«Damned if you do, damned if you don’t»:
Get a green grip of the white winter

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Background

Network with high operating standard ("bare road strategy"):  
- 2015/2016: 59 + 58 km  
- 2018/2019: 90 + 120 km

2014/2015: 2 %  
2018/2019: 10 %

60 % increase in cycle traffic!

Modal split 2025:

2017/18: 21 %
Projects:

- The use of no salt on separated infrastructure
- The use of formate (a more environmentally friendly salt as it is organic) on selected bicycle paths surrounded by particular vulnerable environments

- Is it less damaging to the environment?
- Do the measures give the bicyclists a satisfying grip (user experience)?
- Can the measures be done to an acceptable price?
I «No salt» - a winter road

“Frequent removal of snow when needed”

Challenges:
- Thin layer of ice (safety threat)
- What is «good conditions»?

Lessons learned
- Private contractors give less ownership for testing new methods
- Better planning and follow up


Photo credit: Geir Anders Ørslien Rybakken
II Use of Formate – the bare road strategy

Sodium chloride (inorganic salt):
NaCl → Na⁺ + Cl⁻

+ Available
+ Inexpensive
- Raise salinity in ground/water
- Corrosive

Formates (organic salt):

Replace the use of road salt on the bicycle network during winter without compromising accessibility and traffic safety
II The use of Formate

The main focus:
Mapping the environmental effects

- Improvement in terms of sodium and chloride contents in both water and soil
- More damaged vegetation in the rest of Oslo
II The use of Formate

- **User experience**
  Friction measurements showed that the friction in
  - car lanes was approximately the same when using formats or road salt
  - bicycle lanes was clearly better when using road salt

- **Cost**
  - 15 x the price of road salt
  - More frequent maintaining