

Letter from The Editorial Board

Hello and welcome to the second edition of the Industrial Ecology MSc newsletter Discovery!

We have a fantastic range of student-authors from at least seven countries, bringing you the latest news and trends from the world of IE at Leiden & Delft. But first, a quick contextualising overview from the Editorial Board on what's happening in our quaint uni-bubble here in the Netherlands.

The first years are deep into assignment-deadline period, polishing up their inspirational works on everything from sustainable innovations to sustainable infrastructures & infographics. They recently had a full-day event for the System Earth course: students shared their individual research papers and 'science communication projects' including YouTube videos, board games, websites, art projects and documentaries! Some second years recently delivered their interdisciplinary project group final reports, and are out celebrating in the streets. The IE elders are deep in concentration, keen to complete and defend their theses before Summer hits full swing.

Then we have the new batch of wide-eyed students whom we hope to count amongst our readership: the September 2017 starters who are currently receiving their acceptance offers with great pride. Pay attention to those recommended preparatory courses folks! The more you learn before you arrive, the more fun you can have when you're here 😊 Hopefully there are many future Shiftizens amongst your ranks! If any of you are visiting Leiden/Delft over the summer and want to meet some current students, feel free to reach out and we may be able to arrange something.

Regardless of your current engagements, one thing we know for sure is that everyone will be there on July 7th when we take to the lake for Shift's "End of the Year Event". The event committee claim that our "strength, creativity, speed and coordination will be tested" throughout "a day of challenging games." Good luck with that one guys!

Until next time, we sincerely hope you enjoy this journey of DiscoverIE.



IE Soccer Tournament 2017

by J. MURRAY

The Event Committee's second annual Industrial Ecology Soccer Tournament was held on the 11th of May. Flying ninja kicks and spirited leaps of glory were the order of the afternoon as IE'ers brought their soccer skills to the fields, giving the class an opportunity to enjoy some exercise together and display some athleticism. Moments of artful dribbling and sharp shooting were complemented by a number of balls sent flying into neighboring properties and on one occasion rocketing into the back of the head of an unsuspecting pedestrian walking innocently past the field. Add Jesse's fractured nose and Erwin's torn hamstring to the mix and the evidence suggests an exceptionally eventful afternoon!

We enjoyed seeing everyone bringing their enthusiasm to the event and thank everyone who attended for doing so! We hope you're all looking forward to the end-of-year party as much as we are; if you don't know about it yet, block it off and start getting pumped. The details are on Facebook.



We took a train to Hoofddorp (with a few hints about taking a party bus on these excursions; a suggestion I am beginning to suspect comes up every time). We walked to the park for an enthusiastic talk by the developer Owen, about why he got into C2C certified real estate. Perhaps most interestingly, his talk gave a financial perspective on sustainable developments. Real estate development is not a charitable industry. It was welcome news to hear that designing C2C buildings does not automatically mean higher costs, less profit and a bigger headache. Most buildings nowadays have a technical life which far exceeds their economic life meaning that they are demolished before it is really necessary from a technical standpoint. So, the fact that these buildings were designed with disassembly in mind, and a database of embedded materials (the material passport) means they will retain more value even after decades - whether whole, or as disassembled and recyclable components.

After the talk, the day rounded off with a tour of the business park. Owen gave the impression of much interest from companies wanting to settle in the area so it could remain an interesting site for the coming years. Although each building is by no means perfect, the idea is that each serves as a point on the learning curve towards 100% C2C development.

Lunch Lecture: Future Cities

By F. DE GROEN

Wyske Versteeg came to Delft the 1st of May for the first Shift Lunch Lecture of the year. Whilst waiting for the last slow-walking IE students on their way from the 'Urban Environments' class, we got to chat with Wyske. She seemed a little nervous! But once she was on stage, she talked like a real writer and the presentation went super-smooth!

