VICE VERSA

journalism on global development

WATER SPECIAL

The world of water

The vagaries of the climate
persevere or adapt?

Bring in the Dutch!
is it high time for a critical response?

Universal access to drinking water
route to 2030

VICE VERSA
journalism on global development

Colofon

Publisher Stichting Vice Versa
Editor-in-chief Marc Broere
Programme manager Ayaan Abukar
Programme coordinator Lys-Anne Sirks
Editors Edward Geelhoed and Eline Huisman
Production Angelique Chin
Contributors
Hans Ariëns, Leonard Faüstle, Michel Tonneijck, Sarah Haaij, Eva Huson, Esther Kokmeijer, Siri Lijfering, Bente Meindertsma, Eunice Mwaura, Manon Stravens, Joris Tielens, Selma Zijlstra
Art direction, design and lay-out
Selma Sofie van Gorkum
Cover Esther Kokmeijer
Printer Veldhuis Media
Media adress Vice Versa
Mauritskade 63, 1092 AD Amsterdam
Website hetnieuwe.viceversaonline.nl
E-mail info@viceversaonline.nl
Telephone 06 57 81 27 24

Membership subscription to *Vice Versa*
48 euro a year or 25 euro for students

Information about subscriptions and single issues
Website abonnement.viceversaonline.nl
E-mail abonnementen@viceversaonline.nl

This issue was supported by Cordaid, IRC, NWO-WOTRO Science for Global Development, NWP, Partners for Resilience, RVO (Sustainable Water Fund and Partners for Water), VEI and Watershed.

DECEMBER 2018
WATER SPECIAL
Volume 52, number 3

Editorial

"It's as though it never rains anymore," my wife while said to me when I was reading the proofs of this water special in our garden and she was watering our plants with a sprinkler in mid-October.

I was reading my own report on Kenya, in which one of the sources exclaims: "Rain is almost an event." The amount of water has been consistent in recent years, it's just that what used to fall over the course of six months now falls in just a week. Climate change has a visible impact and leads to long periods of drought, or to excessively heavy rainfall. This means it is difficult for arable or livestock farmers, whose life has become unpredictable, to make plans.

However the main cause of water problems are still caused by human actions, such as inefficient water management or poor governance. Therefore serious progress has yet to be made, irrespective of the vagaries of the climate.

Water is high on the international agenda. Crises involving water, whether too little or too much water, have featured high on the list of the greatest risks the world faces, which is compiled annually by the World Economic Forum. A lack of sanitation and clean drinking water still causes 800,000 deaths a year.

The Netherlands has built up an international reputation in water management. We were a water democracy before we were a country or a kingdom, our water envoy Henk Ovink tells us in this edition. The first water boards were set up in the 12th century. As far as development policy is concerned, water has been one of the spearheads of the Netherlands for a long time. The expertise of our business community is also in great demand all over the world when it comes to jointly reflecting on water problems. The Dutch Approach is even a term used in the international water sector.

This edition is full of examples that illustrate all kinds of areas in which the Netherlands is involved. We advise other countries on delta planning and assist countries with integrated strategies for water management in which various parties are involved. We try to facilitate new funding models for water facilities through public-private partnerships. We support social organisations worldwide in lobbying their governments on the right to water. Our drinking water companies collaborate with water companies in low-income countries to tackle old pipes, poor water meters and leaks.

We work with communities in vulnerable regions to make them more resilient to the vagaries of the climate. We facilitate dialogue related to the construction of a controversial dam. And through innovation we carry out research on waste water and the possibilities of water purification, to tap into a new source of water for millions of urban dwellers.

Today's efforts constitute the final push. To supply everyone in the world to what he or she is entitled. After all, since 2010, water has been a recognised human right, proclaimed by the United Nations in a resolution. Access to water is therefore not only a noble endeavour, it is a right that people can demand.

Marc Broere

Woman gets water in Kamwenge, Uganda © IRC

The world of water

Author: Joris Tielens

Water is dominated by large numbers. Worldwide there are serious needs and major risks, ambitious goals and aspirations, huge opportunities as well as fine words and pretensions, which sometimes require nuancing. A guided tour.

Water is high on the international agenda. For years, water-related crises (too little water, too much water or too contaminated water) has been high on the list produced annually by the World Economic Forum of the most serious risks facing the world. Ninety percent of natural disasters are related to water. It is expected that forty percent of the world's population could be confronted with absolute water scarcity or flooding this century.

This is because of the ever greater demand for water, also because the economy is growing, which results in an increased prosperity for the expanding world population and a greater demand for luxury products. This requires ever more water: for the expanding industry, for cities that need clean drinking water and for the production of food. Agriculture is currently the largest user of freshwater, but increasing quantities of water will be used to generate power.

The largest producer worldwide of renewable energy is hydropower, (seventy percent), which is energy generated by hydropower plants in dams. PBL Netherlands Environmental Assessment Agency, which recently described this and other developments in the *The Geography of Future Water Challenges* report, expects power generation using hydropower to increase by eighty percent by 2050. The PBL expects that the demand for water to cultivate energy crops, for biofuel for cars and planes, will even increase twentyfold by 2050.

The principal cause of water problems is human actions, such as inefficient water management or poor governance, various experts stress, and not climate change in itself, although the latter does exacerbate the issue. Cities in deltas have to cope with a rising sea level and flooding from rivers due to heavy rainfall. Dry areas will become dryer, the weather more extreme and less predictable. A lack of water could also have consequences for nature. Lakes, rivers and *wetlands* play an important role in preserving the planet's biodiversity.

It is also about the health of very many people. The good news is that the number of people without access to safe drinking water decreased by half between 1990 and 2015 and that the former millennium goal has therefore been partly achieved. However, access to sanitation is lagging behind: one in three people in the world does not use a safe and clean toilet, which could lead to cholera and diarrhoea. A lack of sanitation and clean drinking water still causes eight hundred thousand deaths a year. PBL figures reveal that this is more than twelve times the number of victims of drought and floods combined.

The needs and risks are serious, but this also applies to the goals and ambitions that humanity has established to solve this problem. The Sustainable Development Goals, set out by the United Nations in 2015, go much further than the previous Millennium Development Goals. Moreover, an increasing number of politicians, companies and NGOs view the Sustainable Development Goals as decisive. Whereas supplying drinking water was a sub-goal under the Millennium Development Goals, water is the number six goal with the Sustainable Development Goals: to make water available and ensure sustainable water management and sanitation for all.

> **"Water scarcity will increase dramatically** *in the future"*

It includes specific goals, such as universal access to drinking water for all by 2030 (6.1) and access to adequate sanitation for all (6.2), as well as reducing water pollution (6.3), increasing water-use efficiency (6.4), more integrated water resources management (6.5) and protecting water-rich ecosystems (6.6). In addition, water is important in other sustainable goals, such as ending hunger (Goal two), action to combat climate change (Goal thirteen) and for health (Goal three).

Unlike the Millennium Development Goals, the Sustainable Development Goals apply to everyone, therefore also to wealthy countries such as the Netherlands, which has to report about its own water-related challenges.

The Netherlands, as a vulnerable delta, has always had to struggle with and against the water, and has built up an international reputation in water management. All over the world engineering firms design new coastal defences, dredging companies work on ports and coastal defence, while water boards and drinking water companies share their knowledge. Water has occupied a key position in development policy for quite some time; it was one of the four focal points under State Secretary Ben Knapen and Minister Lilianne Ploumen.

In Minister Sigrid Kaag's policy paper (from May 2018) the water theme continues to be emphasised, this time primarily in the new focus countries in the Sahel, the Horn of Africa, the Middle East and North Africa. The Sustainable Development Goals constitute the guiding principle. Drinking water and sanitation continue to be vitally important, half of the water budget is allocated to this issue; the aim is that the Netherlands will have helped fifty million people with sanitation and thirty million with drinking water by 2030.

Moreover, water scarcity is receiving greater attention. The government also emphasises the importance of water and the role of the Netherlands in this matter at an international level: Prime Minister Mark Rutte spoke to the UN High Level Panel on Water in 2017 and Sigrid Kaag demanded attention for water conflicts at the UN Security Council in 2018.

The Netherlands, country of water

The Dutch water business community works much abroad. This includes water technology for drinking water and waste water treatment and delta technology for water management and hydraulic engineering, which means: coastal development, port construction and dredging for developing ports.

Dredgers such as Boskalis and Van Oord are the largest in terms of turnover. The engineering firms, which design and advise on delta works all over the world represent an important industry sector. One emerging market concerns businesses that process data and predict water problems. The Netherlands Water Partnership, the water sector's network organisation, monitors the value of total water-related export. This grew steadily in recent decades, from 2.4 billion euros in 1995 to 7.8 billion euros in 2015. It is expected to be 8.5 billion euros in 2018 and more growth is anticipated in the future.

In terms of drinking water and sanitation, much work is done by NGOs, with the support of the government or donors. Twenty of them are united in the Water NGO Platform NWP. In addition, many Dutch drinking water businesses and water boards provide advice abroad. Drinking water companies have united in the WaterWorX programme, jointly funded by the companies and the government. Water boards collaborate in the Blue Deal public-private programme, which advises on water management.

Dutch universities also possess water knowledge: related to technology at TU Delft, and water management at Wageningen. IHE Delft educates many international students.

Often a distinction is made between three subsectors: water scarcity and water management, access to drinking water and sanitation (WASH) and safe deltas. This *Vice Versa* special is structured according to these three themes. At the same time they are also related. Water flows downwards in rivers from the source in higher areas. Water scarcity could be a problem in the entire catchment area, but in dry areas heavy rainfall can also cause flooding when the land is poorly managed and in the event of deforestation or erosion.

On the other hand there could also be a shortage of clean water in densely populated deltas, where rivers flow into the sea. In deltas water management also involves coastal defences and combating flooding from the sea or rivers. Drinking water and sanitation is a theme that is important throughout the entire catchment; in the past it was often separate from the themes of water management and deltas.

Organisations involved in WASH are completely different from those that focus on water management. However, there is increasing focus on the source of the water and therefore also on water management when building drinking water and sanitation systems. Kaag's policy paper also states that the link between water management and WASH should be reinforced.

"Drinking water and water management are connected, just as food, water and energy are connected", according to Rolien Sasse, who works with water all over the world. "We must take care that we do not put approach to problems into compartments. We need to take an integral and inter-sectoral approach together. The strength of the Netherlands lies in cooperation and impoldering."

According to Sasse water scarcity is a growing, urgent problem in the world. In 2017, she wrote a report commissioned by the Netherlands Water Partnership (NWP), the network in the Netherlands that unites authorities, the business community, knowledge institutions and NGOs in the field of water, so they stand stronger together abroad.

"Water scarcity will increase dramatically in the future", Sasse says, "due to growing demand and climate change." Water scarcity intensifies the differences between competing users and can therefore increase the risk of conflicts. Water used for a hydropower plant or for large-scale irrigation could result in a shortage for other water users downstream and sometimes beyond the country's borders.

"We offer assistance and advice. *Trade is a by-catch"*

A shortage of water undermines people's socio-economic security. Sasse's report states that this could lead to poverty, regional migration and destabilisation when there are no alternatives for the population affected, which could in turn contribute to migration to Europe. Therefore, the NWP report makes a connection between water scarcity and Kaag's policy to eradicate the fundamental causes of migration.

Sasse puts the direct link into perspective: "A solution to the lack of water will not stop migration; it is an incredibly complex process. In contrast severe water issues, if not addressed, will contribute to a reduction in people's security. This could also play a role when considering migration."

Water scarcity is now presented as a security issue rather than a development issue by many others. Senior military figures in the United States and the Netherlands warned about it. However, Sasse claims in her report, water scarcity also offers the opportunity to solve conflicts.

The collective approach to water issues often results in better cooperation between groups or countries. She envisages a major role for the Netherlands contributing knowledge and information systems to water diplomacy and a greater integral water management, and therefore contributing to peace processes in conflict areas.

Stef Smits also sees advantages in taking a broader perspective with regard to water. He works at IRC, a knowledge centre for drinking water and sanitation. "WASH concerns access to water, but there must be alignment and cooperation related to water management wherever possible. Although drinking water requires just five to ten percent of available water, in the event of a scarcity a conflict may still arise with other water users."

There are many challenges involved in WASH. The number one problem still is the classic case of the broken pump or toilet. A third of all manual water pumps in Africa do not work, because the maintenance system does not work. IRC advocates a system approach, which includes management, maintenance, governance and funding to improve the sustainability of drinking water facilities.

IRC also confronts NGOs about their communication, when they suggest that installing a pump suffices when recruiting donors. The Dutch government currently requires drinking water systems to be sustainable. Since an IOB evaluation in 2012 of the WASH policy pointed this out, contracts issued by the International Cooperation Director-ate-General to WASH parties stipulate that new drinking water systems must function for at least fifteen years.

Smits explains that nevertheless, it continues to be difficult to find funding for maintaining the systems. "It is a public service; companies can deliver parts, but the government is responsible. And often it doesn't have any money left to do so." Smits states that it is also becoming difficult to achieve the sustainable goal. "Especially when it comes to sanitation, particularly in Africa. It does not only involve money, but also behavioural change." Many people do not immediately grasp the importance, even though the lack of a toilet results in many people falling ill and dying.

Life in the south of Bangladesh is governed by the tides

© Ronald de Hommel

The IOB-evaluation

The Dutch government and knowledge institutions have a good reputation in the field of water management, effective contributions were made to government plans to improve water management and Dutch input helped many farmers and urban residents. However, there was insufficient consideration of the local context and the contribution made to water management by the business community was overestimated.

These are the main conclusions of the *Review of development cooperation for improved water management 2006-2016* published by the Policy and Operations Evaluation Department of the Ministry of Foreign Affairs of the Netherlands (IOB) at the end of June 2018. This evaluation concerns the 225 projects, programmes and funds related to water management to which the Netherlands gave 871 million euros in development aid over these eleven years. It does not involve aid for drinking water or sanitation (WASH), on which IOB wrote an evaluation in 2012.

Thousands of farmers in Africa and Asia benefited from the policy to install irrigation works, polders and coastal defences, and from strengthening local user organisations. Many urban residents were protected more effectively from flooding, and knowledge transfer also made a positive contribution. And good contributions were made to government plans for improved water management.

Whether the policy was efficient, that is to say, whether the results were proportional to the efforts and expenditure, could not be calculated. The activities were too diverse and there were insufficient data. The large number of strategies and tools in the policy demanded a lot from the coordinators in The Hague and at embassies, and hampered an efficient implementation.

Achieving improvements in institutions, which is important for the long-term, sustainable management of water, often appeared to fail. The policy also insufficiently considered the major differences inherent to the local context.

With regard to the policy of aid and trade the IOB concluded that the contribution made by the Dutch water sector had been overestimated. The presupposed synergy between improvements in water management and Dutch commercial interests did not always exist. Excessive enthusiasm for commercial opportunities means that there is a risk that the Dutch status of independent adviser is undermined. The IOB states that policy must focus on contributing to the sustainable goals and international good citizenship, and not first and foremost on commercial objectives.

In the water works in deltas there is money to be earned, so companies play a greater role there. "Our greatest knowledge and added value lies in the deltas", says Dennis van Peppen, manager of global issues and water at Netherlands Enterprise Agency (RVO). "Our country is also a delta. We have centuries of experience in water management in the delta; our delta works and delta committee are known all over the world. We know how to efficiently manage water in a densely populated environment with little space and a lot of knowledge."

In 2016 the government established the International Water Ambition, a joint initiative by the Ministries of Infrastructure and Water Management, Economic Affairs and Climate Policy and Foreign Affairs and Trade and Development Cooperation, to work on water safety and security in urban deltas with greater urgency. The Water Ambition encourages cooperation between the Dutch government, businesses, knowledge institutions and NGOs, which is in line with the agenda of aid and trade. It is funded by public-private programmes such as Partners for Water and the Sustainable Water Fund (FDW), programmes for which Van Peppen is responsible at RVO.

"Urban deltas face serious challenges", he adds. "Population growth leads to an increased demand for water, which is exacerbated by climate change. The sea level is rising and also often subsidence. More extreme, heavy rainfall combined with poor planning and much asphalt result in major flooding. It is getting worse in large cities in Asia, but also in African cities."

Van Peppen states that the Dutch position is significant in this regard: "By helping to improve governance, better plan designs and technology, and early warning systems." The Netherlands in particular has knowledge to offer, with its engineering firms and knowledge institutions. Not forgetting predicting water issues using data analysis and models.

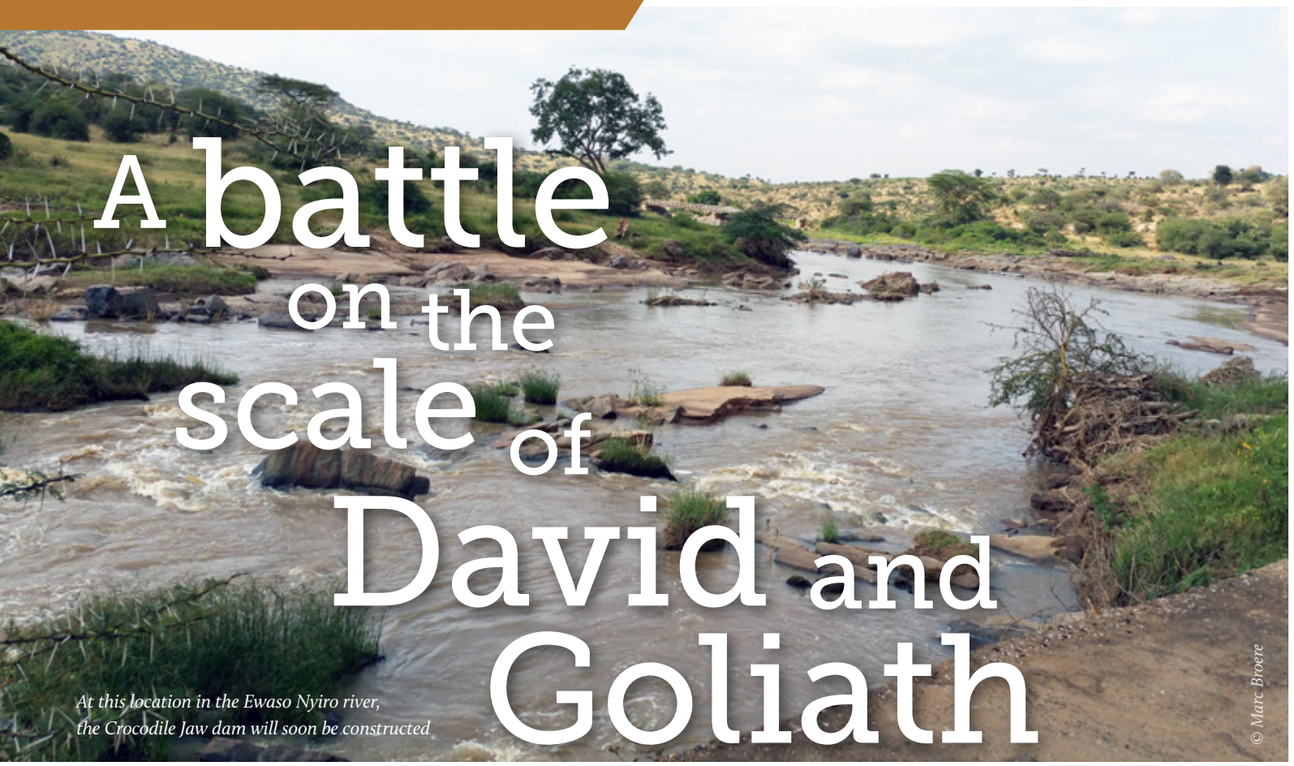
However, Dennis van Peppen also nuances the input of the Netherlands and the importance of the business community. "We must be careful to not punch above our weight", he adds. The impression is that you can call the Netherlands when a water problem arises somewhere and that we will proceed to fly in engineers that will fix the problem, could also work against us, in his opinion. "Problems are extremely complex, different and diverse, and depend on the context. It is good to be modest – in line with our national character – and to really listen to local needs and possibilities."

He also warns that the aid and trade agenda should not give the wrong impression. "The emphasis should be on the common goal: water security and safety." The Netherlands risks losing its position as independent adviser when people start to think that the Netherlands focuses on the self-interests of its businesses. "This is not the case. The Netherlands is a wealthy country and has a great water knowledge, which also creates a responsibility. This is why we offer assistance and advice. Trade is a by-catch." ●

THEME 1

Water scarcity *and climate*

© Eva Huson



A battle on the scale of David and Goliath

At this location in the Ewaso Nyiro river, the Crocodile Jaw dam will soon be constructed

© Marc Broere

The construction of a mega dam in the Ewaso Nyiro river is causing considerable discord in Kenya. It is indispensable for economic development and for regulating the water, its supporters claim. It is a catastrophe for the local population that totally depends on the river for its way of life, the opponents argue. So what's to be done?

Author: Marc Broere

The older men have weather-beaten faces and their beards are coloured with hemp. They also wear sunglasses, which makes them look extremely cool. The women, who are in the minority, are dressed in an orange fabric. We are sitting in the office of a local NGO in Korbesa, a small settlement downstream near the Ewaso Nyiro river. The United Nation's eight Millennium Development Goals, which determined the agenda of most international donors between 2000 and 2015, hang on the wall. The 17 new Sustainable Development Goals (SDGs) do not yet appear to have reached this remote area. However, the community in Korbesa has other things on its mind than the latest blueprints that are thrust upon the world from the UN headquarters. Their existence is threatened by the possible construction of a dam, with the terrifying name of *Crocodile Jaw.* For many communities it also feels as though they will actually disappear into the crocodile's jaws.

We are talking to a passionate delegation of residents. Once we all introduced ourselves, they tell us about their life and what they think about the dam. They are pastoralists who move around with their cows, sheep and goats, and have been dependent on the Ewaso Nyiro river for generations. The animals are their milk and meat, their economy. They pay the school fees for their children out of the sales at the livestock market in Isiolo. "Everyone is dependent on the river", one of them summarises.

The Ewaso Nyiro is unpredictable and erratic. At the moment the riverbed is dry and they have to get water out of the ground using buckets. The riverbank moved a kilometre last year. "We can deal with that, it's part of a meandering river", explains one of the men. They are not the only pastoralists, the river is a nomad too. However, all chang es implemented by man, such as the construction of a dam, have far greater consequences; you have no control over them. "If there is an intervention upstream it has a direct effect here on people's lives here."

What's going on here? The Kenyan authorities compiled ambitious plans in 'Vision 2030', to put the country on the map. Major infrastructural projects are also being developed under the flag of the Lamu Port-South Sudan-Ethiopia Transport (LAPSSET) project, to stimulate economic cooperation between Kenya, South Sudan and Ethiopia. In addition to other controversial projects, such as the construction of a large wind farm at Lake Turkana and the expansion of Lamu Port, the Crocodile Jaw Dam is an initiative that stirs up feelings. The dam is intended to regulate the flow of the Ewaso Nyiro river upstream, mainly to obtain a guaranteed water supply for *Resort City, which has yet to be built.* It will be Isiolo's very own Las Vegas: a city with plenty of entertainment and offering, according to Vision 2030, '*world class living standards and working environment*'. In terms of surface area, Isiolo is one of the largest counties in Kenya, but its population is just 200 thousand. Moreover, Isiolo is located in a dry region with limited other water sources. In the county, a six-hour drive to the north of the capital Nairobi, the residents have felt marginalised for years, but due to the discovery of oil and minerals, and as a result of the Vision 2030 plan, it has suddenly caught the eye of the authorities.

In 2013, the National Water Conservation and Pipeline Corporation announced the construction of the dam. It immediately led to a storm of protest from communities that live downstream, because they are afraid the dam's construction will have major consequences for their water supply. The community we are visiting in Korbesa had to hear about the plans from an NGO operating in the region. "To this very day, nobody from the government has come to talk to us about the dam", one of those present bitterly calls out. A couple of weeks ago, the national government put an end to all uncertainty. The Government of Kenya declared that whatever happens, Crocodile Jaw will be built, regardless of all the local protest. "It's a death sentence", someone exclaims. "Normally the judge reads out a verdict and explains why you are sentenced to death. You are to be hanged, but would understand why. However, we received a verdict, but we do not know why we are going to be hanged."

