Kan norsk oppdrettsindustri bidra til Europas rolle som global matprodusent?

TEKMAR 2010 Innovasjon i havbruk
Britannia Hotell, Trondheim
8. desember 2010

Torgeir Edvardsen
SINTEF Fiskeri og havbruk AS
EATIP

SINTEF

Kan norsk oppdrettsindustri bidra til Europas rolle som global matprodusent?

- Bakgrunnen for spørsmålet
  - Barosso, 2007
  - Befolkningsvekst
  - Stagnerende EU-produksjon
  - "Europa" = EU
  - Matprodusent = fisk ol

Jeg skal se litt nærmere på disse to

F-ordene
- Fish
- Feed
- Food
- Folk and
- the Future

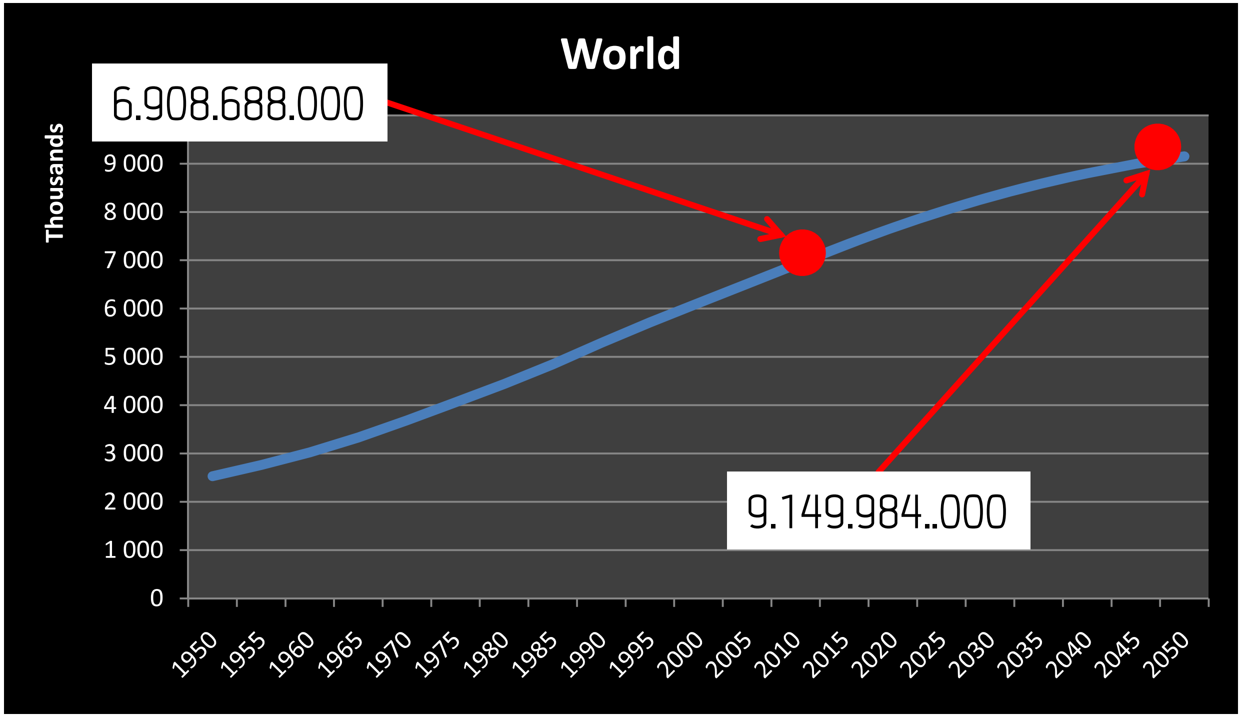
Befolkningsvekst

Stagnerende egenproduksjon I EU

Food Security i EU?

Fremtiden – verdensbefolkningen

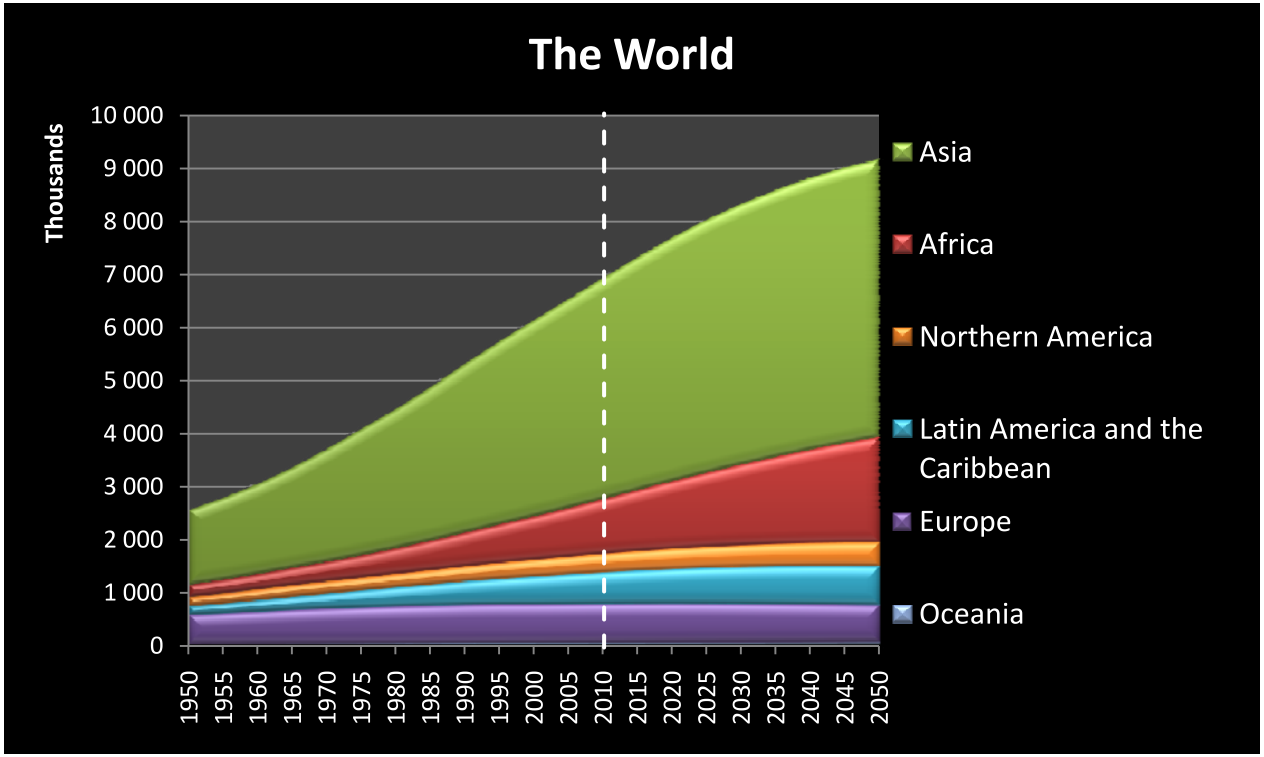
- Innen 2050 verdensbefolkningen anslått til å vokse til 9,1 mrd mennesker (FN, 2010)



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision*, http://esa.un.org/unpp
Monday, December 06, 2010; 6:22:41 PM.

