

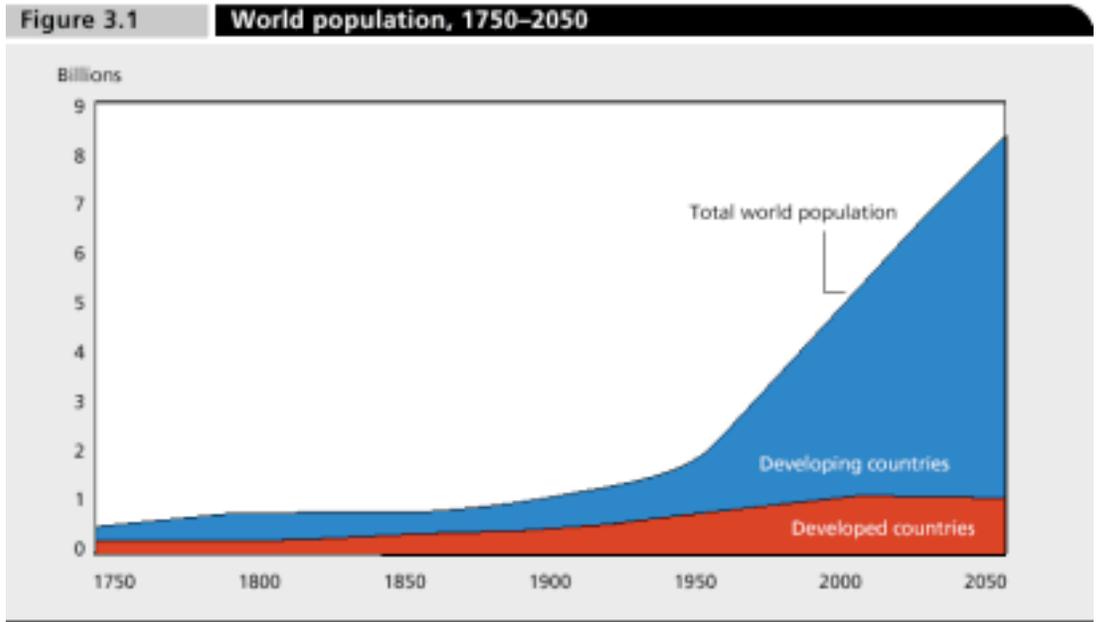
Challenges & Opportunities For Aquaculture in Hawaii

