



Strategy against sea lice, Fish farming industry of western Norway

February 10th 2010

Paul Negaard

Coordinator, sea lice project

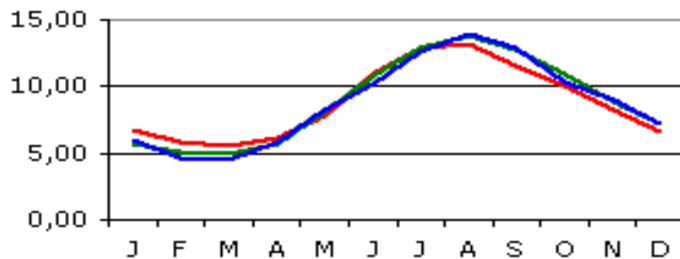
2009

- **Very low levels of sea lice in fishfarms in spring 2009**
- **Ekstraordinary growing on pens - August**
- **Extreme sea lice attacks from August**
- **Bad weather and unusual currents**
- **High levels of sea lice in aquaculture**
- **Reduced sensitivity / resistance**
- **Reduced effect of treatments**
- **Different strategies - Low level of coordination (time and type of drug)**
- **Challenges :**
 - **Increasing drug-resistance**
 - **Redused sensitivity/resistance to Slice (emamectin), pyrethroids,**
 - **Multi-resistance**
 - **Potential problem for wild salmonides**
 - **Negative publication , reputation**
 - **Sealice problem for farmed fish as well**

