

SWELL

February 2019 Volume 40 Number 2

Looking back at Dublin,
looking forward to Brazil

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Hydraulic statistics

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PLASTIC FREE RIVERS

"One party alone cannot make this happen"

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Saving the Great
Barrier Reef

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HET WATERBOUWDISPUUT



Hydraulic Engineering Student Association

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FROM THE EDITORS

Dear members,

You have just opened the first Swell of 2019. Maybe you have noticed that the Swell has been renewed or as we say in Dutch 'in een nieuw jasje gestoken'. In fact we have a whole new corporate identity. From now on all our posters, Swells and social media posts will have this new lay-out. We hope you like it!

This Swell contains a number of reports and updates of some interesting hydraulic projects that are currently in progress in various places around the world.

Additionally, the Swell is an update of some of our hydraulic adventures and activities that we have done in the last couple of months. We hope this will bring up some nice memories of interesting and fun happenings!

Enjoy!

The editors,

Roline Montijn
Bart Scheurwater
Pauline Janssen



The editors: Bart, Roline and Pauline

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FROM THE PRESIDENT

Dear Hydraulic Members,

I am glad to see that the first Swell of 2019 has reached your lap.

To our brand-new partners, SWECO, ARUP, I would like to say welcome to a wonderful partnership and let there be lots of new years together. To our long standing partners I would like to say welcome back in 2019.



After nearly half a hydraulic year I am delighted with the fact that I am truly submerged in Hydraulic Engineering. As member of the board I took part in organising a tremendous kick off where both our international as our local students get to start the academical year with an excursion to get their feet wet and a barbecue to warm them up again. We have been on a company case to MTBS and have had lunch lectures of Royal Haskoning DHV and Horvat & Partners. These lectures and cases gave us as students a clear view of how our future will look: wet and fantastic.

During the past few months we've attended some events, of which the CEDA IADC Conference was the major one. This day took place in the Beurs of Berlage in Amsterdam and was themed "Dredging for Sustainable Infrastructure" where a 'Delta of the future' was drawn. Besides the fact that it was a nice piece of art, now located at the TU Delft, this delta gave me a feeling that we can contribute to a prospecting future.

It is a great time to become a hydraulic engineer. The future is booming and the whole world is in need of sustainable and structural solutions in the hydraulic sector. During these events it became clear that hydraulic companies are making these changes and as student Hydraulic Engineering from Delft this future is for us to decide, which is pretty exciting.

PAST EVENTS

NOVEMBER

- 22 nov Hydraulic dinner at Cafe Rotterdam **P26**
- 29 nov - 2 dec Multiple Day Excursion to Dublin **P10**

DECEMBER

- 3 dec Lunch lecture Horvat & Partners
- 12 dec Company case MTBS
- 15 dec Van Oord Festival
- 19 dec Lunch lecture RHDHV

JANUARY

- 31 jan Hydraulic bowling at Karrewiel Delft



UPCOMING EVENTS

FEBRUARY

- 19 feb Company case RHDHV
- 25 feb Afternoon lecture Van Oord
- Hydraulic coffee Every wednesday in front of CiTG 3.72

MARCH

- 14 march Lunch lecture CDR
- 19 march Master case day
- 28 march Master community
- TBA Company case Van Oord
- Hydraulic coffee Every tuesday in front of CiTG 3.72

APRIL - MAY

- 9 may Symposium **P29**
- TBA Hydraulic dinner
- TBA Hydraulic coffee

SUMMER

- Study trip to Brazil **P16**





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MULTIPLE DAY EXCURSION to DUBLIN

During the Multiple Day Excursion 2018, 23 students went to Dublin! The weekend started with a gift on the airport which was a booklet with inspiring Irish riddles and information about the excursions. After arrival in Dublin, the first Guinness were drunk in the pub Fibbers and it wont be the last of the weekend!



THE RIVER DODDER

Our first host was the OPW, Office of Public Works, who are working on flood defences along the River Dodder, a river straight through the city of Dublin.



Pictures of high-water levels were shown and the difficulties during the construction of the flood defences were told. After a presentation in their work container, we walked in the morning sun along the river to see the flood defenses.



