



**Challenges of implementing climate
change policy-driven legislation;
risk of not meeting policy demands**

Alan Jenkins

Centre for Ecology and Hydrology, UK

The Chartered Institution of Water and Environmental Management

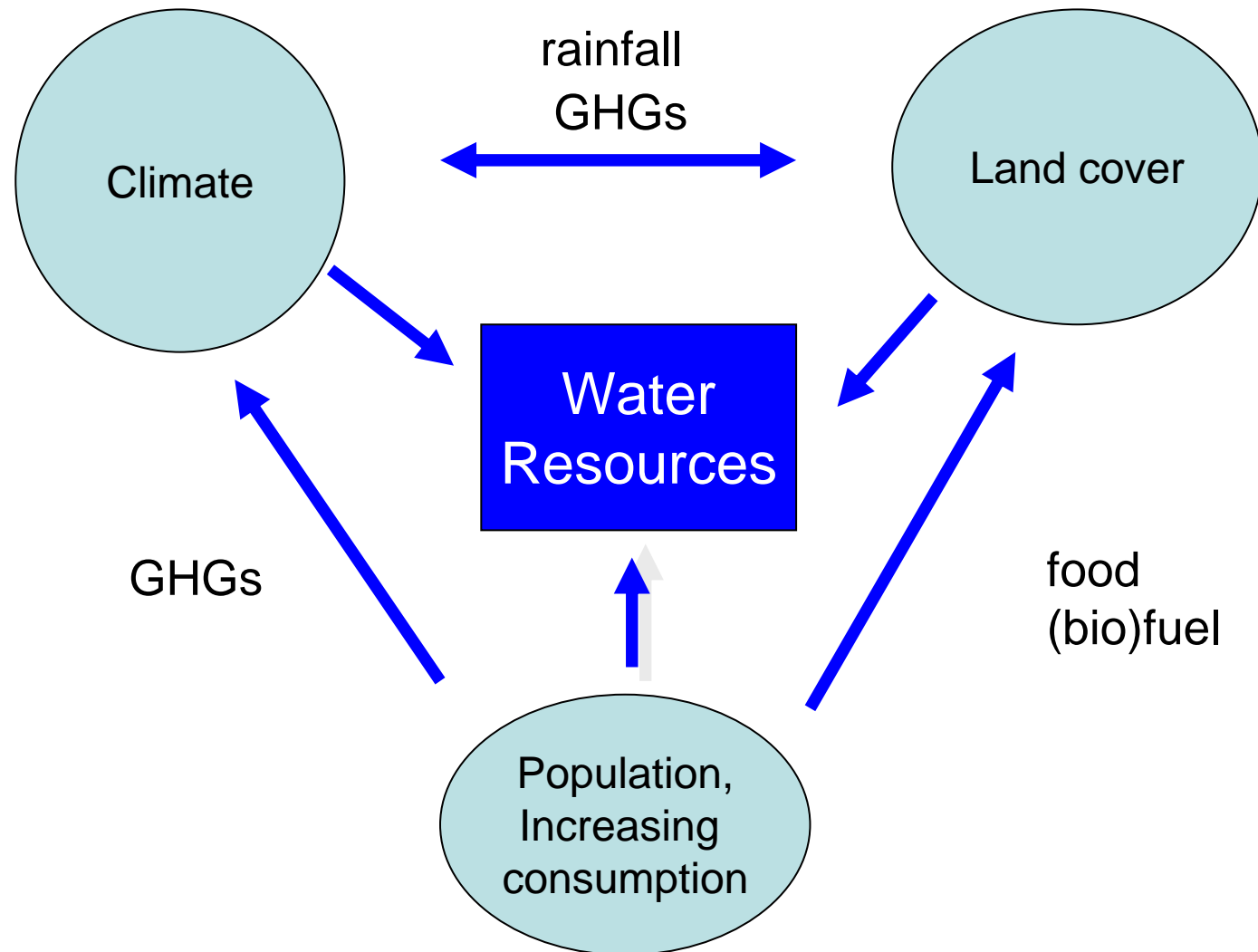


POSITION STATEMENT ON WATER RESOURCES MANAGEMENT PLANS

Water resources are the essence of life and have been a critical factor in the development of societies, communities and industries throughout time. Effective planning and management of water resources is essential now and in the future if sustainable development is to be ensured.

