vercruyssse. 'This turned out to be very important for the development of an appropriate treatment.'

RESEARCH AND POLICY NEED EACH OTHER

'Antiparasitics are mainly used to control parasitic diseases,' says Jozef Vercruysse. 'Unfortunately, interventional programmes are not always adapted to the local circumstances. On-the-ground information is very important. That's why cooperation with the government is essential. We give advice to governments and organisations like the WHO and FAO.'

'We should be proud of the results we have achieved,' Jozef Vercruysse feels. 'Ghent University's Parasitology Laboratory is recognised for its trailblazing research in tropical parasitology. We now work together with organisations like the WHO, FAO and the Bill Gates Foundation, drawing on the expertise we have been able to gain in VLIR-UOS projects and elsewhere.'

ADVICE TO YOUNG RESEARCHERS

What advice would Jozef Vercruysse give to young researchers? 'If you want to cooperate with the developing world you should not be naive. Go there and try to find people with experience in those countries.'

Jozef Vercruysse (left) and Pierre Dorny (right) show off worms at the Ghent lab (Photo: Hans Van de Water)



HAVE YOU FOUND YOUR WOW FACTOR YET?

No one wants to hear about boring research. If you want your research to be picked up by the media, presented in an event or featured in the university magazine, you need a wow factor. VLIR-UOS wrote a how-to and took it on the road. It did not go unnoticed, because the Wow Factor won a European and a Flemish communication award.

THE WOW FACTOR

The wow factor is the element in your research communication that attracts the attention of your audience and initiates a conversation. Why is that important? Because

that enables you to make more of an impact. More people notice and talk about your research, which makes it more likely you will hear new ideas and receive more support and funding.

THE GUIDE

VLIR-UOS published its communication guide, 'Research: how do you get it out there?', in Dutch and English in 2015. It is full of practical tips and concrete cases of scientific communication, as well as advice on how researchers can find their wow factor. Available online at www.yourwowfactor.be, the guide has been enthusiastically received by researchers worldwide.

PRIZE-WINNER

In Perugia, Italy, VLIR-UOS won, third prize at the EUPRIO Award for the Wow Factor. EUPRIO is the European association of communication professionals in higher education. The project also won bronze in the Kortom Communication Award 2015. Kortom is

the Flemish association for public sector communication.

THE WOW FACTOR WORKSHOP

VLIR-UOS communications officer Hans Van de Water held a Wow Factor workshop for international PhD students in Brussels on 26 October 2015 and during Universidad 2016, the international conference on higher Education, in Cuba in February 2016.

So how did the workshop go down among the participants? 'The workshop was very useful for me,' explains Molly Gabaza (UGent/University of Zimbabwe), 'because in my research it is important to communicate the results to people who do not have a scientific background.'

'The workshop was an ideal way to learn how you grab someone's attention in a few seconds,' says Mathil Vandromme (VUB). 'I will definitely use the wow factor when I talk to farmers about my research.'



Participants at the Wow Factor workshop, as part of the VLIR-UOS PhD Day (Photo: Hans Van de Water)



(Photo: Hans Van de Water)

MOLLY GABAZA'S WOW FACTOR

BECOME THE NEXT EINSTEIN OVER BREAKFAST

THE PROBLEM

A deficiency of iron and zinc in blood makes people in developing countries in particular very susceptible to diseases like diarrhoea, respiratory tract infections and malaria. It is a major cause of child mortality.

THE SOLUTION

You can add iron and zinc to flour or grow mineral-rich grain. Another solution is to improve how the grain is processed, by fermentation or germination say, to ensure more minerals are retained. You can also improve how iron and zinc are digested by choosing the right combination of foods in your diet.

THE WOW FACTOR IN 'BECOME THE NEXT EINSTEIN OVER BREAKFAST'

Iron deficiency in children can lead to stunted development, a low IQ and poor performance at school. Children who have an iron-rich porridge for breakfast will develop better, be more active at school and, who knows, might become the next Einstein.

THE STUDY

Corn grain has a high iron and zinc content, but the body only digests 1-5% of that. Molly Gabaza studies how certain microorganisms that arise during fermentation can ensure our bodies digest more minerals. She also wants to examine how adding vegetable products that are rich in vitamin C, like baobab powder, can improve iron digestion.

The target group for her research is the rural population in Zimbabwe. Fermenting corn and turning it into porridge is a widespread practice that goes back many centuries. In combination with a varied diet, a better fermentation method is easy to apply and can have a major impact on the health of a population.

