



FOMENTO AL CONSUMO DE PRODUCTOS PESQUEROS Y ACUÍCOLAS MEXICANOS

WWW.FOROECONOMICO.CONAPESCA.GOB.MX

SAGARPA
SECRETARÍA DE AGRICULTURA,
GANADERÍA, DESARROLLO RURAL,
PECUARIA Y ALIMENTACIÓN



Aquaculture & Nutrition: Can Fish Help Feed the Bottom Billion?

Siwa Msangi

Miroslav Batka

Environment & Production Technology Division

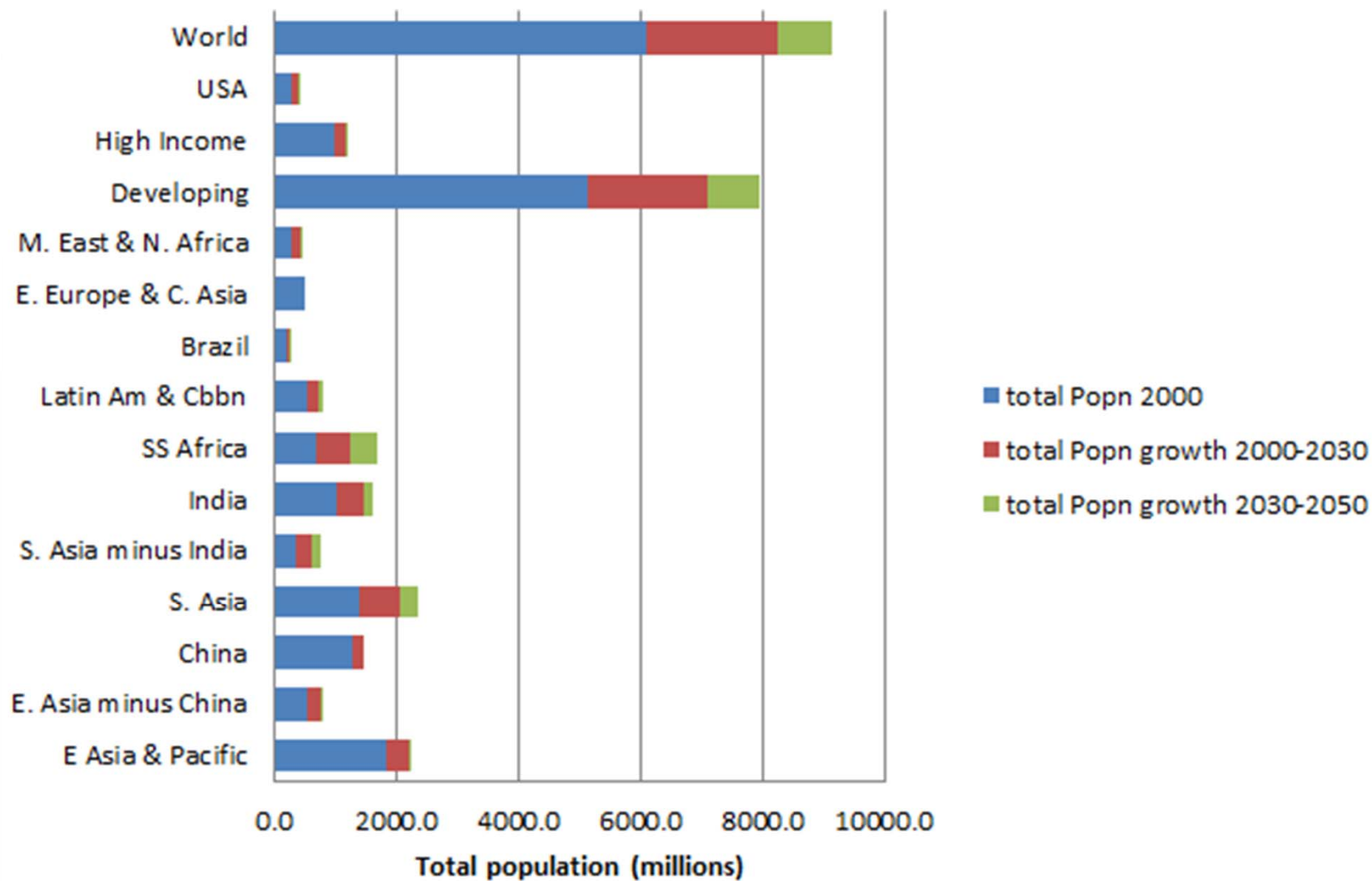
International Food Policy Research Institute (IFPRI)

During the course of this presentation....

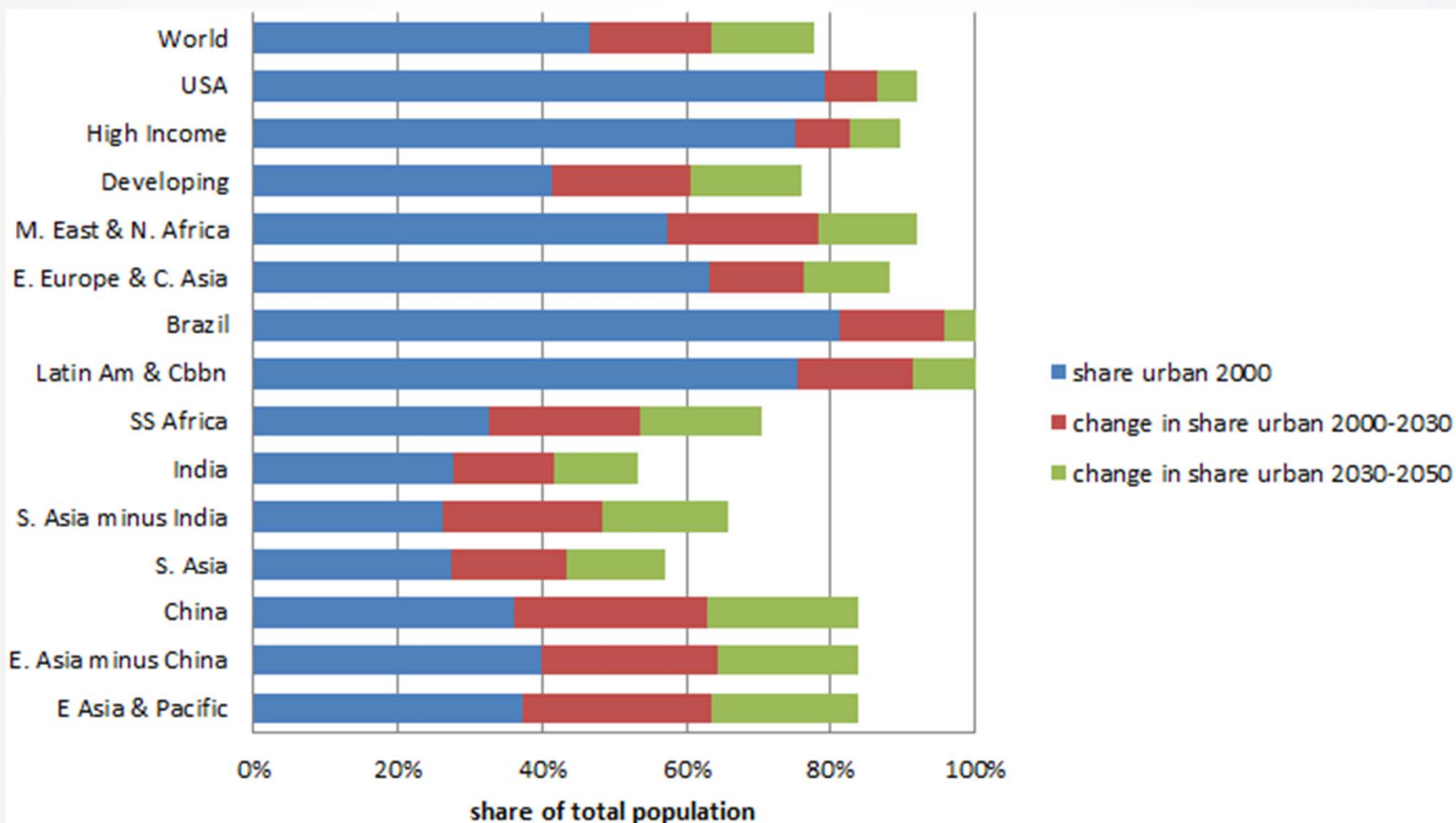
I will:

- Discuss some trends and projections of socio-economic growth, food consumption and nutrient intake to 2050
- Look at those regions which fall in the 'Bottom Billion' of nutritional sufficiency and intake
- Look at recent projections of aquaculture growth
- Consider the role that fish & aquaculture can play in helping the 'Bottom Billion' of global nutrition

