Reviewing the last two semesters I would consider it semester of ideas. We (WAREM and the WAREM students had the intention and try to be part of the global, international world of projects: Constructing wells in Sudan powered by solar energy, a water supply system in a remote village in Honduras and for a school in Kenya, a sprinkler irrigation system in Ethiopia, reactivating an old cistern in the Moroccan desert, a summer school to the topic “Water sensitive cities” and a WAREM image movie.

Limitless ideas. Ideas without limits and boundaries. Ideas inspired by guests we had welcomed during the last months. Maarten Trilsbeek from CEW Center of Water Technologies Leeuwarden, Netherlands, Rüdiger Heidebrecht from DWA (Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall), Roland Frutig from the Suisse Rotary Club, Thomas Weisser from Envirochemie. Projects that bring students away from the University to explore new countries and teach them other problems to solve.

The outcome of these ideas are- at the moment- still not all visible. Like seeds in the earth. However, seeds are full of surprises. Sequoia can emerge from a seed, sunflowers, dandelions, daisies, grass.

For a seed to grow it needs, water, sun, good soils, care.

For an idea to grow it needs faith and confidence, dreams and visions, imagination, positive energy, time, patience, dialogues and interdisciplinarity. And of course, persons who are creative, courageous, critical, adventurous, risk loving, unconventional, open minded, connections and stakeholders.

2018 was definitely the year of ideas and visions. The year of putting the seeds. Let’s see if the planting was successful and visions won’t be transformed into illusions. If we will walk into a Sequoia forest or running over a meadow

Excited

Anne Weiss
“Man is limited only to his imagination”, said the leading character in the final scene of the musical film “The Greatest Showman”, which I was watching on board of an 11.5 hours flight home from Frankfurt am Main airport. This quote somehow reminded me of my journey to WAREM and to this “world” of water engineers, which started over one year ago.

I came to WAREM as a mid-career professional specializing in environmental policy and law. My career was mostly based on working with water - water of the seas and coasts and water of the major regional rivers. I have a strong attachment to water. Over time with the accumulation of both satisfaction and frustration at work one often feels with regard to achievements and one’s own limitations, respectively, at about two years ago I felt most strongly it was the time I needed the specialized technical training in water science and engineering to be more effective. Taking a break from work to go back to university to study something that is difficult and unfamiliar like an engineering course, at this juncture of my career, was considered by many of my acquaintances as “wasteful”, “redundant”, and even “risky”. For me, studying water engineering and being part of WAREM is an important milestone in my professional life.

I came to Stuttgart in September 2017 with the determination to make the best out of the study programme and of the engineering world that was claimed by many of my former technical colleagues as “different” from the world a generalist like me have known of and that is now open before me. Whether or not it was because of this “provocation” that I went into the unfamiliar ground with the aim to know sufficiently well about it, I realised that I myself was eager to become an engineer – not an ordinary but a good one. ;D)

What could have been better, for a new engineering student eager to know as fast and as much as possible about the field, than to plunge right into it as the opportunity presented itself? When Mr. Rüdiger Heidebrecht, Head of the Department Training and International Cooperation of the German Association for Water (DWA) introduced to us, the new WAREM students,
during our first semester, one of the games that DWA developed for the World University Challenges, and mentioned that the 2nd World Challenge would take place in Munich in the following year, I became curious and contemplated joining, as did many of my classmates. The notion of “competition” scared me off, but the strong force that urged me to consider participating was my thought that I could learn more things through the preparation for the Challenge.

The World University Challenge is an innovative platform and stimulating playing field, developed by DWA since 2015, for students from universities around the World to prove their skills in the development of strategies for a sustainable usage of the water resources in different disciplines. The 2nd World University Challenge would take place in May 2018 during the International Trade Fair of Environmental Technologies (IFAT) in Munich.

