

NORDREGIO POLICY BRIEF 2024:7

Waste Management in the High North (WANO) 2021-2024



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Policy Brief

WANO (Waste Management in the High North) is a research project in 2021-2024 funded by the Norwegian Research Council (NFR) and includes the partners NORCE Norwegian Research Centre (the lead partner), Nordregio, Remiks Miljøpark AS, and Hålogaland Ressursselskap (HRS) IKS. The project generates new research-based knowledge on the conditions for innovation-driven, crossborder cooperation in the northernmost regions of Norway, Sweden and Finland.

This Policy Brief presents WANO activities in 2024, and summarizes the major results and findings of the WANO project. Finally, the WANO project group suggests recommendations for further development of municipal waste management in north Norway.

Map: The geographical focus of WANO is largely in north Norway and in northern parts of Finland and Sweden.





Photo: Jukka Teräs. WANO group visiting Kuljetusrinki, Vantaa, Finland

The WANO Project

Project partners:

NORCE Norwegian Research Centre AS is the coordinator of the WANO project. NORCE is one of Norway's largest independent research institutes with long-term experience in Arctic research. Within its Regional Development Group in Tromsø in north Norway, NORCE contributes to the sustainable development of societies and key business sectors in the Nordic Arctic regions. From NORCE, Jukka Teräs, Helge Flick and Anders Lind participate in the WANO project. Professor Trond Nilsen from the Inland Norway University of Applied Sciences acts as scientific advisor for the group.

Nordregio is an applied research institution under the Nordic Council of Ministers with experience in Nordic and Arctic regional development issues. Nordregio is located in Stockholm, Sweden and contributes to the WANO project with knowledge and experience on the Arctic as well as Nordic benchmarking experience. Timothy Heleniak is the Nordregio contact person of WANO.

Remiks Miljøpark AS, owned by the municipalities of Tromsø and Karlsøy, is the main waste management operator in the Tromsø area in north Norway. Remiks handles approximately 80 000 tons of waste per year, including waste from Svalbard, Troms, and northern Nordland, serving about 77 000 inhabitants. The company is organized under two main areas of operation: household and enterprise waste. From Remiks, Øivind Østbø is the contact person of WANO.

Hålogaland Ressursselskap IKS (HRS) is a waste management and recycling company owned by 8 municipalities in the northern part of Nordland and southern Troms in northern Norway. The company, with headquarter in Narvik, provides daily waste management services to 60 000 inhabitants and it is a significant regional actor in the corporate waste market, too. The company handles more than 100 000 tons of annual waste. From HRS, Line Dalhaug is the contact person of WANO.

WANO key activities 2021-2024

The WANO project is organized under seven work packages (WP). WP2 is about key theoretical concepts and methodology to analyze waste management in the Arctic context. The thematic work packages include international and global trends (WP3), Cross-border business cooperation (WP4), and Social aspects (WP5). More functional work packages (WP1, WP 7) take care of project management, coordination and communication & outreach. The WP6 Synthesis concludes the findings of the study. The research outline with work packages is illustrated in the figure below.