HYDROPOWER STATION at TURLOUGH HILL

After a beautiful lunch in the mountains of Ireland, we continued our trip to Turlough Hill, a hydropower station a bit outside of Dublin. It consists of two lakes for which during high energy demand it works as a turbine, during low energy demand as a pump. It was cool! We went into the mountain where all the dams in Ireland were regulated! Afterwards we took a short walk in the beautiful nature of Glendalough.



ENGINEERING CASE at ARUP

On Saturday we visited ARUP, here we worked on an interesting case about how we, as engineers, can contribute to the 17 Sustainable Development Goals set by the United Nations; very inspiring. We finished the weekend with a nice dinner with the group!



Especially, we want to thank Marion Tissier and Matthieu de Schipper for their enthusiastic participation in the trip!

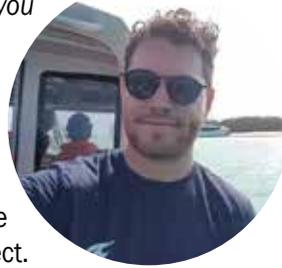


MASTER PROJECT GREAT BARRIER REEF

Interview Focco Vons by Jakob Christiaanse

'Focco, can you tell us something about yourself and the project you are part of in Australia?'

Yes, of course. My name is Focco Vons, maybe you remember me from all the well written stories of last years swells. This time I will tell you something about an amazing project in which I'm involved. If you have followed the news during December, you've probably seen some cool footage coming from Australia about a coral restoration project. That project is a collaboration between Van Oord and CSIRO (Australian research company) with the goal to pump large amounts of coral eggs/embryos and transport them to a degraded reef where the larvae are spread out to restore the reef. As part of my Master's thesis, my task is to design a pumping system to pump the coral embryos from the sea surface onto the vessel.



'What did the preparation look like before doing the experiments in Australia?'

Before we went to Australia we did a lot of experiments in the Netherlands to find pumps that exerted low shear forces onto the particles. In Steenbergen we tested 4 different pumps and a lot of different configurations. We graded the different setups by measuring the mortality rates of the particles that were pumped through the system. Because it was not possible to test all the different pumps with coral spawn (not available in the Netherlands), we used proxies like: water absorbing gel balls, frozen fish eggs, peas and berries. By changing the setups and noting which pump and configuration resulted in the highest survivability we could select the two most promising pumps which we later used in Australia.



'How does the pumping work and what is the goal behind it?'

In Australia we built the complete system on the back deck of a tug vessel containing plastic and steel tanks where the coral embryos were pumped into. With this vessel we sailed towards Heron island around the Southern great barrier reef. This new technique of coral restoration is very promising because you can transport the coral embryos over thousands of kilometers. When a reef is degraded by a cyclone for example, the supply of new embryos will be very little and only few new corals will grow. If there is an opportunity to bring (billions of) embryos from a healthy reef towards this degraded reef, you increase the availability of coral larvae and increase the success rate of restoration.

'What are the next steps in the project?'

After three amazing weeks around the great barrier reef we are now processing all the data we gathered during our field work. The results look very promising and hopefully we can upscale the project in November 2019. This time we used 12 basins of 5m3 (total 60m3) but our goal is to fill a complete hopper (14000m3) with coral spawn. To reach this goal, a lot of work needs to be done but with the right enthusiastic people, with a passion for innovation and the environment, everything is possible!



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HYDRAULIC TUNES

Weren't you always looking for a list with all your favourite tunes about water? Finally, there is one... Scan the QR-code, listen to these amazing tunes on Spotify and don't forget to add your own music to the list!



A SMALL PREVIEW

Bang voor water – Marco Borsato
Cry Me a River – Justin Timberlake
The Tide is High – Atomic Kitten
Oceaan – Racoon
Every Teardrop is a Waterfall – Coldplay

Scan the
QR code
and add
your own
music!



STUDY TRIP to BRAZIL

This summer the Hydraulic engineering study trip will go to Brazil! With our Hydraulic expertise we will inspect the sand of the diverse coastline of Brazil, have a look at some incredible dams and of course have a sip of the Brazilian lifestyle in Rio! Follow us on Instagram to stay tuned.



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PLASTIC-FREE RIVERS

The oceans of the world are filling up with plastic waste carried there by rivers. Where it all comes from no one knows. Wim Uijttewaal, professor of Experimental Hydraulics and professor of Resources & Recycling Peter Rem are on a mission to make the rivers plastic free.

