# Challenges of Environmental Awareness in Future City

**Nordplus Ülemiste City Study Tour 5-7.10.2022**

## 1. Introduction

A description of the Study Tour 2 to Tallinn focusing on the challenge of environmental awareness in Future City. A description is given of the partner institutions and the organisation of the study tour. It is argued that the study tour benefits from taking place in Ülemiste since it especially is designed to help in solving these types of challenges for Estonia. A short presentation of today's challenges in Future City were presented together with some solutions that are already developed and some best practices.Students worked in groups on finding ways to find new creative environmental solutions. Teachers participated in The Green Diet Conference on the second day while students were having their company visits. On the third day the students presented their ideas for solutions.

*Photo by Silver Gutmann:* Ulemiste City/Mainor

### 1.1 Background

**Partner Institutions**
The participating partner institutions of this study tour were from 7 Nordic countries Estonia, Latvia, Lithuania, Finland, Norway, Denmark, and Iceland. The partner schools and universities were Mainor AS (EE), The International School of Tallinn (EE), Vidzeme University of Applied Sciences (LT), Vilniaus kolegija/University of Applied Sciences (LI), Aalborg University (DK), University of Stavanger (NO), South-Eastern Finland University of Applied Sciences (FI), Arcada University of Applied Sciences (FI) and University of Iceland (IS).

**The main purpose of the project:**

The project's purpose is to create a strong link between the modern educational system and future business, so that the studies can be directly related with employers' expectations. To find and describe innovative approaches, study methods and develop curricula. The project will raise the quality of studies: support lecturers in the study process and ensure wider knowledge for students. The materials created will describe, among other issues, also best practices and case studies on how to teach and learn more efficiently.

### 1.2 The program:

The program consisted of best practices of Ülemiste Future City companies including environmental awareness, company visits to campus businesses, speed dates, workshops etc.

**Learning outcomes for this study tour:**

- To understand the current situation
- Work out the solutions
- Use of best practices in different locations
- Multicultural work

### 1.2.1 Day 1: Challenges of Environmental Awareness in Future City

Day one started by opening words from the moderator of Study Tour, Triin Ploompuu - Community and Event Manager, who also presented the aims of this Study Tour. We were briefed about the next two days program as well.

Ülemiste City introduction was done by Silver Kelk, Development Manager, Mainor AS.
Silver presented Ülemiste City history but also today's situation as well as future visions. The City has developed a radar which describes 5 development areas in Ülemiste, 15 dimensions, 42 indicators and 150 quality indicators.


*Figure 1.* Ülemiste City Radar (https://ucuuringud.eek.ee/?page=radar2&setlang=eng)

Ülemiste City presents itself as a test and R&D City, talent city and a community. (Kelk 2022)

The day continued be Triin presenting the student assignment:

- find the environmental challenges in Ülemiste City campus. Take photos of the places that need to be improved and offer your solutions. Outcome is 3-5 photos and one solution slide per photo.
- summarize the best practices of your country for 7 minutes presentation in third day. It should contain an overview of best practices that have been done in your countries related to the subject. You may use the research if you wish.

Academic personnel had a briefing meeting where the following issues were discussed: Nordplus dissemination, articles, first and second report, etc.

### 1.2.2 Day 2: The GREEN DIET conference October 6th 2022, Ulemiste city

https://conference.euas.eu/2022/ (link to conference page)

During the second day of our visit in Tallinn we had the opportunity to take part of the Green DIET conference. DIET stands for Digital/Data Innovation, Entrepreneurship and Technology. These are all words and topics that rhyme well with the project and our activities in the Future city project. Many teachers and researchers in our group where very happy to be able to listen to and learn from the many knowledgeable and interesting speeches throughout the day.

The conference included oral presentation, a panel discussion, posters sessions and publication possibilities.

Below a list of the speakers and topics.

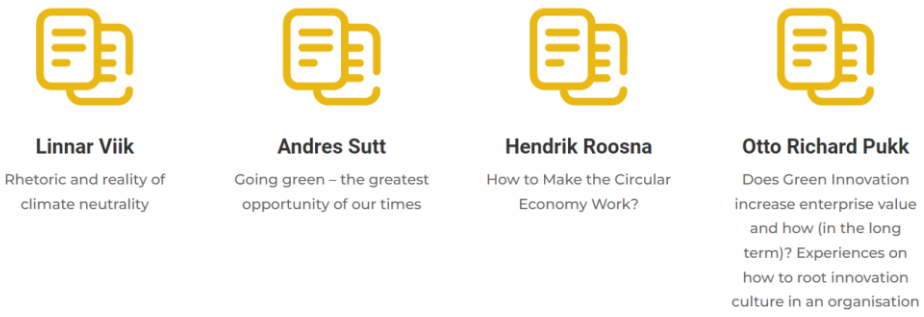



*Figure 2:* Speakers at the conference

Topics integrated ideas and research results where technology was used to deal with issues of sustainability, environmental and other from. The well know SDGs were related to in many ways throughout the day and participants could get both new knowledge and concrete ideas on how to develop, innovate and act in different contexts and sectors.