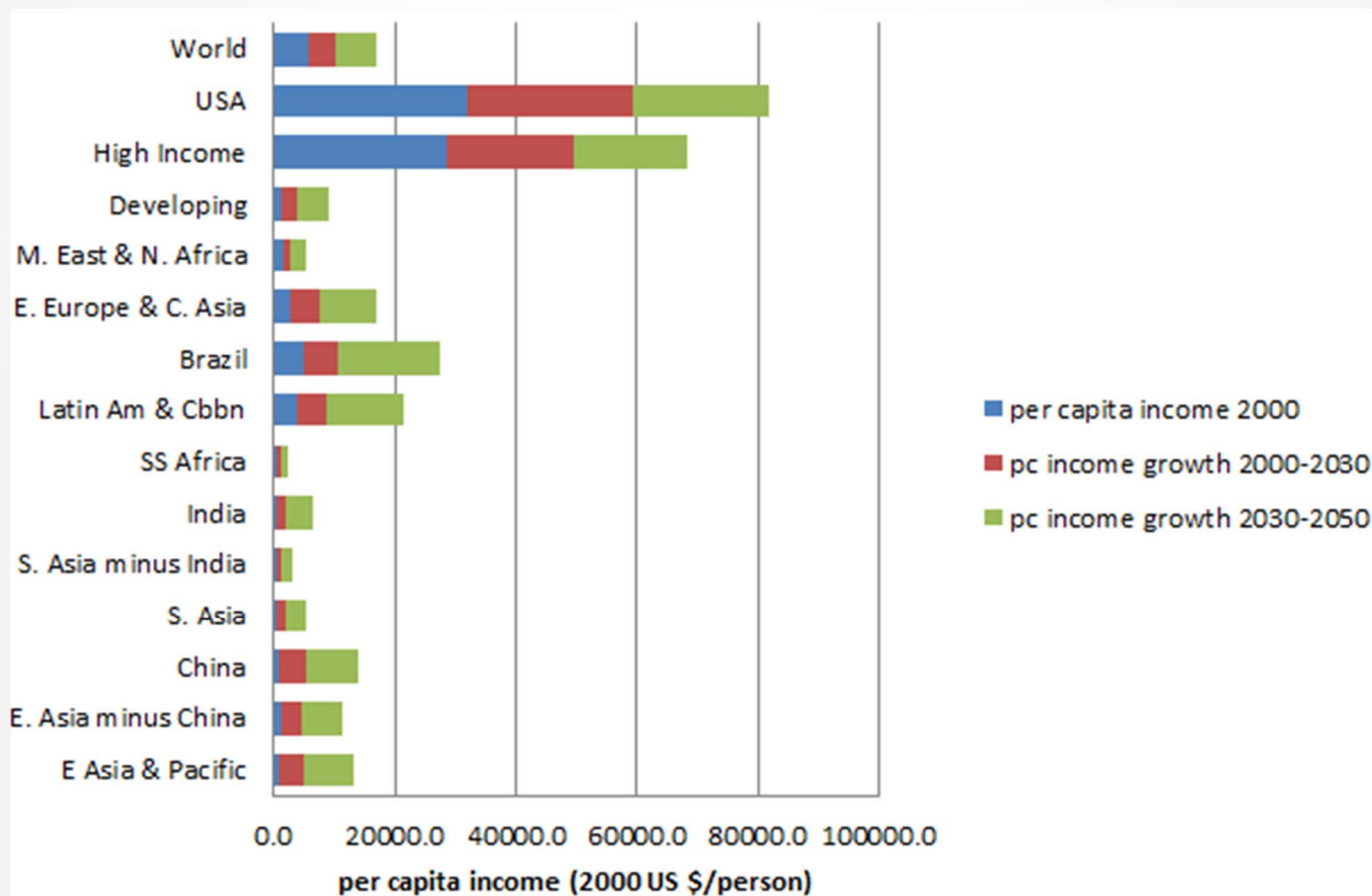
Population projections to 2050



Urbanization projections to 2050

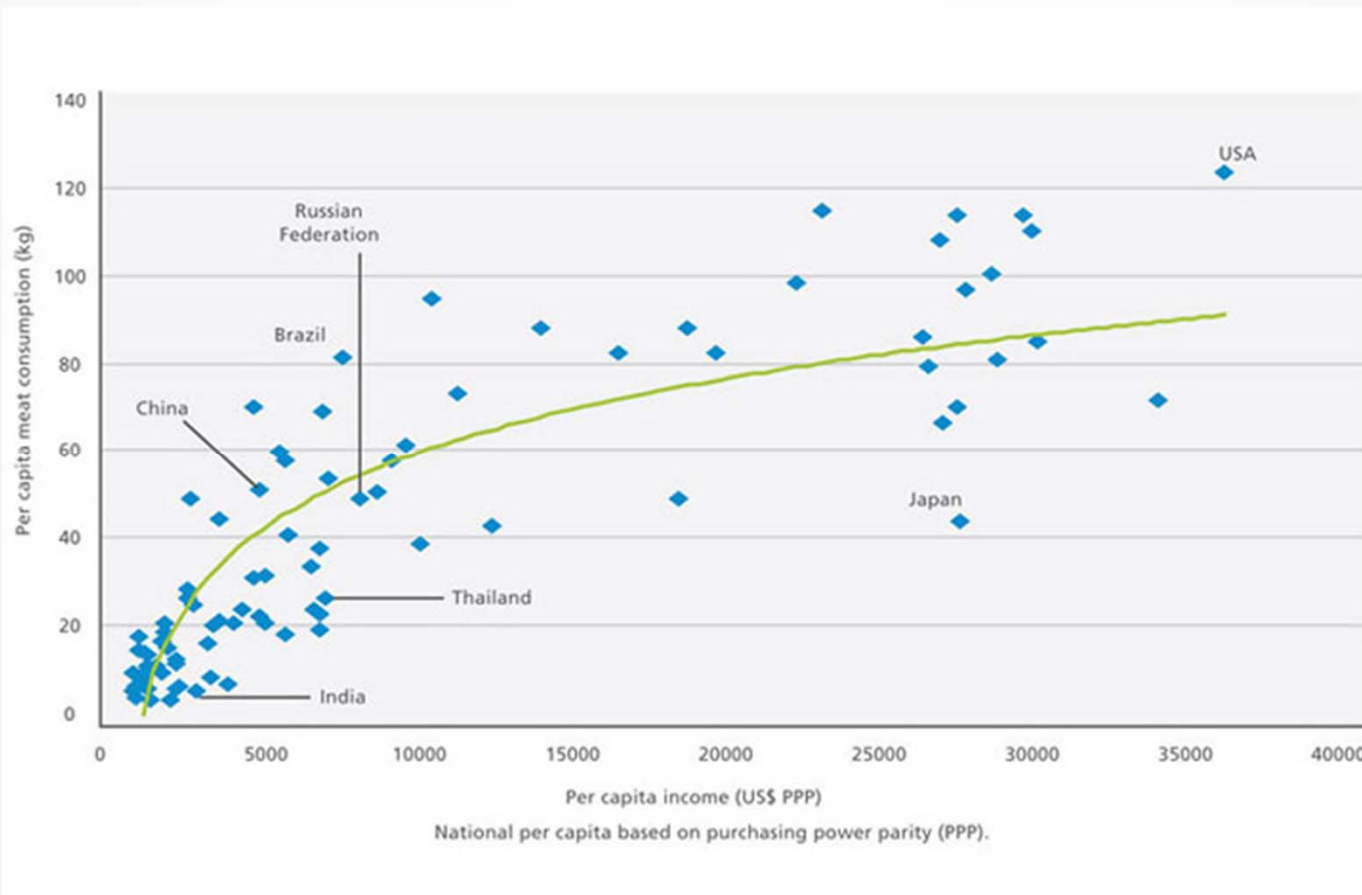


Per capita income projections to 2050

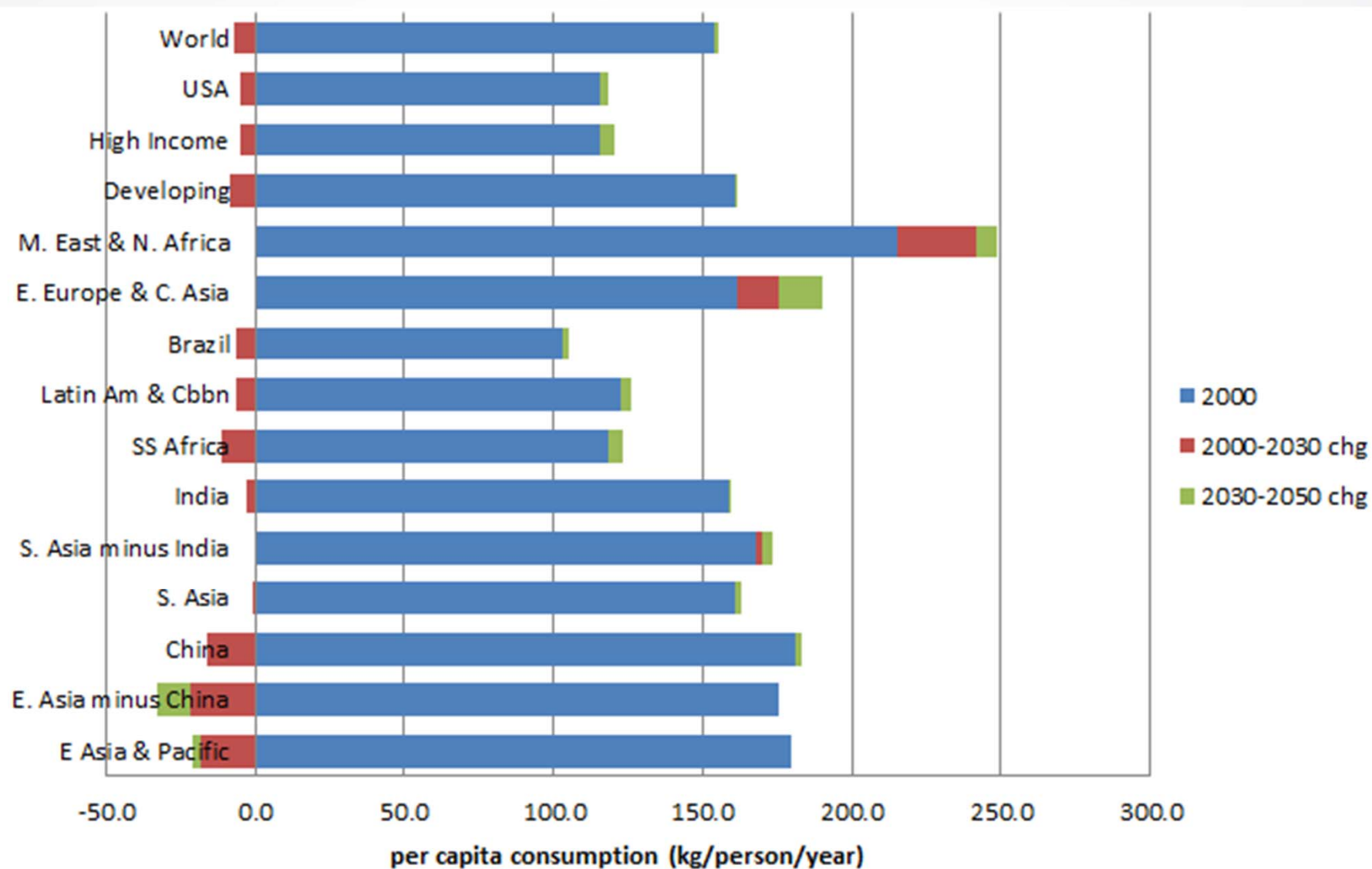


Consumption of Meat

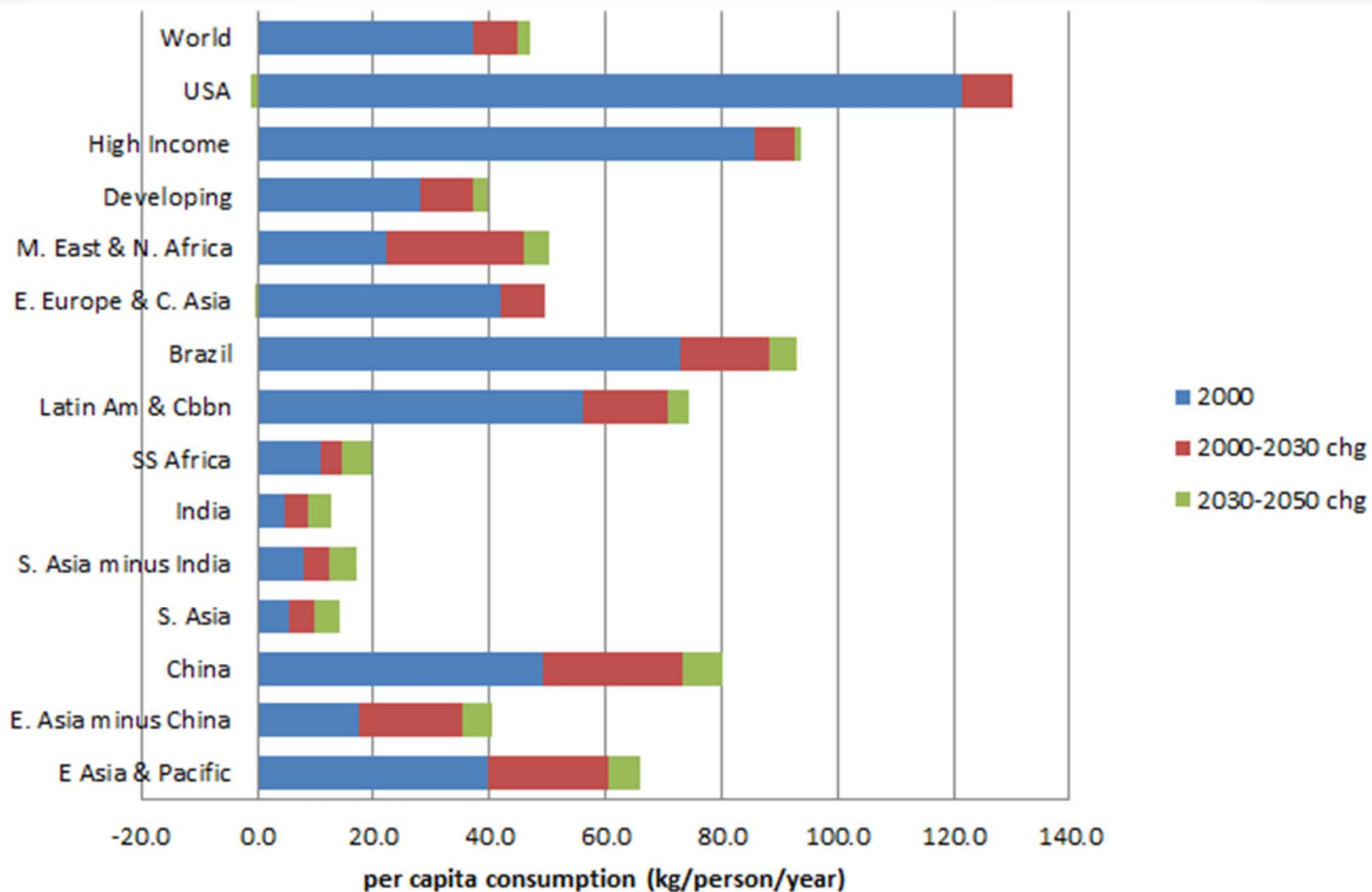
As people get richer
they consume more animal products



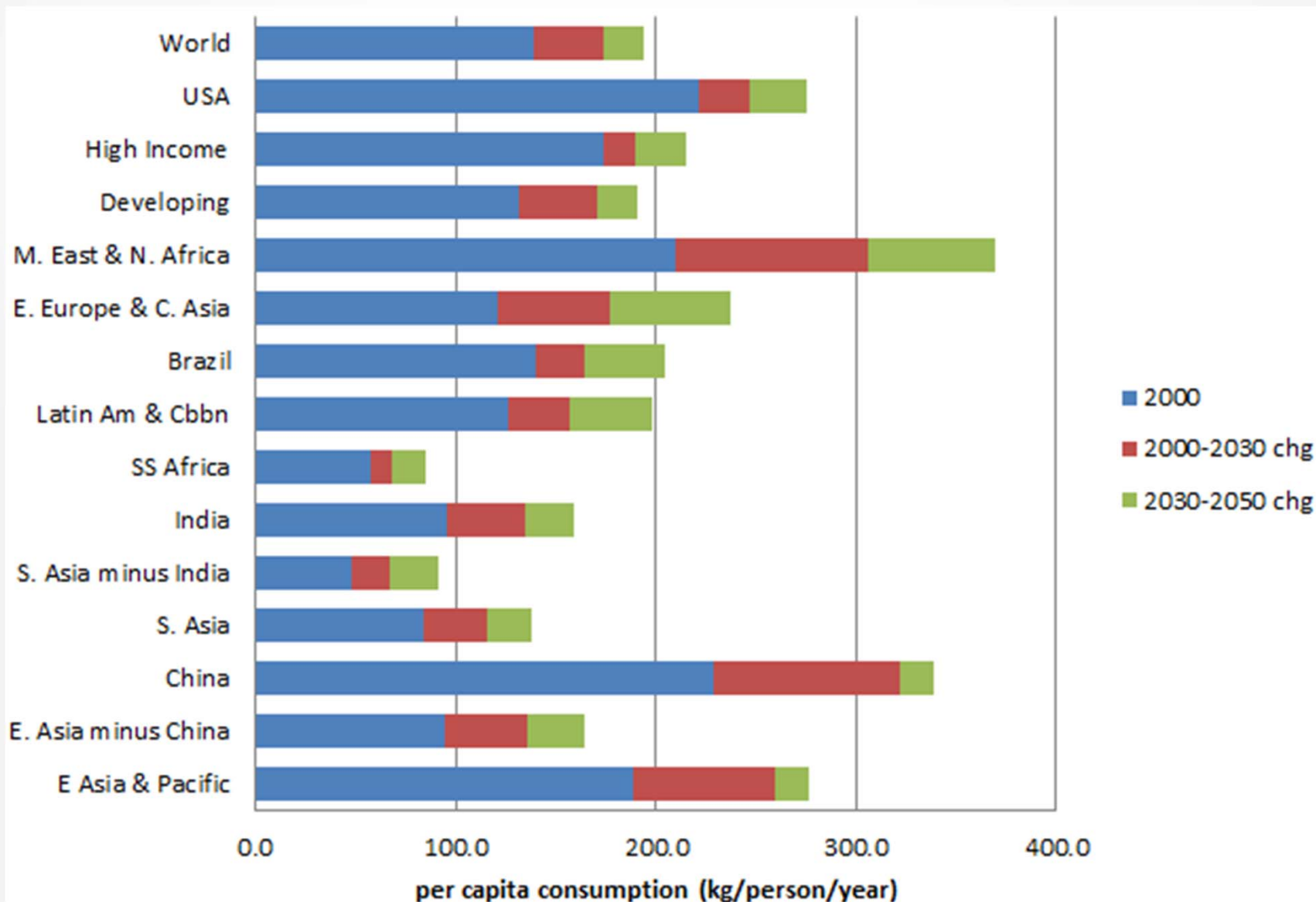
Per Capita Cereal Consumption



Per Capita Meat Consumption



Per cap Fruit & Vegetable Consumption



Looking more closely at diet quality

- We can look more closely at the macro-nutrient component of consumption to get a sense of diet quality
- In our projections we focus on these macro-nutrients:
 - Carbohydrates
 - Protein
 - Dietary Fiber
- Others like Fat and water are also important
- For now – we don't look at micro-nutrients (especially since the question of bio-availability is tricky for nutrients like iron)

General description of a 'healthy' diet

Dietary factor	Goal (% of total energy, unless otherwise stated)
Total Fat	15--30%
Total carbohydrate	55--75%
Protein	10--15%
Cholesterol	<300 mg per day
