

# *A green future for asphalt pavements*

## *Reuse of road pavements*

- The major field of study for the  
Committee of Road Pavements  
during 2010*

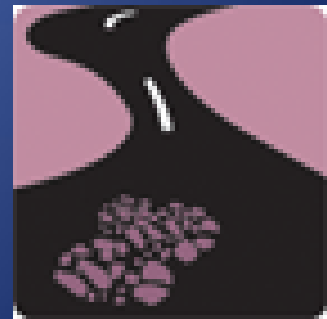
# *Nordic Road Association, Committee of Road Pavements*

## Major field of studies

- 2008: Environmentally adjusted road pavements.
- 2009: Traffic safety and occupational safety for road workers
- 2010: Reuse of road pavements

Electronic reports at [www.nvfnorden.org](http://www.nvfnorden.org)

- ✓ Publikationer
- ✓ Elektroniska rapporter



# Reclaimed asphalt

Hot plant recycling

Hot in-situ recycling

Cold and half warm recycling.

Unbound courses

# Survey

- Production of reclaimed asphalt (RAP) during the last three years
- Percentage of RAP used to produce asphalt
- Amount of reclaimed asphalt incorporated in different types of asphalt mixtures
- Percentage of asphalt produced coming from RAP

# Sweden

Data from Swedish Transport  
Administration & 4 largest  
asphalt producers covering 90 %  
of market

# Reclaimed asphalt (1000 tons) National road network.

Blue bound layers

Red unbound layers



# Trends and restrictions

Cold & half  
warm recycling



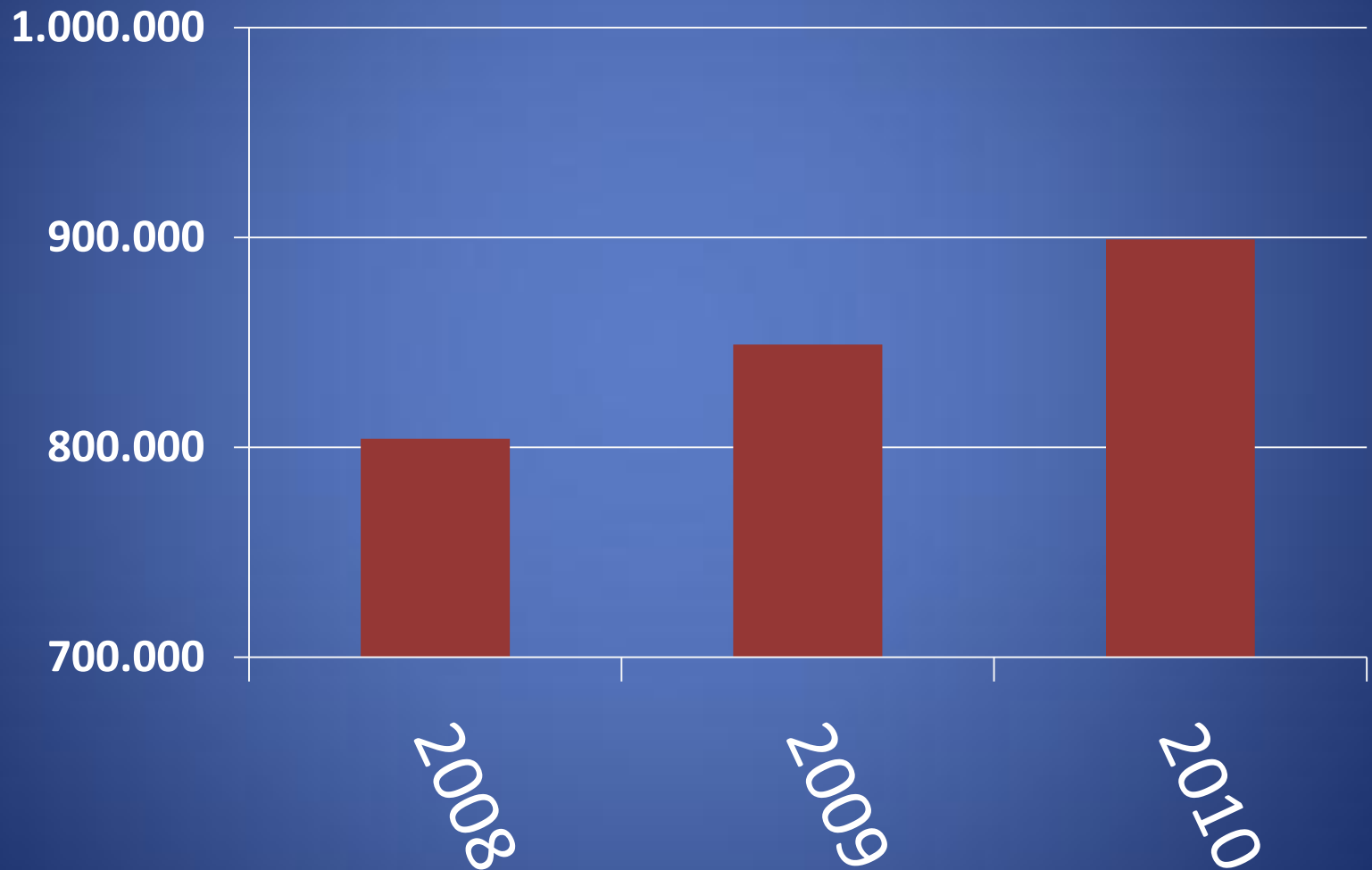
Hot  
recycling

RAP not for  
Thin layers

RAP not used for  
asphalt with PmB

Some municipalities  
requiring use of RAP

# RAP used for asphalt production (t)





# Denmark

- A lot of good experience of recycling but
- For high volume roads tighter restrictions on
  - aggregate quality
  - binder propertieshave limited the possible level of reuse of RAP in hot mix asphalt
- Approximately 1 million tons RAP is produced each year but only 0,3-0,4 million tons are used for asphalt production
- On average 10% RA in hot mixes



- If balance, the average amount of RAP would increased from 10% to 30%.

