

# **Lessons learned from post Chernobyl measures and stakeholder involvement in Norway**

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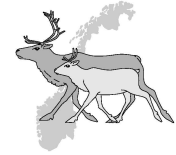
**Norwegian Radiation Protection Authority, and  
Norwegian Reindeer Husbandry Administration**



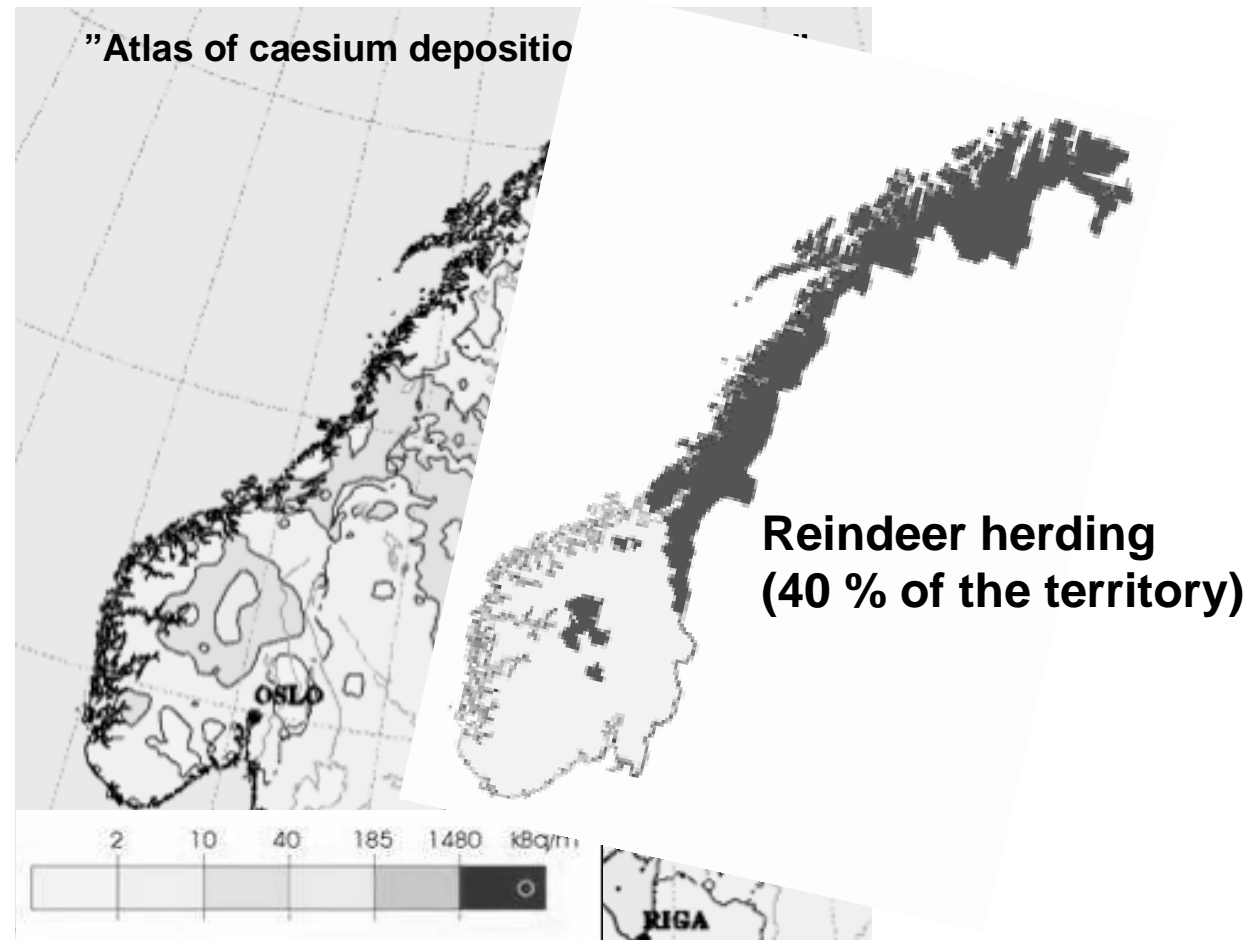
## Introduction - Norway

- Mountainous country with a small population
- 4.6 million inhabitants; i.e., 15 per km<sup>2</sup> vs. 115 in EU
- 3 % agricultural areas vs. 57 % in EU

