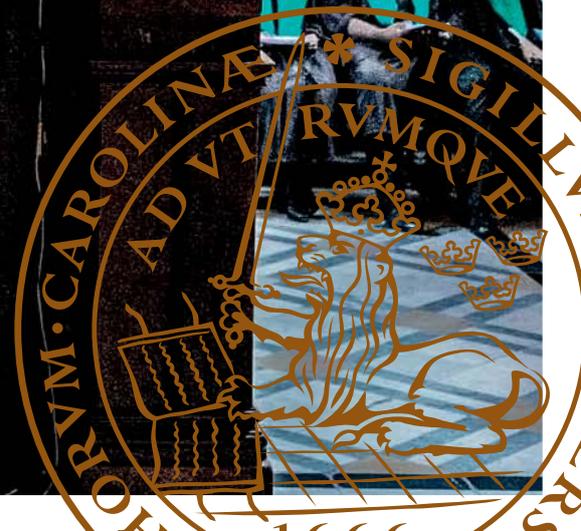




ADVANCING SUSTAINABLE SOLUTIONS
ANNUAL REPORT 2016

iiiee

THE INTERNATIONAL INSTITUTE FOR
INDUSTRIAL ENVIRONMENTAL ECONOMICS



The IIIEE by numbers in 2016

Masters students

93

on campus
(147 on campus and
distance)

Masters graduates

850+

people from

90+

countries

Staff

40+

(21 researchers,
11 PhD students,
9 administration,
guest researchers)

Participants in MOOCs

52,500

Publications

44

(920 in total)

Downloads

56,000

(137,000 in total)

Research projects

30

Turnover

37

million SEK





IIIEE - Advancing Sustainable Solutions

Lena Neij. Photo: Gunnar Menander

The IIIEE is an international and interdisciplinary centre within Lund University that advances knowledge on how to catalyse the transition to low-carbon and resource efficient economies.

We focus on the design, application and evaluation of policies and business strategies and provide support for decision makers in public authorities and business - internationally, nationally and locally.

Since its foundation, the IIIEE education and research has been truly interdisciplinary, collaborative and international.

Interdisciplinary – The IIIEE has a genuine interdisciplinary approach synthesizing insights not only from economic theory and practice but also from natural sciences, engineering, political science, organizational, legal and behavioural studies. The IIIEE academic staff has backgrounds in diverse disciplines.

Collaboration – The IIIEE education and research are performed in close collaboration with business, public authorities and other societal partners. We actively engage our partners in collaborative research, case study projects, lecture series, interactive seminars and workshops.

International – The IIIEE is highly international, and over the last 10 years the IIIEE has collaborated with more than 100 international research groups and societal partners.

Following an entrepreneurial start in 1994, the IIIEE has pioneered a range of activities including interdisciplinary research, high quality international Master's programmes, and award-winning on-line courses, including MOOCs.

In 2016, the IIIEE expanded and further developed its unique interdisciplinary profile and genuine platform for collaboration. Four new professorships have been established, several

new project grants have been received in competition with others, interesting research results have been published in academic journals and presented in the media, several interactive and interesting seminars have been hosted by the IIIEE, and not least, numerous excellent students and future leaders for sustainability have graduated from the IIIEE.

I welcome you all to visit our website regularly to take part in the events that will be arranged in 2017 and beyond. I also want to thank all research partners, companies and organizations for creative and constructive collaboration in 2016.

Professor Lena Neij
Director of the IIIEE

Highlights in 2016



DESIGN WORKSHOP FOR POST-CONFLICT SUSTAINABILITY LABS

In February, IIIEE researcher Tareq Emtairah co-organised a workshop on the theme, *Conflict and Violence in the Middle East: Far away but close to home*, with the purpose of exploring roles for higher education institutions to contribute to addressing the current migration challenges. The event marked the start of a series of design workshops in the period from August to December with 40+ scholars and students from the Syrian diaspora on scenario building for a future Syria.



ROMANIAN AMBASSADOR TO SWEDEN VISITS THE IIIEE

In May, the Romanian Ambassador to Sweden, H.E. Mr Iulian Buga and his delegation visited the IIIEE to learn more about current IIIEE activities and to discuss the conditions and potentials of an expansion of the IIIEE outreach programme, the Swedish-Polish Sustainable Energy Platform, towards Romania.



ASSOCIATE PROFESSOR LUIS MUNDACA PARTICIPATES IN CLIMATE ACTION WEEK 2016

In May, IPCC Lead Author Luis Mundaca participated in high-level meetings during Climate Action Week 2016 in the United States. The meetings included the "Climate Action 2016" summit in Washington, highlighting the role of academic and research institutions in implementing the Climate Paris Agreement and the Sustainable Development Goals.



IIIIEE GRADUATE WINS SWECO HUGO PRIZE

Lucie Zvoltska from our Master's programme won the SWECO Hugo Prize in the category "Student of the Year" for her Master's thesis on the sharing economy with the title *Sustainability Potentials of the Sharing Economy: The case of accommodation sharing platforms*.



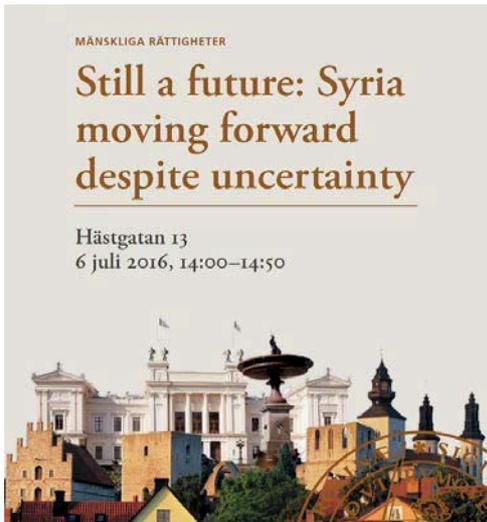
WINNERS OF THE UNIVERSITAS 21 GLOBAL INGENUITY CHALLENGE 2016

In April, the Team Global Lund, including IIIEE Master's students, won the category "Peer's Choice Award" together with Korea University, and received a special award for their contribution *Host-a-Home*. The theme of this year's challenge was "Sustainable Housing" and the contribution *Host-a-Home* suggests a cost-effective, sustainable and flexible housing solution for solving the ongoing refugee housing needs in Sweden and Europe.



UNIVERSITY OF VIRGINIA VISITS THE IIIEE

For the third year the University of Virginia visited the IIIEE with the Study Abroad Programme, engaging in sustainability consulting projects for three weeks, focusing on IIIEE topics including the circular economy, sustainable mobility, sustainable urban development and social innovation. They were working on their projects with the company Godslnlösen, two departments at the City of Lund, and the Connectors Society in Malmö.



IIIEE PARTICIPATES IN THE ALMEDALEN WEEK 2016

The IIIEE took part in two activities at the Almedalen Week in Gotland: 1) *Från förvaltare till klimathjälte* – a seminar arranged by Dagens Industri and Caverion and 2) *Still a future: Syria moving forward despite uncertainty* – a seminar arranged by the Center for Middle Eastern Studies at Lund University.



LESSONS FROM EXTENDED PRODUCER RESPONSIBILITY

In October, Thomas Lindhqvist and Naoko Tojo, together with their PhD student Jessika Luth Richter, organised the conference *Third decade of EPR - What lessons and experiences can be used for light sources and other products?* at the IIIEE, with the objective to follow up the decades of positive experiences in bringing together stakeholders and researchers around topical Extended Producer Responsibility (EPR) issues.



