

Sustainable fish farming : “working at the human-animal-ecosystem interaction”

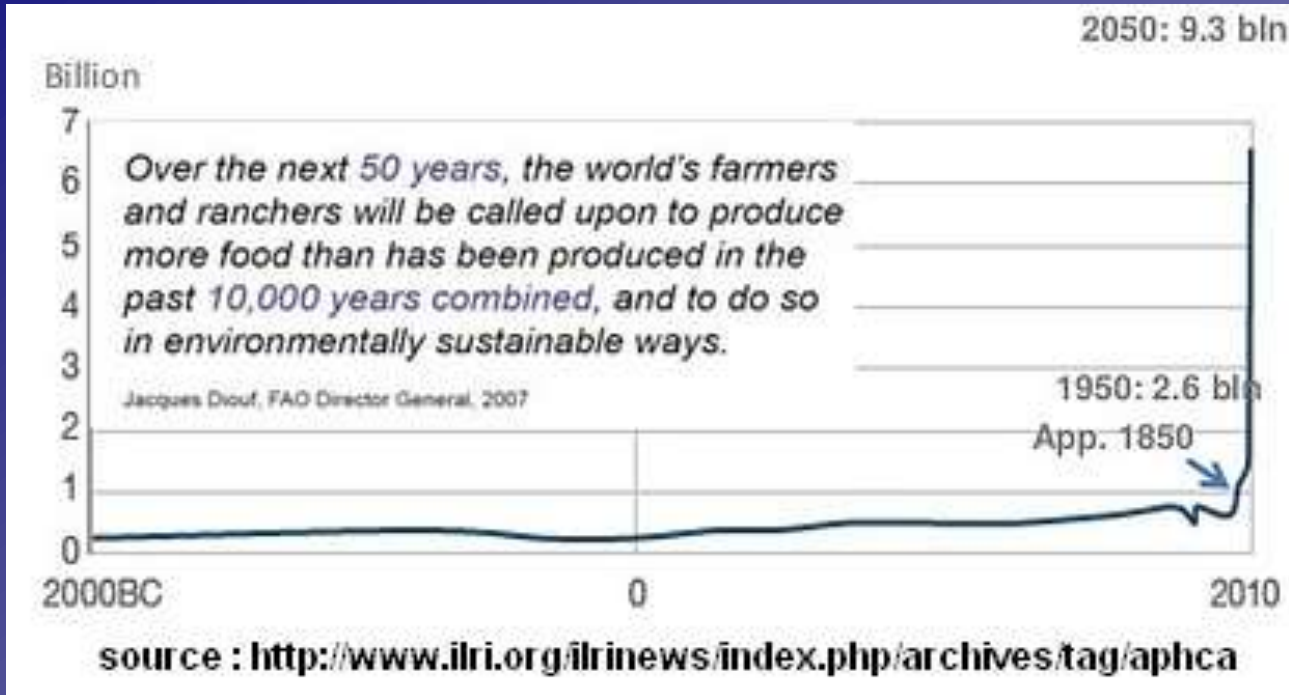
Armand LAUTRAITE
Independant fish veterinarian

