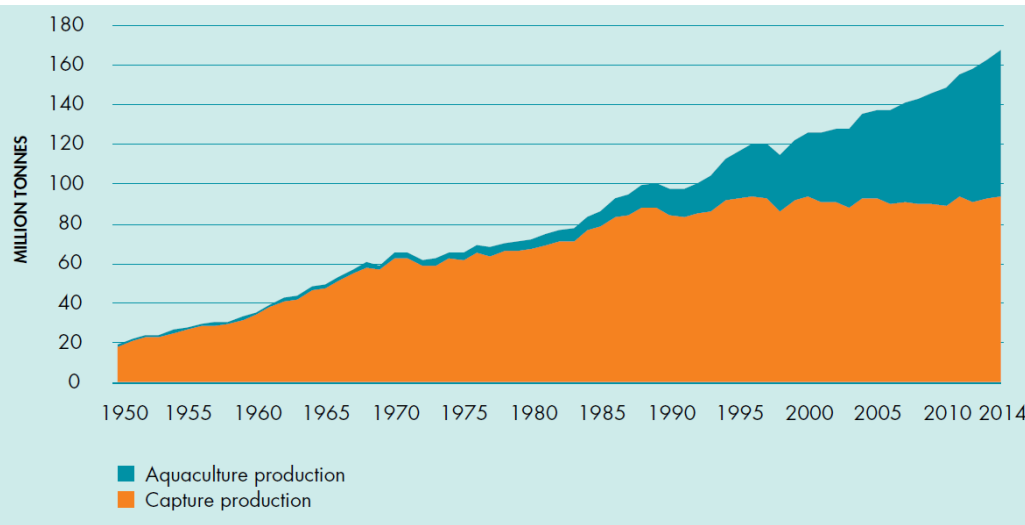




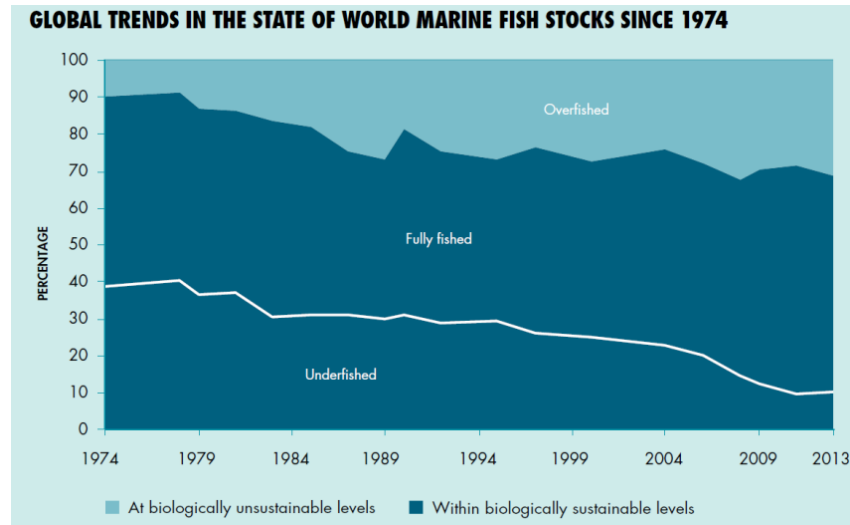
Aquaculture work in progress and perspectives

**Domitilla Pulcini e Fabrizio
Capoccioni**





FAO (2016)

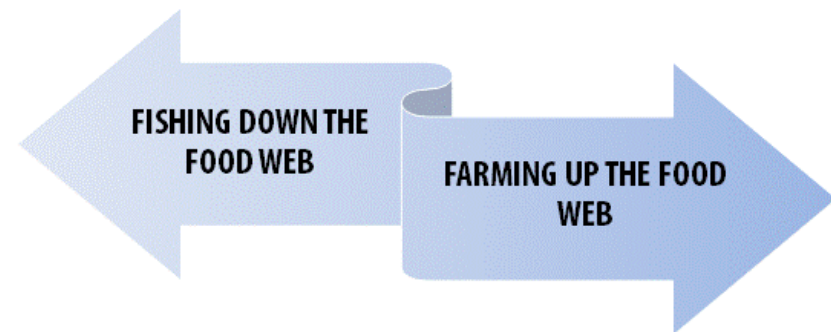


FAO (2016)