"The dam's construction *is a death sentence for us"*

It was Shandey Abdullahi who first informed the community in Korbesa about the dam. He is the director of the Merti Integrated Development Programme (MIDP), the only local NGO in the area. Abdullahi is a passionate and committed man whose life was turned upside down when he first heard about the plans for Crocodile Jaw on 12 April 2012. "The subject came up by chance", he recalls. "I immediately sounded the alert, because I realised the impact it would have. I went to visit all the communities that depend on the river to make sure we spoke with one voice."

Since then he has organised matters with fervour. In recent

Members of the community in Korbesa

© Marc Broere

years he organised three Camel Caravan Campaigns to highlight concerns about the dam (see box). They resulted in both national and international publicity and even caused a delay in the dam's construction and led to the commissioning of a new study on the impact of the dam on man and the environment. However, the statements issued by the national government came as a huge blow to Abdullahi. "I am so shocked. People simply remained passive. Everyone was too perplexed to respond angrily."

He is preparing for a new battle and wants to take it to the Environmental Court. "The fishermen in Lamu also did it. They opposed the LAPSSET plans and received serious compensation. Now we have to examine their approach and how they did it. Fortunately, we have a lawyer who is supporting us free of charge. I am now going to try and obtain money from the community for the other costs involved in the court case. It is a battle on the scale of David and Goliath, but we are going to win."

We are driving along the river in the opposite direction of the flow, from downstream to upstream. It is a difficult road to navigate and you have to travel entire sections at walking speed, even in a four-wheel drive. This is the route to Archers Post along which the Camel Caravan Walk Campaign volunteers also travelled. The Sarova Shaba Lodge, an exclusive tourist destination, lies along the river close to Archers Post. Nearly all guests are European or North American and wear safari outfits. From the terrace there is a stunning view of the river and the adjacent wildlife reserve. Usually NGOs and companies that primarily focus on the *upper class* are not each other's obvious friends, but things are different here. Manager Josphat Ngali talks about the area's unique ecosystem with great passion, where animals and the different population groups generally coexist in peace. He says that it is only the politicians that set people against one another and cause division. Crocodile Jaw is a prime example of this. According to Ngali, the mega dam will disrupt the ecosystem and increase conflict between the different groups of people. What's more, his self-interest is also at risk, the manager admits. If the water supply to the river near the lodge decreases in the future, the amount and diversity of wildlife will also decrease.

Ngali actively works together with NGOs. His lodge serves as an *early warning system* for the communities downstream. "During periods of heavy rainfall we see right away if the river is flowing too powerfully. We then call the NGOs and tell them high water is on the way. This means they can warn local communities to retreat from the riverbed with their livestock." He is full of praise when it comes to the of the work of the NGOs. "The work they do is understood by the local population. They involve the communities and local leaders in their efforts. In fact, they do what our government fails to do, which is to educate and inform people."

The plans related to the construction of Crocodile Jaw cause a great deal of division in the area. This is evident from our discussions in the two county capitals involved. We begin in the county's government building in the capital of the same name, Isiolo. As the governor is absent, we are received by the vice governor, Abdi Issa Ibrahim. The fact that we are speaking with him, and not his boss,

The Camel Caravan Walk

Mariam Halake and Halima Kampicha are members of the Waldegena Women Group in Merti, which is part of the Merti Integrated Development Programme. "Our whole life depends on water", Mariam explains. "You may have food, but without water you cannot do anything with it. A household without water does not exist." Water is currently on short rations in Merti. "The tap in the village is only open two days a week. You have to queue for three hours to collect your supply", Halima adds.

They are worried about the Crocodile Jaw dam. "If the flow of Ewaso Nyiro is reduced because of the dam, the tap will be moved further in the direction of the riverbank. This means we will have to walk an even greater distance to fetch water." Both of them participated in the Camel Caravan Walk Campaign. They proudly tell us about their 240-kilometre hike, which took about one week. It was a tough trip. They were afraid of wild animals that could attack them. Or that they would run into cattle thieves. "There is nobody to hear you when you run into difficulties", Mariam says. "But the negative impact of the dam is greater than the stress of the hike." They sometimes received a sheep or a goat to slaughter from other communities. There was a musician to play songs. And they were accompanied by ten camels. The hike received a lot of attention, not only from local media, but also from the BBC and CNN. "Our journeys resulted in a considerable increase in awareness and publicity and we are ready to do it again. Shandey (from the NGO MIDP, ed.) just has to give us a nod."

With an annual Camel Caravan Walk Shandey Abdullahi wants to draw attention to the concerns about the dam

also means we hear a completely different story. The governor is an enthusiastic supporter of Crocodile Jaw, but his deputy has a different view. Abdi cannot reveal the current state of affairs, but provides an explanation of the surrounding political sphere of influence. The governor and the national government of Kenya are in favour of the project, but the members of the county assembly, 17 in total, are all against the project, apart from one member. On a personal note, Abdi says that he is not against the construction of a dam as such, but that he believes the wrong choice of location has been made. "It would have been better if a site downstream would have been selected. Then the poorest communities would have profited." When asked why this did not happen, he responds with a meaningful smile. "It was decided by national politics. It is a historical fact that all facilities in this district always focus on the people upstream."

Salad Tutana, *chief officer* of Water and Natural Resources in Isiolo, and therefore the highest water official in the county, is an outspoken opponent of the dam. He even participated in the Camel Caravan Campaign. Tutana is convinced that Crocodile Jaw will be built. "The area to the north of Nairobi is becoming overpopulated. The authorities need living space and that's why they want to develop Isiolo economically. They also found oil and minerals here. Then you know that the rights of minorities, such as pastoralists, will always come second. If the government had really given priority to the interests of the local population, it would have first constructed a proper road between Archers Post and Merti."

The Water Resource Management Authority (WRMA), the county's office of Kenya's national water organisation also occupies the same compound as Tutana.

The contrast between the local and national water organisation could not be greater. The WRMA is not responsible for the construction of the dam itself, but is responsible for the ultimate decision of whether or not the dam will be built there. Crocodile Jaw is a sensitive issue for whom the man we are speaking with is responsible; a man who unexpectedly, at the end of the discussion, says that he does not want his name to be mentioned in the article. He states that he will take a "well-considered decision" following a new impact study.

Nevertheless, his seems to have already made up his mind. "NGOs express many untruths about the dam. They scare the communities downstream and do not present any permanent solution." However, he is also critical when it comes to the Kenyan government. "The government should have organised a campaign to create awareness, going from door to door and from community to community, to inform the local population about the importance of the dam. They completely failed to do this."

The marginalised district suddenly caught *the eye of the authorities because of the discovery of oil and minerals*

In Nanyuki we observe the same division. The town is a two-hour drive to the south of Isiolo and falls under the county of Laikipia. The exact construction site of the dam is located just within the boundary of this county. Njenga Kahiro, Minister for Water, Environment and Natural Resources in Laikipia, is keen to place the subject in a broader perspective. "When you examine the rainfall in recent years, the quantity has remained the same. It's just that what used to fall in half a year

now falls in a week. Rain is almost an event. On the few days that it rains, it comes as a torrential downpour. A solution must be found to store the water and increase the resilience of the communities that are affected. The only strategy is to regulate the water flows. In general, a dam is the best option. Although the question is whether you should use a large dam or a series of smaller ones."

"It is a historical fact that all facilities in this district *always focus on the people upstream"*

Nearby, Charles Muitik, director of Public Safety and Disaster Management in the region, speaks plainly. "*We need water like yesterday.* If the NGOs hadn't protested against the dam, it would have already been completed and the reservoir would have already been filled. The pastoralists are only afraid of one thing, and that is of losing their way of life. They refuse to see that their land could better be used for irrigation and farming. Because of the drought they have to travel ever further with their livestock to find pasture, all the way to the foothills of Mount Kenya. They do not only lose half their herd during the trek, it also leads to conflicts with people from other districts."

In his office Mauli Ole Kaunga shakes his head. "People like Charles come from the city and are not familiar with the local culture and history. They are one hundred percent against pastoralism, because they believe it is an outdated way of life. However, the way in which administrators view problems related to water is very limited."

Ole Kaunga is the director of Impact, a local NGO that is extremely concerned about the construction of Crocodile Jaw. The organisation provides people with legal support and collects stories of people who live along the river. His own opinion about Crocodile Jaw is clear. "I am one hundred percent against it. Megaprojects such as these do more harm than good. The construction itself already attracts many people. Local communities will be disrupted as a result. A community of 1,500 will suddenly increase to 3,000 people. You also see it in the construction of the wind farm at Lake Turkana: it has led to a huge increase in prostitution and alcoholism in the communities. What's more, these kinds of projects always create fewer jobs than they promise."

And how will the location where Mr or Mrs Crocodile Jaw will be born look like? To see it first hand, we continue our route upstream. We soon find ourselves in the romantic Africa as it is promoted in holiday brochures. The road traverses a wildlife park at several points and the panoramas are breathtaking. Just before we reach the construction site, we visit a Masai community. We arrive right in the middle of a *rite of passage*, the ritual in which, after having been isolated for several months as morans, young men officially make the transition to *junior elders*. We get a traditional welcome by women dancing and singing, and take a seat in a boma to speak to Samuel Ntanyaki, president of the Koija Group Ranch, and a number of wise, old men. Home-made honey wine is served. Our discussion partners lovingly tell us about the culture of the Masai and their life. The 4,000 people who are part of the Koija Group Ranch live on an area that covers approximately 8,000 hectares. There is plenty of space and their life is good, except during periods of persistent drought. Then they set off in the direction of Mount Kenya and the Aberdares in search of pasture for their herds. Today the area is green because it recently rained. This means that people do not have to leave. "It is the rain that brings our community together", Ntanyaki explains.

The construction of Crocodile Jaw will have major consequences. Our discussion partners come up with various issues. For example, the trees alongside the river will be cut down. The trees currently serve as the source for their traditional medicines and they are used for beekeeping, an activity that provides an additional source of income. What's more, about 70 percent of the land of the Group Ranch will be flooded, the places where the animals graze now. The water will rise to the level of the settlements where people live, and the malaria mosquito will follow as an uninvited guest. Traditional river crossing points used by elephants will disappear, which gives rise to the fear that they will head for the settlements. They also expect that there will be more hippos in the area around the dam, which is dangerous for the women that use the river to wash clothes and fetch water. The small ecolodge on the river, where the community receives tourists now that provide a good income, will be demolished. "The dam is the cause of much confusion in our community", Ntanyaki summarises their feelings.

During a rite of passage young men make the transition to junior elder

© Marc Broere

Stephen Lesonkoi, the newly appointed chief of Loiborsoit

© Marc Broere

It is just a short drive to the river. The sun is slowly setting.

People are walking back from the river, where they have washed. We are joined by Peter Leshao, Ward Administrator of Laikipia. At present the place where the dam is to be built still looks peaceful and almost idyllic.

Leshao explains why the construction site in itself is a logical choice. Right before this spot another river merges with the Ewaso Nyiro. This is why the river has a powerful current here, which makes it easy to fill a reservoir. Leshao points to two hills that will be linked by a vast reservoir. Some of the water will be allowed through for the people and animals that live downstream, but most of it will be siphoned off by pipes directly after the dam and transported to Resort City.

Our final meeting is with Stephen Lesonkoi, the recently appointed chief of Loiborsoit, the area that will be directly affected by the mega dam's arrival. He is a tall, 30-year-old man. Lesonkoi invites us to get into his car, and parks in the shadow of a tree. Then he goes to sit on the ground and begins his story. "Not a single information meeting has been organised to tell us about the dam's construction. I have no idea about the current state of affairs." He feels uneasy as chief in his own region. "Strange people sometimes turn up in large cars and examine the place where the dam is going to be built. I have no idea what they are doing and what they talking about. Look, you came to visit us here today. However, you first introduced yourselves to our community and explained your mission. But these people simply show up, with no explanation."

As the new chief his mission is clear. "I want our community to be fully involved in any decision-making and in any discussions about compensation. And I am talking about compensation amounting to billions of shillings. Look, we do not practice individual landownership here. Members of the Group Ranches are collective owners of the land. They have to decide, not me. Under certain conditions I would personally support the dam. But there must first be a round of serious meetings between the Group Ranches and the authorities. I want that everyone is exactly informed. Why exactly does the government want to build a dam right here? Is it true that large areas of our land will be flooded? What alternative do the authorities have to offer us? Where could we go? How much compensation will we get? This is not a decision that I can take with a delegation of fifty people from the community; it is such an important matter that it requires the full participation of the entire population." ●

Partners for Resilience

"A complete lack of information. What's more, everyone has his or her story to tell." This is what Zeituna Roba (Cordaid) and Titus Wamae (Wetlands International) who cooperate in the Partners for Resilience alliance (PfR) think about the current situation related to the construction of the Crocodile Jaw dam. They emphasise that the information depends on whom you talk to. Kenya is characterised by many administrative layers and organisations, both at a national and local level, and the different contacts follow one another in rapid succession because of dismissals and relocations. It is a tangle that is almost impossible to unravel.

For a long time the construction of Crocodile Jaw appeared to be delayed or even abandoned. An impact study into the effects on the ecosystems that depend on the downstream water supply is still expected. The African Development Bank also withdrew as an investor last year because it did not want to be involved in a project that is facing so much resistance. Now the recent statements by the national government are creating an entirely different playing field.

PfR supports the work of the local NGOs, MIDP in Isiolo County and IMPACT in Laikipia County.

It financed activities to create awareness as well as the Camel Caravan Walk Campaign.

What will the new strategy involve? "If local communities decide now that they want to look for other opportunities to seek for solutions to their challenges, we can facilitate this dialogue", Roba reveals. "Public participation itself should lie with the authorities", Wamae exclaims. "They should take the initiative. If we were to go to the local population to inform people about the impact of the dam, it would give the impression we have our own agenda. But we can help the communities to come to the forums. We can only facilitate the dialogue from two sides. Moreover, the initiative will have to come from the communities."

Roba continues: "We do not want to support activism but our aim is to open the avenues for dialogue. PfR is neither for or against the dam. We look at the broader objective. What impact will the dam have? Will it make people more vulnerable or more resilient to drought, floods and climate change?" Wamae nods. "We are concerned with the processes behind the decision-making."

What has been the greatest success so far? That work has not yet begun", Roba replies. "The local authorities also think that the fact that the African Development Bank withdrew as an investor has something to do with our activities. It is always difficult to claim something as your own success in a lobbying process, but we certainly play a part in it. Without any resistance Crocodile Jaw would have already been built a long time ago."

Already vulnerable people will see their situation deteriorate

Author: Joris Tielens

Water scarcity is getting worse and is increasingly viewed as a security issue. However, experts say the relationship between the lack of freshwater, climate change, and conflict and migration is complex. Scarcity can also bring people together. One thing that's certain is that vulnerable people will suffer most. So, what can be done, also by the Netherlands?

An Egyptian farmer holds a handful of soil to show the dryness of the land © Mohamed Abd El Ghany

Water scarcity is a growing problem, with which many agree. Many areas already have to cope with a shortage of freshwater. And the demand for water will increase worldwide due to population growth, the developing economy and greater demand for energy and food. This will be exacerbated by climate change.

Half a billion people already have to deal with continuous water scarcity today. Not only in regions which are traditionally dry, such as the Sahel and the Middle East, but also in cities such as Cape Town – where the taps almost dried up last spring – and São Paulo, Maputo and Nairobi. Even the Netherlands went without rain for a remarkably long period during the summer of 2018, which posed a risk to dikes and harvests.

Water scarcity is increasingly referred to as a security issue. In reports by the World Bank and the World Economic Forum, as well as by senior American and Dutch military personnel and the UN Security Council. The reasoning is often that water scarcity, whether or not caused by climate change, deprives people of their livelihoods. Competition related to the use of scarce water could subsequently lead to conflicts. Water used for a hydropower plant or for large-scale irrigation could result in a shortage for other water users downstream.

In the case of transboundary rivers it may result in conflicts between countries, which could, in turn, escalate into regional insecurity and instability. This could promote migration, also to Europe. In the words of Sybe Schaap, President of the Netherlands Water Partnership (NWP): "Severe water shortages and flooding set migration flows in motion, which could upset the balance of societies in the country of departure as well as that of arrival." The Netherlands could play a major role in solving water conflicts, according to NWP, through water diplomacy or technical solutions.

Minister Sigrid Kaag also wants to highlight the role of water in international conflicts, as on World Water Day, 22 March 2018, when she spoke on the subject at the UN Security Council in New York. However, no direct relationship between water scarcity and migration, as cited by NWP is mentioned in the coalition agreement, or in Kaag's policy paper. Nevertheless, in the latter it is stated that a water crisis could lead to conflicts as a result of water becoming scarcer, but not that it also promotes migration.

The water at the dam in Northern Cape Town is almost gone © Wikus de Wet

"That particular relationship is extremely complex", Rolien Sasse agrees, whom the NWP commissioned to write a report in 2017, titled: *Water crisis: cause of conflict or contribution to stability.* It is complicated, because many more factors are involved in security and migration. "Nevertheless, the failure to resolve severe water issues may contribute to reduced security for people", Sasse states, "and possibly to migration."

Sasse claims that water scarcity does not have to give rise to conflict, but may also bring parties together. "Precisely because water is an essential human need." She sees a significant role for the Netherlands in contributing knowledge and information systems to water diplomacy and more integral water management, therefore creating peace and not conflict.

> **"Water scarcity can mainly** *be attributed to human actions"*

In her report she cites several possibilities: predicting future scarcity using data analysis, establishing consultation through water diplomacy between countries or between groups of water users. The Netherlands could also take the lead in making water use in humanitarian aid more sustainable.

Moreover, she also mentions water stewardship: "Dutch businesses and investors must be accountable for the impact of their production chain, for example, when growing flowers or beans, on local water scarcity and must therefore adopt a responsible approach." Investors in sustainable energy, for example in dams, must take conflicts related to water into account.

"Water scarcity is created by us", Marie-José Vervest claims. "Scarcity can mainly be attributed to human actions. The risk of scarcity is increased by climate change, but with sensible and integral water management the problem would be far less serious."

Vervest is programme manager at Wetlands International and works on improving the resilience of communities so that they are better able to cope with disasters caused by water scarcity. The term *wetlands* includes rivers, lakes and marshes, as well as inland deltas and lakes in the Sahel that only contain water during the rainy season.

In the *Water Shocks* report last year Wetlands International mapped out the damage that poor water management in the Sahel caused to the population and the economy. Dams were constructed in rivers such as the Niger and the Senegal and around Lake Chad, and water is extracted for large-scale irrigation projects and hydropower. This means that rivers and lakes dry up, while millions of people depend on them for fishing, livestock farming and agriculture. This is one of the causes of armed conflict related to scarce water and results in the forced migration of people.

Vervest explains that the rivers and lakes in the Sahel form a complex system. The blue lifelines not only provide for millions of people, they also act as a buffer for weather extremes – such as persistent drought – due to climate change. An integral approach is necessary to preserve them, in which the landscape and all water users are included.

This also applies to water use in Ethiopia. Lakes in the Central Rift Valley are shrink

ing, and one reason for this is that water is used there to cultivate flowers for export, also by Dutch companies. This could be one of the factors in the uprisings in Oromia, during which flower farms were burned down. "However, the flower farmers are not the only party that causes water scarcity in Ethiopia", Vervest explains. "It involves a combination of factors. Local small-scale farmers around the lakes also use the water inefficiently."

Wetland International establishes the situation on the basis of solid research, after which a dialogue is initiated between all water users, to solve the distribution issue. Green solutions such as 'building with nature' are also proposed. Wetlands International works together with humanitarian organisations in the Partners for Resilience alliance, to strengthen the capacity of local organisations and the situation of people that rely on the *wetlands*, so that they find themselves in a stronger position when engaging in dialogue with other users.

As in Kenya, where shepherds and local farmers protested against the construction of a new dam in the Ewaso Ng'iro river and are able to prevent it for the time being. There are also consultations between countries, such as between the nine countries through which the Niger flows. An umbrella river authority mediates between upstream and downstream users. "The Netherlands", Vervest continues, "definitely has something to offer when it comes to coping with water scarcity. With our knowledge and analysis, and also by offering practical solutions, such as building with nature."

This analysis is conducted by, for example, IHE Delft, where a new tool is being developed for water diplomats. The *Water, Peace and Security* programme strives to detect water-related security risks, before conflicts get out of hand. Data about water short- ages are combined with social, political and economic information, to predict problems that could emerge in the short term: timely measures may prevent worse happening. IHE is working with a growing number of partners and using funding provided by Foreign Affairs.

Pieter van der Zaag, professor at IHE Delft, involved in the initiative, is cautious when outlining the initiative's potential. It has just started and now information is gathered for the first pilot project, involving the Niger river in Mali and Guinea. "The aim of our tool is to develop alarms, which will sound if something strange occurs, so that you can effectively examine what's going on." He says that the initiative cannot promise much more. This is because the relationship between water scarcity, climate change and socio-economic security, security and migration is so complicated. "It is often overly simplified. That is something we must guard against."

Van der Zaag explains that the loss of socio-economic security and the lack of security are related in the first place to the question of whether the government and the market are effective. Although Van der Zaag thinks that making a direct connection between water scarcity and migration is a bridge too far. "On the one hand there is a succession of cause and effect between climate change, drought, instability and migration. However, many more factors are involved in the equation. The main causes of migration are poverty, exploitation and poor governance. And we obviously have to do something about that."

Conversely, Van der Zaag believes that: water systems generally function as badly as the government in the country concerned. "Water scarcity is often the consequence of poor governance." Take the example of sanitation in Zimbabwe, which was the best available in the wider region during the 1990s. Nevertheless, cholera broke out there in 2008, which was a reflection of the Zimbabwean government's collapse. "There was no more money for maintenance, no currency for the chemicals that were needed and there were no people to perform the maintenance."

Building with Nature demonstrator in Indonesia, Northern Java © Boskalis

Water systems generally function as badly *as the government in the country concerned*

Water scarcity often leads to a spirit of fraternity and cooperation, according to Van der Zaag. One example comes from Kenya, where violence was common among travelling livestock farmers, who caused friction with other tribes while searching for fertile grassland for their cattle. "When there was an extreme drought in 2008, the tribal chiefs came together and decided they could no longer fight each other over the scarce water. It was simply too important."

Van der Zaag states that this is no exception. "In the early eighties, Mozambique and South Africa were actually at war, but there were still diplomatic consultations about transboundary rivers. Water was the only topic of consultation for a long time between Palestine and Israel."

The fact that water scarcity is predominantly caused by man is also good news", according to Van der Zaag. "It means we can achieve a great deal and improve the situation through better management and greater efficiency. There are cities in Africa where half of every litre of water supplied is lost due to inefficient systems. However, efficient water management requires more attention and money."

Maarten van Aalst, director of the International Red Cross Red Crescent Climate Centre, sees that there is an increasing international focus on insecurity and instability as a result of water and climate crises. His centre helps the Red Cross and others to prepare for climate change and extreme weather, so that more targeted investments can be made in prevention and aid will ultimately be more effective in the event of disasters.

"Drought is becoming an increasingly severe issue", Van Aalst explains, "and climate change increases the risk of water scarcity." In cooperation with the KNMI and international research partners, his centre recently calculated that the risk of water scarcity, as in Cape Town, has increased threefold due to climate change.

Nonetheless, Van Aalst believes that the emphasis in the discussion focuses too much on the possible consequences for international migration. "Let's not lose sight of the fact that the greatest impact of water shortages and climate change affects vulnerable people."

People that live in conflict areas such as Yemen or Somalia, are hit hardest by drought. "This is a disaster that starts slowly; the consequences only become apparent over time. In well-organised societies this period is used to avoid food shortages." However, people in poverty or conflict have nothing to fall back on. "Either there is no government safety net or the government is part of the problem."

