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FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION
UNIVERSITY OF TWENTE

ITC NEWS

MARINA VAN DAMME AWARD

LAUNCHING TEP

SINCERITY LEADS TO SUCCESS

GREEN WAVE HYPOTHESIS

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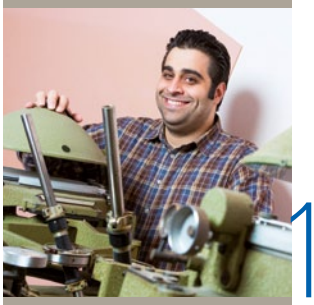

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Moreblessings Shoko became this year's winner of the Marina van Damme award. This ambitious UT graduate aims to empower girls in Zimbabwe by using drones. Drones that will fly to rural areas of her home country and provide girls with sanitary pads, and therefore the chance to go to school.

INTRODUCTION

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As ITC we are very proud of all our alumni as you are all ambassadors of our excellence. Over the years I have read many success stories of ITC alumni who reached their personal goal or one of their goals on their career path to an unknown future. As ITC we enjoy these stories as they are perfect examples of why we are here in the first place. In this issue yet again many success stories of ITC alumni who reached a goal...if it is their ultimate goal or just a start of a new journey we might read in a couple of years but first let us read the stories of Ganesh Prasad Battah (page 5), Moreblessings Shoko (page 6) and Mr Chaka (page18).

This year we also had the honour to congratulate the 300th PhD graduate of ITC. Mitra Shariati defended her thesis in March this year. Her research will enable investigators to monitor the effect of future climate change on the mitigation timing of the geese. On page 11 you can read all about her "green wave" hypothesis. As being the 300th PhD graduate means a list of important PhD milestones on page 22 starting with the first PhD degree of Mr Joseph Akinyede.

Enough about graduation and alumni as there are many students still in the middle of their course work. While participating in a short course (page 8) or in a degree course all students need a little bit of play next to their though course work. Fortunately there are possibilities for students to forget about their coursework for just a bit. As the Netherlands has more international students than only at ITC, each year a sports tournament is organized for all the students living in the Netherlands who are willing to defend the honour of their institute. This year ITC finished second out of seven Dutch institutes. On page 16 you can find an overview of a great sportive day.

While next to the alumni, the directorate (page 3) and ITC staff (page 20) represent us abroad I remain in my office informing you about all the stories that pass my desk via social media channels, newsletters and this magazine. Please do share your stories with us because even though you might think it is small, every success is something to be proud of.

Virtually yours, Jorien Terlouw
Editor

MAIN FEATURE

Tanzania Energy Platform

Oil, gas, geothermal and sustainable energy knowledge infrastructure in Tanzania

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Dinand Alkema d.alkema@utwente.nl

To structure the knowledge on energy in Tanzania, the Tanzania Energy Platform was launched with a workshop on 5th April 2017. Recently, large oil and gas reserves have been discovered in Tanzania and the country may well have a large potential for geothermal energy, as part of it is volcanic and geothermal gradients are high. Moreover, Tanzania has opportunities for sun and wind energy.

The Tanzania Energy Platform is a knowledge infrastructure for energy and energy-related topics in Tanzania and its honorary chair is the vice-president of Tanzania, Prof Samia Suluhu Hassan. Members include educational institutes and Tanzanian and international companies and organisations involved in energy production in Tanzania. These range from local consultants and contractors to international oil & gas multi-nationals and dredging and construction companies for offshore installations. The present chair of the platform is Prof Hudson, of the University of Dar es Salaam, who also organised the highly-successful launch workshop on 5 and 6 April. The platform regularly organises workshops, with discussions and advice on energy topics, and maintains a website (https://energyplatform.ne.tz/).

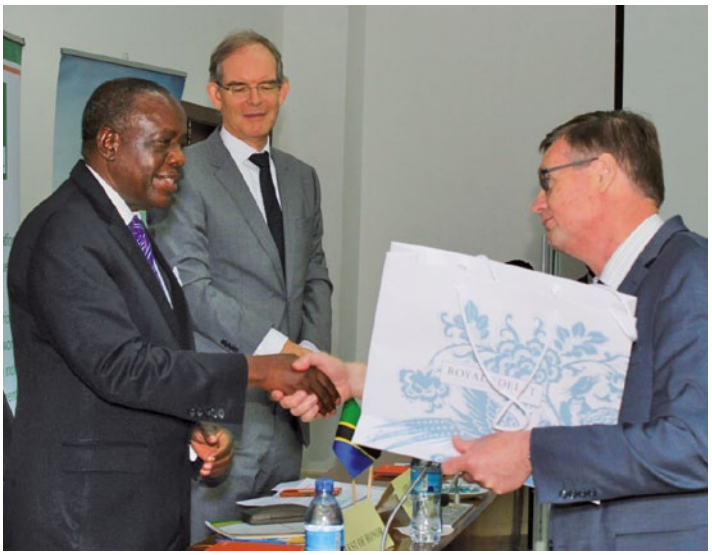
In his speech on behalf of the vice president, Minister of Energy and Minerals Prof Sospeter Muhongo stated that the platform would play a crucial role in advising the government on energy policies and plans, as "Tanzania is endowed with vast sources of renewable and non-renewable sources of energy that are yet to be developed to enhance the country's economic goals". The

Minister of Energy and Minerals, Prof Dr Sospeter Muhongo (sitting 4th from left) and the Netherlands Ambassador to Tanzania, Jaap Frederiks (sitting 5th from left)

Netherlands Ambassador to Tanzania, Jaap Frederiks, elaborated on the cooperation between Tanzania and the Netherlands, saying "I hope that, with this launch, we have planted the seeds for enhanced communication between all stakeholders". Prof Tom Veldkamp presented the vice president with a token of appreciation, in the form of a typical Dutch Delft blue plate and, on behalf of the project, Prof Freek van der Meer expressed his gratitude to the vice president for accepting the honorary chairmanship.