'We want to turn the removal of plastic from rivers into big business. And we want to devise a plastic waste radar that will show where the plastic is, and how it got there.'



Economic value

Looking at it from a distance the problem seems to be of an overwhelming magnitude. And yet in terms of economic value it only represents a few hundred million euros. Rem: 'Some eight million tons of plastic waste end up in the rivers every year. If you remove it, deposit it and burn it the cost per ton comes to around 100 euros.' However, very few parties would be able to break even, let alone make a profit. Uijttewaal: 'There is not enough know-how and the value is too fractured.'

A many-sided product

That is why Uijttewaal and Rem approach making rivers plastic free as a marketable product. Cleaning up the river could result in a quality plastic recycled from plastic waste, for instance, or in the elimination of mosquitos and disease because the water can flow freely once more.

Clean beaches for tourists would be another commodity to be sold. 'The question we ask is: how much is this worth to a potential client? And can all the money put together rid the river of all the plastic? Rem: 'A single plastic bottle fished out of the river immediately represents a certain monetary value. But small pieces of plastic foil, for example, are much more difficult to retrieve and because recycling them cheaply is not possible and burning them would be too damaging to the environment they are not worth it from a money making point of view.'

And that is where local authorities come in. They would be in a position to say 'As no one is willing to spend the money to remove this type of plastic, we will ban all products using it from the local market'. It's similar to what happened with the plastic shopping bags in the Netherlands and Europe.

A climate model for plastic

Supported by TU Delft/Global Initiative, Uijttewaal initiated and now heads the Plastic Free Rivers-programme. 'There are dozens of parties that are trying to tackle the plastic waste problem, each in their own way and each in their own area of expertise. But what is missing, apart from the necessary know-how, is an integral approach. That is what we are focusing on at TU Delft. Our first move was to organise a round table with a number of scientific experts, social partners and businesses. This resulted in a consortium surprisingly quickly.'

The aim is to create a model which can be used by the (local) authorities or investors to ascertain in a relatively short space of time if an investment will be viable. Uijttewaal: 'What the model will tell them once the data has been processed is how much it will cost to remove a ton of plastic from the river in a certain site and how much it's worth. It will put the stakeholders in the picture and how much they would be willing to contribute. The site in question could be the location for a beach attracting lots of tourists, or it could be the site of a sewage pipe that is no longer blocked. How much would that be worth to them?' Stakeholders would, of course, want to see some proof before they commit themselves. Rem: 'It is already a given that we would have to provide multiple quality guarantees. If the tourist sector in Indonesia were to contribute, for example, it would want to make sure the money goes towards something useful, such as a monitoring system to see if the beaches are really getting cleaner.'

The model would be an open source tool accessible to all scientists, including those not connected with the programme. Rem: 'It's similar to the way climate models are made. There is not a researcher in the world who can create a climate model on his own but with the help of other researchers it can be done. With a bit of organisation we can make use of each other's expertise.'

Three countries, three rivers

Uijttewaal emphasises the hypothetical nature of the situation. 'We want to show that we have a business case and that it can work. That's why we are testing the model in Indonesia, Ghana and the Netherlands. As a scientist you want to know if your model holds up under different conditions. If it works in these very different places, chances are it will work anywhere.'



How to make plastic waste pay

An important element of the business case is the value of the plastics themselves. Mixed plastics are worth around 200 euros a ton but once they have been separated the value shoots up to 800 euros. The problem is that the separation process is a lengthy one. 'Your intuition tells you that a pile consisting of 250 kinds of plastic would have to pass through your hands 250 times.' A new sorting method called logarithmic sorting developed by Rem brings the process down to eight steps. 'If you study the process closely you will find to your surprise that the number of actions is proportional to the logarithm of the number of types of plastic.' The pile is divided into two groups of 125 types of plastic each – that is step one. Then the two groups are divided into 62 – and that is step 2. 'If you do this eight times that is your who pile sorted. And that will give you a 600 euro increase in value.'

For the Netherlands and Europe Rem is looking at machines that can distinguish colour and chemical composition. 'For Indonesia and Ghana we want something along the same principles but cheaper and more flexible, for instance a process that consists of 80% sorting by hand and 20% by machine. The human eye is perfectly capable of making the distinction between a light blue and a totally transparent bottle, and whether it is a PET bottle or not. To spot some additives you would need a machine using ultraviolet light but that could be a final step and perhaps not one that would have to be taken then and there.'