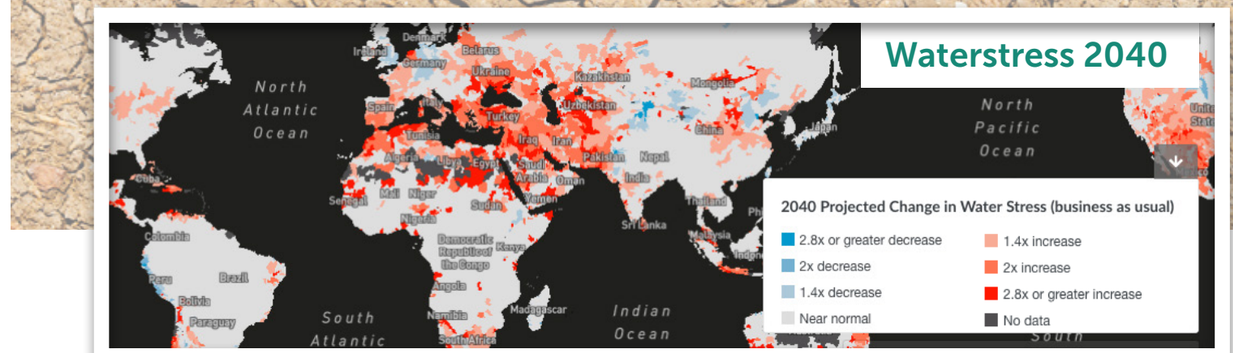
As far as Van Aalst is concerned, it is deplorable that hardly any amount of the hundred billion dollars, which rich countries must invest in poor countries under the Paris Agreement, reaches the most vulnerable people. "The greatest share goes to investments that limit CO2 emissions in developing countries." A small percentage is allocated to adjustments to climate change, but most goes to countries where the money can be easily spent. "While it is most desperately needed in difficult circumstances, such as in Yemen or Somalia."

Van Aalst says that governments also sometimes blame climate change for causing the water crisis, in order to shift the focus away from political decisions that actually cause the problems. The city administration of São Paulo adopted this strategy when water scarcity gripped the city, while the shortage was actually caused by a lack of investment in water facilities.

Yet Van Aalst also sees that much progress has been made. "We are increasingly getting better in predicting crises and coping with them, using, for example, early warning systems." In 1970 three hundred thousand people perished in Bangladesh as the result of a typhoon. Yet now the death toll is now in the thousands during a similar storm.

According to Van Aalst, one recent improvement is the fact that funding for emergency aid, also in the case of water scarcity, is provided prior to a disaster occurring, on the basis of predictions. "Ten years ago the donor community was not yet ready to do this, but now it is. This means we can allocate funds and provide assistance much more efficiently."

Van Aalst explains that this is also because everyone feels the urgency of climate change far more, due to major droughts in cities, heat waves in the Middle East reaching 54 degrees Celsius, more hurricanes and a rise in sea levels that inflict significant storm damage. "Unfortunately, the risks caused by climate change are currently increasing more rapidly than our ingenuity and our capability to adapt to the changes." ●



Water stress will triple in many areas in North Africa and the Middle East by 2040. This is revealed by the map from Resource Watch, a new, dynamic platform by the World Resources Institute, in which data from thirty institutes, including a Dutch institute, is made accessible

Syria: water war or not?

Is the war in Syria the result of water scarcity? Yes, it is, if you want to believe Barack Obama, Friends of the Earth International, the World Bank and many others. They base their opinions on reports about a publication by the researcher Peter Gleick. He suggested that climate change was a factor in the Syrian drought at the end of 2000, which partly caused large-scale internal migration, which again is a significant factor in the unrest in 2011 that escalated into civil war.
However, scientists do not, by any means, always agree on the matter. Researcher Jan Selby came up with a different story: President Bashar al-Assad had launched a major irrigation programme in Northeast Syria for non-Kurds who had settled there. They drilled into groundwater for irrigation, which was depleted as a result of excessive consumption. Subsidies on food and fuel were also abolished. This caused a food shortage, which led to the problems. Another water story, although a different one.

Alexandria: floods are a thing of the past

The coast of Alexandria © Francisco Anzola

How do you make cities that are not used to flooding resistant to weather extremes? In Egypt the water institute IHE Delft is introducing a unique water management system in association with the population, authorities and local experts. "This could be a game changer."

Author: Hans Ariëns

The fear lingers. At the end of October and beginning of November 2015 heavy rains turned the streets of Alexandria into rivers. "The water rose two metres high and did not retreat for two weeks", Moustafa Bahrawi recalls. "Fortunately we managed to stay dry at home, but the road to the university where I am studying was blocked." The flooding was described in the Egyptian media as 'the worst in recent decades' and the impact was severe. "Seven people were killed, six because the water took them by surprise and one because an electric cable fell into the water. The damage was estimated to be seven billion Egyptian pounds, around 25 million euros." This was a conservative estimate. In other calculations the damage was estimated to be ten times this amount.

The fact that the rain was able to cause so many deaths and so much destruction, was because Egypt's second city (home to five million inhabitants, seven million in the summer) was totally unprepared. Unlike in tropical cities, rain in Egypt comes unexpectedly, and rarely takes the form of such torrential downpours (180 mm in two hours in some places). Nobody knew about it because there was no early warning system. And the urban sewer system that drains both waste water and rainwater was outdated. The channel intended to discharge the water to the Mediterranean was partly clogged up with rubbish and water plants. Moreover, the city had no grip on the expanding slums, where buildings with several storeys could hardly discharge their waste water and which occupy all traditional flood plains.

The lack of preparation for the floods and the absence of any response led to the departure of the governor (mayor) Hani El-Mesery. "However, afterwards it was difficult to come up with an adequate response", according to Walid Elbarki, professor at the University of Alexandria, who was made responsible for the initial reaction. "A new drainage network would be difficult in the narrow streets of the historic city, and require huge investments. We had to devise *out-of-the box* solutions." It was decided to enlist the help of the renowned IHE water institute in Delft, with the *flood resilience* Professor Chris Zevenbergen, who led to a 'Dutch Delta Team Egypt' mission to Alexandria.

"I arrived six weeks after the floods and most effects had disappeared", Professor Zevenbergen recalls. "However, I was impressed by the metropolitan problems of a metropolis with 1.5 million slum dwellers, mainly consisting of migrants. I was expected to come up with an investment plan, for investments in water infrastructure, drainage and flood defences, for example. But that would have been a long-term challenge. At the same time we had to focus on the alertness of the population and the city officials. An early warning system would increase their alertness significantly and required a relatively low investment."

"After the floods I saw that *refugees had built small dikes*"

And so the Anticipatory Flood Management Alexandria (AFMA) project was born, a public-private partnership (PPP) involving NGOs, (technical) companies, knowledge institutions (IHE and the University of Alexandria) and the Egyptian authorities, to make the city resistant to severe rainfall. Last year it was allocated a subsidy of the two million euros by the Netherlands Enterprise Agency's Sustainable Water Fund, financed by the Ministry of Foreign Affairs. In order to qualify for a subsidy, projects must involve a public-private partnership and have an effect on many issues: not only on water issues (safe deltas, efficient water consumption or improved access to drinking water and sanitation), but also on inclusive green growth, self-reliance and resilience and poverty reduction.

The residents of the poorest and most vulnerable districts play an important role in the AFMA project. Five hundred 'water ambassadors', at least half of whom are women, receive training to increase water awareness and alertness with regard to the risk of flooding. They, in turn, pass it on to their neighbours. In Alexandria it usually concerns migrants from other African countries and refugees from Syria. How involved are they in their – temporary – environment? Professor Zevenbergen: "I was surprised by their willingness. After the floods I saw that refugees had built small dikes. The risk of flooding obviously has a very direct impact: disease can easily break out as a result of stagnant water in the slums."

Level playing field

The Netherlands Enterprise Agency (RVO) is positive about the project's development. Senior adviser Michel de Zwart: "It's great to see how the partners and the consortium are growing together in the project. In our opinion it is an extremely relevant project with a special emphasis on *Integrated Water Resource Management (IWRM)*, which is an integral approach to everything that has to do with water. IWRM projects are complex. Genuine PPP collaboration is much more difficult to organise in this type of project. We are therefore impressed that the Holding Company, the public partner, is looking for room to create a level playing field with other partners within its complex institutional frameworks. These efforts are commendable. However, they are also necessary, in order to scale up this project and be able to initiate subsequent PPP ventures. The learning process is clearly visible and this will only benefit collaboration within the AFMA project."

Although it is not usual to involve the population in Egypt, professor Zevenbergen and his Egyptian colleagues believe that in this case it was vital. "Everyone has to contribute. You cannot implement these kinds of projects, which affect the entire urban society, in a top-down manner."

The water ambassadors will be equipped with mobile phones fitted with mobile sensors that record rainfall and flood data. "At the moment we lack these kind of data. We are therefore working with human sensors", Professor Zevenbergen explains. These data, combined with the Delft *early warning system*, which translates weather forecasts into information about the risk of flooding, should considerably reduce the risk of disasters such as those in 2015.

"The October storm of 2015 was very rare, it happens once every fifty years, but we could have seen it coming, if we would have had access to state-of-the-art *remote sensing* technology", professor Rifaat Abdel Wahaab agrees, who is Sector Head of Research & development of the public water board, the Holding Company for Water and Waste Water. "We could have used it for an *early warning system* and could have mitigated the impact."

With an early warning system residents can be ordered to move to higher ground if necessary, mobile flood defences can be used to keep buildings and critical infrastructure dry and excess rainwater can be directed to safe, low areas in the city and the lakes around the city, such as Lake Mariout and Airport Lake, can be partially emptied to store the water.

"These short-term measures could buy us time", Professor Zevenbergen says. "When a disaster occurs there is momentum to address the water infrastructure, but there are no effective, well-thought-out plans. Our project lays the foundations for an integral, broadly supported water management plan with a solid business case that can be used by major financial institutions such as the World Bank

and the African Development Bank. International financial institutions have a lot of money available to make cities resistant to the effects of climate change, but they lack good investment proposals that are part of a long-term strategy. Major infrastructural interventions in the water system could have a lead time of ten years, which is much too long for a city like Alexandria."

"Right after a disaster there is momentum to address the water infrastructure, *but there are no effective, well-thought-out plans"*

In this comprehensive delta plan there is room for renewing the water drainage systems, for 'water-sensitive' construction, which is new concept for the city, and for improved water storage. Although water scarcity is one of the greatest problems in Egypt, people are not used anymore to collect and store rainwater in the city. "We are now busy working on a strategic plan to solve this. Water scarcity will only increase as a result of climate change and a new dam in the Blue Nile in Ethiopia", explains Rifaat Abdel Wahaab from the Holding Company.

According to Professor Zevenbergen and his Egyptian colleagues, the AFMA model can be applied in many Arabian cities that have to fight incidental flooding, which no longer seems to be incidental, as professor Elbarki explains: "We are not only talking about Alexandria. In recent years we have also witnessed extreme flooding in Cairo and Hurghada."

Professor Zevenbergen: "This project is one of the very first precautionary water management systems that will be implemented in an urban context in a developing country. This is a breakthrough, with huge potential for scaling up. This could be a game changer."

Another exciting aspect involved in the AFMA project is the public-private partnership, which is no mean feat in a country with a serious government bureaucracy like Egypt. The public partner is the Holding, which is responsible for water infrastructure. The engineering firm GRID and construction firm Montaser are involved on the private side. The NGO Alexandria Business Association is involved in training the water ambassadors, amongst others. Professor Zevenbergen emphasises that the city officials are explicitly not a partner, but a beneficiary, to prevent cumbersome project management.

"This form of collaboration is new to us", Moustafa Bahrawi (26) acknowledges. He participates in the project on behalf of GRID – and is conducting research into the water quality in Lake Mariout, as a student of professors Zevenbergen and Elbarki. "We are all equal partners, with no boss dictating the rules. We have to work things out together, and learn to jointly engage in the debate. This is certainly a learning process for the authorities, and it took quite a while before they accepted it. For us in the private sector it is a great experience which is very valuable for us."

Elbarki explains that public parties such as the Holding Company have an important, but limited responsibility, they are only involved in urban planning or managing water sources. "Managing the water network such as the drainage channels is a public task, but experience in Alexandria teaches us that the maintenance could be effectively carried out by private parties such as GRID and Montaser." Professor Rifaat states that the Holding Company is now also gaining experience in another public-private partnership. "In Kafr El-Sheikh our sister company is part of a PPP involved in 'sludge to energy', together with a German technology firm, amongst others. We produce power there for the urban grid and fertiliser for farming."

Things are also changing with regard to city officials. Professor Abdelaziz Konsowa was elected as the new governor in early September. Prior to this he was a professor of civil engineering and dean of the technical faculty. He has been closely involved in the water management project from the outset and visited IHE Delft in April. As soon as he took up office, he ran simulation models to test the urban water drainage systems in anticipation of the rainy season, and called on the head of the sewer system to carry out maintenance work on the pumps and installations and tackle blockages. "This makes contact with the local authorities so much easier", according to Moustafa Bahrawi, "they completely understand what is required for the project." And the lines are short. While we are talking to professor Elbarki via Skype, he has to briefly interrupt our discussion. "My apologies, I received an important phone call from the governor about urban water drainage."

Konsowa took office at a strategic time. The initial one-year phase has come to an end. During this phase some scientific riddles had to be solved, simulation models tested and – very important – the Consortium Agreement was drafted. It sets out everyone's tasks, what should be done in the project itself and the related risks and responsibilities. And in the meantime a *Flood Management Unit* had to be introduced at the Holding Company, and the employees were trained by IHE, which had to be done with the necessary administrative care, according to Professor Zevenbergen.

Now the residents of the city of Alexander the Great will really notice the effects of the plan. Moustafa Bahrawi: "As a result of the project we now have a mobile information and training facility, a container full of ICT, which travels from one district to another and increases water awareness among people. It is very simple, with computer games and simple lessons. And soon the water ambassadors will also begin work in the poor neighbourhoods. They are going to teach people how to respond to floods, and that the best thing to do is to stay indoors. This should make it possible to prevent a disaster with such an impact as three years ago."

Professor Zevenbergen and his Egyptian colleagues believe in the project's potential to limit the effects of heavy rainfall and prepare the population when flooding occurs. However, they warn that the project cannot cover all eventualities and control all factors. "We cannot reduce the uncertainties about what weather extremes climate change will bring. And we also cannot eliminate the uncertainty of migration flows and uncontrolled urbanisation." ●

Karamojong-shepherd Joseph Loboer: "Whether I am going to adapt to the weather? It has to adapt to me."

Expect plenty of unexpected showers

The North Ugandan region of Karamoja is getting hotter and wetter. The local nomadic herders are desperate: how do they cope with the vagaries of the new weather? Persevere or adapt? "The battle for the future has only just begun."

Author and photographer: Eva Huson

Joseph Loboer nervously rocks back and forth on his little wooden chair in the grass. Flanked by twenty or so grazing cows, he peers up at the ashen sky from underneath his cap. "It will rain soon", the herder mutters as he pulls his chequered *suka* blanket around him more snugly.

In front of him, above the vast savannah plains, a threatening layer of clouds rumbles. It is the end of June and here in Karamoja, a remote area in north Uganda, there should not be much rain at all. However, Loboer gets soaked in a downpour almost every day.

Africa may have contributed least to global warming, but the continent is greatly affected by the changing climate. The mercury is rising, the Sahel is advancing and entire streets are transformed into swirling rivers by rainstorms. This includes Karamoja, where the heavy showers are increasingly random and the droughts are longer and hotter.

The changing weather is a disaster for the Karamojong, the inhabitants of Karamoja. The nomadic herders have been roaming the plains for centuries with their herds of cows and goats, constantly searching for the next pool of water and pasture. In the summer Karamojong herders such as Loboer move around for weeks, if not months at a time. Originally this nomadic lifestyle was a useful way of coping with the annual dry season, but now it is becoming ever more difficult to maintain this survival strategy.

On the grasslands in the north of Karamoja, where the upstream rivers dry up in the summer months, nomadic herders have to walk further and further, and exhausted herds die of thirst or as a result of one of the deadly livestock viruses spreading rapidly through East Africa, partly as a result of the changing climate.

In the lower-lying south, where the rivers flow into marshy swamps and fertile farmland, they worry constantly during the rainy season–fearing floods and inundation. In the absence of their men who travel with their livestock, women and children grow sorghum beside their thatched huts, *manyattas*. Due to the modest knowledge of farming and few tools, this was always a relatively opportunistic exercise, but these days their vegetable gardens are increasingly bare. Weird creatures and fungi ravage crops and the changing weather means that the right time to sow is now a matter of guesswork.

The Ugandan region of Karamoja struggles with changed weather patterns

One minute the recently planted cuttings are washed away by heavy rainfall, while the next crops waste away in the blazing sun. The heatwave in 2016 was a recent low point, in which the United Nations calculated that almost half of the Karamojong's harvest failed. This was a total disaster, because the nomadic herders rely on this harvest during the scorching dry season. Unlike the rest of Uganda, there are not two harvest periods, but just one harvest period.

It is no wonder that the inhabitants of Karamoja find the 'new' weather conditions so hard to bear. Besides changing weather patterns they are saddled with another problem: the region is poverty-stricken. At least three quarters of the Karamojong survive on less than one euro a day.

Meanwhile, undernourishment, illiteracy and alcoholism are common, and basic needs such as electricity and water are scarce. Schools, healthcare and the road network barely function. Since it is far from Kampala, Uganda's political centre, government leaders have historically demonstrated little interest in this nomadic region.

And the wretched cattle war has left its marks. Cattle raids have always been a part of the Karamojong culture, but at the end of the 1970s things went terribly wrong. The nomadic herders got their hands on the abandoned arms depot of former president Idi Amin and transformed Karamoja into one vast area plagued by raids and terrorised by armed gangs. They sometimes stole hundreds of cattle at the same time.

Finally, in 2010, Ugandan troops succeeded in disarming the region and peace was restored. The flip side is that since then a large group of nomadic herders have been robbed and former gang members are now left without work. The fact that many of them are addicted to *kwètè*, an alcoholic drink brewed from grain, does not help Karamoja's already fragile situation.

This also applies to the region's explosive population growth, which is partly the result of polygamous marriages. A nomadic herder like Loboer has many mouths to feed at home, because he has three wives and 21 children, as befits a respected Karamojong. According to expectations, Karamoja's population, which is now around one million, will grow annually between six and seven percent.

A heavy downpour or extreme drought *soon spells disaster here*

Just as problematic is the fact that the region is highly dependent on external food aid. The first international aid operation was launched years ago, during the famine of 1967. Half a century later, many aid organisations, including the UN World Food Programme, are still there; they have become part of Karamoja's food problem, instead of its solution.

All in all, Karamoja is a region that has very little room for manoeuvre. A heavy downpour or extreme drought soon spells disaster. The crucial question is: how can the Karamojong adapt to the changing weather and avert a future calamity?

On the grassy plain to the north of Karamoja, Loboer, the nomadic herder thinks that this is a strange question. "Whether I am going to adapt to the weather?" he asks, chuckling. "The weather has to adapt to me." The nomadic herder refers to what most of his contemporaries do when the clouds refuse to break: fall back on African spirituality. Loboer: "We will ask Akuju, our God, to change the weather. We pray, sacrifice a bull or perform a traditional dance." Does such occultism work? "Oh, it is not up to us", he grins. "Sometimes it does, and sometimes it doesn't."

A short distance away, in the town of Moroto, the Ugandan knowledge centre Nabwin is taking a different approach. Here researchers are preparing the region for the erratic future with hard science. The fenced site is one large outdoor laboratory. Fields are full of modified crops and the grazing cows and goats are all crossed. The aim of the research team is: to find out which crops and animals are best suited to Karamoja's new climate.

The cassava they planted grows extra fast, can withstand the heat better and is exceptionally nutritious. At least, that's the hope: experiments with the crop are still ongoing. The same applies to the spotted calves that the knowledge centre recently distributed to surrounding villages. The expectation is that the animals can cope well with the drought and if everything works out, produce a lot of extra milk.

Gertrude Akol (23) and Mark Lukutae (22) think it is wonderful. Both of them are Karamojong and are following an internship at Nabwin this semester. "For me this is just the beginning", Mark says. "I have almost completed my bachelor in agronomy and afterwards I am going to follow a master's programme and a doctorate." Gertrude, who is in her final year of practical school for agriculture, also wants to continue her studies.

What is all this knowledge needed for? "To become a farmer", Gertrude explains. Just like Mark, she does not aspire to the life of a nomadic herder, but to that of a settled farmer. "Farming is the only way the Karamojong can develop and prepare for the climate", the intern says. Mark nods: "The more I learn about farming, the more I can harvest and sell later on."

The Karamojong community does not have much knowledge about farming. The vegetable gardens around the *mayattas* are small and usually rely on natural rainfall, an opportunistic form of farming that is not sufficient for withstanding the extreme weather. This is why the interns hope to learn how they can become a *real* farmer.

Their favourite subject is irrigation. Gertrude: "In Karamoja it is something we use far too little. I think it would be wonderful to teach everyone at home how to create a terrace or use something as simple as a rain barrel."

The plea of the interns for settled farming sounds like music to the ears of the Ugandan government. Since the region was disarmed and peace restored, Kampala is more mindful of Karamoja and an impressive development plan has been drawn up for the area. In this plan the cabinet of President Yoweri Museveni states that the traditional nomadic life is inadequate to make the future of the area more resilient.

Instead, the ministry for Karamoja must try and get the Karamojong to work in the fields and embrace a life in which they settle down, which is supported by aid organisations through educational farming programmes, pilot gardens and the distribution of modified seeds. And apparently with success, because the number of arable farms in Karamoja has doubled in recent years.

The fact that Museveni's government is suddenly concerned about the remote northern area is not only related to the end of the cattle war. A couple of years ago experts discovered numerous minerals in the soil, after which the government named the mining sector – an industry that provides substantial tax revenues – as one of Karamoja's 'top sectors'.

This is because government leaders in Kampala argue that these types of private sector developments provide jobs and serve as an effective incentive for setting up infrastructural projects. The first mining companies have now begun exploration work and there is a smooth asphalt road running from Moroto to the cities of Mbale and Soroti. Karamojong still mainly travel on foot, but nonetheless: Karamoja is finally connected to the rest of the country.

Interns Mark and Gertrude, dressed in a neat blouse and boat shoes, view the economic activity with great enthusiasm. The two are not scared that the development wave will wipe out Karamojong culture and the associated pastoral lifestyle: "If you want to progress, you also have to give some things up", according to Mark. "Take the weather forecast. In the past the elders forecast the weather by 'rea-ding' nature, but actually they were merely guessing. I prefer to listen to the meteorological weather forecast."

Gertrude also thinks that settling the Karamojong is an irreversible process that will only make society stronger. "Settling down is not the end, but actually the start of our prosperity."

Young Karamojong Mark Lukutae (22) and Gertrude Akol (23) are students in farming

In the Ugandan research center Nabwin, researchers experiment with modified crops and crossed cattle

However, the enthusiasm of the interns is matched by the fear for the future of the older Karamojong men. They have seen that the amount of space they can move around in has shrink in recent decades. “It started with the English”, Angura Natotinyo shudders, who is an elderly Karamojong at the head of the Kaabong district. “They destroyed our traditional migration routes with their borders in Uganda, South Sudan and Kenya.”

He believes it went downhill after that. Today, the Ugandan land registry also interferes in the region and almost half of Karamoja is in the hands of the Ugandan nature authorities. Natotinyo: “They create reserves there which we no longer can access with our herds.” And there are mining companies too, which buy up and seal off pieces of land in a dubious manner, according to Human Rights Watch.

The concerns of the offended Karamojong such as Natotinyo are increased because there is no national nomadic policy in Uganda, as in many other East African countries. Indeed: the cabinet predominantly views the nomadic culture as an irritation. President Museveni does not hide the fact that he condemns the pastoral lifestyle and openly refers to it as ‘backward’ and ‘outdated’. Natotinyo believes there is a logical reason for this resentment. “He wants us to be useful for him: for us to participate in the economy and pay proper taxes.”

