Re Thinking Paradigms – Water and Food Security

The Impossibilities of Water in Agriculture: An Unreal World

4th Marcelino Botin Water Workshop

Santander, Spain, September 2009

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Reality

- Water stressed populations growing
- Climate Change forecasts firming up
- Agric Water Demand sharply increasing.
- Rising Municipal and industrial water use
- Food prices doubling, tripling
- Groundwater depletion – brick wall
- No new investment in low yield areas
- 70 River Basins closing – 1.4b people

Unreality/Impossibilities

- Investments in Agricultural research falling
- Few changes in incentives – or negative
- Population growth – taboo; no investment
- Doha round stuck
- Subsidies stay in high price climate
- Closed door, closed minds to drought/temperatures resistance GMOs
- Maps of potential conflict areas grow
  - Water short, agriculturally dependant areas

Impossibility-and disinterest?

And could we be part of the problem? (although we have mapped the issue and know more about the solutions)

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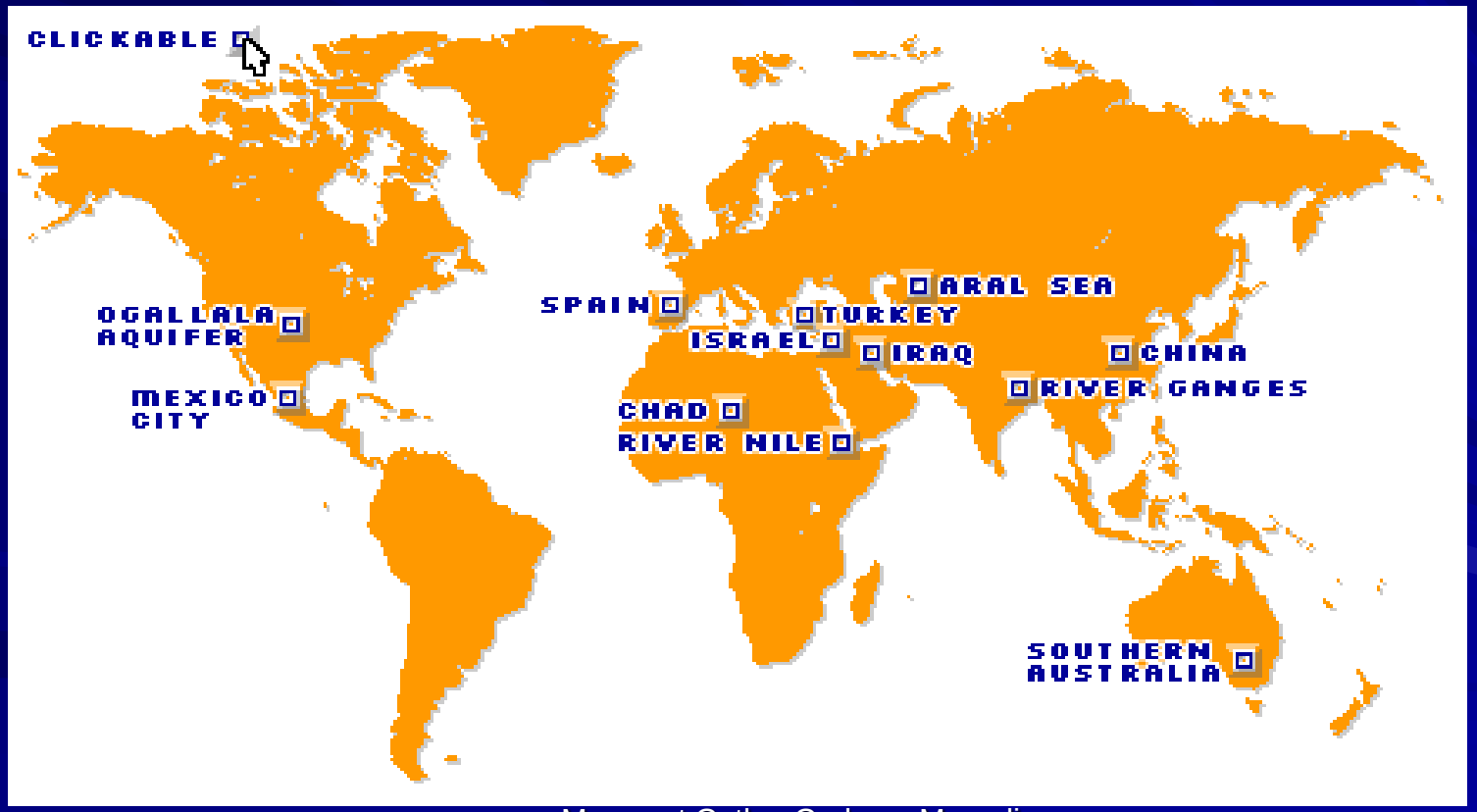
no_reason_071009_720p.wmv

In this room, we agree WHERE problems live…

CIA “Water Hot Spots” Map

- Rich and poor….