WANO 2023-2024: WORK PACKAGES

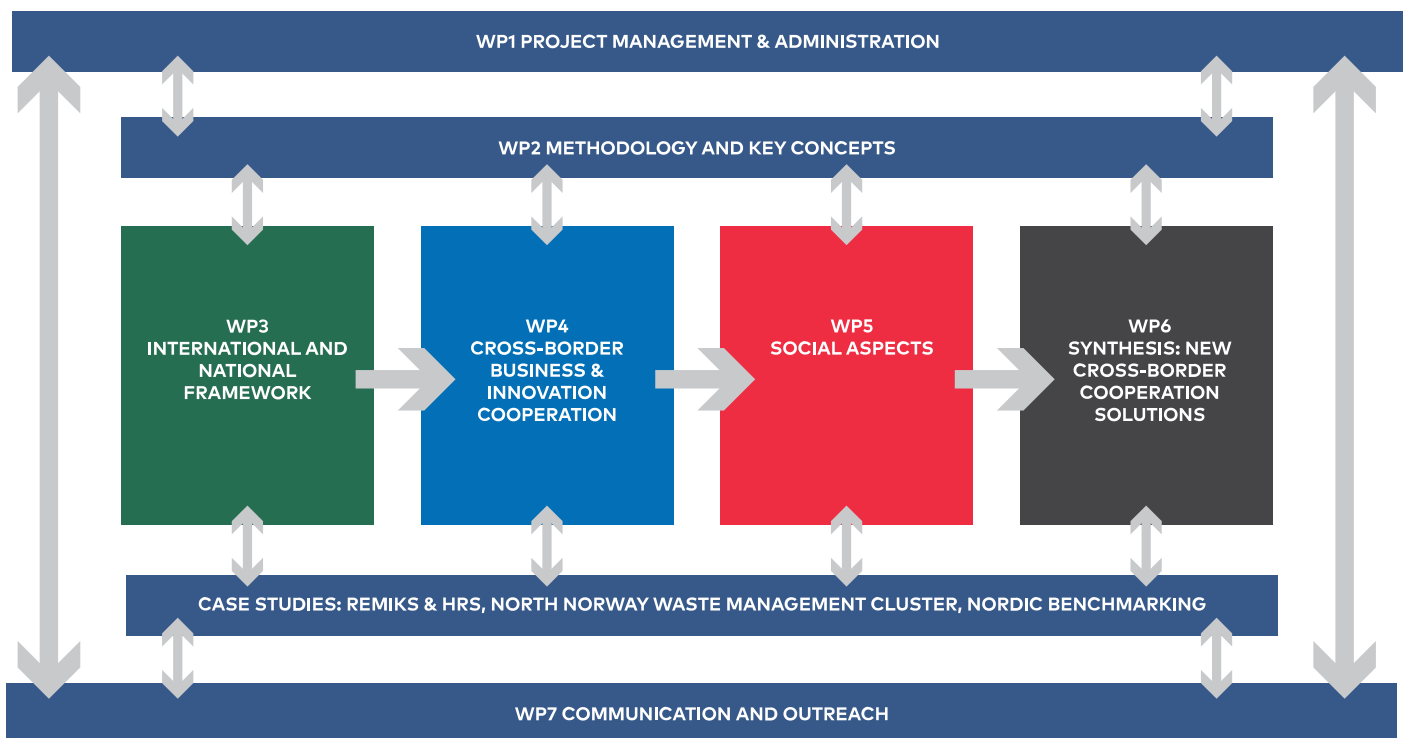




Photo: Janne Laimola / unsplash.com

WANO promoting cross-border innovation

The WANO project has analyzed the needs and interests of the north Norway municipal waste management actors regarding technology development, innovations, and collaboration, with focus on the analysis of the development needs raised by the Remiks and HRS companies.



Photo: Jukka Teräs. Remiks VTT Team work at Innofest 2023, Oulu, Finland.

Intelligent sorting of waste has been one of the core areas of interests of the WANO cross-border innovation promotion activities. A significant cross-border cooperation initiative related to optical sorting in waste management was initiated and catalyzed by WANO in 2023, resulting in a joint pilot case on advanced technological solutions between Remiks and the VTT Technical Research Centre of Finland in Oulu. The cross-border initiative was awarded a grant by the RFF Arktis programme in Norway, and in 2024, Troms Holding AS awarded NOK 2M grant for the follow-up innovation project "Waste Identification and Digital Efficiency (WIDE) on Waste Management in North Troms".

Another cross-border cooperation in municipal waste management by WANO was initiated in early 2024, when the WANO project organized a visit to Helsinki region in Finland for the WANO industrial partners of Remiks and HRS, with an aim to become familiar with some of the latest technology solutions on waste sorting. The visit programme included e.g. Terex ZenRobotics in Vantaa which designs and creates robots that pick, sort, and recycle waste material, and uses artificial intelligence to automate waste sorting.



Photo: Remiks and HRS , the industrial partners of WANO, visiting TEREX ZenRobotics in Vantaa, Finland

International visibility

Harvard Kennedy school & Arctic Mayors' Forum

The WANO project was invited by the Harvard Kennedy School's Arctic Initiative and the Arctic Mayors' Forum to give a presentation at a webinar in April 26, 2024 on circular economy and waste management practices in Arctic cities. The webinar explored the unique challenges of solid waste management in Arctic cities and shared experiences and best practices for implementing circular economy approaches to waste management. The webinar attracted an audience of over 100 experts, policymakers, and students from across the Arctic.