'I want to spark the interest of the general public to use the means already at their disposal optimally,' says Molly Gabaza. 'I work with little-known cereals like finger millet, sorghum and pearl millet, which is actually nutritional power food. Baobab powder is also very interesting, because it comes from a wild fruit that is available in many poor communities and is not yet cultivated for its nutritional value.'

Molly Gabaza receives an ICP-PhD scholarship for her PhD research.

For more information about the Wow Factor, see yourwowfactor.be



(Photo: Hans Van de Water)

MATHIL VANDROMME'S WOW FACTOR

HELP FROM ABOVE: BOOSTING CACAO & COFFEE PRODUCTION BY DOING NOTHING

THE PROBLEM

Small coffee and cacao farmers want a bigger yield, but they often employ pricey, environmentally unfriendly techniques to achieve it.

THE SOLUTION

Employing creative techniques to increase coffee and cacao production in a cheap, environmentally friendly way.

THE WOW FACTOR IN 'HELP FROM ABOVE – BOOSTING CACAO & COFFEE PRODUCTION BY DOING NOTHING'

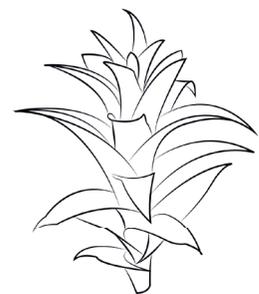
Coffee and cacao plants grow best in the shadows. Which is why on plantations you often see trees to provide shade. Bromelia are tropical plants that establish themselves on the trunks or branches of those trees. Coffee and cacao farmers usually remove them because they look like parasites. But it turns out that bromelia are very useful, because they attract insects that are good pollinators

and excellent at controlling harmful organisms. So help is at hand high in the trees where the bromelia grow. And the farmers do not need to do a thing. The bromelia grow spontaneously.

THE STUDY

Mathil Vandromme studies the insects that live in the bromelia plants and their impact on cacao and coffee production. The goal is to develop a bromelia management plan with the farmers to give the plants the chance to prove their positive effect on the plantations.

Mathil Vandromme receives a VLIR-UOS VLADOC scholarship for her PhD research.



Bromelia

For more information about the Wow Factor, see yourwowfactor.be



HOW TO FIND THE

WOW
FACTOR

IN COMPLEX
RESEARCH?

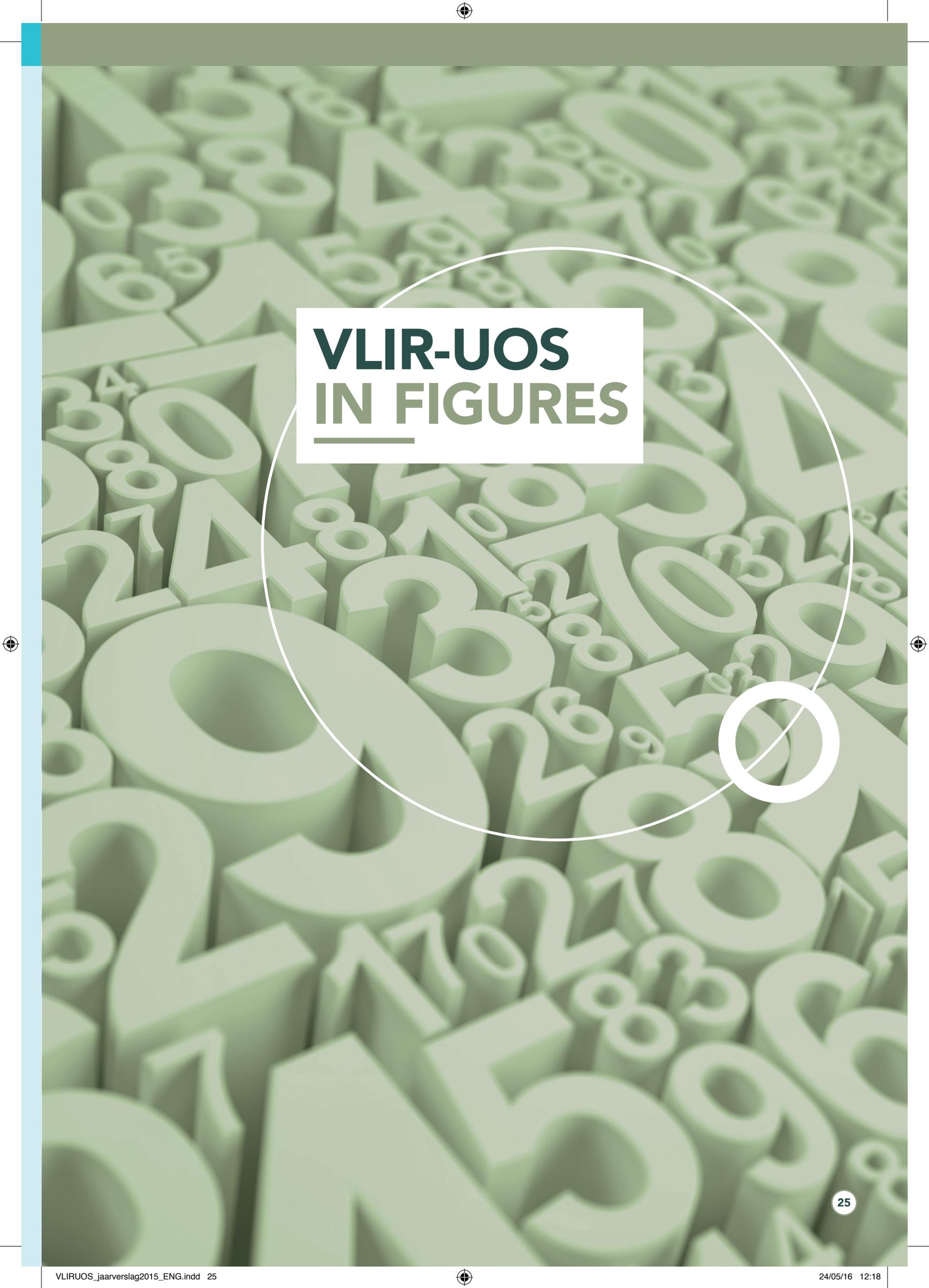
Nobody is interested in boring stories. To get research out there in the media, on stage or in the university magazine you must have a wow factor. We have written the **wow handbook for researchers** to give you the tools to find your wow factor.