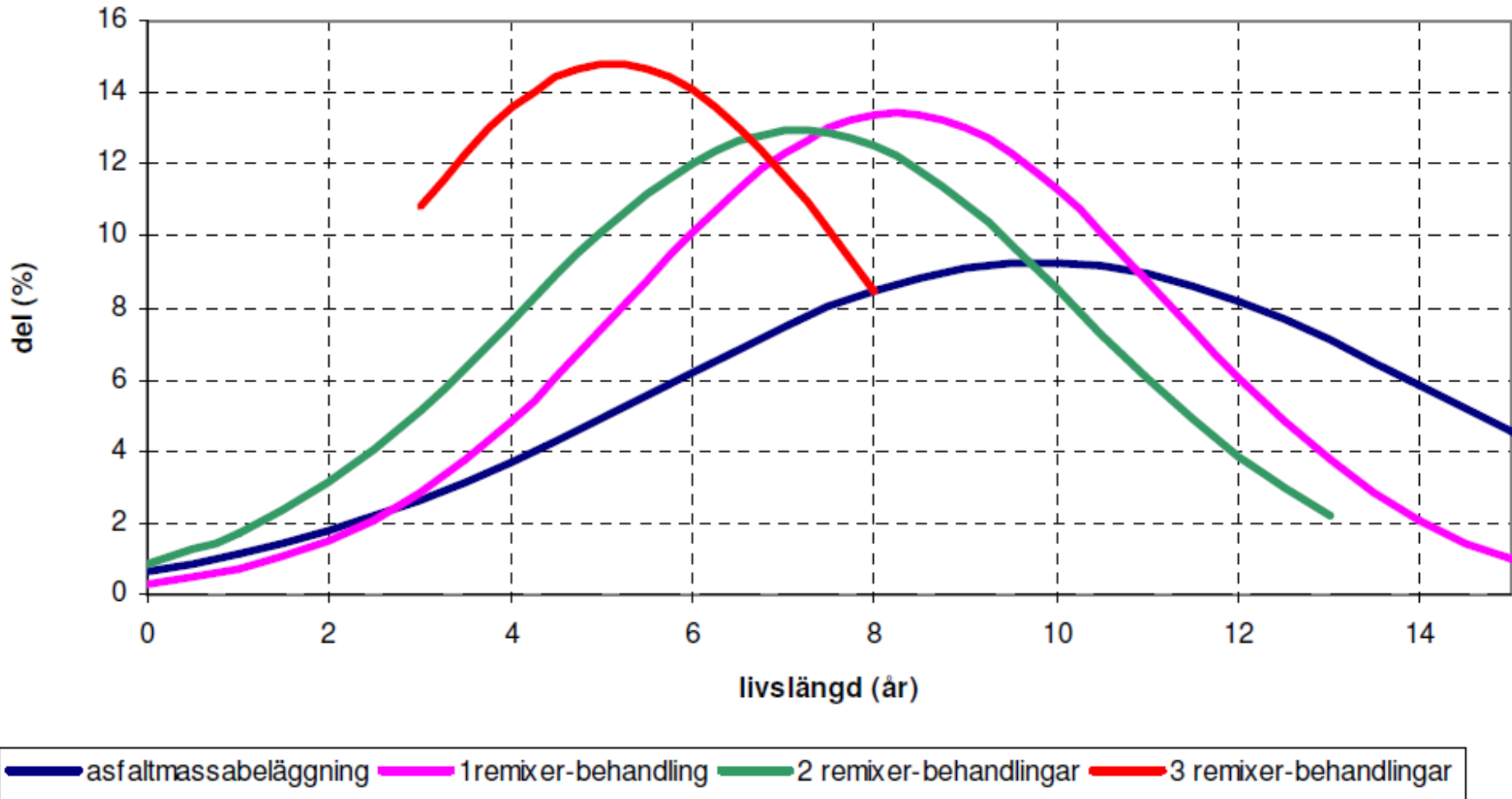
- Balance would save society 20-25 million € / year

# Finland

- Focus on in-situ recycling. More sqm of roads (~ 60%) are resurfaced with in-situ recycling methods compared to traditional hot mixes
- ~ 1 million tons RAP produced
- Average of 13 % RAP used in new traditional mixes
- The average recycling % for the in-situ methods is ~ 65%

- Asphalt plants using more than 100 tons RAP per day – an environmental impact assessment has to be done and approved by authorities. A slow and tedious process
- RAP stored more than 3 years are classified as waste – tax on waste will be raised to 50 € /tonne

# Service life for Remixing



Taina Rantanen, Lauri Suikki; Uusiopäällysteiden käyttö päällysteiden ylläpidossa (*Bruk av recycling inom beläggningsunderhållet*); Tiehallinnon sisäisiä julkaisuja 56/2009. (*Vägförvaltningens interna publikation 56/2009*)

- Although Remixing pavements have shorter service life, LCC is lower provided:
  - pavement is less than 20 years old
  - Less than 2 remixing treatments

# Norway

- Excellent statistics from KFA (The Info Center for Recycling of Asphalt)
- 0,76 million tons RAP reused
- 38 % used in asphalt pavements

# Conclusions

- The asphalt industry is very good at recycling
- Big differences in reusing patterns between Nordic countries
- Knowledge has been gain about cost effectiveness for different ways to reuse RAP
- Large potential to increase the amount of RAP used in asphalt pavements