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SOEST, UH-Manoa***

***As presented at the NOAA Aquaculture Listening Session
held in Honolulu, Hawaii, on April 27, 2010***

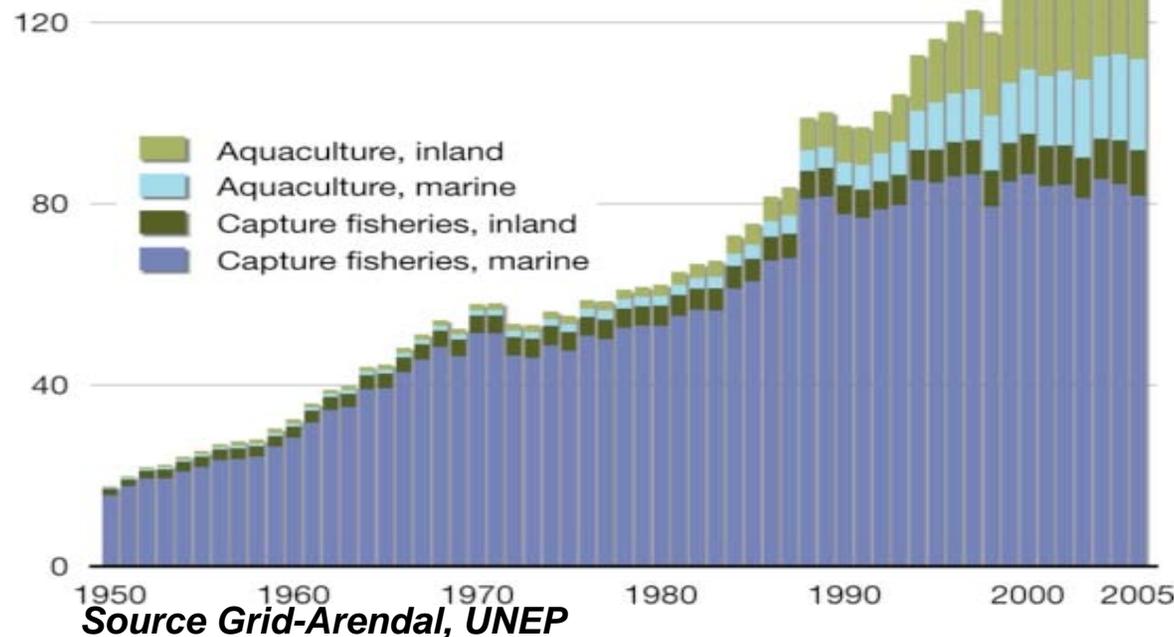
**DRIVING FORCES
FOR GLOBAL
EXPANSION OF
AQUACULTURE:**

- 1) GLOBAL POPULATION
GROWTH
- 2) CAPTURE FISHERIES
AT MAXIMUM HARVESTS



Source: World Bank

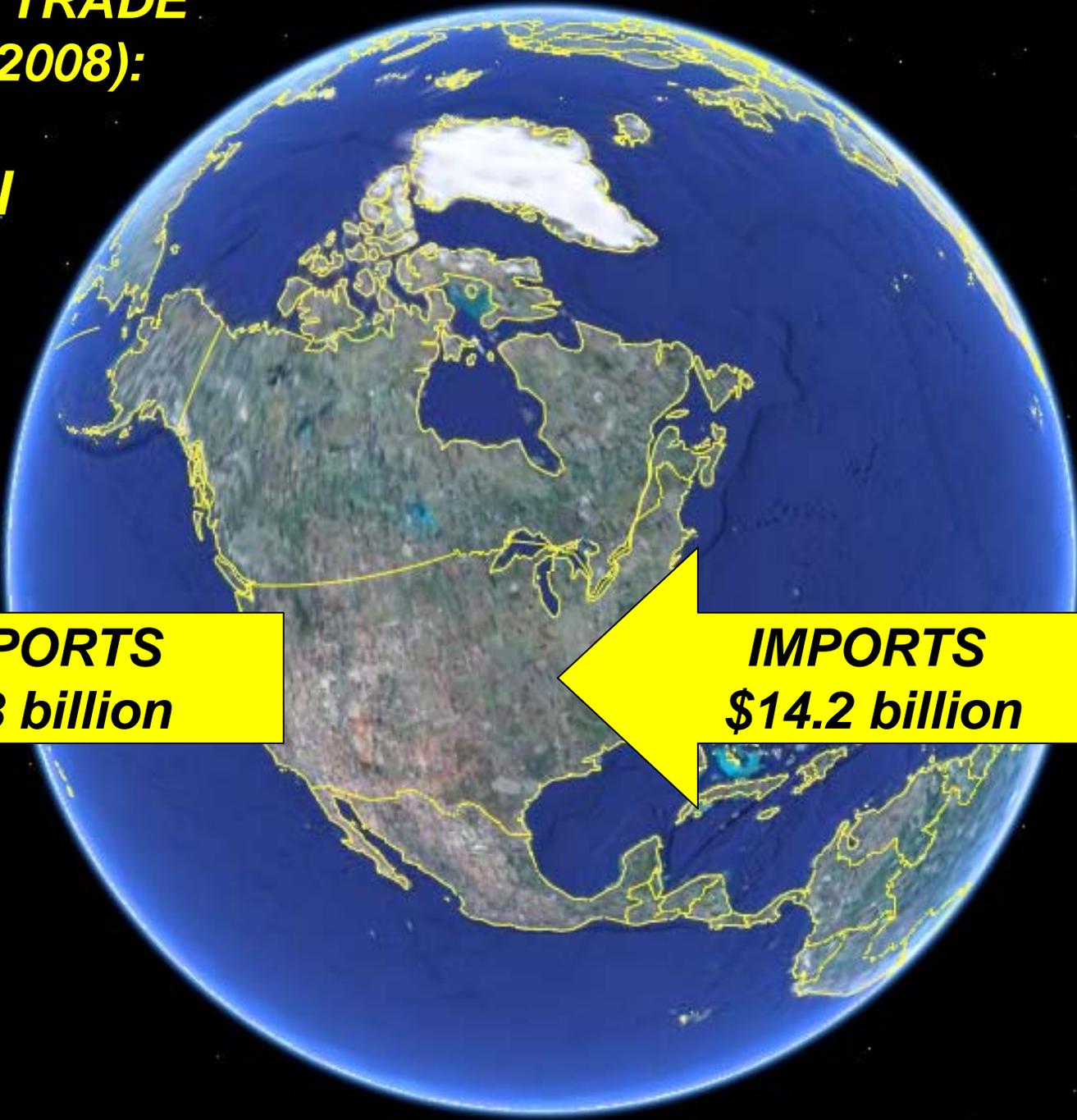
**World fisheries and
aquaculture production
(million tonnes)**