Water Scarcity 2000

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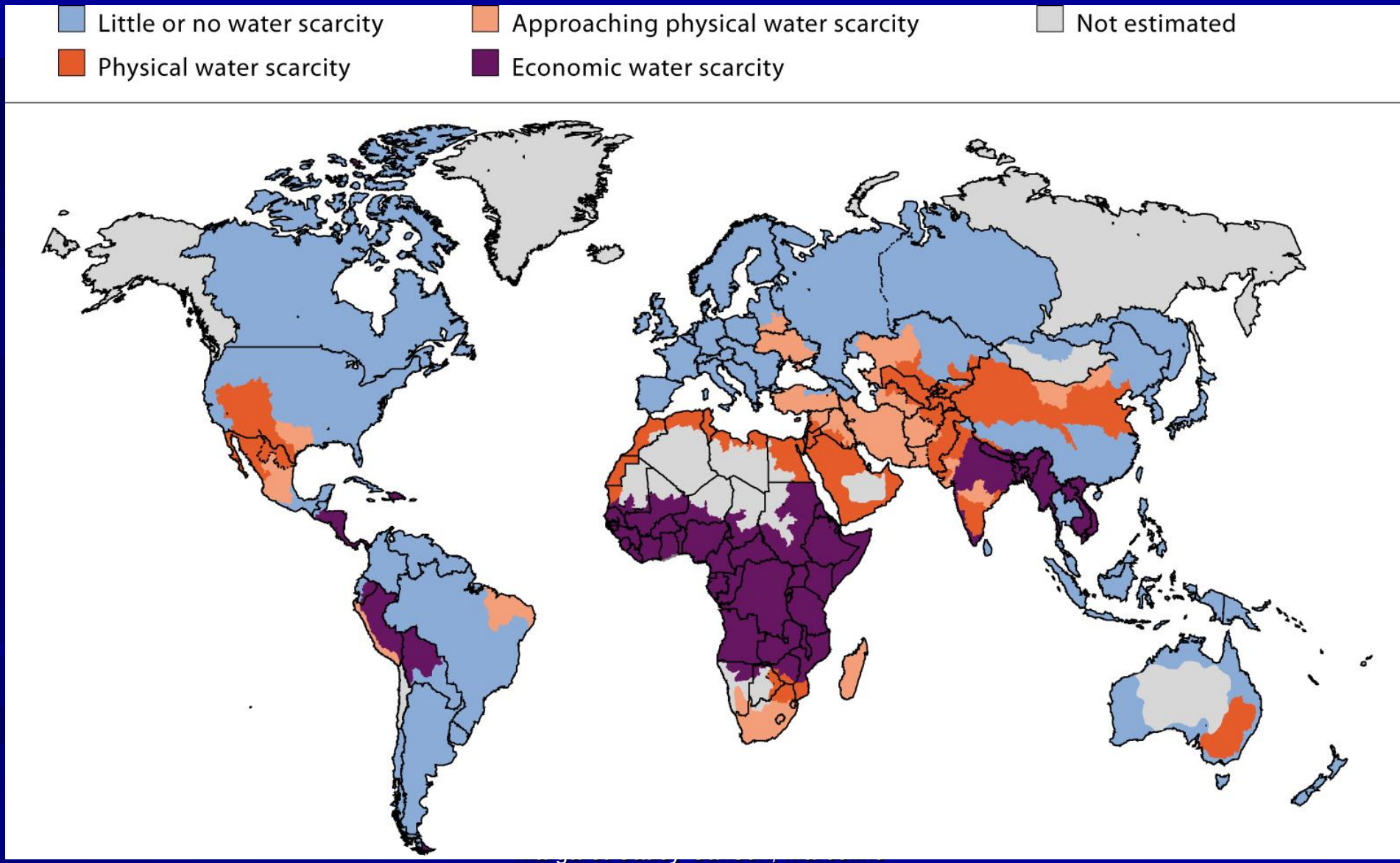
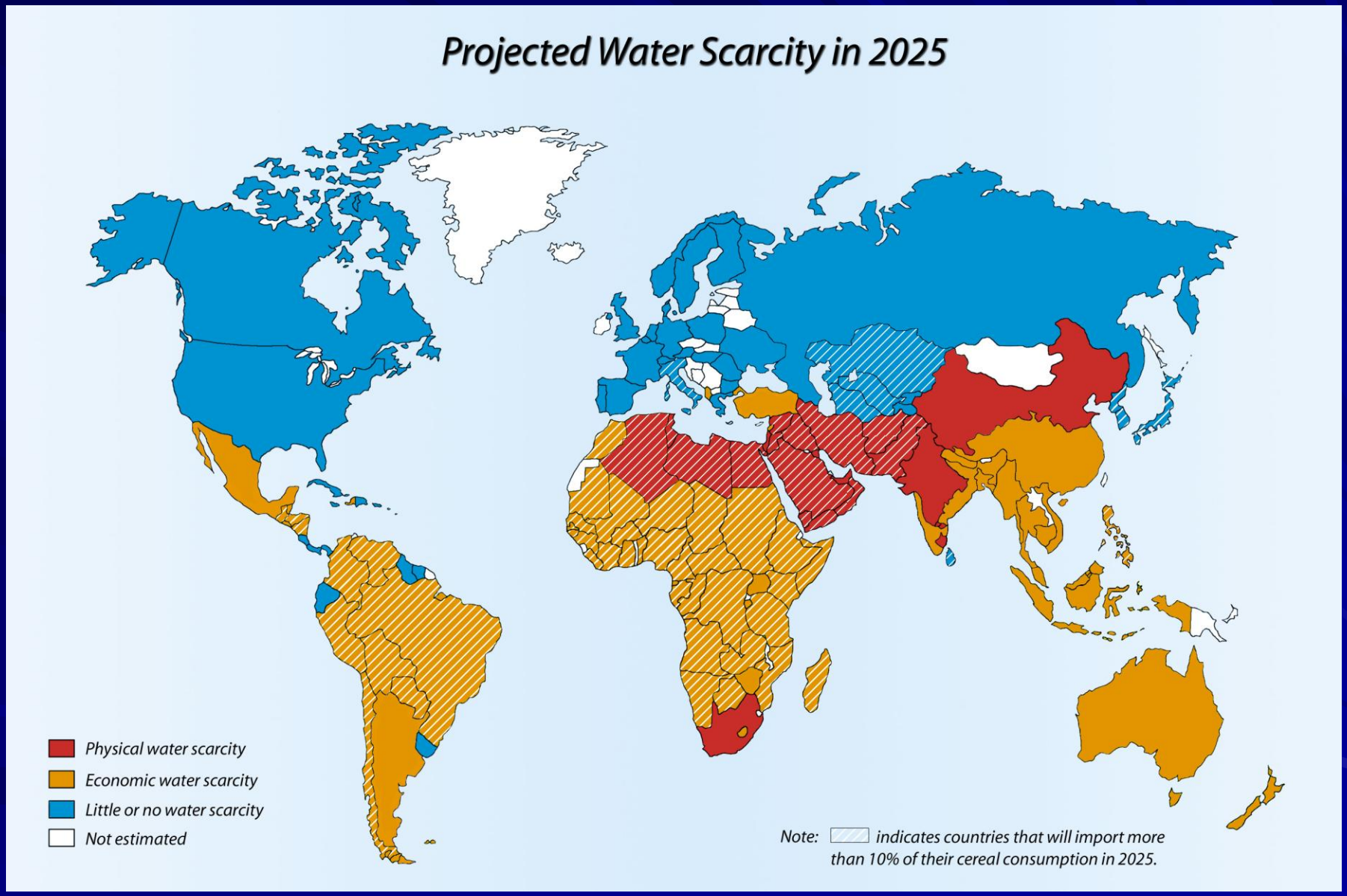


1/3 of the world's population live in basins that have to deal with water scarcity