- Strategies that ensure sustainable water abstraction and water use now and in the future.
- Prevention of abstraction that has a damaging effect on the environment.
- Recognition of and adaptation to the impacts of climate change on water supply and demand.
- Mitigation of future climate change and its effects by reducing the emission of greenhouse gases that result from the supply and treatment of water and the use of water by consumers.

Global Drivers of Change: interactions



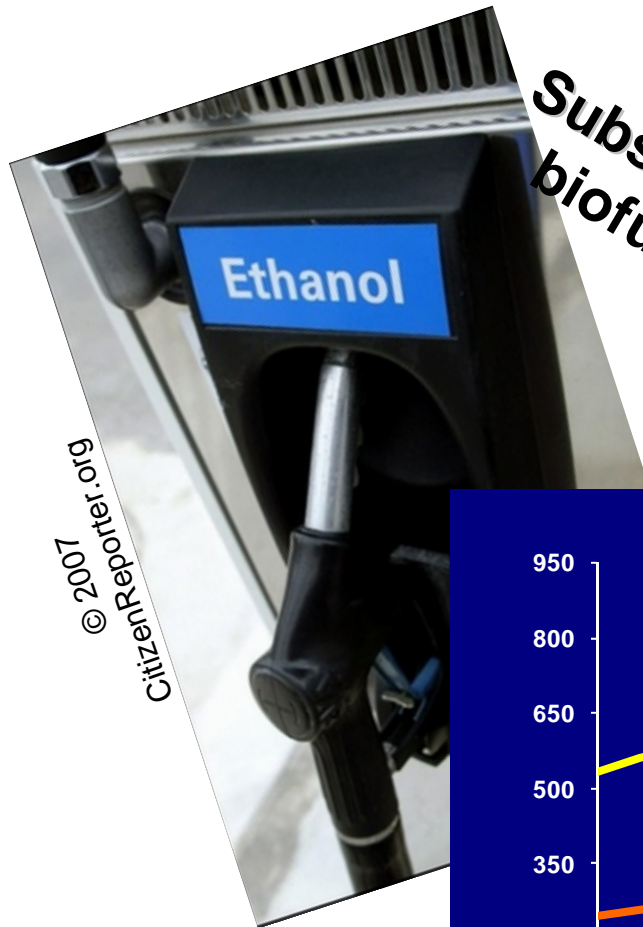
Risks and Opportunities in the Global Agriculture and Food System: Policy and Research Implications