**Global aquaculture production
will have to at least double
in the next 20 years to meet
projected demand for seafood**

**US SEAFOOD TRADE
IMBALANCE (2008):**

\$10 BILLION



**EXPORTS
\$4.3 billion**

**IMPORTS
\$14.2 billion**

Hawaii Situation

Consumption of Seafood

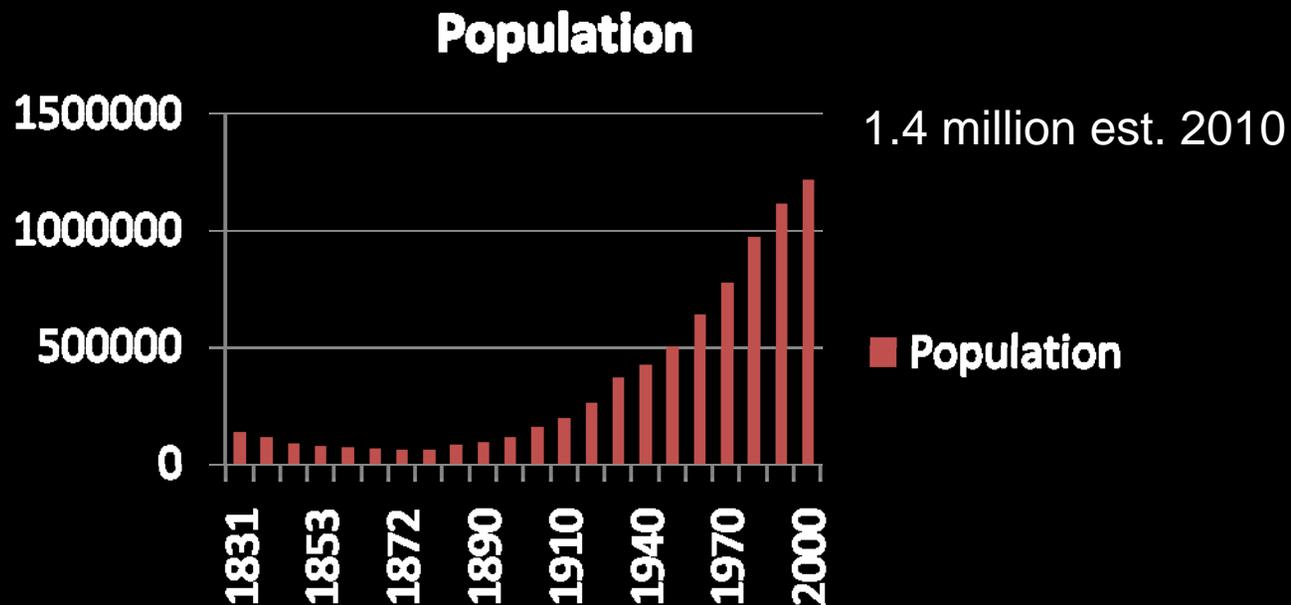
50+ million lbs/yr*

Fisheries production

33+ million lbs/2008

Aquaculture production

0.6 million lbs/2007
\$34.7 million*



Aquaculture in Hawaii

360 Fishponds	2 million lbs/yr	1778*
28 Fishponds		1977**
7 Fishponds	38,000 lbs/yr	1980

70 aquacult. farms	0.6 million lbs/yr	2007
	221 jobs	production

Loko kuapa (seawater fishpond with stone walls)