'In countries where the problem is most pressing and where wages are very low plastic waste removal would boost economic activity. With the help of local parties we can create the right conditions for this to happen,' Uijttewaal adds.

Detection, mining, recycling

Recycling is the third step in the plastics retrieval cycle. It is preceded by 'mining', which is where Uijttewaal's expertise comes to the fore. 'Normally I would look at fine-grained material in rivers, such as pebbles and sand. Plastic doesn't have a definite shape. How does it behave in water? A plastic bag almost seems to float. And how do you separate the plastic from the water and put it into a collection system?'

Before the plastic can be harvested it needs to be detected. To locate the material satellites and drones are used. Uijttewaal: 'At the moment we don't know which image resolution we need to use to see the difference between the trunk of a tree and a load of plastic. We will have to do more tests.'

A rain radar for plastic

Combining satellite and drone images with local activities will shed light on the types of plastics found and where they have come from. The information is put on an online platform, creating a kind of plastic radar accessible to all. Finding out where the plastic originated opens up many new possibilities, Uijttewaal says. 'Pollution is often anonymous: I have thrown it away so I'm no longer responsible. If that anonymity is taken away manufacturers can no longer hide. We can tell them, 'Hey, we are finding your stuff in such and such a place, do something about it!' Detection can also yield more general insights, Rem adds. 'You could find, for instance, that pvc foils are a problem everywhere, not just in a particular region. That means that you could potentially reach a global public and call for a worldwide ban on foils.'

'One party alone cannot make this happen'

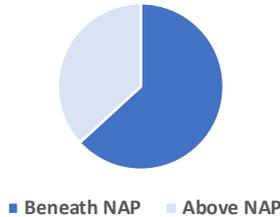
The programme has taken both scientists' beyond their normal sphere of action. Rem: 'This is first and foremost a public programme. It is society that worries about plastic pollution and wants the rivers to be cleaned up. One party alone cannot make this happen. We are very happy that Dutch universities are taking on a leading role.'

DID YOU KNOW... ?

Facts about students Hydraulic Engineering

... where Hydraulic students come from?

I was born and raised:

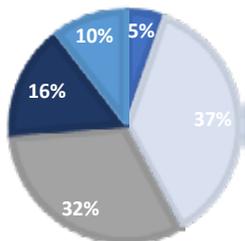


... that 42% of the students showers shorter than 5 minutes?

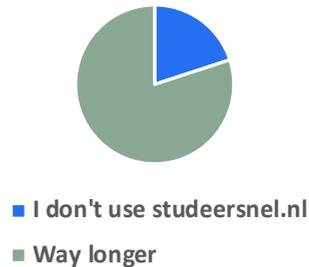
but 10% longer than 10 minutes?

On average, I shower:

■ 1-3 min ■ 3-5 min ■ 5-7 min
■ 7-10 min ■ 10+ min



... that more than 3/4 of the students think they would have completed their bachelors in a much longer time without Studeersnel.nl?



... that of 15% of the students, "waterman" is the constellation? 7% is 'fish'

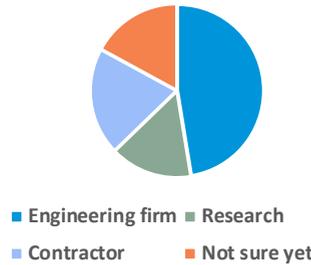
... that the amount of days spent at the TU Delft differs a lot?

How many days of the week do you spend at the TU Delft? (On average)



... and that also the future of the students is expected to differ?

Later, I will work in the following sector:



... that 98% will come to the Hydraulic Symposium on May 9th?

I will come to the hydraulic symposium on May 9th



... that 33% does not do sports at all! Fortunately, 45% practices aquatics. 11% considers drinking as a sport.

