

Grand Challenge Accepted

Schedule August 22nd 2024

Chilling Room - Common Room 5th Floor

9:30 Walk in at Wijnhaven

10.00 | **Welcome and Keynote** 📍 3.46
11.00 | Warm welcome by Haiko van der Voort
and keynote by Ana Victoria Rojas, UNDP

Coffee

11.30 | **Thesis Talks** 📍 3.54 &
12.30 | Group 1: Participatory & Green Urbanization 3.56
Group 2: Integrated Water Resources Management

12.30 | **Lunch-buffet** 📍 Wijnhaven
13.45 | Come relax with us over lunch! Restaurant

13.45 | **Thesis Talks** 📍 3.54 &
14.45 | Group 3: Climate Change & Vulnerability 3.56
Group 4: Economic & Technological Systems

15.00 | **Alumni Panel Discussion** 📍 Labs
15.45 | Alumni will share about their life after EPA 5th Floor

Coffee

16.15 | **Launch of EPA Graduates** 📍 Spanish
17.15 |

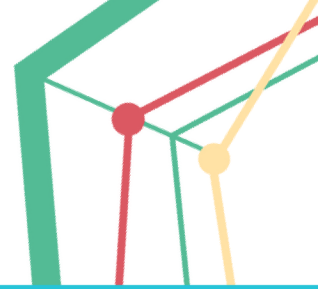
- Word of thanks by Haiko van der Voort
- EPA stories from graduates
- Graduates' picture

Stairs

Travel to Scheveningen

18.00 | **Beach Party** 📍 Beach Club
Late | Closure of the day at the beach of WOW
Scheveningen including dinner

A word of welcome



Haiko van der Voort

Director of MSc Engineering and Policy Analysis

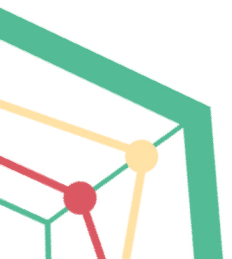
This program booklet will help you navigate through the annual thesis conference of the TU Delft MSc Engineering & Policy Analysis, held at TU Delft | Campus The Hague. I hope you agree that this is an exciting program, where you will learn about international grand challenges—like climate change, artificial intelligence, and energy supply—from a system perspective. Such a system perspective is very popular among engineers, which TU Delft has been training for quite some time now.

The booklet represents what the committee envisions will happen, but there is so much more. Take your time to look around and reflect. The conference theme is “inclusive systems.” This fits well, as EPA people are system thinkers. A ‘system’ is a collection of elements that, in some way, relate to each other and exhibit collective behavior. If that sounds abstract, please realize that you are, in fact, entering a system.

To give you some hints:

- The elements are the people, of course. These include the graduates we say ‘goodbye’ to, the current students, new students wondering what they are starting, teaching staff, supporting staff, and related stakeholders.
- They are connected by the MSc program in Engineering & Policy Analysis, which includes courses on policy analysis, big policy issues, and how to model them. It also includes hard work, which is always a good bonding element.
- I once heard that EPA students are unique because they tend to stay after a lecture, just to discuss what has been covered and relate it to life. Don’t all students do this? Apparently not. So, this is a good example of collective behavior.

Maybe you already feel part of the system. Is EPA an inclusive system? The answer is completely up to you. If you feel it is, why not join us at the beach party this evening? One of the organizers can help you with tickets. I hope you enjoy this wonderful day with us—or better yet, among us.



Keynote



Ana Victoria Rojas

*Senior Gender and Energy Specialist,
Sustainable Energy Hub, UNDP*

10.00-11.00

📍 3.46

Inclusive Energy Systems

Energy is a prerequisite for development. However, the way we design energy systems can inadvertently replicate or even exacerbate social inequalities. Understanding the interplay between energy systems and social dynamics is therefore key for ensuring a just energy transition: one that both addresses a shift towards cleaner energy sources while delivering sustainable development for all.

During this keynote presentation, we will explore how integrating gender equality and intersectional approaches can position us to expand the benefits of energy systems, while working towards addressing structural, social and cultural barriers, which limit the enjoyment of benefits for certain social groups, particularly women.

Accept the challenge and join us to explore how best to design an energy transition that works for all!