Moreover, according to the humanitarian think tank Inter-Agency Regional Analysts Network the herders should not only be concerned about their cultural decline, but also about their resilience. In a recent report about the region, the research group warns that by discouraging migration and cutting off traditional routes, you are depriving the Karamojong of their traditional survival strategies.

Natotinyo claims that this is asking for trouble, especially now that the weather is becoming increasingly erratic. If your harvest fails when you are a novice farmer, it is safer if you can fall back on your animals for a rainy day. He would also like to see Kampala investing more in developing the livestock industry instead of farming. “This is much more logical than chasing everyone into the fields, isn’t it?”

However, it is not only the Karamojong that become less resilient as a result of Museveni’s new policy. This also applies to Karamoja’s nature. Because while Ugandan policymakers consider the farming and mining industry as the key to a more resilient Karamoja, nature lovers regard it as an ecological disaster in the making.

In the lower south, Karamojong struggle with flooding and torrents during the rainy season

President Museveni referred to the nomadic culture *as ‘backward’ and ‘outdated’*

“Sometimes it is as though everything here is consumed”, Simon Khedia exclaims. “That’s charcoal burning.” He stands halfway to Mount Moroto, right next to the Kenyan border, and points to a white strand of smoke, rising out of the valley. “And can you see the field where people are ploughing? That was once a forest.”

Khedia, born and bred in Karamoja, started working as a walking guide at an ecofriendly guest house in Moroto last year. He can be found here amid the unspoilt nature every week, walking with tourists. He knows better than anyone how deforestation is slowly stripping Karamoja bare. Trees are chopped down here and used as firewood for cooking, *manyattas* or for the charcoal business. An increasing number of forests have to make room for the fields of new Karamojong farmers. “I am very worried about the future.”

Quite rightly so, because developments such as deforestation are disastrous for ecosystems. For example, see what is happening in the Kaabong district. The unbridled expansion of fields there is already leading to erosion, the loss of soil fertility and further down, in the lower-lying north, to even more flooding.

Moreover, it is not only deforestation that disrupts ecosystems. Consider the arrival of water reservoirs in Karamoja, where herders often stay for a longer period, resulting in overgrazing and water pollution. Especially also because wetlands act like a sponge for nearby pastoral farmers from South Sudan and Kenya, who cross the border to Karamoja when there is a lack of water in their own region.

The breakdown of the biophysical balance in Karamoja is disastrous for the region and for the attempts to become more resilient, not least because it may result in even more extreme weather. The fact that there is a considerable need to regulate the use of Karamoja’s ecosystems such as forests and rivers is also beginning to dawn on the Ugandan government. The government now wants to focus on sustainable water management, besides introducing various regulations for nature and forest conservation.

Uganda is currently divided into different catchments along hydrological lines, in which each water state has a committee responsible for the protection and regulation of water flows and the surrounding land. The art of this sustainable water management stands or falls with identifying the right balance between economic progress and ecological protection.

In other words: how do you ensure the population as well as nature becomes and remains sustainable? Committees who are assisted by a Dutch collective of aid organisations have been appointed in the two catchments of Karamoja, and management and intervention plans have been drafted. The next step is to find lenders and donors and companies that want to implement the proposed projects.

But aren’t the water managers too late with their plans? Simon Khedia stares at the *manyattas* and fields below in the green valley, and shakes his head: “The battle for the future of Karamoja has only just begun.” ●

Sustainable water management

The sustainable water management and intervention plans for Karamoja’s catchment areas Lokok and Lokere have been finalised and have been used by the local authorities since mid-2017. Aid organisations have funded and implemented several proposals and funding is being sought for the other projects. The plans and documents were compiled based on a collective decision-making process. In doing so, all parties in the water state are involved, from Karamoja’s technocrats to users. An aid collective led by Cordaid managed the process and provided technical support. The other team members are GiZ, Acacia Water, Rain, Wetlands International, and the four Cordaid partner organisations Caritas Kotido, Caritas Moroto, Socadido and TPO Uganda. These are the lessons learned by those involved.

Mieke Hulshof (Acacia Water, the Netherlands)

- **Do not shy away from the technical side.** “As a Dutch party we got involved to add our technical knowledge to the plans. In the beginning many parties hardly knew what a catchment actually is. We took the time to explain it properly, including the technical details. It was quite a challenge, but this knowledge proved to be invaluable later on in the process. After all, if you want to have a well-considered decision about a well or a dam, it helps when you know what is involved.”
- **Consider the opportunities.** “Thinking in terms of solutions instead of problems is crucial in sustainable water management. You might be inclined to view arable farms as a threat to the proper functioning of the ecological system, but instead of stopping them, it is better to reflect on how you could cooperate sustainably with livestock and other farmers. In the water management plan we suggest to let the private sector pay towards conserving ecosystems and encourage farmers to focus more on sustainable farming.”
- **Allow all voices to be heard.** “If you want to devise an inclusive plan, you need to invest time and money in it. In order to draft the plans, we invited all parties involved in the catchments, which was not an obvious thing to do for the authorities and sometimes proved to be difficult in practice. A written invitation is not enough to get a nomadic herder to sit at the table. You have to go on a moped to visit him, explain what it’s all about in the local language and make sure someone has enough money for transport. Then employees must be willing to provide additional information during the meeting, so that everyone can actually participate in contributing ideas and have a say.”

Paul Lochap (Caritas Kotido, Uganda)

- **Make sure that the project is Ugandan.** “When writing the plans for sustainable water management, we wanted everyone to sit around the table, from herders to technocratic officials. That was not easy, but we succeeded. I am proud of this; it meant that these are our plans, they are Ugandan plans. It is obvious that aid organisations and experts can give support, but we are ultimately responsible: it is our change and we have to get things going.”
- **Use local knowledge.** “As a region, Karamoja lags behind the rest of Uganda, but remember: our people have much in-house knowledge, especially about nature and the socio-economic context. This was highlighted in the project, also by our Dutch partners. I am pleased about this, because I know from experience that many aid organisations approach water projects differently, sometimes from a purely technical perspective. This is a shame, because that is not how you reinforce a project.”
- **Also convince the rest.** “The management and intervention plan includes a menu of project options from which anyone who wants to act, can choose. The government, aid organisations and donors can thus easily get started and know that the population is behind the project. The problem is just that donors in particular do not always prioritise sustainability. Take the example of the European Union: it will soon build two mega dams in the vicinity, while our plan clearly specifies that we are not interested in this solution. That’s a shame.”

THEME 2

Drinking water *and sanitation*

© Selma Zijlstra

The rise of the toilet

The toilet of Chrispass Kalenga Wanje in Jibana

A small revolution is underway on the coast of Kenya: a new type of brick appears to be the key to safe toilets for both the rich and the poor. A public-private partnership is creating a genuine market of supply and demand. But how is the toilet integrated in society? On a tour in Kilifi.

Author and photographer: Selma Zijlstra

The remainder of the mixed cement is used to produce the final bricks that are squeezed out of the red iron machine. Roger Kalama Nguwa and his colleagues shovel away the debris and add the bricks to the day's 'yield'. Two hundred and ten perfectly formed rectangles are bathing in the sun - that'll do for today.

Kalama wipes the sweat from his forehead, which glows under a knitted striped hat, and puts his T-shirt back on. It is not one o'clock yet, but the rest of the day he can produce bricks in his own workplace a little further away, after which there is even time to arrange to meet some friends.

He started work early for the entrepreneur that hired him this week; the first bricks already rolled out of the press at seven o'clock. Twenty-eight-year-old Kalama enjoys producing bricks since he was trained by AMREF three years ago. He has become very skilled at it; progressing from making fifty bricks in half a day when he started, to over two hundred nowadays. He sells a brick for twenty Kenyan shilling (seventeen euro cents), and makes a healthy profit. In any case, he currently earns considerably more than he did at his former workplace, where he produced wooden furniture.

The bricks are used for the toilets promoted by the Financial Inclusion lmproves Sanitation and Health in Kenya (Finish lnk) programme; they are called 'interlocking bricks' because of their notches, which means they can be easily stacked: in this way less cement is required. What's more, they are cheaper than bricks made from dead coral which are carved out of stone quarries on the coast to serve as building materials.

The bricks have also surpassed their original purpose; they are no longer exclusively used for toilets, but also for houses. Demand is growing now that the residents of Kilifi town and its vicinity are starting to discover the bricks. Roger Kalama Nguwa explains that he would like to start his own small business soon.

David Makau, manager of the Finish Ink-programme in the Kilifi district, smiles. This is the role of a development worker in 2018: if you want to provide access to safe sanitation, you seek business opportunities. The market mechanism behind sanitation is an important component of the Finish Ink-programme. Besides its goal of clean sanitation for individual households, the programme also hopes to create a self-funding market in which employment is created through building toilets and houses (also with a toilet of course).

In order to examine the origin of this market we return to earlier this morning: we visited the loan cooperative Imarika Sacco (Kiswahili for 'become stable') in Kilifi, a small, friendly town on the Kenyan coast, divided by a stream where white sailing boats are anchored and along which tourists kayak. The cooperative, founded in 1972, currently has over eighty thousand members. This means the counter is busy to say the least.

Manager Edward Charo's office is on the first floor. Through the cooperative people can save and borrow money via the M-Pesa system, which has conquered East Africa with its mobile payment traffic. Most Imarika Sacco members are people active in the informal sector that would not normally have access to financial services, such as small-scale farmers and shopkeepers that have shops along the road selling all kinds of wares: clothing, mobile phone credit, sunglasses, toilet seats, gravestones, samosas or goat's meat baked and roasted in old oil. Or, in Charo's words: "Not the people with serious money, but those that keep our economy going."

Imarika encourages savings of two thousand shillings (seventeen euros) a month. This does not sound like much, but it is much for a Kenyan family, who on average earn hundred to three hundred euros a month. The least well-off, who live on between one to four euros a day, cannot participate. Charo: "We serve the working poor, those who are economically active. The poorest of all have no money; they have to rely on NGOs and the government. After all, we have to ensure that our business remains healthy."

Imarika encourages the construction of toilets. *"Otherwise people come to ask for a loan to buy medicines for diarrhoea and dehydration"*

Imarika encourages the construction of toilets. "Otherwise, people continue to ask for loans to pay for medicines for diarrhoea and dehydration as a result of the cholera bacteria", Charo explains. "And if they get sick, people cannot work to repay their loans." Therefore, Imarika began working with AMREF in 2015. "Initially people were sceptical about toilets. Most collapsed as a result of repeated flooding and people had to rebuild them every year."

AMREF takes a more serious approach. It offers a free on-site inspection, trains craftsmen and collects good materials to build a proper toilet. Imarika has now issued 2,440 loans for sanitation and they are almost all paid back within one year. People can choose between various toilet formulas: a simple version costs 130 euros, and one with a septic tank costs about 430 euros. If you want to upgrade

A cheaper toilet in Jibana for the poorer villagers, with a strong pit and thatched housing

A toilet collapsed due to floods

Finish Ink

Finish Ink is a consortium involving Waste (chair), AMREF the Netherlands, SNS Reaal and UNU Merit and is subsidised by the RVO Sustainable Water Fund (FDW) programme. FDW is financed by the Ministry of Foreign Affairs and parties involved in the public-private partnership. The Ministry strives to encourage public-private partnerships in the water sector, with the aim of improving water safety and security in developing countries. Through the Finish Ink programme AMREF works together with the local ministries of Health, financial institutions and craftsmen to be trained who can build toilets in the districts of Kilifi and Busia.

your toilet, with tiles, a nice paint and a mirror, you have to invest a maximum of 700 euros.

This year Kenya suffered from its heaviest rainfall in decades. The coastal region suffered from severe flooding. Charo: "However, this time the cholera outbreaks were less serious in this area. We do not have any scientific evidence, but we cautiously believe that this is because of the toilets."

After all this talk about toilets, it is time to see a real toilet. At a small kindergarten fifteen curious children's faces greet us through the open windows of the classroom, their high voices calling out '*mambo*', a Swahili greeting. There is a toilet block at the site, with three toilets. Two young boys have a race to see who can get there first, and the winner slams the door behind him; the 'loser' looks at us timidly.

Michael Kahindi is waiting for us. He is responsible for having this private school built, including the toilet block and a large underground septic tank, using an Imarika loan. He does not teach here himself, but at a public primary school a short distance away. There they still use old-style toilets. Kahindi pulls a face: "It stinks there, it's filthy. That's how people get sick."

We ask why the school does not have a proper toilet built. Kahindi says nothing for a moment, looks at the ground and smiles. "The government issues its own contracts. They have toilets built for two million shillings (17,000 euros)." The smile of pity spreads on his face. "Compare that with these toilets costing just 160,000 shillings (1,380 euros)."

When faced with such an answer, you usually know the underlying reason in Kenya, as it is number 143 on the corruption index of Transparency International, which features in total 160 countries. In any case you can guess that the two million shillings was not spent entirely on toilets. Any attempt by NGOs to improve living conditions is not unrelated to the current policy structures.

This is also apparent from the water supply. Because a major pipeline is being constructed, there are water shortages all along the coast – and Kahindi's refined water system is therefore of little use. As a solution he relies on his own water source, at home, a few metres away. However, this means that he has to walk back and forth to refill the cisterns. "Perhaps I could buy a large tank to store the water in", he says optimistically.

Before we leave, we ask why one toilet does not have a sink and the other toilet does not have a door. "Stolen", Kahindi explains. "We need to fit good locks on the doors. Or arrange armed security, at night." Nothing is too extreme to protect your expensive toilet from the big, bad, outside world.

Michael Kahindi waiting in front of the school toilets

As we drive into the small village of Jibana via the bumpy, sandy road, the first thing that catches our attention is a collapsed thatched ruin, which was a toilet until just a few days ago. That's not how things should be done. Apparently not all the villagers were convinced of the practical use of a proper toilet, but this could be the final push to persuade those who are still reluctant.

Apart from this, the village looks reasonably clean. However, if you would have come here a couple of years ago, the stench would have been unbearable. People urinated and defecated in the bushes or in ramshackle pits that collapsed each time there was heavy rainfall. The village was plagued by cholera and diarrhoea. Over 61 percent of the rural population in Kenya has no access to proper sanitation and seventeen percent urinates and defecates outdoors.

Three years ago AMREF built a 'demo toilet' here, to show the community what a proper toilet looks like. Chrispass Kalenga Wanje, village chief and one of the volunteer health workers with whom AMREF works, was the first to show his enthusiasm. His cheerful toilet, painted yellow, is like a showroom in the middle of the village square.

"I must serve as a good example for the community", Kalenga exclaims. He also drives around a small kiosk. "If I want to sell my items to people, my hands must be clean." So, he has even installed a tap with a bottle full of antibacterial soap in front of the toilet. The toilet cost 857 euros. "It's a lot of money, but it's important."

Although it took a while before everyone in the village was convinced of its practical use. "At first", says David Makau, "it was difficult to get people to invest in a toilet, they thought that we should build the toilets for them. They are used to getting help for free. But just imagine: when you live in a house made of thatch and corrugated sheets, you're not going to build a toilet from bricks, are you?"

The residents of Jibana would therefore not pay for a standard toilet. So the villagers were able to opt for a cheap version; a toilet with a stone structure around the pit which meant that it would not collapse, but the external housing is made of thatch and corrugated sheets. You just need fifty euros and most people can pay this amount back within one year.

According to Kalenga's administration, 106 of the 123 households have a proper toilet now. Makau: "And they paid for it themselves, so there is no question of ownership; they also want to maintain and clean it themselves."

Wasn't the government prepared to provide good sanitation in the village? Makau and Kalenga briefly shake their heads. "The law states that people must have proper sanitation", Makau explains, "so it is the government's duty to do something about it. However, it boils down to laxity and sometimes ignorance. The authorities sometimes come to visit, but don't know which materials are good, so the toilets collapse."

Makau formed a partnership with the local authorities and the *chief*. "They participated when we rolled out the programme. We stimulate the government by providing a good example, so that they do what they are supposed to do. When we leave here shortly, they will have to continue to monitor the village."

After Jibana, my day excursion along the sanitation mechanisms of Finish Ink comes to an end. A day during which – I only realise later – I have only spoken with men. This does not mean that the programme does not have a clear gender component: simply by building toilets, women do not have to urinate and defecate outdoors, where they run the risk of being raped. Moreover, girls with a toilet at school can also attend lessons when they are menstruating.

Nevertheless, the lack of female involvement in the programme has backfired to a certain extent: it was recently discovered that the toilets designed by Finish Ink are too narrow for the more sturdily built women with broad hips. The toilet designer was a man, and had based his design on a male figure.

The Finish Ink programme in Kilifi and Busia will run until mid-2019, by which time 20,500 new sanitation systems will have to be built, while the ambition for 2025 is even greater: 196,000 systems. It is hoped that the programme can be extended from Kenya and India to many other countries, including Uganda, Tanzania, Bangladesh and Ethiopia.

Roger Kalama Nguwa produces the special interlocking bricks used for the toilets

However, at least as important is the market that is created as a result, in which five million loans have been issued to date. This market, which is slowly leaving its infancy phase, will ultimately have to be self-sufficient. Craftsmen like Roger Kalama should have healthy businesses to satisfy demand from the population.

The toilets proved too narrow for women with broad hips. *The toilet designer was a man, and had based his design on a male figure*

It is the intention that the government will take over AMREF's role, as a monitor and adviser and to make the necessary initial investments: for example, in hydraulic machines that can be used to make bricks more quickly. The government in Kilifi has already purchased six of these machines.

And manager Makau? During the return journey, in the car on the way to the town of Kilifi, I ask how he sees his future in this scenario. He smiles: "Perhaps I will become a sanitation consultant for the government. So that I do the same work as I do now, but am paid by the market and not from development aid funds." ●

Approaching the ‘last mile’

© Melanie Haas

Taking a sip of water, flushing the WC, washing your hands; you take it all for granted. Until you find yourself in Nepal, soon after the earthquake, at a rural school in Kyrgyzstan or in the migration region of Burkina Faso, when clean water is a matter of survival or of life itself. In 2030 there must be access to drinking water for all. How can this be achieved? Three experts explain.

Author: Sarah Haaij

More than 2.6 billion people have obtained access to safe drinking water over the past 25 years. The Millennium Development Goal to halve the number of people without access to clean drinking water has been achieved. There is now a new point on the horizon of the global community: universal access and sustainable management of water and sanitation in 2030. Safe and clean water for all, not only now but also in the long term.

Sustainable Development Goal number six was not a misplaced idea; the human right to safe and clean drinking water and sanitation has been a recognised human right since 2010. At the United Nations the Bolivian President Evo Morales advocated the right to water, which until then had been vaguely discussed, to be established in a resolution. Access to water is therefore not only a noble endeavour, it is a right that people can lay claim to.

And that is what is happening. In the Netherlands a Heerlen judge already ruled in 2008 that water could not be cut off from a household that had not paid the bill, because that would violate the international law on water. Last year an Indonesian judge ruled that water companies were failing because they were not supplying affordable water to poor residents of a slum in Jakarta: “The companies are not complying with the people’s right to drinking water.” The judge summoned the local authorities to restore the public water supply for these people.

Water receives the attention it deserves. However, this does not mean that there are no major challenges involved in achieving the sixth Sustainable Development Goal.

On the contrary: tales of water scarcity dominated the news in 2018. Extreme drought in South Africa, demonstrations because of water shortages in Iran and Pakistan, a violent drinking water crisis in the Indian city of Shimla, and the Dutch were also warned this unprecedented dry summer that nobody, not even the farmers, were allowed to continue to tap surface water.

As opposed to the goal to provide everyone with clean and sustainable water, there is the global challenge of population growth, urbanisation and ever increasing consumption.

Although in recent years 2.6 billion people obtained access to water and sanitation, forty percent of the world’s population now has to cope with water scarcity, according to the UN Development Programme. Three out of ten people, that is to say, 2.1 billion persons worldwide, still do not have access to safe water in their home. And six out of ten people, that is to say 4.5 billion persons worldwide, do not have access to safe sanitation, according to figures provided by Unicef and the World Health Organisation. Every year three hundred thousand young children die of diarrhoea as a result of dirty water and the lack of clean toilets.

According to Guy Hutton, development economist at the World Bank, up to and including 2030, thirty billion dollars are needed annually to provide access to safe water and sanitation (WASH). And ninety billion dollars for the services to make it safe and sustainable. What should be done? Three experts, each with their particular water specialisation, talk about their road map regarding safe water for all.

Nepal, 2015 – a couple of weeks after the devastating earthquake. We have to walk for two days to visit Sindhupalchowk with a humanitarian NGO. The earthquakes have made the roads difficult to pass and it soon becomes clear that they have destroyed the water infrastructure. Many sources have been polluted, wells have collapsed and water tanks are not in operation. No clean drinking water is available anywhere in the valley. For unexplained reasons there is a supply of small bottles of very sweet cola; we drink nothing else for three days. Many Nepalese are condemned to the potentially dangerous water.

Sustainable Development Goal 6.1

Safe and affordable drinking water for all

In order to achieve Sustainable Development Goal 6.1, 884 million people who are totally deprived of water and 2.1 billion people who do not have water at home still have to be reached. These people lack access to a tap or a pump, a source or a pipe.

The Dutch water company Vitens Evides International (VEI) advises water companies in developing countries all over the world about how to effectively design and maintain such a system. The website of Vitens Evides reminds us that ‘Every day tens of thousands of people die, mainly children, due to a lack of clean drinking water and sanitation’. “That is the equivalent of twenty jumbo jets a day.”

Adriaan Mels is regional manager for Africa and Asia at VEI: “Many people die because the water quality is poor. It makes them ill.” However, there is a major problem in the water distribution. “People say that you need a total average water supply of a thousand cubic metres every year, also for irrigation and industry. In Kenya only three hundred cubic metres are available, which means that you start with a scarcity.”

It is precisely in countries with a water scarcity that it is advisable to supply the little water that is available to people’s homes. The infrastructure is a problem in this respect, which is often not in a good condition, according to VEI. The problems include old pipes, poor water metres and leaks.

In areas where the company is active one issue always crops up: water supplied by the companies gets ‘lost’. The water seeps away through leaks or there is no registration system for properly collecting water bills. There are companies where just two thirds of the water supplied is paid for. Mels: “As a result there is no money to properly maintain the infrastructure.”

With development subsidies from the Netherlands and a contribution (over half a percent of its turnover) from Vitens Evides, VEI is starting long-term partnerships with these companies. Mels: “Eight years is the minimum, in my opinion.” This covers the entire business operations. For example, VEI is introducing software for plant maintenance, which shows you when need to check the pumps or replace a part. “It comes from a Dutch firm, is relatively cheap and works well almost anywhere.”

> **“Why do you always have to be innovative?** *Sometimes things just simply work well”*

The money received by VEI comes, for example, from the Sustainable Water Fund (FDW): 5.3 million euros for ten projects. So, do Dutch companies always have to be involved? “It is not compulsory”, Mels replies. “We include them if they offer an effective price-quality ratio. Sometimes they are simply too expensive.”

In the beginning the collaboration with NGOs felt a bit like a shotgun wedding. Mels doesn’t remember it being love at first sight. The technical, result-oriented specialists at VEI and the more process-based development workers sometimes could not work together well. Yet now he sees the added value it provides: “NGO access to the poor is often easier; they are better equipped to identify the people’s needs. And an orga- ni-sation took us with them to Kenya, which is great.”

However, an intermediate review of the public-private partnerships in FDW conduc- ted in 2015 by the Ministry of Foreign Affairs revealed that the projects do not adequately focus on *development.*

“I view things differently”, Mels states. “When you improve people’s access to water it leads to development, doesn’t it?” Mels remembers that the evaluation also claimed that the projects are not *game changers.* “Then I have to ask: why not? Do you always have to be innovative? Sometimes things simply work well and you want to apply the same method.”