PROFESSOR LENA NEIJ APPOINTED BY THE SWEDISH GOVERNMENT TO THE NATIONAL JOINT ACTION GROUP FOR SMART CITIES

In September, the Swedish Government presented five national joint action groups which are connected to the government’s five strategic research programmes, with the aim of developing the government’s innovation politics. Professor Lena Neij, Director at the IIIEE, was selected to be part of the joint action group on smart cities.



NEW PHD CANDIDATES IN THE URBAN SHARING PROJECT

In September, two new PhD candidates joined the IIIEE, Steven Curtis and Lucie Zvolkska. Their PhD projects are both part of the project *Urban Sharing: From Excess Economy to Access Economy*, a project which will be investigating urban sharing organisations in eight cities - Berlin, Barcelona, London, San Francisco, Melbourne, São Paulo, Jakarta, and Seoul - to understand sharing in different contexts.



THE SWEDISH MINISTER FOR THE ENVIRONMENT VISITS THE IIIEE

The IIIEE hosted a regional seminar in October, arranged by the Swedish Scientific Council for Sustainable Development, a council established by the Swedish Government. The aim of the seminar was to build on two areas of strength in the southern part of Sweden: smart cities and smart materials. Present at the regional seminar was, among others, Karolina Skog, Minister for the Environment.



MALMÖ CITY DEVELOPMENT CONFERENCE 2016

In December, the Urban Arena (coordinated by IIIEE) hosted a seminar at the Sustainable City Development Conference in Malmö on the topic of implementing Agenda 2030. Professor Lena Neij, Director at the IIIEE, coordinated the seminar which explored interlinkages between Agenda 2030 and the realization of sustainable cities along with the latest research and key challenges.

Education

All education at the IIIEE is designed to equip students with the knowledge, skills and personal qualities needed to advance strategies for sustainable solutions.

A central feature of our education is that it is both international and interdisciplinary. This is reflected in the composition of our teachers as well as in the students we admit, and it allows us to train students that are able to analyse and understand environmental challenges, and their potential solutions, from many different perspectives. In fact, the IIIEE (Professor Lena Neij) holds a UNESCO Chair on Education for Sustainable Development.

At the core of the IIIEE education activities are its two international Master's programmes: the MSc in Environmental Management and Policy (EMP) and the MSc in Environmental Sciences, Policy and Management (MESPOM). We are very proud to see that graduates of these programmes go on to have careers where they truly become agents of change influencing the sustainability agenda at different levels of society across the globe.

And on behalf of the Centre for Environmental and Climate Research (CEC) we provide an undergraduate course on Industrial Environmental Economics as well as a MSc track on Strategic Environmental Management and Policy. We also run a number of courses in collaboration with, or on commission

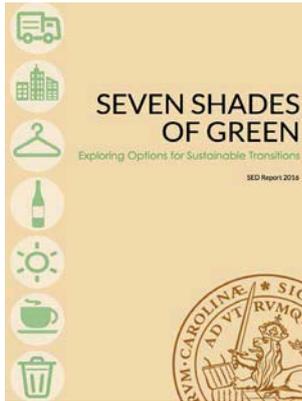
for other faculties within Lund University. Each year we give young engineering students an Introduction to Industrial Environmental Management in a course commissioned by the Faculty of Engineering (LTH).

Since 2015, we are also pleased to be able to offer an undergraduate course, which is primarily designed for the many exchange students that come to Lund University. This course is modelled on our successful MOOC on "Greening the Economy: Lessons from Scandinavia." In the course we use a lot of the material that has been developed for the MOOC, to design a course based largely on the pedagogic ideas referred to as "the flipped classroom".



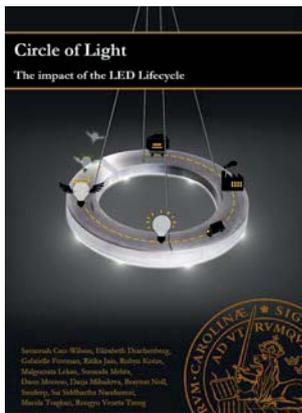
THE STRATEGIC ENVIRONMENTAL DEVELOPMENT COURSE (SED) IN 2016

The SED course is our hands-on, strategic learning exercise and an opportunity for students to gain a unique insight and experience on how to apply theoretical knowledge in real-life complex systems. During 2016, two SED reports were completed, one by the EMP students and one by the MESPOM students.



Seven shades of green: Exploring options for sustainable transitions (EMP)

In 2016, we brought SED teams to Africa and America. We were invited by KPD Coffee in Tanzania to work on climate adaptation and FEMSA, Mexico, on waste in a circular economy. A project for Volvo Trucks on electrification led on to five thesis projects! The other client projects included textile upcycling in Tallinn, communication in the wine industry in Portugal, energy resilience in refugee camps in Jordan, and sustainable mobility for Zabrze, Poland.



Circle of light: The impact of the LED lifecycle (MESPOM)

The dramatic uptake of LED technology has brought about a transformation of the lighting industry, and it is generally perceived to be a good thing for the environment. This report contributes to a deepening of the discourse on environmental challenges with LED by exploring the impacts over the life cycle – from raw material extraction to end-of-life management.



Alumni Network

The alumni network is a vibrant group of international environmental professionals with experience and positive energy. The IIIEE takes great pride in our thriving network of graduates!

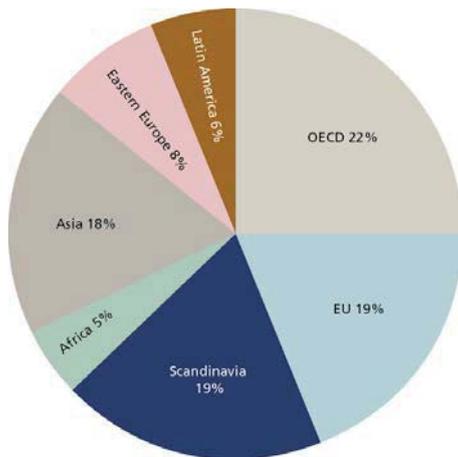
The intense and challenging educational programmes at the IIIEE, spiced with dedicated team-building activities, create strong personal ties – effectively connecting and shrinking our globalised world.

The education offered at the IIIEE draws extensively on alumni participation and each year 20–30 alumni are involved in case studies, thesis projects, study visits, examining student work, or just dropping by to talk about their professional life after graduation.

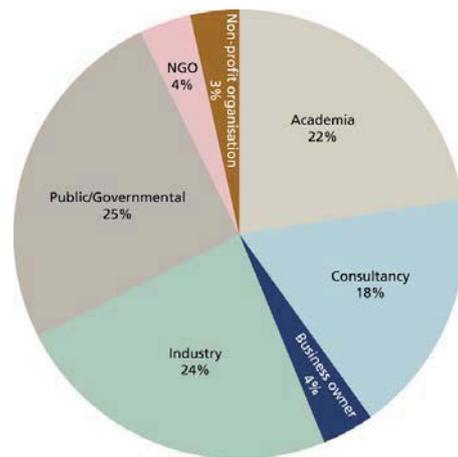
Important international environmental gatherings, such as the global climate negotiations and major conferences,

always gather a group of alumni and thereby offer a chance to meet, greet and discuss.