Download it now for free on www.yourwowfactor.be

With the support of
THE BELGIAN
DEVELOPMENT COOPERATION **.be**

VLIR-UIOS supports partnerships between universities and university colleges in Flanders (Belgium) and Africa, Asia and Latin America, looking for innovative responses to global and local challenges. www.vliruos.be

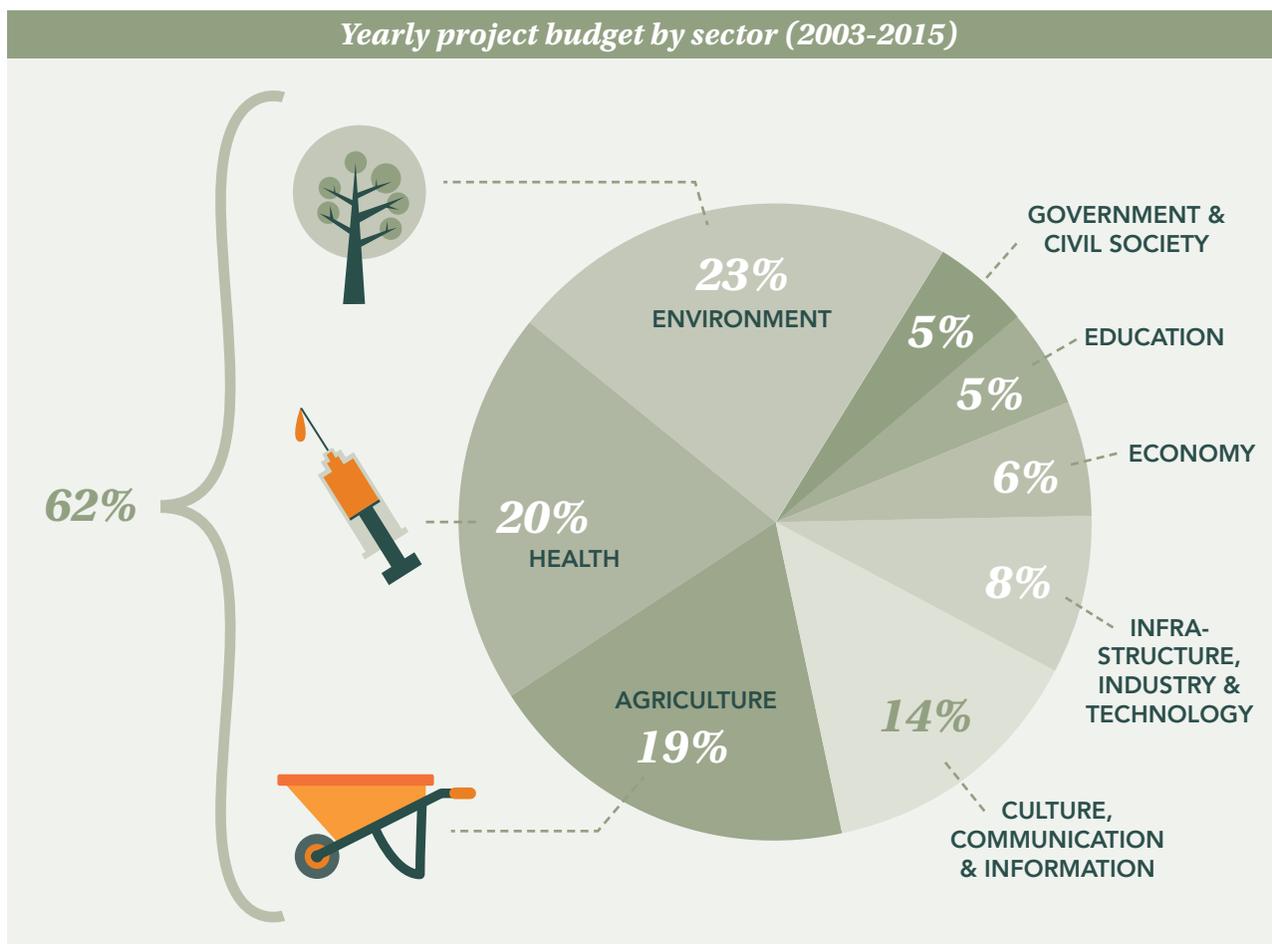
vliruos
SHARING MINDS,
CHANGING LIVES



VLIR-UOS IN FIGURES

SECTOR

Splitting the project budget between 2003 and 2015 down by sector, we see that more than 60% goes to three sectors: **Environment** (23%), **Health** (20%) and **Agriculture** (19%).



AGE

At 52, the average age of **Flemish project supervisors** has remained fairly constant since 2003.

Among the scholars, **Flemish students** are on average much younger than **students from the developing world**. The average is lowest for travel grants, at 23. The average starting age of Flemish PhD students (VLADOC) is 26.