Kyrgyzstan, 2012 – a public primary school a three-hour drive from the city of Osh. When the hundred pupils or their teachers have to go to the toilet they have a wooden deck with three holes. Next to them is a container of lime to ‘break it all down’. There is no well or pump to flush or wash their hands. The man that is supposed to empty the latrine hasn’t been seen for weeks. After four days our team of seven visitors is sick. Not surprisingly the pupils opt to use the open fields behind the school.

Sustainable Development Goal 6.2

Access to adequate and equitable sanitation and hygiene for all, and an end to open defecation

One in three people in the world does not use a safe and clean WC. And according to estimates ninety countries are now lagging behind in terms of the goal of sanitation for all.

What’s more, the people at IRC do not believe that this will change as long as we pour money into infrastructure, but ignore the system that should ensure the infrastructure continues to function. IRC is a knowledge centre and project organisation focusing on drinking water and sanitation.

For the first water special five years ago *Vice Versa* also spoke to Catarina Fonseca, head of the international innovation programme of IRC. At the time she revealed that thirty to forty percent of WASH investments is wasted because the systems do not function anymore. The classic story of the water pump that is not maintained.

“Oh, wow,” Fonseca exclaims, “is it already five years ago that I said that? Can you

believe it!" In her opinion the basic problem still exists today, but fortunately she also sees that much has changed over the past five years: "In the Dutch government's plans for WASH 2030, in the United Nations, you can hear people everywhere talk about a system approach. There is greater focus on water management, governance and financing."

However now, Fonseca adds, the discourse must shift from talking to action. Money should be invested and "until now this has not happened". If she had one water wish for 2030 it would be a water budget: one for each country. It may not sound very exciting, but she believes it is necessary if we are to achieve the sixth Sustainable Development Goal.

"And by that I mean an overview: what is received in taxes, aid and water payments. What should be done and how can we deal with the budget deficit? All countries committed themselves to the Sustainable Development Goals, but only a few have a plan to actually realise them."

In the latest IRC water campaign you therefore see a woman at a water pump on the left of the poster and a man holding a propeller on the right. And underneath the text: "If this is a permanent water system, then this is an airline company." Fonseca: "We want to focus the attention on the system behind the water."

However, Fonseca, like Mels, notices that it is sometimes difficult to get donors to focus on long-term action; the investments are not necessarily innovative, but they are desperately needed for a water system to continue to function. She even has her own term for it: *flatlining*. "When a country realises a sixty to seventy percent water supply, you often see activities flatlining. Investments still increase substantially, but water coverage remains the same."

Fonseca knows that the investments usually focus on innovation. Not on maintenance, not on strengthening the institutions or on monitoring. "Donors say that is something governments have to take care of. However, this doesn't mean we shouldn't keep a close eye on it."

Thailand, 2016 – the metropolis Bangkok is severely affected when the monsoon rears its angry head. The drainage system has to process so much waste water from households all year round that it constantly becomes blocked with rubbish and sediment. Everything overflows to knee level, inclu- ding the contents of the sewers. Anyone who wants to move around simply has to wade through water.

Sustainable Development Goal 6.3

Improve water quality and combat the discharge of untreated waste water

"Anywhere water is used, waste water is produced", Merle de Kreuk explains, who is professor in waste water treatment at TU Delft. "And waste water contains pathogens you should eliminate before the water enters the cycle again."

According to the World Health Organisation, half of the population of developing countries may suffer from diseases linked to a lack of clean water. As a result of the Sustainable Development Goals there is now a focus on the role of waste water; "the flip side of water".

This is good, De Kreuk adds, because she believes the flip side is equally important. Certainly in countries where water is scarce and is recycled in a much more direct way.

As a researcher De Kreuk is involved in various collaborations in Asia. Like in India, where cities are growing at an unprecedented rate; but where there are no sewage or treatment systems to process the waste water from all these people. "This is a current issue that is out of control." The waste water in these metropolises does not only cause disease, it also pollutes the rivers into which it is discharged.

If you could treat the water, you could create a new source of water for all the millions of city dwellers, provided it is done properly.

This is where De Kreuk's expertise comes in. "I am a technologist", she explains. "I examine purification systems; which system is suitable here and how are we going to achieve it? In India we are currently looking at ways to organise treatment locally and on a small scale, so without the large sewer systems that we know, but in a district or apartment complex."

Her partners at the Vrije Universiteit and research institute TERI in Delhi are studying the social aspect of water. What do people think of water and safety? Are they prepared to directly recycle treated waste water. "In the Netherlands we think that this is disgusting. But it's not, you know; in Namibia they've been doing it for years."

De Kreuk would prefer to see water treatment designed in such a way that it can generate an income, by separating waste flows and selling water, energy surpluses or fertilisers. "When a profit can be made parties will also be inclined to maintain the system."

"If it only were true: *a well that solves all your problems*"

Burkina Faso, 2017 – after a four-hour drive, a canoe trip and a journey across dirt tracks on the back of a 50cc bike with gears, we finally reach our destination: a water pump, installed by the International Organisation for Migration in the south of Burkina Faso. It is a region from which many young people set off to seek their fortune in Europe. Do the youngsters gathered around the well know why IOM placed it there? No, not really. "The idea is that it removes your fundamental reason for migrating; as a result you don't want to leave anymore." They grin: "If only that were true, a well that solves all your problems."

At the core is the sixth Sustainable Development Goal about access to water. It is no longer a purely technical subject, but more than ever a political issue; especially now that governments are pointing to water as a cause of migration. From the WASH strategy 2016-'30 of the Ministry of Foreign Affairs: "Water insecurity in countries of origin is one of the fundamental causes of conflict and migration. [...] These fundamental causes must be eliminated."

When you talk to people who do not have access to water, you're talking about the 'last mile': the last 884 million people with no clean drinking water. The people that are most difficult to reach: the vulnerable, those that live in remote areas, outcasts, those that want to leave, the poorest of all.

Mels, Fonseca and De Kreuk all see challenges in this task. In order to achieve the Sixth Goal, political will as well as the will to invest are required, sometimes also selflessly, Fonseca emphasises. After all, if we want to provide the poorest people with access to water, someone will have to pay for it.

It does not suffice to merely save a well, as the boys in Burkina Faso already know: a well is no panacea. According to one of them, water is "A matter of survival." ●

Around the village pump

The villagers are responsible for maintaining their water pump in the Ugandan countryside. For a long time the government and aid organisations viewed this management model as the key to better water supplies. But is this still the case? On assignment.

Author and photographer: Eva Huson

In Kanara's village street a handwritten note is attached to a bamboo stick. The note bears the title 'Water meeting' and calls on all villagers to convene for a serious discussion at three o'clock that afternoon. The topic of the meeting is the only water pump that exists in this rural area in West Uganda. "And of course I had to go and fetch everyone myself", Jonathan Bengyi Kabuka, the note's signatory, winks. He stands a short distance away, in a garden with mango trees, and surveys the full meeting benches in front of him. It is four o'clock and the meeting can begin.

Kabuka is the new chairman of Kanara's water committee, a small group of residents that has been elected by the rest of the village to manage and maintain the local water pump on a voluntary basis. This is an important task, because the national water mains do not reach these remote villages in the province. Anyone who is thirsty or wants to wash him/herself in Kanara has to rely on this communal water point.

In order to ensure that the pump remains operational, Kabuka's team sees to it that the surrounding water point is kept clean and that villagers use the lever properly. The volunteers also make sure the local mechanic regularly services the device and performs any repairs quickly and correctly. In order to fund all this, the water team also has a financial task. Every month the committee collects a water tax, fifty eurocents per household, which the treasurer keeps in a piggy bank.

"Well, yes, that's the idea", says Kabuka. Following the death of his predecessor, the water committee stagnated and for months the water tax went uncollected. The payment arrears are substantial, and that is exactly what Kabuka, recently elected as the new chairman, wants to address today during his first meeting. "Everyone has

to pay in the end", the Ugandan says in a fiery tone.

The fact that it is not the government, but villagers like Kabuka who manage and fund a water point, has been the norm in the Ugandan countryside since the nineties. The idea was developed at the offices of the United Nations during the International Drinking Water Supply and Sanitation Decade in the 1980s.

It is where a series of conferences and communiqués led to the same conclusion: centralised water management in rural areas in low-income countries is doomed to fail. People were convinced that these governments failed or barely managed to keep their water infrastructure operational due to their crippling bureaucracy and usually empty treasury.

Which is a shame, because many wells and water pumps were consequently neglected, fell into disrepair and became unusable in the long term. According to UN water experts, setting up water committees in remote rural areas offered a solution to the authorities. Because when each water point has a volunteer committee that ensures maintenance and funding, the authorities do not have to recruit mechanics or allocate money to pay for repairs. Indeed, once a well or water pump had been constructed, you no longer have to worry about it.

The idea was supported by the authorities in Africa and also gained acceptance with development organisations. They regard the management model as an attractive way of guaranteeing maintenance of the wells and pumps they constructed after their departure. In Uganda, where the state was struggling at the time to maintain its water infrastructure, the method was also an immediate hit and the government set up the first water committees in the early nineties, together with aid organisations.

Now, twenty years later, water committees are incorporated in the Ugandan water policy and setting up a committee is one of the conditions that applies if a village is to acquire a water point. According to government statistics, the country has thousands of committees. It's time to take stock: does this kind of volunteer management work? Is communal water management actually the key to sustainable water supplies?

Water committee member John Tumwesigye at work

Village residents in Nyabani refuse to pay the water tax

A water committee in Western Uganda

"Children from the village school hang around the pump all day long", a large lady shouts from the meeting bench. "Why should I pay the same monthly amount as the village school? That's not fair, is it?" An older man wearing a hat seconds her: "If they break the pump when they're hanging around, we'll then have to pay for the repairs, won't we? I don't agree."

In Kanara the water meeting has now been in session for half an hour and chairman Kabuka has fallen silent. He faces greater opposition than he had bargained for: most fellow villagers refuse to pay the water tax.

Their resistance is not surprising. The evidence is crystal clear: failing water committees are the rule rather than the exception. In the *Community Development Journal* published by Oxford University researchers calculated that thirty to sixty percent of these committees in rural Africa fail or barely function.

This appears to be no different in Uganda. According to the state, more than eighty percent of water committees function as they should, but official figures contradict this claim. A sample taken by IRC, a knowledge institution in the field of drinking water, revealed that just a third of the water points in the Kabarole district have a water committee, of which less than eight percent is in fact active and collects money.

The main reason for the failure of committees? "Unwilling payers", according to Martin Watsisi, who works for the Ugandan branch of IRC, which manages Watershed (see box). Together with Ugandan organisations, the programme strives to influence government policy on water facilities and catchment areas. "Users in rural Uganda", Watsisi explains, "currently have little income, and there is the prevailing idea that water should be free." People view it as a gift from Mother Nature, the authorities or aid organisations, which does not have a positive impact on their willingness to pay.

The fact that not all water users interact closely, let alone collaborate in everyday life is also problematic. According to Sheila Ruyondo, from the Ugandan organisation and Watershed member, JESE, this is a breeding ground for distrust. "You see that water users are often very afraid that the treasurer will disappear along with the savings."

> **"Water users are often very afraid** *that the treasurer will disappear with the savings"*

Therefore the villagers keep a tight grip on their purses, or prefer to put their money into a collective savings and credit system such as Yahura Yehoza, in which a small group jointly saves for emergencies such as a funeral or irrepairable farming equipment. "You see", Ruyondo explains, "that water is not by any means a priority for everyone in the Ugandan countryside."

Motivation is another problem. "Committee members carry out their tasks as volunteers", Watsisi continues. "So if the rest of the village opposes them, they ask themselves: 'Why bother?'" When users refuse to pay the water tax, the situation will quickly deteriorate. Committees will then not meet anymore, departing members will not be succeeded and the group will be dormant over time, with all the misery this entails.

Because when the well does not function anymore due to a lack of maintenance, it drains the committee's piggy bank and the well cannot be used anymore. "Therefore people will often revert to using open water sources such as the closest river or swamp." Watsisi concludes. "Or they may visit a water pump a few kilometres away, where the problems of payment will frequently emerge again. In the end a water pump is a public water point, to which everyone has free access."

And committees also struggle with the poor financial capacity of their members. Before the water committees were introduced, the authorities may not have been able to manage the water infrastructure in a successful way, but they left the job to paid experts. How realistic is it to expect that small groups of unpaid amateur managers, such as Kabuka and his team, can handle these management and maintenance tasks?

"It's not always straightforward", Ruyondo from JESE acknowledges. The committee members elected by the village, that is to say, the residents that are trusted most, are often elderly and cannot always read and write, let alone keep the books or convince defaulters.

Finally, what also does not help is the fact that the Ugandan government is almost absent. Committees hardly receive any support when they encounter problems, and are not accountable to anyone for the work they carry out. As stipulated by national guidelines, when a committee is founded community rules are drawn up on paper, including the fines issued to defaulters. However, these rules do not have a legal basis in practice and the village police and lead

ers do not make a genuine effort to enforce them. "Ultimately", Watsisi explains, "a local politician prefers to sign a land agreement for which he receives a fee than to lose votes by clamping down on voters with regard to an unpopular water tax."

Officially, the volunteer management falls under the supervision of subdistricts, the lowest administrative level of the Ugandan government. Officials should motivate, support and inspect the committees, but in fact the subdistrict shines is mainly absent. "It's simple", according to Stella Kahumde, head of the West Ugandan subdistrict of Karambi. "There is just no money."

Anyone that scrutinises the national budget can see that the Ugandan government gives priority to roads and power cables. The head of a subdistrict has to manage with a few thousands of euros, which the local council can budget itself. "However, aldermen are not interested in investing money in something abstract like supervising water management", Kahumde says. Therefore the hands of the civil servants in the water department are tied. At present there is a lack of money for transport as well as for the 'daily allowance', the Ugandan custom of paying officials extra when they are on the road.

Officials are therefore shackled to their desks and this is reason for concern, Ruyondo warns: "A water committee cannot succeed on its own. You have to continue to monitor and inspect members." Watsisi agrees: "It concerns a group of volunteers, to who you have to devote time and energy." When this kind of support is not provided, as is currently the case, he believes sustainable water supplies are doomed to fail.

Kabuka is still sitting in silence on his chair in the mango garden in Kanara and fellow committee member John Tumwesigye, also a farmer and water pump technician, takes over: "We recently tried out a pre-paid method. You paid per filled jerry can instead of the monthly water tax." People sitting on the wooden meeting benches murmur in agreement.

"However", Tumwesigye continues, looking severely at his fellow villagers, "when the pump operator we hired went home, someone broke the lock off the pump and stole water." A woman wearing a shirt from a major aid organisation shakes her head and jumps up: "I just don't think we should have to pay. It should be up to the authorities or the *mzungus*." There is a loud applause from the benches.

The aid organisations in Uganda are well aware that it is difficult for the community of users to solve the issues related to managing the water pump on their own. This is why some try and intervene through an information campaign that should convince the villagers of the usefulness of the water tax. The villagers of Kanara also benefited from a campaign to raise 'awareness' on a couple of occasions.

According to committee member Tumwesigye, the sessions were not particularly memorable: "They show up every few months, but if you want to bring about a real change, the trainers must visit much more often." Tumwesigye is also not a fan of the alternative payment methods, such as the pre-paid model, which the aid organisations propose to the water committees: "There is no point if we have no authority; the village just doesn't take us seriously."

This is a reason for aid organisations, including the members trained by Watershed, to defend people like Kabuka and Tumwesigye and seek a solution through the administrative route, or by advocating an institutional safety net for water committees. For example, the Ugandan JESE is setting up associations for water users, an umbrella organisation that water committees can join on a voluntary basis.

The idea is that the associations take over some of the work from committees by helping them collect money and plan repairs and carry out the periodic service. "This is how we want to guarantee that the water supply is really sustainable", Ruyondo states. JESE has currently set up three associations, but at the moment the bottleneck is the lack of funding. "We pay everything ourselves right now", Ruyondo reveals. "However, we hope the associations will be sufficiently effective to train the water committees, so that they collect enough funds to be able to pay the staff members of the association."

The Ugandan branch of IRC is now lobbying for a more 'authoritative' version, in the form of local authority water states within the subdistricts. "Our aim is to set up official water departments at the lowest administrative level", says Watsisi.

The water committees can turn to them for support and training, but must also be accountable. Moreover, it is the intention that the water committees will become part of the water department, which means that the committee members will also be paid. Watsisi: "We want to eliminate volunteer work and ensure that the water managers will become professional. This is the only way to improve the committees over time."

Michael Byamukama, who works as a water official in the Kamwegne district, completely agrees. Together with a group of organisations, including IRC and Water For People, he has launched a water department in five subdistricts. "We are still waiting for the green light from the head of each subdistrict and then we can get started."

Well, yes, there is just one major problem: the Ugandan government is not convinced by the plan, which means there is a lack of funding. The fact that this particular cabinet has allocated the highest amount ever to the water portfolio, will not be directly felt by the water committees in the opinion of Watsisi: "As long as we have no proof that the water departments work, the government prefers to invest money in building water infrastructure rather than managing it."

To anyone who has read the political programme of the government party NRM, this comes as no surprise. President Museveni's party writes that its goal is to transfer water management and maintenance again from volunteers back to the authorities.

"However", official Byamukama says with a grimace, "the fact that they have written this down does not mean it will actually happen. Where do they get the money and experts from now? Water management in the countryside always costs too much money and time." The official also dismisses the suggestion to bring the private sector or national water company to the Ugandan province: "That is too expensive and too complicated."

It is clear that rural water management by volunteers has its limitations. However, starting an alternative, such as setting up a water department, is quite an undertaking. But will the lobbying end? "Absolutely not", Watsisi grins. The financial year began in June, so Watsisi has a year to manoeuvre 'his' water departments into the next budget.

He is therefore outlining institutional guidelines and examining with a number of organisations whether they could fund the water departments themselves. "If the government sees the 'train' is starting to move", he says, "it might jump on board after all."

Watershed

Watershed is a programme by the Dutch Ministry of Foreign Affairs and a consortium comprising IRC, Simavi, Wetlands International and Akvo. The project, which runs for five years (2016-'20), is part of the strategic partnerships and focuses on the management and use of water supplies and catchment areas in six countries (Bangladesh, India, Mali, Ghana, Uganda and Kenya).
Its objective is to support social organisations in their role as active champions of water users. This approach enables the consortium to influence government policy and to guarantee quality and sustainable water supplies over time. The programme has entered its second year in Uganda and 24 organisations are receiving training, ranging from data visualisation to lobbying techniques.
They concern lobbying tips provided by Steven Birungi, director of the Ugandan organisation and Watershed member Hewasa.

- **"Tailor your communication.** When you speak with the head of a village, use different language and arguments than those you would use when you are talking with an honoured district politician. You can confront the latter about his election promises or budget, while you should try and convince the head of a village by clearly explaining the consequences of certain customs and traditions in the village. In short, put yourself in the shoes of the person in front of you."
- **"Be patient. In Uganda,** lobbying is more or less viewed as influencing behaviour. Many policymakers currently base their choices on the wishes of local politicians and predominantly focus on water infrastructure. That is obviously very easy to 'sell'. However, we try and persuade officials to make policy choices based on facts. This is a long and complex process. Is a five-year programme enough to turn things around? I wouldn't dare speculate."
- **"Work together.** The programme is still running, but I am already proud of how we collaborate as a consortium, especially at the implementation level. As Ugandan organisations we all have our specific strengths. At Hewasa our strong point is drinking water, JESE excels at integral water management and IRC is extremely skilled in documentation and lobbying work. Since we now form a consortium we maintain contact more closely than before and really work together as water clubs. It's fantastic, because you can easily exchange knowledge and reinforce each other's projects."

In the future, the Ugandan government also wants to place national pipelines in rural areas, such as this common pipeline

"Alright people, *we'll postpone the payment once again*"

"Hey, when is this going to be finished?", a man wearing a baseball cap calls out impatiently. Kabuka and Tumwesigye glance at each other anxiously. The meeting has already lasted an hour and the villagers are becoming impatient. The pair have run through the payment rules one more time, but it does not look like the residents will want to pay the water tax. Tumwesigye hesitantly looks at his chairman, who gives him a timid nod. "Alright people", Tumwesigye exclaims. "We know it's difficult and that you have not brought in the harvest yet. We, the water committee, want to help you: we'll postpone the payment once again." ●

‘By connecting people to the water, you make them part of society’

Judit collector Omaña takes the meter readings in slum Tipolo

Author and photography: Sarah Haaij

Why do the poorest of people pay more for water that’s dirty too? A Dutch-Filipino team is trying to tackle this problem in the Philippine metro, Cebu. The solution sometimes seems unbelievably simple. ‘If people can pay their water bill on a daily basis, it makes a world of difference.’

MCWD employees are studying the new water pipeline plan in Alaska

‘Ajoo, ajoooo’, Judit Omaña’s voice sounds through the slums of Tipolo. Her greeting is answered just as cheerfully, with a laugh or a wave. ‘Today, it is just 27 pesos (0.45 cent, ed.)’, says Omaña, while she shows Suset Garcia her water bill for the past two days. Garcia looks satisfied. Normally, she doesn’t like people who want money from her, but for Omaña she’s happy to make an exception. Since Omaña walks through the neighborhood with her water meter app every day, Garcia has water on tap at home. ‘I used to buy my water at the village pump’, says the mother of three. ‘But I spent a lot more energy and money on that.’

Since being connected to the water supply system, Garcia is charged 1 peso (1.5 cents) for 20 liters of water.’ That’s three times less than before!’, she calculates, while looking around satisfied. Tipolo may be known as an illegal poor district of the city of Cebu, but according to Garcia, that doesn’t mean it must be allowed to fall apart. Her well-kept garden filled with flowers stands out like a small oasis between the waste lying around, and the shacks of her neighbors. ‘I water the plants with our dish-washing and bath water.’ Not a drop of something as precious as water is lost in Tipolo.

Once the account is paid, Omaña continues on her way across the narrow gangways connecting Tipolo’s houses. In this district of the Philippine metro, Cebu, life is lived outside. And in this life, it is all about water. Washing, brushing teeth, showering and cooking; It continues all day long, and preferably on the pavement in front of the makeshift homes. All the while, the little ones walk back and forth with big buckets to supply their mothers with enough water.’

‘Sometimes there were days when we couldn’t drink a drop, but happily my children will never have to go through that again’, says Lenita Dejito while breastfeeding her youngest. Dejito and her family of nine children have no official address, but for the last three years they do have a connection to the water system. ‘And that makes our lives so much easier.’ Omaña shows today’s water usage account on the water meter-app is 30 pesos (50 cents). Dejito has to sigh. Her husband earns about 8 euro per day working as a mechanic. ‘So that’s a lot of money for us’, she says. But we don’t have a choice. ‘The children need clean water.’ She has been grateful for some time that her account can be paid daily. She agrees saving up for a monthly account would not be all that easy. ‘There are always so many reasons why the money is gone.’

Omaña is glad the Dejito family drink the water too. She knows not everyone dares to do that. People are used to buying it in bottles or barrels, they don’t trust the tap system yet. ‘But they can just as well. We check the quality every month.’

Before Omaña started as collector, doing her rounds through the neighborhood for the social enterprise Eau et Vie, she, just like her neighbours from Tipolo, was already up at four a.m. to be on time at the village pump. But the water that was pumped up by a commercial company, tasted salty and the buckets were heavy. Now Omaña still gets up early, but for a different reason. As fixed collector, she must take all the meter readings in the morning. Then she goes on her rounds, going from door to door to collect the water bill. And because people can pay their account daily, more and more Tipoli’s can afford a connection on the network.

‘It may seem like something small’, Omaña says as she pauses in the shade of a canopy. ‘But for us it makes a world of difference.’

Despite the convenience of tap water, it remains a challenge to sign up new customers. In an illegal area like Tipolo, people are used to minding their own business. ‘Neighbors just don’t believe we lay the pipes’, says Omaña. ‘And that you will only have to pay for your connection and the water. ‘Yet that is exactly what we are doing, confirms Chloé Frotin, project leader at Eau et Vie in the Philippines, a French NGO. ‘We provide water in those areas where the municipality’s water network doesn’t reach.’