The IIIEE alumni network consists of more than 850 graduates, from more than 90 countries, and it is an organization founded by the inaugural IIIEE graduates. It elects an executive committee that governs the organisation, collects membership fees, publishes a newsletter and organises alumni conferences and other related gatherings.

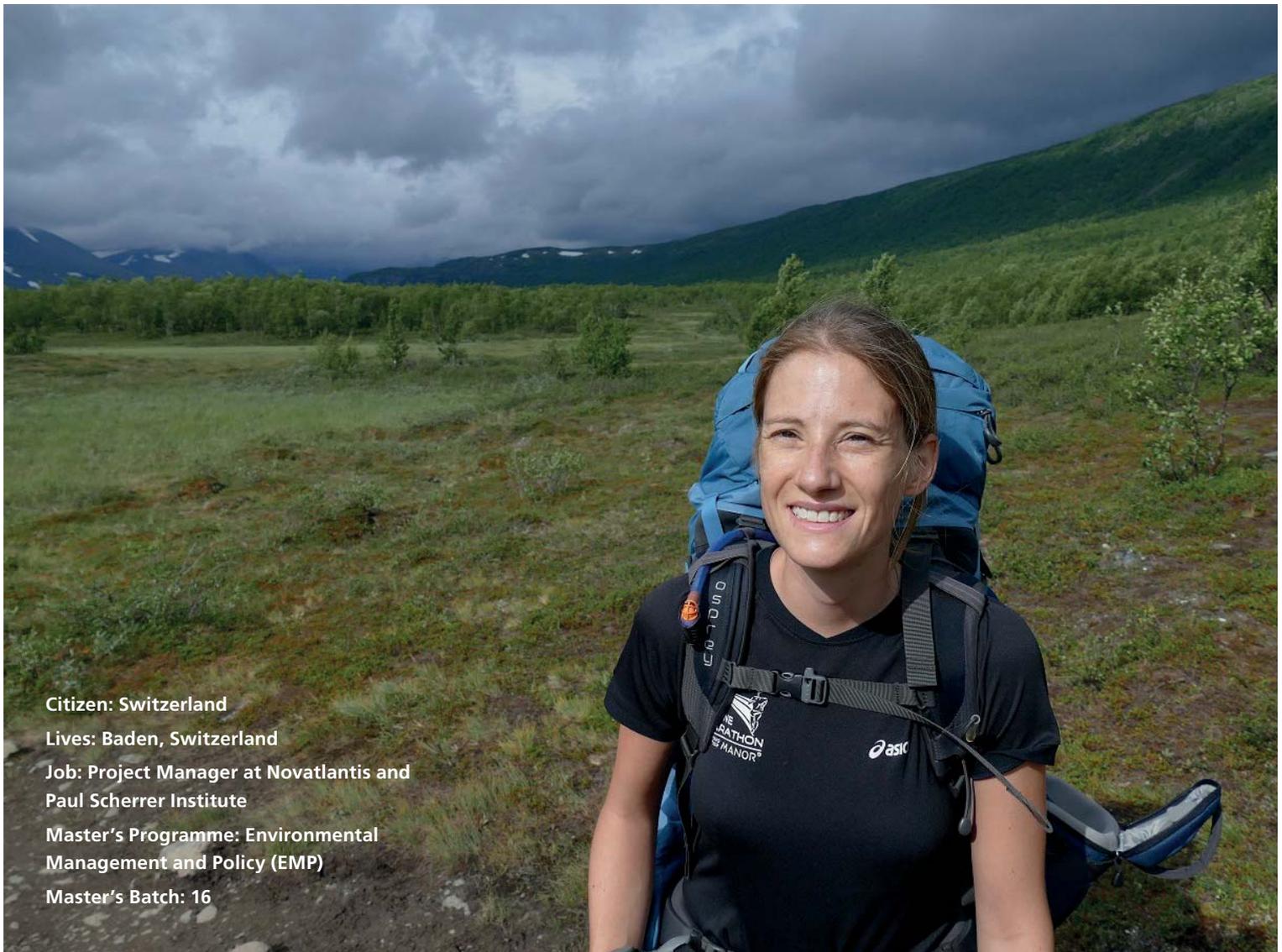


IIIIEE graduate nationalities



IIIIEE graduate careers





Citizen: Switzerland

Lives: Baden, Switzerland

Job: Project Manager at Novatlantis and Paul Scherrer Institute

Master's Programme: Environmental Management and Policy (EMP)

Master's Batch: 16

Alumni Profile – Meet Cornelia Moser

What do you remember most from your studies at the IIIIEE?

It's difficult to pick one or two single aspects. If I have to choose, I would rate the practical exercises and the friendships established during my time at the IIIIEE highest. I really appreciated the applied exercises because they allowed for a hands-on approach and a direct implementation of theoretical learnings. The contact with and responsibilities towards external project partners such as municipalities and companies together with the work in international teams allowed for a "real-life" learning- and work experience that I found challenging and rewarding at the same time. As much as I value the educational aspects of my studies at the IIIIEE (still helping me in my everyday working life), the fondest memories are about the people, with whom I had the opportunity to share this great time in Lund.

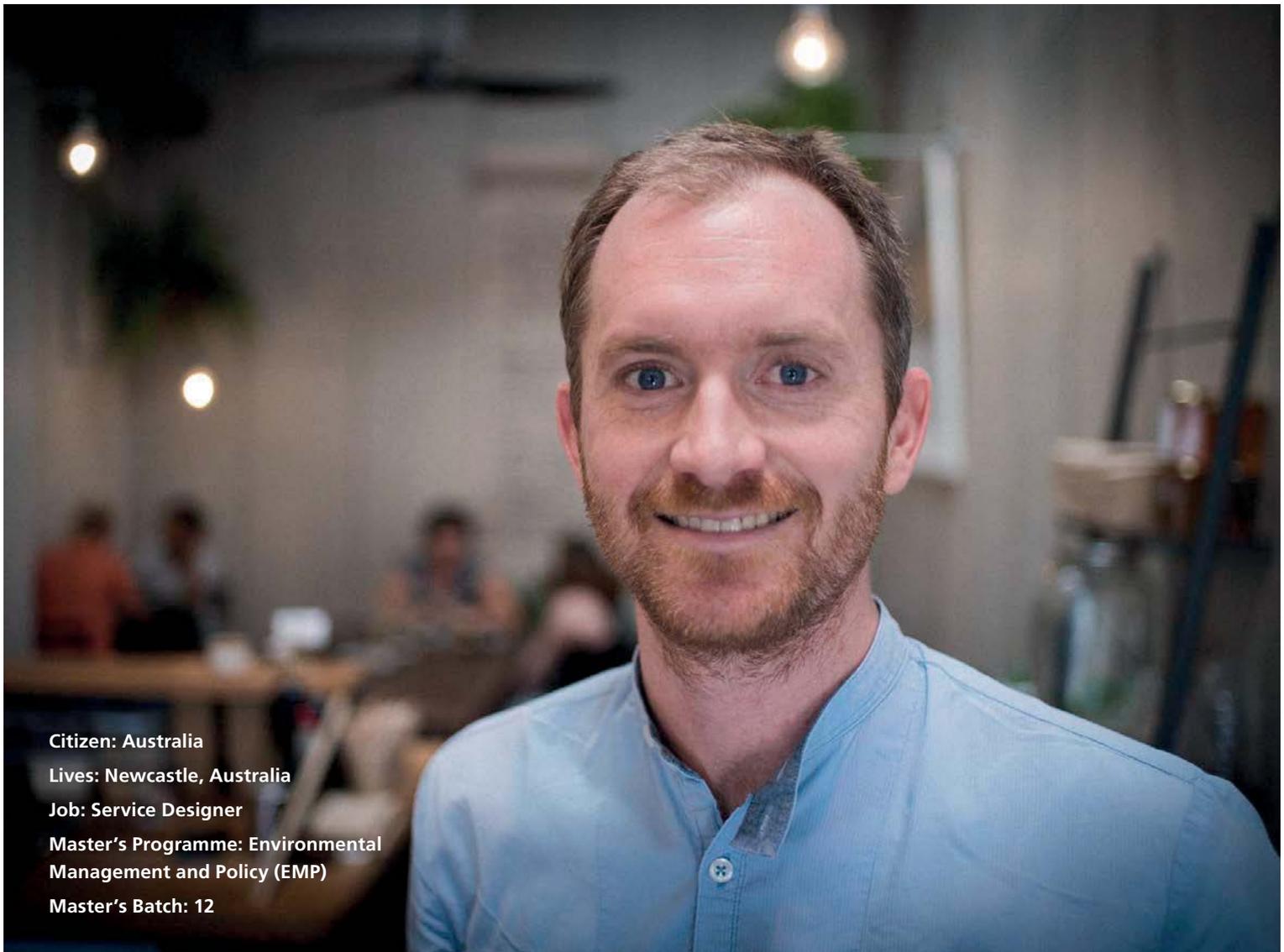
What gets you out of bed in the morning and makes you passionate about your work?