DREDGING FOR SUSTAINABLE INFRASTRUCTURE

On the 19th of November, the CEDA (Central Dredging Association) organised a two-day-long conference based on the new guidebook of CEDA-IADC 'Dredging for Sustainable Infrastructure'. This new guidebook is written partly by our own Stefan Aarninckhof and Mark van Koningsveld. With a delegation of 9 students we took off early in the morning. The conference was opened by a short small group session for all the dredgers and was led by the question "what if?". What if you could design the delta's in the Netherlands? After the brainstorm session THE ultimate sustainable delta was designed by having 6 discussion points of leading experts in the field. While the experts pitched their plan, varying from benefits of dredged materials, navigation with nature, climate-resilient coasts, sustainable solutions, the energy transition and ecological infrastructure development. The perfect delta was painted directly on an enormous delta displayed on the screen. This interactive session made it possible to open up discussion and design in the same time. As three of the leading experts came from the TU Delft (Tiedo Vellinga, Mark van Koningsveld and Stefan Aarninckhof) e are very happy to announce that the painting will be hun at our faculty

After this creative session it was time for the excursions, which consists of three site visits around Amsterdam.

IJburg: Amsterdam is growing yet again with a new island emerging in the IJmeer lake. Situated adjacent to IJburg, the 82 hectare project - being realised by Boskalis with soft and hard bank protection - will host housing to relieve the city's rapid population growth and will include a nature area of three hectares. Markermeerdijk: Stretching from Amsterdam to Hoorn, dykes protect North Holland from flooding caused by the North Sea. Although stronger than initially thought, the infrastructure called the Markermeerdijk is being updated to ensure the region is protected from rising sea levels by 2021. Innovative strategies which are cheaper and stronger are being employed such as dykes on peat and vacuum consolidation among others.

Plastic whale: Amsterdam's rings of canals are renowned around the world. On a daily basis, the waterways host boats, tourists, residents and wildlife alongside an unwanted visitor: plastic. Help remove unwanted plastic and give birds, fish and locals alike a cleaner home. From a boat made from previously collected plastic, fish plastic from the city's waterways while seeing the city's beautiful sights. After these technical visits it was time to relax and have a few drinks during dinner. This lead to an informal setting and a lot of well deserved fun.



De Traineepool

De traineepool is een samenwerking van de waterschappen:

Hollandse Delta, Rijnland, Hollands-Noorderkwartier, Schieland en de Krimpenerwaard en Rivierenland, incl. Hoogwaterbeschermingsplan, Hoogheemraadschap van Delfland en Urie van Waterschappen.

'Door de vergrijzing is het van belang meer jonge starters te werven. Het is belangrijk om jonge mensen in je organisatie te hebben. Jongeren die net van school komen, hebben nieuwe werkwijzen en technieken tijdens hun studie meegekregen. Daarnaast hopen wij de bestaande samenwerking tussen de waterschappen te versterken. Welk beter moment is er dan om nu direct deze jonge starters voor te werven?'

Wat zijn de doelstellingen?

'We willen de waterschappen neerzetten als aantrekkelijke werkgever. Maar ook willen we de samenwerking binnen de waterschappen bevorderen.' 'We gaan 2-jaarlijks minimaal 20 jonge starters werven en hen een traineeship aanbieden binnen Waterschapstalent. Uiteraard willen we een aanzienlijk aantal trainees behouden voor de Landelijke Waterschappen.'

Maaruit bestaat het opleidings- / ontwikkelprogramma?

'Gedurende twee jaar doorlopen de trainees een gevarieerd werk- en leertraject. Het programma start met een "verwonderingsperiode" waarbij de trainees kennis maken met de waterschappen. De trainees volgen onder meer diverse vaardigheidstrainingen, bij voorbeeld op het gebied van projectmanagement, adviseren of persoonlijke effectiviteit. De praktijkopdrachten met een duur van 3 tot 6 maanden worden in groepsverband uitgevoerd, gaan over een actueel thema van belang voor alle deelnemende waterschappen.'

Welke toekomstverwachtingen hebben jullie over de traineepool?

'De traineepool is enerzijds een succes wanneer een groot deel van de trainees aangeeft te willen blijven werken bij het waterschap. Anderzijds kunnen we spreken van een succes wanneer de waterschappen het jammer zouden vinden wanneer de trainees na het traineeprogramma weg zouden gaan. Voor de trainees is het de uitdaging om ervoor te zorgen dat ze onmisbaar voor ons worden, hun meerwaarde te tonen en ervoor te zorgen dat ze de ruimte krijgen om hun plekje te vinden.'

