



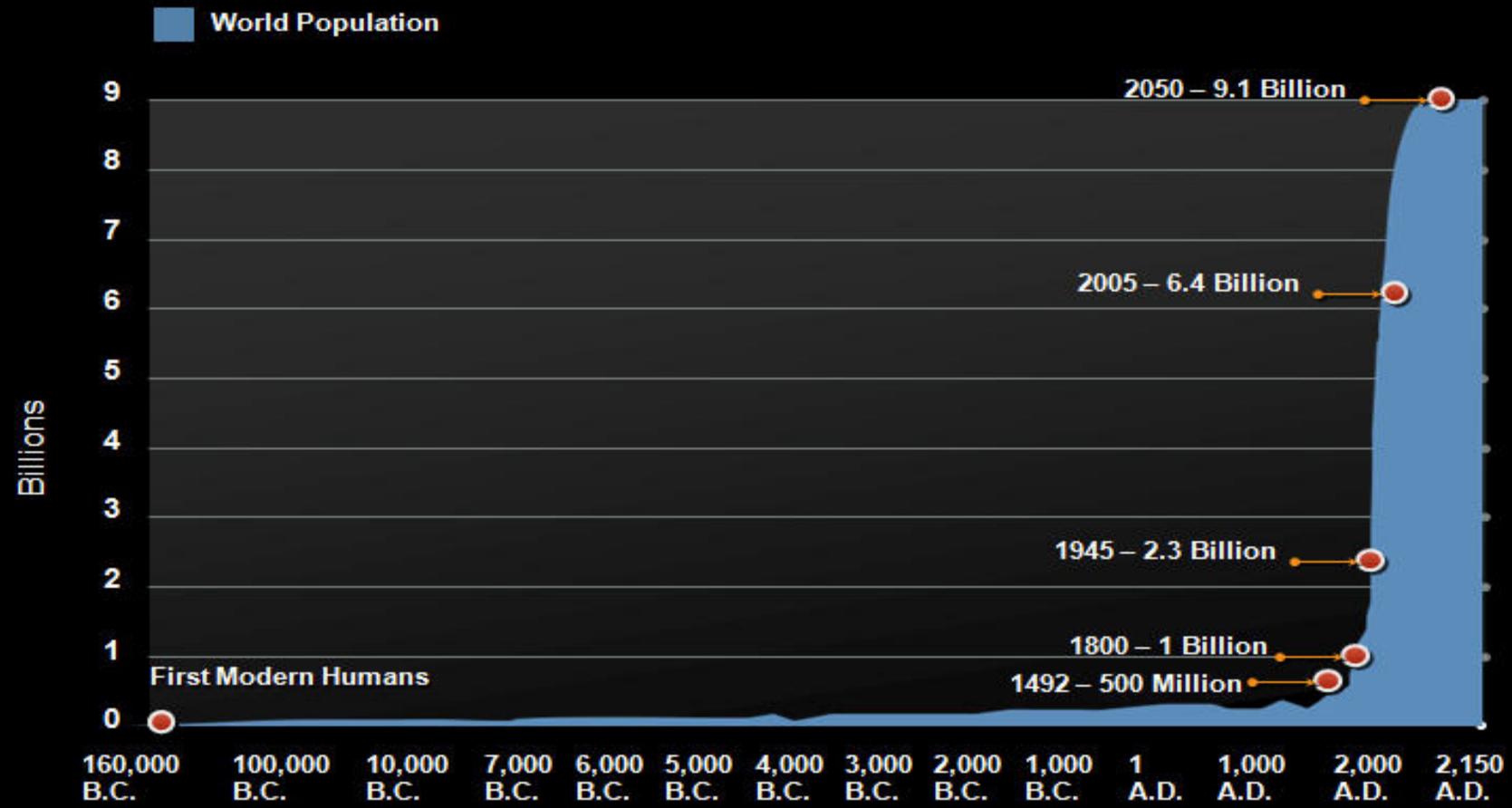
MAINE AQUACULTURE ASSOCIATION

# NATIONAL AQUACULTURE RESEARCH NEEDS

An Industry Perspective

**SINCE 1950 WE HAVE CONSUMED 2X THE RESOURCES THAN ALL PRIOR HISTORY COMBINED**

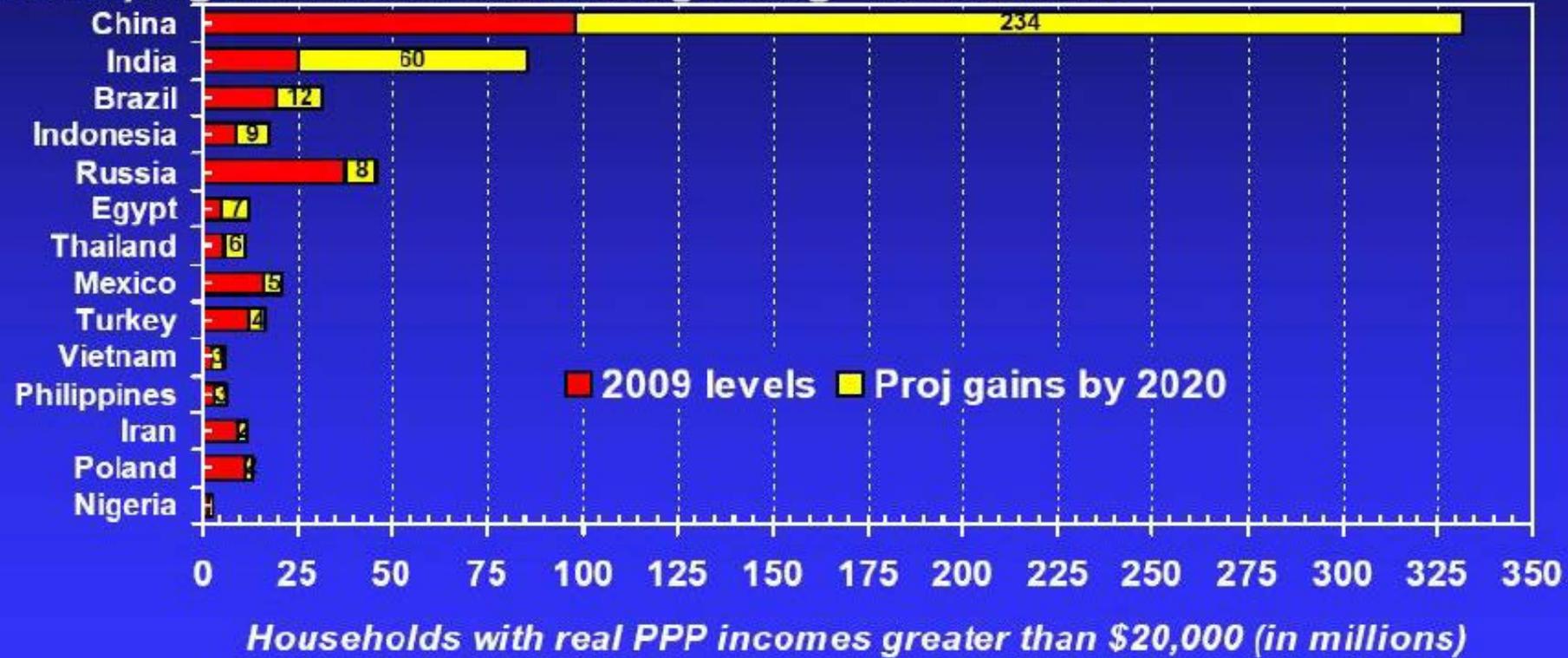
# Population Growth Throughout History



Source: United Nations

