



Alliance for IoT
and Edge Computing
Innovation

24-25 Sep
BRUSSELS

AIOTI
DAYS 2024

Session: Use cases applying methodologies for CO2 reduction measurements

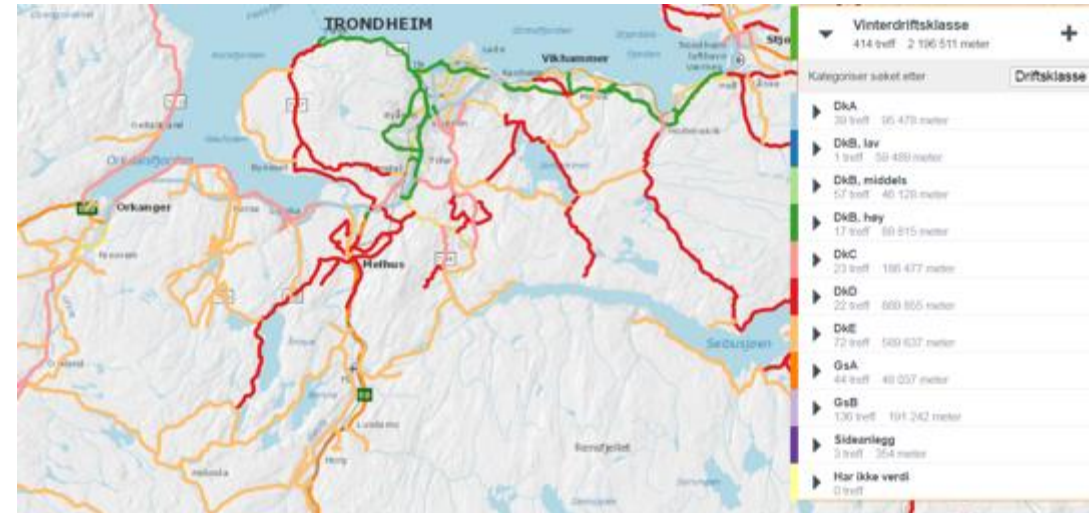
Use cases: Smart winter maintenance

Lizhen Huang, Prof. , NTNU

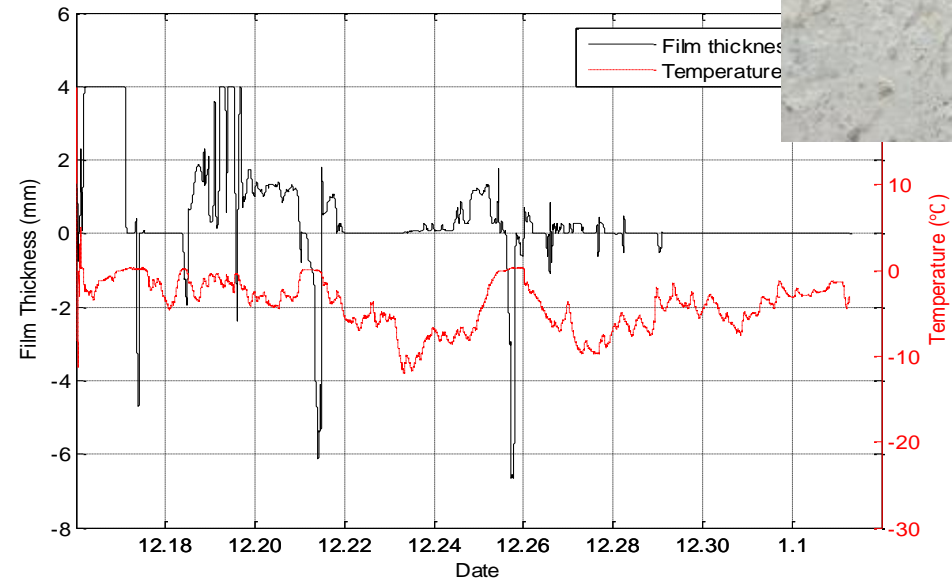
Event Sponsors



- Provide information to road users
- Provide information to maintenance personnel
- Control winter maintenance measures
- Decreasing the transport needs on winter maintenance and then CO2 emissions
- Decreasing the use of salt



Source: SVV. icelsee report



Method and data

Life cycle stage (EN 15804:2012 and EN 15978:2011, NS 3720:2018)