Sodium chloride (sodium)	<5 g per day (<2 g per day)
Fruits and vegetables	5400 g per day
Total dietary fibre	From foods

Source: Table 6, WHO (2003)

The 'Bottom Billion' of dietary quality

- There is more than one way to characterize poor nutrition and dietary quality
- In this analysis – we look at those regions which fall into the bottom 20% of regional rankings for sufficiency of macro-nutrient intake
- In terms of these macro-nutrients:
 - Carbohydrates – fall below 40% of RDI
 - Protein – fall below 25-30% of RDI
 - Dietary Fiber – fall below 20% of RDI
- We identify those regions which fall into this bottom bracket at the beginning of our projections

country/region	Fiber	Protein	Carbohydrates
Benin	x	x	x
Burkina Faso		x	x
Burundi	x	x	x
Cameroon	x	x	
Central African Republic	x		x
Chad	x	x	x
Congo	x	x	x
Democratic Republic of Congo	x	x	x
Ethiopia		x	x
Côte d'Ivoire	x	x	x
Kenya	x	x	x
Madagascar	x	x	x
Mali		x	x
Mauritania	x		x
Malawi	x	x	x
Mozambique	x	x	x
Niger		x	x
Rwanda	x	x	x
South Africa	x	x	
Tanzania	x	x	x
Togo	x	x	x
Uganda	x	x	
Zimbabwe	x	x	

African Countries in the 'Bottom Billion'