# RISING LIVING STANDARDS

*Developing countries with fastest growing "middle class"*



Source - USDA Foreign Agricultural Service

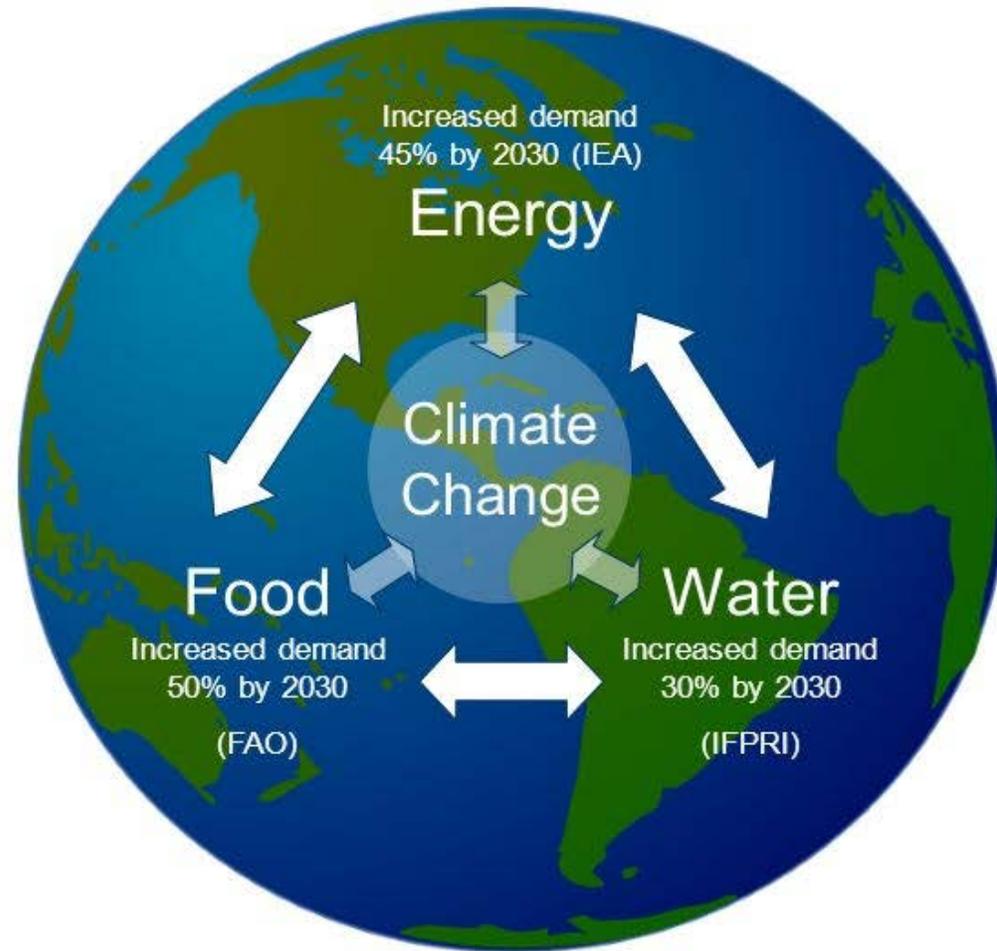


# WATER - NUTRIENTS



## Global food system – Future projections

1. Increasing population
2. Changing diets
3. Losing land to urbanisation and rising sea levels
4. Water limits
5. Phosphorous limits



# ***EFFICIENCIES OF DIFFERENT ANIMAL PROTEIN SECTORS***

## ***FOOD AND FRESH WATER REQUIREMENTS TO PRODUCE 1KG***



***8 kg feed***  
***1857 gallons***



***3 kg feed***  
***756 gallons***



***2 kg feed***  
***469 gallons***



***1.1 kg feed***  
***132 gallons***

***Aquatic organisms 10-20% more efficient than land animals  
at converting energy, water and feed to meat and protein***