Water scarcity a threat to food security



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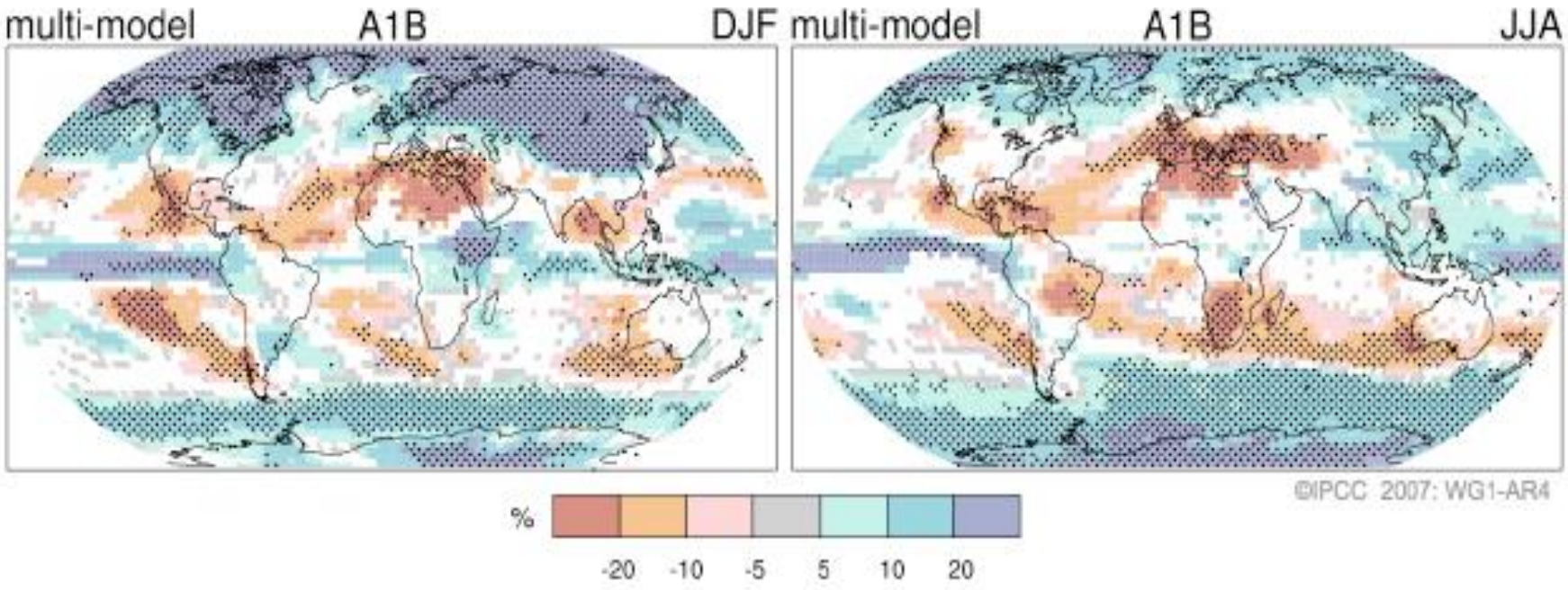
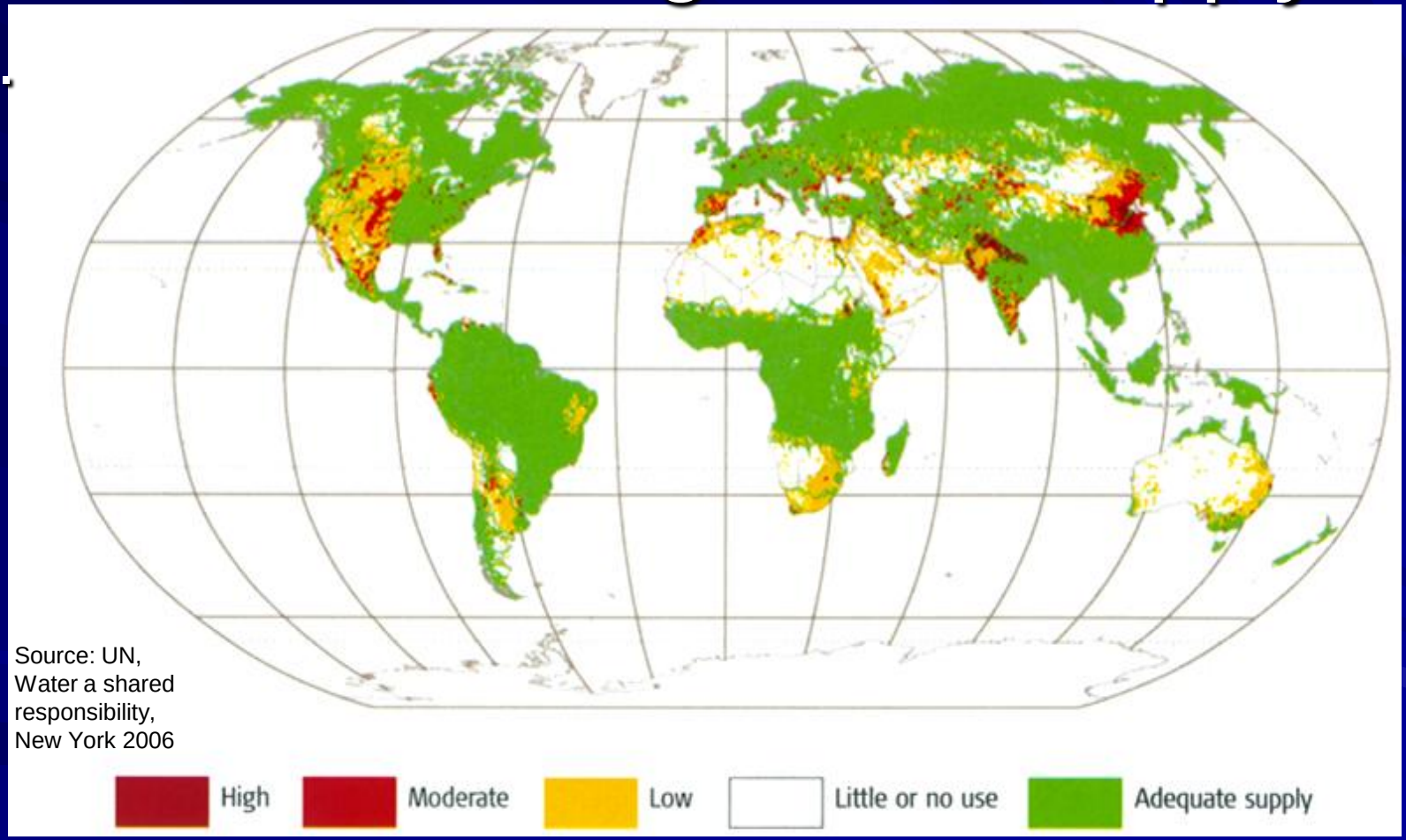
IPCC Report



Relative changes in precipitation (by percent) for the period 2090-2099, relative to 1980-1999. Values are multi-model averages based on the SRES based on the A1B scenario for December to February (left) and June to August (right). White areas are where 66% of the models agree on the sign of the change and stippled areas are where more than 90% of the models agree on the sign of the change.