I really enjoy the complexity and variety of my work. Working with small communities and SMEs, the focus is always on

creating win-win situations, trying to balance the economic, social, political and environmental aspects of sustainability projects. In my view the dissemination of knowledge and available technology is key to a more sustainable society and it is definitely fun trying to connect people in order for new services, projects and products to develop.

How would you sum up the IIIIEE to a potential student?

The IIIIEE is the right place for students who are looking for an interdisciplinary, international education in the area of environmental management and policies. It is great for students who want to embrace sustainability as a broad, multifaceted concept and who enjoy team work as well as applied research. While the IIIIEE provides the basic framework for the learning experience, I feel that students can (and are supposed to) take on responsibility for what kind of insights they want to get out of the program, particularly when it comes to the research projects towards the end of the studies.



Citizen: Australia

Lives: Newcastle, Australia

Job: Service Designer

Master's Programme: Environmental Management and Policy (EMP)

Master's Batch: 12

Alumni Profile – Meet Douglas Helman

What do you remember most from your studies at the IIIIEE?

Fika, long hours in the Tute (especially the library), learning to love economics, stor falafel, spending so much time in deep learning (I've never read so much in my life), innebandy, cycling regularly to Bjärred, picking apples from trees on the side of the road, long summer nights, devotion of the staff, drive of the staff, overwhelming positivity and belief in a sustainable future and now, dedication of my classmates (and the wider IIIIEE family) towards a better future for us all.

What gets you out of bed in the morning and makes you passionate about your work?

Every organisation delivers services, even those that deliver mostly products. Every service can be improved by understanding the people who deliver them and use them. Service design brings me into contact with lots and lots and lots of people, activities that I know nothing about and into situations where the immediate answer to a question is often not apparent. Every service can be designed in ways that help the service provider and customer move towards a more sustain-

able outcome. Or not. Finding the way that helps them get closer is what gets me out of bed in the morning.

How would you sum up the IIIIEE to a potential student?

IIIIEE is an experience that will change the direction of your life. You'll confirm some of your ideas about how the world works. You'll have your misconceptions shattered. You'll invest so heavily in expanding your knowledge that you'll look back and wonder when you ever found time for innebandy, Café Ariman or sitting in the sun at Domkyrkan. You'll build bonds with teachers and colleagues that will grow even after you've long left Lund. You'll go back into the world with a heightened sense of what is going on around you and you'll be attuned to which sustainability approaches work and which don't. You'll be a well-tuned force for a sustainable future.



Citizen: Argentina
Lives: Buenos Aires, Argentina
Job: Director at the Ministry of Environment and Sustainable Development
Master's Programme: Environmental Management and Policy (EMP)
Master's Batch: 15

Alumni Profile – Meet Diana Vega

What do you remember most from your studies at the IIIEE?

What I remember the most is probably linked with the two most important things I learned from studying at the IIIEE: i) working in groups, and ii) developing “versatility” skills to face daily challenges that requires immediate response. These were also the main difficulties I had to face while studying in Lund, because back home I was not used to the kind of education I received there, where building teams and developing strategies were more important than the individual success. Years after I finished my master, in the different jobs I had back home, I realized that in the sustainability and environmental fields, everything is about working as a team and in a collaborative manner in order to find innovative ideas to solve problems and bring “out the box” solutions.

What gets you out of bed in the morning and makes you passionate about your work?

The belief that one solid and good idea makes the difference. I feel that many people (including myself) live in a *comfortable discomfort*. Stability, a fixed salary, the tranquillity of

knowing in detail your work, sometimes makes you paralyze and stop pursuing your dreams. But deep inside, we all have an innovative and challenging spirit that encourages us to try to pursue something more, something better; this spirit, “this solid idea” is the one that pushes us to an *uncomfortable comfort*. I loved everything I learned from working in the Ministry of environment for the last five years; but after learning so much and contributing the most that I could, I know that it’s already time to keep pursuing my dream of being better on what I love: environmental law.

How would you sum up the IIIEE to a potential student?

The place where you will discover your passion (if not known yet), or where you will set the bases to be able to pursue what you feel passionate about; the place that will build your character, not only as a better professional but as a person.

Greening the Economy: Massive Open Online Courses

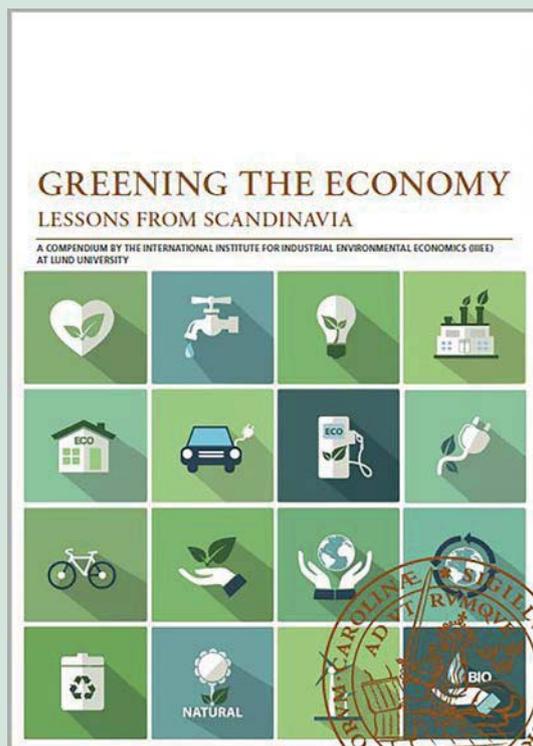
In 2016, over 52,500 people visited the two Massive Open Online Courses (MOOCs) developed by the IIIIEE.

The IIIIEE has developed two MOOCs in the Greening the Economy series. The first MOOC is called “Greening the Economy: Lessons from Scandinavia” and the second is entitled “Greening the Economy: Sustainable Cities”. During 2016, a total of 52,500 people visited the two MOOCs, coming from countries all over the world.