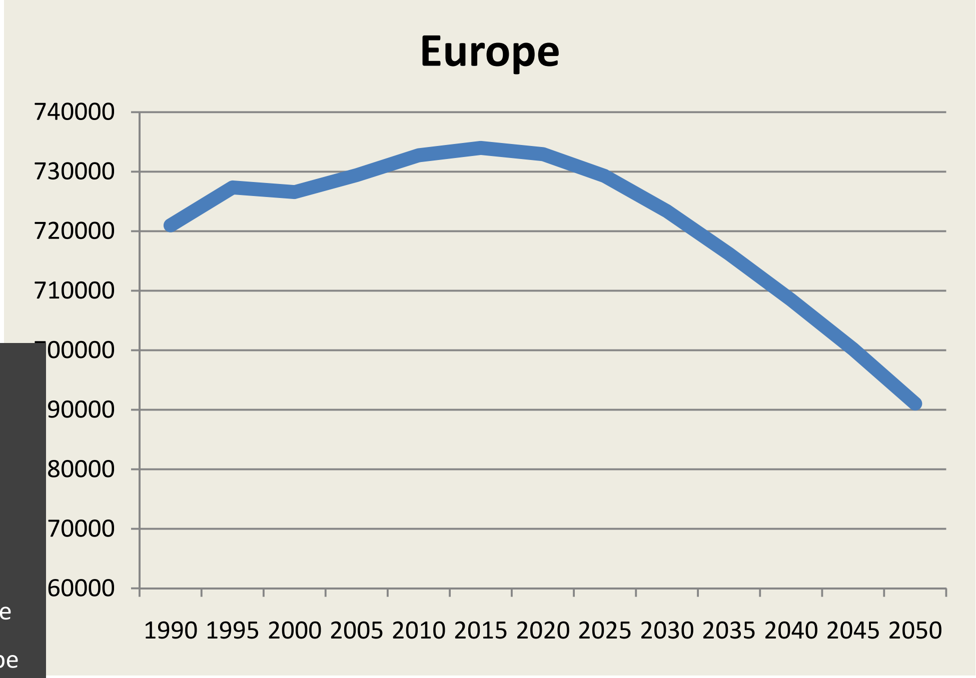
Imidlertid,

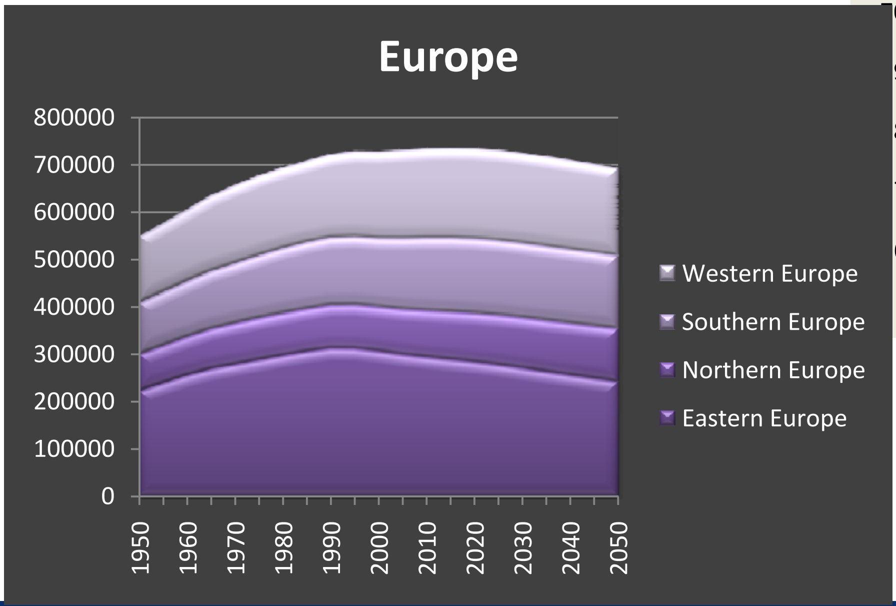
Befolkningsveksten er skjevfordelt:



Hva mere er,

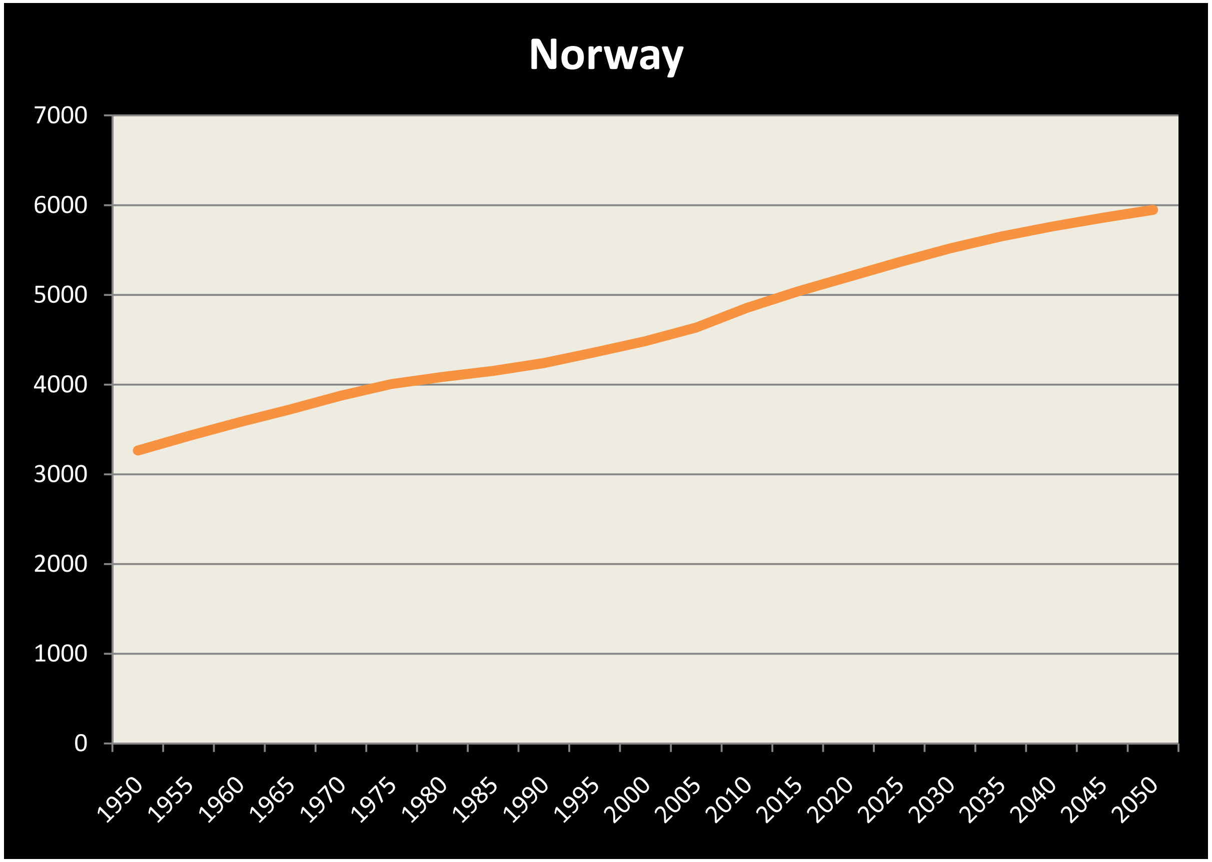
befolkningsveksten i Europa er avtagende fra ca 2020:





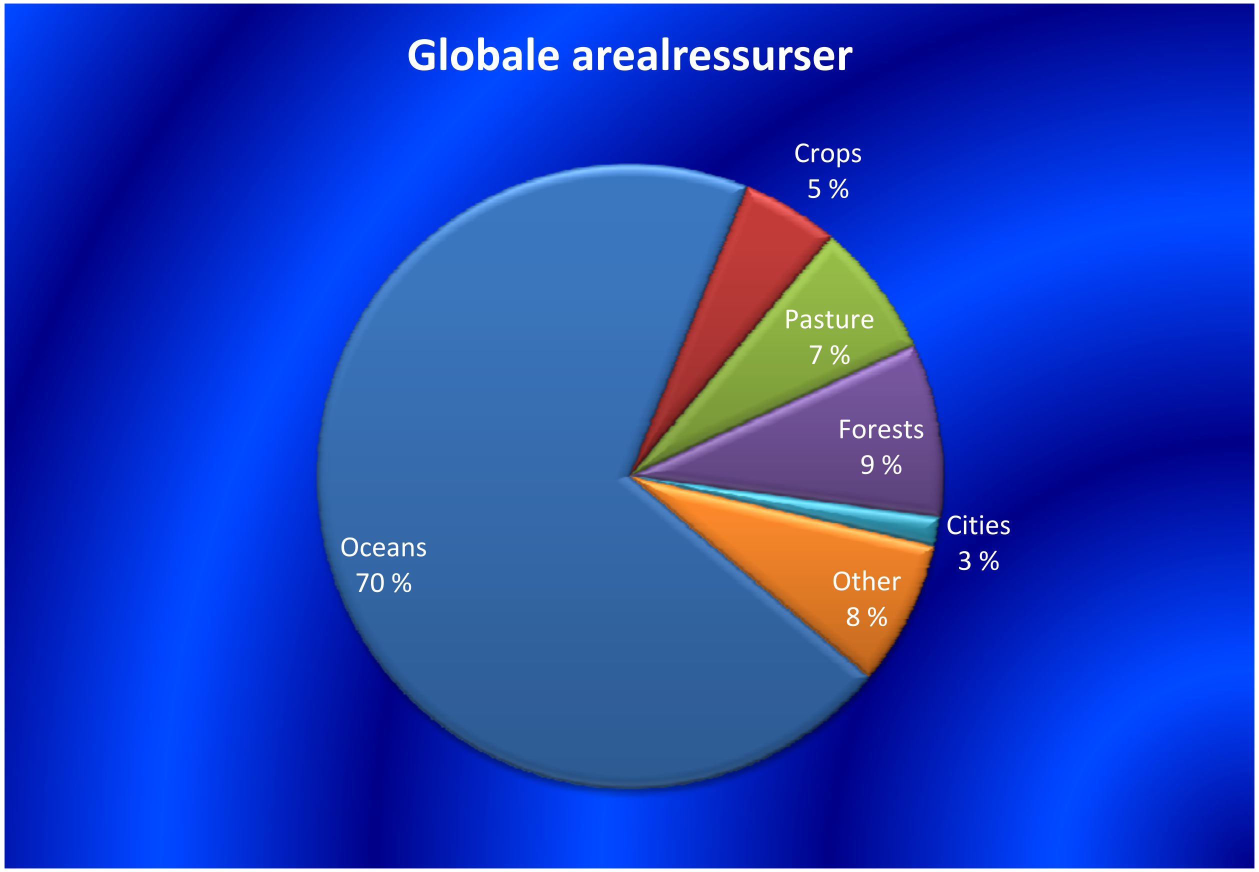
Og for spesielt interesserte:

i Norge forventes befolkningen å vokse



Tilgjengelig mat

- Ressurser for matproduksjon
  - Arealressurser
  - Ferskvann



Tilgjengelig mat

- Ressurser for matproduksjon
  - Arealressurser
  - Ferskvann

Ferskvann

- 2,8 mrd (44%) av verdens befolkning lever i områder med vannmangel
- 67% av tilgjengelig vann brukes i landbruk
- Prognose: innen 2025 vil vannmangel redusere landbruksproduksjon med 30%

