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CIRCULARITATY AND INDUSTRIAL SIMBIOSYS IN INDUSTRIAL PARKS AS TOOLS FOR GREEN TRANSITION

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FReINDs Webinar on Industrial Symbiosis

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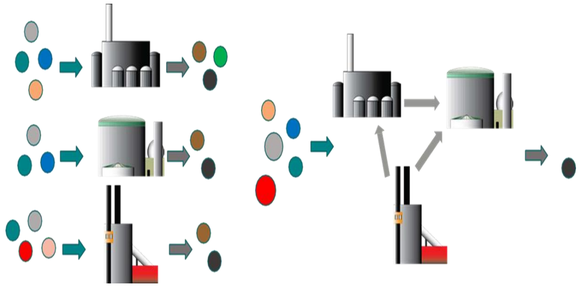
CATALYST AIM



To facilitate the transition to a circular economy by industrial symbiosis implementing and promoting cooperation between industrial entities in Romania and Norway for sustainable development.

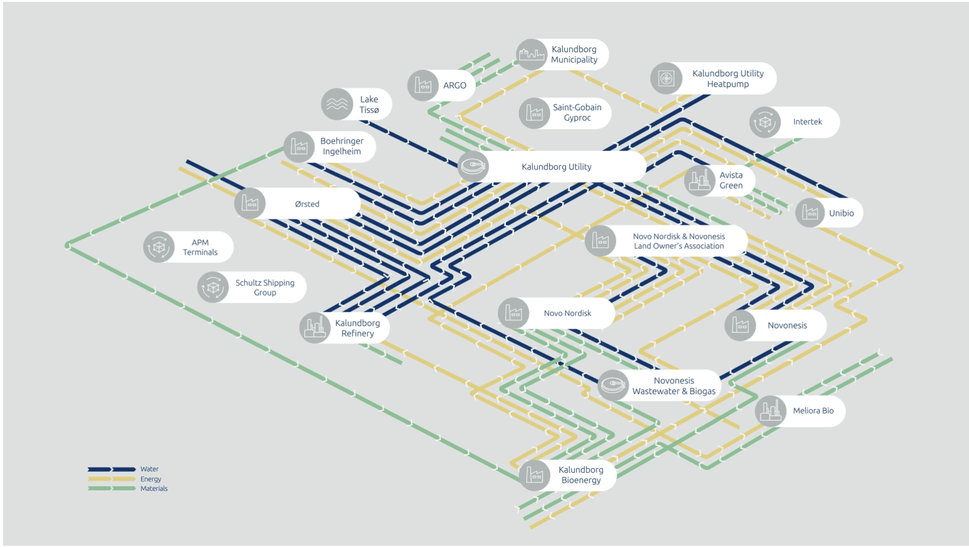
WHAT IS INDUSTRIAL SYMBIOSIS?

“Industrial symbiosis is the use by one company or sector of underutilized resources broadly defined (including waste, by-products, residues, energy, water, logistics, capacity, expertise, equipment and materials) from another, with the result of keeping resources in productive use for longer” (*European Committee for Standardisation and European Committee for Electrotechnical Standardisation, ‘Industrial Symbiosis: Core elements and implementation approaches’, workshop agreement, 2018*).

In the CATALYST project and surveys, we have defined industrial symbiosis as a **collaboration** model where companies from various industries, usually located in close geographical proximity, collaborate to utilize the waste, energy, or unused resources of one company as raw material or resource for another company.