HYDRAULIC DINNER

On November 22nd, Het Waterbouwdispuut hosted the first Hydraulic Dinner of this year. 24 selected students from the Hydraulic Engineering Master's, took a seat at the tables of four of our main partners: Van Oord, Royal HaskoningDHV, Boskalis and Witteveen+Bos.



The dinner was hosted by Café Rotterdam, under the incredible view of a huge cruise ship as well as the Erasmus bridge in the evening floodlights. After every course, the students rotated to a different table (and company) so that in the end, every student had the ability to get to know each of the four companies and vice versa.



We started the evening with some casual drinks after which we were seated at the tables. Each company had their own table with their colleagues and students. After each course the group of students switched to another company. In between the four courses and the presentations of the participating companies, each company had a question to answer from the 'grabbelhoed'. These questions were prepared by the participating students.

The kind of questions were: 'What upcoming innovation do you think will have a big influence in your field of work?', 'What upcoming innovation do you think will have a big influence in your field of work?', 'What



knowledge and expertise could you share with the rest of the world in order to make significant improvements towards a more sustainable and environmentally friendly world?'. We concluded the evening with some drinks to talk about the successful evening full of opportunities for the students and companies.

All in all, it was a very fun evening, full of laughs, drinks and interesting talks. We're already looking forward to the next edition of the hydraulic dinner in May 2019!

SAVE THE DATE

LARGE DAMS GREAT DAY

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50 years of Nethcold

with inspiring speakers, interactive workshops, company fair and drinks

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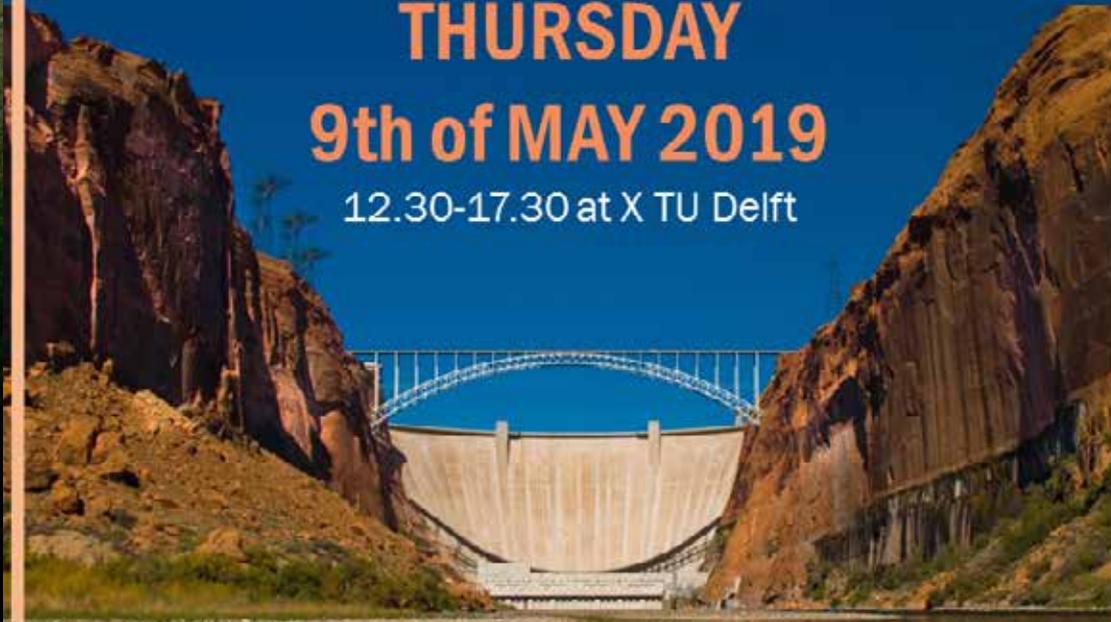
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THURSDAY

9th of MAY 2019

12.30-17.30 at X TU Delft



MULTI DISCIPLINARY PROJECT BALI



“We aim to create a cleaner living environment in Bali and contribute to a reduction of plastic pollution worldwide”

Over the last 70 years, plastics have integrated in society and have become an indispensable part of modern life. Thanks to their great characteristics such as low cost, ease of manufacture, versatility and high durability they are being used for innumerable products. Yet, this all comes at a certain cost.. Much of all produced plastics eventually end up in the environment and



stay there for many years. **The marine environment is the greatest victim regarding plastic pollution**, as it is the end station of every river on the planet. Here entanglement and ingestion are a common death cause of animals. Plastic pollution also threatens human health as they can enter our own food chain via microplastics.