Among scholars from developing countries, the average age of master's students studying in Flanders (ICP) is 28. The average starting age of PhD students (ICP-PhD) is 31. The highest average age is among training programme participants (ITP and KOI) where it is 33 and 36 respectively. These programmes are mainly oriented to people who already have some professional experience.

M/F

On average only 13% of the Flemish supervisors were female in 2003-2015. That is in line with the general average among Flemish professors. A slight increase has been seen among female supervisors in recent years.

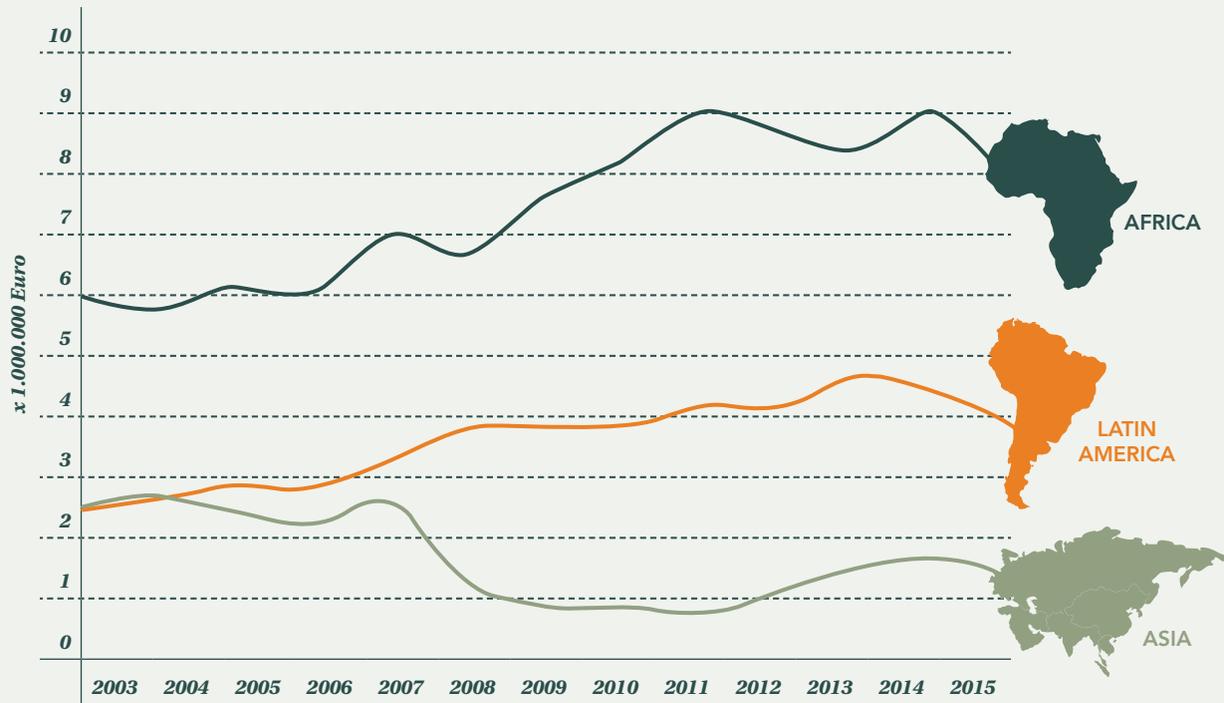
On average, 40% of scholars from the developing world are female. That figure has remained fairly steady since 2003. Looking at the Flemish scholars with a travel grant or a VLADOC PhD scholarship, on average 72% are women. There is a slight rising trend since 2003.