16 May 2013

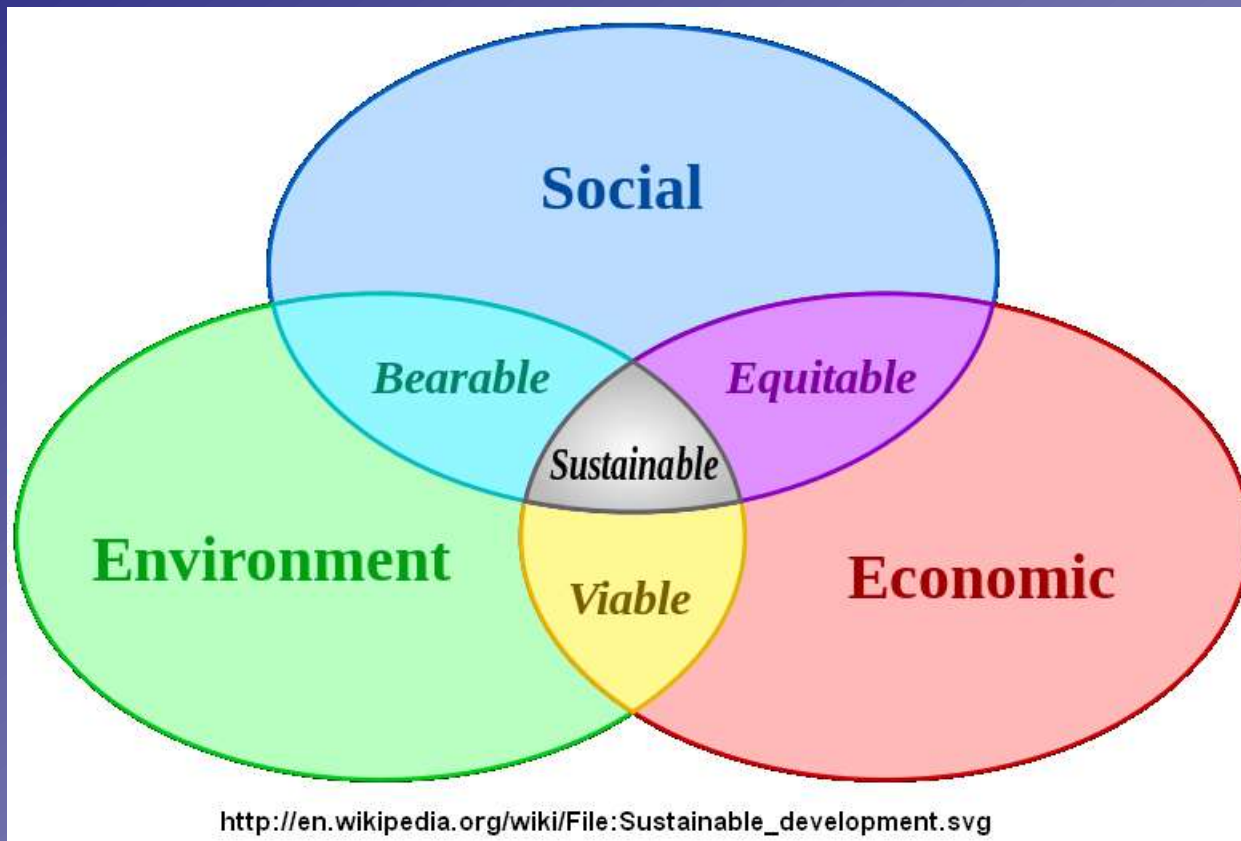
EVE conference -
Brussels



The challenge of sustainability



The three “pillars” of sustainability



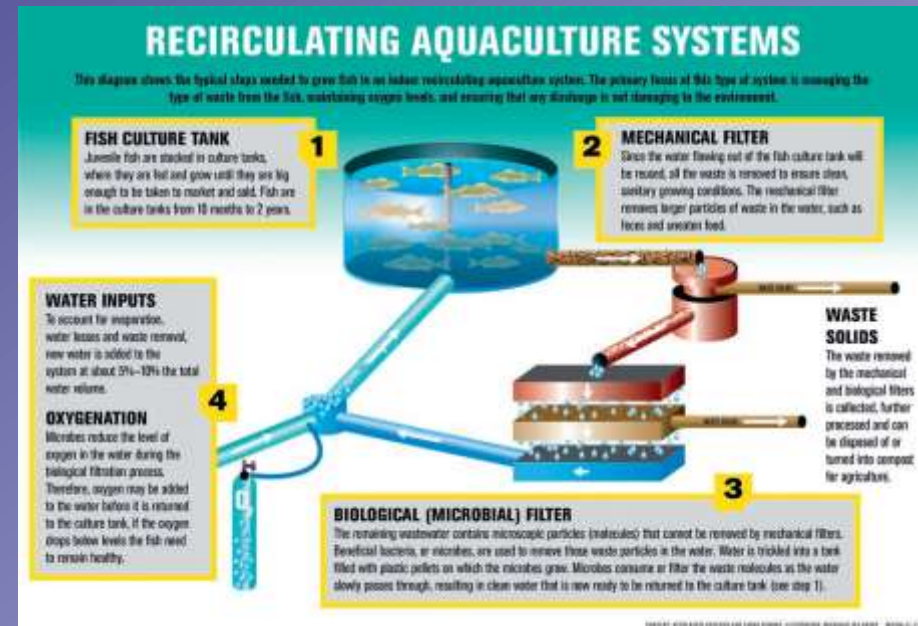
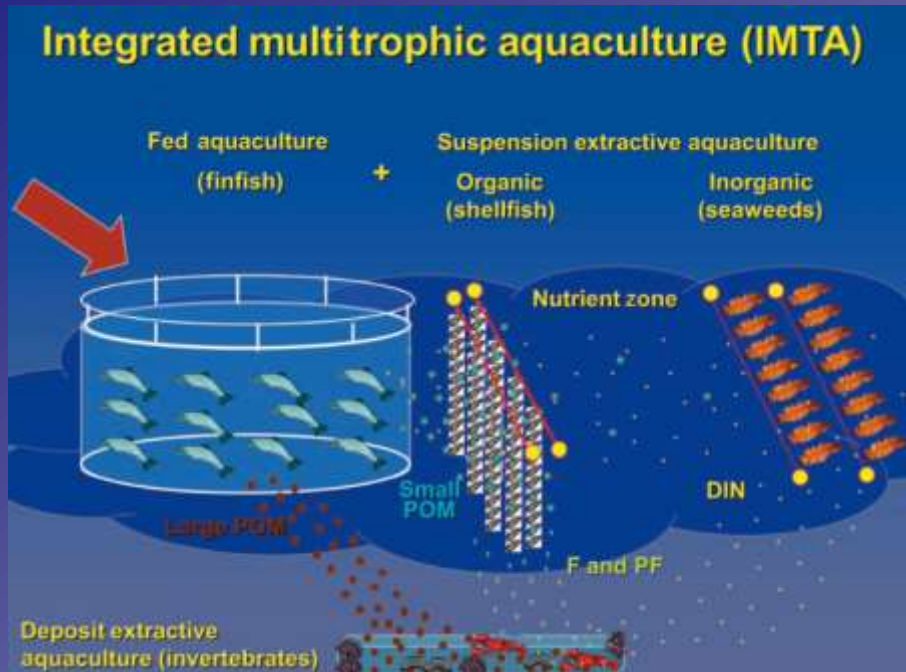
Fish farming :
Sustainable ?