Joachim von Braun
Director General

International Food Policy Research Institute

SLU-CGIAR Workshop
Uppsala, September 23-24, 2008

New challenges

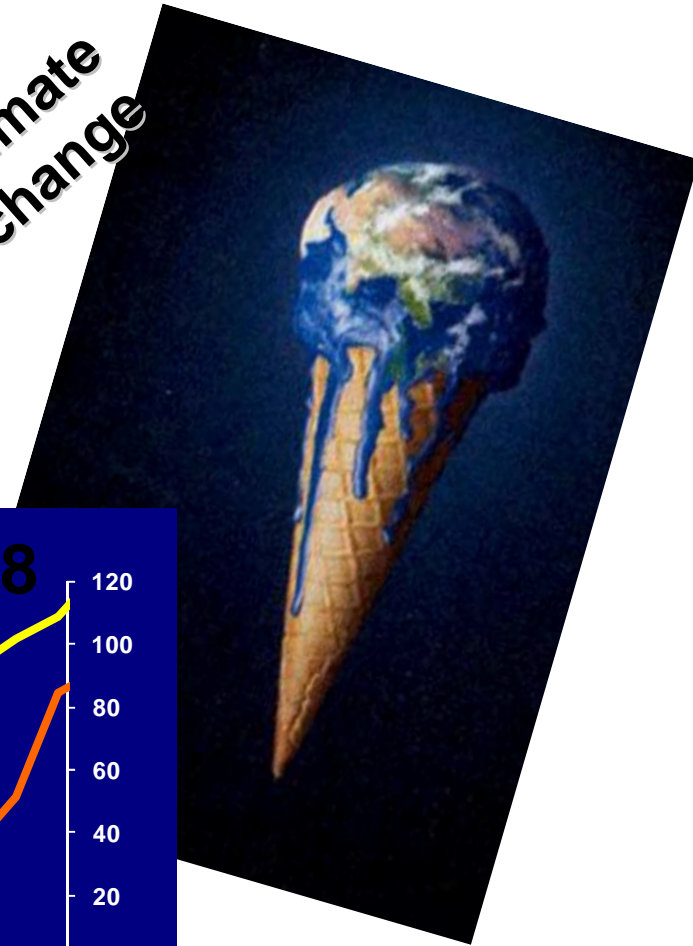


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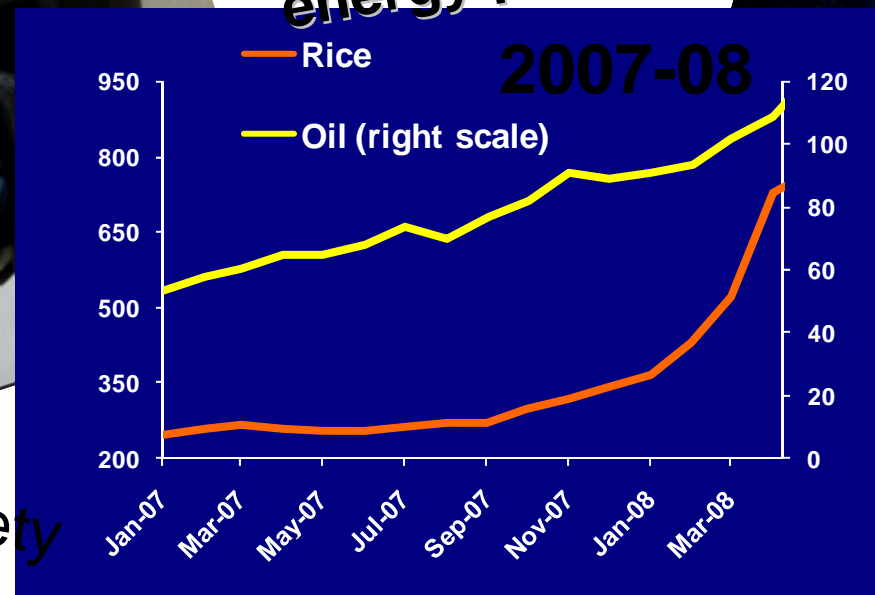
Subsidized
biofuels

Climate
change

Rising food and
energy prices



and food safety



and pests, diseases

Energy Policy/Climate policy



increased demand for biofuel production



Implications for water supply

- Water use for irrigation
- Water use for biorefineries

Implications for water quality

- Fertilizer runoff and nutrient pollution
- Soil erosion and sedimentation



Implications for RBMP's within the WFD ?

Projected Increase in Biofuels

Biofuel contribution
% energy equivalent

Biofuels
(billion litres)

	2005	2030	2005	2030
US/Canada	1	5	13	51
EU	2	10	4	23
China	3	9	4	18
World	2	8	39	141