TIMELINE

- 1800’s collaborative approaches among industries using waste and residual streams
- 1947 (earliest) ”Industrial Symbiosis” used in literature
- 1960s-70s Former Soviet Concepts of IS
- 1970s Kalundborg symbiotic activities begin (Industrial Park)
- 1989 Frosch and Gallopolous definition of ”industrial ecology”
- 1990 Eco-industrial Park term coined
- 1990s-2000s….exponential ”uncovering” of IS networks and research into their development
- 2000s , CE…



PROMOTOR :

National Center for Sustainable Consumption and Production (RO)

PARTENERS:

Politehnica University of Timisoara (RO)

Norwegian Institute for Water Research (NO)

Thams Industrial Cluster (NO)

CATALYST
Objectives, activities și results

Objectives

- Enhance cooperation between Norwegian and Romanian organisations by facilitating interaction, knowledge and best practices transfer between the partners, industrial parks and companies during the project activities, bilateral visits and beyond;
- Create awareness and promote the benefits of resource efficiency, circular economy, and industrial symbiosis among the Romanian and Norwegian companies and industrial parks;
- Build capacity for the IS Facilitators (representatives of industrial parks and companies) by transferring Norwegian knowledge and expertise;
- Accelerate transition to green and circular economy by identifying opportunities for resource efficiency and industrial symbiosis;
- Exchange experience with Norwegian partners and eco-industrial parks and companies during bilateral visits in Norway and Romania;
- Enhanced collaboration and industrial symbiosis: by facilitating collaboration in industrial symbiosis, the project aims to create synergies among companies within industrial parks, leading to share resource utilization, innovation, and mutual benefits for stakeholders.

Activity 1. Target Groups Information and Research

Components:

1.1 Stakeholders mapping and categorization
1.2 Survey to investigate actual challenges and opportunities in companies and industrial parks and concluding report
1.3 Reporting on research activities
1.4 Info Day for industrial parks, companies, and other relevant stakeholders (local and regional authorities)

Outputs Activity 1:

- *A Stakeholders map and characterisation based on the relevance and level of involvement in the project in both countries;*
- *At least 30 Surveys conducted to investigate challenges and opportunities within companies and industrial parks, with a* ***concluding report summarising key findings, both countries****;*
- *Two informational events, one face to face and one webinar organised for Romanian target groups, with participation from companies, industrial parks, and other relevant stakeholders, including local and regional authorities,*

Activity 2. Educational Webinars for IS Facilitators and companies

Components:

2.1 Training Package preparation (2 modules on the following topics: "Industrial symbiosis, concept and step by step methodology"/ "Resource efficiency: Water, Energy, Materials and Waste, concept and step by step methodology".
2.2 Creation of an online resource knowledge hub
2.3 Identification, evaluation, and registration of trainees from companies, **industrial parks, and business support entities,**
2.4 Delivery of training sessions during the two days webinars
2.5 Final assessment of trainees to evaluate their knowledge and contributions to practical work during Activity 3

Outputs Activity 2:

- *Training package in EN, RO, NO consisting of PPT, case studies, exercises, available here: https://cnpcd.eu/proiecte/catalyst/catalyst-resource-hub/*
- *At least 2 half-day training sessions/webinars*
- *1 Online Resource Knowledge Hub for free access to training materials and resources on circularity of resources and industrial symbiosis, available here: https://cnpcd.eu/proiecte/catalyst/catalyst-resource-hub/*
- *17 Professionals from business support entities participated, companies and industrial parks benefiting from full training in resource efficiency, circular economy and industrial symbiosis*

1 Assessment report of trainees (knowledge and contributions to practical work during the pilot project)

Activity 3. Accelerate circular economy practices and waste valorisation

Components:

3.1 Selection of a Pilot Industrial Park

3.2 Workshop for establishing companies' interrelations and first synergies in Romania;
3.3 Industrial Symbiosis Software acquisition and training;
3.4 Identify and assess opportunities for resource efficiency and industrial symbiosis;
3.5 Development of an Action Plan for Resource Efficiency and Industrial Symbiosis

Outputs Activity 3:

- ***1 Workshop organized to facilitate networking and collaboration among companies within the industrial park –*** *Cluj Innovation Park ;*

- ***Minimum 5 opportunities for resource efficiency and industrial symbiosis*** *identified and assessed through detailed analysis, available using International Synergies software;*