Regions where water withdrawals are exceeding natural supply



Source: UN, Water a shared responsibility, New York 2006

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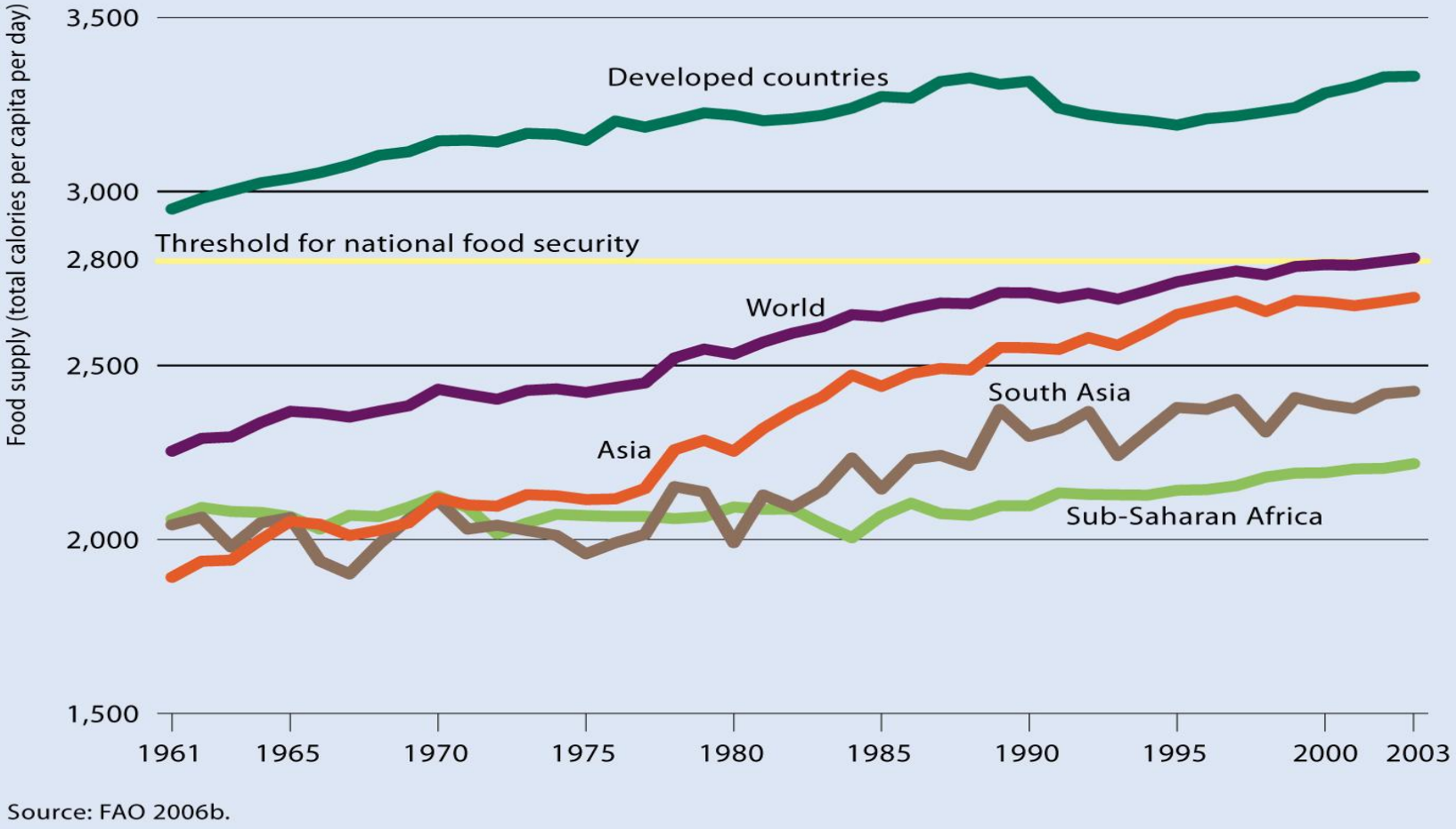
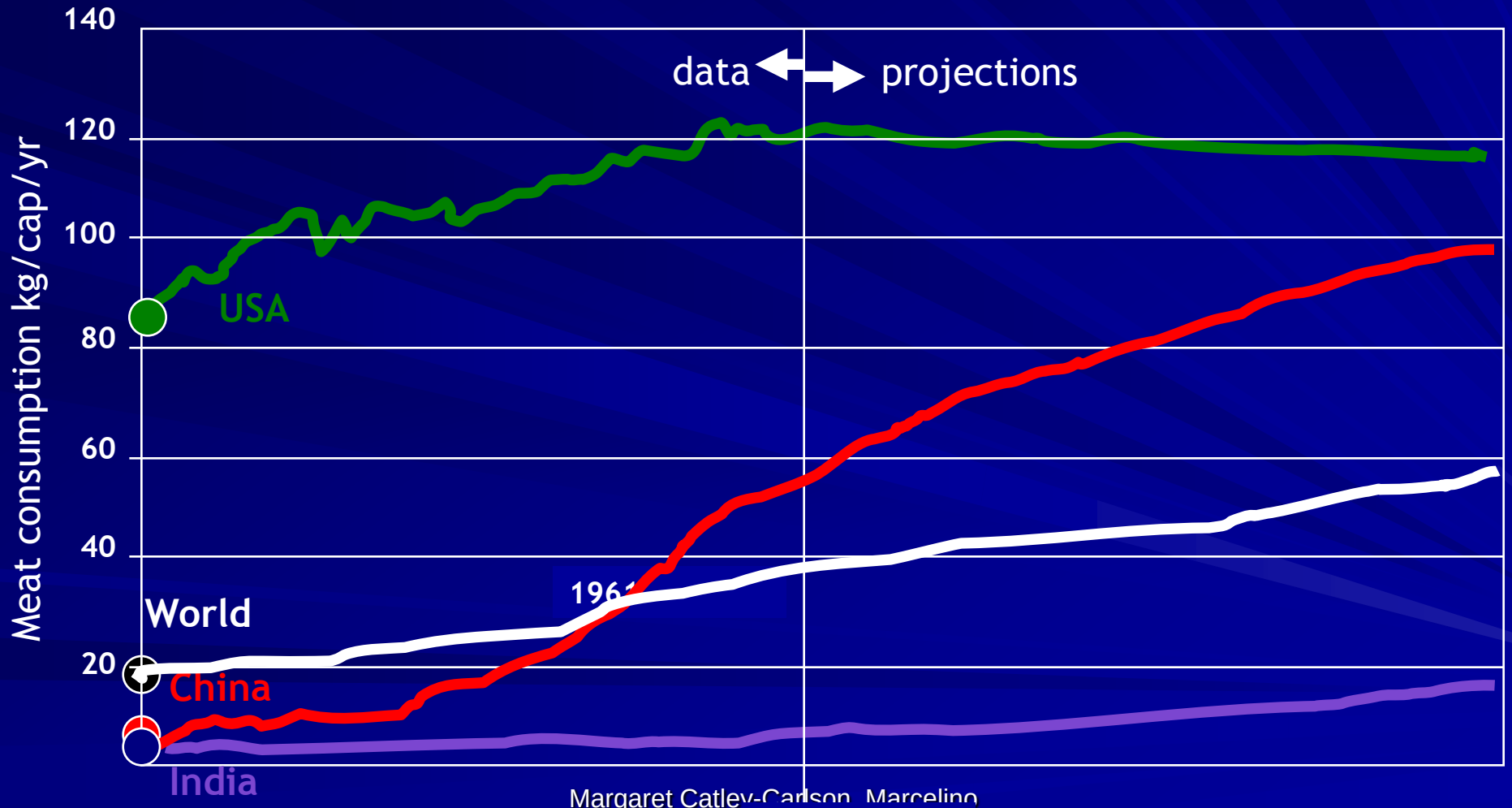
And we agree on the causes of the principal problems …….