The topics are highly relevant and useful for many participants in their own research and teaching as well. The conference gave great material for further dissemination in the local contexts, ie universities in the Nordics and Baltics. It is important to talk about the presented topics and as Linnar Viik, Estonian information technology scientist, entrepreneur, and visionary, and a member of the President of Estonia's Digital Council, said that it takes so much time to decide where to go and how: "it takes two decades for regulatory systems to react." He talked about the importance of accelerating a system (for example AI driven) or not. The impact on increased democracy was one of his core thoughts in

relation to new systems implementation. Another thing mentioned was that late comers can spoil the system, also in terms of security. He also talks about the opportunity we can find in digital twins, for example in terms of cost-efficiency.
One could sense a sense of urgency in his speech.

Andres Sutt, Member of Parliament and a former Minister of Entrepreneurship and IT, on the other hand talked about planet earth and a sustainable future for humans and the planet. He mentioned the meaning of both investments and for example customers' changing behaviour and demands.

Hendrik Roosna, the CEO of Fairown Finance talked about how to make circular economy work and gave many good and concrete examples on how it can work. This was a great speech and an easy to share further for us who in our courses at the universities talk about circular economy with our students.

Otto Richard Pukk, CEO of Incap, connected the topics of the day to innovation culture, leadership and SDGs. He pointed out that many a many companies have sign documents to work on a with these, but little has happened. Again, a sense of urgency.

Below Incap's own roadmap as presented during the day.

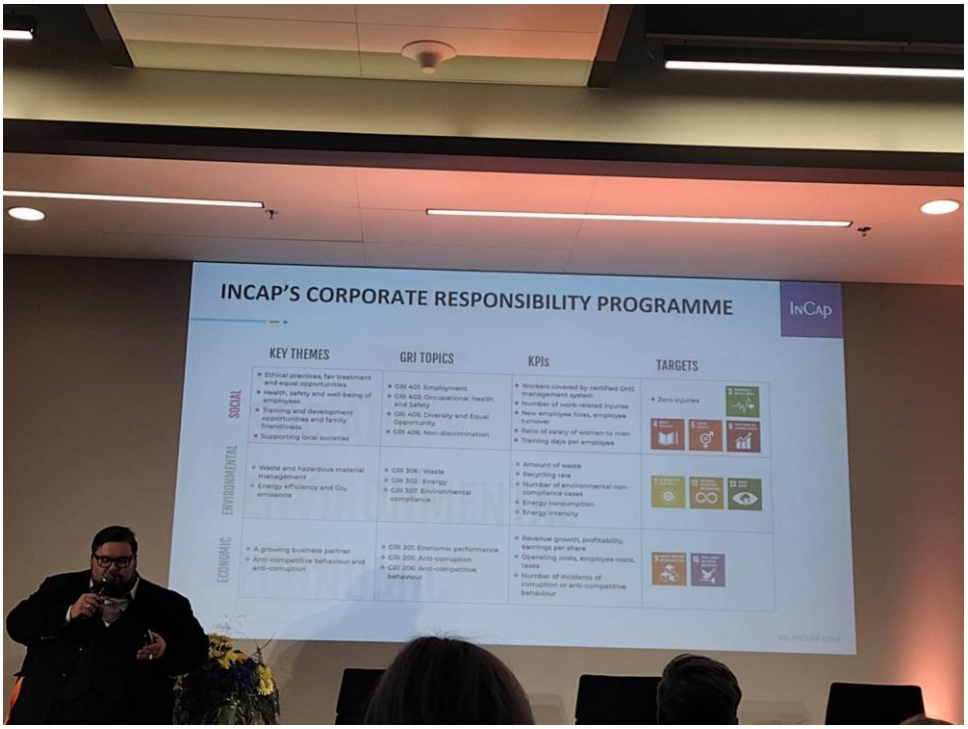
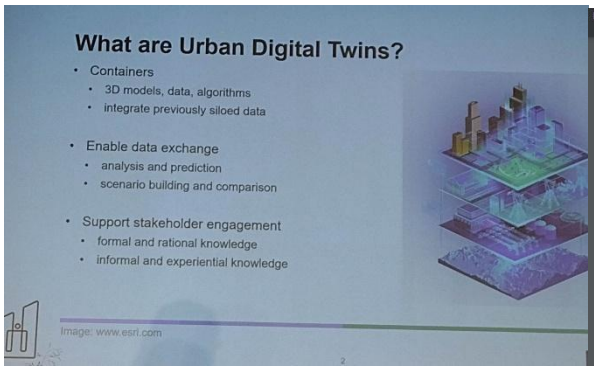