- ***An Action Plan for resource efficiency and industrial symbiosis*** *based on the results of workshop discussions and analysis.*

Activity 4. Knowledge exchange and capacity building through bilateral study visits in Romania and Norway

Components:

4.1 Selection of Romanian participants for the study visits;

4.2 Bilateral Visit to Romania and Norway;

4.3 Development of a comprehensive Bilateral Visit Report

Outputs Activity 4:

- ***12 (13) Selected professionals*** *from companies and industrial parks, project partners, benefited from knowledge exchange, facilitated interaction with Norwegian companies and industrial parks during the bilateral visits and beyond;*

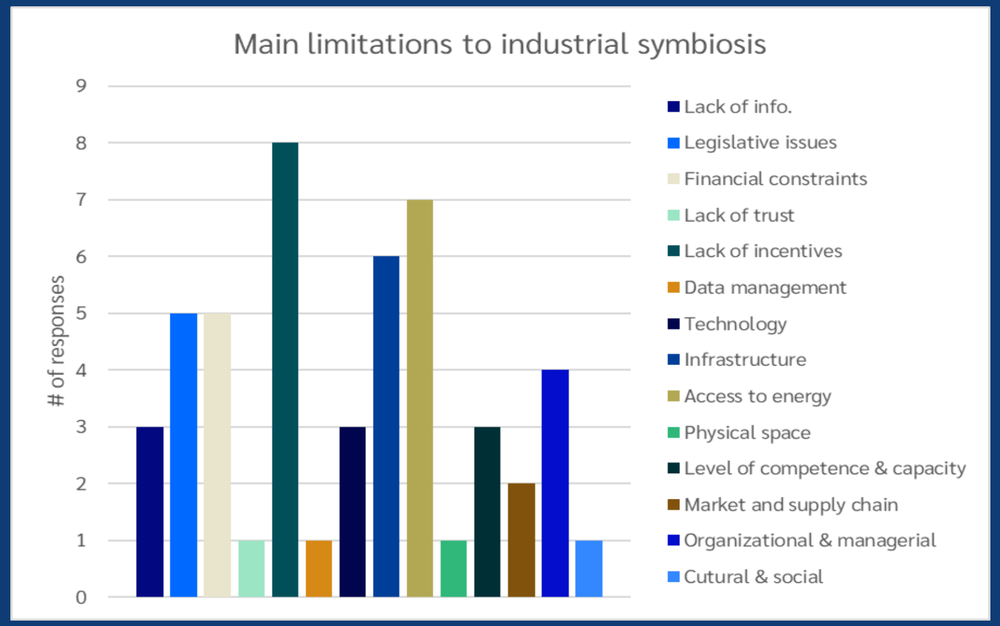
- ***2 Bilateral visits*** *conducted successfully, with participants gaining valuable insights and experiences related to resource efficiency, circular economy, and industrial symbiosis and plan on new, potential cooperation;*

- ***1 Bilateral Visit Report*** *and documentation of lessons learned from the bilateral visits, highlighting best practices, success stories, and key takeaways for future implementation*

Info about NO and RO survey (comparative analysis)

Survey structure:

Personal Data (i.e., information about the respondent)
General Information (i.e., information about the industrial park)
Current Practice (i.e., current practices surrounding industrial symbiosis)
Resource Management
Collaboration and Communication (i.e., communication platforms utilized)
Limitations and Opportunities
Future Plans
Feedback and Consent