Source: FAO 2006b.

It takes a litre of water to produce every calorie, on average

Per capita meat demand (kg/cap/yr)



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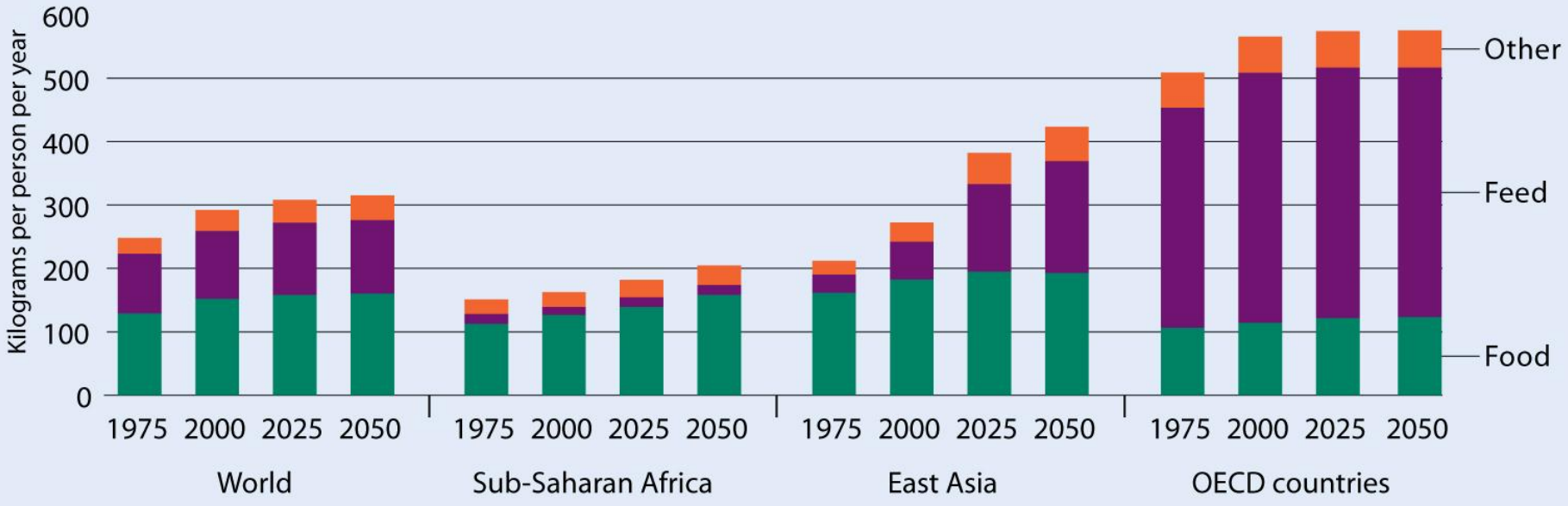
How much more cereals?



Source: For 1975 and 2000, FAOSTAT 2006; for 2025 and 2050, International Water Management Institute analysis done for the Comprehensive Assessment of Water Management in Agriculture using the Watersim model.

Food demand doubles over the next 50 because of diet and population

Water Needs (ET) will double – without water productivty gains

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We see the linkages….water scarcity and the next global Food crises

- We are NOT running out of drinking water – we are running out of economic water – agric, energy, industry, tourism – in competition.
- If present trends continue the livelihoods of one third of the world's population will be affected by water scarcity by 2025.
- We could be facing annual losses equivalent to the entire grain crops of India and the US combined.

We watch countries lurch toward solutions….Saudi Arabia scraps wheat growing to save water

- Reuters Tue Jan 8, 2008 11:02am

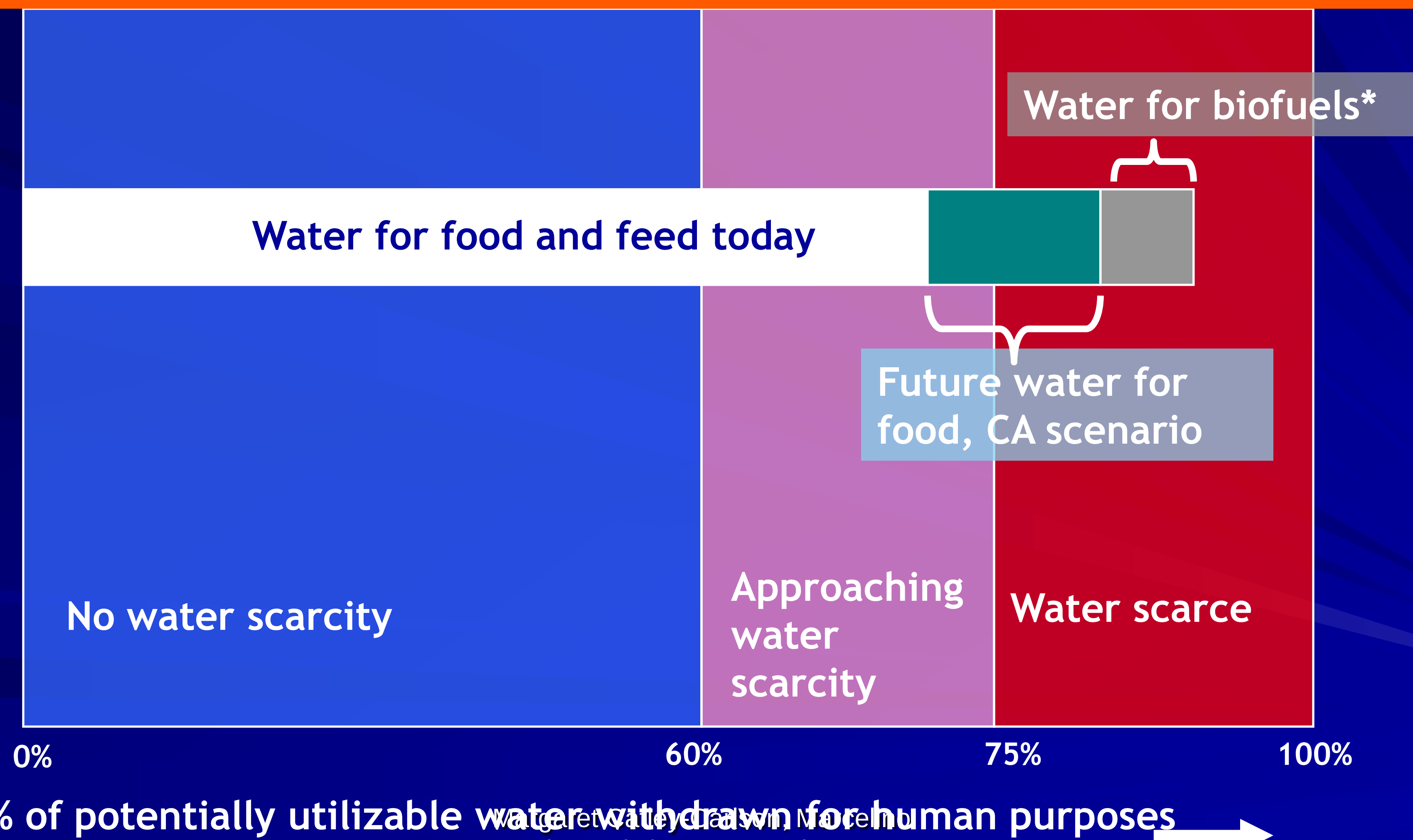
- RIYADH, Jan 8 (Reuters) - Saudi Arabia is abandoning a 30-year programme to grow wheat that achieved self-sufficiency but depleted the desert kingdom's scarce water supplies.