Kilde: World Economic Forum World Bank|

Tilgjengelig mat

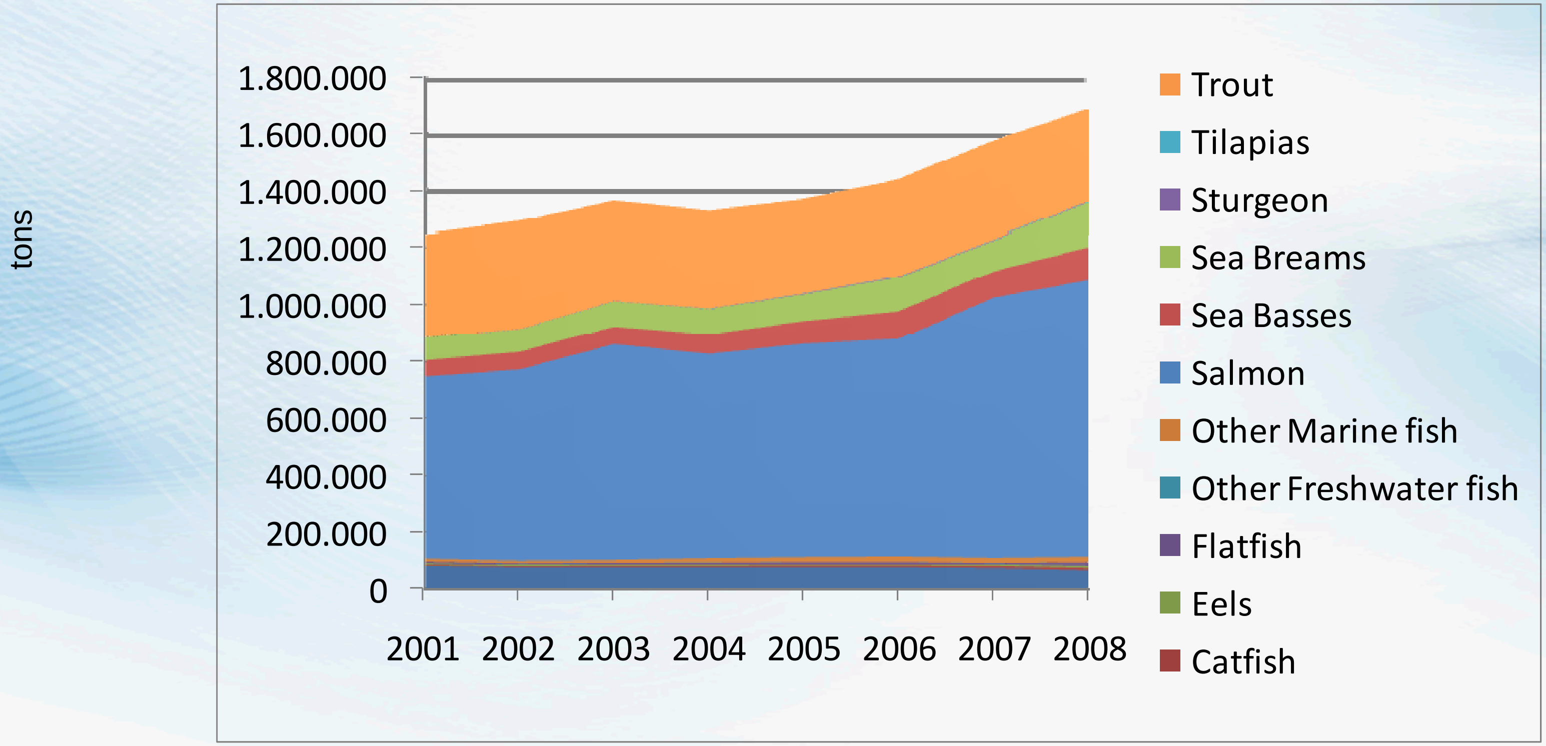
- Ressurser for matproduksjon
  - Arealressurser
  - Ferskvann
- Men, problemet er ikke for lite mat I verden; problemet er fordelingen
- I dag sulter 1 milliard mennesker
- Produktivitetsøkninger (pr knapp faktor)