Note: The "x" indicates countries that fall below the threshold

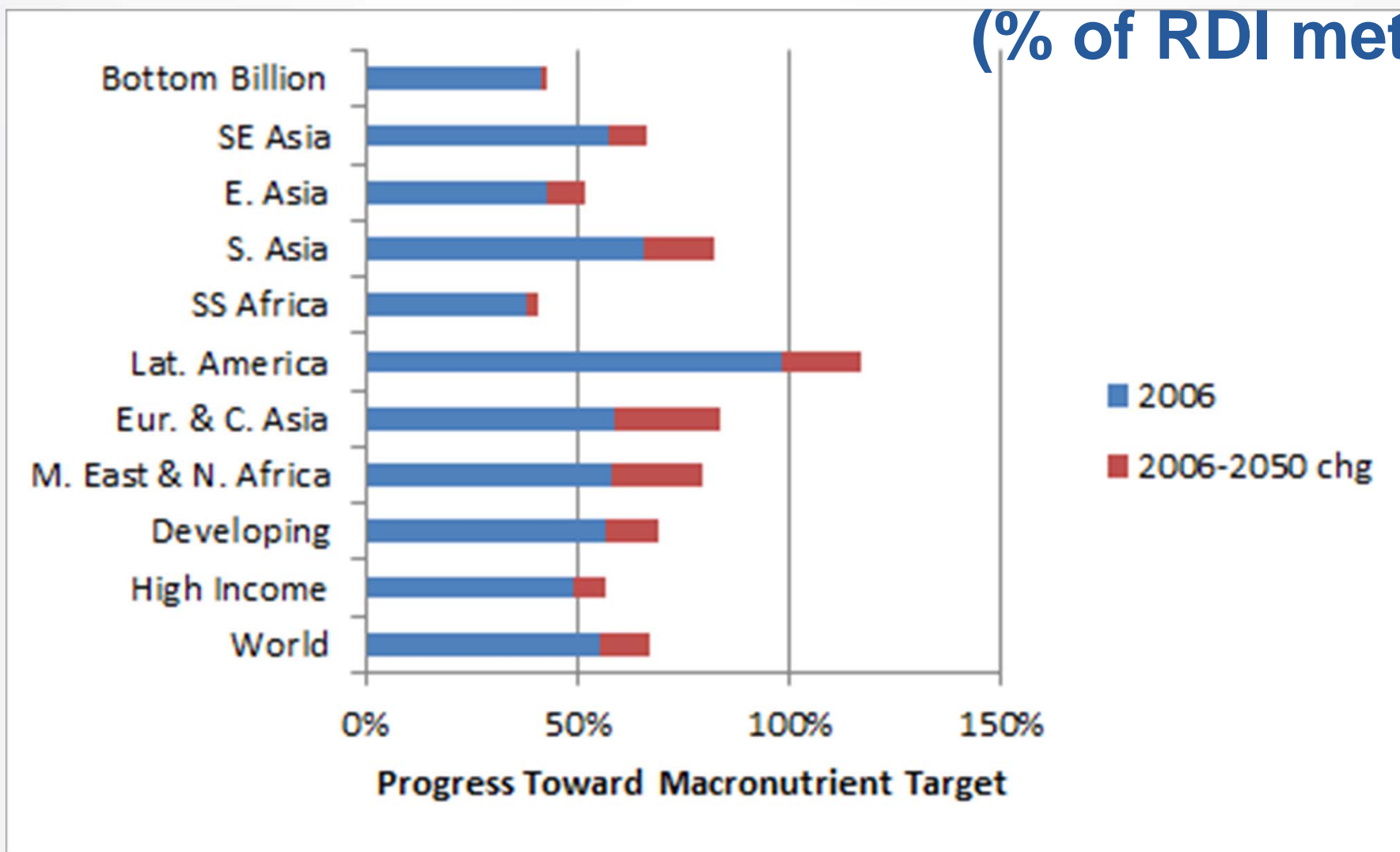
‘Bottom Billion’ countries in Asia and Latin America

Country/region	Fiber	Protein	Carbohydrates
Bangladesh	X	X	X
Central America and the Caribbean	X	X	
Colombia	X	X	
Mongolia	X		X
Myanmar	X	X	X
Nepal	X	X	X
North Korea	X	X	X
SE Asia (Cambodia, Laos)	X	X	X
Sri Lanka	X	X	X
Vietnam	X		X

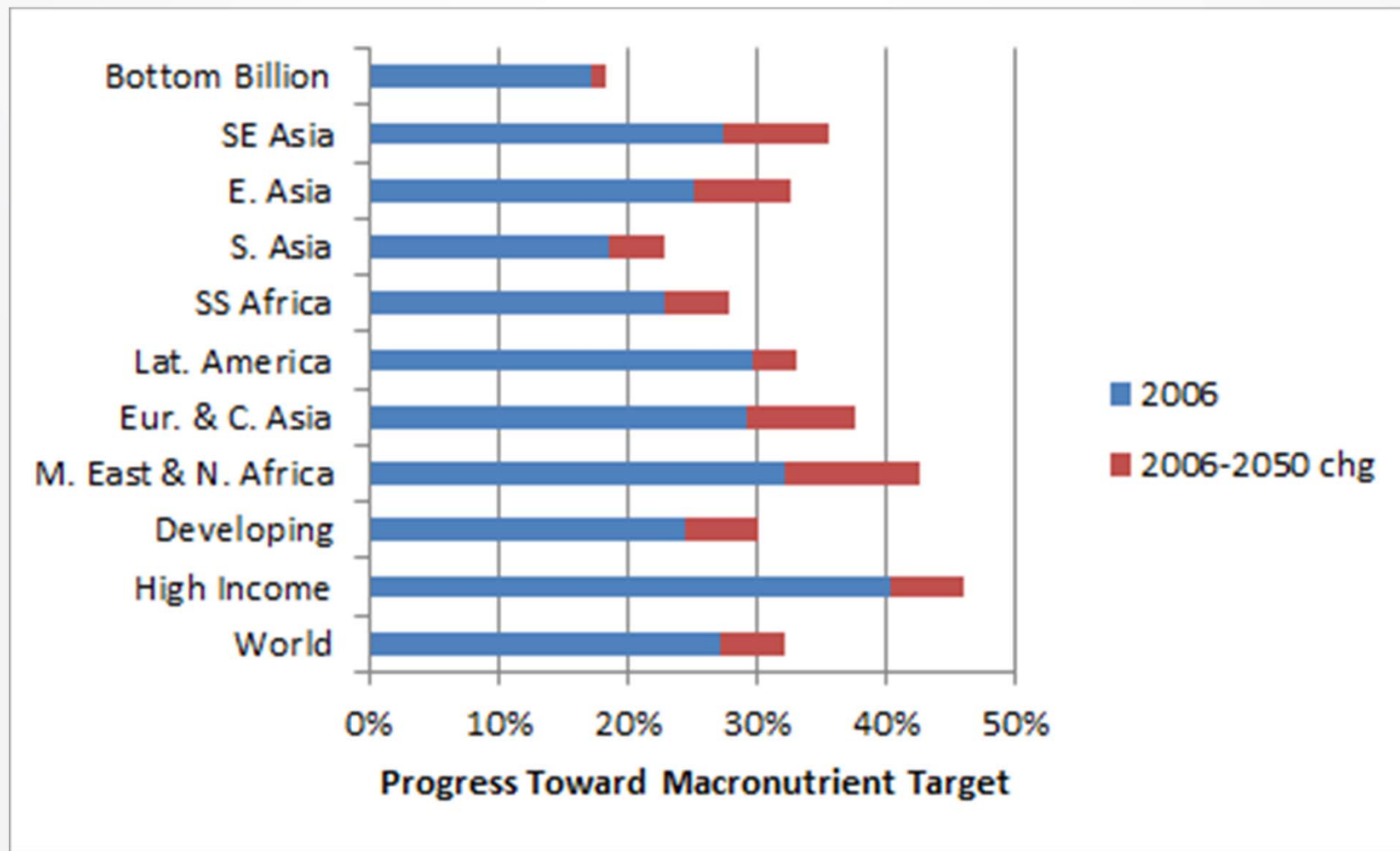
Note: The “x” indicates countries that fall below the threshold

Achievement of RDI for carbohydrates

(% of RDI met)

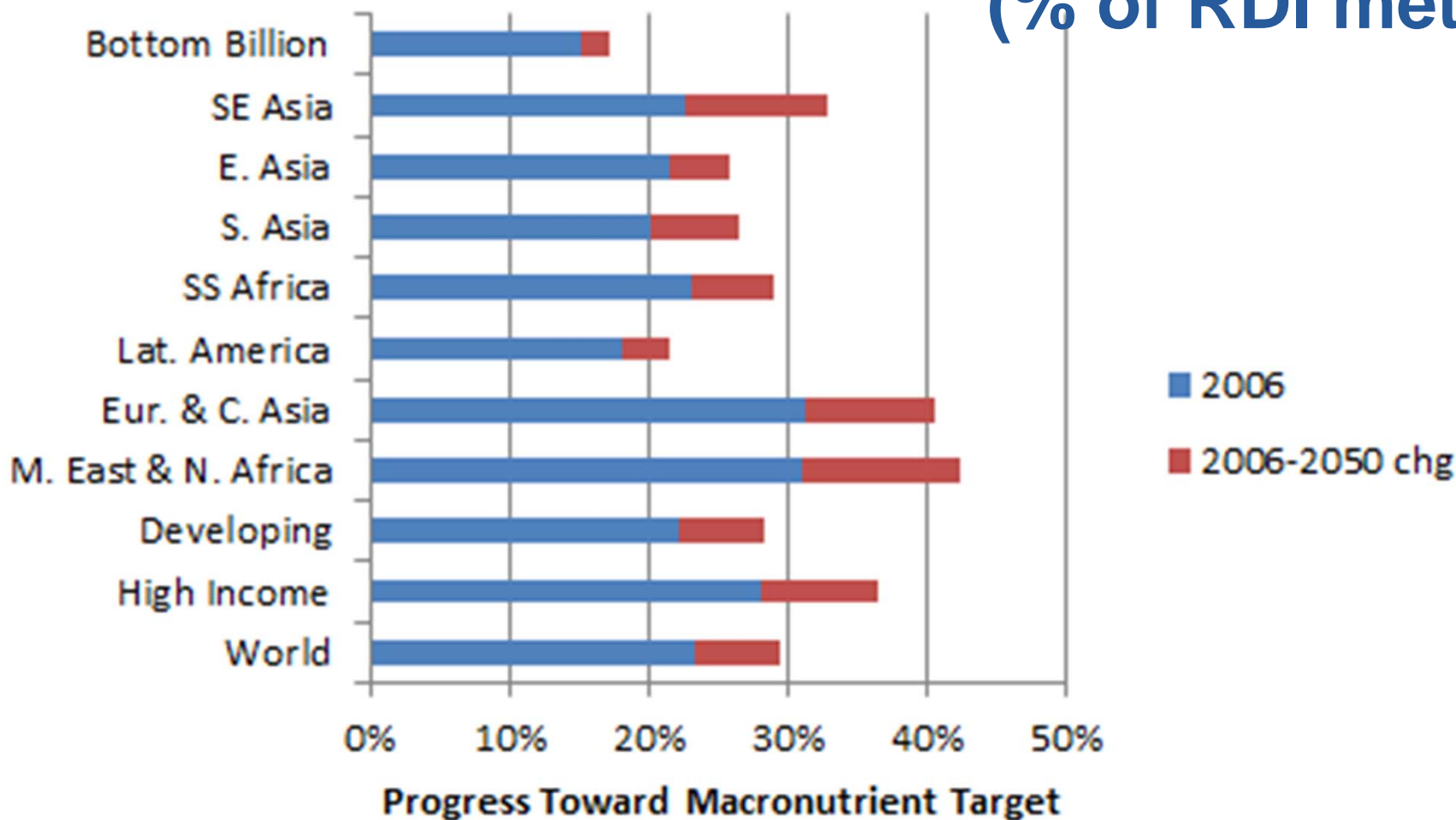


Achievement of RDI for proteins (% of RDI met)