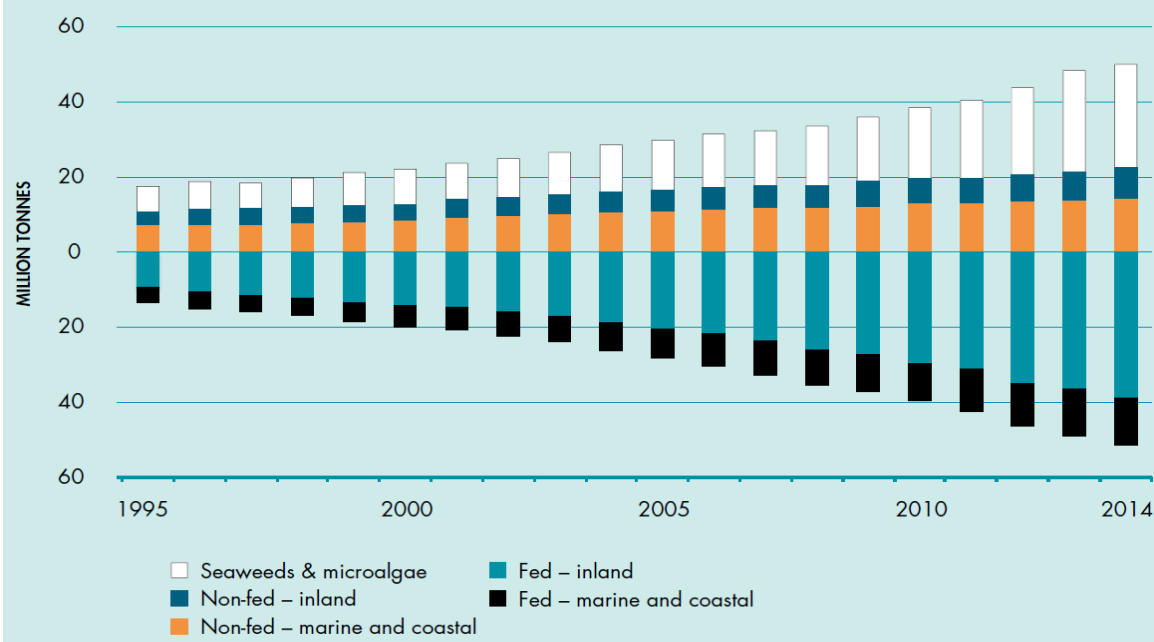
Fisheries production decreased in the last decades and capture composition changed

Almost 80% of fish stocks are overexploited

Aquaculture production increased in the last decades (average 8% each year)
Aquaculture production is changing



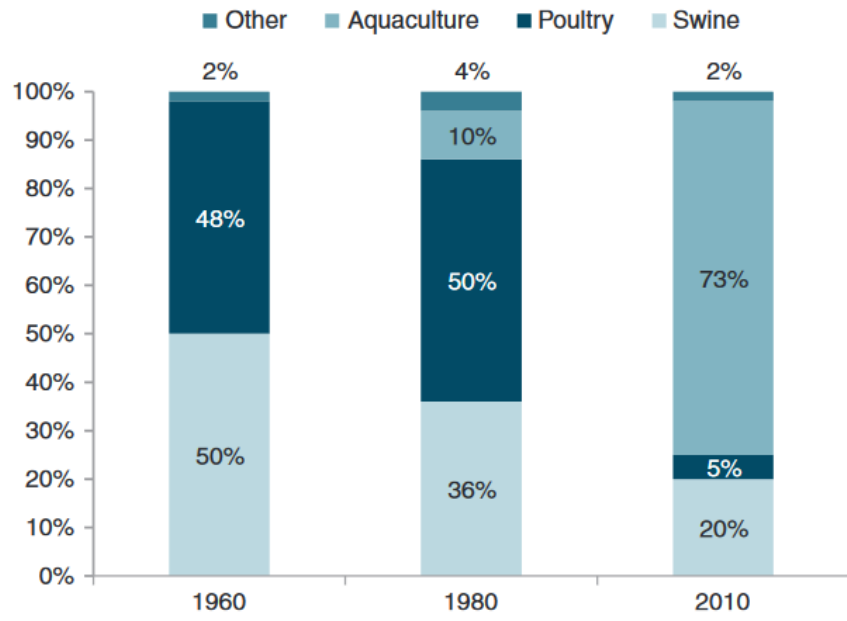
FAO (2016)