- Reducing purchases of wheat from local farmers 12.5 percent per year,
- The Kingdom aims to rely entirely on
- imports by 2016.

- BUT 50 m hectares now under lease around the world – a new global good?

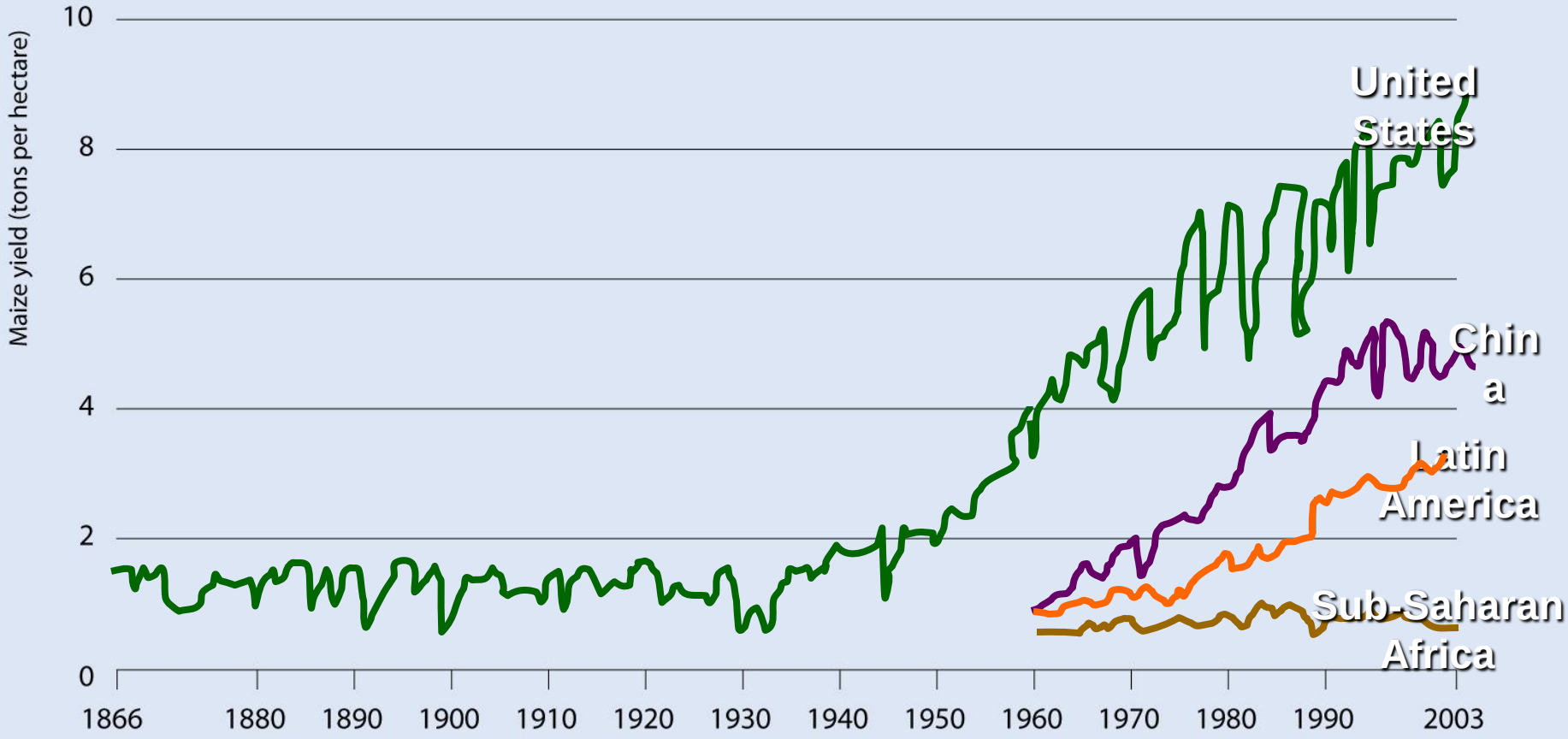
Biofuels: India: and in 2030 (WaterSim analysis by IWMI).