Achievement of RDI for dietary fiber

(% of RDI met)



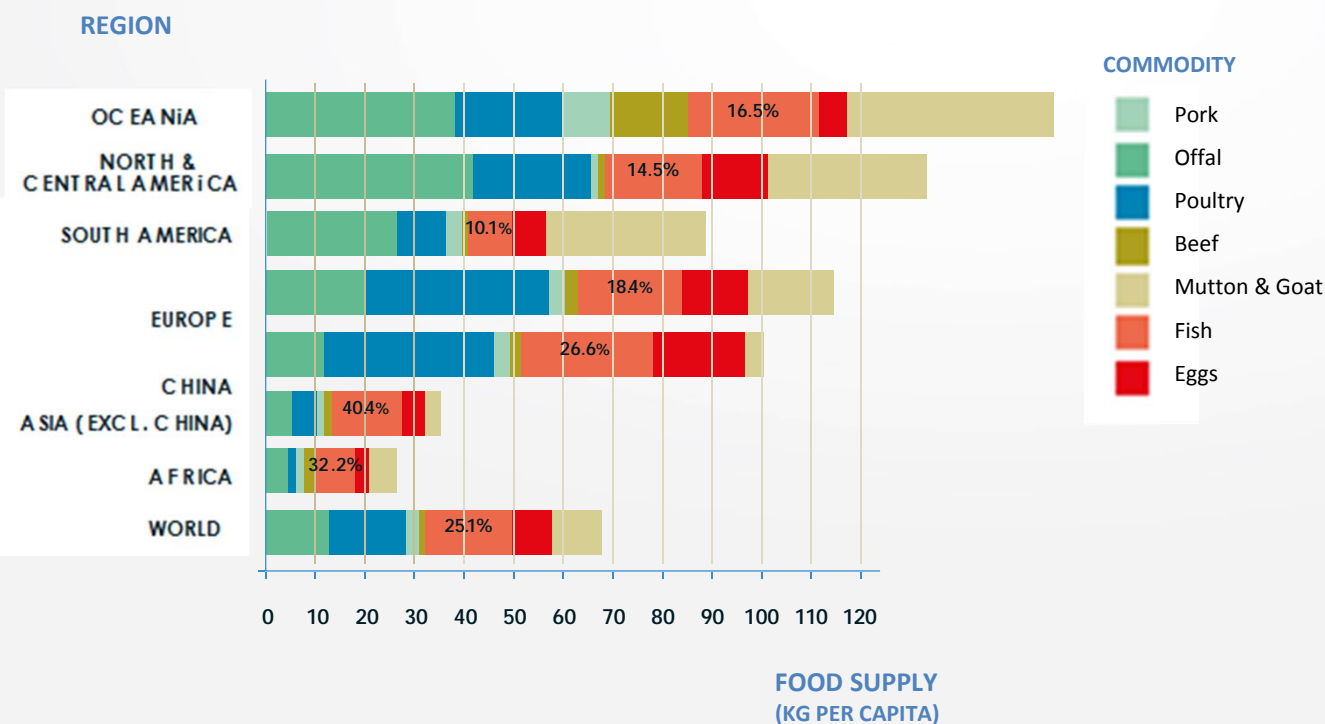
Little progress for the ‘Bottom Billion’

- According to our baseline projections, the ‘bottom billion’ don’t make very large gains in their progress towards meeting RDI of key macro-nutrients
- Other regions, by contrast, progress strongly in meeting RDIs to 2050 – especially E, SE Asia & MENA
- LAC and S Asia do better in increasing carbohydrate RDI than for protein or fiber
- SS Africa does better on average compared to the ‘bottom billion’ and shows there are some regions that have potential to do well

How to help those at the bottom?

- We know the factors that drive nutrition & consumption
 - Household preferences for foods (changes with income)
 - Household income & purchasing power (depends on prices)
 - Household methods for preparing foods
 - These factors are all closely-tied to each other
- If we look more closely at the fish sector, as a source of animal-sourced foods – we might see the potential for improving the outlook for nutrition through the aquaculture-driven growth
- Can this be a way to improve the nutritional outlook of the ‘bottom billion’?

Animal source food (ASF) from different regions

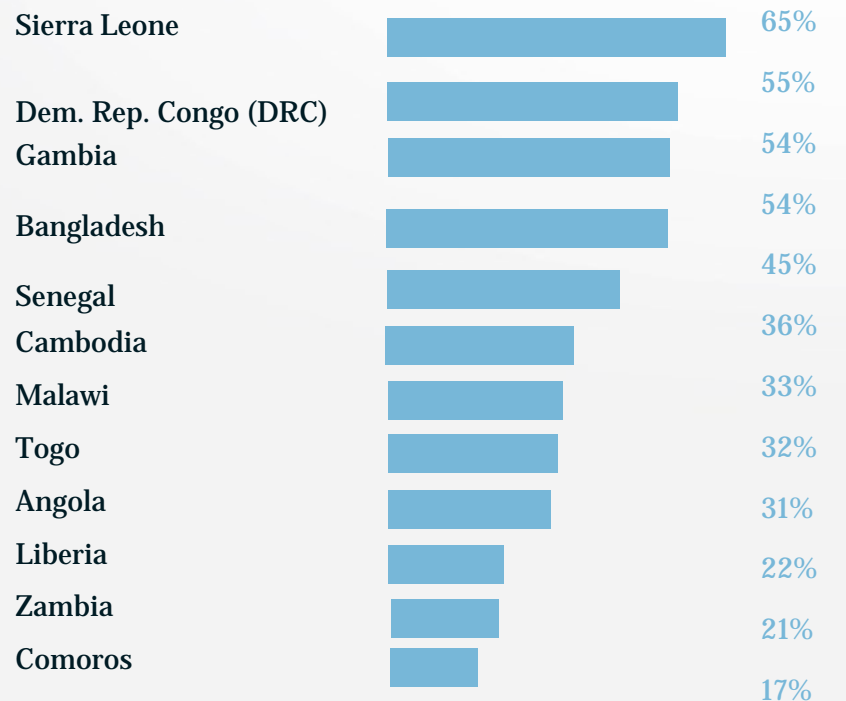


Of the countries with the lowest per capita consumption of animal-sourced foods (ASF) – Asia (excl. China) and Africa – the largest share comes from fish

Source: www.fishingfuture.org
(briefing note 6)

Intersection of high fish consumption & high under-nutrition

DEVELOPING COUNTRIES, HIGH FISH CONSUMPTION AND HIGH UNDER NUTRITION



We obtain this picture by considering:

(1) fish-eating countries with high levels of undernutrition

(2) developing countries which consume high levels of fish

which points to the potential for fish to contribute strongly to the alleviation of under-nutrition

Source: www.fishingfuture.org (briefing note 6)

Fish to 2030 Report

- Official launch February 6, 2014





WORLD BANK

- Current market conditions and industry trends
- International policy environment and discussion



IFPRI

- IMPACT model
- Experience with global models and programming
- Non-fish agricultural markets