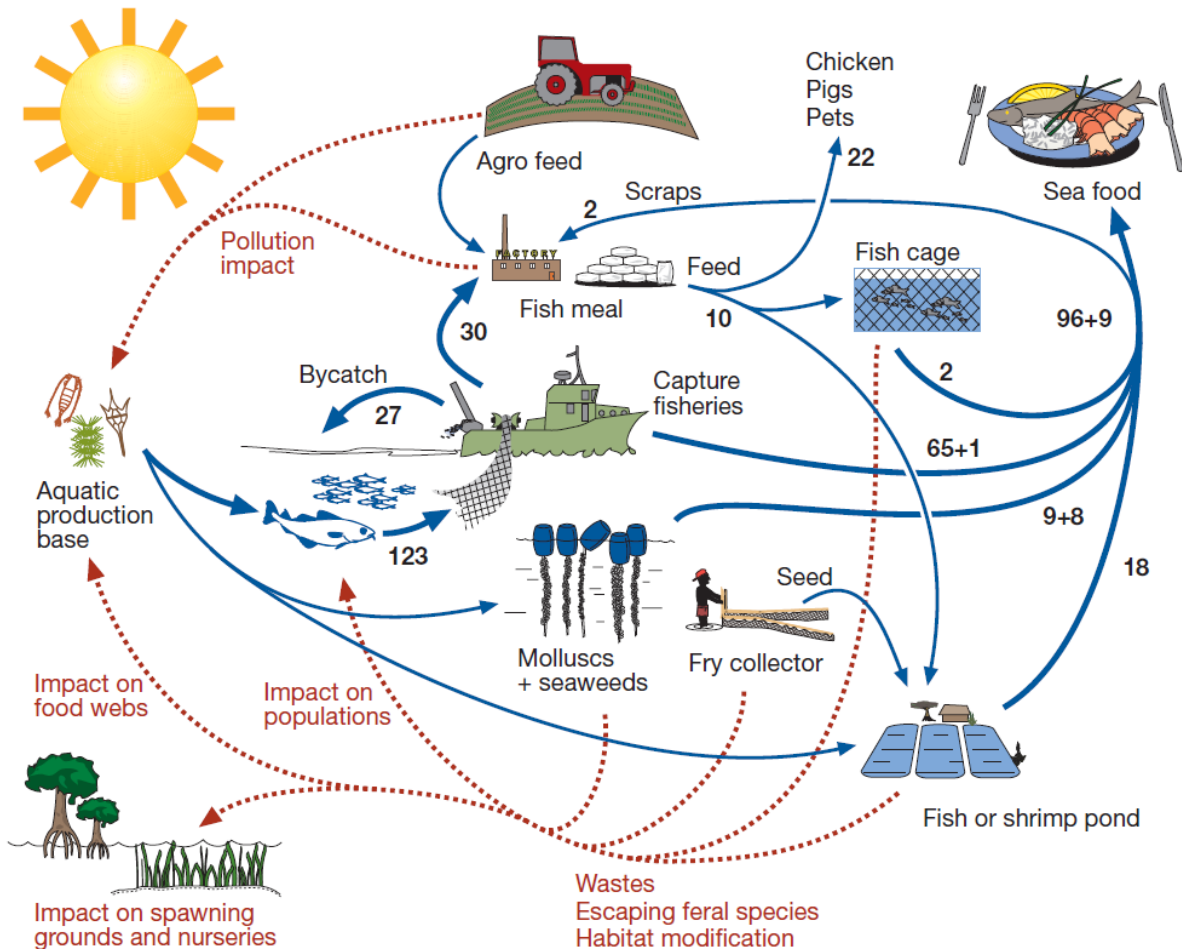


About 50% of aquaculture production in 2014 came from non-fed species
Fed species share is dramatically increasing

Further raise of aquaculture production depends on **feed ingredients alternative to fishmeal** (uncertain availability, increasing prices and competition with other productive activities)

GLOBAL FISHMEAL USE Shepherd (2012)





As **aquaculture** continues to **intensify**, its **impact** on environment and ocean fishery is likely to **increase**

- DIRECT PRESSURE ON FISHERY RESOURCES
- HABITAT MODIFICATION
- USE OF WILD SEED TO STOCK AQUACULTURE PONDS
- INTRODUCTION OF NON-INDIGENOUS ORGANISMS
- EFFLUENT DISCHARGE

EFFECT OF AQUACULTURE ON GLOBAL FISH SUPPLIES
Naylor et al. (2000)



CREA work is aimed at **reducing environmental impact** of aquaculture and **increasing sustainable production**
(AQUACULTURE IN THE EU - Tapping Into Blue Growth)

SUSTAINABLE FISH
FEEDS INNOVATIVE
SUSHIN - Novel
INGREDIENTS

ingredients and underexploited feed resources to improve sustainability of farmed fish species: growth, quality, health and food safety issues