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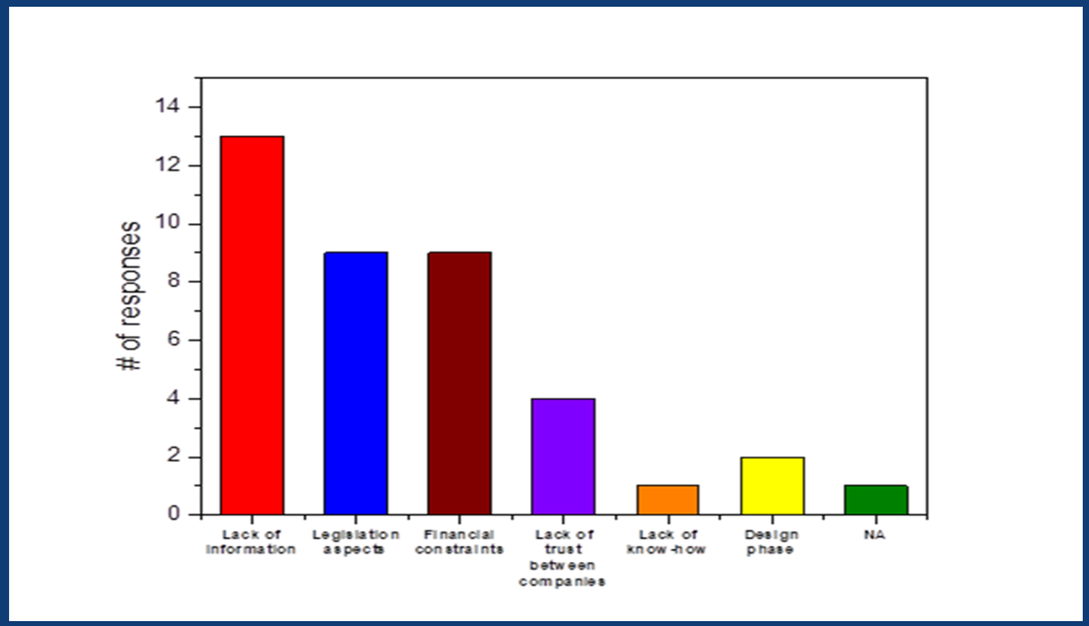
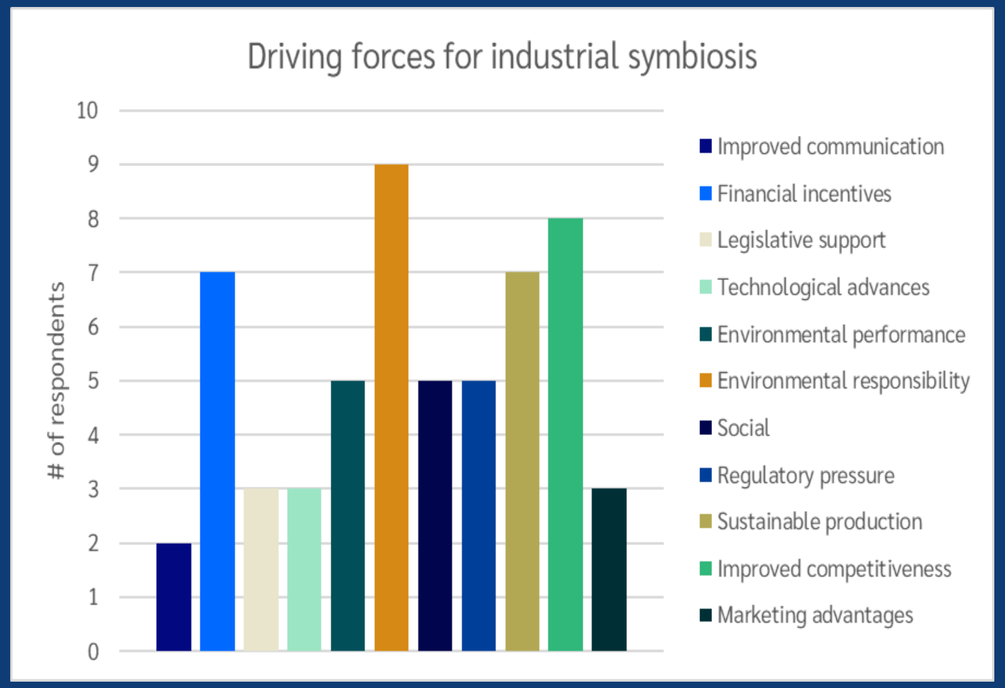