Tanzania Dutch Energy Capacity Building (TDECB) project

The Tanzania Energy Platform is the result of the Tanzania Dutch Energy Capacity Building (TDECB) project, which is developing a series of activities in Tanzania to assist the country in setting up energy and sustainable energy education and knowledge infrastructure to enhance their education curriculum for energy topics. The University of Twente, Faculty of Geo-information Science and Earth Observation (ITC), Department of Earth Systems Analyses (ESA) is managing the project, which also involves the Tanzanian educational institutes of the University of Dar es Salaam, DIT, KIST and the Dutch universities of Delft, Hanze and Utrecht. The project receives funding from the Dutch Ministry of Foreign Affairs, via Nuffic. The TDEBC project focuses on training staff, developing education and research programmes, investing in equipment and improving the gender balance. The project offers a solution to the Tanzanian shortage of highly-qualified people in the energy sector. Oil and gas are not great for the environment, but are preferable to coal and charcoal, which are what are mainly used now in Tanzania. Smart use of oil and gas reserves means revenues can be used to develop renewable energy sources, such as geothermal and solar energy, in the future. ■



Minister of Energy and Minerals (left) receiving a present from Prof Tom Veldkamp, University Twente/ITC (right), the Netherlands Ambassador Jaap Frederiks is in the centre *(photo: courtesy MTANZANIA Newspaper, 6 April 2017)*

Prof Freek van der Meer in his speech of thanks to the vice president

ITC ALUMNI MEETING

Immediately after the launching event and the TEP workshops, an alumni meet and greet was held. Approximately 20 former ITC students came to meet the dean Tom Veldkamp and the managing director Erna Leurink as well as the ITC staff, Robert Hack and Dinand Alkema and the Nuffic representative Ms Rosa Borges. And, naturally, to meet each other. With ITC as a common experience, it was easy for the participants to start a conversation. "When were you at ITC?" was a much-used opening line, often followed by something like "… and do you remember …?" It was nice to see how our alumni had returned to Tanzania and embarked on their careers. Many agreed that the study at ITC had been most helpful for them. With drinks and snacked served, this provided a warm closure to two highly-intensive days at the Julius Nyerere Convention Center.

Sincerity Leads to Success

Ganesh Prasad Battah bhatta07954@alumni.itc.nl

I am proud to say that I have been fortunate enough to attend ITC twice in my life. My first opportunity came in the year 2003 as a student on the GFM3 course, which I completed in 2004. After a gap of four years, I had another opportunity to study on the MSc Land Administration course, which I completed in 2010 with distinction. I was honoured to receive a Nuffic Scholarship to attend both courses. I have also had the privilege of attending two refresher courses (one in Vietnam in 2007 and the other in Mongolia in 2015).

During my stay at ITC, I was involved in social activities in addition my regular studies. Serving as the social commissioner of the Student Association Board (SAB) in 2003-2004 and president of the same in 2008-2009 were the most valuable experiences of my life at ITC. Similarly, I served as the general secretary of the Nepalese Students' Community in Enschede in 2003-2004 and president of the same in 2008-2009.

As the highest scorer with distinction of the 2008 - 2010 batch of MSc Land Administration students, in 2010 I was decorated with the prestigious Nepal Academic Award Medal 'B' by the then Right Honourable President of Nepal, Dr Ram Baran Yadav (this news was featured in the ITC newsletter in the issue published after September 2010, I think it was the fourth issue of the year)

I have been applying the knowledge and skills gained at ITC in various capacities at the Survey Department of Nepal, which I presently head. The organisation comes under the Nepalese government's Ministry of Land Reform and Management, which is the only national mapping organisation in the country. It was established in 1957 and will celebrate its 60th anniversary on 28 May 2017. The department is responsible for geodetic survey, topographic survey, cadastral survey and national spatial data infrastructure. It also takes care of international boundary surveys (with India and China) and is mandated to regulate all surveying and mapping activities in Nepal. The department has a workforce of approximately 3,000 at the central and district level offices. ITC has greatly contributed to the institutional development and technological transformation of the Survey Department. Most of its senior level officials are ITC graduates and they are doing their utmost to deploy the knowledge they have gained at ITC in its technological transformation. The department has long been privileged enough to receive higher education opportunities for its senior level staff. It is disappointing to note, though, that the number has declined in recent years.

My present appointment makes me the youngest ever director general of the Survey Department in its sixty-year history

My academic experience at ITC has been a real asset to my professional life. Like colleagues who also attended ITC, I have been contributing to the institutional growth of the Nepal government's survey department and policy reform, not only in surveying and mapping but also in the land administration and management sector.

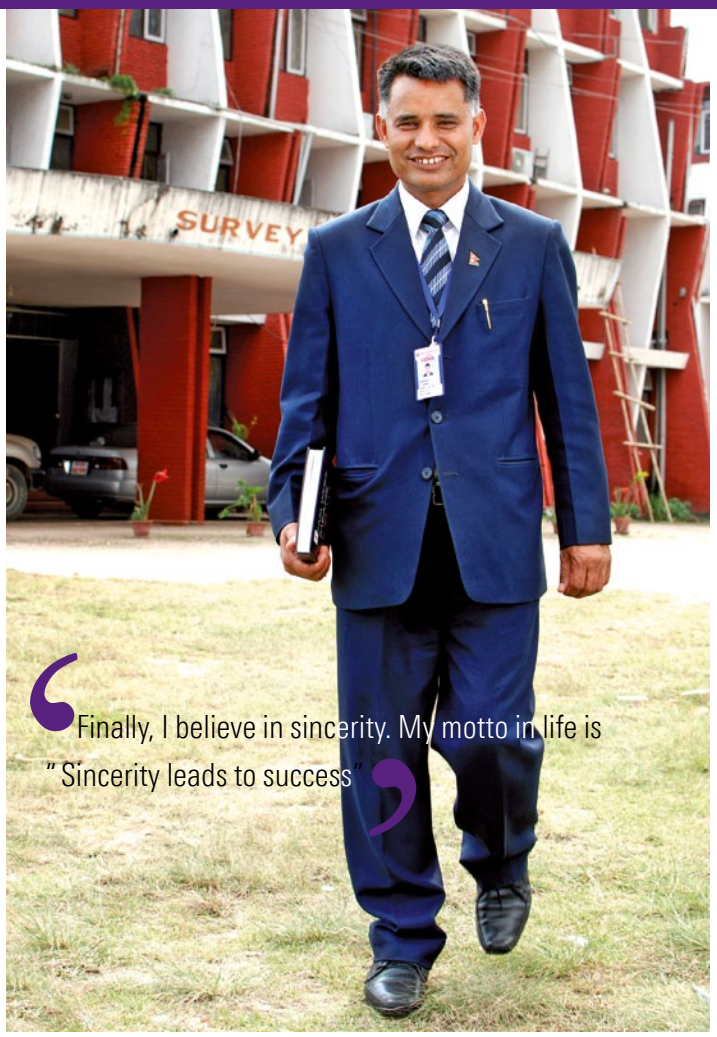
Professionally, I am one of the few fortunate persons in the department to achieve success in a short space of time. The knowledge I gained at ITC has enhanced not only my professional capacity but also my competency in bringing in the best in internal competition for promotion to a higher position. Consequently, I attained my current position relatively shortly after

joining government service. My present appointment makes me the youngest ever director general of the Survey Department in its sixty-year history.