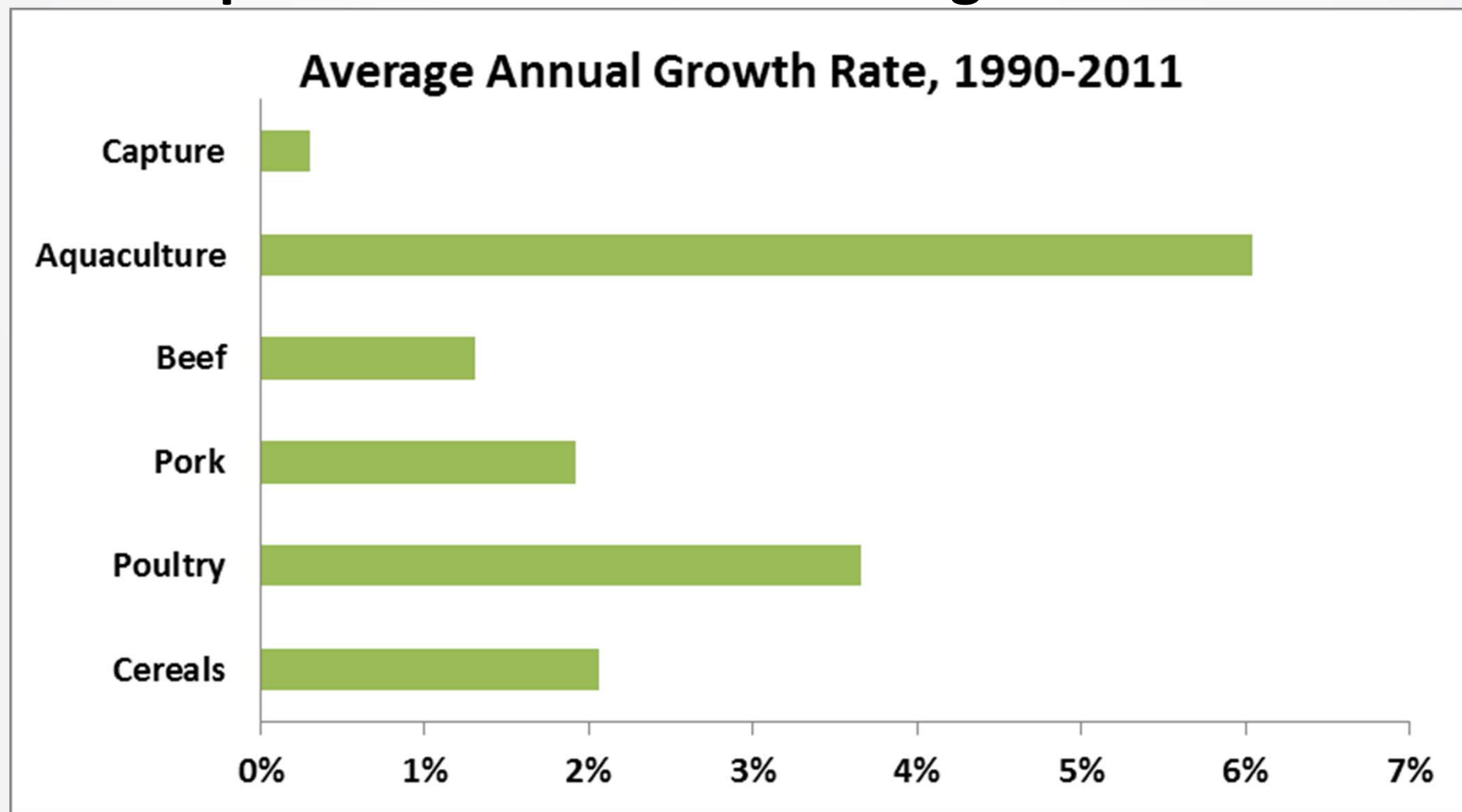


- Global dataset
- Commodity aggregations
- Data reliability and deficiencies

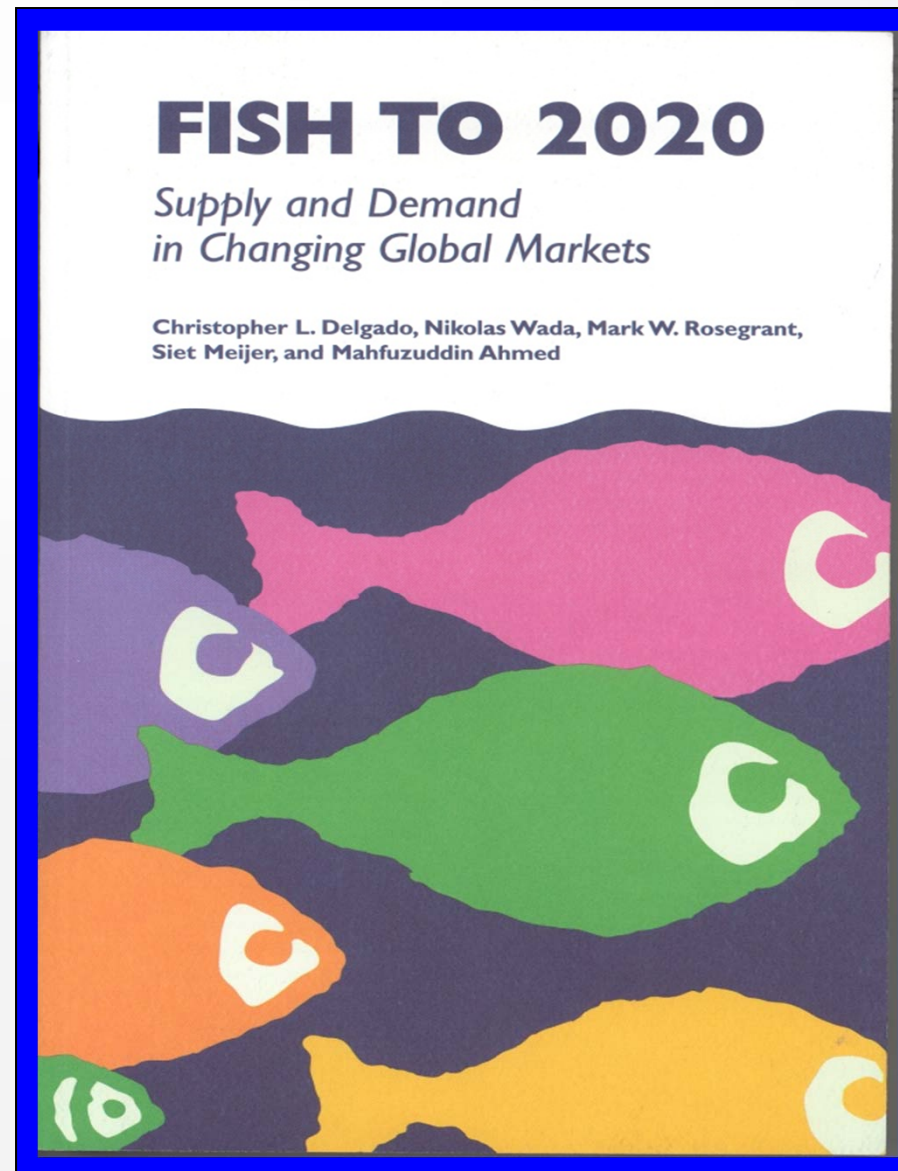
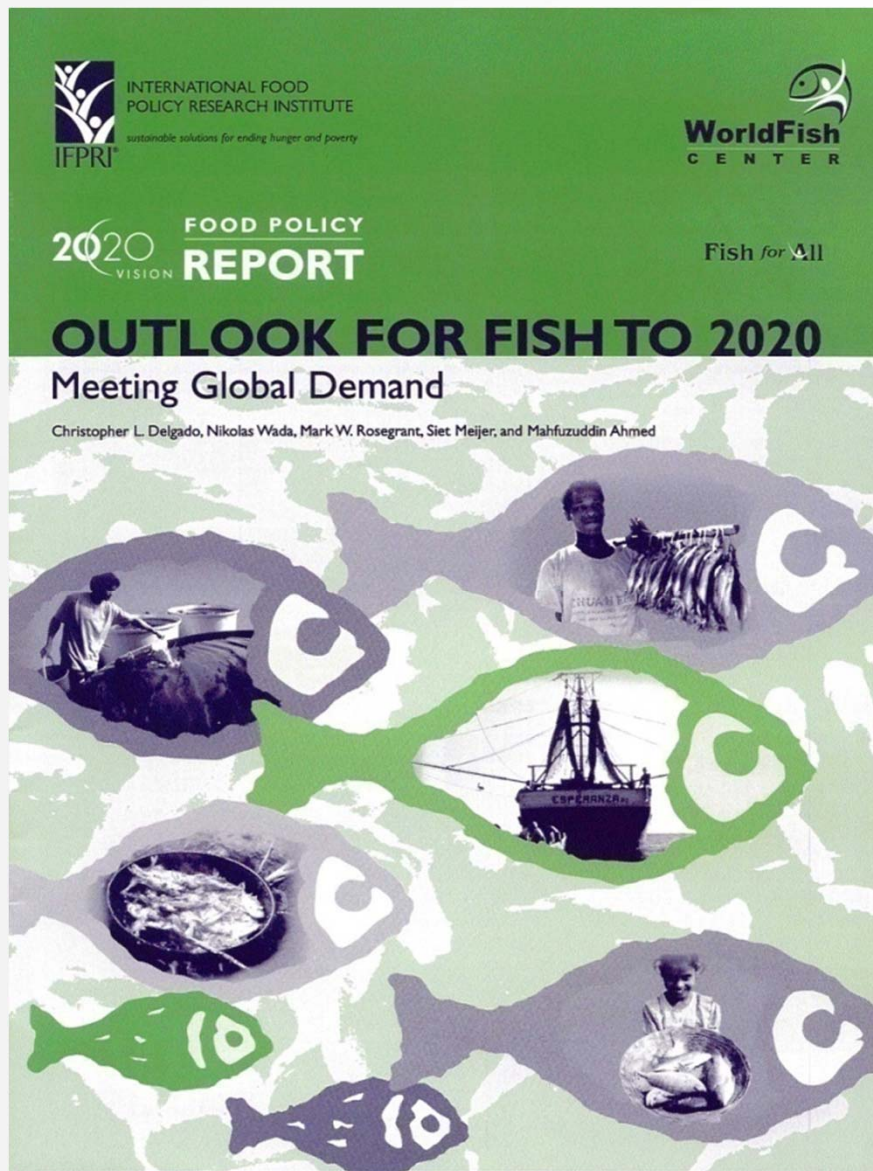


- Current market conditions and industry trends
- Experience with regional modeling (AsiaFish model)