RO

Main limitations in implementing industrial symbiosis *in industrial parks/companies as identified by respondents through the survey*



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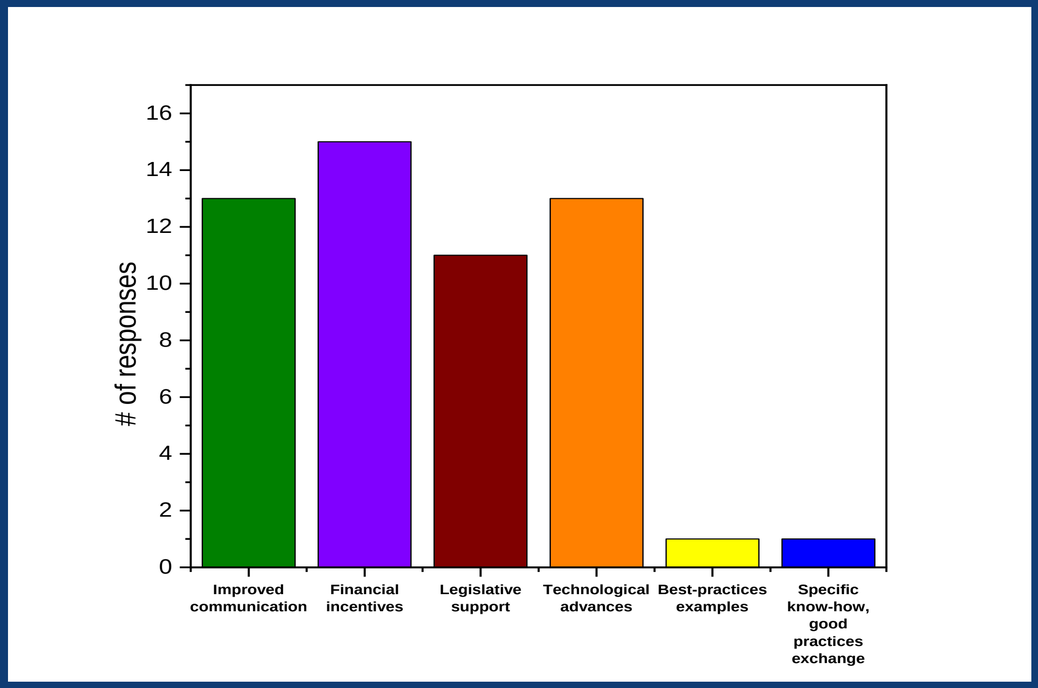
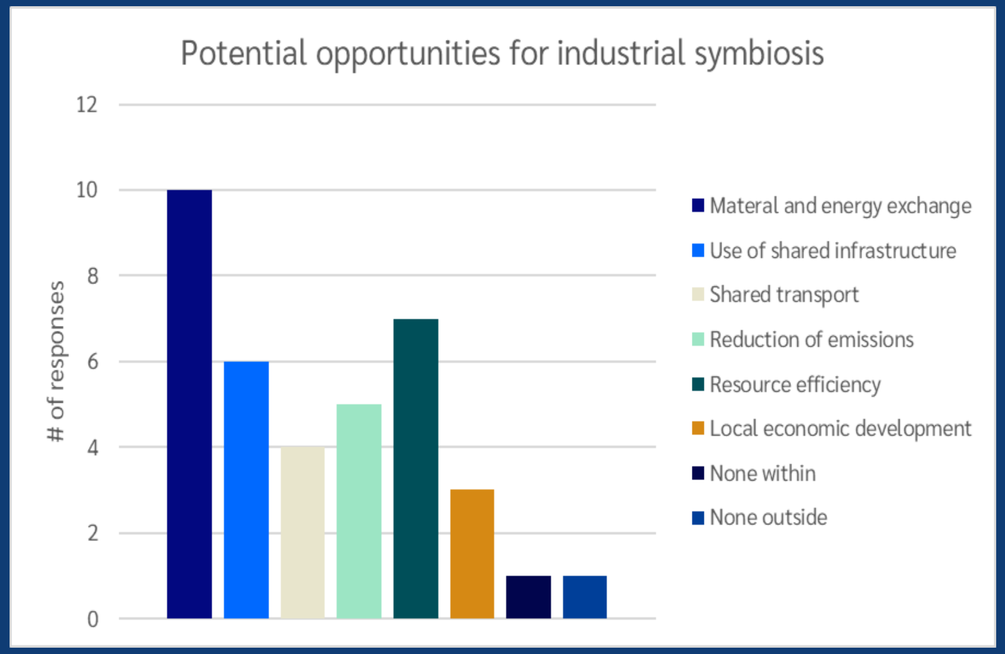