What do the cities of the future look like? What do the people in those cities want? What do you want in the future? Unfortunately these questions were not answered in this 45 minutes of lunch lecture. However the students received many great insights on how to imagine the future, to help guide the development of our cities in the present. There was a challenging question regarding how engineers could possibly improve these skills in their daily activities. Wyske mentioned reading a lot of science fiction, which sounds like good advice generally.

The next event from the Post-Fossil City Challenge by Urban Future Studios is the exhibition in June, where the 10 finalists demonstrate how they think the future cities will look, smell and feel. Sensitive stuff!

Excursion to Park 20|20

by A. SINGHVI

On May 19th, the Delft Green Office and Shift hosted an excursion to Park 20|20, a business park that abides by the 'Cradle to Cradle' philosophy. The four key principles of the buildings are that they have to be designed for disassembly, increase productivity and health, have a 'material passport', and the products are to be sold as services where possible. All in all, an ambitious plan.



Future Events



Sustainable Business Battle

by E. KANTOR

The first ever 'Sustainable Business Battle' in Leiden & The Hague is approaching the climax event and you're totally welcome to join us! For 6 weeks, thirty students addressed sustainability challenges provided by organisations including Vliko, DUWO, Rijnlang Hoogheemraadschap, Koninklijke Horeca Nederland and municipality, and Leiden University. They received lectures from the greats: Rene Kleijn & Arnold Tukker; nurtured their creative impulses in a design workshop; and learnt how to pitch a presentation (not a baseball). On the 23rd of June, the finalists will present their ideas to an independent jury including the Dutch Minister for Infrastructure and Environment Melanie Shultz van Haegen!

IE's very own Daniel Avila Ortega, Cristina Acosta Piscioti, Sandra Atanasoae and Yanze Yang all participated. Yanze's team will present their solution for Koninklijke Horeca Nederland at the final! Join us to support her and also vote for our other friends so they can win the wildcard and pitch before the jury.

We hope to see you all there!

<https://www.facebook.com/SustainableBusinessBattle/>
<http://sustainablebusinessbattle.nl/>

Panel Discussion: Sustainable Political Strategies

by T.M.

For our second lunch event of the year, IESA Shift and Studium Generale have organised a panel discussion on sustainability and governance! The Dutch GroenLinks MP Liesbeth van Tongeren has kindly agreed to join us, alongside legendary Delft professors including Hubert Savenije & Peter Luscuere.

The context of the event is provided by an open-letter sent to the post-election coalition which was forming at the time of writing. Ninety professors from eighteen Dutch universities urged the new cabinet to promote a sustainable green economy. They want the government to invest 200 billion euros in smart infrastructure, knowledge, labour, education and new ways of organizing.

Many Delft professors signed the letter which was organised by Jan Rotmans. Others professors contacted by Shift would also have signed if they knew about it! We looked for opponents to the contents of the letter, with the intention of hosting a structured debate but no Delft or Leiden staff we spoke to strongly disagreed! Hence we decided to arrange a lovely collaborative discussion instead.

The goal of the event is to provide actionable insight regarding how academics and young people including international students can meet their sustainability-related political goals. Many of us would like to see our societies move in this direction, but find it difficult to influence the top levels of decision making.

The panel discussion will revolve around a number of questions. With regards to the letter: what do the signatories expect to achieve? Are the professors also engaged in other forms of activism? Do they see their research as part of the sustainable transition that is called for?

Which effective political strategies and forms of organisation are available to the students? And finally, how are all of these potential actions perceived by the serving politicians? We hope you'll join us on Monday, June 19 for what could be a stimulating and valuable event.

Write it in your calendar!

Sustainable Business Battle

When? June 23rd: 16:00-19:00
Where? L.S.V. Minerva,
Breestraat 50, 2311 CS, Leiden

Panel Discussion: Sustainable Political Strategies

When? June 19th: 12:30-14.00
Where? Industrial Design Arena
Landbergstraat 15, Delft

Shift End of the Year Event

Daytime activities

When? July 7th: 13:00-17.00
Where? De Delftse Hout
Laantje, 2600 AP, Delft
What? A day of challenging games, which will test your speed, creativity, strenght and coordination.