Stagnating EU Seafood Production

European fish farming

1,240,000 tons

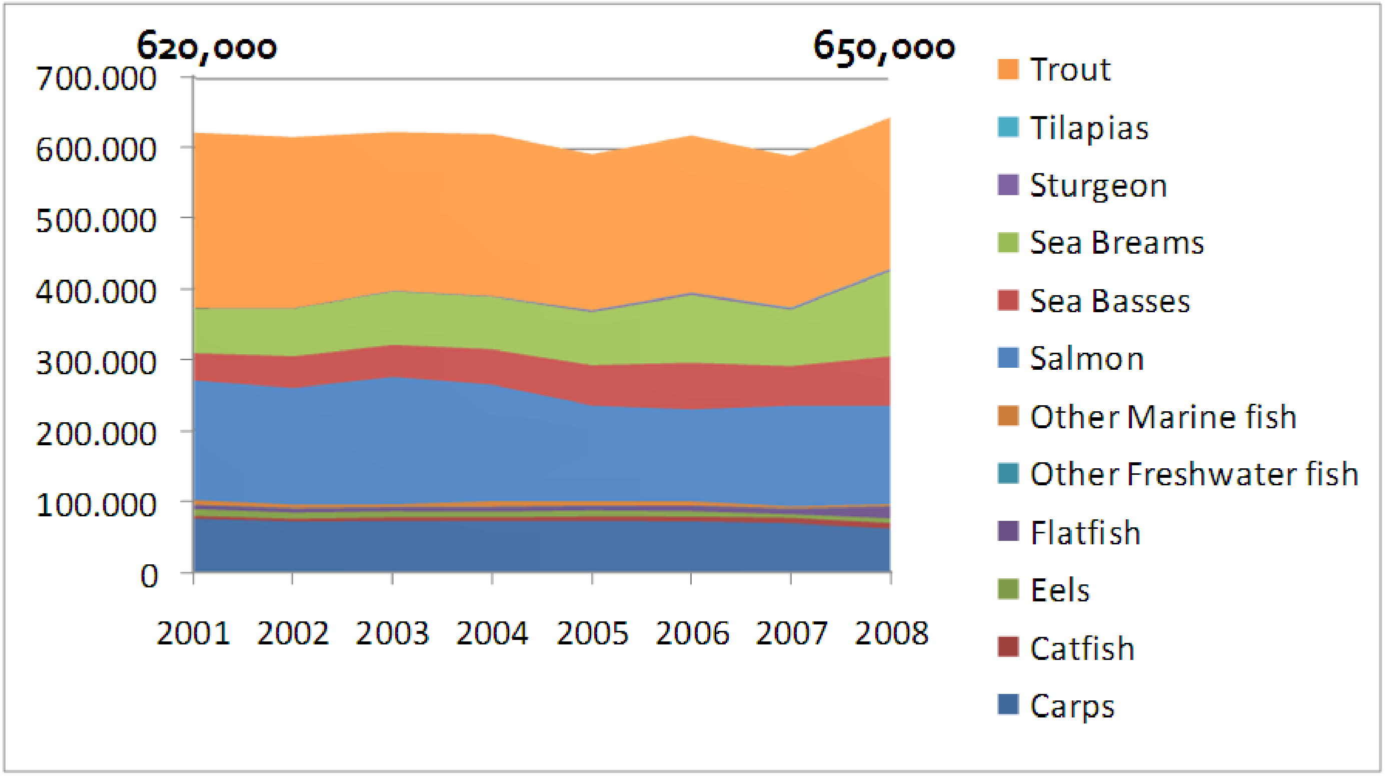
1,680,000 tons



Source: FEAP Member Associations

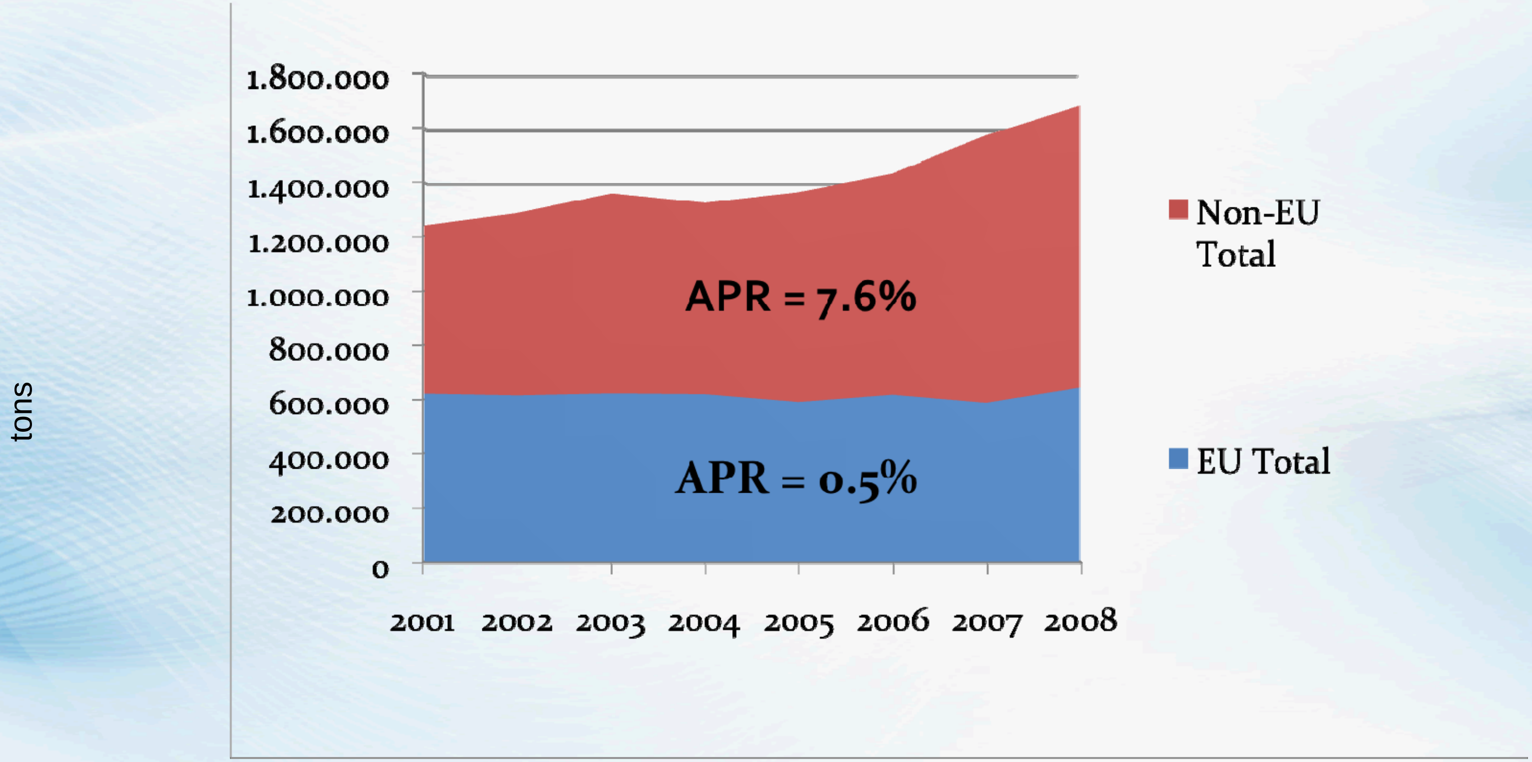
EU fish farming

European Aquaculture
Technology and Innovation Platform



Source: FEAP Member Associations

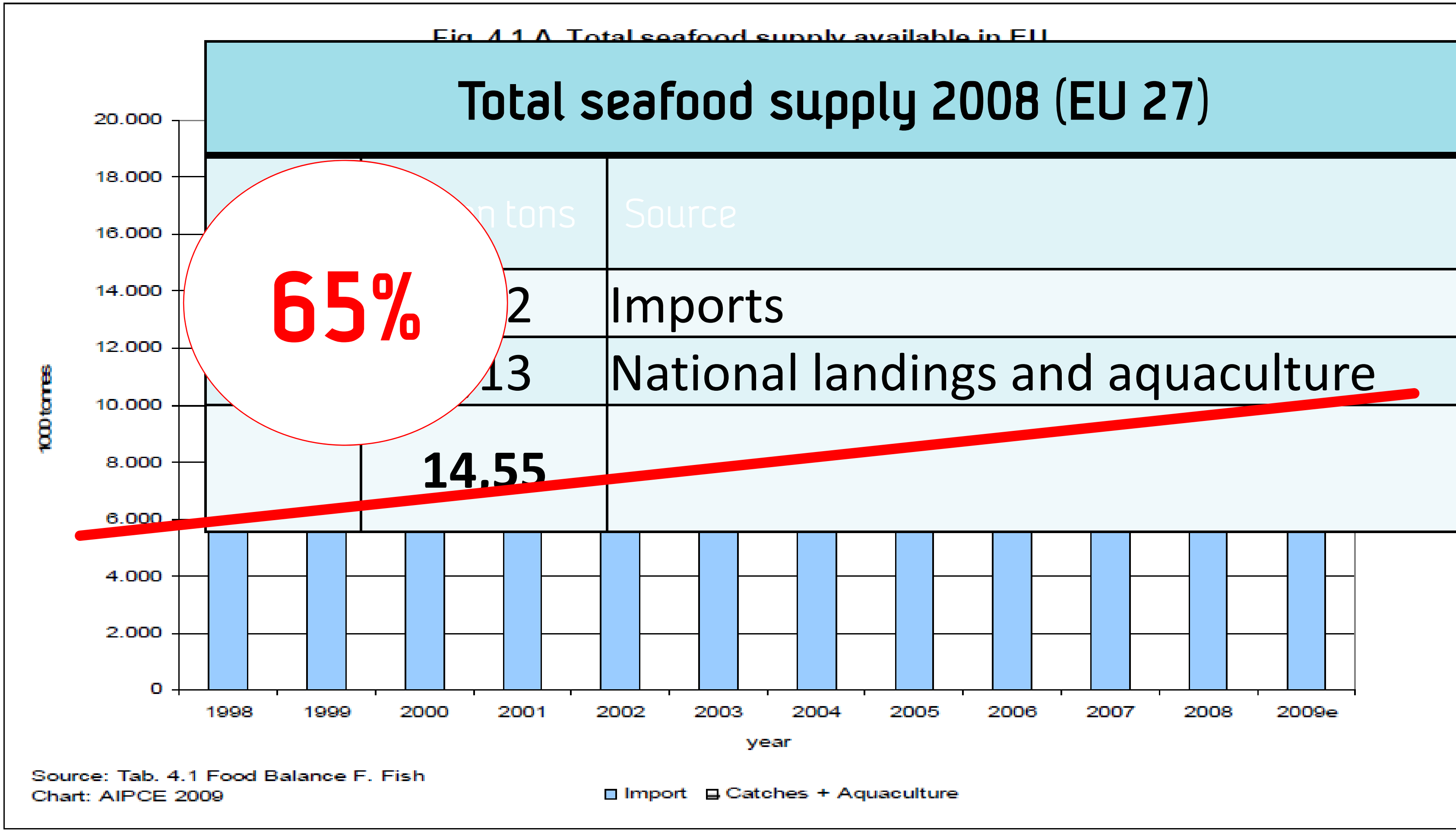
Some net differences!