Source : <http://alexandramorton.typepad.com>



Trends in “modern” aquaculture to reach sustainability

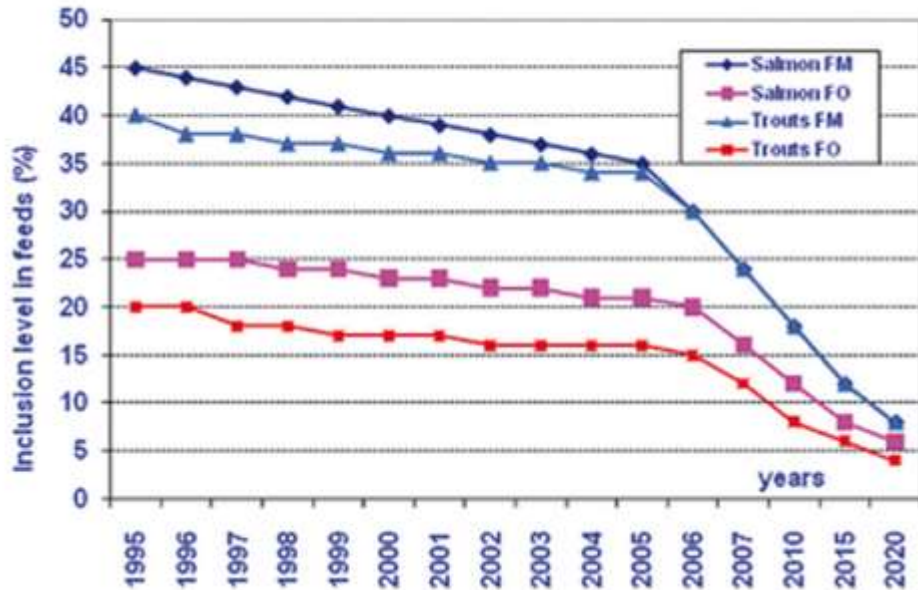


Source : Diana *et al.* 2013 – BioScience 63(4)