Evening activities

When? July 7th: 20:00-01:00
Where? Café de Ruif, Kerkstraat. 22-14, Delft
What? Party!

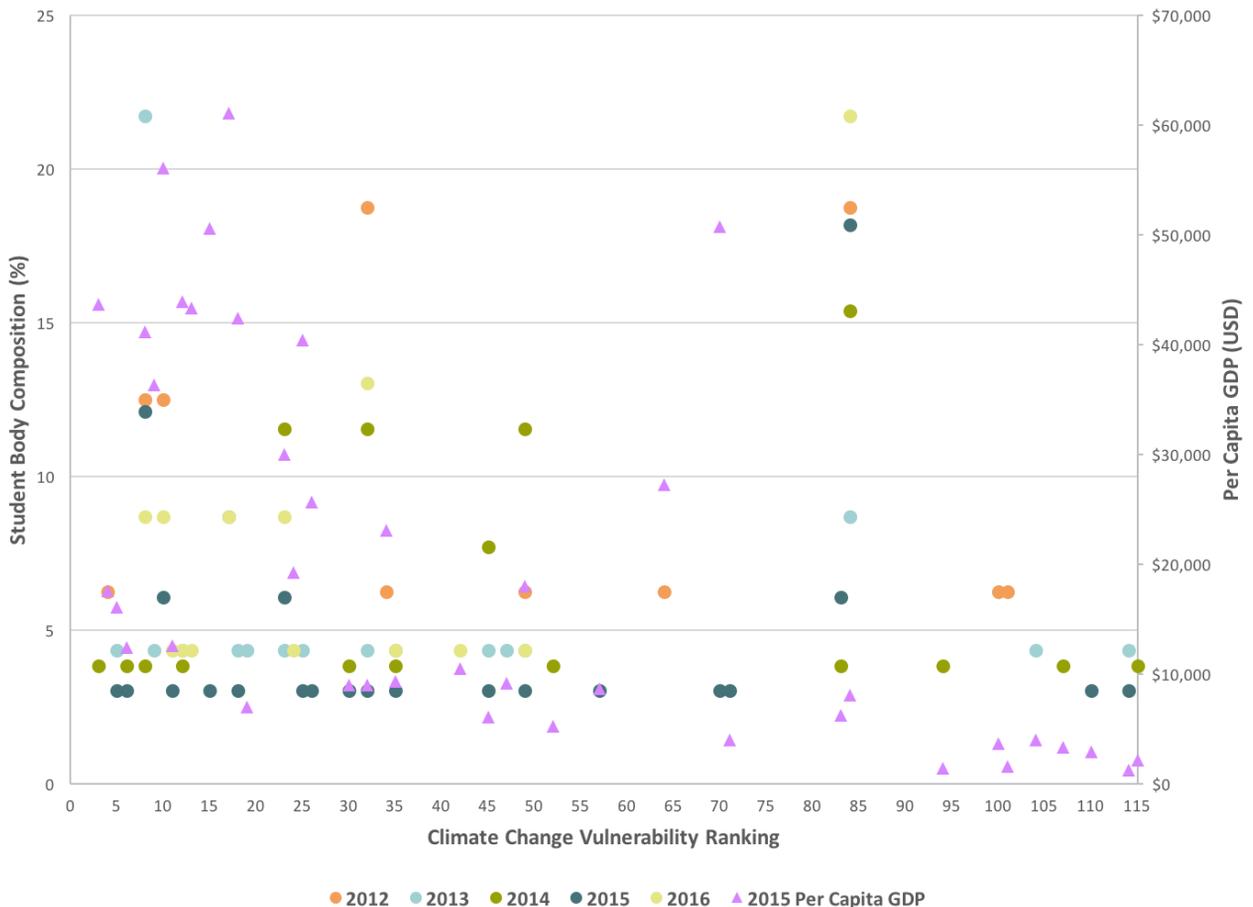
Diversity in IE

by A. MÁRQUEZ

Access to higher education is critical if we are to successfully combat the encroaching threat of climate change. As a society, we trust that institutions of higher learning will give students the tools and knowledge that are needed to reduce or eliminate the impacts of climate change. Access to higher education becomes increasingly important for low-income and minority ethnic groups since they will inevitably bear the most severe consequences of environmental degradation and pollution. Fortunately, enrollment rates in higher education have been steadily increasing since the 1980s even in the most impoverished regions in the world¹ and yet financial and educational barriers (among others)² prevent these enrollment rates from increasing. This forces us to question to what extent the former affects the latter in our IE programme. This is increasingly important given that it is those same barriers that are impeding us from enjoying the benefits of a diverse student body.

I met with Els Kroon and she was kind enough to provide me with anonymised information about the IE programme. Specifically, she shared data from students that have actually enrolled from 2012 to 2016. I took this data, organized it based on the student's country of origin, and compared to a climate change vulnerability ranking developed by Standard & Poor (S&P) and the country's per capita GDP according to the World Bank. From this data, I filtered out the Dutch students because it's only natural that Dutch students would make up most of the student body in a school in The Netherlands.

With that in mind, I divided the S&P ranking in three and categorized each country in their respective bin and generated the following graph:



¹Kapur, Devesh, and Megan Crowley. 2008. *Beyond the ABCs: Higher Education and Developing Countries*. Washington D.C.: Center for Global Development.

² Prodan, Adriana, Emil Maxim, Irina Manolescu, Carmen Claudia Arustei, and Alexandra Luciana Guta. 2015. "Access to Higher Education: Influences and Possible Implications." *7th International Conference on Globalization and Higher Education in Economics and Business Administration*. Iasi: Elsevier. 535-543.

The graph shows the student body composition from each region from 2012 to 2016. The countries are ranked from 1 to 116 with one being the lowest vulnerability and 116 the highest. On the secondary axis of the graph is the country's per capita GDP.

