



# An engineer's paradise

Myanmar is opening up to the outside world. Engineers from TU Delft are discovering some great opportunities to conduct research and teach there. 'It is an engineer's paradise.'

TEXT TOMAS VAN DIJK PHOTOS ALWIN COMMANDEUR/RENS HASMAN

Everyone was always talking about Ayeyarwady, but no one had ever seen this great river. It is almost the size of the Mekong, but still it meanders freely through the country, unhindered by dams or quays. In its course, it swallows up ancient pagodas.'

The trip report by Alwin Commandeur (24) almost reads like the diary of a 19th-century adventurer travelling. Early this year, the student of hydraulic engineering navigated Myanmar's largest river, the Ayeyarwady, in a river boat. During his thousand-kilometre journey, he passed places unseen by Western engineers for decades. "My trip was a kind of reconnaissance mission", explains civil engineering student Alwin Commandeur. "I was researching the navigability of the river by measuring its depth every few hundred metres using an echo sounder. I also took a lot of photographs. I recorded the location of any infrastructure and its condition. It is

a truly wondrous area: a vast wilderness."

As well as Commandeur, several other TU Delft students have set off in search of adventure in Myanmar in the last six months, a country that was until recently in the hands of the military regime.

## FIERCE COMPETITION

The students were commissioned by engineering firms in the Netherlands, including Royal HaskoningDHV, Arcadis, Grontmij and the Deltares research institute. Next year, the group intends to submit a report about integrated water management to the Myanmar government. It will include recommendations on the administrative aspects of water management as well as advice on generating energy from hydroelectric power (which currently only happens on a piecemeal basis) and more efficient irrigation, without threatening drinking water supplies or the navigability of the rivers. The group is receiving support

from the Dutch Ministry of Infrastructure and Environment, which has signed a cooperative agreement with Myanmar and is also investing money. For example, the Ministry funded the studies by the TU Delft students and several engineers from Deltares. The firms hope to be able to secure contracts this way. But competition is fierce. Myanmar is rich in all kinds of resources, including oil, wood and minerals. It is opening up to the outside world at a rapid pace. There will be elections in 2015, the World Bank is standing by with a loan and international businesses and NGOs are eager to do business in the country.

## NEED FOR EDUCATION

According to Tjitte Nauta, who works for Deltares on water-related projects in south-east Asia, the Netherlands is a step ahead of its competitors when it comes to water. "Whereas others concentrate solely on a specific aspect of water management, such as reservoirs or irrigation channels, we focus on >>

integrated water management. With integrated water management, we can develop an excellent new revenue model.”

This is something that the country is crying out for. Nauta: “The Dutch water sector has become too expensive and is suffering from competition from Japan, South Korea and China. In Myanmar, we can reinvent ourselves.” In other words, ambitious plans are afoot and TU Delft students are not the only ones working to achieve them. The University is involved in a different way too. Prof. Nick van de Giesen (water management department), Prof. Marcel Stive (hydraulic engineering department) and emeritus professor in hydraulic engineering Prof. Han Vrijling are members of a committee including former Minister of Agriculture Cees Veerman that is providing advice to the consortium of engineering firms.

In the last two years, Van de Giesen has travelled twice to Myanmar to establish contacts, accompanied by Marjan Kreijns from the TU Delft Valorisation Centre, one of the initiators of the project in Myanmar. According to Van de Giesen, what the country needs most of all is education and training. “There is a group of people over the age of 60 with a lot of knowledge, many of them qualified in Delft. (See box ‘The Delft connection’). But the military junta was fiercely opposed

## ‘Ambitious plans are afoot and TU Delft students are not the only ones working to achieve them. The University is involved in a different way too’

to intellectuals and the level of knowledge at the universities plummeted. A whole generation is now in need of a fast-track education and this is what we are focusing on. For this reason, we have our own project designed to achieve capacity building, running parallel with the engineering firms’ water plan project.”

### NO INTERNET

“Close your eyes and imagine 1988, the year when the country closed itself off to the outside world”, continues Van de Giesen. “There was no internet or mobile telephones then. It may seem slightly exaggerated, but in Myanmar it is still like that now to a great extent. You are quite isolated, with almost no internet and it is impossible to make international telephone calls. Remote-sensing satellites are almost unheard of here.”