RO

Driving forces for implementing/promoting industrial symbiosis in industrial parks/companies *as identified by respondents through the survey*



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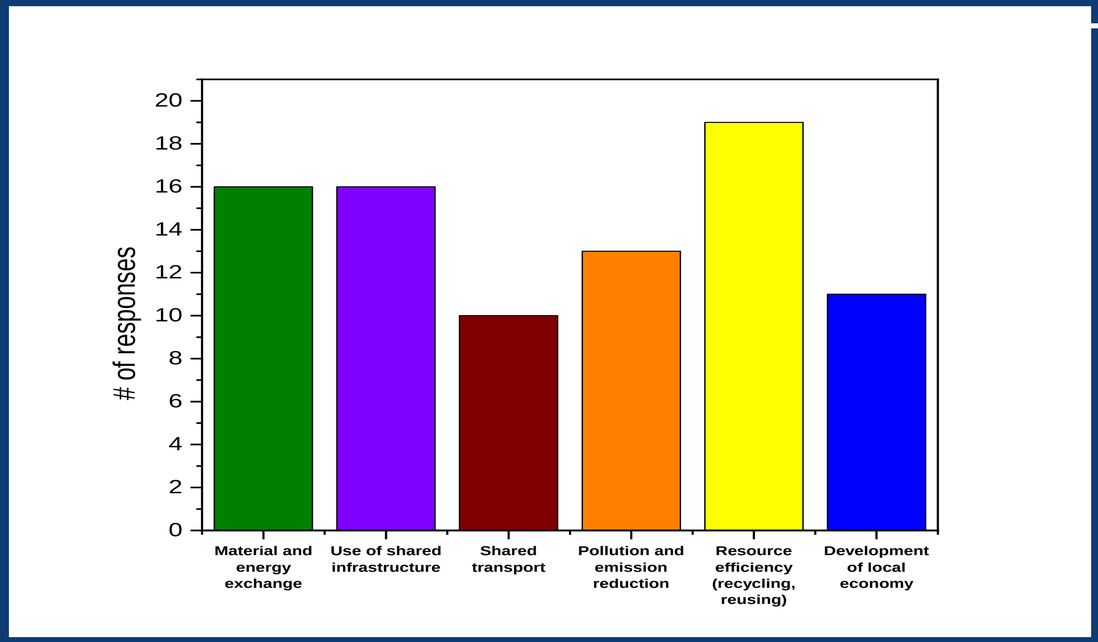

RO

Potential opportunities for implementing industrial symbiosis within industrial parks *as identified by respondents through the survey*

KEY TAKEAWAY (bilateral visit)

Face-to-face interactions during these visits emphasized the added value of direct engagement, enabling a deeper understanding of concepts and fostering meaningful discussions.

Key takeaways include the importance of integrating industrial symbiosis principles during the design phase of projects as well as facilitator clusters in coordinating efforts and building trust.

These study tours demonstrate the great potential interdisciplinary **collaboration** can bring in achieving innovation sustainable industrial growth.