Green solution with blue impacts



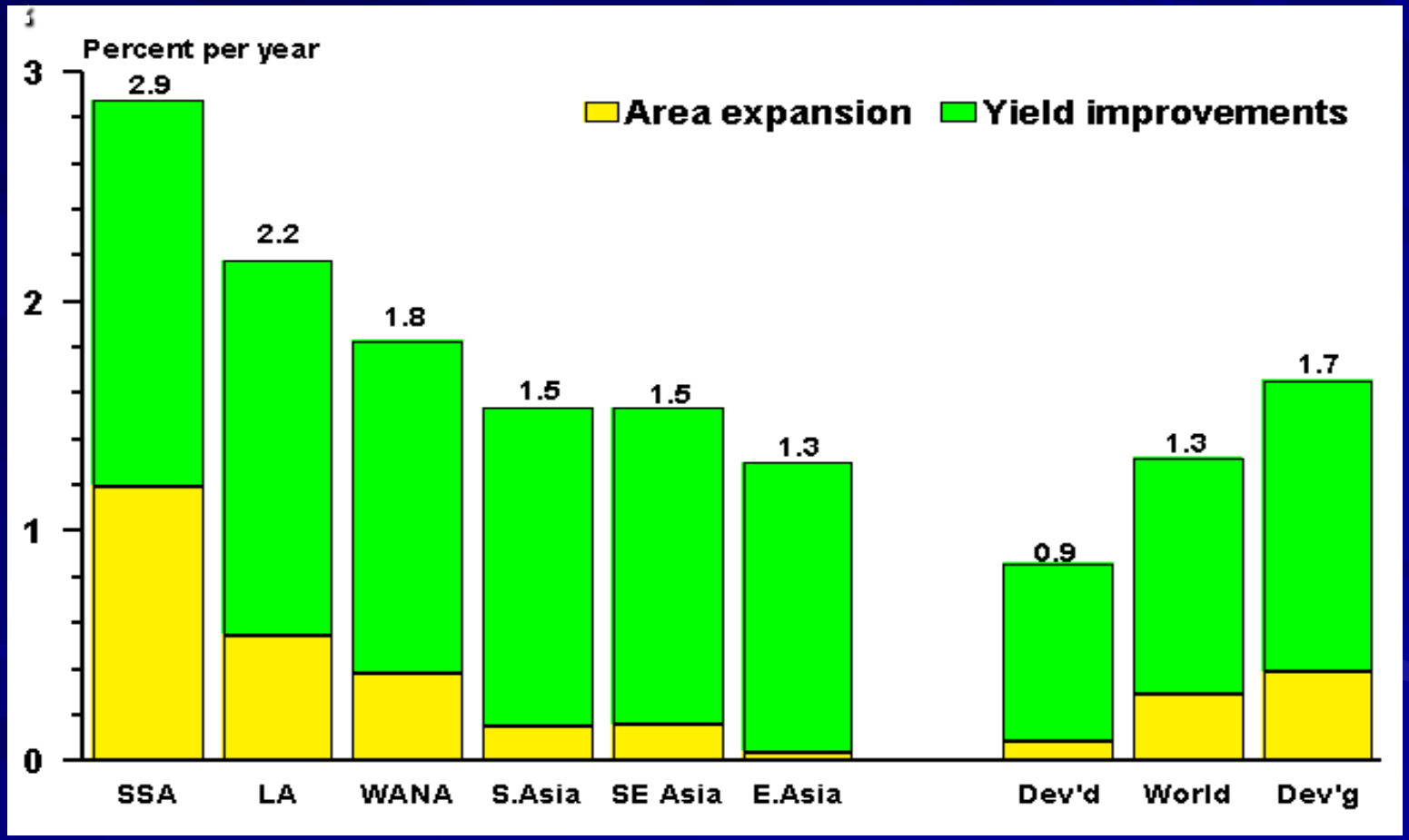
*Assumes that 10% of gasoline demand is met by biofuels by 2030

We have some agreed answers:
Growth in yields – A GOOD THING



Source: U.S. data, U.S. Department of Agriculture's National Agricultural Statistics Service; all other countries and regions, FAOStat.

Growth in cereal production from yield growths (1995-2020)

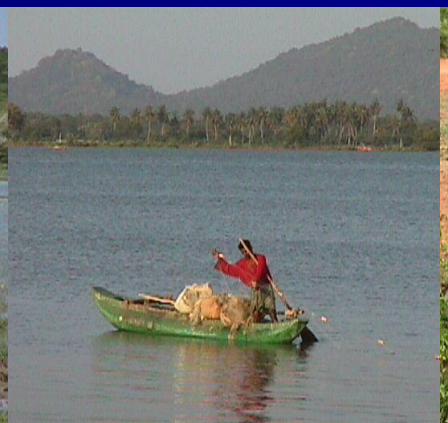


Source: P.Pinstrup-Andersen, et al. 1999

wide agreement in the water literature on solutions.

- Integrated Agriculture-Aquaculture Systems. Livestock in irrigation
- Multifunctional Agriculture
- Multiple Use Systems
- **Ensure secure access (including water rights)**
- **Fix the trading regime (and maybe add water…)**
- **Targeted investments in pro-poor technologies**
- **Local management**
- **Informal irrigation**,
- **Multiple-use systems**
- **Maintaining fisheries**,

How real is any of this?

The main problem??

- World doesn't value water
- Irrigation systems – 40-60% efficiency norm in too many places
- Municipal systems – 50% unaccounted for water
- We leave taps running – literally and metaphorically
- We don't pay enough for it
- We don't design it in as a scarce VALUABLE

.

- *Is this research increasing the probability that water will have higher value?*

Key Problems (Steiglitz)

- How to induce firms, consumers, and governments to act in a way which is consistent with the scarcity of water
  - What is the appropriate regulatory framework?
  - How can we make market mechanisms work in a fair and efficient way?
- Secondarily - how to create an appropriate global framework

The questions too often ignored. Are we able to get to the REAL WORLD LOCAL Enabling Conditions?

- Cost & affordability
- Price and profitability
- Risk – market, climate, water availability
- Markets
- Reliable supply of water
- Education
- Incentives and institutions

Reform is a negotiated political process—high stakes means powerful resistance

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'What is the responsibility of the Researcher/ Analyst?

We have the knowledge – what must we do?

The Policy Change Warrior

- Reach out to other sectors to build coalitions
  - Coordination, collaboration—other govt. agencies, civil society, private sector
- Need *local* champions but not foreign knights in shining armor!
  - Start with processes enabling local actors to take RELEVANT local initiatives
  - <u>Problem has to be seen though the eyes of those to be influenced</u>

Water management problems are not just water issues

Water issues embedded in complex institutional contexts but are often addressed as if the sector is independent

- Water agencies, as well as donor agencies organized based on this narrow perspective
- Limited impacts of IMT and basin management reforms in many countries because of narrow sectoral thinking
- Political boundaries rarely consistent with hydrological boundaries

Need to focus identify the *problem AS SEEN BY THOSE WE ARE TRYHING TO RALLY TO THE CAUSE.*

One Totally Important Factor

- **"What would it take to make it happen?"** Needs to be part of the researchable question.
- Do research, get facts in hand, marshal data
  - Central, but not sufficient
- Essentially a marketing approach
  - – Understand the policy/implementation/climate
  - Take a research on political situation approach –
    - Probably NOT one many researchers will be comfortable with

Elements of “What would it take to make it happen?”

- Who is/are actual decision makers?
- Who can push this?
- WHY might they agree?
  - May well not be poverty, better water allocation
  - May be reducing pressure on them
- Who will be opposed?
  - Are there levers?
- What external support needed to policy change?
- Policy calendars, cabinet procedures etc.
  - not data as much as process.

Getting through the looking glass

- Meetings and conferences – all about what SHOULD be done.
- What we never explore – why it isn't done.
- Little utility in constant repetition of what an ideal state looks like….doesn't get us there.
- Need to concentrate on the "what would it take?"