As director general of the department, I face many challenges, including technological transformation, the supply of demand-based geo products, the regularisation of surveying and mapping activities and the organisational restructuring in the present context of state restructuring, as the country is transforming into a federal structure. At the same time, colleagues have high expectations, especially of the improvements in service delivery and the quality of geo products.

The development of the staff capacity is another big challenge. The department currently employs approximately 3,000 people throughout the country. To enhance their capacity and, in particular, to make them competent in coping with the needs of current society and technological advancement, I have to work very hard. In this context, I expect ITC will continue to support us in providing studying and training opportunities for a large number of department staff.

As director general, my future plans focus on activities that can bring about positive changes in the professional domain so that ordinary citizens can experience improvements in service delivery and the availability of geo products to meet their requirements. The international community may be interested to know that the Survey Department is planning to measure the height of Mt. Everest by its own efforts, staring before the end of this year. ■



ITC Alumna Starts a Revolution in Zimbabwe with an UT Award

Michaela Nesvarova – Utoday utoday@utwente.nl

Moreblessings Shoko became this year's winner of the Marina van Damme award. This ambitious ITC/UT graduate aims to empower girls in Zimbabwe by using drones. Drones that will fly to rural areas of her home country and provide girls with sanitary pads, and therefore the chance to go to school.

'I'm so excited about winning this award. It definitely gives me a nudge in the right direction. It will allow me to become a certified drone pilot and help girls in rural areas of my country. It is a dream come true,' Moreblessings Shoko says about receiving the Marina van Damme scholarship, which is annually awarded to a UT alumna with the goal of furthering her career.

No sanitary pads = no school

'I'm a university lecturer and I noticed that there are very few girls studying engineering disciplines,' Shoko explains what gave her the idea for her project. 'What you need to know is that many girls in rural areas of Zimbabwe have no access to sanitary products. They are forced to use sand, stones, tree branches or pieces of plastics instead. That means they can't go to school when they have their period and they miss a week of school every month. And once they come back, boys often laugh at them and point. This alone makes you feel undignified as a woman and it makes it extremely difficult to get proper education.'

Giving girls their dignity back

'If we can provide these girls with sanitary pads, we can give them their dignity back and truly empower them,' continues the

alumna, who received her Master's degree at the ITC faculty in 2010 and currently works at the Midlands State University in Zimbabwe.

To help women in pursuing better education, Shoko will use drones. 'I will fly drones to the rural areas and distribute sanitary pads anywhere where it's needed,' confirms Shoko. 'To keep this project running, I will simultaneously use the drones to map the areas and sell the data, because many places in Zimbabwe don't have any up-to-date maps. In fact, ITC will serve as an official advisor for the project.'

To make the enterprise truly sustainable, Shoko has developed special reusable sanitary pads, which can be washed. These pads are made of local cotton and produced locally with the help of female cooperatives.

Drone revolution

All of this was only a plan until now, but thanks to the Marina van Damme award, Moreblessings Shoko can make it a reality. ' I hope to start with product development this July and begin the actual distribution in 2018,' she says. 'Before that happens, I need to visit the rural areas and involve local coordinators, most likely teachers, who can contact me when sanitary pads are needed. Once I receive a text message from them, I can deploy the drone.' ■

AWARD FOR MARINA VAN DAMME HERSELF

It is the fifteenth time the Marina van Damme award is being handed out. For that reason, the initiator of the award Marina van Damme, received a special award herself. She was the first female PhD student to receive her doctorate, back in 1965. Executive chairman Victor van der Chijs honored all her efforts, by giving her the medal (Dutch: erepenning) of the University of Twente.

Marina van Damme

'I believe this project is likely to grow as a business, though. Drones are still new in Zimbabwe, which means I will be able to teach others how to use them. I'm basically starting a drone revolution.'

Moreblessing Shoko

This article was published by Utoday (former UT news). The original publication can be found here:

www.utoday.nl/news/64223/marina-van-damme-award-ut-alumna-starts-a-revolution-in-zimbabwe

Picture:Gijs van Ouwekerk

eGARUDA Training: Marine Spatial Planning and Policymaking

Suhyb Salama s.salama@utwente.nl

From 9 to 27 January 2017, a group of seventeen staff from Indonesia's Ministry of Marine Affairs (MMAF) attended the eGARUDA course at ITC to build capacity in the field of marine spatial planning and policymaking.

During the eGARUDA course, participants were introduced to the concepts and skills required in spatial data analysis, environmental impact assessment, planning and policymaking. The teaching method was project oriented and participant centred. The participants identified land reclamation as an imminent issue for marine spatial planning in Indonesia and worked through the course to present solutions and provide scientifically-based policy guidelines for land reclamation.

The participants were divided into teams, with each team working on a specific sub-project in the core case study. Each sub-project was presented and defended in an interaction session involving peers as well as trainers. The participants then worked on combining their sub-projects into one, evaluating the impact of land reclamation on marine resources and developing guidelines for marine policy for land reclamation in Indonesia. In addition, three excursions were organised, introducing the participants to marine research, industry and policymaking in the Netherlands.

eGARUDA was successfully evaluated by the participants and the funding agency NUFFIC-NESO with the main results summarised as follows:

a) Provided MMAF staff with up-to-date knowledge and skills on spatial data and spatial analysis for the management and spatial planning of marine resources.
b) Provided MMAF staff with increased capacity to disseminate awareness, knowledge and skills with regard to strategic environmental impact assessments for marine spatial planning.
c) Assisted MMAF in establishingguidelines for developing national marine and fisheries policy. ■

Visit to Maasland storm surge barrier and Maasvlakte

Visit to NIOZ

Graduation

Visit to saltmarsh

Facilitating State Building

Post-Conflict Land Administration: Facilitating State Building

Dimo Todorovski d.todorovski@utwente.nl

The most serious concerns in armed conflicts are human casualties, destroyed infrastructure and houses and population displacement. Destruction and displacement have a major influence on land and property-related issues during - and specifically in the aftermath of - a conflict (Unruh & Williams, 2013). Land issues grow in complexity immediately after the conflict, as large numbers of displaced people return to their places of origin to find their houses and properties destroyed, damaged or illegally occupied by secondary occupants.