Before deciding on participating, I did some research on the internet on the earlier versions of the Challenge that had taken place in China, India, Germany, and Turkey, the teams that participated in those competitions, their performances, and particularly the structure and general content of the World Challenge. There was not much information on the internet then, but it was enough to give an idea of the general expectation from participating students. With my two classmates, Benedikt Scheuring (Germany) and Pan Ei Ei Phyoe (Myanmar), we formed a team and registered. Despite the huge interest from others, we were the only team from our Generation that actually registered and went into the Challenge.

For the 2nd World University Challenge, there were four tasks the information of which we received, from the organizers, about one month before the Challenge:

1) **Integrated Water Resources Management** (60 minutes): The task dealt with an infrastructure concerning the water economy, waste industry and energy industry in a fiction society. This was a role playing game, with us being the consultant, the representative of the water and energy operation utility and the governor of the province. The three meet the first time to develop an idea of a new master plan for the region, based on a given scenario.

2) **Flow Measurement Regulation and Control Tasks** (60 minutes): The task was to demonstrate the operation and the measurement of drainage and sewage plants in a model. The teams had to complete the piping and instrument flow diagram, assemble, and operate the test system based on the given parameters.
3) Aqua Republica Game – Digital environmental planning (30 minutes): This was a computer game, developed by DHI (an international software development and engineering consultant firm headquartered in Denmark) and the United Nations Environment Programme (UNEP), based on international practices in sustainable water management. Through the game, participating teams identified and stimulated the connection between water usage, social and business development as well as ecological sustainability.

4) Virtual Reality (30 minutes): Using virtual reality glasses, students identified and named mistakes on a virtual sewage plant.

We did learn a lot during the preparation for the Challenge. The three of us divided up the tasks and set times to meet and discuss about the details of each task. We were trying to first get familiar with the tasks and the associated technologies and instruments. Task 1, though complex and challenging even in real-life practices, was fairly straightforward to grasp. Here we did some reading and made a summary of key points. For Task 3, we could play the game online and tried for ourselves how good we were with it. Pan was the best player among us three. For task 4, we had a vague idea about “virtual reality glasses” but besides that we felt we knew the subject. We already had a course on waste water treatment and as part of the course already visited our university’s waste water treatment plant in Bruesnau (ISWA) during the first semester. In order to make sure of our knowledge, we went back to the plant and looked closely with our attentive eyes and ears at the various steps of treatment and the associated equipment and locations. The most difficult task for us was task 2. Here we were able to find a technical manual for the system but we had never seen the model or practiced on such a system before. We contacted a faculty member of ISWA with hope that there was one model in the Institute and that we could be allowed to have a look. We were lucky. Just one day before leaving for the Challenge, we got the appointment to see the model system and to try operating it. We did not have enough practice (as it would turn out at the Challenge) but on that day we were relieved we had seen the system and did have some practice.

Then the day came. Besides us, there were other 17 teams, altogether from 13 universities of 7 countries in Asia, Africa, and Europe.
Our team did not win in any task, but we had a good time participating and meeting other students at the Challenge. With Pan and Ben, I believe we have better understood each other and have learned so much together from team work and collaboration. For me personally, I have achieved my goal. And most importantly, I have won over myself in daring to test my limits and to go out of my comfort zone. Gaining new knowledge to me is never wasteful or redundant, and pursuing one’s passion is never a risky business. One needs not to be reminded to just dream again.
Once I had to choose my Master Thesis while I was still in Stuttgart, I (as well as everyone) had to define two main things. The first one the topic and then the location. To select the topic, I had the picture clear: I wanted to continue with the focus that I had taken in the last year of WAREM: water supply and urban drainage lectures. Also, something related to my halftime work duties in the Zweckverband Landeswasserversorgung, one of the water supply companies from Stuttgart, where I worked for almost then months while I was attending to Uni-Stuttgart. Then, to select where to do the Master Thesis, I decided to look for opportunities to do it in Germany as well as in my homeland Colombia. It was not an easy choice. In one hand, I had the option to stay in the country where I was having a great experience and good options to build a carrier; in the other the option to come back see family, friends, NO WINTER also the possibility to make there something big! This last was the inflection point of my decision: I contacted the Acueducto de Bogotá (Water Supply Company from Bogotá) proposing a project there in Sustainable Urban Drainage Systems (SUDS) to prevent floods in the urban area of the city. After a while it was approved; then I went to Dr. Dittmer from ISWA to show the scope of project. Three months later I was in Colombia...