Aquaculture: Fastest Growing Food Sector



- Growth of aquaculture almost **2x** as fast as other protein sectors



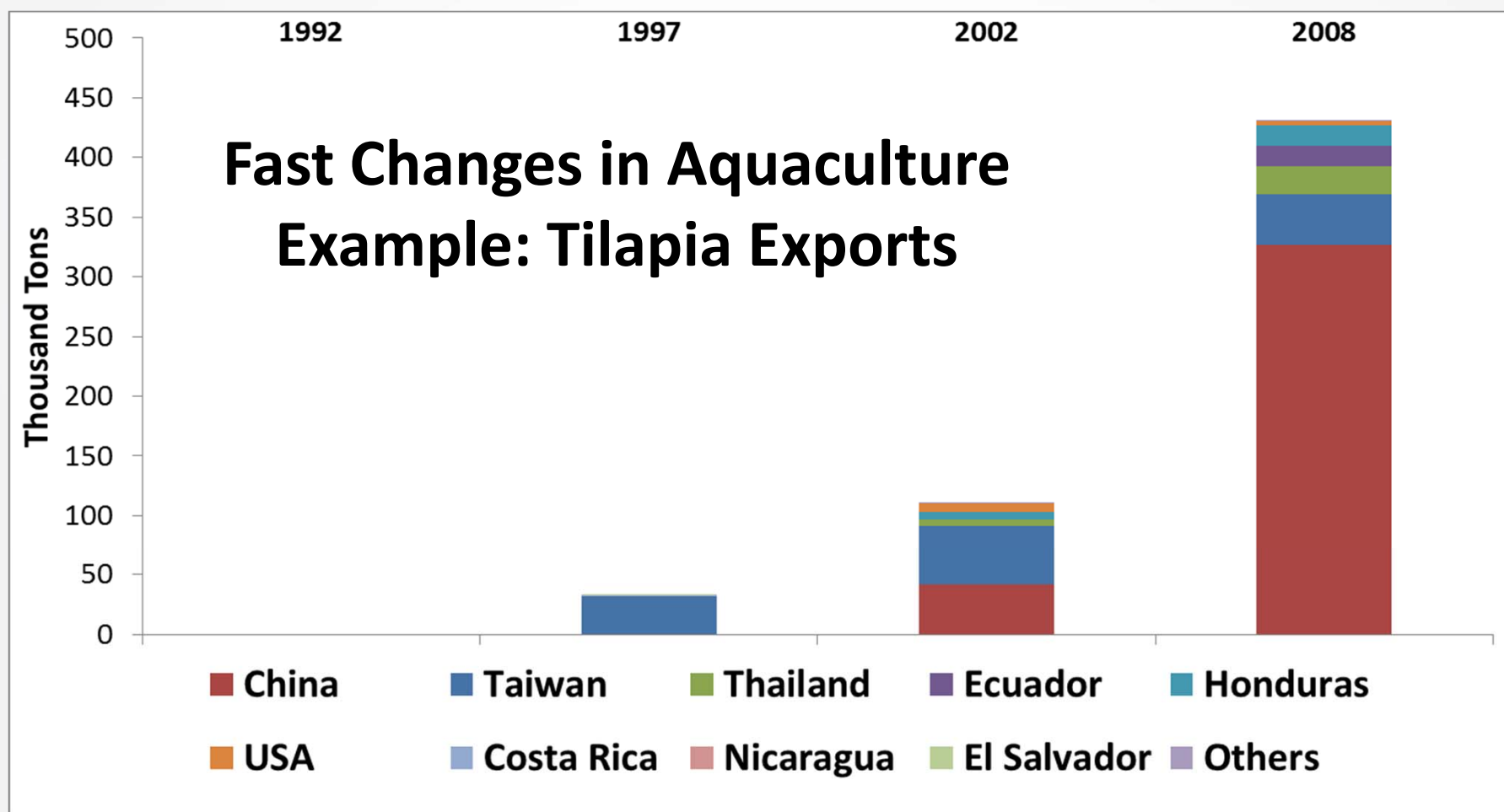
Comparison with Past Work: How Well Did We Anticipate the Future?

Information Source	SOFIA, 2002	SOFIA, 2002	OECD-FAO, 2011	IFPRI Study, 2003
Projection Year	2010	2020	2020	2020
Capture	93	93	90	116
Aquaculture	53	70	74	54
Total Production	146	163	164	170
Percentage for Food	82%	85%	-	77%

Source: OECD/FAO (2009, 2011); In million tons.

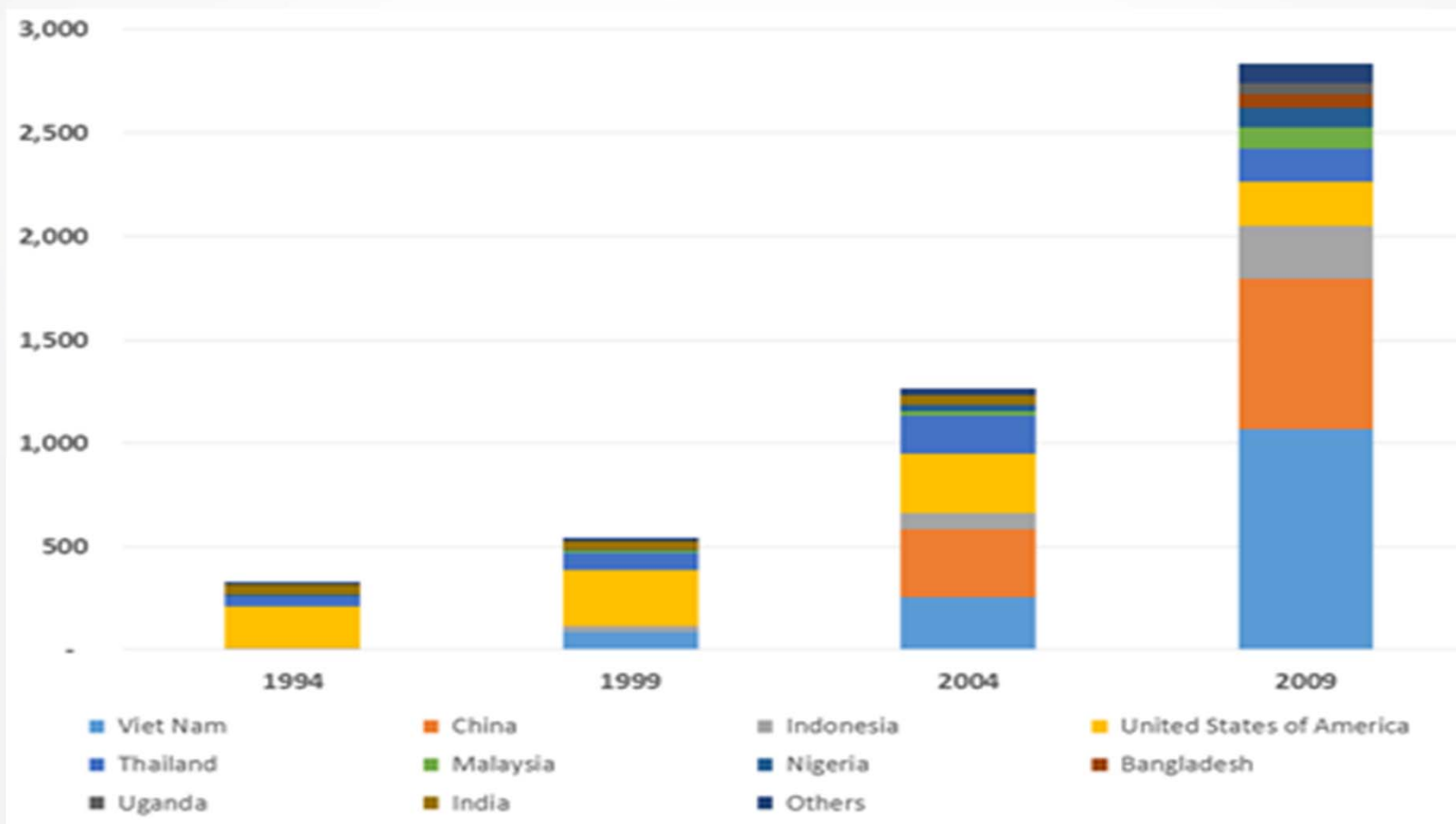
Comparison and Lessons Learned:

- **Capture** - FAO and OECD projections are more pessimistic on production than IFPRI's 2003 study
- **Aquaculture** - 2010 production was already above what the IFPRI projections were indicating for 2020



- **10x** increase in global exports in 10 years
- The composition of **top exporters** can change quickly

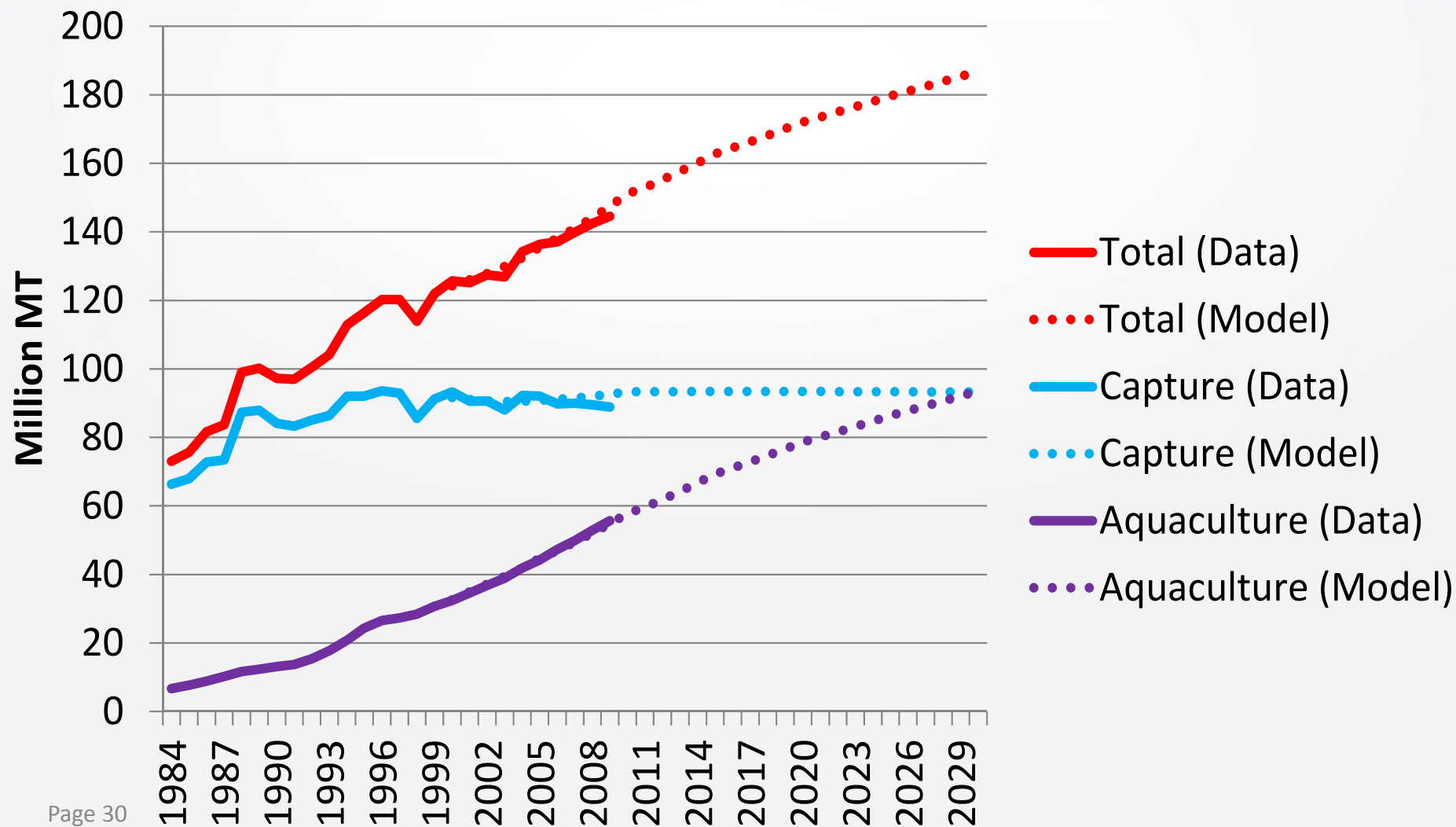
Example: Pangasius Production ('000 tons)