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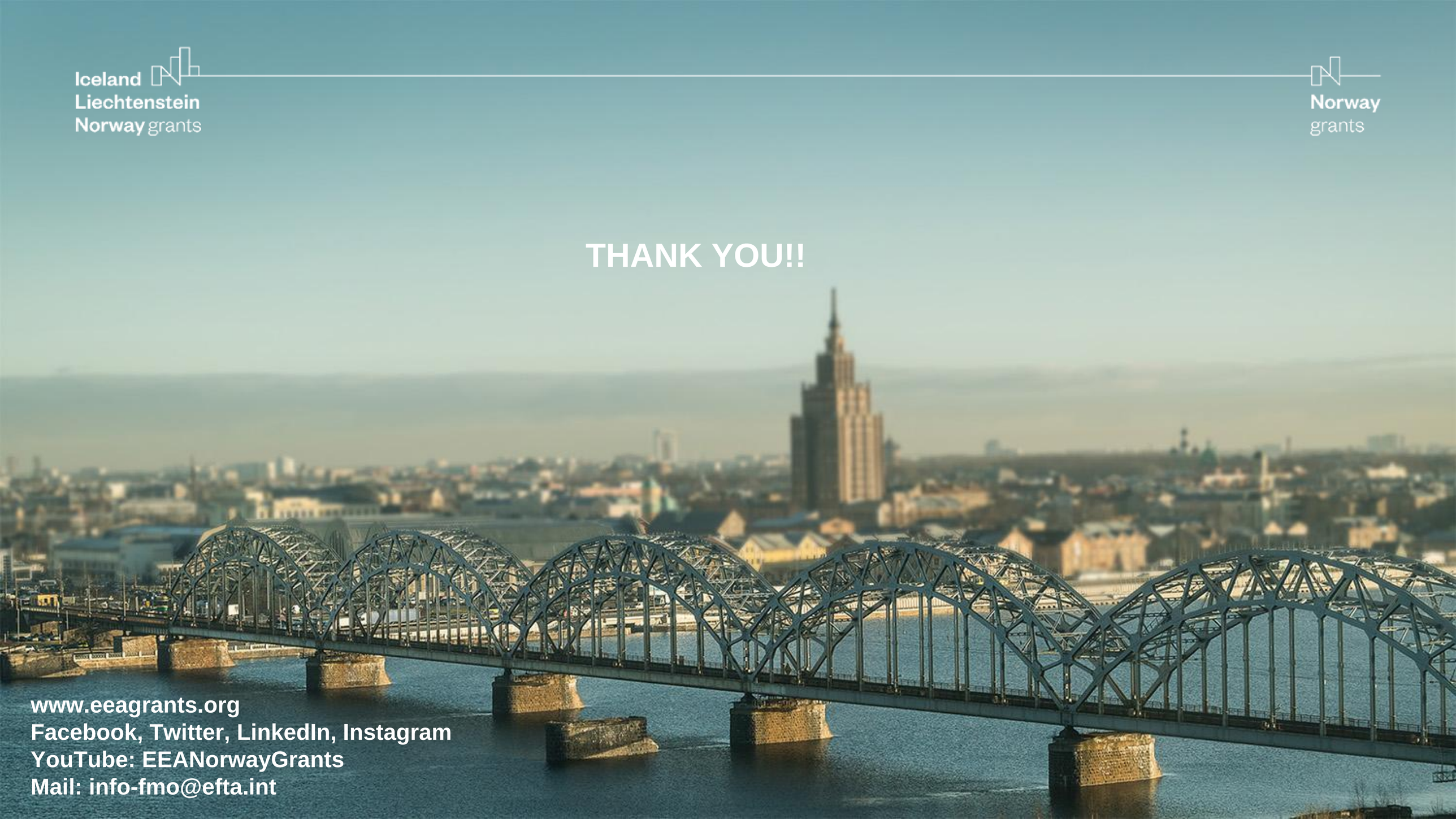
THANK YOU!!



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