CONTINENT

Africa is far and away the leader in both projects and scholarships. In projects **Latin America** is second, whereas **Asia** is second in terms of scholarships. Strikingly, Latin America and Asia had virtually the same budget in 2003 in project terms. Since then, that budget has risen sharply for Latin America and fallen for Asia.

Yearly budget for running projects and scholarships by continent (2003-2015)

Project budget



Scholarships budget



VLIR-UOS BUDGET 2015

Below is a summary of the VLIR-UOS budget for 2015. Precise insight into expenditure will only be available in the autumn of 2016, as we will not receive the project receipts until then.

SOUTH PROGRAMMES	15.160.000	43,1%
Institutional university cooperation and country cooperation (IUC programmes, thematic networks, research platforms and other national/international cross cutting projects)	9.450.000	26,9%
Projects with a duration of 1 to 5 years (TEAM, Research Initiatives Programme, South Initiatives)	5.710.000	16,2%
RESEARCH IN FLANDERS	516.176	1,5%
Policy oriented research: Acropolis	400.000	1,2%
International Conferences (INCO)	116.176	0,3%
EDUCATION PROGRAMMES IN FLANDERS FOR STUDENTS FROM DEVELOPING COUNTRIES	2.872.586	8,2%
International Course Programme (ICP)	2.355.032	6,7%
International Training Programme (ITP)	383.376	1,1%
Short Training Initiatives (KOI)	134.178	0,4%
SCHOLARSHIPS FOR EDUCATION PROGRAMMES IN FLANDERS	8.839.000	25,2%
ICP PhD scholarships for researchers from developing countries	944.555	2,7%
ICP scholarships	5.989.611	17,0%
ITP scholarships	712.368	2,0%
KOI scholarships	331.285	1,0%
Coordination costs and ICP Get Together Day	861.181	2,5%
SCHOLARSHIPS FOR FLEMISH STUDENTS	1.948.425	5,5%
Travel grants for Flemish students	500.000	1,4%
Flemish PhD scholarships (VLADOC)	1.448.425	4,1%
STRUCTURAL COSTS	5.811.813	16,5%
CO ₂ compensation	35.000	0,1%
Education costs for Flemish universities	3.000.000	8,5%
VLIR-UOS secretariat and cofounding contacts at universities	2.776.813	7,9%
TOTAL	35.148.000	100%





***partnerships between
universities and university
colleges in Flanders (Belgium)
and the South looking for
innovative responses to global
and local challenges***

ABOUT VLIR-UOS

VLIR-UOS supports partnerships between universities and university colleges in Flanders (Belgium) and the South looking for innovative responses to global and local challenges.

VLIR-UOS funds cooperation projects between professors, researchers and teachers. VLIR-UOS also awards scholarships to students and professionals in Flanders and the South. Lastly, VLIR-UOS helps to strengthen higher education in the South and the globalisation of higher education in Flanders.

VLIR-UOS is part of the Flemish Interuniversity Council and receives funding from the Belgian Development Cooperation. More information: www.vliruos.be

Coordination and editor-in-chief: Hans Van de Water

Design: Shortcut

Printed by: Geers Offset

Cover picture: Hans Van de Water

Publisher:

Kristien Verbruggen, VLIR-UOS,
Bolwerksquare 1a, 1050 Brussels

You can download the digital version in
English and Dutch on www.vliruos.be

D/2016/10.960/2

