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NORDIC WINTER MAINTENANCE RESEARCH PROGRAM

Group "Vinterteknologi" meeting 22.4.2015
Nordic countries are on the lead when it comes to developing winter maintenance. Even though a lot has been done already, stronger Nordic co-operation could bring more effective winter maintenance.

GOALS FOR THE RESEARCH PROGRAM

- To find out the best winter maintenance practices and developing them even further
- Applying the knowledge into practice
- Creating a Nordic network for developing winter maintenance
POSSIBLE RESEARCH AREAS

Methods and equipment
- Searching old and new methods for snow removal and antiskid-treatment
- Applying methods to practice and testing them
- Special needs for the equipment in different routes
- Assisting methods, e.g. weather information

Organising winter maintenance
- Different ways to organize maintenance
- Works contracts: preparation and content
- Monitoring the work
- Responsibilities
- Different actors involved in winter maintenance

Snow logistics
- Planning snow logistics
- Space for snow and taking it into account in land use planning
- The costs of snow logistics

Societal relevance
- Health impacts
- Impact on traffic accidents
- Impact to the amount of cyclists and pedestrians and the willingness to walk/cycle
- Economic consequences (to municipalities, government, business life)

Future challenges
STAGES FOR THE RESEARCH PROGRAM

1. Preliminary study
   Finding out the needs for winter maintenance research in the Nordic countries, planning the content and partners

2. RESEARCH PROGRAM – Sub-Projects
   - Methods and equipment
     - Sub-Project 1
     - Sub-Project 2
   - Organising winter maintenance
     - Sub-Project 3
     - Sub-Project 4
   - Snow logistics
     - Sub-Project 5
     ...

3. Gathering the results and reporting

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STAGES OF THE PRESTUDY

Interviews

- Norway: Vegvesen, NTNU, City of Oslo
- Sweden: Trafikverket, VTI, City of Linköping
- Denmark: Vejdirektoratet, City of Copenhagen, City of Odense
- Iceland: Vegagerdin, City of Reykjavik

Internet-surveys

Survey of the most important research needs in the field of winter maintenance
  - Finnish municipalities
  - Centres for Economic development, Transport and the Environment
  - Finnish contractors

Comments to the possible research ideas and realisation of the research program
  - Sent to interviewed Nordic stakeholders

Workshops

Workshops in Finnish municipalities
  - Jyväskylä, Helsinki, Lappeenranta and Oulu

Workshop for Finnish stakeholders

An online-meeting with Nordic stakeholders

Literature review

A preparatory literature review of winter maintenance research done in 1990 - 2014 in Nordic countries and abroad.
Conclusions

• There are many fields in winter maintenance that need to be studied more
  – More exact project ideas need to be identified

• There is a strong co-operation between road authorities
  – More need for sharing information and co-operation in municipalities

• With Nordic co-operation a lot can be achieved
  – The Nordic know-how is appreciated and acknowledged abroad

→ Base project: "Nordic winter maintenance know-how"
Goals for base project

- Make all information about winter maintenance easily accessible for different stakeholders
- Promote Nordic winter maintenance know-how internationally
- Create and promote knowledge exchange of winter maintenance in Nordic countries
- Encouraging for research exchange and strengthening the high quality of research done in Nordic countries
- Find out research gaps in winter maintenance
Work packages

WP 1 State of the art
Finding research done in the field of winter maintenance in all Nordic countries. Collecting state of the art for the base of future research.

WP 2 Sharing knowledge internationally
Creating a scheme for promoting Nordic winter maintenance know-how internationally. Collecting data into one portal in an easily readable and accessible way.

WP 3 Creating networks
Finding out the existing networks and information channels for winter maintenance and creating new procedures for strengthening expertise and co-operation.
What else…

- **Duration about 2 years**
- **Funding applied through NordFoU**
  - Finland as a leading country
- **Starting as soon as possible**
  - Possibly at the beginning of 2016
- **Project realised in Nordic co-operation**
  - Different research institutions participating from different countries
  - E.g. Verne, VTI, NTNU
Suggestions for future research projects

”Economical impacts of winter maintenance”

”Winter maintenance for cyclists and pedestrians”

”More effective snow logistics”

”Quality assurance in winter maintenance management”

”The utilization of information and communication technology in winter maintenance”
"Economical impacts of winter maintenance”

- Creating a **better picture** of the field of winter maintenance and its effects on the economy and society.

- **Calculating the costs and benefits** of winter maintenance broadly so that the actual costs could be presented more profoundly.

- Giving municipalities and road administrations **more information for the planning of** winter maintenance.

- Giving decision makers and politicians **more information of the overall costs associated to winter maintenance** for the base of decision making and budgeting.
”Winter maintenance for cyclists and pedestrians”

- Study what are the biggest reasons for people not to walk or cycle during winter among different user groups.

- Study the most effective and useful winter maintenance methods for e.g. cycleways, cycle lanes, walkways and pedestrian areas.

- Study what kind of impact does infrastructure have on winter maintenance and what kind of infrastructure could support walking and cycling most effectively.

- Give municipalities, road authorities and contractors more information on how to take the needs of cyclists and pedestrians into consideration more profoundly.
”More effective snow logistics”

• Study **the best practices of snow logistics** in municipalities and in public roads.

• **Comparing the costs and effectiveness** of different kinds of ways of managing snow e.g. melting equipment and local disposal areas.

• Creating a **visual and practical guide** on how to plan for snow logistics.

• Give municipalities, road authorities and contractors **more information on how to plan snow logistics** so that the **safety** is taken into consideration and the **costs** could be minimized.
”Quality assurance in winter maintenance management”

• Study how quality assurance has been realised today in road administrations and municipalities and how could it be developed taking into consideration different organizing models.

• Create a model for quality assurance and test it in winter maintenance contracts.

• Consider how ITS could support the quality assurance more effectively.

• Give municipalities, road authorities and contractors more information on how to take quality assurance into consideration more in winter maintenance.

• Strengthen co-operation between municipalities, road authorities and contractor in order to achieve high quality in winter maintenance.
”The utilization of information and communication technology in winter maintenance”

• Develop a **system which would share information** of the state of maintenance to all stakeholders.

• **Increase safety** when people are aware of what’s happening on the street and road network and the winter conditions.

• Give municipalities and road authorities a **good picture of the current status of the maintenance**.

• Make people aware of the winter maintenance and help them being more alert of the winter situation.
Thank you for your interest!

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