Photo: Jukka Teräs from NORCE contributed to a panel discussion on solid waste management in Arctic cities, organised by the Arctic Initiative of the Harvard Kennedy School and Arctic Mayors' Forum. Other panelists: Ernst Kloosterman (Tromsø Municipality), Mark Spafford (Alaska Water Group /Jacobs Engineering Group), Nivi Strunz (Kommune Qeqertalik, Greenland) and Nadezhda Filimonova (Harvard/ Arctic Initiative).

Nordic series of waste management events in the north

Cooperation between WANO & the NOWA Interreg Aurora Project

The WANO project has been implemented in close cooperation and dialogue with the Interreg Aurora project NOWA (Nordic Waste Management Vision). In 2024, WANO contributed to the NOWA webinar series including presentations to waste management actors and stakeholders in North Norway, North Sweden, and North Finland. The webinar series shared experiences and insights on the challenges and opportunities of waste management in the North.

Interreg  Co-funded by the European Union

Aurora

NOWA - Nordic Waste Management Vision

Webinar 07.06.2024 kl. 09 - 10:30

**INTERNASJONALT OG
REGIONALT SAMARBEID I
AVFALLSBRANSJEN**

Stian Larsen
Remiks Miljøpark

Jukka Teräs
Norce

Elin Hansen
Avfall Norge

Mikko Ahokas
Macon

Photo: The Nordic webinar series event in North Norway on June 7, 2024 included presentations by the North Norway Waste Cluster, the NOWA project, the WANO project, and the national waste management organization Avfall Norge.

Research meets waste management in the north

The International seminar on waste management

The "Research meets waste management in the North" seminar in Tromsø on October 28, 2024, brought together waste management actors and stakeholders, and researchers on waste management with focus on local and regional development. The seminar introduced ways to facilitate dialogue and close partnership between research institutes and waste management actors in the region. The seminar brought together waste management actors, researchers, and stakeholders from Norway, Finland, Sweden, and Italy to discuss international collaboration and joint development. The seminar was organized by the Remiks company in Tromsø, the NORCE research institute, and the WANO waste management project.

International insights included Nordic experiences by Murat Mirata from the University of Linköping, as well as good practice case on local acceptance and stakeholder engagement from Tuscany, Italy, by Cecilia Pasquinelli from the Parthenope University of Naples.

The seminar revealed that despite geographical and cultural differences, many of the challenges and opportunities in the waste management sector can be analyzed and solved via international cooperation between research, waste management practitioners, and supporting stakeholders.



Photo: Remiks. Øivind Østbø from Remiks giving a presentation at the Research meets waste management seminar.

Interview with Cecilia Pasquinelli on local acceptance

Cecilia Pasquinelli



Photo: Cecilia Pasquinelli

Associate Professor, Parthenope University of Naples, Italy

Cecilia, you gave a presentation at the WANO international seminar in Tromsø in October 28, 2024. What was your presentation about?

My presentation was about local acceptance and stakeholder engagement applied to waste management. We have studied with Jukka Teräs how Peccioli, a small town in Tuscany, Italy, with 5 000 residents, little by little has become an important regional actor in the regional system of waste management in Tuscany. They have created "the Peccioli system" which has contributed considerably to local acceptance and stakeholder engagement regarding waste management activities – we call it "Yes in my backyard" mentality in our study.

Peccioli has successfully combined waste management development and public investments in culture and arts. Please tell us more.

A systematic work on a counterintuitive communication of waste in Peccioli started already in the early 2000s, with an attitude like "Why not turning the landfill into an interesting place to visit". Peccioli has been able to develop a combination of landfill with the development of advanced waste management treatment facilities, and - perhaps surprisingly - a site for investing in and presenting public art, including for example the giant sculptures in the landfill site. School kids and tourists come to visit and learn about waste, in a unique landscape, with contemporary art presented, too. You should visit Peccioli and the waste management site!

Do you think some elements of inspiring local community in Peccioli would be transferable to other regions, and to North Norway? You also heard about waste management in North Norway and visited the Remiks waste management facility in Tromsø during your stay - what would you like to take back to Tuscany as good practice, based on what you saw and learned?