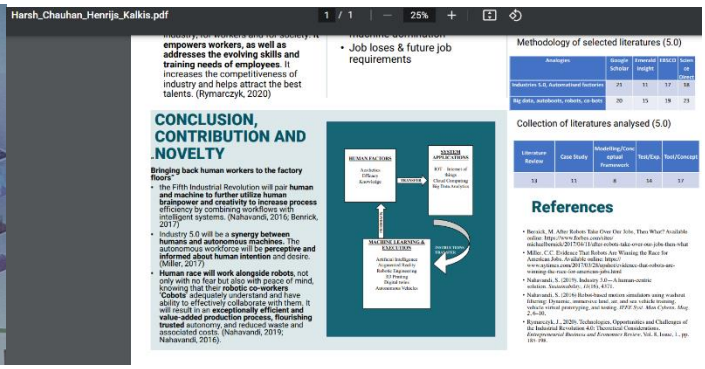
*Photo by Christa Tigerstedt:* Incap's CEO talks about implementation of SDGs.

On top of this we got insights into current research in the field of 'Green Diet'.
We got examples on how digital twins can be used urban context.
The poster presentation took place during the breaks in the lunch/coffee area. Some thought-provoking examples were visualized. Human machine interaction challenges were identified, and strategies and models grounded in data were demonstrated. Another thing we learnt about was the

climate impact from streaming by Emma Stewart (https://euroweeklynews.com/2021/06/14/whats-the-true-impact-of-streaming-netflix-on-the-climate/).




Digital Twins in urban contexts, www.esri.com. Photo by Christa Tigerstedt.




Poster presentation by Harsh Chauhan and Henrijs Kalkis. (Screenshot, C.Tigerstedt)

### 1.2.3. Best practises in Ülemiste City

During the second day, students had the possibility to visit the following companies and learn about green solutions.

*Tvo*
The role of the TVO is to be an undertaking's assistant, cooperation partner and adviser in all the challenges related to packaging and packaging waste. (tvo.ee)

*Ringo*
The business district, Ülemiste City in Tallinn, has begun a partnership with the company Ringo Eco to reduce the amount of packaging waste generated from takeaway food. The partnership will see single-use plastics in cafes, restaurants and office spaces replaced by reusable packaging that can be deposited in containers all around Ülemiste City.

*CLEVON*
The mission of Clevon is to develop and manufacture vehicles that save energy, are environmentally friendly and contribute towards a climate-neutral economy. (Clevon.com)

### 1.2.4 Future City hackathon - a student's task

During the first day, 5.10.2022, students took part in an outside workshop. The goal was to find the environmental challenges in Ülemiste City campus: Take photos of the places that need to improve and offer their solutions. The ideas were presented by the teams during the third day, 7.10.2022.

**Team 1** presented ideas on how to make Ülemiste City a carfree zone. They suggested huge parking lots could move out of the city. Not too far away, so it still would be possible to enter the city on foot or by bike. The team also suggested to reduce complexity of the streets by reducing the number of different accesses to the city. The next challenge the team brought up was garbage recycling. The group suggested to introduce more different types of recycling bins as in Sweden, which makes recycling easier. The third idea was related to urban gardening, to bring the gardens closer to the city, and have them for example close to the restaurants and inhabitants on the roof. The group also

discussed plant walls, which have a huge potential in Ülemiste City. Plant walls could provide thermo benefits for the buildings, increase biodiversity and serve as air and noise pollution cover. This would increase the wellbeing of the people in the city, also by bringing nature closer to the people. The team had also paid attention to the fact that there are not many playgrounds for children and not many possibilities for outdoor activities, so the team suggested more playgrounds for skaters and toddlers. Finally, the team suggested building a smug tower in the airport, to reduce airport pollution.