Implications for RBMP's ? – lack of scientific understanding

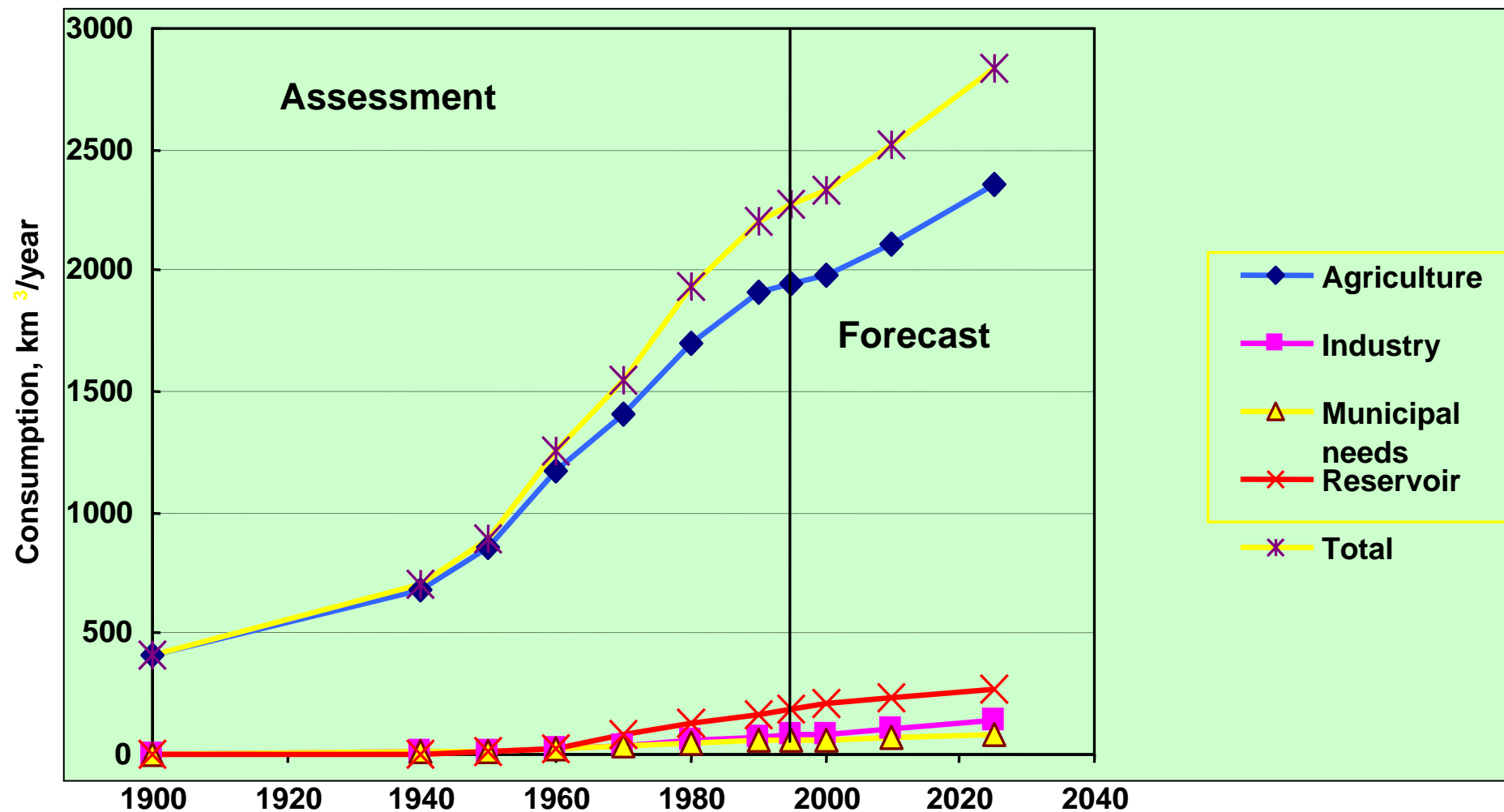
Biofuels, Land and Water - 2030

	Area for biofuel crops (m ha)	% of total cropped area	Biofuel crop ET km ³	Irrigation for biofuel crop km ³
US/Canada	14	9	76	37
EU	15	28	30	1
China	8	4	44	35
World	42	3	261	128

Simulated: WATERSIM (Fraiture et al. 2008)

Water Consumption

- after Shiklomanov 2000



Whatever the reasons for increased water demand.....

What are the options??