Land and its administration are always negatively affected during conflicts and in post-conflict situations. In this article, the author argues that, if land and its administration are neglected or not properly addressed once a conflict has ended, land can become a cause for renewed armed conflict and an obstacle to the rebuilding of a post-conflict society.

The most serious concerns in armed conflicts are human casualties, destroyed infrastructure and houses and population displacement. Destruction and displacement have a major influence on land and property-related issues during - and specifically in the aftermath of - a conflict (Unruh & Williams, 2013). Land issues grow in complexity immediately after the conflict, as large numbers of displaced people return to their places of origin to find their houses and properties destroyed, damaged or illegally occupied by secondary occupants. Land and its administration are always negatively affected during conflicts and in post-conflict situations. In this article, the author argues that, if land and its administration are neglected or not properly addressed once a conflict has ended, land can become a cause for renewed armed conflict and an obstacle to the rebuilding of a post-conflict society.

Post-conflict situations lead to a dysfunctional land administration system characterised by limited prioritisation of land policy, discriminatory land law, poor institutional and regulatory frameworks that allow the grabbing of public and private land by powerful individuals and groups, poor management of geoinformation systems for record keeping and a weak government that is incapable of helping internally displaced people and refugees. Accordingly, land administration suffers most from the loss of land records and land professionals. Study in the field of land administration for post-conflict contexts has identified a knowledge gap in the relationship between land administration and post-conflict state building (Figure 1).

Case Study Investigations

Guided by the goal of 'identifying which interventions in land administration facilitate post-conflict state building and under which circumstances', five case studies are

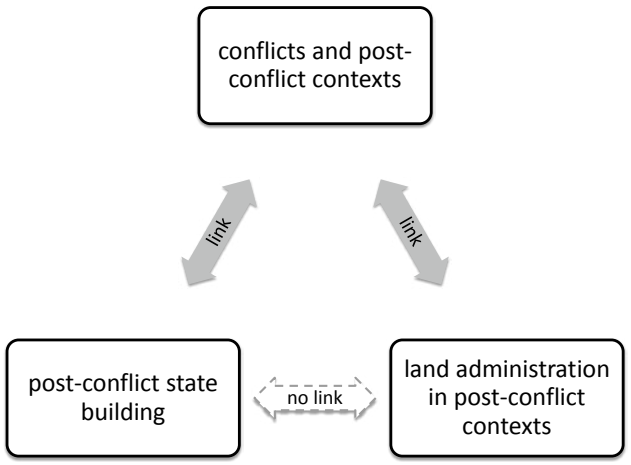


Figure 1: The knowledge gap

explored in detail. Two main case studies are explored on the basis of fieldwork activities, reports and literature and three supportive case studies are explored on the basis of available literature. Kosovo and Rwanda are the two main case studies and Mozambique, Cambodia and Timor-Leste are the supportive case studies. Table 1 shows the results of interventions in post-conflict land administration that occurred in the specific case study. The relationship between land, conflict and post-conflict contexts have also been explored and the specific findings presented as a framework for rebuilding post-conflict states under such conditions as institutional weaknesses, economic and social problems and serious security problems.

Land, conflict and post conflict

In some of the cases, land was either a major cause of or one of many factors influencing the eruption of armed conflict. Consequently, land issues required specific attention during state building in post-conflict contexts. This confirmed the acknowledgement that all conflicts have a land dimension. Additional confirmation from the cases shows it is beneficial for specific interventions in land administration and land-related issues to be included in the peace agreement documents integrated into United Nations (UN) operations. Findings show that, when that has not been the case, the development of the land segment has occurred later, resulting in complications to and a slowdown of post-conflict state building. Where applicable, it has been beneficial to rapidly adopt ad-hoc land policies that have strengthened the legitimacy of the state and supported political stability, as shown in the case of Rwanda. The cases explored showed developments in the land sectors regarding the creation of land legislation, organisations with enforcement mandates and participation by citizens and authorities involved and how these contributed to the rule of law in post-conflict contexts.

Overcoming institutional weaknesses

Development of a national land policy in post-conflict contexts benefited all related users. This was most efficient when developed within a broader national development strategy, jointly created and accepted by all relevant stakeholders. Land policy needs to contain clear directions for the development of land law and the appointment of specific organisations with a mandate for the enforcement of law and policy. In all five cases explored, the creation of specific organisations, such as land administration organisations and land claim commissions, revealed that this supported the governmental structure and strengthened the weak post-conflict political system. In addition, capacity building was required and implemented in relation to the legal framework, the creation of organisations, the education and training of land professionals and equipment. In all cases, capacity building was supported by assistance from international actors or development partners. Findings have shown that the land-related activities mentioned are most effective and efficient when developed with international assistance and through implementation programmes or projects. Interventions in land administration contributed to improving the political leaders' low level of legitimacy and to the legitimacy of the state. In the case of Rwanda, findings showed that building the legitimacy of the state was

Dimo Todorovski holds a PhD from University of Twente. After 19 years of professional engagement in the Agency for Real Estate Cadaster in Macedonia, he joined ITC in 2011. He is the course coordinator for land administration specialisation at ITC, University of Twente, the Netherlands.

Table 1: Interventions in land administration for post-conflict state building (Todorovski, Zevenbergen and Van der Molen, 2016)

Parameter	Kosovo	Rwanda	Mozambique	Cambodia	Timor-Leste
National land policy	√	√	√	√	√
Cadastre / land law	√	√	√	√	√
Land administration organisations	√	√	√	√	√
Land-claims commissions	√	√	√	√	√
Implementation program / project	√	√		√	√
Ad hoc land policies: Land sharing, state land for housing and village settlements		√			
Specific land management / administration issues in PAD	√	√			√
Land registration improved/created	√	√	√	√	√
Recover/create land records	√	√	√	√	√
Train/educate land professionals	√	√	√	√	√
Cadastre products and services for displaced population and destroyed infrastructure and houses	√				
Land dispute mechanisms (by mediation or adjudication)	√	√	√		√

Bojane

Quanton

Stenkovec

initially based on the ad-hoc land sharing policy, allocation of state land and housing and village settlements. Interventions in land administration, as discussed here, assist in overcoming post-conflict institutional weaknesses.