A VERY tough message

- “if you gather scientific knowledge but are unable to convey it to others in a correct and compelling form, you might as well not even have bothered to gather the information”
  - Randy Olson – Don’t be SUCH a scientist, September 2009

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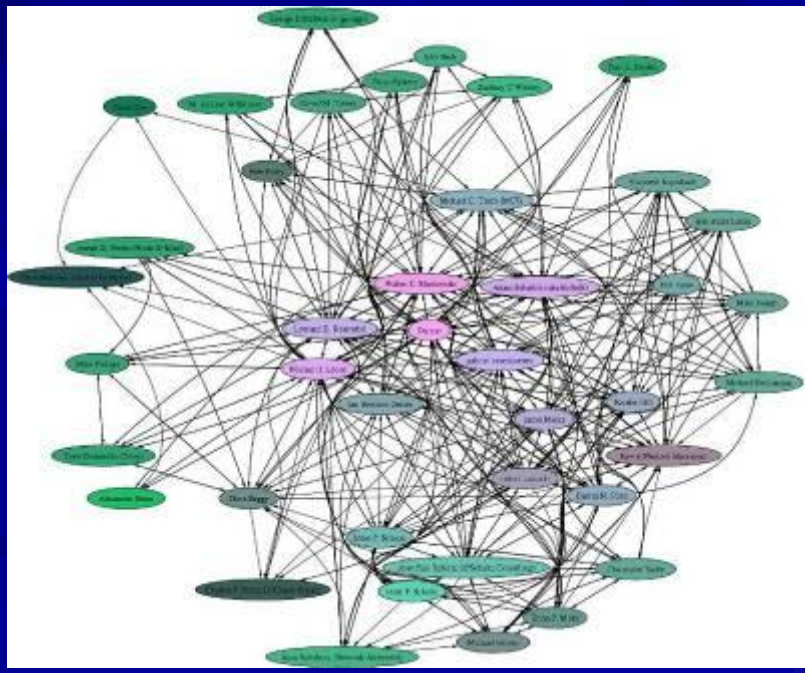
- Boredom may be a greater sin than inaccuracy.
- Story telling is key
- Information will not create change – emotion is the change impulse
- Find the simple clear messages and make them come alive

And where to start?

…..maybe not the whole thing all at once unless there is a high reform appetite.

- If IWRM demands wholesale integration, we won't get there
  - Sectoral decision-making should be abandoned entirely.

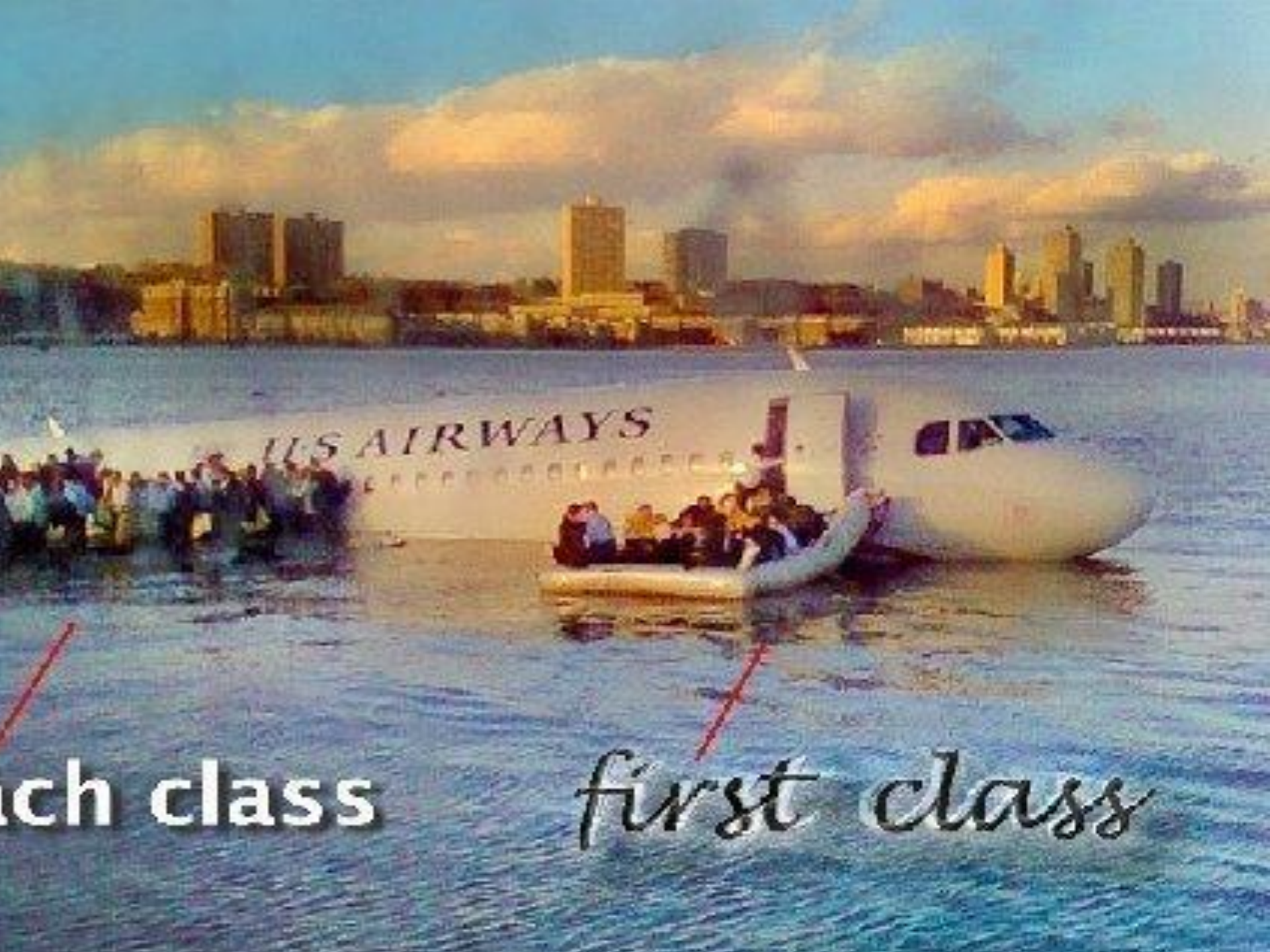


Real world dilemmas

Does the country have to “hit the wall” first?

- Probably YES, to some extent –
- Can be somewhat engineered

- Ad hoc – and possible vs long term and better organized – how to reconcile?
- Pendulums – it isn’t getting it right – it is correcting the abuses and anomalies that arises from the existing policy.
- **Poor because no water: no water because they are poor? Makes a lot of difference**


US AIRWAYS
ch class
first class

But what do we do about water????
New Paradigms, New Design – Desperately Needed Now

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Societies have much in common with tapestries

- Unicorn—holy grail (unattainable)
- Intricately patterned
- Integrated—cannot replace a tree or the unicorn or pull a thread without affecting the rest

Throw out the engineering metaphor!