Sharing experiences with managers and researchers was extremely fruitful. Beyond contextual differences, we had the opportunity to see that we have an important challenge in common, which is finding effective modalities and approaches to communicating waste and local waste management systems. Something to work on is going beyond traditional information and thinking of advanced projects and techniques that today may be more effective in dialoguing with and engaging local stakeholders, including residents.



Photo: Renzo Macelloni, Mayor of Peccioli and the giant art sculptures at the Peccioli waste management site.



Photo: Jukka Teräs. Renzo Macelloni & Cecilia Pasquinelli



Photo: Jukka Teräs. Remiks waste management facility, Tromsø

WANO: major results

The WANO project focused on studying and promoting cross-border possibilities of municipal waste management between north Norway, Sweden, and Finland, as the changes in the geopolitical situation prevented cross-border cooperation efforts towards the Russia. Despite the changes in the geopolitical situation, the WANO project was able to meet its major objective: to generate new research-based knowledge on the cross-border cooperation in the Barents Region and to identify new cross-border business opportunities in the Arctic waste management sector. The major results of the WANO project include:

Progress in cross-border research, innovation, and business opportunities in the north: The WANO project was able to identify, analyse, and communicate the opportunities, challenges, and concrete ways to increase cross-border R&D and business cooperation in the High North in the field of waste management. The WANO cross-border activities and initiatives paved way to concrete cross-border partnerships and cross-border projects e.g., in the field of optical sorting of waste.

Analysis of national and international framework: The WANO project, with an updated analysis of the key political and legal factors influencing operation of Arctic waste management systems, contributed to setting the waste management in the north in a broader national, and international context.

Social aspects: The WANO project contributed to understanding of key social aspects related to municipal waste management, with focus on social aspects of new incineration facilities in the Arctic. The international benchmark on local acceptance and stakeholder engagement played an important role, including an international benchmark study in Tuscany, Italy.

Communication and outreach: WANO reached out a broad range of actors and stakeholders through activities ranging from international events to targeted cross-border seminars and workshops, and active networking with other waste management projects. The WANO dissemination reached the academic stakeholders, too, including Journal articles, Working Papers, and academic conferences.

Broader impact: The WANO project has raised the awareness of the cross-border collaboration and innovation in municipal waste management sector in north Norway, among a wide range of stakeholders. The results of WANO research and industrial collaboration support and inspire policymakers and other stakeholders in preparing waste handling policies that take into account the needs and expectations of Arctic communities.

WANO and future development of waste management in the north: WANO contributes to future development of cross-border waste management in High North. The international, political, business, and social approaches by WANO, together with broad networking, open up new possibilities both for cross-border business and innovation, and for future academic research.

Policy recommendations

Our major policy recommendations:

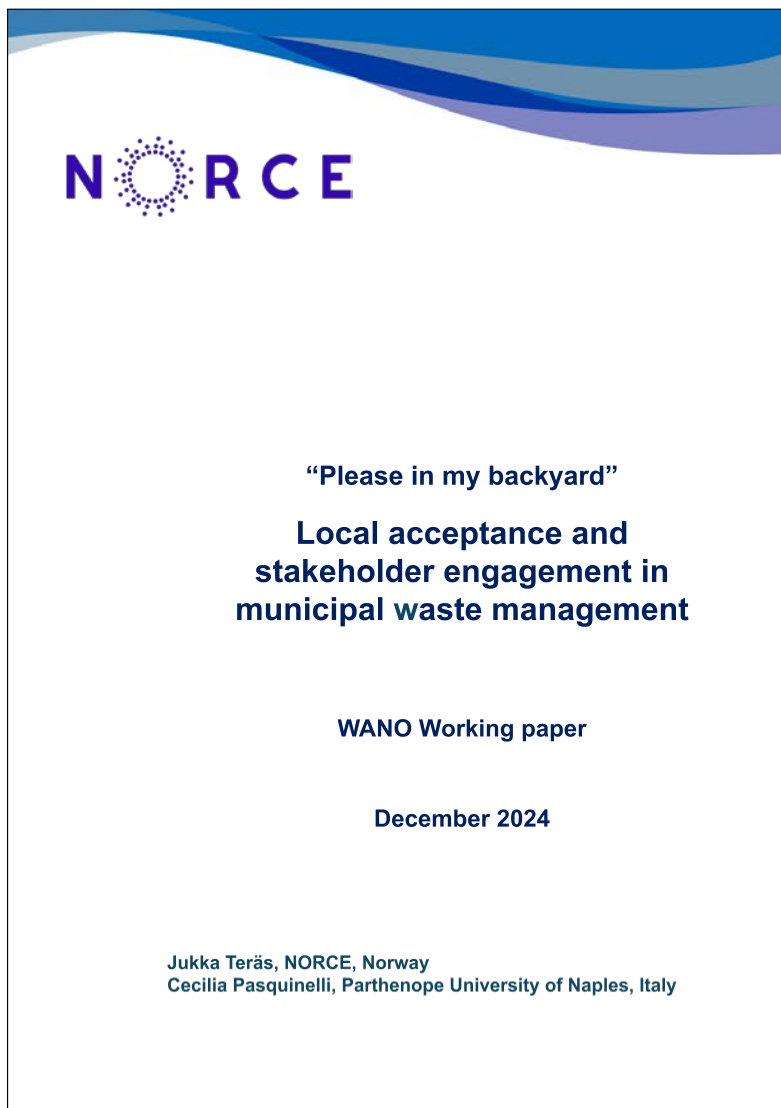
- The municipal waste management sector provides opportunities for innovation and cross-border cooperation. The WANO project reveals a number of potential initiatives to be further developed in the municipal waste management sector
- The recent collaboration and innovation initiatives by the north Norway waste management actors, including e.g., the north Norway Waste Cluster collaboration, include promising activities towards utilizing external knowledge, forming international partnerships, and investing in constant competence upgrade. The joint collaboration between the waste management actors deserves further development and support
- Waste management actors and stakeholders welcome knowledge-based analysis related to the municipal waste management. "While all transformation of reforming industrial systems and value chains must be done by industry actors, academic and research institutions often play a key part in guiding decision makers to knowledge-based action" (Mirata, WANO Policy Brief 2024:1)
- Local acceptance and stakeholder engagement related to municipal waste management, especially related to new investments, deserves additional attention in the Arctic context, too. The "please in my backyard" (PIMBY) approach, introduced by the international benchmark study of WANO, deserves further studying and provides a basis for inspiration and joint learning for north Norway, too.

Learn more:

This Policy Brief is part of the project work for the WANO Waste Management in High North 2021-2024, financed by the Research Council of Norway. For more information about the WANO project, please contact Jukka Teräs, Research Professor at NORCE, jute@norceresearch.no, and visit our website: www.wanoresearch.no

WANO Research article: Teräs, J. & Nilsen T (2024) *The role of collaboration in the renewal of Arctic waste management*. *Polar Geography*, <https://doi.org/10.1080/1088937X.2024.2434755>

WANO Working Paper on Local acceptance and stakeholder engagement (2024) , see below (available at: www.norceresearch.no):



WANO Scientific Partners:



NORCE is an independent Norwegian research institute that conducts research to facilitate informed and sustainable choices for the future.

Website: Norceresearch.no



Nordregio is a leading Nordic research institute within the fields of regional development, policy and planning. The institute was established by the Nordic Council of Ministers.

Website: Nordregio.org

WANO Business Partners:



Hålogaland Ressursselskap (HRS) IKS is a waste management company located in Harstad and Narvik, Norway and servicing a total of eight municipalities in the surrounding region. HRS also processes business waste from the region.

Website: HRS.no



Remiks AS is a waste management company located in Tromsø, Norway. The company processes municipal waste from Tromsø and Karlsøy municipalities as well as business waste from the region.

Website: Remiks.no

About this publication

Waste Management in the High North (WANO) 2021-2024

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Nordregio

Nordregio is a leading Nordic and European research centre for regional development and planning, established by the Nordic Council of Ministers in 1997. We conduct solution-oriented and applied research, addressing current issues from both a research perspective and the viewpoint of policymakers and practitioners. Operating at the international, national, regional and local levels, Nordregio's research covers a wide geographic scope, emphasising the Nordic and Baltic Sea Regions, Europe and the Arctic.

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