For the MOOCs, a tailor-made compendium has been developed based on the contents of the video lectures and interviews. It was created by about 30 contributors and 3 editors. It is accessible via Lund University publications as Creative Commons and it has been downloaded almost 10,000 times.

The IIIIEE is planning two new MOOCs in 2017 and beyond on the Circular Economy and Nature-based Solutions in Cities. These two new MOOCs are connected with ongoing research and provide an innovative way to connected education, communication and research.

The MOOCs at the IIIIEE are intended to give potential students an insight into the educational programs at the IIIIEE before enrolling, disseminate the research produced at the IIIIEE, and develop a global community of learners on greening the economy.



GREENING THE ECONOMY: LESSONS FROM SCANDINAVIA

How can we live a good life on one planet with over seven billion people? This course explores greening the economy on four levels – individual, business, city, and nation. It looks at the relationships between these levels and gives a number of examples of the complexities and practical solutions from the Scandinavian region.

The course is accessible here: www.coursera.org/learn/greening-the-economy

GREENING THE ECONOMY: SUSTAINABLE CITIES

How can we shape urban development towards sustainable and prosperous futures? This course explores sustainable cities as engines for greening the economy. The course themes are sustainable urban transformation, infrastructure and planning, urban living labs, future urban visions, and sustainable urban lifestyles.

The course is accessible here: www.coursera.org/learn/gte-sustainable-cities

Dissertations

The PhD team at the IIIEE is a group of international environmental specialists working on important research projects for the transition to low-carbon and resource efficient economies. During 2016, three PhD candidates completed dissertations.



Nora Smedby – doctoral dissertation defence on 8 April 2016

LOCAL ENVIRONMENTAL GOVERNANCE: ASSESSING PROACTIVE INITIATIVES IN BUILDING ENERGY EFFICIENCY

Local governments are increasingly taking the initiative in environmental governance. But can they make any difference in addressing current environmental challenges, which are becoming more and more global in scope? This thesis explores and analyses the outcomes of proactive initiatives in the field of building energy efficiency, and the governance approaches taken.

Olga Chkanikova – doctoral dissertation defence on 2 December 2016

SUSTAINABLE SUPPLY CHAIN MANAGEMENT IN FOOD RETAILING: INSIGHTS INTO CORPORATE PRACTICE OF MANAGING SUPPLIER RELATIONSHIPS

This thesis investigated the sustainable supply chain management practices in food retailing as a strategy to create environmentally and socially responsible food supply chains. These practices include ways of managing supplier relationships and associated institutions (third-party sustainability certification and mechanism of private eco-branding) to promote a sustainably produced product supply.



Jessika Luth Richter – licentiate dissertation defence on 21 December 2016

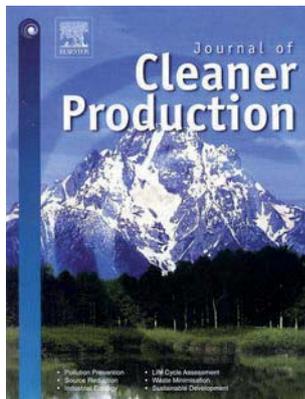
EXTENDED PRODUCER RESPONSIBILITY FOR CLOSING MATERIAL LOOPS: LESSONS FROM ENERGY-EFFICIENT LIGHTING PRODUCTS

This licentiate thesis contributed to Extended Producer Responsibility (EPR) research with detailed knowledge about the performance of EPR policies for energy-efficient lamps in Europe. Using a theory-based evaluation approach, both the performance in relation to EPR goals as well as challenges perceived by key stakeholders, were analysed. Factors contributing to high operational performance and best practices in the Nordic countries were identified, as well as the areas for further improvement.



Special Issues

In 2016, the IIIEE coordinated the development of two Special Issues in the Journal of Cleaner Production and Applied Energy.

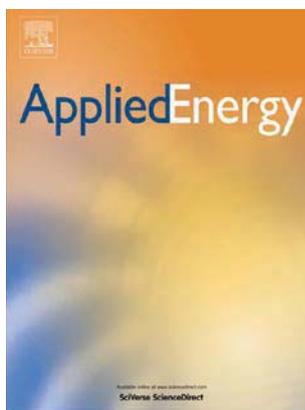


ADVANCING SUSTAINABLE SOLUTIONS

GUEST EDITORS: KES MCCORMICK, LENA NEIJ, OKSANA MONT, CHRIS RYAN, HÅKAN RODHE AND RENATO ORSATO

Sustainable solutions are needed to drive a profound industrial and societal transformation towards a sustainable, low-carbon, resilient, equitable and prosperous future. This Special Volume of the Journal of Cleaner Production addresses possibilities and drivers for change by focusing on strategies for sustainable solutions with the underlying purpose of defining an interdisciplinary and collaborative research agenda for the next 10 years.

Based on over 20 articles from around the world, we identify 10 key areas for targeted research and action, which are underpinned by 5 themes on sustainable solutions, including consumption governance and lifestyles, cities and buildings, business management and practice, international and national policies, and education and learning. The main message of this Special Volume is that we need creative, robust and audacious strategies in governance, management and education to catalyse and mainstream sustainable development across scales and sectors.



TOWARDS A GREEN ENERGY ECONOMY?

GUEST EDITORS: LUIS MUNDACA, LENA NEIJ, ANIL MARKANDYA, PETER HENNICKE, AND JINYUE YAN

This Special Issue in Applied Energy contributes with knowledge about the performance, implications and complexities of policies and strategies addressing the Green Energy Economy (GEE). It contains a series of articles that critically investigate economic, environmental, social, technological and institutional concerns from an interdisciplinary point of view. The Special Issue provides relevant policy insights using a variety of analytical approaches.

Overall, this scientific work calls for strong leadership, ambitious policy instruments, rigorous assessments, effective multi-level governance, inter/national cooperation, institutional capacity development, and the immediate alignment of the financial system with the energy sector on numerous challenges associated with the GEE transition.



Research

The IIIEE is a centre of excellence conducting interdisciplinary and collaborative research focused on advancing sustainable solutions in governance and management.

We advance knowledge on how to catalyse the transition to low-carbon and resource efficient economies across different levels of governance and management. We have a genuine interdisciplinary approach to all IIIEE research. We synthesize insights not only from economic theory and practice but also from natural sciences, engineering, political science, organisational, legal and behavioural studies. We conduct research in close collaboration with business, public authorities and other societal partners.

INTERNATIONAL AND NATIONAL POLICY INTERVENTION - FOR A TRANSITION TO LOW-CARBON AND RESOURCE EFFICIENT ECONOMIES

In this theme, the IIIEE advances knowledge on policy instruments, developed and implemented by governments and international authorities. We develop methodologies and analytical approaches and provide new insights in areas such as a green economy, low-carbon technologies and mitigation strategies, resource and product policy, and a circular economy. We identify barriers to policy intervention, analyse learning opportunities and address multi-level governance interactions. The research is conducted in collaboration with governmental authorities and organisations.



URBAN GOVERNANCE AND EXPERIMENTATION - FOR A TRANSITION TO LOW-CARBON AND RESOURCE EFFICIENT ECONOMIES

In this theme, the IIIEE advances knowledge on urban governance, experimentation and innovation. We go beyond traditional urban planning by including tools such as visions, collaborative dialogues, urban living labs, financing models, local regulations and public procurement for urban transition processes. The research is conducted in collaboration with municipalities, businesses, public organisations and other societal partners.