FONDAZIONI IN RETE
PER LA RICERCA
AGROALIMENTARE

SUPPORT TO ORGANIC
SANPEI 2 - Promotion
AQUACULTURE
of organic fish use in

public canteens by means of food education and marine species organic rearing experimental trials

BioBreedH₂O -
Analysis of the weak points slowing down the organic aquaculture sector and organization

of a **mipaaf** living
all t **mipaaf** lers
ministero delle
politiche agricole
alimentari e forestali

COASTAL LAGOONS
INTEGRATED
LAGURES - Evaluation
MANAGEMENT
of the restoring capacity of coastal lagoons on local coastal fisheries stocks: qualitative and quantitative aspect investigated in the coastal lagoons of

Circ **mipaaf** Park
ministero delle
politiche agricole
alimentari e forestali

SUSHIN is a research project to improve feeding strategies for intensive fish culture by investigating novel ingredients and underscored feed sources to formulate **well-performing, cost-effective and eco-sustainable new fish diets**



Nutritious **raw materials** that will be investigated



Poultry by-product



Dried microalgae biomass



Insect meal

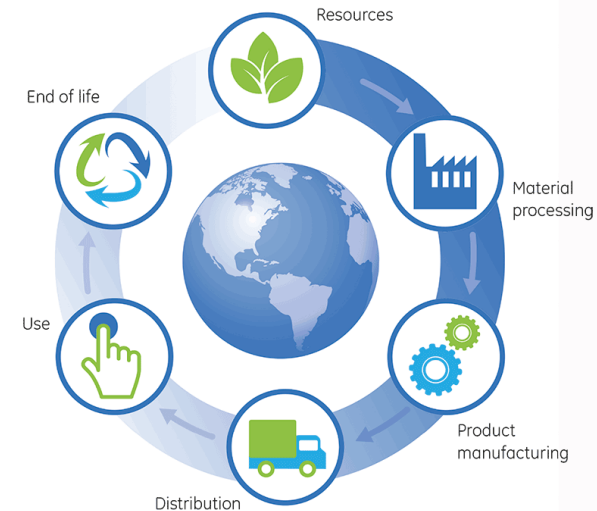


Redswamp crayfish meal

SUSHIN is aimed at

1. Gain a deep insight into the nutritive values, functional and safety properties of novel feed ingredients
2. Test the new diets in major fish species (rainbow trout, European sea bass and gilthead seabream)
3. Assessing fish performances through an integrated approach (health, welfare, food-quality attributes)
4. Evaluate the new diets in terms of food safety and quality by means of sensorial analysis and consumer tests

environmental impact of new fish diets by LCA





SANPEI 2 is a research project to promote sustainable aquaculture production, by means of new market identification, such as public and scholastic food service



http://sanpei.ceris.cnr.it/index.php?option=com_content&view=article&id=17&Itemid=24

1. Identification of appropriate broodstocks for the production of high quality certificated juveniles of Mediterranean marine species (European sea bass and gilthead seabream)
2. Active interaction with all the stakeholders to identify weak points of organic aquaculture production



BioBreedH₂O is a research project to promote organic aquaculture through the creation of a platform involving all the stakeholders (feed producers, fish farmers, market and distribution)

www.biobreed.it



Un nuovo respiro per l'acquacoltura biologica:

il supporto della ricerca partecipata alla crescita del settore

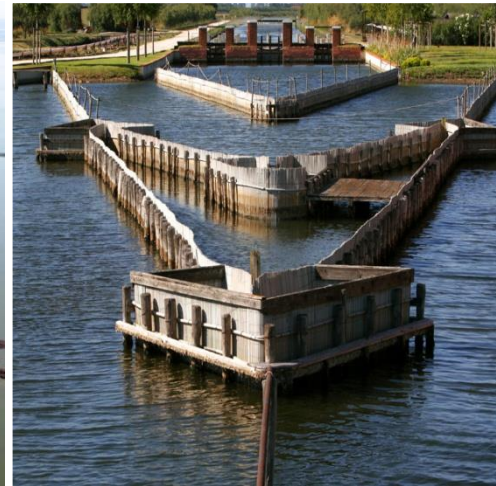


Round table discussions with
producers and distribution
market

Promotion of information
sharing at the EU level
(Database on organic fish
production)

Support for the EU
Regulation upgrade

LAGURES is a research project to evaluate the restoring capacity of coastal lagoons on marine coastal fish stocks



1. Characterize and quantify biomass flow through coastal lagoons and sea for major commercial fish species (eel, gilthead seabream, European seabass)
2. Describe the health status of eel (*Anguilla anguilla*) local stock and set up a "health