Eventually, I started to work at the Acueducto de Bogotá and the project from the Master Thesis was developed successfully, I got the master’s degree and the job search started. Firs of all, the intension was to stay at the Acueducto de Bogotá. After some tries and some bureaucratic issues it has been impossible to sign the contract. I realize how difficult was to deal with the public sector in Colombia and I decided to look for new options. Sometimes we heard “When one door closes, another opens...” and yes, it was like that! I started a hiring process at an European private company from Barcelona, Spain, called Meteosim S.L., which develops predictive atmospherically numerical models. The process was hard and long; it has taken almost 3 months and more than 300 candidates went. I came to the final rounds with 20 persons, where I was the youngest and with less years of experience. Nevertheless, I got it. Of course, I had to ask why I was selected. The answer from my Chief surpassed me:

They were looking for the Country Manager to develop the business in Colombia. They wanted someone with international background to deal with multicultural differences, because I would be the only non European person form the company. They need someone able to understand Latinos as well as Europeans: one of the biggest gifts from the two years WAREM experiences. Part of the job was to be the interlocuter with the Colombian clients, determine their needs, build commercial offers, negotiate and sell them the project. But all the technicians where Spanish, and no matter we speak the same language, we communicated and feel different
Some young were looked. They wanted someone to build the Meteosim’s Colombian project as a life project. Therefore, my age, that I though it was my weakest point, became strong. And my short work experience (at that time it wasn’t longer than 3 years) was compensated with technical knowledge obtained in a high-status German university like Uni-Stuttgart. That makes WAREM students attractive to companies.

At Meteosim I had to start a company in Colombia from Zero. To identify the business opportunities and the potential clients in the different regions of the country. I had to sell applied scientific technology which helped companies from the public or private sector to manage climate risks (as we studied with Dr. Dittmer in the Special Aspects of Urban Water Management lecture) in their daily operations like flood hazard, rain water supply or extreme temperatures or rainy periods management, blizzards and even hurricanes and tornadoes early alert. At the end, working here, was what I was looking for: applied technical knowledge to do something big: prevent natural disasters, help companies and communities to deal with them as well as saving peoples live using early warning systems. Not bad for a country where climate change is daily highly affecting.

Now, after more than almost 3 years after being graduated from WAREM, time during I had great experiences and achievements, I have realized that WAREM wasn’t only a Master that I studied; It has been a Master I lived. A completely Master of life, that I would like to repeat again and again. It gave me the technical knowledge to get my actual job as well as the related background to have a good performance. It and all people involved during that experience contributed in the person I am today.

Mein Entschluss wurde durch Weiterempfehlungen über die Universität und positive Berichte über das skandinavische Bildungssystem und einer einwandfreien Organisation vor Ort bestärkt. Ausschlaggebend für meine Bewerbung in Schweden waren außerdem die schwedische Mentalität, die für Freundlichkeit und Herzlichkeit steht, sowie die schwedischen Traditionen und die wunderschöne Landschaft. Ich wurde in keinem Punkt enttäuscht.


**Universität und Bildung**


Anders als in Deutschland gibt es pro Semester (30 LP) 2 Perioden (je 15 LP), die wiederum in 2 Abschnitte (je 7,5 LP) unterteilt sind. Ein Kurs (knapp 20 - 30 Personen) dauert immer nur 2 Monate und ist deswegen sehr intensiv. Im Gegensatz zu Deutschland besteht


Assignments” in jedem Kurs, das Herangehen und Strukturieren von Problemstellungen in den Gruppenarbeiten, hatte ich das Gefühl dazuzulernen und gut auf meine Masterarbeit vorbereitet zu sein. In meiner zweiten Hälfte des Studiums in Schweden stand dann die sechsmonatige Masterarbeit an, die von einem deutschen und einem schwedischen Professor betreut wird.