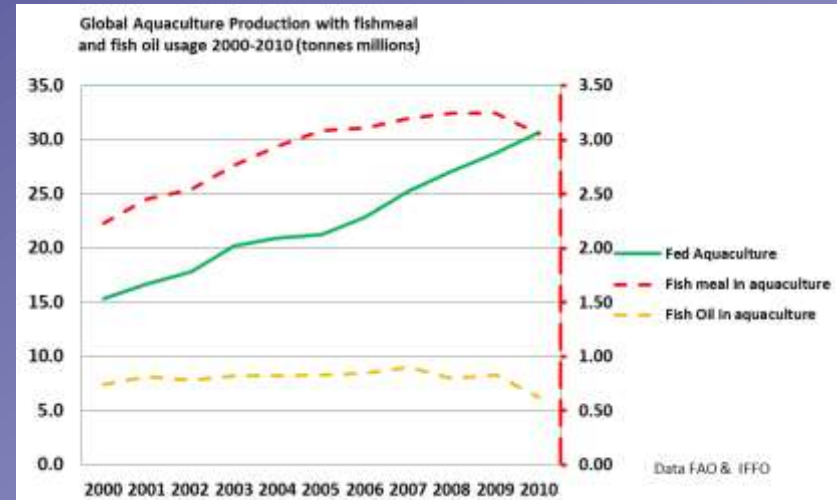


Sustainable fish production ?

Inclusion levels of fish meal (FM) and fish oil (FO) in salmonids feed

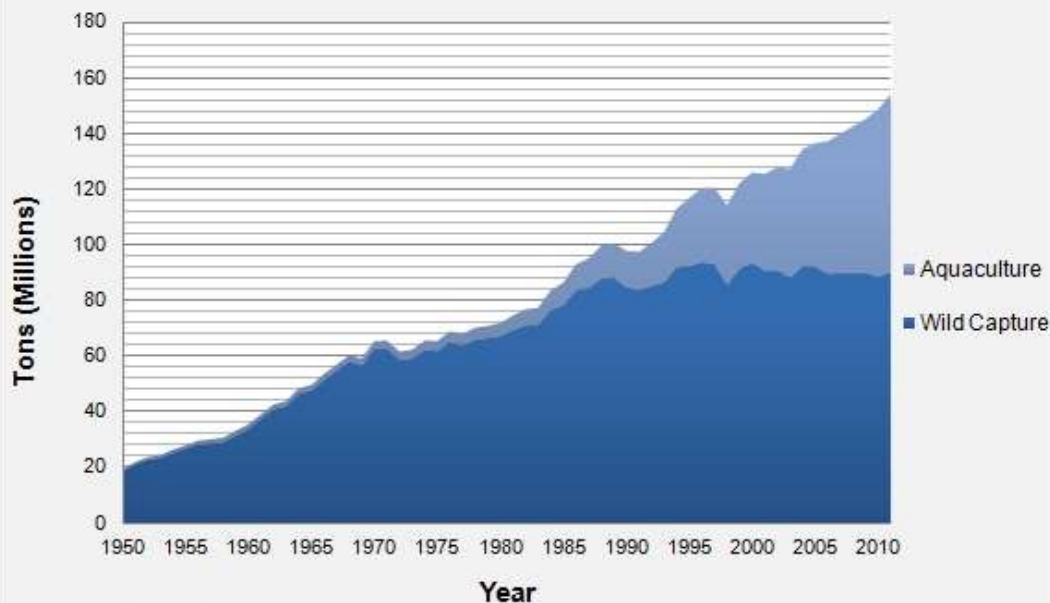


Source : Kaushik et Troell, 2010 in Réflexions et recommandations pour la pisciculture de truites - UICN



Sustainable fish production ?