Bio:

Ana Victoria Rojas is a lawyer with over twenty years of experience working with policymakers, international organizations, NGOs, and grassroots representatives across four continents. She is committed to promoting equality and environmental sustainability and has a proven track record of conducting legal analysis, field evaluations, and sharing expertise through training workshops and advocacy.

Since September 2022, Ana has been a Gender and Energy Specialist with the United Nations Development Programme (UNDP), where she is part of the Gender Team and collaborates with the Sustainable Energy Hub. In this role, she ensures that gender equality is integral to UNDP's scaled-up Energy Offer and strategy, aligning with the goals of UNDP's Gender Equality Strategy 2022-2025.

In addition, as a senior gender consultant at the Nedworc Foundation, Ana provides technical support to international organizations, including coordinating the energy component under the Advancing Gender in the Environment (AGENT) initiatives for the IUCN's Global Gender Office. Her work focuses on developing gender-responsive energy and climate change policies, facilitating specialized networks, and producing knowledge products. She also supports the African Development Bank and the Climate Investment Fund in creating a training package for CIF focal points.

Ana's notable projects include conducting a gender institutional assessment of the EU's EUROCLIMA+ program in Latin America, developing a gender toolkit for project actions, and supporting capacity-building programs for women in the energy sector with APEC and SNV in an ADB regional program. She also spent nine years with the International Secretariat of ENERGIA, where she mainstreamed gender in energy projects and policies, and has contributed to environmental and climate change initiatives with organizations in the Netherlands and Costa Rica.



Agathe Momméja

Group 1
11.30-12.30

📍 3.54

Urban heatwaves in Paris: developing a methodology for multi-objective spatial planning of nature-based solutions

Explore how spatial data science and multi-objective optimization are harnessed in a cutting-edge decision-support system to enhance urban heat adaptation policies. This presentation delves into integrating nature-based solutions like green roofs and street trees to combat heat waves, emphasizing social justice and efficient resource allocation. Discover how this tool bridges the gap between technical solutions and political action, providing city planners with actionable insights to prioritize interventions and promote equitable urban cooling.



Emma Lombardo

Towards The Oasis : Application of green infrastructure in the deserts of Riyadh, Saudi Arabia

In 1737, Deham ibn Dawwas unified various oases by constructing a wall around them, transforming the area into a fortified city. The name Riyadh, meaning gardens, reflects this early oasis town, which was lost due to rapid urban expansion. Saudi Arabia is currently shifting from an oil-centred economy to one focused on tourism and research, exemplified by the Saudi Vision 2030 initiative aiming for a Net Zero future by 2060. Among its flagship megaprojects, the Green Riyadh Project stands out for its integration of Nature-Based Solutions for climate mitigation. Green roofs and façades are particularly alluring for mitigating the UHI effect and severe floods during the wet season. However, several concerns arise regarding their application, and this thesis evaluates the feasibility of such infrastructure in Riyadh's arid climate following on-site visits to the Kingdom.



Warih Aji Pamungkas

Enabling Community Energy Development for Electricity Generation in Bali, Indonesia: A Case Study Analysis Using Strategic Niche Management (SNM)

Harmony between buana agung (the environment) and buana alit (the people) has always been deep-rooted within the indigenous wisdom of the Balinese people. This communal, value-driven community becomes a hotbed of bottom-up energy transition efforts in the form of Community Energy (CE). This research explores how CE initiatives in Bali emerged and survived amid Indonesia's monopolistic electricity market, half-baked transition policies and efforts, and post-pandemic rebound in tourism activities. Despite the challenges, Bali is an island full of potential as it regularly hosted various high-level international climate-related meetings and adopted unique decentralised "Customary Village" governance, among others.



Ariel Goldin Marcovich

Group 2
11.30-12.30

📍 3.56

How to Distribute Water Fairly when there's not Enough

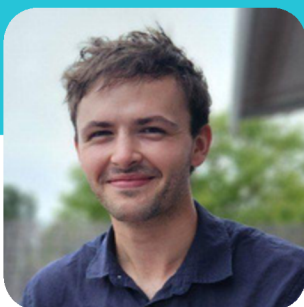
The newly built circular aqueduct enables the city of Guadalajara, Mexico, to transfer water between areas of the city that were previously isolated. This capacity increases the city's resilience to drought. However, no distribution policy has been developed. As supplying one area in need can represent taking water away from other areas, this decision-making problem is heavily influenced by how the city should interpret distributive justice under scarcity conditions. To tackle this decision making problem, a participatory and simulation-based approach was implemented, leveraging Multi-Objective Optimization to develop a Decision Support Tool for Water Distribution Policies.