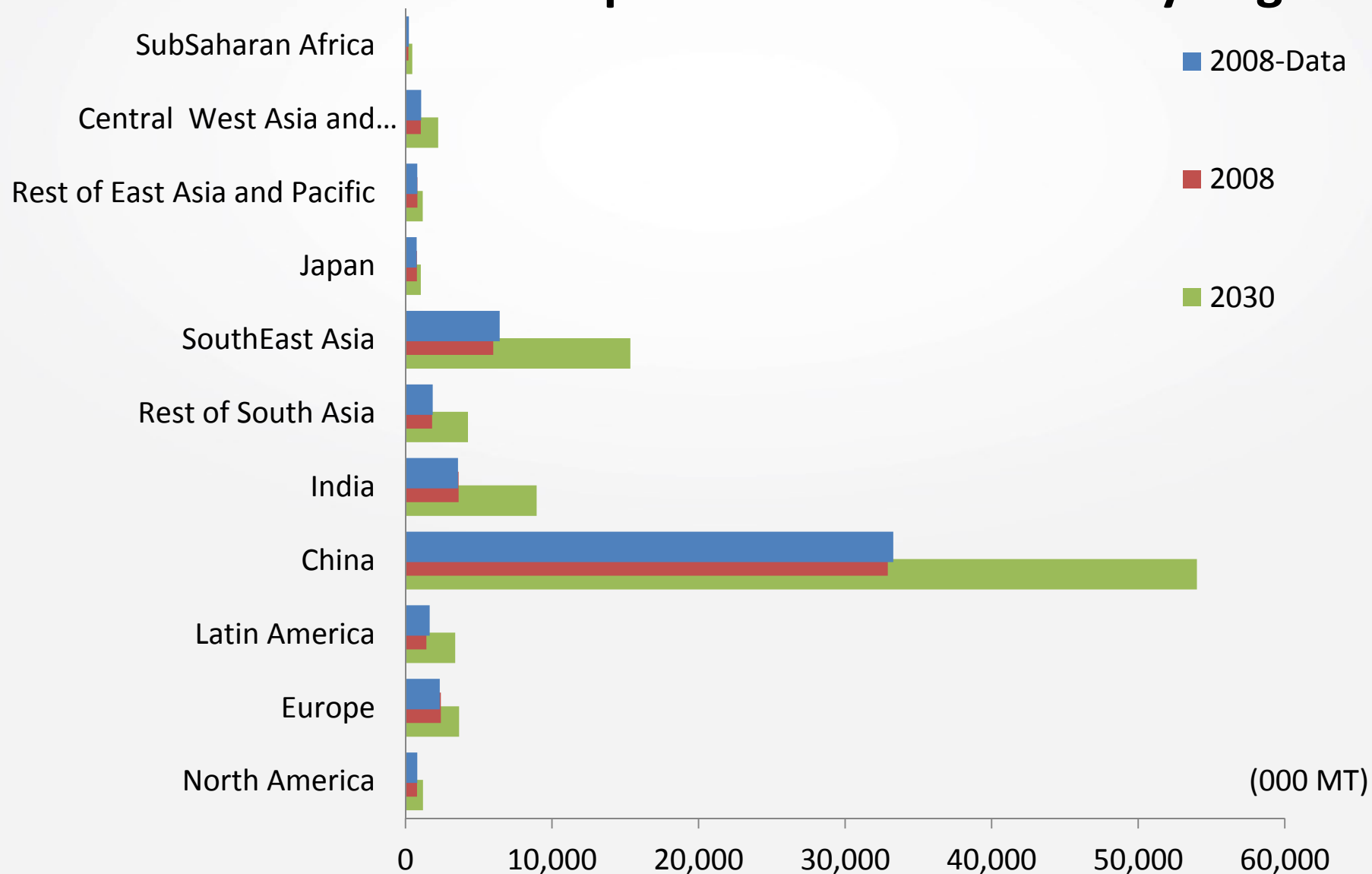
Source: FishSTAT data

- A similar rapid evolution in pangasius production

Fish Production (historical + projections)



Total Aquaculture Production by Region

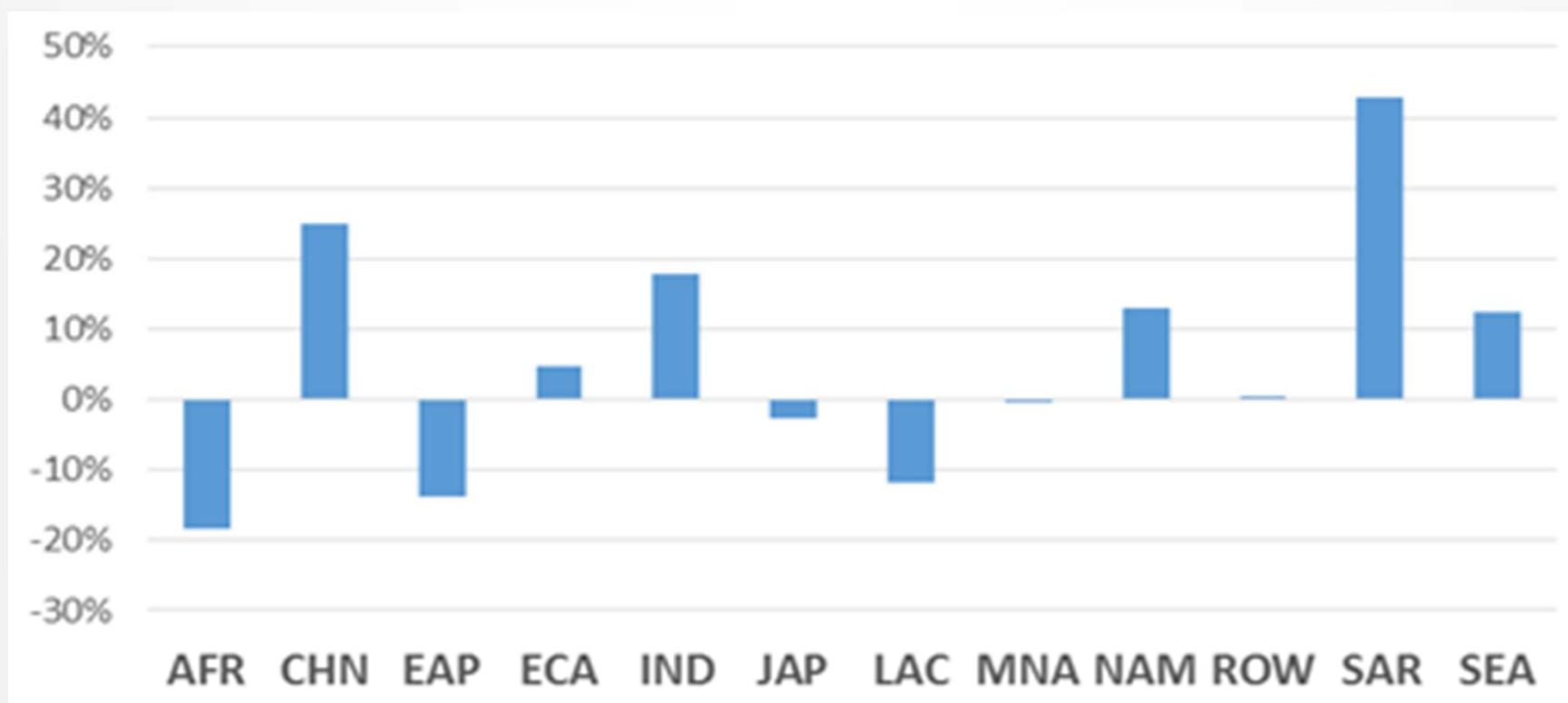


Baseline projections of fish production over 2010-2030 period (‘000 tons)

	2010-2030 Increase in Production (million tons)	2010-2030 Increase in Production (%)	Share of 2010-2030 increase coming from aquaculture
Global Total	35.7	24%	100%
ROW	0.0	1%	60%
AFR	0.3	4%	64%
MNA	0.8	22%	97%
IND	4.8	60%	98%
SAR	2.4	32%	82%
SEA	7.9	38%	97%
JAP	(0.5)	-9%	-
CHN	16.5	31%	101%
EAP	0.3	7%	105%
LAC	2.1	11%	94%
NAM	0.2	4%	103%
ECA	0.8	6%	122%

Source: IMPACT model projections

Change in per capita protein intake from fish over 2010-2030 period (% change)



Source: IMPACT model projections

What does this mean for nutrition?

- There is fast growth of fish production & consumption in south & southeast Asia – and we see the increase in protein supply coming from aquaculture
- In Sub-Saharan Africa, the growth in fish production is the lowest, and the change in protein intake from fish is even negative
- This points to the world market effect that draws fish production into the world market exports rather than domestic consumption

Africa needs an aquaculture revolution

- The way to change this picture for Africa is for it to follow the path of rapid aquaculture expansion that has been seen in Asia & elsewhere
- This will not only create incomes, but also new sources of animal protein for consumption
- Preferences matter – so not all people will eat more fish if they become richer or if it becomes more abundant
- The most important aspect is to boost incomes and improve livelihoods – which is the best way of helping the ‘bottom billion’

Further work

- Further exploring the possibilities for African aquaculture growth – needs a foresight exercise which considers alternative investment & policy scenarios
- Looking more closely at preference changes and the implications for intake & nutrition
- Considering the ‘micro nutrients’ as well coming from fish & other sources

Thank you!

Muchas gracias!