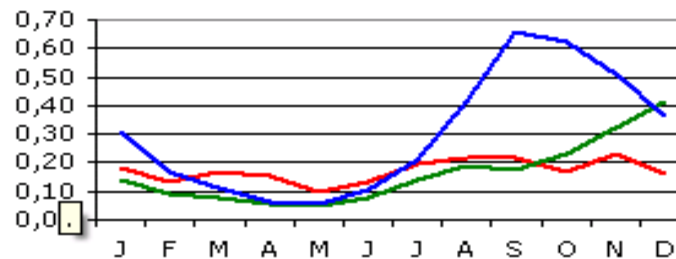
Lusesituasjonen på landsbasis

Norge

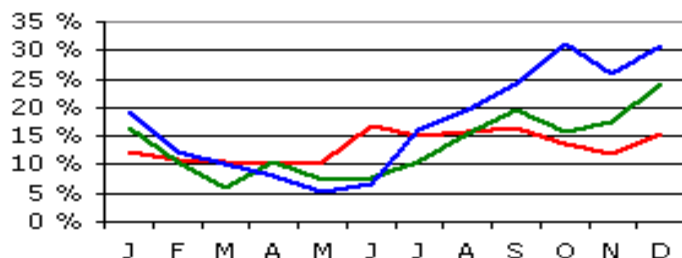
Temperatur



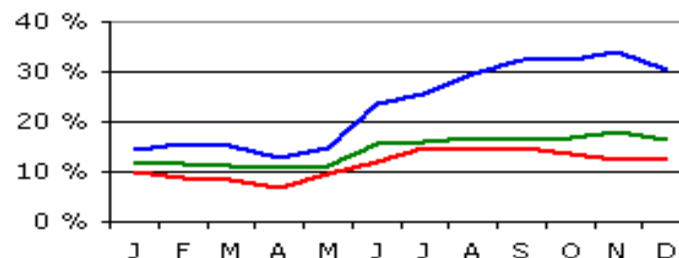
Voksne Hunnlus



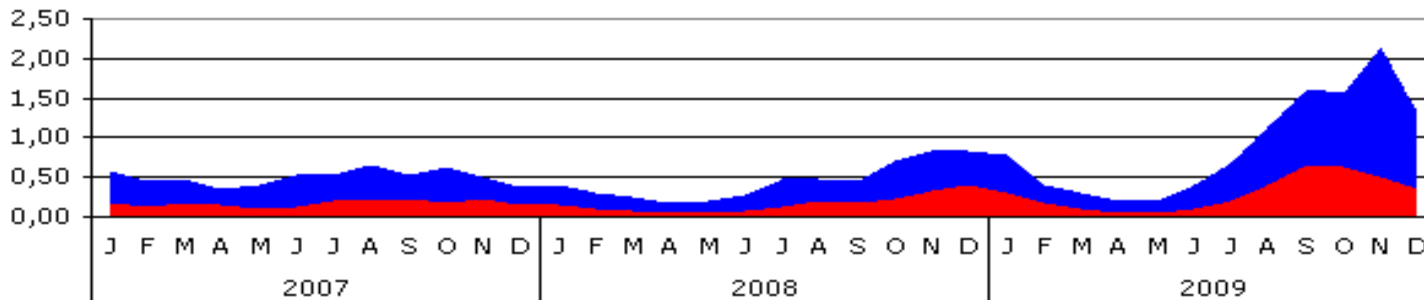
Andel med behandling



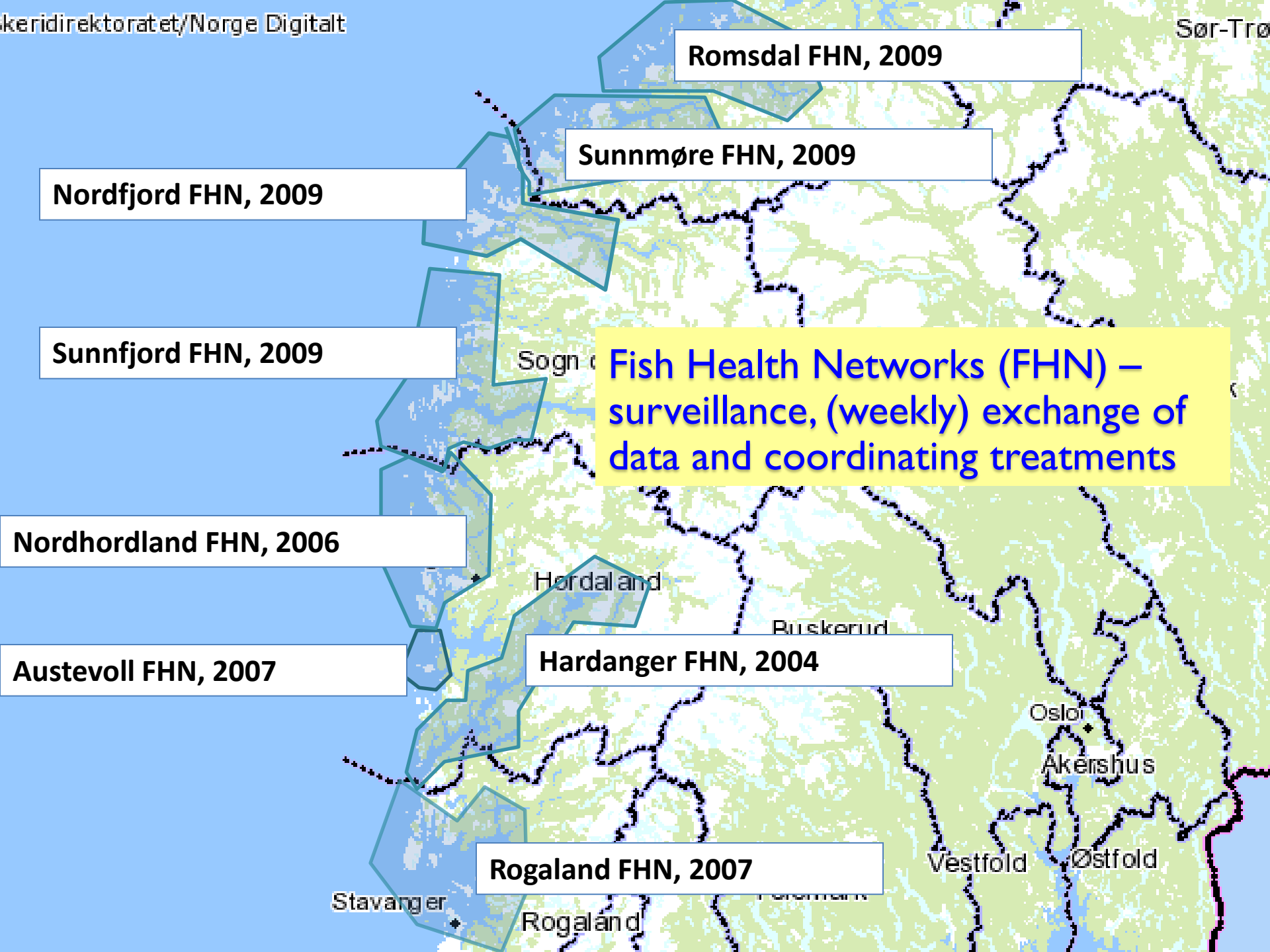
Andel med leppefisk



Utvikling de siste år



■ Mobile stages ■ Adult females



Romsdal FHN, 2009

Sunnmøre FHN, 2009

Nordfjord FHN, 2009

Sunnfjord FHN, 2009

Fish Health Networks (FHN) –
surveillance, (weekly) exchange of
data and coordinating treatments