EU Aquaculture strategy (2002) forecast 4% annual growth

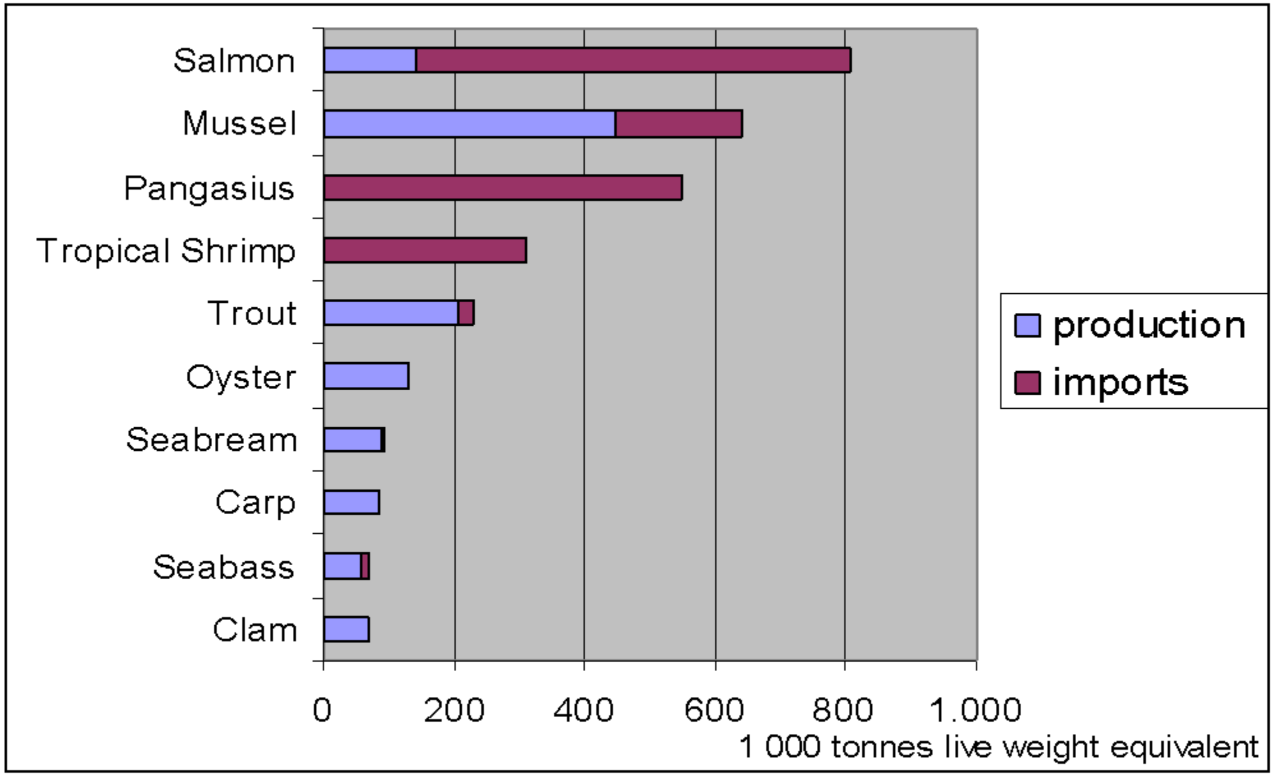
Source: FEAP Member Associations

Total seafood supply in EU



EU market for aquaculture products (2008)

Top ten farmed species in EU consumption (in live weight equivalent)



Source: Philippe Paquotte – European Commission, European Parliament Brussels Nov. 2010

Food Security

Food security

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Technology and Innovation Platform

- The World Food Summit of 1996 defined food security as existing
  "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life".
  - Includes both physical and economic access to food that meets people's dietary needs as well as their food preferences.

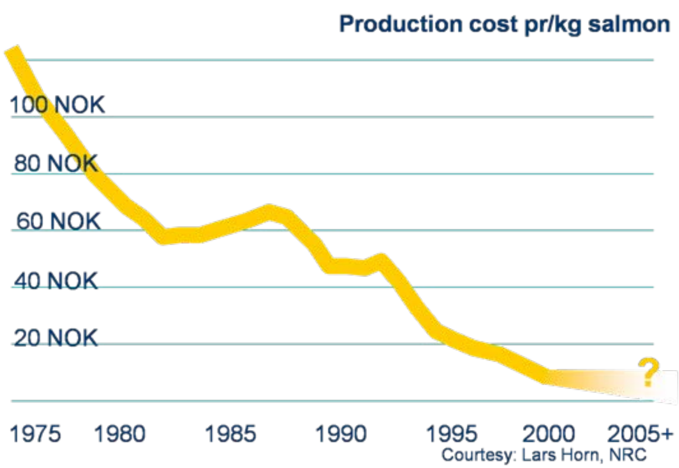
Befolkningsvekst

Stagnerende egen-produksjon av fisk i EU

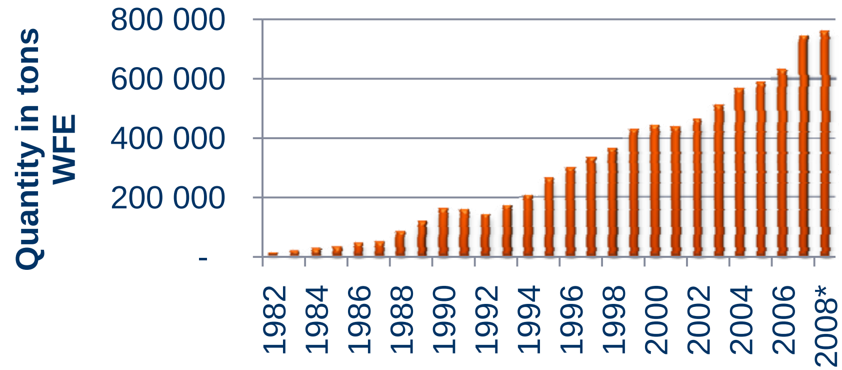
Food Security i EU?

- *Investeringer i kunnskapsutvikling:*
- *the EU is expected to have enough purchasing power to feed its population*

Kan norsk oppdrettsindustri bidra til Europas rolle som global matprodusent?