- Demand management options
- New supply options



briefing note

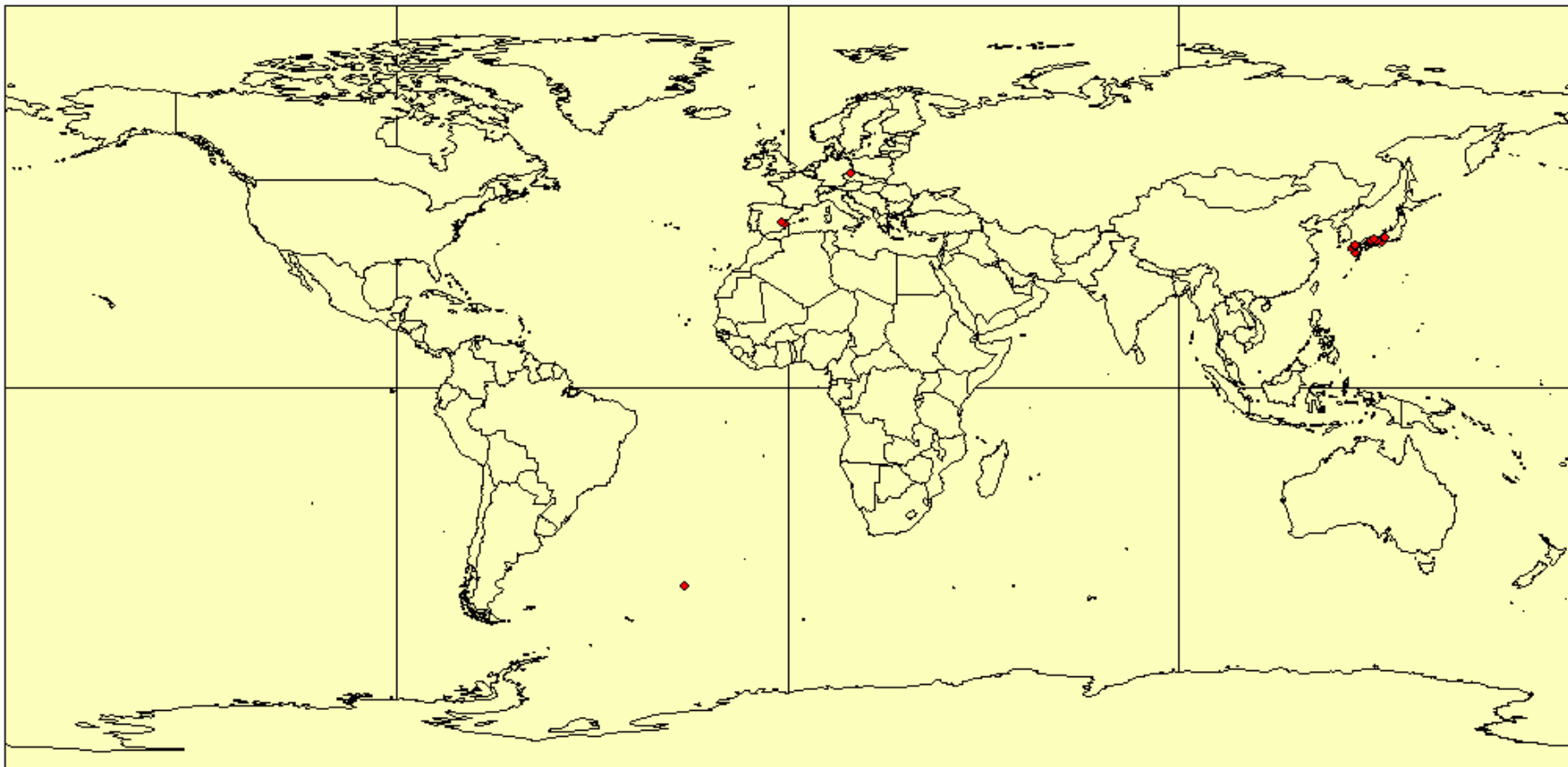
The greenhouse gas implications of future water resources options

New supply option	Emissions kgCO ₂ e/day/house	Carbon cost pence/m ³
Current water 'supply-use-disposal'	2.43	28
Direct ground water abstraction	2.46	29
Aquifer storage and recharge	2.47	29
River intake	2.48	30
Indirect effluent reuse	2.57	31
Reservoir	2.61	31
Desalination (brackish water)	2.91	34
Desalination (saline water)	3.77	44

Global Reservoir Database

～1750年

13,382dams,



Visual courtesy of Kuni Takeuchi



Summary of information received from Member States on best practices and approaches for a climate check of the first Programmes of Measures

1. Question 3: Will there be a “climate check” of the Programme of Measures?

Climate check	Number of countries
Yes	8 (BE, BG, DK, FI, LT, NO, SI, UK)
No	3 (AT, DE, NL)
Not decided yet	3 (CZ, HU, SE)
Answer unclear	2 (FR, RO)