***WHY?***

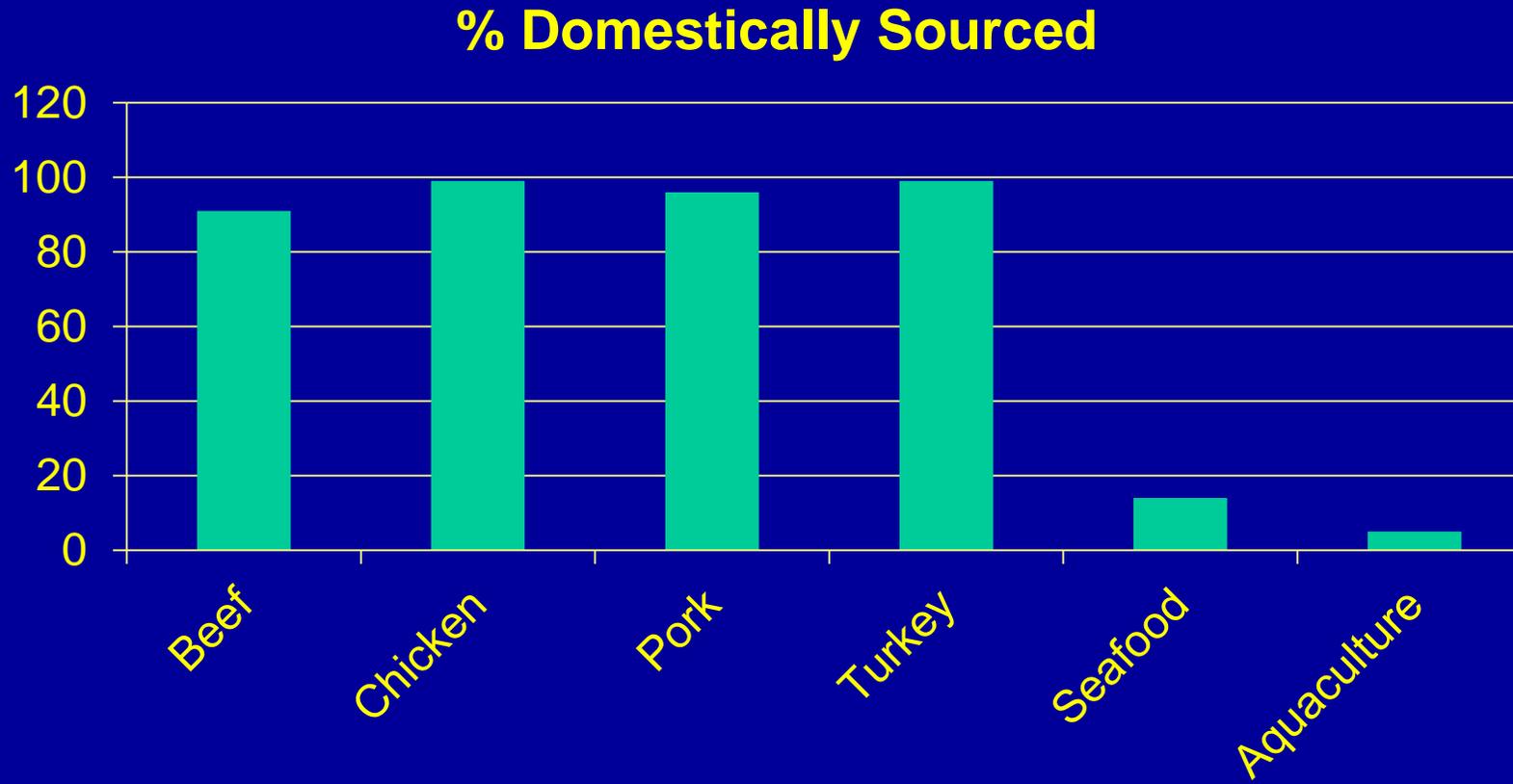
# MORE ON EFFICIENCIES AND IMPACTS

## YIELDS AND RETENTION RATES FOR VARIOUS ANIMALS

	ATLANTIC SALMON	PIGS	CHICKEN	LAMB
HARVEST YIELD (%)	86-92	72.5	65.6	46.9
ENERGY RETENTION(%)	23	14	10	5
PROTEIN RETENTION (%)	31	18	21	5