Eau et Vie does this by setting up local social enterprises to take care of the water supply. In Cebu, this is Tubig Pag-Asa (Water for hope, in Taglog), run by Filipinos, who buy the water from the city water company and distributes this through its own constructed network through informal areas like Tipolo. The clients do however pay for the water. People start with a daily account, then go on to a two-day and weekly account; until they can pay the monthly water bill. The idea is to create the habit to set aside money for water.

‘When we started everyone said: ‘forget it. These people are never going to pay! They are too poor and too unreliable for that’, Chloé Frotin recalls. ‘But we actually wanted to prove that these residents can be regular customers too. If you anticipate their living environment. That they belong to the city. And we did it!’ Certainly, says

Frotin, since they are part of a Dutch funded public-private partnerships; the Sustainable and Resilient Pro-Poor Water Supply Project.

At the Offices of the city of Cebu's water company, the Metro Cebu Water District (MCWD), there is a workplace set up for Briton Patrick Egan. Egan works for the Dutch Vitens Evides International (VEI) and is the project leader of the public-private partnership formed between VEI and the MCDW, Eau et Vie and the Dutch and Philippine Red Cross. Egans' desk is adorned with a laptop and a large water bottle with the sticker 'I drink MCDW water!'. It is characteristic of the enthusiasm the water engineer has for this project. 'It's a fantastic project,' he says directly upon entry. 'At relatively little money (€7.2 million, ed.) we have a great impact on people's lives.'

No losing time on smalltalk, he introduces his water-colleagues at MCDW. Why are the poorest of the poor in the city not connected to the water supply system, and how do we change that? That is the question this team has worked on since 2015; and that's what Egan wants to talk about. The Eau et Vie project with collector Omaña is just one part of the partnership. Another solution the Philippine water company and VEI experiments with, is offering the connection fee on installment. That happens in the poor yet 'official' districts of Cebu, where people have an address. Many families are not able to pay the 82 euro connection charge at once, but spread over twelve months, they might just manage it.

According to Egan, the big win of this project lies in the fact that a semi-public institution like the MCDW extends the possibilities to connect the poor on the water network. Being poor is expensive. 'Just imagine, people now pay up to 5000 pesos (83 euros) per month to the water truck or for bottled water.' So much more than when they would be connected to the network. 'And besides', he adds delicately, 'this is better, cheaper and safer.'

The partnership hopes to thus connect 15 thousand families to MCWD's water system. To facilitate this, quite a few kilometers of new pipeline are constructed towards the poor fringes of the city. Like the district of Alaska, where people live in shacks on stilts, or Inayawan – a neighborhood on top of the largest garbage dump of Cebu.

Due to rising sea levels, the coastal city of Cebu slowly sinks away and the ground water becomes saltier. Some residents seek their salvation on the water, like the district of Alaska. In huts of braided mats on long poles, life happens high above sea level. The overriding smell of stagnant sewage, dried fish and soapy water among the stilt houses doesn't seem to affect anyone, but not having any running water, does seem to bother the residents though. In Alaska, people do however have an address and a water supply point at the edge of their area, but almost no one has water coming from the tap. The 82 euro connection charge constitutes the biggest hurdle.

When Grisilda Cortez heard you may now pay the connection in instalments, she responded right away. A silver tap gleams before her house, and there are five blue water barrels filled to the brim with water. What does she need all that water for? Cortez smiles. As one of the few people with a connection, she sells tap water to her neighbors per litre. Thus, she earns two euros a day. 'If I can earn a bit somewhere, I grab the chance' she says, 'that's how we live here.' Besides her water business, Cortez also has a sari-sari shop, a shop selling cigarettes and sweets, and an old computer that neighbours may use per hour. 'My husband sells dried fish. In the morning, we never know how much money there will be that evening.' Cortez admits it is not always easy to pay the monthly bill, (MCWD doesn't offer a day option as with the Eau et Vie microfinancing, ed.)

However, she still prefers to buy her drinking water bottled. With a wry face, she looks down to where her water pipe bores his way through a thick layer of waste gunk. She is afraid the dirt will contaminate her water. 'Can't that water company do something about that too?'. But that water company takes care of the pipes, the connection point – the new customers will have to maintain the piece of pipe to their houses themselves.

When Egan started the project three years ago in the Philippines, he did not know that the biggest challenge would be the connection itself. 'I thought: we will lay the pipes and people will be hugging us with joy. But this is not how it works.'

The Filipino communities where the partnership works, are very old. All this time, the residents have organised the water in their own way. 'We are there to bring the importance of clean and safe water to life', says Marianne Baltazar of the Philippine Red Cross. As a PPP partner, Baltazar and her colleagues work on the so-called 'soft' side of water in these areas: the information.

There is a presentation in a small neighborhood commission in the unofficial suburb Labogon on water use, washing hands, toilets and waste disposal. Red Cross-volunteers from the area lead the brainstorm session. 'Who has a solution to our waste problem?', volunteer Gina asks the gathered local residents, a cheerful mix of newborn babies, young mothers and village elders.

Baltazar wants to get the message through that water is so much more than a tap. 'We want people to personally discover that water is a closed cycle. That if you dump waste behind your house, or use the bushes as your toilet, you will also pollute your drinking water.'

That water is more than just a tap, the inhabitants of poor districts in Cebu often encounter themselves. Right after brand new blue pipes snaked through Tipolo, an infamous slum fire devastated the nearby neighbourhood. It was all gone: pipes, connections, everything. The 52-year-old Marie Jone Kelong-Kelong still remembers it well. 'It was so scary',' she says with hunched shoulders. That's why Kelong-Kelong is now a member of the new voluntary firefighting team. She displays her fire-fighting set proudly; a long fire extinguishing hose, a water pump, buckets. All made available through the partnership. Should a fire break out now, she knows what to do. 'I have already put one out, a few houses away.' Kelong-Kelong points towards the still visible soot spots. In a long chain, she and her neighbors pass on buckets full of water. 'Previously, I didn't know what to do, but after the training I'm no longer afraid. My mind remains clear. I grab my fire hose and I rush towards it.'

In ten years' time there will be a well-flowing water project *that I can proudly show to my daughter*

The Eau et Vie water network in Tipolo has since been restored. Marie Jone's voluntary fire brigade team guards the neighborhood. But that doesn't protect an illegal settlement like Tipolo against other threats; the Government can for instance always force an illegal area to relocate. The question arises whether this approach is sustainable. Should you be investing in permanent water systems in a slum? Yes, is the resolute reply of those involved, people in an informal area also have a right to water. 'Access to water saves people time and money,' says Egan. 'People remain healthier and they can work better. All things helping them to move forward.'

'We always do our homework very meticulously,' says Frotin (Eau et Vie) on a bench in the main square of Tipolo. 'We will only enter a district if we are quite sure there are no relocation plans.' They would actually prefer to change those plans, because when you link people to the water, you make them part of your society. 'We show the Government there are people living here with the same human rights as everyone else.'

That the poorest of the poor also have to pay for their water is an essential part of this vision. If people pay for a service, it generates ownership and responsibility. The water experts know, just putting something down for free, and then departing, makes no sense. The decayed toilet-block of Tipolo, once donated by a well-meaning NGO, is the sad proof of that.

Thanks to the partnership, 600 households are since connected on the Cebu-water network. When the water pipes are all in place at the end of next year, that number will increase to 10 thousand. It will still be a while, but for Egan that doesn't matter.

'Everything we do in this project, is based on the thought: what about ten years from now, what will our investment look like then?' Without awaiting a response, Egan elaborates on his question: 'I'll tell you: in ten years' time, there will be a properly running water project that I can show to my daughter with pride.' ●

The Red Cross in Cebu for a wash-awareness session

Lenita Dejito and her 9 children now have water from the tap

Water supply system

How do you connect 80.000 poor residents of a Philippine metropolis on the city's water supply system? The Sustainable and Resilient Pro-Poor Water Supply project in Cebu is a public-private partnership (PPP) dealing with this question. By cutting the water bill and the fixed connection charges into bits, clean water becomes affordable for the poorest inhabitants too.

The partnership consists of Vitens Evides International (VEI), Metro Cebu Water District (MCWD), RVO Nederland, the Dutch and Philippine Red Cross and the French NGO Eau et Vie, and has 7.2 million euros available. More than half of that budget, EUR 4 million, comes from the Ministry of Foreign Affairs and implementation partner RVO; a development grant from the Sustainable Water Fund (FDW). Metro Cebu Water District itself made 2.2 million available; VEI 750,000 euro and the Red Cross 300 thousand euros.

The PPP has three new financing forms to facilitate access to water:

- 10,000 households in poor areas of the city are given the option to pay off their water-connection charge of €82 in twelve installments. The PPP also finances 50% of the new water pipes installed by Cebu City for this purpose.
- Through additional funding, 4,000 of the poorest families will receive a 60 percent subsidy on the connection fees.
- Via Eau et Vie, 2,500 families in illegal slums are given the chance to pay their water bill on a daily basis.

The Red Cross partners also raise awareness in the vulnerable communities about water, sanitation and hygiene.

THEME 3

Sustainable *deltas*

© Michel Tonnetjck

Noblesse oblige or self-interest?

Daniëlle Hirsch, director of Both ENDS

Deltas are complex hubs of water and trade, man and the environment, ideals and interests – just try and design an integral delta plan that accommodates all these aspects. What are the underlying ideals and driving forces? A dialogue between Daniëlle Hirsch of Both ENDS and Henk Ovink, the country's first water envoy.

Author: Manon Stravens

If deltas all over the world are the areas where extremes will become increasingly extreme, the Oosterschelde (Eastern Scheldt) in Zeeland shows no signs of this whatsoever. Sail in a small boat along one of the thirteen delta works, on calm water, in the sun and surrounded by brazen seagulls, and the Dutch battle against the water seems to be a thing of the past.

Centuries ago, in our Dutch delta farmers quarrelled about the water level, and nature conservationists, politicians and fishermen became concerned about the effects of the delta works on the ecosystem following the North Sea Flood of 1953. This is the basis of the water boards and the knowledge of water and delta management which the Netherlands is exporting all over the world, in Vietnam and Mozambique, in Argentina and New York.

In doing so, the Netherlands is praised, but also criticised, as revealed in a discussion with Henk Ovink, who was appointed as the country's first water envoy in 2015, and Daniëlle Hirsch, director of the environmental and human rights organisation Both ENDS.

"You can say what you like about the delta works, but it is a global model of how things can be done", Hirsch says. "And it's not so much about engineering, but rather the entire socio-political process of which the delta works are the result. This is why there were no dams, but ingenious locks that can be opened and closed. Due to the polder model there is now a system that works more or less effectively."

Ovink adds that this model is deeply rooted in the Dutch water history. "The Netherlands was already a water democracy before we became a country or a kingdom. In medieval times, when we built houses on mounds. The first water boards, a democratic institute, were founded in the 12th century."

Delta knowledge and technology is something the two of them believe is desperately needed. "This is because all over the world deltas are increasingly becoming areas of tension due to urbanisation, population growth and climate change ", Ovink explains, who has a long record in water policy, planning and advice. He does not want to lump the deltas all together, but points out a number of parallels. "As a result of their accessibility, fertile soil, water supply and coastal climate, deltas are extremely appealing places to live and invest in, but we also destroy them with dams, channelling, agriculture and industry."

The average income is increasing, at the same time the gap between the rich and poor is growing, as is the pressure on natural resources. Ovink: "There are still over two billion people who have no access to clean water. That is appalling."

Hirsch adds that deltas are also playing an increasingly important role in the global economy. "They are hubs where international chains converge, from which domestic production is transported to the global market. Simultaneously forests are cleared and dams are built for the global economy, which results in degradation." As a result deltas are not only hotspots for development and investment, but have also become hotbeds for crises and conflicts of interest.

> **"Deltas do not respect** *borders set up by man."*

Ovink: "The interests are trans-boundary, because deltas do not respect borders designed by man. Water connects, because it touches everything. A lack of water causes problems related to health, gender and security, and results in social inequality. This offers opportunities for integration, but also increases mutual independence between the different countries. "Major economic interests conflict with society and the environment, according to the water envoy.

What could a small country like the Netherlands, with its peaceful, bird-rich and dammed coastal waters, offer these areas? "Only a fraction of water enters Lobith compared to the flows in the Ganges and the Brahmaputra in Bangladesh", according to Hirsch. "These riverbeds regularly change their course over a distance of two hundred kilometres, entire areas are flooded every year. They can hardly be stopped, they are so strong that they just push concrete blocks away. You cannot make an effective contribution there with infrastructure alone."

Ovink adds that the Netherlands must keep its promise because of the global objectives that have been formulated and the Paris Climate Agreement. "There is a collective responsibility to ensure that adequate knowledge, expertise and money is available to tackle the delta issue on a global scale."

Hirsch states that self-interest goes beyond *noblesse oblige*. "The Netherlands also has serious economic interests in these delta areas. We are leaders in port development, with our construction and dredging companies. Our financial sector is constantly seeking new investment opportunities, in large-scale infrastructure and the fossil economy, because of its return." According to Hirsch, the Netherlands does not just simply want the best for the world. "There is a major public-private *push* behind it all."

Henk Ovink, the first Dutch water envoy

Hirsch says that these investments could be interesting for delta residents, "but you have to organise it in such a way that they can benefit from this." The Netherlands does not always succeed in doing so. In Bangladesh the polders and dikes, according to the Dutch model, can no longer cope with the increasingly powerful floods. And in Jakarta fishermen risk losing their socio-economic security due to the construction of a large seawall, to protect the city from the effects of subsidence. "Their voice", Hirsch says, "was insufficiently heard."

According to her, the Netherlands places too much emphasis on technology and infrastructure and too little on the socio-political side of the water issue. In other words: bringing together all the players, joint negotiations and seeking the best solutions. "While this is where the strength of the Dutch model lies." The principles of participation and the rights of women, crucial pillars for effective water management in Hirsch's view, are embedded in the analysis and mission of the Dutch water ambition, but fade into the background when worked out in practice.

And, in Hirsch's opinion, that is wrong. "After all, it is precisely in the deltas, with their complexity and conflicting interests, where you see social cohesion being eroded." And cohesion is necessary for finding solutions. "In many deltas carrying out more small-scale interventions will achieve more than immediately constructing dams and dikes everywhere."

Hirsch supports a bottom-up approach and decision-making process, which Both ENDS also applies in its land- and water-management programmes. "When you come together, jointly consider the interests, negotiate and combine this with the technical ingenuity and creativity of Dutch knowledge institutions and engineering firms, you will find interesting solutions", according to Hirsch. "Not everyone needs to totally agree with the outcome." That is also how we do it in the Netherlands: "Local residents together reflect on how they want to collect water with the support of urban water services."

Ovink says that it is certainly not only about the engineering approach. "If there's

one country that has learned that a decision taken from the top-down fails, especially in terms of infrastructure, it's the Netherlands." Integration, transparency, inclusiveness and capacity reinforcement, sustainability and collaboration are paramount in the Dutch delta approach, with a long-term vision and short-term results.

"In many deltas carrying out more small-scale interventions *will achieve more than immediately constructing dams and dikes everywhere"*

The Dutch culture of life in the delta cannot simply be transposed all over the world, but could reinforce the global approach to deltas. "These are tense processes", Ovink knows, having been fully involved in delta planning worldwide. "This is because there are many different interests in a delta area. And people must understand each decision and every spent dollar and be held accountable in this respect."

Hirsch explains that Both ENDS starts from the bottom-up. "We identify the problem and potential solutions with all the actors, including representatives of women's groups, residents of slums, local authorities and the industry." The best solution is determined based on this analysis.

"If you can carry out such a negotiating process at twenty places along a river", Hirsch says, "you build up a basis of knowledge and experience." This was evident in a tributary of the Krishna in India, where old water collection and management systems were repaired thanks to local knowledge. Though she immediately adds: "We are not sure yet if this approach is scalable. That remains to be seen."

Ovink responds by saying that this kind of bottom-up approach risks fragmentation. "Then you have thousands of bottom-up initiatives that may interfere with each other and you still forget certain parties. I always try to place integrality and connectedness on the agenda, not bottom-up or top-down; it is clear that with a horizontal process you create added value."

The key is to find a way to organise trust, space and methods for this collaboration while considering all interests, which is increasingly difficult, according to Ovink, because he also sees that connectedness and social cohesion are declining in the deltas. "All parties ignore the complexity. The focus on simple solutions is far too great."

A blueprint does not work in delta planning, according to Ovink. "Each delta is unique. You must start with understanding the complexity of the area and then not only examine the rivers, ecosystem and their value, but also the human interventions." Ovink believes that this insight into the complexity of a delta and the willingness to place it on the agenda is very important for a plan to be successful: "You cannot fiddle with a system without understanding it or placing it in a perspective."

When you want to involve all players in the planning process from the very start, Hirsch explains, you must invest time and money in people who are not used to being heard. "You must prepare them to come up with good solutions."

At present she does not see this happen too much. "Local organisations are either involved in the process at a late stage, or not at all. Reality in many countries sometimes makes it complicated; diplomats or (business) partners of the authorities in Indonesia are deemed not to talk to local, social organisations. Or you have to cope with twenty local authorities and at least as many NGOs and other interest groups, such as cooperatives of fishermen and farmers. You have to talk to them and take their knowledge, experience and ideas seriously in order to find better solutions."

Hirsch recommends performing effective risk analyses, in particular about land and human rights, then you will know what to expect. "The elite in many countries do not always act in the best interests of their people."

Ovink agrees with Hirsch that the Dutch strength lies in the inclusive and integral process, and that this process is weakened across the border. Sometimes Ovink is "flabbergasted" about how "interests are fragmented", something which he believes every party is guilty of. "Countries that fight each other over water rights, risk-avoiding companies that miss sustainable opportunities and exclude parties, NGOs with blinkered views, which prioritise their own interest group, investors that cannot innovate, etc."

Then try to seek a common denominator, which will benefit everyone. In short: delta planners take the 'slow but sure' approach and regularly hold 'serious discussions' when parties want to go their own way. "We reinvent diplomacy every day."

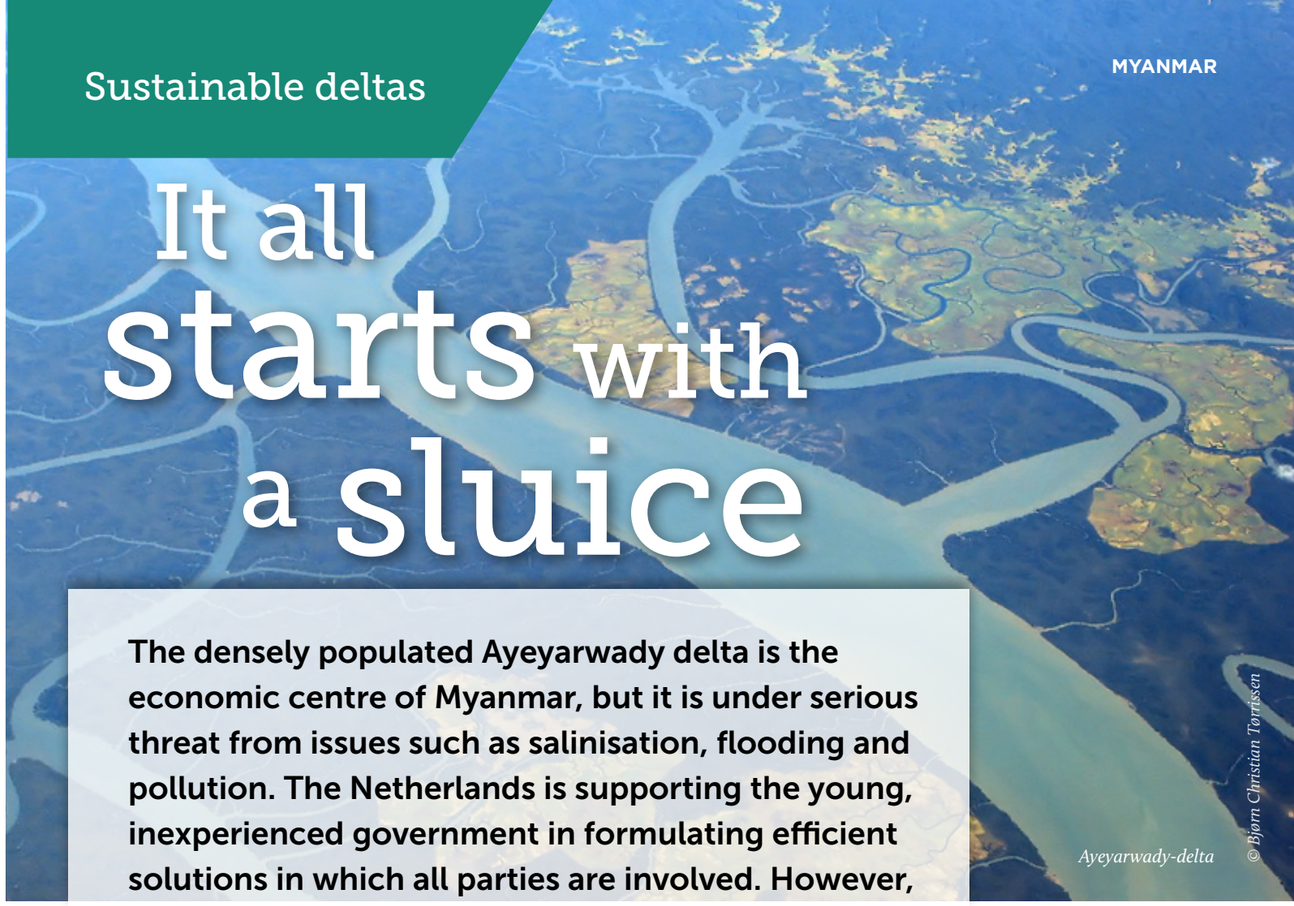
Ovink says that you should not expect the plans to be set in stone from day one. "Developing the Dutch delta plans, including specific details for their implementation, also took years. At times we do not allow others to take their time, and that is stupid. At the same time you want everyone to be safe right now and invest in a sustainable way. You must therefore view the Bengali or Mozambique plans as the basis for a common language and an assessment framework for developing projects and investments, which will only follow at a later stage."

Ovink adds that once a plan is ready and has been approved, things will continue to be tense. "Parties must demonstrate ownership, otherwise the process grinds to a halt and everyone just ends up looking at each other. This requires a continuous commitment and sometimes you have to shake up things a bit. You have to explain and to organise matters in such a way that it is workable, for everyone and with everyone. Because I want everyone to be fully committed to such a plan." ●

Daniëlle Hirsch is an environmental economist, board member of the Netherlands Water Partnership and since 2008 she has been director of Both ENDS, which strives for sustainable development worldwide. Both ENDS reinforces and collaborates with a global network of interest organisations, activists and researchers, to defend the right of using nature and the environment. Before joining Both ENDS she lived and worked for three years in South America. When she returned to the Netherlands she worked as an international consultant for a Delft engineering firm, specialised in water and coastal management.

Henk Ovink, a water envoy, is the figurehead of the Dutch water sector. His task is economic diplomacy, to achieve good relationships between foreign governments, companies, interest organisations and donors. Ovink was previously an adviser to President Obama's Hurricane Sandy Rebuilding Task Force and acting Director-General of Space and Water and Director of National Spatial Planning at the Ministry of Infrastructure and Water Management. Ovink is also involved in various research programmes and academic institutes.

It all starts with a sluice



Ayeyarwady-delta

© Bjørn Christian Tørrissen

The densely populated Ayeyarwady delta is the economic centre of Myanmar, but it is under serious threat from issues such as salinisation, flooding and pollution. The Netherlands is supporting the young, inexperienced government in formulating efficient solutions in which all parties are involved. However, is Myanmar ready for an integrated strategy?

Author: Bente Meindertsma

A heavy monsoon rain shower causes the streets of Yangon to flood. The busy Friday afternoon traffic slowly navigates its way through the deep puddles. Men and women wearing flip-flops wade through the brown water; plastic waste has accumulated in the drainage channels along the road. The rapid growth of Myanmar's economic centre places such a heavy strain on the water supply, drainage and sewer system, that during the monsoon season flooding is the order of the day.