BUSINESS MANAGEMENT AND PRACTICE - FOR A TRANSITION TO LOW-CARBON AND RESOURCE EFFICIENT ECONOMIES

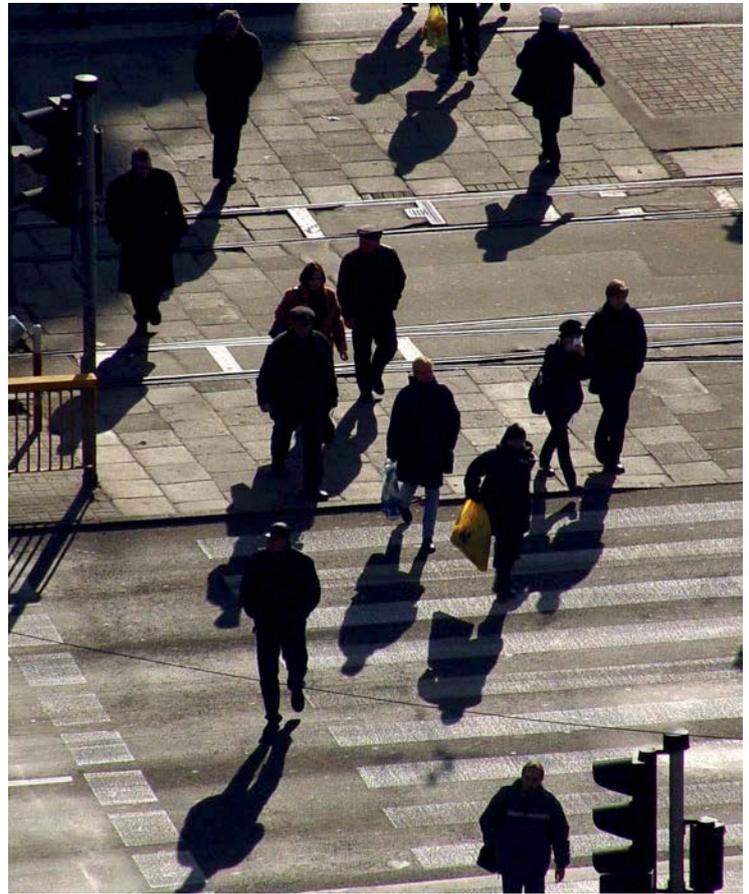
In this theme, the IIIEE advances knowledge on sustainable business management and practice. Based on the conviction that the transition towards sustainable development requires both changes in business practice and institutional context, we research sustainable business models, management approaches to support industry transitions, corporate sustainability strategies, CSR and the nexus of corporate action (private regulation), standards and public policy. The research is conducted in collaboration with businesses, governmental authorities and other societal organisations.



CONSUMPTION GOVERNANCE - FOR A TRANSITION TO LOW-CARBON AND RESOURCE EFFICIENT ECONOMIES

In this theme, the IIIEE advances knowledge on consumption governance. Based on knowledge about barriers and drivers for sustainable consumption and lifestyles, we conduct research on sustainable consumption policies, behavioural economics and market responses to policy intervention, the sharing and prosumer economy, as well as visions, pathways and scenarios for sustainable consumption. The research is conducted in collaboration with governmental authorities, businesses and other societal organisations.

On the following pages, we provide short articles that highlight examples of research projects covering the key research themes at the IIIEE. There are many more research projects at the IIIEE and short articles on our website: www.iiiee.lu.se/research





INTERNATIONAL AND NATIONAL POLICY INTERVENTION

Aiming for blue Beijing skies

An increasingly ambitious environmental legislation has not reduced economic growth in the EU – indicating it will not do so in China either. This is good news for Chinese environmentalists, who have asked IIEE researchers for evidence that supports their work for a greener China under bluer skies.

Over the past few decades China has experienced a remarkable period of economic growth as the country has shifted from centrally planned to a market based economy via rapid industrialisation and urbanisation. On the other hand, almost 100 million Chinese still live in poverty. They too need job opportunities and want to be part of the middle class. Some hold that China's social stability depends on continued prosperity, so the ruling political elite has many reasons for wishing to continue its country's economic development.

But along with this, rapid and devastating environmental damage is a parallel issue that affects all, even the political and economic elite.

"Anyone who has experienced the choking smog in major Chinese cities should be concerned, but for many Chinese it could

be just another normal day. However, rare so-called 'Parade blue' skies over Beijing have shown the people how life could be if pollution were reduced. Blue skies like this occur when the Government orders polluting industries and power plants to shut down, and bans cars from the city – for political reasons. Many Chinese are increasingly aware of the health problems connected to pollution", says IIEE researcher Philip Peck.

Together with his colleagues Claire Lawson and Ben Fethers, Philip Peck has finished a report for the Chinese Academy for Environmental Planning (CAEP), an organisation affiliated with the State Environmental Protection Administration. CAEP is tasked by the Chinese government to support the formulation of national medium and long-term environmental protection plans.

“In a nutshell, the Chinese question to us was: Could we provide them with evidence that the EU has driven pollution reduction with environmental policy without damaging economic growth and socio-economic development? In China, there remains widespread belief in industrial and political spheres that environmental protection will constrain economic development”, explains Philip.

When examining the details of the request from the CAEP, Philip Peck realised that he had actually never seen an overview of the development of emissions within the EU in relation to environmental legislation, and accepted the assignment. His team chose to frame the study to 1990 onwards, to concentrate on the EU15, and to use Sweden, Germany, the UK and Spain as four specific national examples that represent differing types of economies.

“Since that time the EU has made enormous environmental progress. While it isn’t always easy to find good records in earlier decades, it is broadly accepted that European pollution culminated in the mid-1980s. However, many of us have already forgotten the reports showing dead forests and rivers, and the smog-covered cities of those times. In just one generation we have actually cut emissions of some of the most serious EU pollutants by as much as 90 per cent. We still have a much to do, but a convincing start has been made.”

“And during that same period, our economic growth has continued steadily. We cannot claim that environmental protection drives growth, but we certainly can show that economic growth has continued throughout an era of intensifying environmental regulation. So when we met CAEP to present our draft report earlier this autumn, we certainly gave them plenty of material that strengthens their case: Yes, it is possible – an ambitious programme to shape and enforce environmental legislation is absolutely compatible with economic growth”, says Philip Peck.

Quite predictably, CAEP also asked for insights into how much of the EU’s pollution has simply been shifted to China as a result of closure of polluting industries in Europe and consumption of Chinese goods. A much trickier question, admits Philip Peck:

“It is clear that Europe now imports many products that it once manufactured. Because of this, a meaningful part of its polluting processes can be said to have moved to China. This results in both carbon leakage and pollution there instead of here. While we could present this in general terms to CAEP, the scope of the project did not allow us to go into so much depth. One thing we could highlight was that the manufacturing sector within Sweden has achieved about a 10% reduction in total emissions while still increasing production output by more than a third. This helps show China that they can do this too”, he says and continues:

“There is a growing awareness in China that ‘business as usual’ is not the road to follow and that reduction of pollution is better for both society and the economy when one counts all the costs. The Chinese have an increasingly clearer picture of the downsides of pollution; lost productivity, damage to infrastructure, reduced agricultural production, clean water scarcity – and of course massive costs related to human health issues.”

But there are good news showing that China definitely is waking up to this and environmental legislation rapidly is being put into place.