Economic and social improvements

Addressing the specific land management/administration interventions within the peace agreement documents in three explored cases and addressing land issues regarding displaced persons in all five cases was an initial step towards involving land and its administration in improving the economic and social situation in post-conflict contexts. In addition, the creation of specific land claim commissions and land administration organisations assisted the population - and specifically the displaced people - in settling the land disputes and reduced social and security tensions. The aim of land administration organisations is to create or improve the land registration and land administration systems. The cases explored showed that this was successfully realised, supported by implementation programmes or projects, which further contributed to sustainable development and bolstered the property market. The success of the implementation programmes and projects, as was the case in both main case studies, is evidenced in the economic development and reduced social tensions. Development of land administration, specifically in the creation of land records in four cases (or recovery of the land records as in the case of Kosovo), contributed to the service provision to all land-related sectors and significantly increased the security of land rights. This supported the establishment of the land market and improved the overall economic development. When land records became available, provision of land products and services helped meet the requirements of displacement and destroyed properties. Interventions in housing and property rights and land administration are identified as elements that contributed to solving the prevailing social and economic problems.

Establishing security

Addressing specific land management, administration (in three cases) – and land-related issues in the peace agreement document – was shown in all cases to contribute to some degree to improving security situations with regard to the displaced population. Land dispute and claim mechanisms were adequately developed in each of the five cases explored. In addition, findings reveal that these mechanisms are seen as instruments that support the settlement of land disputes and reduce conflict tensions. The interventions in land administration identified here are recognised as facilitators of post-conflict state building (Todorovski, 2016). ■

This article was published by GIM International: www.gim-international.com/content/article/post-conflict-land-administration

Further reading:

Todorovski, D. (2016). Post-conflict land administration, facilitator of post-conflict state building (PhD), University of Twente Faculty of Geo-Information and Earth Observation (ITC), Enschede, the Netherlands. (282)

Todorovski, D., Zevenbergen, J., and Van der Molen, P. (2016). How do interventions in land administration in post-conflict situations facilitate state building? International Journal of Peace and Development Studies, 7(3), 18-31.

Unruh, J., & Williams, R. (2013). Land and post-conflict peace building. Ed. J. Unruh and R.C. Williams. London: Earthscan.

Migration Timing and Stopover Selection for Barnacle Geese Branta Leucopsis

Mitra Shariati mitra.sh.na@gmail.com

Timely arrival at the breeding site is particularly important for migratory avian herbivores breeding in the Arctic region and it depends on environmental parameters at both the breeding site and the stopover sites. It is equally imperative for migration to commence at the right time and avian herbivores are tuned to a wave of available forage as they move along the migration flyway, the so-called "green wave" hypothesis.

In the current study, the focus was on barnacle geese, Branta leucopsis, which are categorised in the highly-selective herbivore class and depend on forage of a high nutritional quality. The green wave hypothesis has been successfully tested for barnacle geese using field data. There are, however, several proxies evidencing the onset of spring, one of which is the satellite-derived green wave index (GWI). In addition, GWI is closely related to photosynthesis and has proved a useful tool for studying the migration of herbivorous mammals with respect to vegetation phenology. It has never been tested for migrating avian herbivores, though.

Barnacle Geese Branta Leucopsis

Besides following the food availability at the stopover sites, migratory birds need to respond to other environmental parameters, such as weather, temperature and day length, to anticipate the most favourable arrival date at the breeding site. Environmental parameters at the last staging site, in particular, can greatly influence the arrival date, as it is the longest and closest stopping site to the breeding ground.

Despite the possible importance of environmental parameters at the last staging site, little or no knowledge exists of the relationship between these parameters and the migration timing of the geese.
In addition to migration timing, stopover ecology is also an area of avid interest in avian ecology. Stopover selection along the migratory route is important for long-distance migrants to renew their energy reserves for completing their migration. Moreover, the habitat selection is greatly influenced by a variety of environmental parameters, including food availability, the cost of predation and disturbance risks and inter- and intraspecific competition. Thus, the relationships between the species and their environment can be understood by studying habitat selection using modelling. This information is necessary for the effective conservation and management of migratory birds. It is evident, however, that there is a lack of knowledge concerning the site selection of migratory birds.

The main goals of this thesis are: 1) to investigate the effect on the spring migration timing of barnacle geese of the green wave of highly nutritious plants and environmental parameters along the flyway and, particularly, at the final staging sites and 2) to model the stopover site selection of barnacle geese using the Bayesian expert system and environmental parameters.

To achieve these goals, the advance applications of statistical analysis plus remote sensing and satellite tracking techniques are applied.
Using GWI, the results presented in this thesis showed that individual barnacle geese surf the wave of high-nutrition plants. Moreover, it was found that the GWI is more accurate than a temperature-derived green wave index in predicting the arrival dates of barnacle geese at stopover and breeding sites.
The results obtained revealed a significant correlation between the environmental parameters at the last stage of migration and arrival date at the breeding site. Barnacle geese may benefit from using the local environmental conditions to adjust their migration timing, but they may not be able to predict the situation at their destination from their last staging site.

Moreover, during the research, by incorporating environmental parameters into a Bayesian expert system it was observed that this model can correctly detect the stopover sites of the geese. This model can be used as a proper method for modelling the presence/absence of barnacle geese at the stopover sites in the future.

These findings will enable investigators to monitor the effect of future climate change on the migration timing of the geese. Furthermore, the correct identification of stopover sites is particularly important in management plans to resolve possible future conflicts caused by an increase in the numbers and range of barnacle geese. ■

This was no ordinary PhD defence, as Mitra Shariati was ITC's 300th PhD graduate. On page 22 you can read about the previous jubilee graduates.

On 23 March 2017 Mitra Shariati defended her thesis and was award with a PhD degree

The Poorer you are, the More Difficult it is'

Sadra Matmir on the perceived effects of climate change

Climate change continues to be a hot topic, but is often debated in terms of how it affects natural phenomena or biodiversity. To fill part of that gap, master's student Sadra Matmir (ITC) explores how city folk in New York experience the impacts of heatwaves, as one of the main hazards posed by climate change.

From satellite images to computer modelling, your faculty is known for its ability to use technology to measure changes on the earth's surface and the surrounding atmosphere. So why does your research explore the way 'ordinary' people in cities experience climate change?

'There is a lot of scientific debate going on when it comes to climate change and a lot of research is being conducted. But policymakers are not motivated simply by academic insight; the needs of their constituents constitute a far greater drive for them to make changes. So, if you want policymakers to act on climate change, it's helpful for them to know how citizens feel it affects them. At the same time, it can be good to know if these perceived effects actually exist and what shape they take.