**Mein Leben in Göteborg**


Zu einer Fika trifft man sich im Café oder aber auch daheim. Es gibt Kaffee/Tee und etwas Süßes dazu. “Kaffeekränzchen” wäre wohl die passendste Beschreibung in Deutschland, aber das trifft es einfach nicht. Es ist altmodisch und hipp zugleich. Ganz egal ob es ein anstrengender oder entspannter Tag war, bei einer Fika kann man den Alltag hinter sich lassen. Das Leben in der Zeit meiner Masterarbeit spielte sich größtenteils in kleinen gemütlichen Cafés in Göteborg ab. Die Vielfalt an Leckereien, die einem dort geboten werden, findet man bei uns im Land selten bis gar nicht. Die Spezialitäten sind saisonal, wie zum Beispiel die “Semlor” während der Fastenzeit, die “Prinsesstårta” zu Anlässen wie Geburtstagen, oder aber Klassiker wie die “Kanelbullar”, die schwedischen Zimtschnecken. Das Leben in Göteborg findet in den kalten und ungemütlichen Tagen, und
davon gibt es viele, hauptsächlich im warmen Inneren von Cafés statt.


Wenn ich wieder vor der Wahl stehen würde, würde ich die Möglichkeit wieder ergreifen! Es hat mein Leben verändert!
My name is Pann Ei Ei Phyoe and I am currently doing an internship program at Centre of Expertise Water Technologies (CEW) in the city of Leeuwarden, in the Netherlands. I am a master student from Water Resources Engineering and Management (WAREM) and currently enrolling at the third semester at University of Stuttgart, Germany.

Leeuwarden is the European Capital Culture 2018 which is situated in the province of Friesland in the northern part of Holland. Water Campus Leeuwarden is the meeting point of the Dutch water technology sector which stimulates the cooperation between (inter)national businesses, knowledge institutes and governments within the sector.

The cooperation of Education between science, applied research and business sector has standout as one of the best water technology hubs in Europe. CEW is one of the managing companies in Watercampus Leeuwarden.

My main goal for doing an internship is to come out of my comfort zone and challenge myself in a practically working environment internationally. Erasmus+ program provides me a chance of doing an exchange internship in one of the European institutes while enrolling at the University. I arrived to Leeuwarden on 15th of September 2018. I was kicked off my internship with the training of “Wetskills Water Challenge 2018” in Leeuwarden. This challenge was a part of my internship.
There were students from different parts of the world who participated for a two-week intensive training. We have consulted with various sectors including government municipalities, private and public institutes and company. We had training on four main topics: self-supportive temporary shelters for multi-purpose use, Self-supportive cities and islands on water and energy, Wastewater reuse for agriculture, BioBizzHub for energising startups to scale up their business. We also had excursions to Afsluitdijk which is one of the biggest flood protection dikes in the world and one of its kind. A glance of how the Dutch protects the country from the danger of flooding is fascinating.

My team came up with the decentralized energy circulation system for the topic of Self-supportive cities and islands on water and energy and we have won the challenge with the project “Water Wide Web 3.1”. Besides, we had a chance to participate at European Water Tech Week in Leeuwarden. This is a good experience to work with students from different nationalities, different background and could network professionally. Besides, it opens my eyes about the water sector even more.