Norwegian production of salmon



- Ja, men det fordrer:
  - Forskning
  - Innovasjon
  - Finansiering

Teknologiplattformen EATIP

European Aquaculture
Technology and Innovation Platform

From CP via TAs to Deliveries

European Aquaculture
Technology and Innovation Platform

- Establishing a strong relationship between aquaculture and the consumer
- The assurance of a sustainable industry
- Consolidation of the role of aquaculture in society

Core Priorities

↓

Deliverables

Vision → SRA → Implementation Plan

From CP via TAs to Deliveries

European Aquaculture
Technology and Innovation Platform

- Establishing a strong relationship between <u>aquaculture and the consumer</u>
- The assurance of <u>a sustainable industry</u>
- Consolidation of the role of <u>aquaculture in society</u>

Core Priorities

↓

Process

↓

Deliverables

Vision
Strategic Research Agenda
Implementation Plan

From CP via TAs to Deliveries

European Aquaculture
Technology and Innovation Platform

- Establishing a strong relationship between aquaculture and the consumer
- The assurance of a sustainable industry
- Consolidation of the role of aquaculture in society

Core Priorities

Thematic Areas

Deliverables

Vision
Strategic Research Agenda
Implementation Plan

Aquaculture and the Consumer	The Assurance of a Sustainable Industry	The Role of Aquaculture in Society

Thematic Areas

Product quality & human safety and health
Technology and systems (engineering)
Managing the biological lifecycle
Sustainable feed production
Interactions with the environment
Aquatic animal health and welfare
Knowledge management

New: Socio-economics and Management

Vision documents and SRIAs

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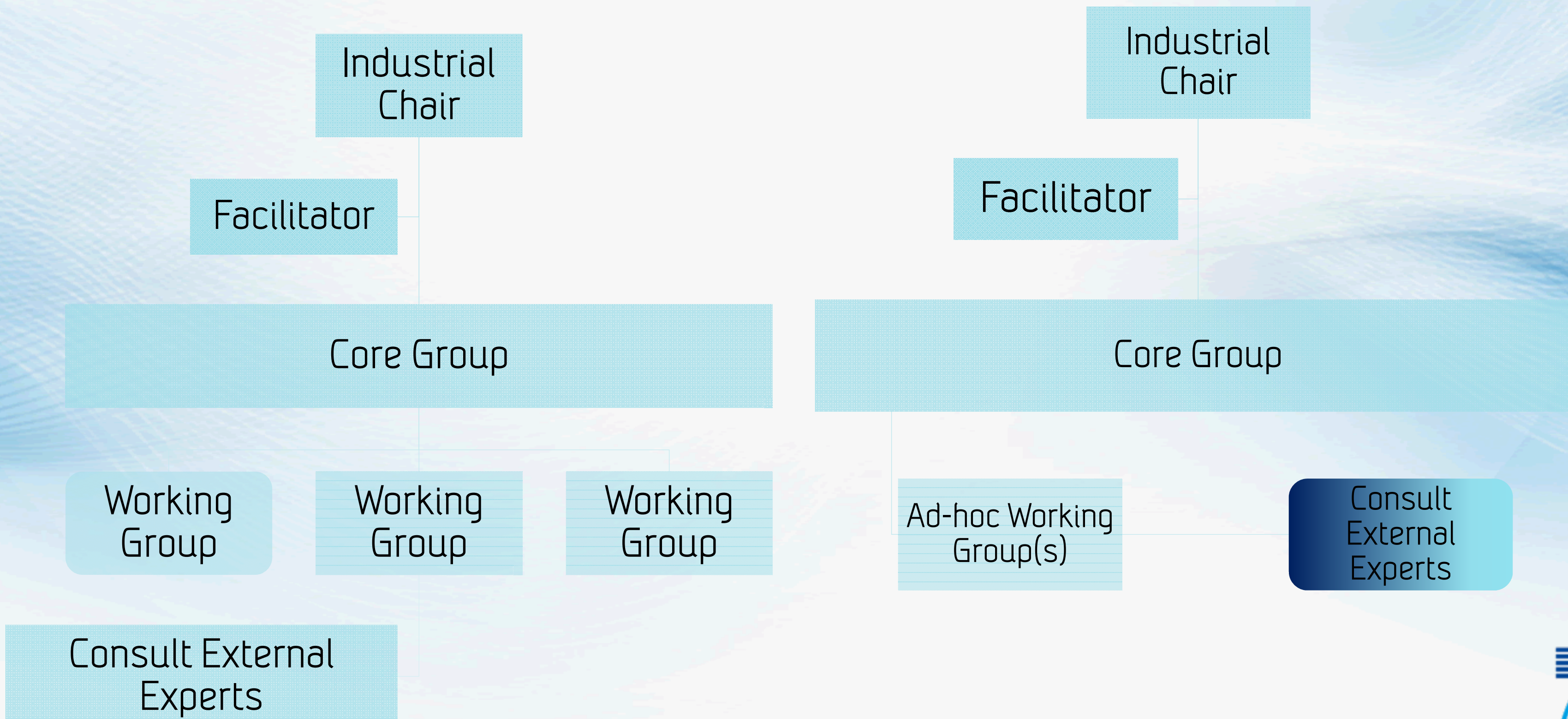
- The **Vision Documents** provide a consensus view of where the sector should be in 10-20 years time
  - identifying strengths, weaknesses – opportunities, threats and specific knowledge gaps
- The **Strategic Research & Innovation Agendas** should describe **what needs to be done** to respond to the identified goals of the Vision Document

Thematic Area structure (options)



- **Eksempel: TA 2 Technology and systems**

- Kontakt:
  - Jone Gjerde (chair)
  - Laszlo Varadi (facilitator)

TA 2 Technology and systems

European Aquaculture
Technology and Innovation Platform

Technology & Systems
Jone Gjerde (chair)
Laszlo Varadi (facilitator)

Sea Cage Culture
Mr. Noralf Rønningen (chair)
Dr. Arne Fredheim (facilitator)

Inland Culture
Mr. Jacek Juchniewicz (chair)
Dr. Zdenek Adamek (facilitator)

Recirkulation Systems
Mr. Idar Schei (chair)
Dr. Johan Verreth (facilitator)

Mollusc Culture
TBD (chair)
Prof. Michel Mathieu (facilitator)

Handling & Processing
TBD (chair)
Dr./Prof. Il Marit Aursland
(facilitator)

TA2 Dokumenter

European Aquaculture

- TA Visjon
  - TA 2 - Vision Statement 201
- TA SRIA

European Aquaculture
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Thematic Area Vision