“As one example, Chinese coal consumption actually dropped by four per cent this last year – this is at least in part due to pollution reduction demands placed on old coal-fired heat and power plants or their replacement with newer facilities. And a vital driver to keep this moving will be growing social demands for a cleaner environment, keeping pressure on the political sphere. So my expectation is that our report will serve as a tool for continued work.”





URBAN GOVERNANCE AND EXPERIMENTATION

Developer dialogue – a tool for greener buildings

How can a city encourage energy efficiency in new buildings? A study within the Urban Transition Öresund shows that local demands on building developers give good results. Combined with dialogue and knowledge sharing, the results are even better.

Energy efficiency in new buildings is of high priority for most local governments in Sweden today. Accordingly, the cities increasingly address building developers through different types of governance strategies. But what difference do they make in the end? Within the project Urban Transition Öresund, IIIIEE researcher Nora Smedby has aimed to answer this question by evaluating the impact of a local programme for sustainable buildings, Miljöbyggprogram Syd, as well as a developer dialogue in Malmö, Sweden. Concerning estimated energy use, her answer is quite clear:

“My study indicates that the energy performance in these buildings improved thanks to local regulation. However, since the buildings as well as the programme were very new at the time of my study, I could only analyse the calculated energy ef-

iciency, and not the actual outcome”, says Nora Smedby. Nora Smedby’s study included all apartment buildings in Malmö built in 2010 and 2011. She compared three categories of buildings: those not regulated by the local governance programme, those built on city-owned land and thus included in the programme, and as an unplanned third category, the apartment buildings in the district of Fullriggaren, situated in the residential area of Western Harbour.

“I realised these buildings had to form a category of their own, since circumstances here were different. In addition to the local governance programme, the city of Malmö in this case also worked with a building developer dialogue, which showed to have a strong impact. Moreover, the area has a very strong green profile, which might have influenced sustainability ambi-

tion levels of the developers. The dialogue, including seminars and workshops and other forums for knowledge sharing and discussions, seems to have had an enhancing effect on the ambitions of the building developers, since the Fullriggaren district shows particularly low calculated energy consumption.”

“Developer dialogue as a method is resource intensive, but can be a good investment since it may contribute significantly to the effectiveness of local programmes”, says Nora Smedby. In Denmark, the city of Egedal has reached similar results by combining local demands on constructions built on city-owned land and work with dialogue and incentives, known as governing by enabling. Comparing their studies, Nora Smedby

and her Danish colleague Maj-Britt Quitzau have also seen a tendency where both cities and building developers aim to take energy-efficient buildings from the experimental hi-tech pilot project level into the mainstream.

“We see both a tendency and a need. In order to scale up, stakeholders need to fill the knowledge and process gap, leading from being merely an innovation to a new standard way of building.”





BUSINESS MANAGEMENT AND PRACTICE

Swedish wood – innovative products for a circular economy

Can Swedish wood be the answer to our future needs, from T-shirts to 10-storey apartment buildings? The challenge is not the technology, but how society can support the development of this market. It has the potential for creating both a sustainable and circular economy.

Saying that Sweden and Finland are territories covered by forests, is no exaggeration. For centuries, wood has been one of the financially most important major natural resources of our two countries, but during the last decade the related pulp and paper industry has faced increasing challenges.

These include high costs of wood raw material compared to countries in warmer climates, as well as increasing energy prices. A third factor is the digital revolution, which has drastically reduced the demand for paper-based newspapers and other print.

“And on top of this development, Nordic forests are growing faster due to a milder climate and a rise in fertilising nitrogen

emissions. So all in all, forests are growing faster than we’re cutting them down”, says Åke Thidell, IIIIEE researcher with a special interest in cleaner production within the industry, and the promotion of environmentally friendly products and services. He continues:

“Simultaneously, we see a development towards an increased awareness and demand for sustainable products in a more circular economy where resources are used in a smarter way. All together, these factors come together in a general question: How can society support the renewal of an industry based on wood as raw material in a way that contributes to a circular economy and a sustainable society?”

This question is the base for the project that IIIEE is involved in together with Finnish SYKE and Aalto University School of Business. The project has recently started so the results are not ready yet, but the project has already generated interesting questions and challenges.

“If the forest industry is no longer dependent on the need for pulp and paper, then how can we make use of this green resource? Our hypothesis is that the pulp industry and its bio-refineries must reach a new level. Seeing the pulp mill as a flexible refinery helps us understand its capacity as a producer of biologically based products, replacing products that used to be produced from oil. Plastics, chemicals, textile fibres, heating, oil and so on – all out of wood”, says Åke Thidell.

“Our task is to provide an understanding of how new business models and national policies can enable this shift”, says Åke Thidell giving two examples of questions investigated in the study that suggests new paths for the pulp industry:

“One is how we can alter wood construction techniques in order to build taller and larger buildings than what is possible today. A good solution would expand the market tremendously.”

The answer, according to Åke Thidell, may involve a more modular way of production, resulting in more flexible and efficient transportation, construction and buildings, which would all provide a more sustainable and circular economy and product.

Another example of new applications for wood is the textile industry. Textile consumption is estimated to triple by 2050, due to population increase and most of all due to a growing middle class with an increasing consumption of clothing. Neither cotton- nor oil-based materials are sustainable, so new materials are needed.

“Wood fibres could be a solution, but innovative ideas and processes are still needed. The potential is enormous”, says Åke Thidell.

Together with his colleagues in Sweden and Finland, Åke Thidell is now mapping actors of the market, focusing on entrepreneurs and innovators. The collected material will result in an analysis of current policies, which in its turn will hopefully clarify what further policies are needed.

Åke Thidell says: “There is no lack of ideas for new applications and products. The true challenge is how to bring them to the market and scale up the production. There is where our work will hopefully be important.”





CONSUMPTION GOVERNANCE

Nudging – a tool for sustainable behaviour

Sometimes, a gentle nudge is all it takes for us to do the right thing. With a report written by three IIIIEE researchers, nudging as a behavioural tool has gained interest among a broad Swedish audience.

Most of us wish to make sustainable choices and do well for ourselves as well as for society. Yet, we fail, over and over again. Sometimes though, a gentle nudge is all it takes for us to change our behaviour and become more sustainable consumers.

Nudging is also the name of a behavioural economics tool recently brought to the attention of policy makers and academics. It can be used to enable behaviours and private decisions that are good for individuals and often for society as well.

Together with her IIIIEE colleagues Matthias Lehner and Eva Heiskanen, Oksana Mont has written the first Swedish report on nudging. The report was commissioned and funded by the Swedish Environmental Protection Agency and the study has served as a direct input to advancing strategic work on sustainable consumption policies.

“Nudging can be described as a method that aims to shape our routine decisions, choices or behaviour without actively changing our values. We know that almost half of our daily decisions and actions are based on habits and routines, which we barely reflect upon”, says Oksana Mont, professor at the IIIIEE.

Oksana Mont holds the default choice as the nudge with the strongest potential to change behaviours.

“Changing the default choice in a sustainable direction has proven very effective, she says. When an American energy company made green energy their offered default choice, more than 95 per cent of the customers chose accordingly. Opting out of this default required an active choice and only around five per cent of the customers chose not to buy green energy”, she says.

Displaying fruit instead of candy close to the cashier in shops, using smaller plates at the restaurant buffet to reduce food waste and lowering car speed in residential areas with small street bumps are other examples of nudging that have proved to be effective.