Meanwhile, on a global scale it's evident that poor people are more affected by climate change, as they have fewer means to fight its effects. To find out if this gap also exists in cities, together with other researchers in the project I examine whether people from different socio-economic backgrounds and classes feel differently affected by climate change. Moreover, we are using citizens' perceptions of and frames of reference for the impact of heatwaves to try and develop suitable adaptation options.'

Why does your research focus on New York City rather than, for instance, Amsterdam?

'As a large, densely-populated and highly-built-up city, New York represents an excellent test case for discovering more about the intersection of climate change and cities. Moreover, our research fills an important research gap: heatwaves are one of the major hazards threatening the city but, in New York City, municipal plans for and academic research on climate change adaptation focus mainly on floods and coastal storms. Even though heatwaves don't look like serious natural disasters, they actually kill far more people than earthquakes or tornadoes. There were also practical considerations guiding the choice for New York City. My now supervisor Diana Reckien had already conducted a survey for Columbia University among New York residents, collecting information on how different social groups in New York City experience extreme weather events and what kind of adaptation options are most feasible for reducing the perceived burden of weather extremes on different social groups. My supervisor at ITC, Johannes Flacke, became interested in working with these valuable data and analysing them to gain more of an insight into adaptation options for various income groups during heatwaves.'

Sadra Matmir

Why is it so important to study the effects of climate change on cities, including the possible rise in heatwaves?
'Over half of the world's population now lives in cities. When these urban areas are increasingly hit by such hazards as heatwaves, inland floods, sea level rise and storm surges due to climate change, then a lot of people, property and infrastructure are at risk. Moreover, temperatures are generally higher in cities than in the surrounding countryside, further exacerbating the effects of a heatwave. To give an example of the health effects, more people die during a heatwave, particularly older people. But there are also generally more conflicts and clashes between people. Meanwhile, higher temperatures may affect drinking water and energy supply – in a time when people get extra thirsty and are keen to use fans or air conditioning'.

How do the experiences of New Yorkers compare with existing knowledge on the social effects of climate change?
'So far, our research has shown that all income groups are experiencing more health problems and financial strain due to heatwaves. But there were also differences between the groups. Citizens on a lower income, including those below the poverty line, were more worried about the future impact of heatwaves on

PROJECT NEWS

BInUCom and SES: Erasmus+ projects in cooperation with Indian, Ethiopian and European partners

Javier Martinez j.martinez@utwente.nl

Building Inclusive Urban Communities (BInUCom) and *Social Inclusion and Energy Management for Informal Urban Settlements* (SES) are two projects under the **Erasmus+ Programme** funded by the European Union (EACEA) in the field of Capacity Building in Higher Education. The Department of Urban and Regional Planning and Geo-information Management (PGM) participates in these two programmes in cooperation with Indian, Ethiopian and European partners (Lund and Kassel University).

Coordinated by Danube University Krems (Austria), the BInUCom project started in 2016 with the objective of enhancing cooperation between Indian universities in Ahmedabad (CEPT), Coimbatore (Karpagam), Mumbai (KRVIA) and Vijayawada (SPAV). In 2017, the SES project was launched, aimed at strengthening the cooperation between Ethiopian universities in Addis Ababa (EiABC), Gondar (UoG) and Mekelle (UoM).

BInUCom and SES will increase the relevance of architecture and planning studies by introducing multidisciplinary topics, such as social inclusion, sustainable housing, participatory mapping, sustainable social housing and environmental risk assessment. PGM contributes in such topics as (participatory) community quality of life monitoring, social indicators, GIS, slum mapping, upgrading and governance, in particular.

In India, rapid urbanisation is expected to lead to a housing shortage in cities of about 30 million by 2022, creating appalling conditions for urban poor. The government of India has addressed this problem by defining "Housing for All" as its goal to

their lives. Moreover, compared with medium or high-income groups, people on a lower income were more concerned about the fate of parks and other public green spaces and asked for more investment to ensure these areas withstand heatwaves. All in all, our results confirm that, the poorer you are, the more difficult it is to cope with the impacts of climate change. This makes it especially important to devise ways for the city to best adapt to, and prepare for, heatwaves, reflecting each income group's priorities.' ■

(Source: UT Nieuws Magazine December 2016)

'Heatwaves kill far more people than earthquakes or tornadoes'

be achieved by 2022. This situation creates a huge demand for architects and urban planners who can deal with the complex challenges of sustainable social housing and the development of inclusive urban communities. To complement the vertical policy-making in India with a horizontal exchange of good practices, the BInUCom project aims to foster collaboration between HEIs.

In Ethiopia, the SES project aims to help Ethiopian cities solve problems related to housing poor urban communities, by supporting these communities rather than evicting them from their informal settlements. SES introduces a holistic approach into Ethiopian HEI's existing academic programmes for future urban developers and energy managers and educates responsible personnel at local authorities to complement the vertical policy-making in Ethiopia with a horizontal exchange of good practices. Both BInUCom and SES enhance the relations between HEIs and their wider socio-economic environment by organising information, consultation and feedback mechanisms with various social actors during case studies, by providing external trainings to stakeholders, holding local dissemination workshops and national conferences and sharing open educational resources and complementary materials via a Moodle platform. These results will sharpen the profile of HEIs and their responsiveness to societal needs, improve the employability of graduates and the networking between local stakeholders and intensify contacts between India, Ethiopia and Europe.

On 3 March 2017, coinciding with the kick-off meeting for the SES project in Krems (Austria), partners of the two projects met for a mutual exchange of experiences and approaches aimed at improving higher education for architects and urban planners, to enable them to meet the complex challenges of sustainable social housing in the two partner countries. ■

Funded by the Erasmus+ Programme of the European Union

More information on BInUCom and SES is available at:
https://moodle.donau-uni.ac.at/binucom/
https://moodle.donau-uni.ac.at/ses/

A Kick-off meeting fort he SES project in Krems (Austria) where partners of two projects were present

ITC Finishes Second at the International Sportsday 2017

The International Sport Day on 1 April 2017, which was hosted by IHE Delft, saw over 70 students from ITC taking part in various sporting activities: basketball, football, volleyball, athletics, badminton, table tennis, chess and darts. It was a day filled with intense competition and lots of fun. We came first in basketball, badminton and darts and did well in athletics and chess. We came second and third in table tennis and third in volleyball. The ITC team was supported by Marie Chantel, Theresa and Wan Bakx, our athletic coach.
We finished the overall tournament in second position out of a total of the 6 international institutions ISS The Hague, IHE Delft, Saxion, KIT Amsterdam, HIS Rotterdam and ITC.