*Photo by Marek Jõepera:* Team 1 proposing urban gardening

**Team 2** brought up the challenge of micro mobility. The bikes use the same driving lanes as the cars, which is less safe for bikers. The team suggested separate lanes for bikes. They also suggested cargo bikes and bike rentals, to offer solutions other than cars. The team paid attention to the fact that there is a lot of car traffic but the transition to electric cars is challenging as there are only a few electric charging stations. The team suggested that the city center could be made car free. The team also suggested using cars as batteries. The team paid attention to that there are more parking than public spaces and that the public spaces were noisy. To solve this, the team suggested establishing more green public spaces in less noisy areas. The team mentioned the problem with mobility for disabled people. To increase the safety and convenience for people with disabilities the group suggested vertical platform lifts that are easily accessible.

*Photo by Marek Jõepera:* Team 2 proposing separate bike lanes for bikes

**Team 3** brought up that there are few electric vehicles and charging stations in the city. In many Nordic countries EV: s is subsidised. In some toll stations EV: s pays lower fees, as an incentive for the transformation from fossil vehicles to EV: s. The team suggested investing in infrastructure for bikes, investing in more charging stations and increasing the green areas in the city. The team also suggested incentives for recycling plastic bottles and cans and more garbage bins and machines that sort waste.

*Photo by Marek Jõepera:* Team 3 solutions for a greener city

**Team 4** discussed challenges in transportation. The team had created the "3R: s for the CARS", which included three levels of action, based on similar logic as the waste hierarchy: 1. Reduce, 2. Reuse and

3. Rearrange. The first suggestion would be to reduce the number of cars, the second to reuse the cars that are still in the city and the third option, if there are still cars left, would be to rearrange the cars. Reducing cars could be done by implementing more bike infrastructure and more e-bikes connected to bus services. As an example, in Norway you can ride an e-bike with bus membership for a limited time. Reusing cars could be done by a carpooling system and car sharing providers. Rearranging cars could be done by moving the car park underground and in addition having solar panels on the roof of the building, to provide multifunctionality of the car park. This would increase the green areas in the city. The team's second topic was urban farming. As many buildings have flat roofs, they can be used for rooftop gardening, growing vegetables for residents, restaurants etc. Gardening can also be in the ground area, as green areas are important for physical and mental health

*Photo by Marek Jõepera:* Team 4 presenting their model "3Rs for the CARS"

**Team 5** had also, during the city tour, paid attention to the problem with the small number of electric cars in the city. Companies could encourage their employees to use bikes, by rewarding employees using bikes. The group also suggested parking lots with rainwater systems. This solution would help the flooding in the city by preventing rainwater from entering the sewage system. The group also suggested introducing solar panels on roof tops, with robot arms to follow the sun, on upcoming buildings in the city. One option would be a solar window panel. The group also paid attention to the lack of recycling bins in the city. They suggested more bins for different options of trash. They also suggested a Zero Waste store to the city, with local, organic products including vegan and gluten free options. The customers could bring their own bag, jar or similar for their purchase.

*Photo by Marek Jõepera:* Group 5 presenting the concept of Zero Waste store

**Team 6** discussed the challenge with long distance transports of fresh groceries in the city and that a high percentage go to waste. The group suggested bringing the production of vegetables and fruits closer to the consumers with the help of hydroponics farms. To solve the problem with food waste the group suggested using waste to produce biogas for energy and fertilisers. To solve the problem with many cars and parking lots, the group suggested adding more bicycle stands and promoting use of e-scooters. The group also paid attention to the lack of green areas. They proposed green roof tops and green areas. Green areas will absorb CO2 and promote the health for inhabitants. Also, biodiversity can be improved.

*Photo by Marek Jõepera:* Bringing the farm to you: Hydroponics farms

**Team 7** discussed the lack of outdoor activities in the city. The group suggested more options for activities, like concrete ping pong tables, workout areas and playgrounds. The goal would be to encourage people to stay out in the fresh air with activities. The group suggested adding more ecology to parking lots, for example adding grass to the underlayer, as it helps to reduce CO2. The group also suggested bike lanes and one-way streets. The groups supported the idea of green roof tops. The roofs would protect the drainage system, give better air quality, contribute to biodiversity, and regulate air temperature.


*Photo by Marek Jõepera:* Team 7 suggestions for outdoor activities in the city

## Summary

Based on the student feedback form one can say that the students enjoyed these three days a lot. They seem to have benefited from the study tour in many ways, especially the company visits were seen as very educational. Students were also given the possibility to participate in the Green Diet conference on the second day which gave added value to their learning experience. Teachers found the presentations of students very interesting and the second day conference had excellent eye opening presentations. All the participants also enjoyed the leisure program and possibility to learn more about Estonian culture. These types on multicultural meeting are important also from learning perspective, especially learning soft skills.