There are two particularly troubling things that come from this analysis. One, the student body of the IE programme is comprised mostly of students that are at the lowest risk of climate change and have the financial means to afford a higher education. Two, the students that have the most to gain and are most at risk to the dangers of climate change are being excluded from the conversation given their low composition of the student body. This trend is present since 2012 which means that IE students have been predominantly exposed to students with similar profiles for the past five years which reinforces similar points of view and ultimately limits our opportunities to learn from other people and find solutions to climate change (for more information read Cuppen (2011).)

Money is a big reason. International students have to pay a yearly tuition of €15,000 before taking living expenses into account. This amount is five times higher than the average per capita GDP of countries with a high climate change vulnerability and is simply out of reach for them. Another thing to consider is Dutch education policy. From my conversation with Els she mentioned that, in the case of Africa, there are few schools that meet the minimum criteria for access to higher education in The Netherlands, which shrinks the potential applicant pool.

I argue a good first step is to identify the barriers by surveying the students that do not accept their admissions offer. Based on their answers, we can formulate a proper course of action and improve the educational quality for everyone.

Introducing the New Career Committee

by E. BLOK

When discussing our beautiful master you have probably heard the remark; 'Oh! When you graduate, you will easily get a job!'. After the conversation you're left wondering; 'Yeah I hope so, but where?!?'. Well, wonder no more! Because the IE Career Committee is here to assist you in your search for career opportunities. We are preparing activities for your participation in the new study year. These activities range from workshops/CV-checks to an actual IE Career Day! The purpose of these events is to build your acquaintance with the varied careers that the field of IE has to offer. We can help if you want to find an internship, or enter a company as a trainee. And of course proper graduate-level jobs too! Just let us know! - The IE Career Committee (Rosa, Daniel, Cathelijne, Ebe)

P.S. If you have any contacts with companies / IE graduates that could be useful, don't hesitate to contact us: career.iesashift@gmail.com

Elective Review: 2 Electives on Materials Engineering

by J. KOTNIS

'**Recycling engineering materials**' in the Delft 3ME department is one of the best courses I've taken so far! It's the only course that tackles specifically the engineering of recycling, including descriptions of presently used technologies for each material type. It's close related to the IE programme, due to connections with LCA, economic and social aspects. So everyone can find something interesting there! The most fun part was an excursion to a recycling facility, last year it was ARN in Tiel (auto shredder residue recycling plant). This trip gave me the opportunity to see how recycling looks in practice. I definitely recommend this course as an elective within IE!