*Kikuchi, 1976; Costa-Pierce, 1987 **Madsen & Paulsen, 1977

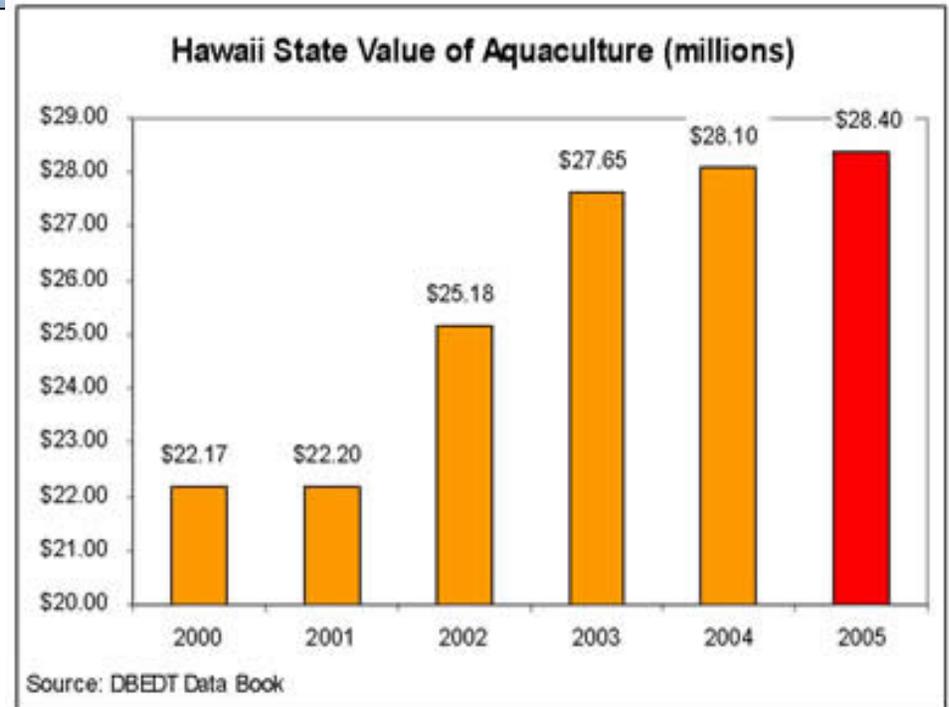
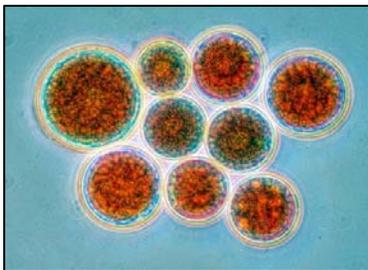
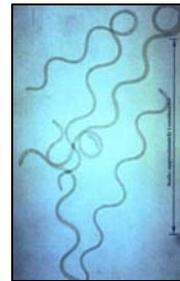
Hawai'i 2050 Sustainability Plan

- Develop a more diverse and resilient economy
- Create a sustainability ethic
- Increase production and consumption of local foods and products, particularly in **AQUACULTURE**.
- **NEED:** R & D, Demonstration programs, Commercialization of Marine Aquaculture.