Van de Giesen’s PhD student, ir. Martine Rutten knows all about it. Last autumn, she and several colleagues from CEG taught courses in Myanmar that covered such areas as the use of

remote sensing and modelling of water flows. The courses were taught to engineers at the ministries of agriculture & irrigation and transport as well as students at the Myanmar Maritime University.

“When computer modelling really took off, the country had closed itself off to the outside world”, explains Rutten. “So they missed out on that. When I ask students and engineers to do simple calculations on a computer, you can see their eyes light up. Then they reach the same result as the international consultants. They understand that it is not rocket science or some kind of magic.”

This month, Rutten is setting off to another university, the once highly-reputed Yangon Technical University. TU Delft has had a cooperative alliance with this university since last autumn. She will be teaching there for three months. “Until last summer, university sites were off-limits for people from abroad”, says Rutten. “According to the regime, universities were a hotbed for revolutionary ideas.”

### De Delft connection

“They were the golden years,” says Aye Myint (65). He is referring to the period when knowledge was still shared with the outside world. He himself spent a year in 1982 studying hydrology at the Unesco-IHE Institute for Water Education in Delft. He is one of many alumni of this research institute and TU Delft. Until 1988, there were strong links between these institutions and universities in

Myanmar. The alumni event held in 2012 in Myanmar attracted almost a hundred people.

“Around twenty years ago, researchers in this country were cut off from the outside world by the military regime. We are now missing a generation of professional engineers in my country. I am absolutely jubilant about the renewed cooperation with Delft.” Myint works for the Myanmar-ba-

sed engineering firm, National Engineering & Planning Services. During the last year, he has assisted TU Delft students and Martine Rutten in collecting data and outlining the current water issues in Myanmar. “Many of his former colleagues also studied in the Netherlands”, says Rutten. “We’ve had some exciting discussions with these men who are truly committed to water management in

their country.” One of Myint’s former colleagues is Tin Maung (73). He studied hydrology at TU Delft in 1969 and 1970. “Thanks to that time in Delft, I gained a respectable position as an engineer in my country”, he explains. “My dream is one day to return and tell my TU Delft colleagues about my experiences after Delft.”



Alwin Commandeur crossed Ayeyarwady on the 'Dolphin'.



Commandeur sailed the meandering river for 1,000 km.



Student Rens Hasman collected data for this research from old books.



Engineers from Delft in the delta



A fishing town in the South of Myanmar, an area that floods easily.



PhD student Martine Rutten trained engineers in Yangon and Bago.

(ILLUSTRATION: ALWIN COMMANDEUR)



Rutten feels that it is important that the people she is training can use the knowledge to arm themselves against all the foreign companies they are set to encounter.

**NOT PHILANTHROPIC**

However, the cooperation with Myanmar is not solely philanthropic, according to Professor Stive. "I firmly believe that Dutch companies will soon need the students we are teaching to do business with. Since 2001, we have also been working on capacity building in Vietnam. Lots of students and PhD candidates from Vietnam have come to Delft. Dutch engineering firms are now being successful in that

country too. Here, we are replicating what we have done in Vietnam." "It is also in the interest of our own students for us to participate in these kinds of projects", continues Stive. "If

**'There is a group of people over the age of 60 with a lot of knowledge, many of them qualified in Delft'**

I want to continue to give my students a good education, I need to get to know Myanmar. That is reason enough in itself."

Asked to describe it, Stive has this to say about the country: "A valley runs from North to South between two ridges of mountains, where the Ayeyarwady and its tributaries flow. The discharge of the river is 40,000 m3 per second, which is equal to that of the Mekong. The Mekong flows through five countries (China, Laos, Thailand, Cambodia and Vietnam) but the Ayeyarwady flows through Myanmar alone. Only 10% of the potential hydroelectric power is used. The Delta region is extremely fertile, although vulnerable to flooding. There is a lot of precipitation, but it is unevenly distributed. As is the case in many Delta regions, there is also oil. It is an engineer's paradise." <<