The nudging report was also presented to the minister for Financial Markets and Consumer Affairs Per Bolund and representatives of financial sector in March 2015. Inspired by the report, the Nordic Council of Ministers has come out with a research call in order to advance their knowledge on how to apply nudging as a tool for shaping consumer behaviour in relation to the reuse and recycling of small electronic devices such as mobile phones.



Board

The IIIEE is governed by a Board appointed jointly by Lund University and the Government of Sweden. Since 2010, the IIIEE is directed by Professor Lena Neij.

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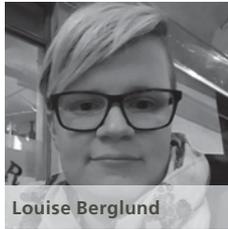
The IIIIEE consists of researchers, PhD students, administration, and guest researchers. It is a highly international staff and vibrant working environment.



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Aleh Cherp



Olga Chkanikova



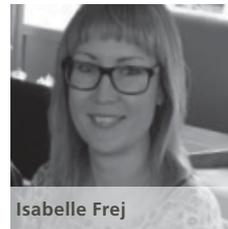
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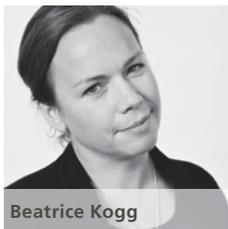
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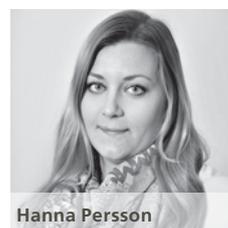
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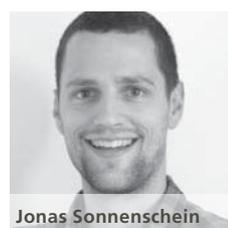
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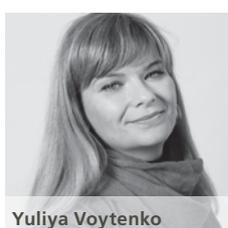
Lars Strupeit



Åke Thidell



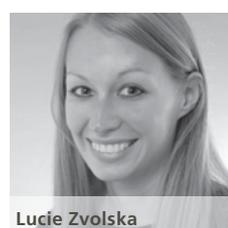
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THE IIIEE AND LUND UNIVERSITY

The International Institute for Industrial Environmental Economics (IIIIEE) is an international and interdisciplinary centre of excellence at Lund University. The IIIIEE is located in the Öresund region, one of the most dynamic regions in Europe, with the ambitions to become one of the most creative and sustainable city-regions in the world.

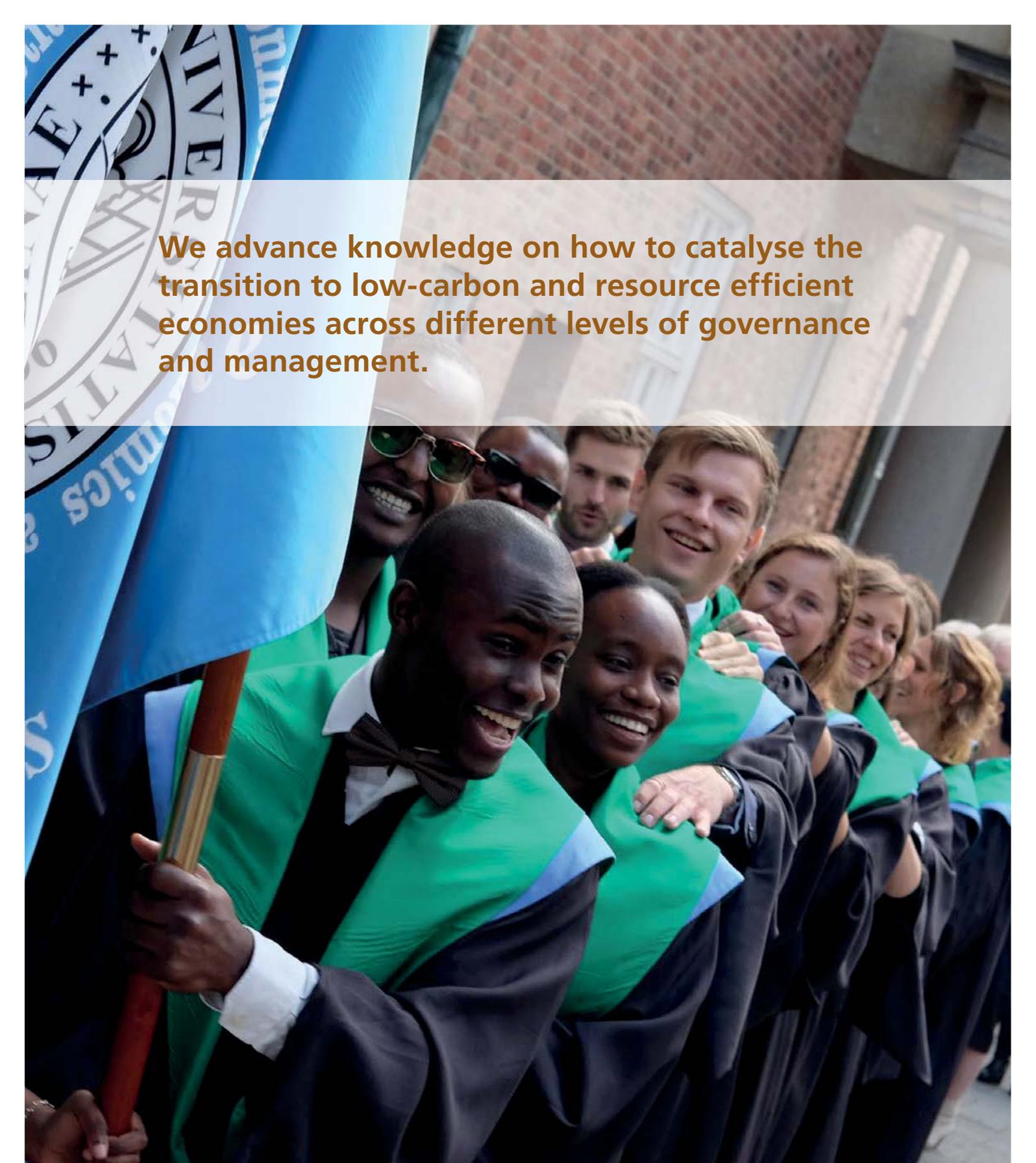
Lund University and the Öresund region provide an excellent platform for education and research to advance sustainable solutions. Lund University was founded in 1666 and for a number of years it has been ranked among the top 100 universities in the world. It has 42,000 students and more than 7,500 staff based in Lund, Helsingborg and Malmö.



THE IIIIEE BUILDING AND SURROUNDINGS

The building that houses the IIIIEE was completed in 1909. It was designed by the architect Fredrik Sundbärg, and commissioned by the insurance company, Skånska Brand, to be used as their office headquarters. During the summer of 1995, as well as during 2003, the building was extensively renovated, and several rooms were restored to their original style. The building is an integral part of what makes the IIIIEE unique.

Lund calls itself the City of Ideas – a place where academia, business, culture and nature thrive within bicycle distance from each other. The spires of the Cathedral of Lund tower over a city characterized by its rich cultural and historical heritage, state-of-the-art scientific research and development, and bustling activities of a university town full with students and staff from all over the world.



We advance knowledge on how to catalyse the transition to low-carbon and resource efficient economies across different levels of governance and management.



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