POSNO-SPORT


QATAR

VISIT

Land Administration Authority of Lesotho Visits ITC

Dimo Todorovski d.todorovski@utwente.nl

Following a short course on Securing Land Tenure in 2013, within the Land Administration Programme PGM Department, Mr Chaka was appointed as Director General and Chief Executive of the Land Administration Authority (LAA) of Lesotho. Sending professionals from the LAA for capacity development training at ITC proved to be a very good practice, he remarked. Each year since 2013, a group of 3-5 managerial level participants from LAA have attended various short courses offered as part of ITC's Land Administration Programme.

During his brief visit to ITC on 8 March 2017, Mr Chaka commented that "the improved quality of the performance of the Land Administration Authority as an organisation is evident and it is noted as one of the best-performing governmental institutions in Lesotho". He also believes that this capacity development for LAA staff should continue in the future, to maintain their high performance level and ensure continuous improvement of their core business, which is providing land administration services and products for not only their citizens but also all related stakeholders in Lesotho.

This academic year, there are three participants from Lesotho's LAA on the short course, Land Management for Good Governance. They joined the group of 19 Participants currently following the Land Administration Programme 2016-2018. At ITC we are looking forward to receiving short course participants from LAA for their capacity development for the 5th consecutive year. As this will be an anniversary, we are pleased to devote appropriate attention to this moment, with the desire and intention to continue this good practice in the long term, elevating our cooperation to a higher level. ■

Mr Chaka, Director General LAA, ITC Alumnus (centre), together with short course participants from LAA, Prof Zevenbergen (second from the right) and Dr Todorovski, course coordinator LA (first from the left)

ANNOUNCEMENTS

ITC at Geospatial World Forum 2017

23-25 January in Hyderabad, India

Dimo Todorovski d.todorovski@utwente.nl

The motto of this year's Geospatial World Forum was *Geospatial + Deep Learning = Shaping Smarter World.* The forum gathered professionals and academics from the geospatial world and was marked by the celebration of three anniversaries: 10 years of the magazine Geospatial World, 20 years of Geospatial Media and Communications and the start of a year's celebrations of the 250th anniversary of Survey of India. ITC joined in the spirit of congratulation and this was marked by Survey of India's surveyor general, Dr Swarna Subba Rao (an ITC alumnus), presenting Dr Dimo Todorovski, ITC's Land Administration course coordinator, with a gift.

Several ITC professors and scientific workers were present at this important occasion, which focused on utilising the latest GIS and remote sensing tools and technologies and their practical application in multiple domains for shaping a smarter world. As president of the International Cartographic Association (ICA), Prof Menno Jan Kraak was one the guest speakers at the one-day event, *Digital Cartography Summit*, held on 24 January 2017. He had gave of the opening speeches for the summit and acted as moderator of two working sessions and the closing session.

The Symposium on Land Administration Systems was held on the second day of the Geospatial World Forum. The symposium attracted numerous world experts in land administration (such as World Bank, Open Geospatial Consortium OGC, Netherlands Kadaster, UNECE WPLA, USAID, Trimble and Esri) as well as experts from the India National Government and several Indian state government authorities concerned with land administration. Prof Jaap Zevenbergen and Dr Dimo Todorovski were speakers at the Session on *Land Information Systems Driving Economies,* where their presentations were well attended and followed by a rich discussion on the topic of land administration.

The presence of ITC professors and lecturers was noted by the Indian National Remote Sensing Center, (NRSC) and the International Institute for Remote Sensing (IIRS), ITC's partner in the Joint Education Programme, which organised the two-day event NRSC Users Interaction Meet 2017.

Prof Jaap Zevenbergen and Dr Dimo Todorovski were invited to give lead speeches during the second day of this event, which were followed by some 180 young, prosperous professionals presenting Innovations in Education in ITC and within the Land Administration Programme. ■

Dr Swarna Subba Rao (an ITC alumnus), presenting Dr Dimo Todorovski, ITC's Land Administration course coordinator a gift

Dr Christiaan Lemmen, ITC Academic Visitor Scientist

Prof Zevenbergen with Col Inderjit Singh Dir. Smart Cities

Cheetah in Top List of Food Waste Apps

Communication Department news-magazine@utwente.nl

Last week, The Guardian featured an interesting article in on the best apps for tackling food waste around the world. Included in the list is the Cheetah app, from a start-up company building on research at ITC. Cheetah prevents food being wasted during transport in developing countries.

Cheetah amplifies the voice of value chain players (transporters, consumers, growers, officials from public and private agencies) by allowing them to communicate value chain shortcomings. The app also enables players to tap into chains of horticulture intelligence, which leads to better-informed decisions. This, in turn, reduces costs and increases profits for businesses and leads to lower market prices for consumers, fairer prices for growers and better interventions by public and private agencies. Cheetah has been developed by Ujuizi Laboratories, a spin-off company of the Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, in collaboration with several other ICT experts. ■

Read the article via: www.theguardian.com/sustainable-business/2017/feb/06/food-waste-apps-global-technology-leftovers-landfill.

ITC's 300th PhD Student Graduates

On 23 March 2017, Ms Mitra Shariati Najafabadi defended her PhD thesis, "Migration timing and stopover selection for Barnacle Geese Branta Leucopsis".

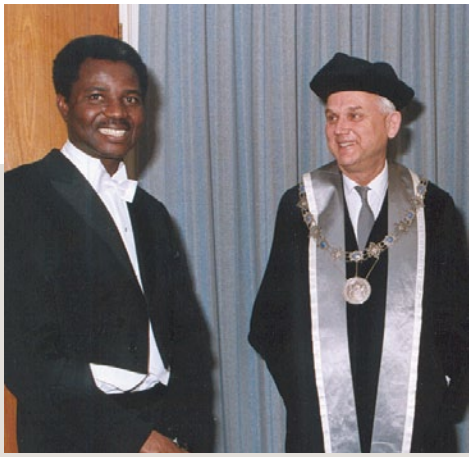
2017

Dr Mitra Shariati studied Natural Resource Engineering-Environment at the Isfahan University of Technology and received a BSc in September 2006. She obtained her MSc in the same field from the University of Tehran in February 2009. Her MSc research focused on avifaunal distribution patterns and abundance in Hyrcanian mountain forests in northern Iran. After graduating, for two years she collaborated with the University of Tehran on a number of environmental projects. In 2011, she was awarded the European Commission, Erasmus Mundus scholarship, to pursue her doctoral research at the Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, which resulted in her doctoral thesis "Migration timing and stopover selection for barnacle geese Branta leucopsis".