Aquaculture Sales Reach a Record in 2008

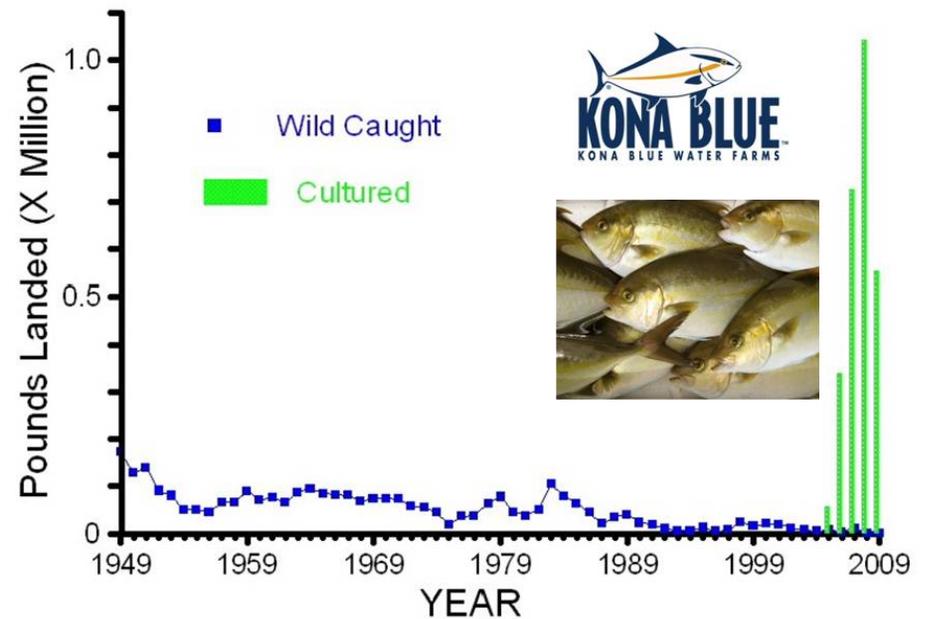
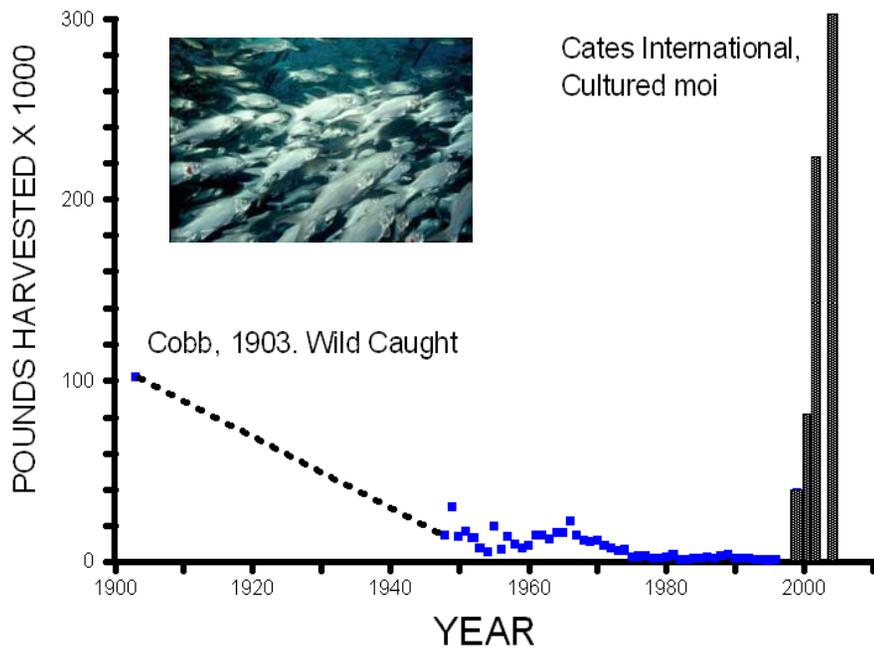
\$34.7 Million