Floris van der Heijde

Stakeholder participation in decision-making for dredge sediment management in the Port of Rotterdam

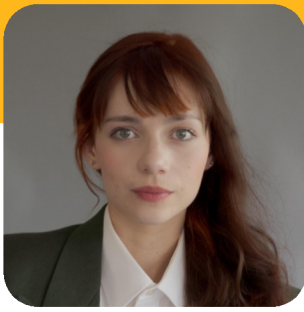
Ports and waterways around the world require regular dredging to ensure they remain accessible for all the shipping and recreational vessels. These dredging operations produces hundreds of million cubic meters of sediments that need to be disposed of in some manner. The Port of Rotterdam currently take most dredge sediments offshore to the North Sea where the coastal dynamics take it up. This process is very emission intensive and as such alternative methods are being explored that could process a portion more locally to reduce emissions. The decision-making process for alternative methods as mostly halted on a desire to collaborate but no action. I explore a stakeholder participatory approach to further decision-making, also involving logistical models to better illustrate potential impacts.



Paul Ludwig Branzk

Uncertain River Basins: How to Improve the Adaptive Policy Design for River Basin Management

River basins are under increasing pressure. In 2050, the number of people residing in water-stressed transboundary basins will double. Consequently, effective river basin management is vital for human survival, ecosystem health, and advancing societies. However, achieving operational agreements poses significant challenges. Computational models have proven beneficial in facilitating agreements. My thesis focused on enhancing this decision support amidst deep uncertainty. I proposed a methodology that integrates robust and dynamic planning approaches to improve the adaptive policy design for reservoir operation strategies. Ultimately, it will allow policymakers to address challenges associated with the complex policy structure of dynamic plans while overcoming limitations related to robust planning, thereby providing continuous and flexible decision support for managing deep uncertain river basins.



Angela Camarena Barba

Group 3
13.45-14.45

📍 3.54

Matter Matters: Integrated Assessment of Recycling and Climate Mitigation Policies

Integrated Assessment Models (IAMs) are crucial for climate change mitigation planning but largely overlook future material demand and the benefits of circularity. This study introduces JUSTICE-MATTER, an enhanced IAM framework that integrates a matter-use dynamics module, emphasizing recycling as a policy tool. JUSTICE-MATTER tracks material flows from extraction to disposal, following the economy-wide Material Flow Analysis (ew-MFA) framework. It evaluates the environmental, economic and distributional impacts of recycling across 57 regions under various socio-economic and climate scenarios. JUSTICE-MATTER aims to design effective joint climate and recycling policies, addressing multiple societal objectives and uncertainties.



Gabriel Sher

Reading Between the Boxes: Using Scenario Discovery to Explore Tipping Points in the Behaviour of Human-Earth Systems

Scenario Discovery (SD) is an exploratory modeling tool that can help extract relationships between input parameters and outcomes of interest in models of complex systems. By identifying the input conditions under which qualitatively distinct output behaviours occur, SD can be used to create something that resembles a model's "phase diagram" - similar to a plot indicating at which temperatures and pressures water becomes ice or vapour. Using this framing and the notion that tipping points resemble boundaries between a system's phases, this research uses SD to search for tipping points in complex, high-dimensional models. It is applied to an agent-based model of a coastal economy threatened by rising flood risk.



Haekal Akbar Kartasasmita

Multidimensional Index: an alternative measurement method to a proportional social vulnerability index for disaster risk management assessment

This research introduces a novel method for measuring social vulnerability in disaster risk assessments. By incorporating intersectionality and multidimensionality, the method creates a vulnerability index that reflects the diverse conditions affecting different community groups. Addressing societal inequalities, this approach provides a nuanced understanding of vulnerability, suitable for those interested in multidimensional approaches to enhancing disaster management strategies.



Nicolò Canal

Group 4
13.45-14.45

📍 3.56

Beyond conventional growth: Analysing economic growth in a demand-led framework

In macroeconomics, the impact of past actions on future outcomes is debated, with mainstream economists arguing that only supply-side changes affect long-term performance, while demand-side factors influence short-term fluctuations. Austerity measures, like monetary tightening, are believed to control demand without harming long-term growth. However, the 2008 financial crisis challenges this view. This thesis explores hysteresis, where demand-side forces have lasting effects, examining its implications for austerity and focusing on the Italian economy as a case study.