The city is located on the edge of the Ayeyarwady delta, the most densely populated area in Myanmar. The Ayeyarwady river springs from the foothills of the Himalayas and traverses the country from north to south. The flow widens in the delta, to a water surface over a kilometre wide in some parts, and branches into many tributaries.

Ten years ago, in early May 2008, the devastating cyclone Nargis ravaged the area. Many villages and towns were swept away, official figures estimate the number of people that lost their lives in the disaster to be 138,000, although most sources believe the actual figure was much higher.

The delta is still vulnerable. Population growth and economic activities place the area under pressure, the consequences of climate change, such as the rise in the sea level and extreme rainfall, pose a threat. According to the *Global Climate Risk Index 2016* Myanmar is the second most vulnerable country with regard to the effects of climate change, such as storms and floods.

Three different ministries are tackling the problems with their own measures, but all these individual interventions do not provide an effective response to the problem. An integrated approach is required. This requires some effort from the departments, because they are used to strictly focus on their own part of the delta. The Ministry of Transport focuses on the navigability of the river, Agriculture is mainly interested in irrigation and Forestry is concerned with the mangrove forests.

"With our centuries of experience in managing an economically important delta, we are the ideal party to help Myanmar develop a strategy for the Ayeyarwady", according to Huub Buise, Deputy Ambassador in Yangon. "I see many similarities, but while the Netherlands had the luxury of gaining experience in a relatively sparsely populated area, the population pressure is far greater here and Myanmar suffers much more from the effects of climate change."

In 2013 the Netherlands and Myanmar signed a memorandum to formalise the collaboration related to integral water management. Support for the problem in the delta is an important factor. Zaw

Monsoon-season in Yangon, Myanmar

Lwin Tun, director of the Myanmar Water Partnership, very much appreciates the integrated approach. “The Netherlands involves all the relevant ministries”, he explains, “while a country like South Korea develops a plan with just one ministry.”

Buise: “Although the need to undertake action quickly is much more urgent here, I think that Myanmar can learn from the Netherlands that you shouldn’t do anything in haste. You shouldn’t be under the illusion that you can protect everything.” The art is to achieve your goals such as safety, irrigation, drinking water and sanitation, with smart measures.

A year and a half ago, a consortium of Dutch companies and knowledge institutions, led by Arcadis, developed the Integrated Ayeyarwady Delta Strategy (IADS), with funding from the Partners for Water programme. All the important parties in the delta were involved: rural ministries, local governing agencies and NGOs. “It was a major challenge in the beginning”, recalls Tanya Huizer. “The agencies were not used to collaborating with people from outside their department.”

As project leader at Arcadis, Huizer has led dozens of consultation meetings. “I particularly enjoyed bringing lower officials from different departments together,” Huizer reveals, “because it is virtually impossible for them to look beyond the walls of their particular ministry.”

Permission has to be sought from the highest administrative authority for everything in the hierarchical country of Myanmar. “We immediately compiled mixed working groups”, she says. “It was tough at first, but I believe that the idea of cooperation did sink in at many departments.” The participants finally formalised their priorities together.

The result is a vision for the delta with which all parties are able to identify. The IADS describes perspectives for the short, medium and long term that will lead to a safe, prosperous and sustainable delta. Ranging from preserving ecosystems to developing climate-smart farming.

A study trip will soon take place involving seventeen officials from six departments from Myanmar to the Mekong delta, where they will witness the best of climate change adaptation, especially its integration in farming. To do so they will visit local farms and talk with the authorities.

The National Water Resources Committee (NWRC) has been involved from the beginning; it is a cooperation partnership that includes all departments from the main ministries that are active in the delta. “The vice president is chair of the committee, which is why we rank higher than the ministries and have the mandate for aligning projects such as IADS”, Htun Lwin Oo says, secretary of the NWRC.

“Fish breeders secretly seal off drainage channels *and rice farmers try to bribe local officials”*

I visit him at the directorate for Water Sources and the Improvement of River Systems, of which Htun Lwin Oo is director general. In order to get to the entrance my taxi has to struggle through about hundred metres of knee-deep, brown water. Htun Lwin Oo explains that the flooding is caused by the high tide. When there is a serious monsoon rain shower, there is nowhere for the water to go.

Encroaching seawater constitutes a threat to the whole of the low-lying delta. “In the lowest-lying area we need enough freshwater to keep the seawater at bay”, Zaw Lwin Tun from the Myanmar Water Partnership explains. “When too much water is consumed in the higher-lying areas the salty water enters the delta and makes agricultural fields unusable.” He provides examples of conflicting interests that are difficult to reconcile, even within his own Department of Irrigation.

Along the long, flat road to the west coast the battle between the economic activities is clearly visible. Brown ponds surrounded by small muddy dikes can be seen everywhere. Now that aquaculture is taking off in Myanmar, these breeding ponds form a new source of income for the area, which has traditionally been dominated by rice cultivation. However, during the rainy season, the interests of the rice farmers and the fish breeders clash head on.

“The rice farmers want to drain off all the extra water through drainage channels as quickly as possible, while the fish breeders want to retain it in their ponds”, Zaw Lwin Tun reveals. “Both groups have to make concessions, but try to avoid this. Fish breeders secretly seal off drainage channels and rice farmers try and bribe local officials, so that the water level is low enough to grow rice for the entire duration of the monsoon season.”

In the future there will have to be specific agreements about combating salinisation and the correct degree of irrigation and drainage; at the moment the IADS has a more general vision. The report about phase one states that due to the lack of adequate data it is currently impossible to formulate measures. It could be the basis for a master plan, including an investment agenda, but there is still a long way to go.

“It is crucial that the IADS is linked to an investment plan”, states Buise. “Otherwise it is destined to remain a Mercedes without petrol.” The ambassador is working towards a link with the River Basin Master Plan, in which the World Bank is investing a hundred million dollars to develop a strong, integrated and climate-proof management of the entire Ayeyarwady river, including the delta. The IADS report proposes measures for moving a step closer to an investment plan.

To what extent is the IADS also viewed as an overarching strategy by the Myanmar government and other donors? The Netherlands advocates an integrated approach, but the resources for supporting the implementation of the proposed measures are negligible compared with the staggering investments by China, South Korea and Japan. South Korea is investing 61 million dollars in navigability and protection against erosion and flooding in the Twante Canal, Japan is spending 55 million dollars on developing a port in the Ayeyarwady river.

“Aung San Suu Kyi’s government is feeling the pressure to invest”, Huub Buise acknowledges. “Following the disappointing results of the first two years she has two more years to prove herself, and the Chinese, Japanese and Koreans are eager to jump on board.” The first democratic government elected for over fifty years also lacks the capacity to effectively manage the interests and initiatives. “We try and place the government in the *driver’s seat*“, Buise explains, “so that it takes control and ensures that the various plans are aligned.”

The NWRC strives to fulfil this role in an optimal way. “We meet every other month to discuss the donor programmes and decide which ministries will support the different donors,” Htun Lwin Oo continues. “However, we do not have much experience yet, because we could only start working with international donors again in 2010. Therefore, our capacity is limited to clearly formulate our questions and needs.”

Buise is also afraid that the young government currently lacks the capacity and overview to effectively coordinate the plans. “The only thing we can do is continue the dialogue”, he says. “There’s no point in opposing China’s plans.”

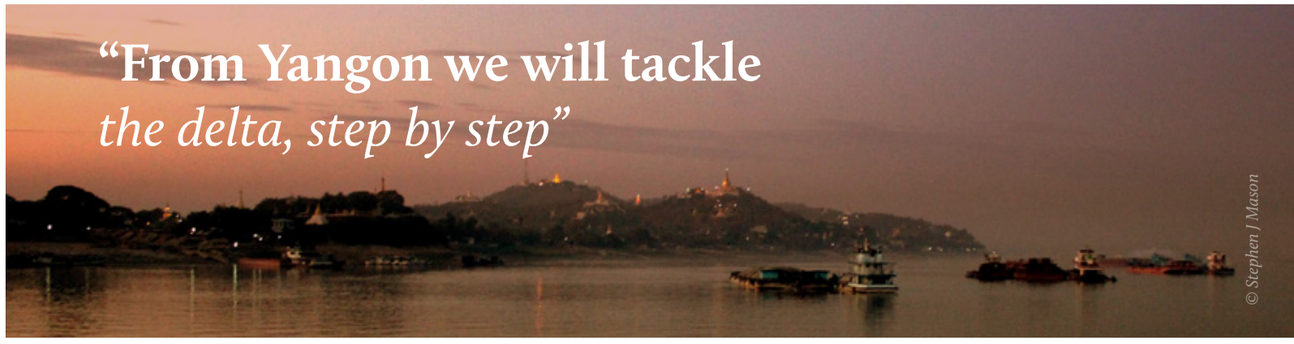
“Strategy development is a slow process that is difficult to comprehend, and in which few tangible results are apparent in the beginning”, Huizer explains. “However, Myanmar wants to see rapid and concrete results.”

Zaw Lwin Tun and his colleagues regularly wonder when all the donors will actually do something. “Until now everyone especially focuses on developing feasibility studies and plans”, he adds. “They come and request data over and over again, something my colleagues are becoming rather tired of. The next research committee can come and ask the geckoes sitting on the wall here for information”, he exclaims, roaring with laughter. “They have heard it all so many times that they can now pass it on.”

Even though there still is no overarching master plan and investment agenda, the Netherlands is already addressing specific issues that emerge from the strategies of different players in the delta, such as the planning and construction of a sluice in the Pan Hlaing river to the west of Yangon.

Several problems come together with regard to this river, such as waste water from an industrial zone, the uncontrolled growth of local construction and the risk of major water flows. “It’s not that difficult to build a sluice”, Buise explains. “In this area we can demonstrate how you can achieve a number of objectives with the aid of a well-thought-out strategy: combating salinisation, irrigation for farming and ensuring the population’s safety.”

Zaw Lwin Tun and Htun Lwin Oo are both supporters of specific pilot projects that are consistent with the integrated strategy, and which allow the Netherlands to set a good example. One such project is the planned Pan Hlaing sluice: it could form the basis for developing an integrated approach. Zaw Lwin Tun concludes, full of self-confidence: “From Yangon we will tackle the delta, step by step.” ●



‘Delta planning is the art of seduction’

Vegetable transport on the Mekong at My Tho

The Mekong Delta risks drowning in its own success as Vietnam’s agricultural growth engine. Since 2010 Dutch and Vietnamese experts have jointly worked on making the delta future-proof, but the complexity of the problems and political interests seem to be standing in the way of structural change. Will it be possible to turn the tide?

Author: Siri Lijfering
Photographer: Michel Tonneijck

‘Amsterdam that large city, built on poles. Who would pay if it all fell down?’ This famous verse refers to the vulnerability of our capital city, which is built on a marshy peat bog. But while Amsterdam residents have no need to worry about their living environment disappearing into the water, this fear is part of everyday life for the seventeen million inhabitants of the Vietnamese Mekong Delta.

The delta’s riverbank is gradually being swallowed by the river due to extreme weather conditions in which persistent drought, heavy rainfall and flooding alternate. In May, parts of the riverbank broke off in multiple places and dozens of houses and roads were swept away in the process.

Koos Neefjes, climate expert and director of consultancy firm Climate Sense, has lived and worked in the region for twenty-five years, and has witnessed several floods: “It might be spectacular watching a whole row of houses simply tumble into the river, but it is heartbreaking for the population that have watched their property and possessions suddenly disappear.”

The network of rivers on which the inhabitants sell their wares, on the ‘floating market’, not only offers unique photographic material for the 22 million tourists that visit the delta every year, it is also an important source of income for the area’s residents. Besides fruit, fish and shrimps, the delta produces half of all the rice in the country. Therefore the Mekong Delta is Vietnam’s granary and the country is largely dependent on the area.

At first glance the problems in the Mekong Delta appear to have an obvious cause: climate change. But if you look more closely, you will see that the causes of the problems are just the same tangle as the network of rivers.

Take the mega dams that have emerged in recent decades. The Mekong River has its source on the Tibetan Plateau and flows through Myanmar, Laos, Thailand and Cambodia to finally branch off through Vietnam into nine distributaries ending up in the sea. This is how the river got its nickname; the Nine-Headed Dragon.

China uses the river to generate power to meet the energy demand of its growing population; in recent years it has built six large hydropower plants, and in the meanwhile Cambodia, Laos and Thailand are doing the same. All these megadams involve major risks. At the end of July a fracture in the Xepian-Xe Nam Noy dam in Laos caused a disaster in which dozens of people lost their lives and over seven thousand houses were destroyed.

However, according to the Vietnamese Nguyen Huu Thien, ecologist and consultant for IUCN, it is not the main reason that the hydropower plants constitute a threat to the delta: “The construction of dams disturbs the journeys made by fish and the flows of sediment to lower-lying areas. This has a serious impact on biodiversity in the river and the soil’s fertility. If we do not do something to stop it, the delta will be lost for ever.”

The Vietnamese themselves also contribute to the problems in the Mekong Delta. Illegal sand extraction, disappearing riparian vegetation and stern waves from large vessels are causing riverbank erosion. Mangrove forests, which are a weapon against coastal erosion, are increasingly under pressure due to illegal logging and blocked deposits of the coast as a result of reduced sediment discharge from the branches of the Mekong. Moreover, saltwater intrusion causes salinisation of the rivers, which means that during the dry season farmers have to use groundwater for their farming activities ever more frequently, which causes land subsidence.

As a result of these problems, combined with the rising sea level, the delta is extra susceptible to flooding. “If we continue like this, in two hundred years the Mekong Delta will no longer exist,” Nguyen warns. “If we want to ensure a future for the delta we need to act now.”

In response to this message a special team of Dutch experts came together in 2010 under Partners for Water 3, to study the problems in the delta in greater detail and make specific recommendations for a sustainable approach. The programme, funded by the Netherlands Enterprise Agency (RVO), is in line with the strategic partnership between the Netherlands and Vietnam. Cees Veerman, former Minister of Agriculture and former chairman of the Second Delta Committee, was appointed special advisor to the Vietnamese government in this context.

> **“If we continue like this,** *the Mekong delta will no longer exist in two centuries”*

Martijn van de Groep, director of Water.nl, coordinated the Dutch efforts in the delta, which involved Royal HaskoningDHV, Wageningen University, Deltares and Rebel. “The Partners for Water programme”, Van de Groep explains, “started as a traditional water management project, but during the project we discovered that it actually concerned initiating an agricultural transition that would lead to a sustainable delta.”

This was also the main conclusion of the Mekong Delta Plan, which the team delivered in 2013. “The delta”, Van de Groep continues, “offers considerable agricultural potential, but as a result of the wrong policy choices the opportunities were not optimally used and farming has become a cause of the problem. In recent decades an increasing number of Vietnamese farmers closed off their land with dikes, so they could harvest rice three times a year instead of twice.”

As a result the soil no longer received its annual flushing and nutrient-rich sediments were kept out, which impoverishes the soil. “This means farmers have to use more pesticides and artificial fertilisers, which results in serious water pollution.”

Nguyen Huu Thien grew up as the son of a farmer in the delta and remembers how he used to swim between the rice fields and drank water directly from the river. “You

The floating market of Phong Dien

really can't do that these days. I wouldn't even wash my clothes in it!"

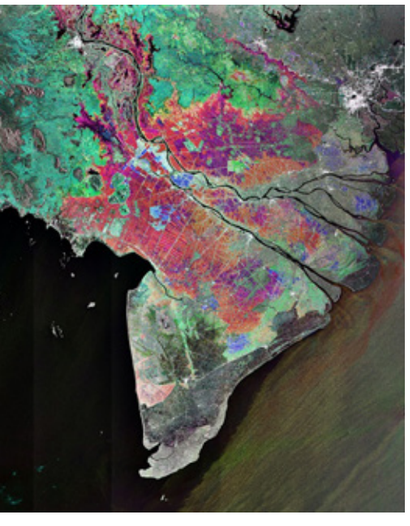
Although Nguyen agrees with the conclusions in the Delta Plan, he proposes to look at it from a historic perspective. The end of the Vietnam War, or the American War, as it is referred to in Vietnam, heralded a period of Communist reforms that subjected the delta to strict production quotas and forced farmers to organise themselves in state-controlled cooperatives.

These economic measures, in combination with trade embargoes by the West and the debt that Vietnam had to pay to China and the Soviet Union, led to a period of economic stagnation and extreme famine. Therefore, the Vietnamese government announced economic and political reforms in 1986, known as *Doi Moi: the Renovation.*

The Mekong Delta became the growth engine, whereby the government focused on the quantity of the rice production instead of on the quality, in order to improve the country's food security. Vietnam quickly grew to become the second largest rice exporter in the world and in 2007 the Socialist Republic was even admitted to the World Trade Organisation.

"The rice intensification helped our country rise out of poverty," Nguyen reveals, "but this approach is now catching up with us. The delta farmers were better off twenty years ago than they are today; production costs have become so high due to dike maintenance and the purchase of pesticides that they can barely make a living from their land. You also see large migration flows to cities such as Ho Chi Minh, because people no longer see a future in the delta."

Vietnam's Mekong delta



According to Van de Groep, this is why it is vital that investments are made in developing value chains: "Rice is currently transported from the delta to the surrounding provinces, where value is added through processing, packing and export. If you further develop the farming industry in the Mekong Delta itself, this would provide jobs and there would be more left over for the farmers."

"Allowing planned flooding of the land may be fun to watch on tv, *but is less appealing when your kitchen is flooded for a month"*

Moreover, the report pointed to reversing rice intensification by allowing planned flooding to take place, so that the soil's fertility could be restored.

However, Michel Tonneijck, project manager at Royal HaskoningDHV, had to get used to this approach: "As an engineer you focus on preventing flooding by offering smart technical solutions. Now, we had to examine the usefulness of flooding and approach the problem from a more systemic perspective."

Van de Groep believes this is where the strength of the Delta Plan and the Dutch contribution lies: "The conclusions we put forward were not new, but by linking all these developments and presenting a total picture, we were able to reflect on delta plans and potential solutions for the Mekong Delta in a more systematic way."

At first the conclusions were not welcomed with open arms and the Delta Plan was met with opposition, both by the authorities and by the inhabitants of the delta. Neefjes explains: "The suggestion to allow the land to flood once a year sounds great on paper and is delightful to see when viewed from a plane or on television, but is less appealing when your home and your kitchen is flooded for a month, or when you are forced to live on the roof. The Vietnamese want to feel safe, like everyone else, and this is not possible if you flood part of their living environment every year."

Tonneijck recalls that besides the concerns of citizens the conclusions were also difficult for Vietnamese policymakers: "The rice trade is still largely in the hands of the Communist Party, which has an interest in increasing production to safeguard the country's economic growth. The conclusion that farmers would only be able to harvest rice twice a year instead of the desired three times, was diametrically opposed."

In Nguyen's opinion other interests also play a role: "Engineering firms dominated state policy for years. They invested in major infrastructural projects, because they are the most lucrative." According to Nguyen, the new approach that was proposed in the Delta Plan also requires a change in mentality for which not everyone is ready yet.

In order to ensure that the main conclusions in the report were actually adopted by the Vietnamese government, the Partners for Water team decided not to issue any administrative recommendations, but outline scenarios related to the potential outcomes of the measures.

Tonneijck: 'In Vietnam I learned that delta planning is the art of seduction. You create a fairytale of how the future could look a hundred years from now and which developments are possible. Afterwards you reason what has to be done to turn the dream into reality, and only then can you talk about reforms."

Tonneijck is well aware that diplomacy is needed to bring about a structural change: "In the past the Vietnamese have thrown out the Chinese, the French and the Americans, so how do we know they wouldn't do the same with the Dutch? We didn't want to make that mistake."

This is why Tonneijck believes that ownership of the plans has to lie with the authorities, so that they are also responsible for implementing the plan. Professor Dao Xuan Hoc, water expert and former Minister of Agriculture, confirms this: "We respect the Dutch expertise and can learn much from the way in which you have conquered the water, but Vietnam is not the Netherlands. Here there are many other matters you also have to take into account if you want to successfully implement a plan."

Floating market Cai Rang, in Can Tho

Rice workers north of Chau Doc, near the Cambodian border

This is why Dao believes it is necessary to not only work together bilaterally, but also build up joint research capacity. "In recent years Vietnam has trained many experts in the field of water and delta management. They can help develop a plan that is not only consistent with the scientific frameworks, but also with the social and cultural context of Vietnam."

Tonneijck agrees: "It is arrogant to think that our system is good for every other country. There are so many nuances which we as foreigners do not see right away, it it is an illusion to believe we know what is right for a country better than the people themselves. The only thing we can do is present suggestions that are tempting and then the people have to consider what to do with them."

According to Van de Groep, one strategy for putting forward the conclusions was to create broad support for the plan. "First we mainly worked at government level with Vietnam at the Ministry of Natural Resources and Environment and the Ministry of Agriculture. In terms of the aid and trade approach of The Hague, Vietnam is a transition country, which means that the government itself must contribute to realising the project. In practice this did not happen, which meant we had to seek cooperation with organisations outside the government."

The main party was the World Bank, which endorsed the conclusions of the Delta Plan and even linked an investment plan of 350 million dollars to it. Ghanaian Victoria Kwakwa, former director for Vietnam, signed a letter of support for the plan. Van de Groep believes this smoothed the way for cooperation with the Vietnamese State and led to the adoption of the main conclusions in the national Delta Approach.

The process required a great deal of patience and efficiency. Tonneijck: "In terms of funding and trade perspectives we cannot compete with other donors. We cannot compete with the Germans, who not only have a lot of money, but also bring along companies such as Mercedes and Siemens, or with the World Bank, which offers multi-million investments. Compared with these parties the Dutch contribution is small change. However, based on content and effectiveness we certainly play a role. With the Partners for Water project the Netherlands demonstrates that you can achieve major results even with a small budget."

This approach is consistent with the objectives of the Partners for Water programme, which the Dutch contribution also views as an opportunity to reinforce the position as BV Nederland in the region: "Water as a foot in the door", as Melanie Schultz stated. According to the former Minister of Infrastructure and the Environment, Dutch efforts in Vietnam constitute 'noblesse oblige'. Schultz: "The Netherlands could fulfil a unique role in increasing water safety in the world. Not only because we can, but because we want to, and must."

In this context a trade mission was organised to Vietnam earlier this year, in which 45 Dutch businesses led by VNO-NCW and Sigrid Kaag, who is the Minister for Foreign Trade and Development Cooperation, could meet potential partners in Hanoi and Ho Chi Minh City.

However, at present the Dutch investment still does not seem to be paying off in direct tenders for projects from the Vietnamese authorities. "For a country like Vietnam the bill is too high to initiate this kind of project alone", Tonneijck explains. "You can recruit five Vietnamese for a whole month for the daily rate demanded by Dutch experts."

He sees opportunities for Dutch companies such as Royal HaskoningDHV elsewhere: "With the Mekong Delta Plan we have shown that you can multiply investments with the Dutch expertise. Donors such as the World Bank and large companies such as Heineken are taking notice and the opportunities for the Dutch business sector will most likely arise from this."

In his opinion, the results of Dutch investment in the Mekong Delta will pay off in the long term, for the sustainability of the delta itself as well as for the Netherlands. "In Vietnam we showed the world what the Netherlands is capable of. Now it's a matter of seeking new opportunities in order to fulfil that promise." ●

© Selma Sofie

Time for counteraction

The frequently cited *'Bring in the Dutch!'* symbolises the global success of the Dutch Delta Approach. However, according to three water researchers a critical response is much needed. "We act as though we are asked to solve problems all over the world, but behind the delta plan is a major investment agenda and it is being driven by The Hague."

Author: Manon Stravens

Shahnoor Hasan is happy to stand in front of an audience that includes plenty of women. "After all, delta planning is predominantly conducted by men." The Bangladeshi PhD fellow, associated with IHE Delft, was spea-king at a recent water conference in Amsterdam. And she is highly critical of the way in which the Netherlands promotes and transfers its delta knowledge.