Nordhordland FHN, 2006

Austevoll FHN, 2007

Hardanger FHN, 2004

Rogaland FHN, 2007

Sogn og Fjordane

Hordaland

Buskerud

Oslo

Akershus

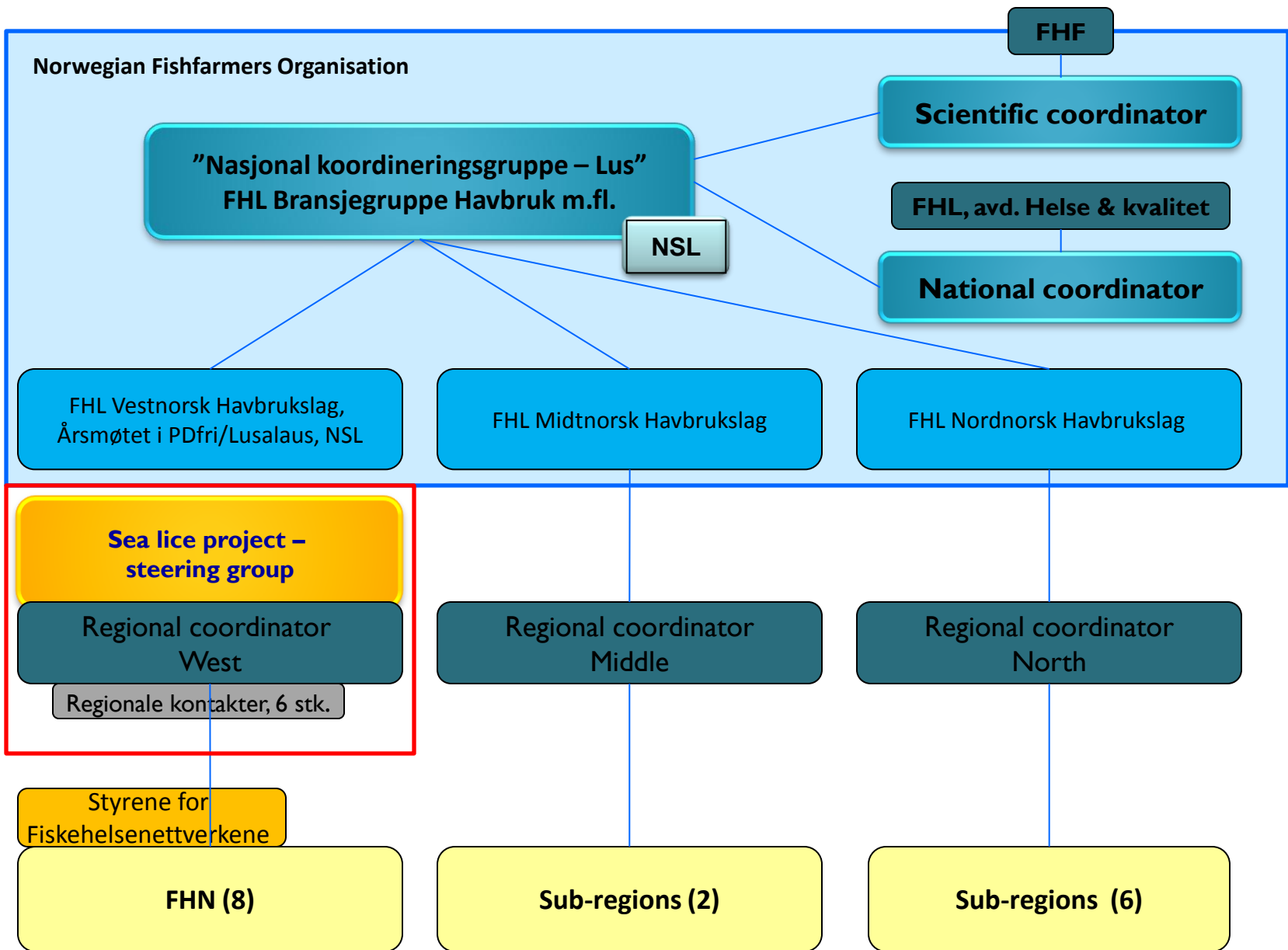
Vestfold

Østfold

Stavanger

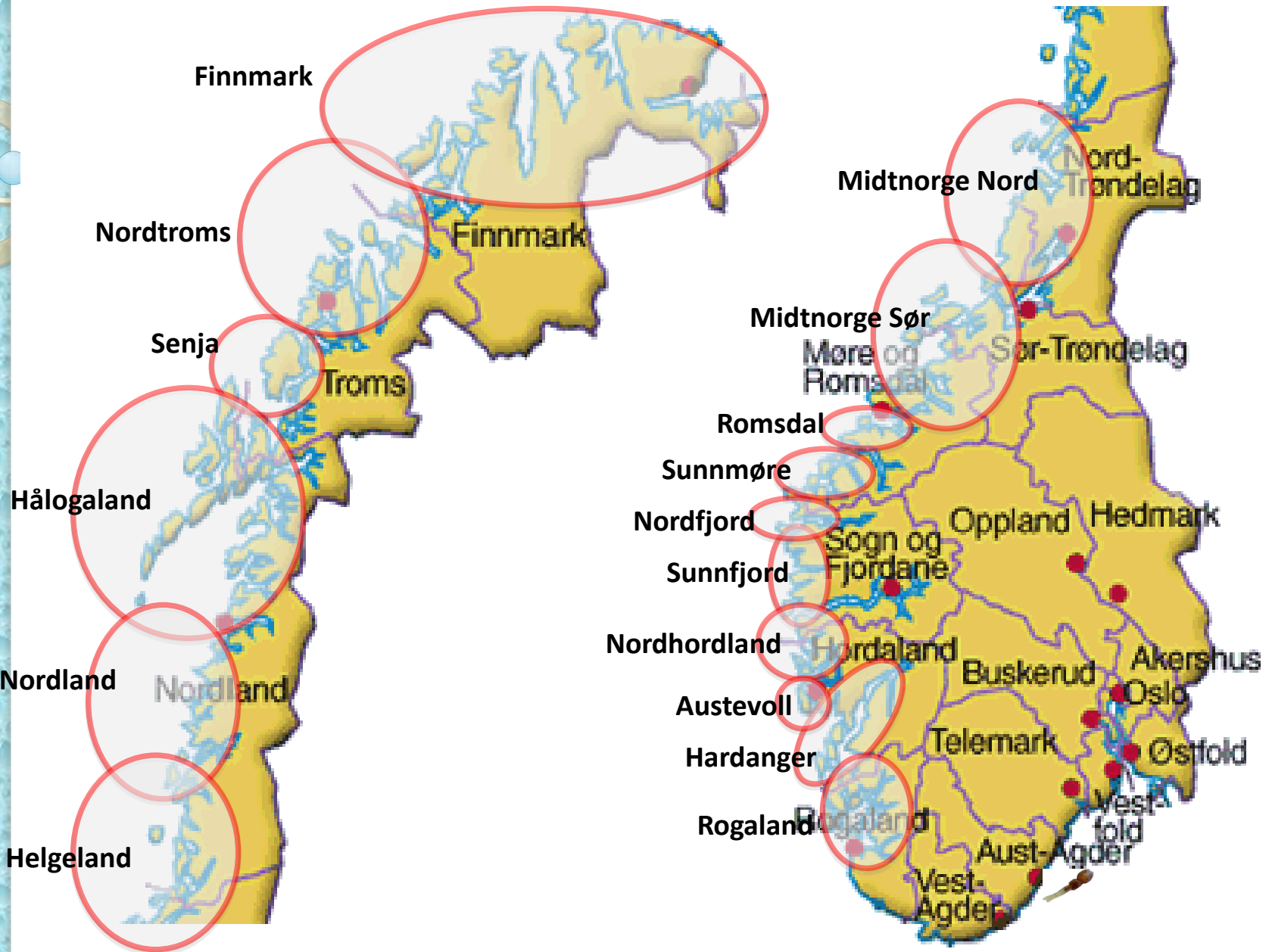
Rogaland

I. Organisering - Luseprosjektet



Nasjonal ressursgruppe, lus

Fish Health Networks



Fundament

- Experiences from the PD-project (2007)
- Cognition : mutual problems, mutual solution
- Every company – large and small
- Challenging process
- Agreement on cooperative measures
- Cooperation with authorities, scientific institutions, other industries
- Authorities - making voluntary measures mandatory (regulations)