Roos de Jonge

Understanding why innovations fail: A fundamental System Dynamics Model of Technological Innovation Systems

Radically new technological innovations like PV cells and electric vehicles can address global challenges and transform societies, yet they face a 47% risk of failure. To understand and prevent these failures, I am developing a System Dynamics Model that mirrors market behaviours determining these innovations' fates. I determine how these markets can be transformed from socio-economic theories into variables, I research how these variables interact and simulate these interactions to identify conditions for success or failure. My presentation will detail the model's design, methodology, and my next challenge of simulating a model without available data.



Alexander Dietz

Capacity Shortages in Healthcare: A Simulation study of the Neonatal Care System

Healthcare systems worldwide are increasingly challenged by capacity shortages and staffing limitations, particularly in neonatal care, where specialized needs and high emotional stress for nurses exacerbate the problem. Moreover, neonatal care is unpredictable, often requiring patient transfers to other regions, adding additional stress to newborns. In response to this urgent need, I collaborated with Erasmus MC Children's Hospital to develop a discrete-event simulation model for regional hospitals. This model tests system levers and assesses the impact of clinical interventions, providing valuable insights for individual hospitals and neonatal care regions to address these critical challenges.



Alumni Panel Discussion

15.00-15.45

5th Floor
Labs

EPA and the Real World: Stories from EPA Alumni

How is life after EPA? This is a difficult question for many reasons. First, EPA is broad, so there are many directions one can take. Second, EPA is not very well known, so future employers might not know what to ask. Third, EPA graduates have diverse backgrounds and profiles. So, how do you connect to the real world?

In this 45-minute session, three alumni will present themselves and answer your questions.



Irene van Droffelaar, PhD Candidate

Irene van Droffelaar graduated in 2020 and started her career in science. She is finishing her PhD at TU Delft/TPM. Her research explores how to optimize resource positioning in networks with uncertain and limited real-time data, in collaboration with the Dutch National Police.



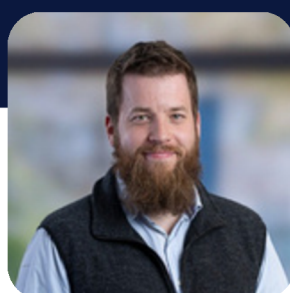
Marie Sam Rutten, Ministry of Justice & Security

Marie Sam Rutten began EPA in 2018 and initially envisioned a career as a strategy consultant. However, her trajectory shifted when she started a traineeship in (inter)national security and justice with the Government in 2021. This decision shaped her path to her current role as a Policy Officer at the International Migration Office of the Ministry of Justice and Security.



Mirjam Nelisse, TNO & VVD

Mirjam Nelisse graduated in System Engineering, Policy, and Management in 2001, which can be seen as the predecessor of EPA. In addition to her work as a senior researcher at TNO, she is involved in politics at the Province of South Holland.



Moderated by Patrick Steinmann, TU Delft

The panel will be moderated by Patrick Steinmann, Assistant Professor of Policy Analysis at TPM and also an EPA alumnus. He will guide the discussion between you and the alumni to unlock stories of uncertainty, discovery, and pride.



Launch of EPA Graduates

16.15-17.15

 Spanish Stairs

The traditional send-off starts with a goodbye from Haiko van der Voort. He will thank everybody that he noticed contributing to the EPA community. Furthermore two EPA graduates will give a personal reflection on EPA and EPA life. This together will make all graduates gloom on the professional cohort picture that will be taken right afterwards.



EPA Grand Challenge Accepted 2023

Beach Party

18.00-Late

 Beachclub WOW

We will have dinner and drinks at Beachclub WOW in Scheveningen! There will be a volleyball net as well. Haven't registered yet? Please contact one of the organizers or go to gcaepa2024.eventbrite.nl



A word of thanks

Without the help of many people and organisations we would not have been able to organise Grand Challenge Accepted 2024. We would like to therefore to thank: Ana Victoria Rojas, all the speakers, volunteers, alumni, Dentatus, photographers, staff, and of course, all the participants.

On behalf of the Grand Challenge Accepted Committee 2024,
Haiko, Özge, Lilian, Nelene, Floris, Yashi, and Rhys