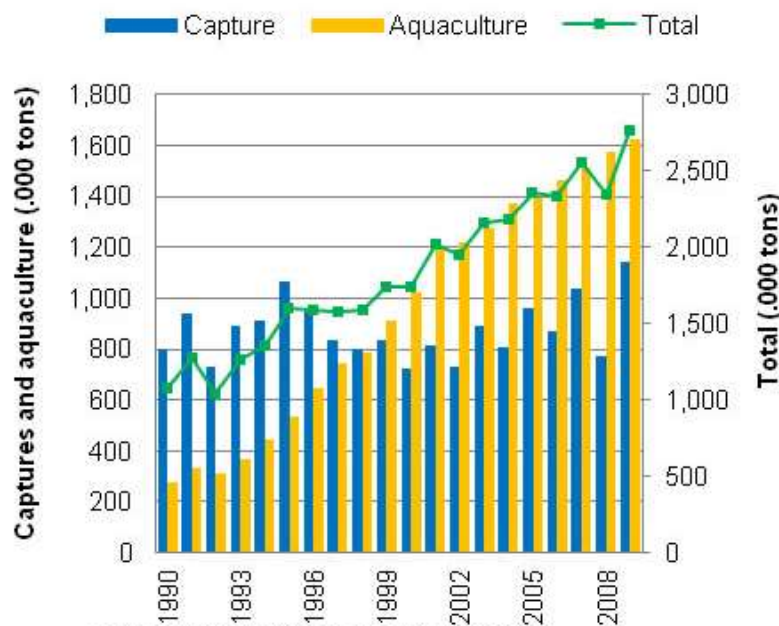
Global Fish Production, 1950-2011



©Worldwatch Institute

Source: FAO

Captures and aquaculture of salmon species

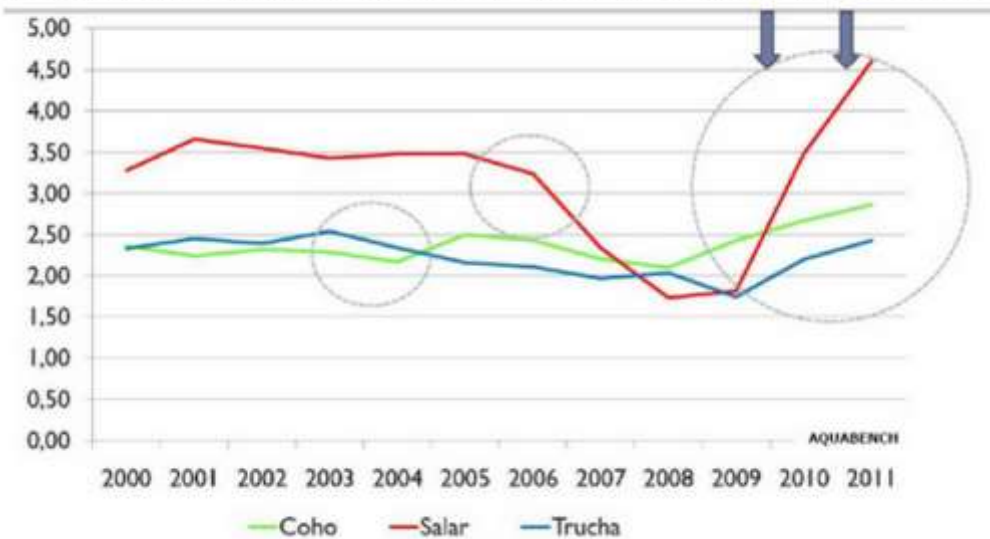


source : www.agbioforum.org - FAO fishstat



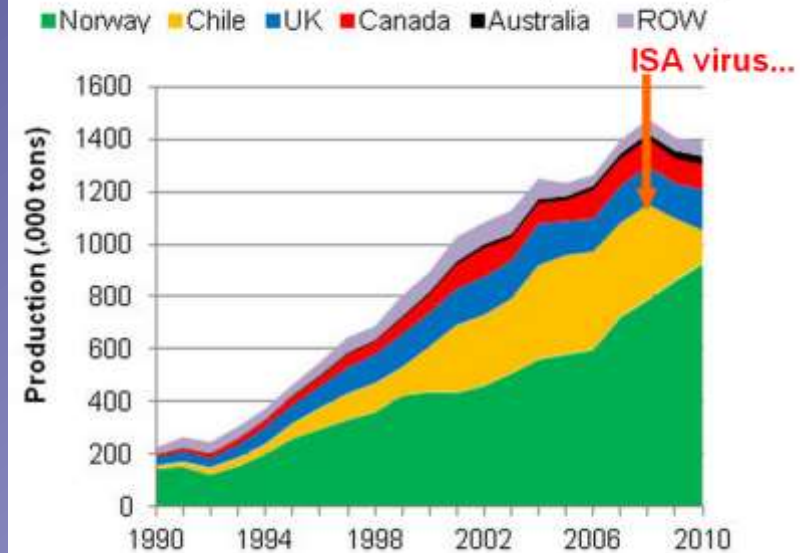
Sustainable fish production : effects of diseases on farmed fish production

Chilean fish farming : Yield per smolt (kg harvested per smolt)



Source : www.thefishsite.com/articles/1198/the-recovery-of-the-chilean-salmon-industry

Production of Atlantic salmon in the world (thousand tons)