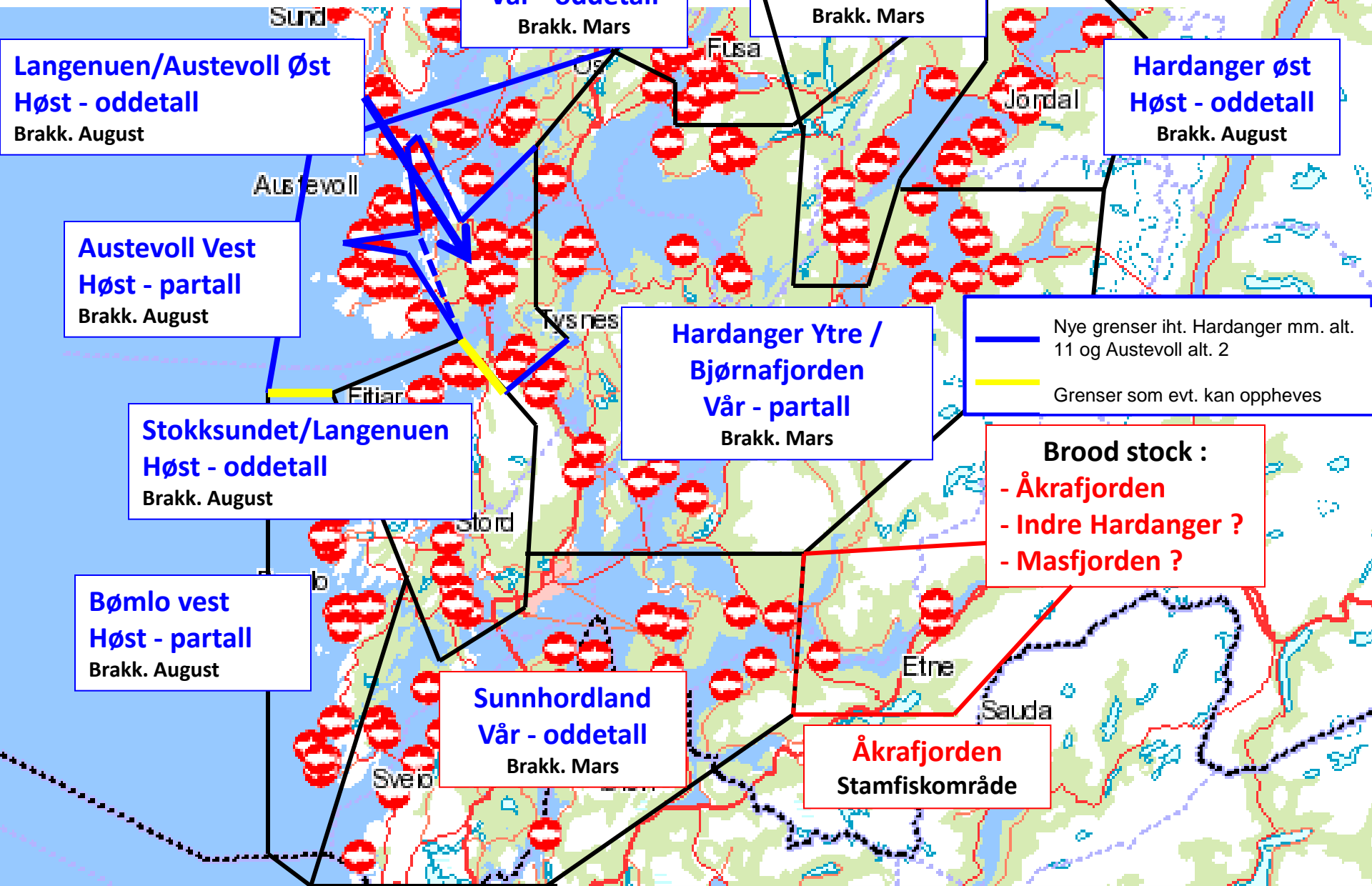
Strategy – main elements

1. **Mutual, binding agreements on cooperation**
2. **Cooperation with authorities**
3. **Exchange of, and coordinated and use of, information**
4. **Coordinated management and fallowing**
 - **Large areas**
 - **Requires changes in site structure**
5. **Synchronized (medical) treatments**
 - **Systematic alternation / rotation of chemicals**
6. **Technical quality on treatment**
7. **Methods that are medicine independent / not inducing resistance**
 - **Cleanerfish**
8. **Prevent the spread of lice (copepodids)**
 - **Filtration**
9. **Prevent the lice from settling on the fish**
 - **Functional feeds, vaccine, breeding,**
10. **Knowledge**
11. **Regional surveillance and emergency plans**
12. **R&D**