In Bali, the plastic pollution problem is experienced first hand. Last December, officials in Bali have again declared a “garbage emergency” after the country’s most popular beaches were inundated with shocking amounts of plastic waste. During the peak of rainy season 100 tonnes of plastic wash ashore on a daily basis.

“ The marine environment is the greatest victim regarding plastic pollution, as it is the end station of every river on the planet “

Over 600 workers are called to work daily to remove the plastic in order to maintain the beaches enjoyable for tourists. However, the same amount washes ashore the next day, leaving loads of tourists and locals affected. Because the economy of Bali is largely depending on the tourist industry, the effects of plastic pollution have become more and more problematic for locals.



When we first heard about the plastic problem in Indonesia, we were astonished by the amount of plastics that wash ashore during rainy season and felt the necessity to do something about it. These concerns eventually motivated us to start our own project, Pantai Project, in order to contribute to a cleaner and more sustainable living environment.

Pantai project is a non-profit student initiative which has been established in August 2018. In cooperation with TU Delft, TU Delft Global Initiative, The Ocean Cleanup, Allseas, Arcadis and Jongste Beheer, and together with many local institutes, we aim to create a cleaner living environment in Bali and contribute to a reduction of plastic pollution worldwide. By assessing the problem from both a scientific and social perspective we hope to increase global recognition and that more action will be taken to reduce plastic pollution.

In order to work towards an efficient solution, first the main drivers for plastic accumulation at Bali's have to be identified. We, the first team, have done many measurements in rivers and on beaches to locate the source and quantify the amount of plastics that wash ashore. Together with our network of many local institutes and stakeholders we also organized beach cleanups and created more awareness among locals.

During our two months in Bali, we have gathered a lot of data and knowledge about the problem such as the waste management system, governance structure, social attitude and real-time amounts of waste. However, designing an actual solution requires much more time. Therefore, we are looking for new MDPs to follow up our research. So, if you would like to contribute to reducing plastic pollution then don't hesitate to contact us!



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HYDRAULIC PUZZLES

Give me food, and I will live Give me water, and I will die What am I? *Fire*

I am the biggest letter in the alphabet, as I contain the most water in the world. Who am I? *The 'C'*

If you drop a yellow hat in the Red Sea, what does it become? *Wet*

What always runs but never walks, often murmurs, never talks, has a bed but never sleeps, has a mouth but never sleeps? *A River*



d=w+r



-d -h



t=e

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Kom jij het maken in de Waterbouw?

De Nederlandse waterbouwers zijn wereldmarktleider op het gebied van baggeren, havenontwikkeling en landuitbreiding en worden wereldwijd geroemd om de waterbouwkundige werken die zij realiseren.

Werken die landen en hun inwoners beschermen tegen overstromingen. Werken die gebiedsontwikkeling en transport mogelijk maken. Werken die economieën laten groeien. Niet voor niets heeft de Nederlandse overheid de waterbouw tot een van de meest kansrijke sectoren van de Nederlandse economie benoemd.

Facts & Figures

- Totale werkgelegenheid: **10.000, verspreid over de hele wereld**
- Totale omzet per jaar voor deze branche: **Meer dan 11 miljard euro wereldwijd**
- Aantal bedrijven: **Ongeveer 250**
- Aantal werknemers: **Ongeveer 6.000 in Nederland**

Bedrijven

In Nederland zijn zo'n 250 bedrijven als aannemer of dienstverlener actief in de waterbouw. Zij voeren in Nederland projecten uit voor Rijkswaterstaat, waterschappen, gemeenten, provincies en havenbedrijven. Internationale opdrachtgevers zijn onder andere grote olie-maatschappijen en projectontwikkelaars.

Bedrijven in de waterbouw houden zich bezig met de aanleg en het onderhoud van havens en waterwegen, landaanwinning, aanleg van kunstmatige eilanden, bouwen met de natuur en infrastructuurprojecten.

Interesse?

Kom dan werken in de waterbouw, een branche met een breed carrièreperspectief zowel in binnen- als buitenland met aandacht voor je persoonlijke ontwikkeling en begeleiding gedurende je hele carrière.



COLOFON

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