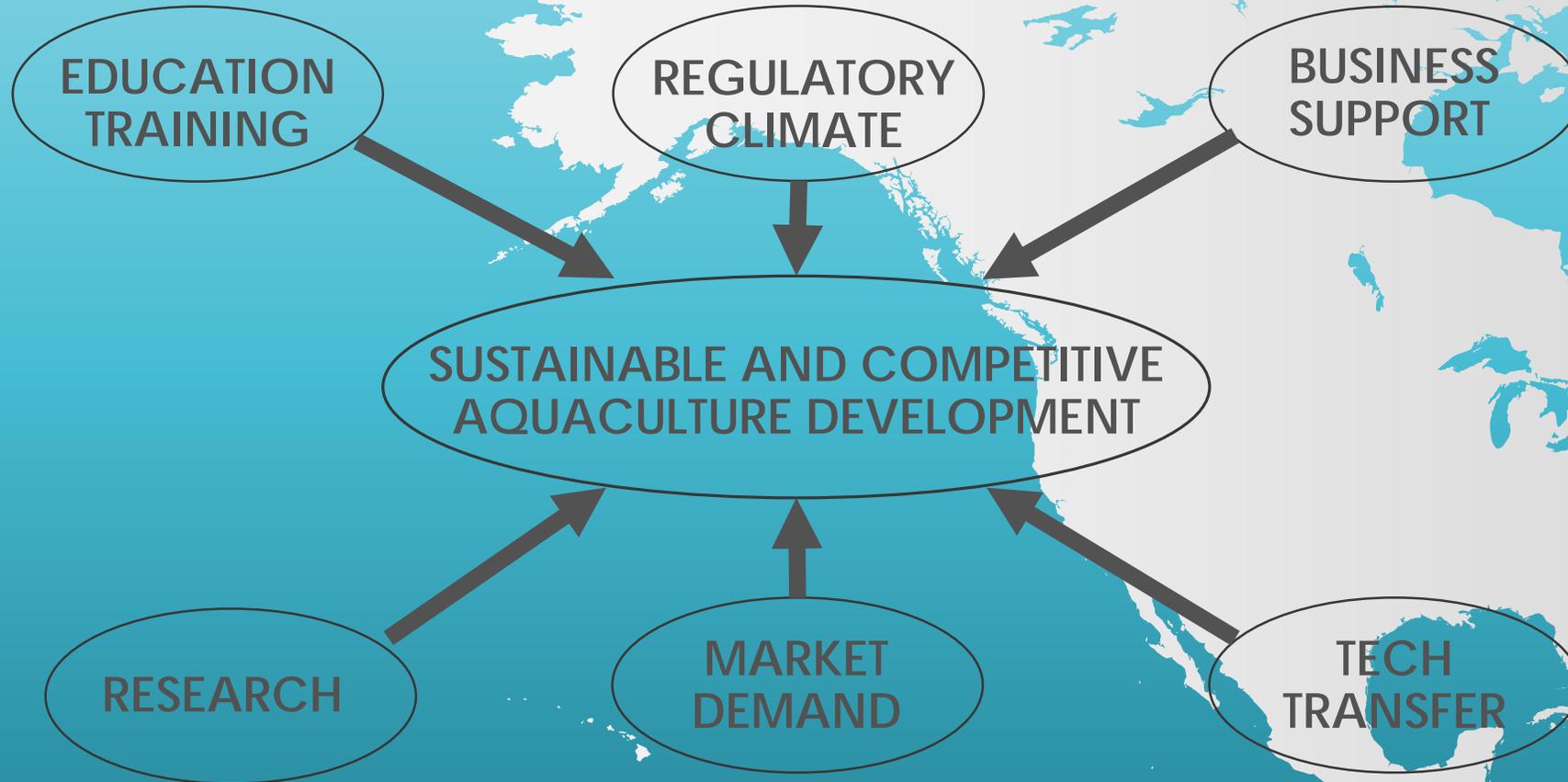


# SHARE OF U.S. CONSUMPTION SUPPLIED BY DOMESTIC PRODUCTION





# KEY COMPONENTS OF AQUACULTURE DEVELOPMENT





## COMMON "TYPES" OF AQUACULTURE RESEARCH PROGRAMS

- SHORT/MEDIUM TERM "FAST" RESPONSE
- LONG TERM PROGRAMS
- REGIONAL FOCUSED
- SPECIES FOCUSED
- BOTTLENECK/CHALLENGE FOCUSED
- PRODUCTION METHOD FOCUSED



# National Strategic Plan For Federal Aquaculture Research (2014-2019)

## 9 Strategic Goals

- Advance Understanding of the Interactions of Aquaculture and the Environment
- Employ Genetics to Increase Productivity and Protect Natural Populations
- Counter Disease in Aquatic Organisms and Improving Biosecurity
- Improve Production Efficiency and Well-Being
- Improve Nutrition and develop Novel Feeds
- Increase Supply of Nutritious, Safe, High-quality Seafood and Aquatic Products
- Improve Performance of Production Systems
- Create a Skilled Workforce and Enhance Technology Transfer
- Develop and Use Socioeconomic and Business Research to Advance Domestic Aquaculture



## ROLE OF RESEARCH IN NATIONAL AQUACULTURE DEVELOPMENT

- REGULATORY AND MANAGEMENT CONCERNS
- “SPARING” CAPITAL
- REDUCING RISK
- REDUCING VARIABILITY....INCREASING PREDICTABILITY
- INCREASING PRODUCTION EFFICIENCY
- INCREASING ROI
- PRODUCT/METHOD “PROSPECTING”
- INNOVATION
- IMPROVING PUBLIC UNDERSTANDING/PERCEPTION



## INDUSTRY AQUACULTURE RESEARCH "PRIORITIES" 2018

- GENETICS
- ANIMAL/PLANT HEALTH AND WELFARE
- NUTRITION
- ENGINEERING/TECHNOLOGY
- SPECIES ASSESSMENT
- FARM/ENVIRONMENT INTERACTIONS
- PRODUCT DEVELOPMENT
- MARKET DYNAMICS AND CONSUMER PREFERENCES
- RISK ANALYSIS AND MANAGEMENT
- FARM/PRODUCTION PLANNING AND MANAGEMENT
- REGULATORY COSTS AND DUPLICATION