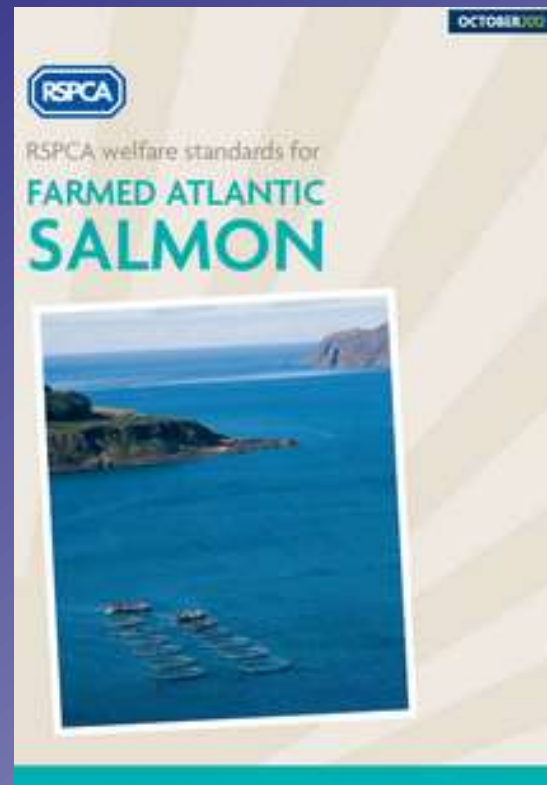
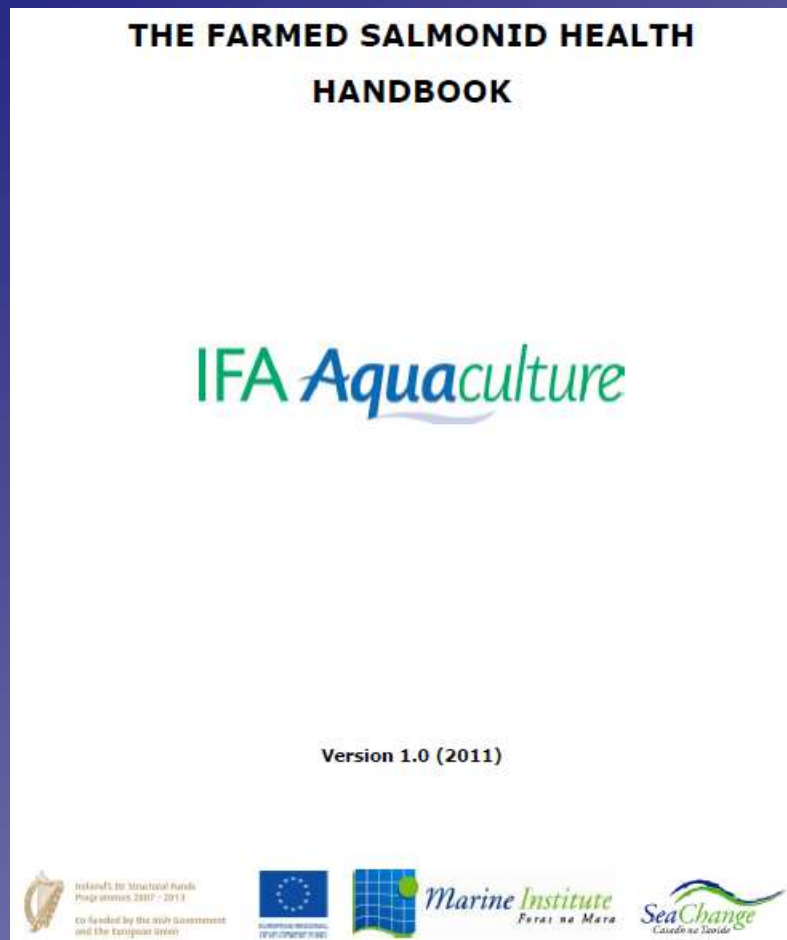