I love cycling as I grew up with bikes in Myanmar. Leeuwarden reminds me a lot about my hometown. It is small yet, it has everything that you need. I can bike everywhere easily. One of the interesting things is learning the cultural difference. All my Dutch colleagues tends to have bread for lunch every day with a cup of milk. I do not see anyone having warm meal in the lunch time. Besides, the nightlife in Holland usually starts very late, once I was at a club at 1:00 AM and it seems that we were the first to arrive and we had a very good laugh about it. Furthermore, communications within the researchers and the students are very welcoming. We also celebrate a cake afternoon almost every two weeks and an activity to improve the team-building skills such as golfing, or ice-skating in each month.
I started my project of Desalination of Salty Seepage on 1st of October, and at the end of October, I have received a second project which is to perform analysis and analytical control a small-scale waste water system in the lab scale. I work mainly on the water application center which is situated in University of Applied Science Van Hall Larenstein. I have two project supervisors and who are closely supervised me along the process. I felt incredibly fortunate because I can not only work in the full-facilitated institute but also have the mentors and professionals to ask any questions that I might have. The opportunity of “Learning by working” has a huge impact on my learning processes. Besides, CEW and Wetsus Academy has accommodated many students and researchers, hence it has also given me a chance to network broadly in the water sector.

In conclusion, I am very happy and did the right decision to come to the Netherlands for my Erasmus+ internship and I am sure it will have a huge impact on deciding not only for my master thesis but also for my future career.
In the state of Tamil Nadu in Southern India, rainwater harvesting has been obligated in every building since 2003. This fact was the starting point of my master’s thesis. With a topic “Rainwater harvesting for domestic use and groundwater recharge in Coimbatore, India” on-site research was done in April–May 2018 based at IIT Madras, Chennai. IGCS (Indo-German Centre for Sustainability) granted the whole expenses for the stay.

The research site was Coimbatore where is the second big city in Tamil Nadu. The research was planned to investigate the residential need for rainwater harvesting, at the same time analyzing the current practices of rainwater harvesting after 15 years since the law was first implemented. The ultimate aim was to evaluate the feasibility of rainwater harvesting for domestic use considering legislative, administrative and technical availabilities.

During 2 months of stay in India, I conducted surveys on the residents and interviews on the professionals. It was inevitable to rearrange almost everything due to unexpected regional circumstances. Information gained from the professionals interviews was used to set up the survey questionnaire and to select the survey sites. 28 houses were visited and the sites were divided in 3 different economic classes. The regional language Tamil was one of the barriers. Besides, few of the questions used in the survey turned out misleading answers.

Despite of small target population, it was possible to have results to be discussed further. Residents’ water use and provision were evaluated for simulated storage models. The storage models showed different results (optimal suggestions) depending on the economic class.

Currently, Smart City project is being carried out in many cities in India. This national level movement includes, of course, improvement of water resources management. Rainwater harvesting for recharging groundwater is a part of it, since groundwater is the most important water resource in India. The results of my research shed light on rainwater for domestic use which can still be linked to groundwater recharge.
It was a great opportunity to communicate directly with the beneficiaries and stakeholders. My expectation for the research changed greatly after I experienced all on-site. Coimbatore’s rainwater harvesting situation is very interesting in terms of the long Indian history of harvesting rainwater, and city’s previous great efforts. I wanted to highlight its potential so that the city takes better attention to reviewing the current practices and improving them.

Staying in India for 2 months was an amazing experience for me. Sometimes I was overwhelmed by the fact that I had to deal with so many new things by myself. And it was too hot. On the other hand, the new perspectives and environments inspired me a lot to think more differently in working as a water engineer.

For example, I met a family during the survey who used rainwater for drinking only with a simple screening. The family also answered that they could not install rainwater harvesting facility because their kids could trip over it. And most of the rainwater harvesting facility installed houses were found out that they had to block the facility because of building alteration. I certainly could not have thought these factors without asking the residents at the place. Furthermore, I learned how important the interaction between stakeholders and beneficiaries is in a water project. Thanks to this experience, next time I will contribute more time and better knowledge to understand the water dynamics, running around people.
EXCURSIONS

LANGENAU LANDESWASSERVERSORGUNG
GENERATION 2018