Technology & Systems

1. Vision Statement
To advance aquaculture industry technologies and systems so that Europe can become an environmentally and economically sustainable net supplier of seafood, characterised by a safe and attractive working environment.
2. Executive Summary
The EATiP thematic area Technology & Systems will define research and innovation needs of the European aquaculture industry related to engineering technologies and systems. For the European aquaculture industry to be sustainable, economic viability must be assured. This is the most important condition for farmers to trust making infrastructure investments and undertake sustainable practices. Profitability can be improved by lowering the operating cost and increasing the productivity. Technology and systems will play a major role in this task going forward. This will also increase the global competitiveness of the industry. There are five working groups related to key technology areas; sea cage culture, inland culture, recirculation systems, molluscs culture and handling & processing. It has been widely recognised that technological development will play a major role in future expansion of the industry and will be vital in breaching the gap between supply and demand for seafood products. For aquaculture to provide a high quality protein source and help to reduce negative impacts on wild fish stocks, new technologies and solutions should be developed to improve

TA2 Dokumenter

European Aquaculture
Technology and Innovation Platform

- [TA Visjon]
  - ..\..\..\EATP\OC - TAs\TA2\TA 2 - Vision
- TA SRIA
  - TA2 - SRIA Key Goals 2010-11-30.doc

Template 3 - EATiP Key Goal Definition, May 2010

EATiP
European Aquaculture Technology & Innovation Platform

Template 3: Strategic Research and Innovation Agenda (SRIA)

"Key Goal" Definition Template

Purpose: The Strategic Research and Innovation Agenda (SRIA) of each Thematic Area will be organised by reference to its "Key Goals". Please use this official template to define each key goal. One template should be used for each key goal. No more than **six** key goal templates should be submitted.

For the purposes of the first consultation (June – October 2010), each completed template will be circulated widely both within the EATiP members and externally for feedback. Later in the year, each TA will be able to refine its goals and generate a final SRIA for presentation and consultation, notably within the regional workshops of Aquainnova.

Using this official template is essential. Integrating all TA elements and considerations into a single document will allow for consistency across TAs in the approached used to justify the goals identified. This is also necessary for the wider audience consultation foreseen and will make it possible for stakeholders to compare and contrast.

Pending endorsement by EATiP members, the completed templates will ultimately become the core of the final EATiP SRIA.

Part A contains the considerations relative to the goal identified.

Part B provides space to itemise suggestions on recommended ACTIONS. **Full details should NOT be provided here. Once this SRIA template is complete, you will be asked to complete**

TA2 Dokumenter

European Aquaculture
Technology and Innovation Platform

- [TA Visjon]
  - [..\..\..\EATP\OC - TA[illegible]]
- TA SRI[illegible]
  - [..\..\..\EATP\O[illegible] - TA[illegible]]
- TA2 Aksj[illegible]
  - [Copy of TA2 - Plan [illegible]]

A2

Initial Goals Specification:

1	**Initial Goals Specification:**	
2		
3	**G 1: Ensure an environmental sustainable industry by the application of new knowledge and technology innovations.**	
4	G1.1	To develop escape-proof technologies for on-growing fish in farms subject to strong waves and currents
5	G1.2	Developing technologies and protocols to minimise escapes for species with differing types of behaviour within on-growing cages
6	G1[illegible]	Reducing the intensity of impact may occur through focussing research on the best configuration of farms to enhance dispersion, [illegible]velop[illegible] techn[illegible]s to ma[illegible]se [illegible] of [illegible]ovi[illegible]ulture conditions for growth of fish
7	G[illegible]	[illegible]evelopment of [illegible]newa[illegible]gy so[illegible] for gener[illegible]n of ener[illegible]n offshore fis[illegible]rms
8	G1.5	[illegible]ed aqua[illegible]re sy[illegible]ns
9	G1.6	New s[illegible]s for [illegible]d aqu[illegible]lture
10	G[illegible]	Produ[illegible] of st[illegible]g ma[illegible]al
11	G1.8	[illegible] the a[illegible]t and [illegible]imize the [illegible]ity of the [illegible]ste produ[illegible] (R[illegible])
12	G1.9	To improve the efficiency of waste removal in the system (RAS)
13	G1.10	To reduce the discharge of waste to the outside environment (RAS)
14		
15	**G 2: Meet the demand for fish in EU by the development of efficient technologies to support continued growth.**	
16	G2.1	Development of farming equipment for more offshore sites
17	G2.2	Development of operational protocols for more offshore sites
18	G2.3	Development of protocols for site assessments
19	G2.4	Development of equipment for efficient monitoring of oxygen levels
20	G2.5	Integrated knowledge on fish biology and welfare in conjunction with new technology and farm management protocols
21	G2.6	Bio-labelling of products from pond culture
22	G2.7	Food safety and welfare (pond)
23	G2.8	Product quality and processing (pond)
24	G2.9	Prevent the contamination of shellfish with human pathogens by developing and enforcing improved waste water treatment and
25	G2.10	Develop standardised detection and quantification methods for Norovirus
26	G2.11	Reduce the incidence of diseases of shellfish
27	G2.12	Control the contamination of molluscs by algal toxins
28	G2.13	Improve existing production techniques
29	G2.14	Develop new techniques for exposed and offshore areas
30	G2.15	Develop better understanding of the interactions between shellfish cultivation, the natural environment and other coexisting
31		
32	**G 3: Ensure the profitability of the aquaculture industry by developing improved operation, management systems and technology.**	
33	G3.1	Technologies to provide better control of environmental variables and fish behaviour of the fish in the cages
34	G3.2	Improved scientific understanding of biofouling
35	G3.3	Improved technology for the monitoring and removal of biofouling

Instructions | Initial Goals | Revised Main Goals | TA2 Goal 1 | TA2 Goal 2 | TA2 Goal 3 | TA2 Goal 4 | TA2

Ready

Neste skritt

- Operativt konsil: Fra TA til EATIP
  - Visjon
  - SRIA
  - Aksjonsplan
- Intern konsultasjon blant medlemmene

Hvorfor delta i EATIP

European Aquaculture
Technology and Innovation Platform

- EATIP provides ***a unique opportunity to develop the European aquaculture value-chain*** through RTDI through:
  - Multi-stakeholder debate and discussion
  - Identifying needs, opportunities and gaps
  - Developing a *Vision* for the future
  - Providing *Strategic Research and Innovation Agendas*
  - Providing *Implementation Plans*
  - Communicating its conclusions and proposals

Hvordan delta i EATIP

European Aquaculture
Technology and Innovation Platform

- **Bli medlem!**
  - **Søknadsskjema på nett www.EATIP.eu**
  - **Forpliktelser, rettigheter**
- Kun medlemmer har stemmerett og kan delta i
  - TA
  - WG
  - SM

Tidslinje

European Aquaculture
Technology and Innovation Platform

- Februar 2011: TA SRIA
- Februar – Mai: EATIP SRIA; intern konsultering
- Mai 2011: offentliggjøring; promosjon

Takk for oppmerksomheten!

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Telephone: +47 9111 6501 – E-mail: torgeir.edvardsen@sintef.no

SINTEF

Teknologi for et bedre samfunn