Mitra Shariati (Iran)

Library link: www.itc.nl/library/papers_2017/phd/shariati.pdf

1990



Joseph Akinyede (Nigeria)

First PhD graduate

On **6 February 1990**, Dr Joseph Akinyede from Nigeria became the first PhD graduate at ITC. Dr Akinyede was director of NASRDA (National Space Research and Development Agency) in Nigeria. NASRDA was established by the Nigerian government to implement the National Space Policy and Programme. NASRDA carries out research and development in space science and technology for the sustainable socio-economic development of Nigeria. This includes the building and launching of satellites and space application support for sustainable development programmes. Dr Akinyede left NASRDA in 2003 to make the transfer from space to education by becoming director of the African Regional Centre for Space Science and Technology Education - in English Language.

Library link: uuid:90f79a54-8569-4d7f-8d41-4d2c3cfefe10

2003

Jose Laurinde Campos dos Santos (Brazil)

100th PhD graduate

On **4 June 2003**, José Laurindo Campos dos Santos from Brazil became ITC's 100th research student to be awarded a PhD. His thesis, entitled "A biodiversity information system in an open data - metadatabase architecture," comprises his investigation into the development and implementation of a new database architecture that can meet the specific demands of biosciences (a biodiversity information system in an open data/metadatabase architecture). After graduating, Dr Campos dos Santos worked at the INPA (National Institute for Amazon Research) in Brazil, where he became involved in the institute's activities in building up an SDI for scientific data exchange within the Amazon basin.

Library link: www.itc.nl/library/Papers_2003/phd_theses/campos_dos_santos.pdf

Library link: www.itc.nl/library/papers_2012/phd/yijian.pdf

Yijian Zeng (China)

2012

200th PhD Graduate

On **16 February 2012**, Yijian Zeng defended his PhD thesis, "Coupled Dynamics in Soil: understanding the transport mechanisms of liquid water, water vapor, air pressure and heat by field experiments and numerical simulation". He received his doctor's degree cum laude. Dr Yijian Zeng became a PhD student at the ITC Faculty of the University of Twente under a joint-cooperation project supported by ITC, CUGB (China University of Geosciences (Beijing)) and CAREERI (Cold and Arid Regions Environmental and Engineering Research Institute, China Academy of Sciences). Yijian Zeng now works as an assistant professor in ITC's Department of Water Resources (ITC-WRS). ■

LIFE AFTER

Chinese Academy of Sciences:

40 Years of Scientific Co-operation with Europe

John van Genderen published in: CAS Newsletter, February, 2017

The year 2017 marks the fortieth anniversary of the scientific co-operation between the Chinese Academy of Sciences (CAS) and Europe. In 1977, a delegation from CAS went to the UK, a visit hosted by the Royal Society, and visited various research centres. This visit was more than a year before China formally started its reform and opening-up policy.

One of the CAS delegation members was the academician, Chen Shupeng, from the CAS institute of Geography (IOG). He was hosted by Prof John van Genderen, co-founder and general secretary of the British Remote Sensing Society, which had been formally established in January 1974. Prof van Genderen arranged for Prof Chen to be introduced to remote sensing in the UK and showed him various remote sensing institutes and companies and an airborne remote sensing platform equipped with multiple sensors.

As a result of this visit, Prof van Genderen was invited to visit CAS in Beijing, China, in April and May of 1978 to give lectures on remote sensing and advice on the design and setting up of a new CAS institute: the Institute of Remote Sensing Applications (IRSA). This involved designing the building and laboratories and consulting on equipment requirements, training and personal needs. Shortly afterwards, in 1979, IRSA was formally established with Prof Chen as its honorary director general. At that time, there were almost no cars in Beijing, nor were there any high rise buildings or many computer facilities in the field of remote sensing. Now, 40 years later, China has become a world leader in remote sensing: the Institute of Remote Sensing and Digital Earth (RADI) has been instrumental in making these great achievements.
Since that first visit to China in the spring of 1978, Prof van Genderen has visited China more than two hundred times and has been closely involved in the developments in remote sensing in China. Once Prof Chens' four-year term was completed, Prof Yang Shiren took over, followed in turn by CAS academics Tnog Qingxi, XU Guanhua, Guo Huadong and Li Xiawen. Prof Guo later established the CAS Center for Earth Observation and Digital Earth (CEODE), which later merged with the former IRSA to form RADI.

Prof van Genderen has worked closely with CEODE and is working currently with RADI, both as a visiting senior researcher and on many joint scientific projects. RADI has many international programmes and cooperates with almost all top organisations in this field. Prof van Genderen says that it has been a great honour to be involved in China's rapid development in the field of Earth observation and to see it grow from such humble beginnings to its current leading role in the world.

Prof van Genderen has trained hundreds of Chinese scholars at MSc, PhD and Post-Doc levels in Europe, as well as hosting several visiting scholars and arranging study tours. From 2009 to 2011, he was a CAS visiting senior researcher at CEODE in Beijing. During his forty years of working in China, he has visited CAS institutes throughout China, from Xinjiang in the Northwest to Xi'an Shanghai, Nanjing. He was project leader of the first Asian Development Bank technical assistance project in China on "Monitoring Fragile Eco-systems in Shanxi, Shaanxi and inner Mongolia" for which IRSA was the local counterpart in the early 1990s.

Prof van Genderen is currently a science committee member of the Digital Belt and Road Initiative (DBAR). He helped found the International Journal of Digital Earth (IJDE) and was co-founder of the International Society of Digital Earth (ISDE), both hosted by RADI.

He is vice president of the European Chapter of the International Eurasian Academy of Science, former president of the International Society for Photogrammetry and Remote Sensing (ISPRS)'s technical commission on remote sensing and he has received numerous awards from the crown princess of Thailand, from the government of Mongolia and from various other countries for his service to Asian remote sensing. Prof van Genderen is currently an Emeritus Prof of Faculty ITC, University of Twente in Enschede, The Netherlands. ■

For more information please contact John van Genderen (genderen@alumni.itc.nl)

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