'**Material selection in engineering applications**' (also 3ME) is another option for those that are into materials engineering. If you're not scared of concepts like material strength, stiffness, and Young's modulus this class will be a pleasure for you. But don't be discouraged if you don't recall any of those! It's not rocket science (for that you'll need to head to Delft's aerospace department), you can still catch up with basics of mechanics and material properties. The teacher is very understanding and eager to help! You will learn how to take different a perspective when designing new products, and that's a good opportunity to incorporate IE concepts like design for recycling or carbon footprint reduction. The coolest part of this course (besides no exam) is the software 'CES EduPack', with a huge material database including sustainability and eco-design modes.

Elective Review: Technology and Global Development

by V. RABL

Sustainability often seems to us students of Industrial Ecology as one of the most important goals societies should seek to achieve. The course "Technology and Global Development" provides the knowledge to put this aspiration in a global perspective.

For me, the most important lesson was the immense significance of economic prosperity for developing countries, as measured by GDP. The course puts human development in a broad perspective, and argues that economic development helped improve the living conditions of billions of people. We also explored

whether GDP is still a good metric for human development in developed countries, and which alternatives are available.

Another important insight was the clear distinction between the developed and developing world with regards to sustainability. Strategies that work here are not necessarily good solutions for the developed world. Many ideas originating from the developed world impede sustainable progress elsewhere. For instance, because of the strong opposition to nuclear energy, the majority of developing countries now have a great dependence on coal.

The teaching in class was unfortunately not quite inspiring. The content is solid, but the teachers were not very energetic. There is a vast amount of required reading including three books.

If you are interested in a nuanced conceptual & theoretical discussion of sustainable human development, this class is perfect for you. If you are interested in hands-on knowledge that is directly transferable into practice, you might want to search for another course.

IE Spotlight: Micky Schepers

by T. M.

Hi Micky! You've just returned from some time in Nepal! What on earth were you doing there?!

Hey! I was on a multidisciplinary project called 'Shock Safe Nepal'. We did research into earthquake resistant buildings. We validated and optimised a design that had been made previously and researched the possibilities for building in Nepal. We mainly stayed in Kathmandu but went to the village where the Pilot house was built by a previous group a couple of times. We also did a ten day trip through the mountains in Lower Mustang on motorbikes!

Has your Industrial Ecology education helped with that kind of stuff?

Although the project is based more on architecture and engineering studies than IE, I think that industrial ecology definitely helped. For example in seeing the problem at a system level. Also in recognising that not all solutions are sustainable, although they might look like it at first. We also conducted stakeholder analyses like in CLOSC and the PESTLE analysis that we used in SUISCY and used a couple of other frameworks that I knew from IE.

What's going to happen with the project now you've returned?

We are working on starting a foundation to make the project useful into the future. Our dream is to become a platform for students who are interested in doing a project in Nepal, by linking them to organisations in the

The IE Insight



country. We want to improve knowledge and research into earthquake resilient building and of course students who participate will learn a lot.

... Any final advice for people thinking of taking on international projects whilst studying IE?

Ask around the people you know who have done projects abroad to get inspired and discover interesting opportunities. Realise that you are not only helping locals but you are learning as well! And print documents you might need beforehand, as the Internet doesn't always work! There are also a couple of 'Delft Mobility Grants' like FIS that you can get if you do an international project, which always helps!

Readers: Got an idea for someone you think would be perfect for next month's spotlight? Let us know!



Pun of the Month

by UNKNOWN

I'm writing a book about sustainable water management. It's called: "Dam Right!"
Some people think it's left-wing propaganda.

(Author too embarrassed to leave name)
Got a joke for next month? Let us know!

Layout by Ella Tolonen