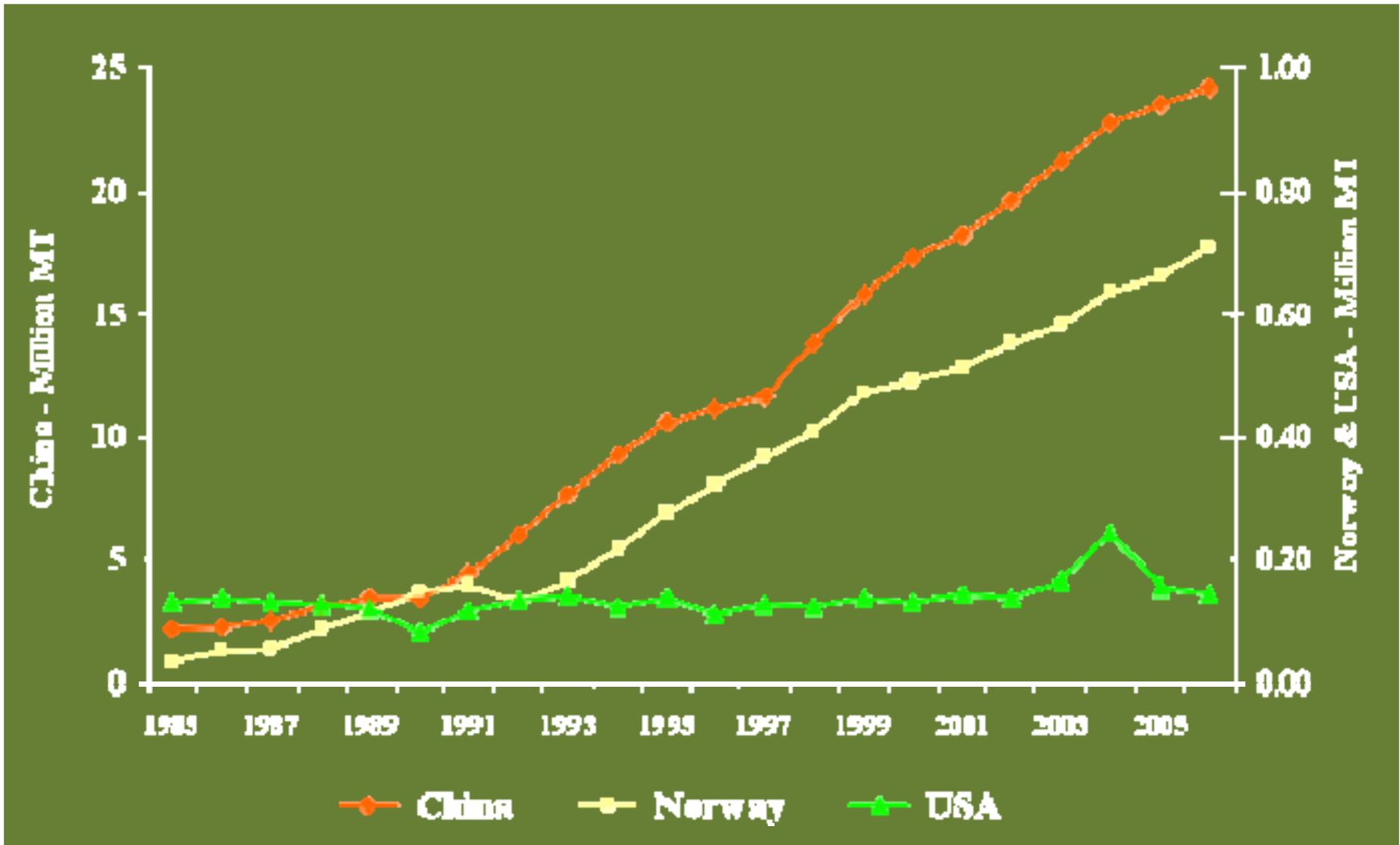
Open Ocean Aquaculture

- MOI production

- Kahala production



GROWTH OF AQUACULTURE IN THE USA IS FALLING BEHIND OTHER NATIONS



SOURCE: FISHSTAT 2008

Leadership in R & D



First Vaccines for Aquaculture



Open Ocean Technology

**Self contained
marine aquaculture
At COMB, Baltimore.**

**Methane generated
Powers generator for
System.**



What Research Needs?

- Science needed for effective regulation
- Answers for environmental, economic, social, and ecosystem management questions.
- Develop species, technologies, and BMPs for marine stock enhancement.
- Research on relationship between fishing, habitat, stock enhancement, and aquaculture.



**Pond culture of microalgae
Alternative feeds**

CHALLENGES FOR THE 21st CENTURY:

How can opportunities be created to expand aquaculture in the US to:

- 1) complement society's core values,
- 2) benefit or have a neutral effect on the environment,
- 3) be sustainable in the long-term,
- 4) create economic opportunities and jobs,
- 5) ensure long-term food security of the US?