Hasan explains that the Netherlands works hard to create the need for a delta plan in countries like Bangladesh and Vietnam and emphasises its importance. She believes that the deltas are lumped together too soon in this process. Yes, the Netherlands has something to offer in her opinion, which is based on an impressive history of living with water. Nevertheless, Dutch knowledge is not superior and universal and the Bengali and Vietnamese people have also inhabited and shaped their deltas for centuries. However, the teams of delta planners still have more Dutch than local experts.

She is also critical of the terminology used: it portrays Bangladesh as the needy party and the Netherlands as the country that can offer a helping hand, which makes it possible for Bangladesh to tackle its delta issues. According to Shahnoor Hasan, these words do not do justice to the collaboration that has lasted for decades, in which local knowledge and expertise also play a major role.

She is not the only critical voice to be heard. Researchers Arjen Zegwaard (University of Amsterdam) and Chris Seijger (IHE Delft and University of Freiburg) virtually say the same thing. Both state independently from each other that Dutch delta knowledge is based on a specific Dutch situation in a delta that is virtually incomparable with deltas elsewhere in the world.

Moreover, the Netherlands focuses too little on the political game and uses an extensive PR campaign to export this knowledge. Seijger: "In the case of delta issues we always hear "*Bring in the Dutch!*", but a critical response would also be useful occasionally."

In Freiburg Seijger said that the Neth-er- lands definitely has something to offer in designing major plans. "Knowledge and expertise related to river and water management has been built up here for decades. There are good universities here, where we educate many people and devise innovations – like the Sand Motor, an artificially created peninsula to the south of The Hague, which makes the coast wider and safer and provides space for nature and recreation. Or the Fish Migration River, a permanent opening in the Af- sluitdijk, for migratory fish that require fresh and salt water for their life cycle. This is an impressive bank of delta knowledge, more substantial than those of other water know-ledge exporters such as Australia."

However, Zegwaard, who researches deltas and uncertainties, particularly in South-east Asia, explains that it concerns specific knowledge of the Dutch deltas. "The situation in the Netherlands is also characterised by a high degree of engineering, with much technical and infrastructural knowledge. And this is then exported to areas where there is nothing, so to speak."

"We are keen to believe that our approach also works elsewhere, *but this is only partly true"*

What's more, the Netherlands acts as though the delta is a water system, which is a Dutch assumption, according to Zegwaard. "It is also a place where people and animals live, with an economy and a culture."

Seijger: "We manage our deltas in a specific way, based on the recommendation issued by the Veerman Committee in 2008. We are keen to believe that our approach also works elsewhere, but this is only partly true."

The Netherlands has a Delta Act and a Delta Programme, a Delta Fund and a Delta Commissioner. This is a highly institutional basis, which is necessary for implementing complex forms of water management and planning, which other countries do not necessarily have. Furthermore, the deltas in Bangladesh and Vietnam, where Seijger carries out his research, and in Indonesia have their own history, "with institutions and capacities that have developed in their own way".

Zegwaard explains that the Netherlands is highly focused on keeping the sea at bay: "The Netherlands is eager to keep the land and water apart, with a coastal region that is based on fresh water agriculture. However, in the Asian deltas this is barely sustainable, due to the quantity and power of the water." The dikes and polders, which have been constructed in Bangladesh since the sixties were built to protect arable land according to the Dutch model, can hardly cope.

Now that climate change is causing sea levels to rise more quickly and making cyclones more powerful, according to predictions, other strategies are required: fewer barricades, more space for water and controlled flooding. Seijger: "We are searching for ways to use the floods, to farm with water." People are also exploring the possibilities of transforming fresh water into salt water in agricultural and water use.

The Netherlands conducts a solid campaign to promote its delta approach all over the world. This methodology consists of twelve building blocks, including an integral approach, sustainability, cooperation, long-term planning and funding. According to Zegwaard, this suggests a uniformity in the approach that does not exist. Deltas throughout the world are too complex for that.

Seijger also states: "We act as though we are asked to solve problems all over the world, but behind the delta plan is a major investment agenda and it is driven by The Hague." These long-term plans, sometimes spanning fifty or seventy years, are worth billions. Dredging work and building dikes, dams and locks requires considerable investment, funded by other parties such as the Japan International Cooperation Agency or the World Bank."

"A delta plan disguises the fact *that the process is extremely political"*

Zegwaard adds that the delta is put forward as an urgent project that requires our attention: "In fact the delta is a policy item that has been created." While the Mekong has no boundaries and flows from Vietnam to Cambodia, the delta plan stops at the border, like the Dutch delta plan also stops at the Belgian border. "People in the recipient country are subsequently made enthusiastic and water boards are set up, all to reach a general consensus. This is followed by the implementation of a planning process that is presented as apolitical, which it never is: the delta plan disguises the fact that the entire process is extremely political."

Seijger thinks that it is actually necessary to understand and incorporate power relationships and interests. Seijger, like Shanoor Hasan, carries out research on strategic planning processes. "Ministries are often at odds about what is and is not included. When an organisation thinks that it is not involved, it will soon refuse to support it. It's all politics."

The researchers believe that a critical problem analysis of the state of the delta is important. "What are the driving forces of delta development, types of land use, expected sea level rises and the consequences?", Seijger adds. "The investment choices are decisive with regard to the future. When you decide to construct dikes and impolder coastal areas, you commit yourself for a long period of time. There has to be sufficient insight into future developments, which then must be translated into the short term. A long-term vision is difficult, but crucial."

Seijger explains that the Dutch delta is like a rare postage stamp. "We want to cherish it, just like our level of prosperity and current fresh water supply. We are rather conservative and pin ourselves to a strategy consisting of more and higher dikes." However, countries like Vietnam or Bangladesh and their deltas are developing. "The future has not been set in stone in these areas."

After the war, Vietnam focused on growing rice to feed its population. Seijger: "Dikes were constructed so that rice could be harvested on large areas of land three times a year. However, today rice alone can no longer provide the necessary socio-economic prosperity, so Vietnam is looking for alternatives for further development."

The researchers believe that the Netherlands could learn from this. Seijger: "More radical scenarios in which we can actually be innovative, for example a transformation to saline cultivation, is not part of the delta plan. While Dutch fresh water agriculture in the coastal deltas also has a hard time as a result of higher sea levels and dryer growing seasons." The Netherlands itself must also explore strategies that are consistent with a saline future.

According to Seijger, our exported knowledge focuses primarily on more flood defences and fresh water cultivation, but there are also opportunities for a saline economy and other forms of housing. Zegwaard also believes that the Netherlands needs to constantly update its repertoire of exportable knowledge if it wants to continue to be a relevant player in the future.

Another key word to which the researchers give short shrift is participation. "Don't expect too much from participation", Seijger advises. "Field visits are made and discussions are held with delta residents, but not everyone sits around the table when the decisions are made. And critical organisations risk being excluded. So how do you know if the right decision is being taken?" The polder model is effective in the Netherlands, also because people here can "protest very loudly" when they do not agree with a decision. However, this is highly complex in other countries, for example communist Vietnam, as Zegwaard reminds us. "Those in power in Hanoi are not so fond of impoldering." If delta planners want to bring about change, they have to adopt the Vietnamese way of planning, that is to say, top-down. "But in doing so you simply reinforce the status quo. That's also politics."

Seijger explains that there are often conflicting interests, for example between small-scale farmers and major landowners. In Bangladesh the small-scale farmer strives to be self-sufficient and must flood his arable land to achieve this. The sediment in the water accumulates and protects the fields from flooding. "However, this also means that the land remains under water for between three and five years."

This conflicts with the interests of the major landowner, who is eager to keep the polders closed, for example for shrimp farming. Seijger: "And the landowners have political influence and the money to manipu- late power. The small-scale farmer and the environment soon come off worse."

According to Seijger, the process predominantly involves soft implementation. "Not immediately putting a shovel into the ground, but a more subtle process of involving people in the problem analysis, identifying possible alternatives." Or: getting ministries, authorities as well as the international community to agree.

This is water diplomacy on the highest level, in Seijger's opinion: "Using small steps to steer the process in the right direction." The embassies are indispensable in this regard. This is followed by the shovel and dusting off and adjusting proposals, which have sat on the shelf for a very long time.

After all, as Zegwaard knows, just because a plan has been drafted it does not mean that it will be implemented. "Never start celebrating too soon. This is why it is important to establish the plans in laws and regulations, including the funding." Delta planners must also find methods to involve delta residents in the different stages of the process: "The trick is to genuinely listen." Seijger examines which parties support a plan when it is drawn up and implemented, and which parties do not support the plan in question.

What does a process that is so time and energy-consuming achieve? Zegwaard: "The Mekong Delta Plan definitely placed certain issues on the agenda among a number of major parties, including the World Bank, international funders and in Hanoi. This sounds limited, but public tenders have now been issued to fulfil parts of the plan." And delta planning continues to be necessary. Zegwaard: "At the end of the day you want to design the delta area so that it is able to resist the forces of nature in the future."

It is easy to criticise, Seijger adds. "It is admirable how delta planners push and pull, how they try and get bickering ministries, authorities and donors, who each have their own self-interests, into line. They work incredibly hard to achieve compromises and piece together as much data, knowledge and reports as possible. They genuinely want to deliver an effective plan, which will benefit the local delta population."

A little modesty will not do us any harm, according to Seijger. "It is terrible that we think we have the monopoly on wisdom. The white man who knows what's best." The Bengali and Vietnamese people already have so much knowledge and expertise. "This is why we work closely with PhD fellows and researchers from these countries. For example, the Vietnamese partner WACC-VNU is developing a method for assessing the feasibility of innovations, in view of the motivations and capacities of the parties involved. We are also trying to introduce this methodology in Bangladesh, so that the exchange of knowledge is started between the two countries."

According to Seijger, the Netherlands must obtain a better understanding of what works and what does not work, and of our role in this. "In the Netherlands the lines are short and there is much exchange between the organisations. This means that Dutch delta knowledge can be integrated relatively well. At the same time there is a lack of reflection on the applicability of this knowledge abroad. This means that we are losing relevant insights and there is no consideration for the diversity in methods of delta management and delta development."

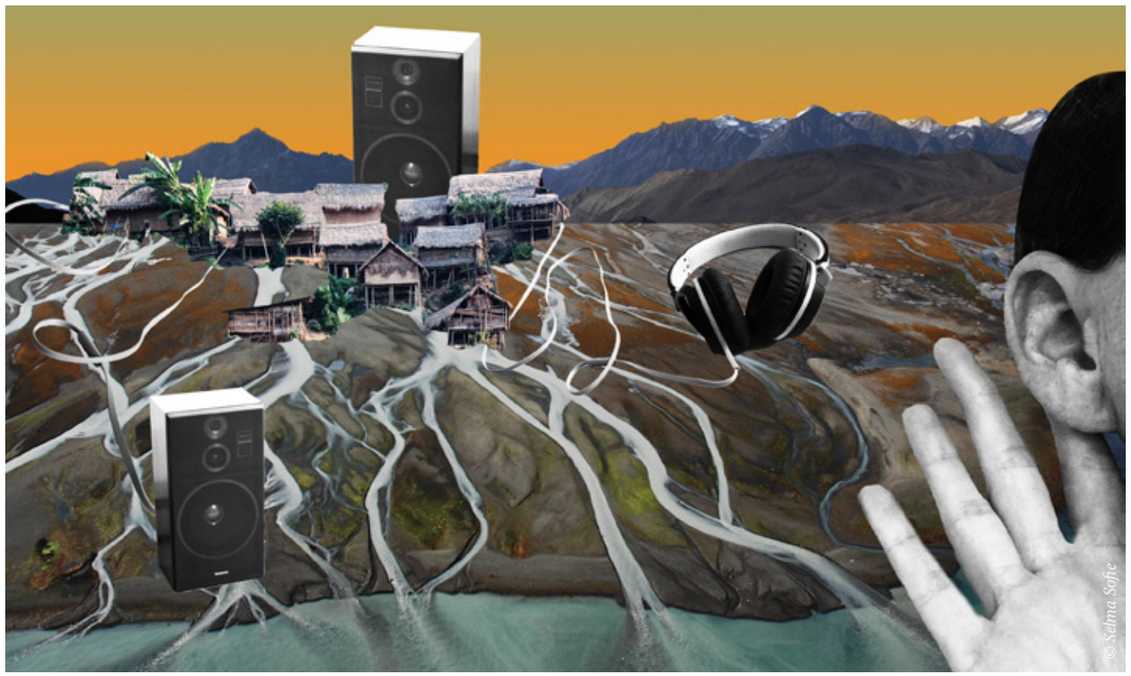
The Netherlands travels all over the world as a water merchant and preacher, but the question is whether this need for Dutch knowledge and expertise will continue. The researchers have their doubts. Seijger: "We are working tirelessly to maintain our name and reputation. We have no money; our interest is to continue to be an influential, leading and well-known expert", the researcher suspects.

"Dutch water diplomacy is currently doing well", he continues, "but if we do not open up to new developments, we run the risk of being overtaken on all sides by other parties, who may well bring along a bag of money with them." ●

Shahnoor Hasan is a PhD fellow, associated with the Integrated Water Systems and Governance research group at IHE Delft. Her research is part of the NWO-UDW Strategic Delta Planning project, in which she studies the transfer of Dutch delta planning knowledge to Bangladesh and Vietnam.

Chris Seijger studies strategic delta planning processes in the NWO-UDW project Strengthening strategic delta planning processes in Bangladesh, the Netherlands, Vietnam and beyond. He is also part of the Integrated Water Systems and Governance Group. In addition he teaches water management in forestry and agricultural areas at the Albert-Ludwig University of Freiburg.

Arjen Zegwaard is associated with the University of Amsterdam. He studies deltas and uncertainties, particularly in Southeast Asia, focused on decisionmaking processes. In this context he is also involved in the Deltas' Dealings with Uncertainty project, financed by the Netherlands, the United Kingdom, France and Japan, among others.



Photographic report

If water could talk

The Marshall Islands appear like small oases of land in the Pacific Ocean. The archipelago risks vanishing due to the ice melting at both Poles. Artist and expedition photographer Esther Kokmeijer saw how the Marshallese are battling to win the struggle against water by reviving ancient traditions.

Author and photographer: Esther Kokmeijer

I sit for hours on end with my forehead pressed against the small, plastic window of the aircraft, staring at the ocean, looking for a trace of land. Wave patterns glide along with the time. From a great height the water appears to be motionless, as if its ripples are carved into the water.

Over a hundred-year period, according to the Lenntech water specialists on their website, a water molecule spends 98 years in the ocean, 20 months in the form of ice, two weeks in lakes and rivers and less than a week in the atmosphere. Water has already existed since the earth formed, and my mind boggles at the thought that water always moves into other forms and to other places. The water in front of me right now, which I just received from the stewardess, will soon disappear into my body. What have these water molecules already experienced?

Water is also a unique archive. On Antarctica ice cores are drilled kilometres deep, revealing, among other things, moments in history when volcanoes erupted. The air bubbles trapped in the ice also show how much carbon dioxide was present during the different eras, for example. The water forms an archive, which allows us to look back 800 thousand years.

However, water and ice do not only tell us about the distant past. A team of scientists that studied sea ice from the Arctic Ocean last year, came to the shocking conclusion that the water contains up to 12 thousand microparticles of plastic per litre. The legacy of this century.

The aircraft begins its descent. During the seven-hour flight I have not seen any sign of land. The ripples in the water now appear more irregular and as we descend, the more the white foam heads break up the fixed pattern. The colour of the ocean slowly changes from dark navy blue to a blue so deep and intense that depth and distance appear not to exist.

And then suddenly there is land. A very thin strip, accentuated by a green band of palm trees. So beautiful, yet so fragile. This is the backyard of climate change. Oases in the ocean that risk disappearing due to the ice melting at both Poles. The water chews the coast,

A student from the Waan Aelõñ training programme in Majel (WAM) learns how to sail in a traditional outrigger canoe

gradually dragging the land into its depths. The Marshall Islands lie slightly north of the equator in the Pacific Ocean. So far away from the ice, but so vulnerable to rising water.

The archipelago consists of 1,100 islands and 30 atolls – circular islands with water in the centre – and is as densely populated as the Netherlands, with just over 411 residents per square kilometre. Here there is also a battle to keep the water out. But the Netherlands has the space to build dikes and dunes. The Marshall Islands are nothing more than razor-thin strips of land. If you throw a stone from the lagoon, it falls into the Pacific Ocean on the other side of the land.

Traditionally, the Marshallese are seafarers, and you could describe them as 'wayfinders'. Because palm trees are virtually the only thing that grows on the land, and do not grow any taller than 30 metres, the land is difficult to detect out at sea. Navigating between the atolls of the Marshall Islands and other islands in the Pacific requires knowledge of natural phenomena that can provide guidance. Clouds, fish, birds, stars, sun and wind can all reveal something about the place you are heading to. The seafarers of the Marshall Islands were known for their navigating tradition, which enabled them to remotely sense whether land was nearby from watching the swell, which is interrupted by the islands. The 'navigators' read the waves. They embodied the knowledge of the ocean, and could become one with their environment to determine their location. In order to find their way, have people ever been as instinctive as migrating animals who could navigate from one side of the earth to the other?

The knowledge and skills the 'navigators' acquired have almost become extinct. The arrival of GPS has made them superfluous, after colonisation had already brought an end to part of the tradition of wave navigation. During the occupation of the Marshall Islands the cultural tradition of going to sea was discouraged and even forbidden. It was too dangerous, and what's more, it enabled the colonists to prevent trade between different peoples and clans, which made the island residents dependent.

During the time that the Marshallese went to sea to trade or explore new land, it was common to have one 'navigator' within a group of boats. He had not only mastered the art of reading waves, but also had to be able to navigate through all aspects of life. During an expedition it was vital to know the path through the waves, but also which fish were or were not edible and how an infected wound should be treated. The 'navigator's knowledge was transferred from father to son, but could also be transferred through the female line – which is remarkable, given their high status.

Majuro atoll

Today there is nobody anymore in the Marshall Islands who may bear the official title of 'navigator'. There is another reason for this, besides colonisation and the arrival of GPS: the nuclear tests the US conducted on the Bikini Atoll just after the Second World War. The final test which the 'navigators' had to carry out took place on the Rongelap Atoll – not far from the Bikini Atoll. All inhabitants of Rongelap were evacuated after the nuclear tests, and have not returned to this day.

There are many reasons why the Marshallese are no longer the seafarers they once were. Building and sailing the traditional sea canoe had almost died out until recently, after all, what does the sea still offer the Marshallese? Fishermen use modern equipment. The bay of the capital Majuro is packed with large trawlers that deplete the seas around the Marshall Islands of their fish, with the help of helicopters.

However, there has been a unique cultural *revival* since the past ten years or so. Knowledge and culture on the verge of being lost forever has been brought back to life. People are convinced that they can offer sustainable alternatives for dealing with nature. As in many other archipelagos in the Pacific Ocean, the Marshall Islands are wrestling with the legacy of the disastrous way nature was treated by colonialism and capitalism.

Waan Aelõñ in Majel (WAM), founded in Majuro at the end of the Nineties, is a training programme for young people who have little or no opportunities on the labour market. In the morning they have theory lessons, including subjects such as English and Economics. In the afternoon they have practical lessons in traditions and ancient customs, such as building and sailing a traditional sea canoe.

Alson Kelen is the director of WAM, as well as a canoe builder and climate activist. His family is originally from the Bikini Atoll, but was evacuated when the area became uninhabitable because of the American nuclear tests. Alson Kelen does not bear the official title of 'navigator', but is the person who has most knowledge about wave navigation, which he once learned from his uncle Captain Korent, one of the last 'navigators' to be appointed. There is a chance that Alson Kelen may be officially appointed some day, if the *chief* will allow his 'navigation test' to go ahead and Kelen passes it. Only one attempt is permitted.

Nevertheless, he is already a 'navigator' of life, even without an official title. Someone that lives his dreams and also gives others the chance to dream. Kelen believes in the power of culture and tradition. He believes that the Marshallese could live with the sea again. At WAM, in collaboration with the German development organisation GIZ a fleet is designed and produced for sustainable transport, inspired by traditional sea canoes.

Dustin Langidrik is another truly inspiring person when it comes to the ocean. His eyes even reflect the ocean on land. His name means 'perfect storm' and that's what you need out at sea. I am allowed to sail with him on the Okeanos to Ebeye on Kwajalein Atoll, where the annual meeting with the mayor is held, during which he will explain about the possibilities for sustainable sea transport. It takes three days sailing in a north-westerly direction.

We leave Majuro and after sailing for an hour Dustin draws my attention to two tree tops sticking out of the sea on the horizon.

The canoe house of WAM, where young Marshallese are trained to build and sail the traditional sea canoe

Canoe builder Binton Daniel and WAM-trainer Gregory Jokray. In the background, a trawler fishes for tuna

While Captain Tohitika Sanchez stands at the tiller of the Okeanos, Dustin Langidrik plays traditional songs on the ukulele

The Okeanos

Esther Kokmeijer at the helm

© Dustin Langidrik

This is where a former *chief* planted two conifers, which grow taller than the rest, in between all the palm trees. They are a natural beacon which indicate the only place where you can leave the lagoon. Once we reach open water the waves have free rein and we are surrendered to the ocean.

Before setting off, the seven of us stood hand in hand in a circle on the foredeck, and Captain Tohitika Sanchez from Tahiti asked each of us to pray to our own gods. When I ask him later which god he prayed to, he replies that his religion is vaka; 'canoe'.

The Okeanos is steered using a vast helm. Even in a breeze or when tacking, it can no longer be controlled by just one person; at times the colossus has to be kept in check by three people. We sail according to a strict schedule, taking it in turn to keep a three-hour watch. I am thrilled to be at the helm. I feel one with the water around me, the ocean's language can be *read* in the cadence of the helm. There is GPS on board, but I try and stay on course as much as possible, only using the rhythm of the waves. It is a fantastic experience to feel the path through the waves and maintain it. The Okeanos is little more that a raft on two large floats, which gives you the impression you could merge into the surroundings. It is truly magical, especially at night. Stars shoot into the air like rockets and at times we are surrounded by sea sparkle, luminescent plankton that glows when set in motion by the helm or one of the two floats. We sail about seven degrees above the equator and both the Crux and the Great Bear are visible.

There is lots of singing and someone is playing the ukulele. Dustin in particular knows many songs that were used in the past to navigate and remember where the different islands were located. He exclaims that the ocean is like a woman: "She is giving, she is caring, she can be tempestuous, she connects, she protects and she takes."

However, not everything I witnessed on the Marshall Islands was fantastic. There are concerns about the rising water, there are health problems caused by a poor diet and there is pollution. There is nowhere left to put the waste, it blows from the landfill site straight into the sea. What's more, a considerable amount of nuclear waste was left behind after the tests carried out in the 1940s, 1950s and 1960s. And there is the addiction to sugar, oil and money as in the rest of the world.

Before I board my return flight, someone advises me to sit on the left side of the aircraft. That's what I do. During take-off I think of Alson Kelen, and on his philosophy about how reading the waves can give you direction. I am firmly convinced that the more you let nature in, the less you need of all the other things.

When I press my head against the window to look outside as we take off, the ocean is no longer a dark, impenetrable surface. I see a glistening pearl necklace in the middle of the Pacific Ocean. ●

Esther Kokmeijer is an artist and expedition photographer in the Antarctic, among other places. In her work the relationship between man and nature plays a key role. She focuses on the Global Commons, a term that is commonly used to describe international, supranational and global resource domains. Global commons are the worldwide shared natural resources of the earth, such as the oceans, the atmosphere, the outer space and the Antarctic. In recent years she has mainly concentrated on the three forms water can take, from the perspective of our wish and ability to control or protect nature.

SUPPORT VICE VERSA

BECOME A MEMBER

Support journalism on global development and subscribe to *Vice Versa*.

in-depth international news,

talked-about **events**,

inspiring thinkers and doers,

informed **opinions** and

current **background stories**

VICE VERSA

journalism on global development

Check out

www.viceversaonline.nl/abonneren