Source : FAO fishstat in www.agbioforum.org

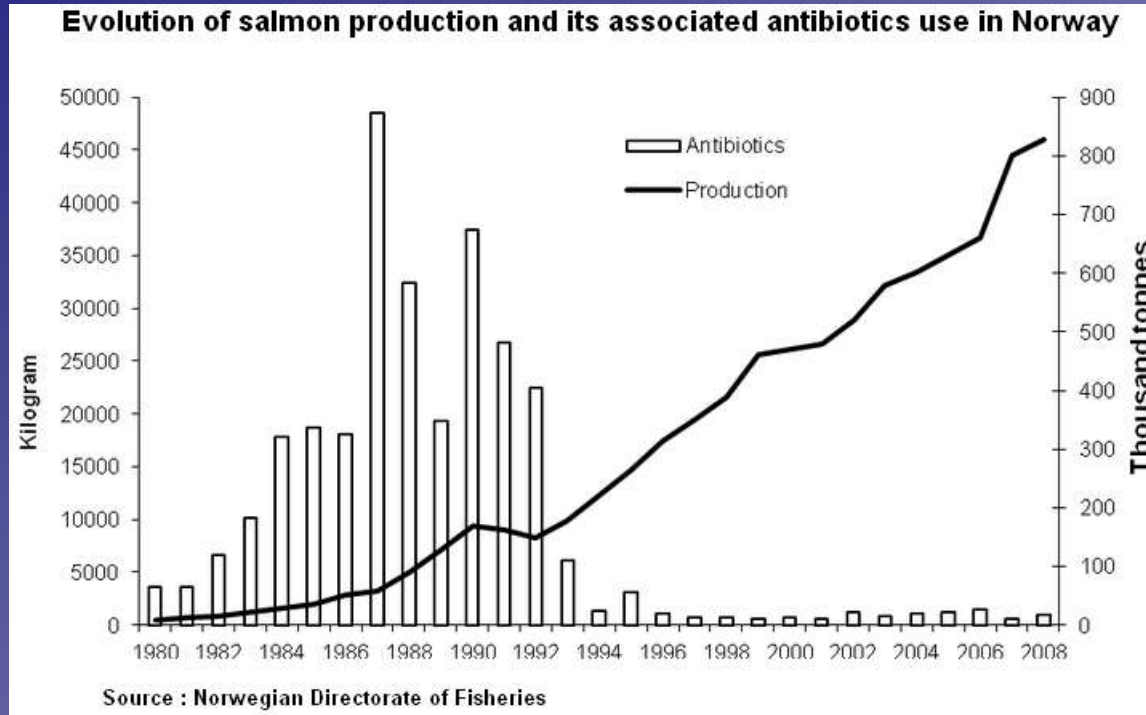


Good practice :

- Fish health
- Fish welfare



Good fish health practice : vaccination



Reduced use of antibiotics (exclusively as therapeutants) :

Improvement of the surrounding environment

Risk mitigation towards AMR



Human-animal-ecosystem interaction : AMR

- Non use or restricted use of critical antibiotics (3rd and 4th cephalosporins, fluoroquinolones...)
- Guideline preparation in different MS (France...)
- Issue related to the standardization and predictive value of antibiograms
- EARS-Net



Source : http://www.ecdc.europa.eu/en/healthtopics/antimicrobial_resistance



Human-animal-ecosystem interaction : Prevention of fish zoonotic and fish borne diseases

FISH = VERY SAFE SOURCE OF FOOD

Parasitic : Diphylobothriosis (*D. latum*) ; Anisakiasis (*A. simplex*) ;
Dioctophymiasis ; trematodes

Bacterial : Mycobacteriosis ; Vibriosis ; Edwardsiellosis ; Streptococcosis
(Viral)...

Viral zoonoses very unlikely : species barrier, environmental barrier

Variable risk levels / fish species ; rearing environment

Mostly a problem in developing countries and warm water environments

Very weak incidence in Europe and developed countries



Some needs for a sustainable work at the human-animal-ecosystem interaction :

Continuing education (daily management of fish health ; antibiotics prudent use...)

A sustainable network of fish vet across fish farming regions

Research involvement in applied issues like :
reliable diagnostic methods (ex. fish amoeba) ;
zotechnical improvements for fish welfare (and health) ;
Stimulation (specific or not) of fish immune system

Development of sustainability indicators towards fish health and fish welfare



CONCLUSION

Aquaculture = fastest healthy food producing sector.
Sustainable fish farming involving science-based operations / multidisciplinary approach based on consensus between stakeholders.

Definition of the “best practices” in fish health and welfare management = key factor to secure the interactions inside the human-animal ecosystem (one health).

Diversity of species, rearing methods and environments
Scientific and technical knowledge continuously expanding
Clear, precise guideline which fit with each situation = complex and always renewed challenge.

Thanks for your attention and patience