AIOI:

IoT and Edge Computing
Carbon Footprint
Measurement
Methodology

Release 4

Data:

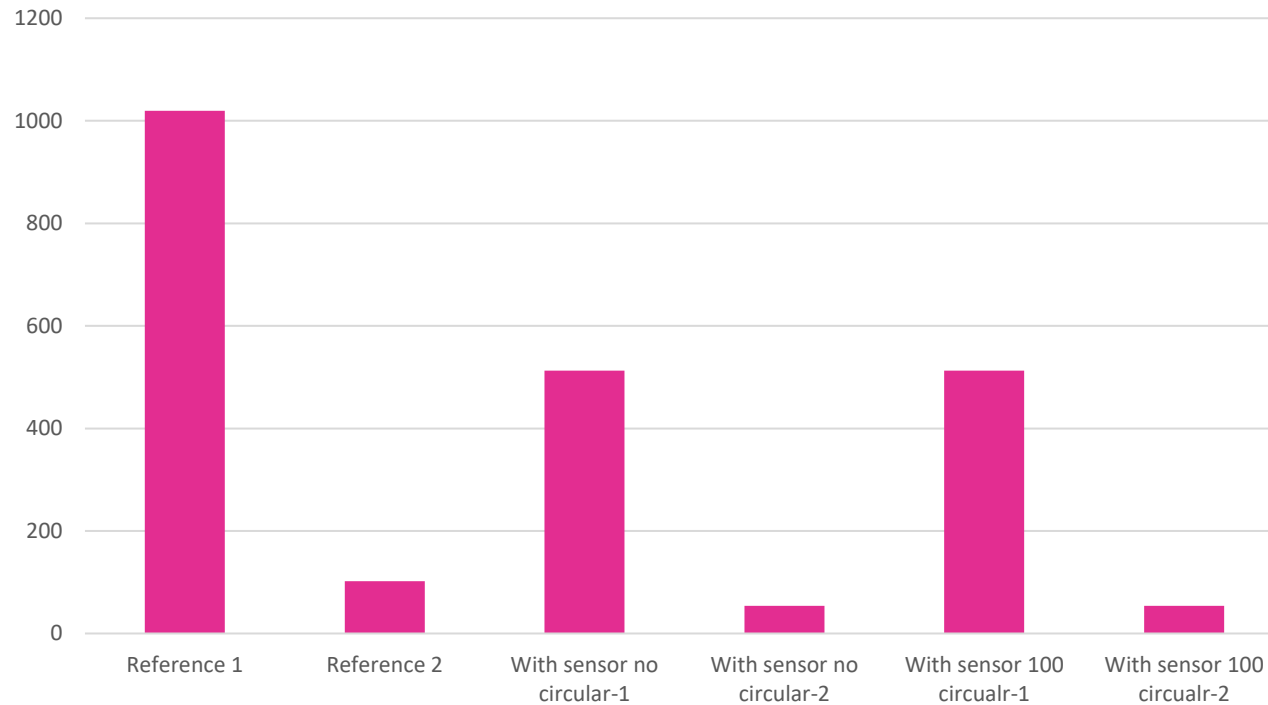
Field data collection for
Road surface heating

Field and Literature data
collection for snow
cleaning and salting.

Building Life-Cycle Information													Supplementary Information Beyond the Building Life-Cycle	
A 1 - 3			A 4 - 5		B 1 - 7					C 1 - 4				D
PRODUCT stage			Construction Process stage		USE stage					END OF LIFE stage				Benefits and Loads Beyond the System Boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	
Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation Process	Use	Maintenance (incl. transport)	Repair (incl. transport)	Replacement (incl. transport)	Refurbishment (incl. transport)	De-Construction Demolition	Transport	Waste Processing	Disposal	Re-Use Recovery Recycling Potential
			Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	Scenario	
					B6 Operational Energy Use									
					Scenario									
					B7 Operational Water Use									
					Scenario									

Results

Ton CO2-eq



Total avoid GHGs emission	Ton CO2-eq
With sensor no circular-1	506,709
With sensor no circular-2	48,044
With sensor 100 circular-1	506,788
With sensor 100 circular-2	48,122

Discussion and conclusions

- How to include other value such as safety improving, well being.
- Scenarios: Green enabled Scenario
- Uncertainty
- Standardisation