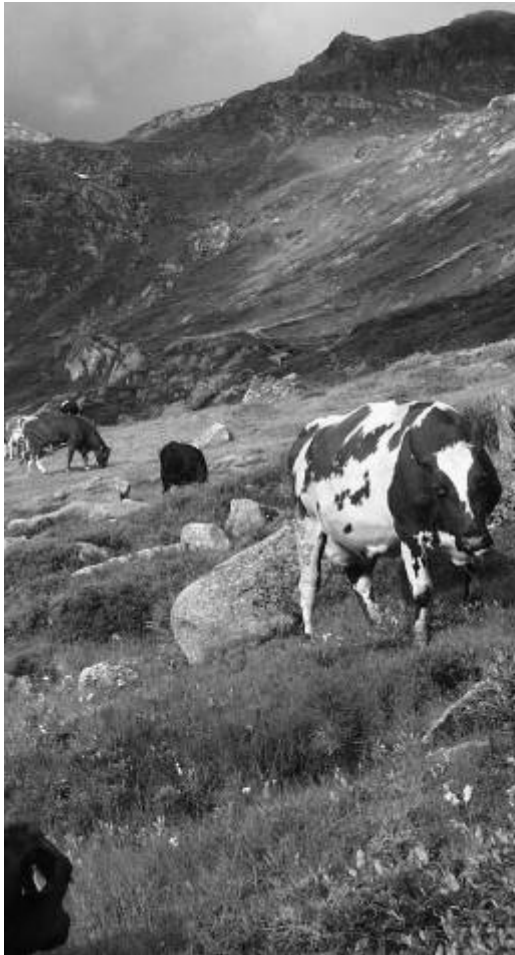




## Some Chernobyl consequences in Norway



Hot spots > 500 kBq/m<sup>2</sup>



## **Consequences cont.**

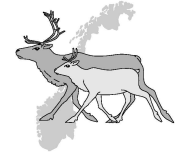
- **Dramatic consequences emerging during summer 1986**
- **31 July 1986: Governmental resolution about compensation to all farmers and reindeer herders**
- **1986: 27 % of all sheep clean fed. Additional 3 % - 2300 tons mutton – condemned**
- **1986: All reindeer in central and southern Norway condemned (545 tons)**
- **November 1986: To avoid condemnation of 85% of total national reindeer production, intervention limit increased to 6000 Bq/kg (3000 Bq/kg from 1994 onwards)**
- **Condemnation expensive and unsatisfactory – should be last option!**
- **Development of measures: Live monitoring, clean feeding, changing slaughtering season, caesium binders, dietary advices**



## **Stakeholder involvement**

- **Reindeer herders engaged in sampling/mapping**
- **Authorities, farmer's and reindeer herder's unions, food industries etc. involved in working and coordination groups on countermeasure R&D, practical implementation etc.**
- **Negotiations with the unions on economic compensation**





## Stakeholder involvement cont.

- **Field testing of measures developed in labs (live monitoring, clean feeding, administration of Cs binders)**
- **Evaluation of countermeasure regimes in reindeer herding (1992, 2006)**

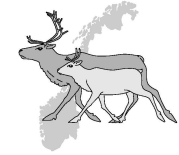


# Lessons learned

- 1. Involve all stakeholders before implementing any countermeasure, e.g. from animal owner to slaughterhouse or dairy, local authority responsible for the implementation, and authority who will inspect that implementation was successful**
- 2. Develop set of measures, i.e. options. Gives some feeling of influence/control/independence. No freedom cause frustration.**
- 3. Live monitoring acceptable and appreciated measure to avoid condemnation**
- 4. Local monitoring stations enable building of local knowledge on contamination, giving the local population specific rather than general answers, e.g. free monitoring of their own private products**







## More lessons learned

5. **Need to maintain and develop national competence. Need definite answers. Experimenting and testing creates “guinea pigs”**
6. **Take into account possible scepticism towards national authorities and experts:**
  - Inherent scepticism among rural populations towards practical values of regulation/advice from national authorities and experts
  - “Any scientist in radiation protection/ radioecology is a pro-nuclear activist” – direct contact crucial for confidence



## Even more lessons learned

### **7. Stakeholder involvement is not a consensus exercise:**

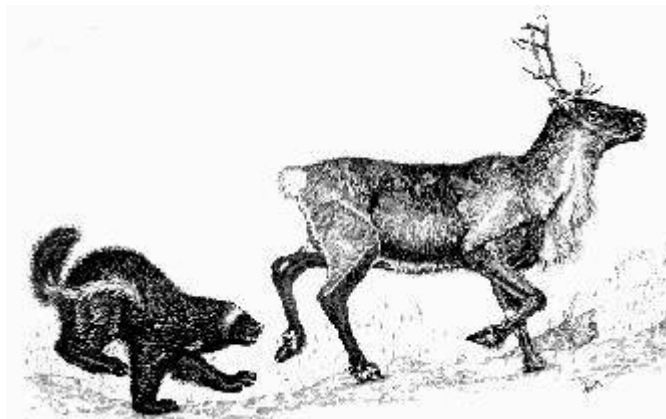
- Individuals from the same stakeholder group have various views
- Stakeholders may represent more than one group (e.g. political interests as well as personal costs)
- Stakeholder views may change with time (20 years....)



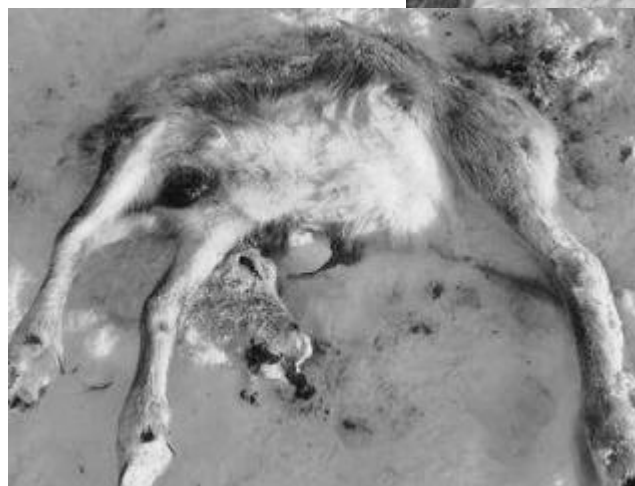


## The last lesson learned – so far

8. Other stressors influence possibilities for and attitudes towards countermeasure application. E.g. losses of animals to predators is real threat – radionuclide contamination is relative (cf. intervention limits)



Norwegian Radiation Protection Authority



Norwegian Reindeer Husbandry Administration



**Abstract book pp. 32 – 37**