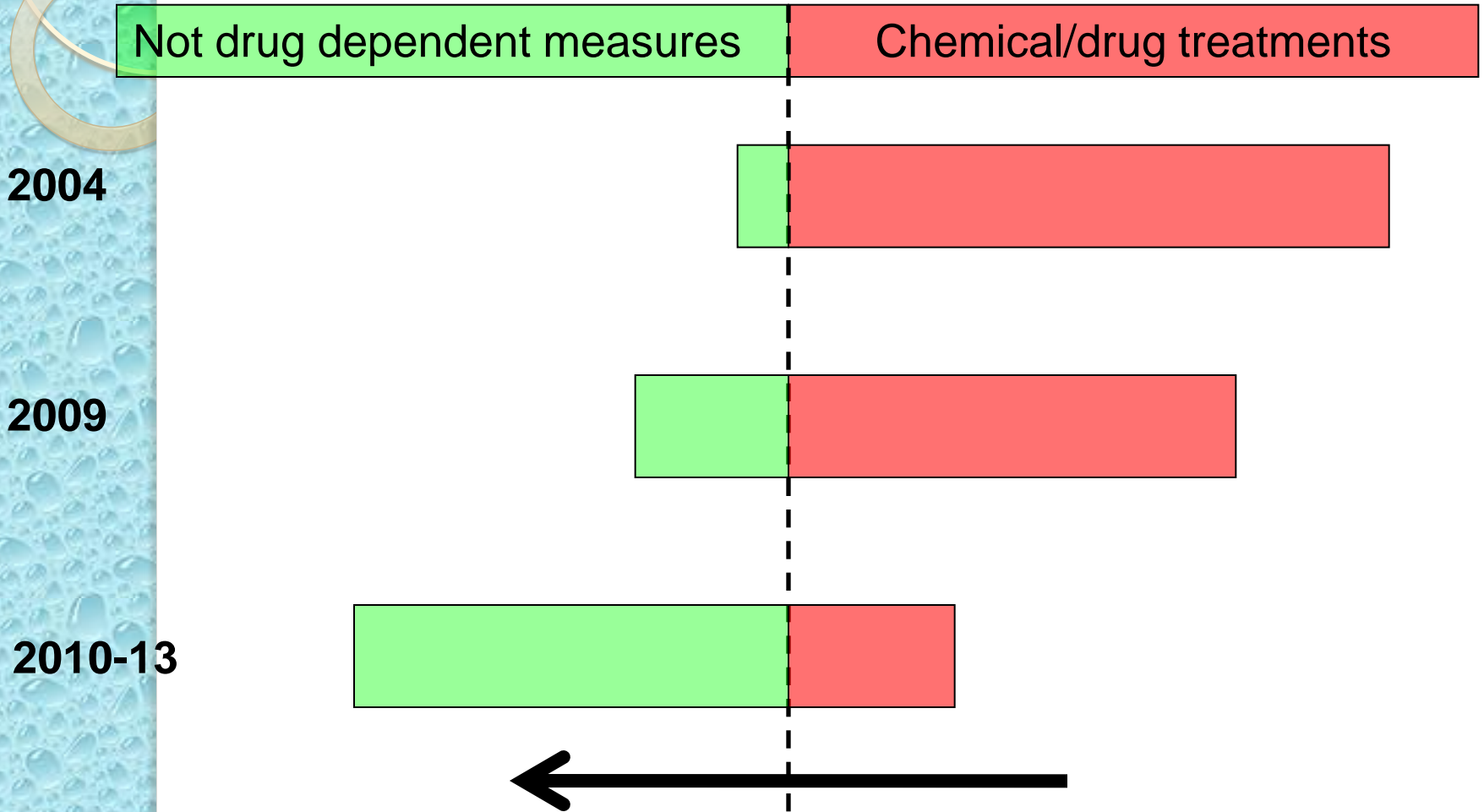
Sunnhordland/Hardanger/Bjørnefjorden-Austevoll_alt. 11-2

Coordinated fallowing

Målestokk 1 : 677 500



Strategic direction



The battle against lice has to be less drug dependent

What do we achieve ?

- **A more robust produksjon structure -
Decreased risk and increased ability to meet
emerging diseases**
- **Better protection for wild salmonides**
- **Reduced production of sealice**
- **Reduced spreading of sealice**
- **Reduced risk of resistance / reduced sensitivity
to drugs**
- **Reduced risk of PD and other contagious
diseases**
- **Lower overall mortality**
- **Better productivity**



CO :

- **COGNITION**
- **CONSENSUS**
- **COMMITMENT**
- **C😊ORDINATION**
- **C😊OPERATION**
- **C😊LLABORATION**

Thanks for your auditive c😊operation

Foto : EFF