Counter productive

Some new storage infrastructure
Some hydromorphological measures

Win-win

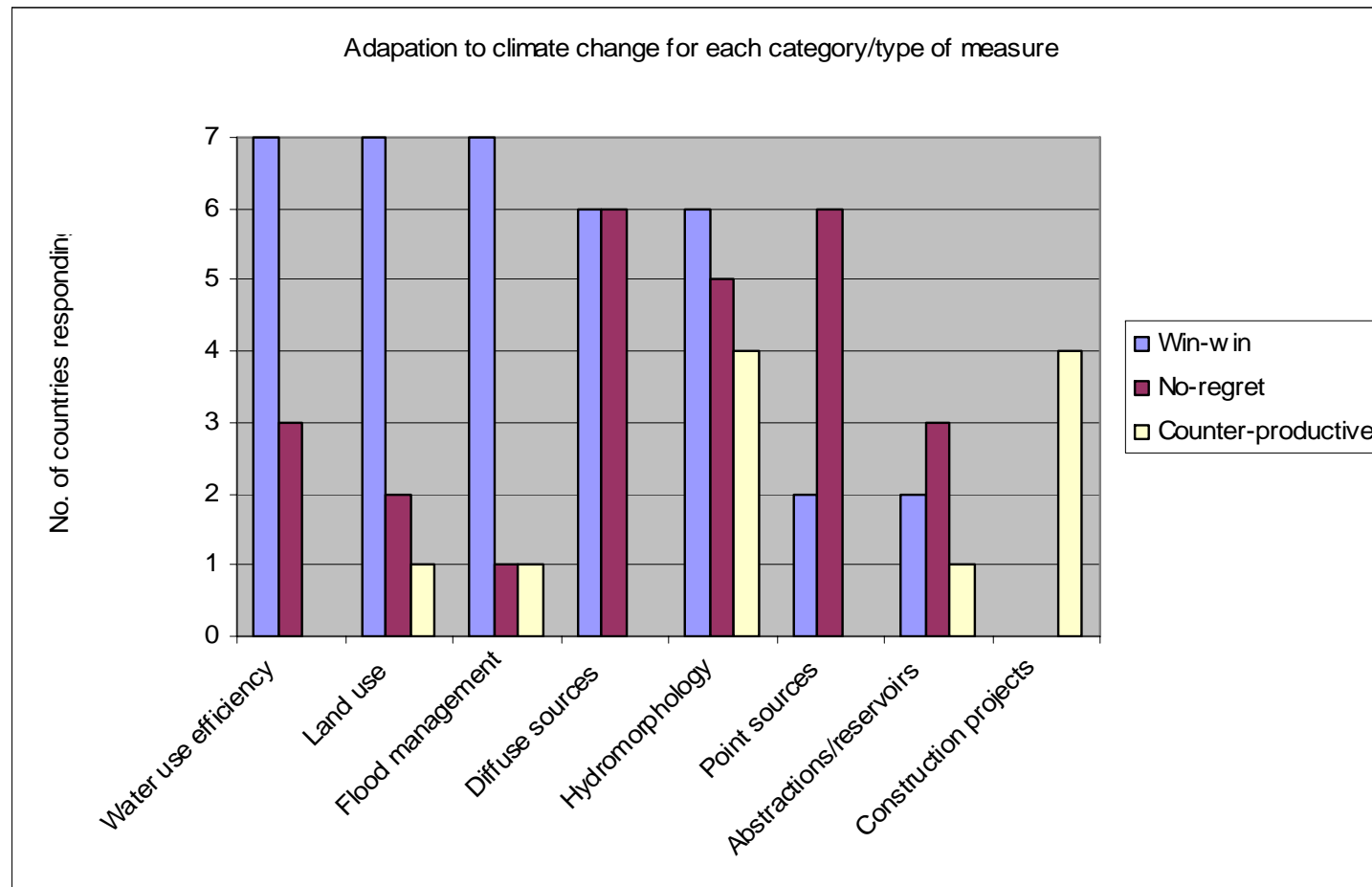
Reduction of water use
Land use management to
reduce flooding



No-regrets

Control of point sources
Control of diffuse pollution

Number of countries reporting measures (by category) that are seen to be win-win, no-regret or counter-productive in terms of adapting to a changing climate.



Projected Patterns of Precipitation Changes

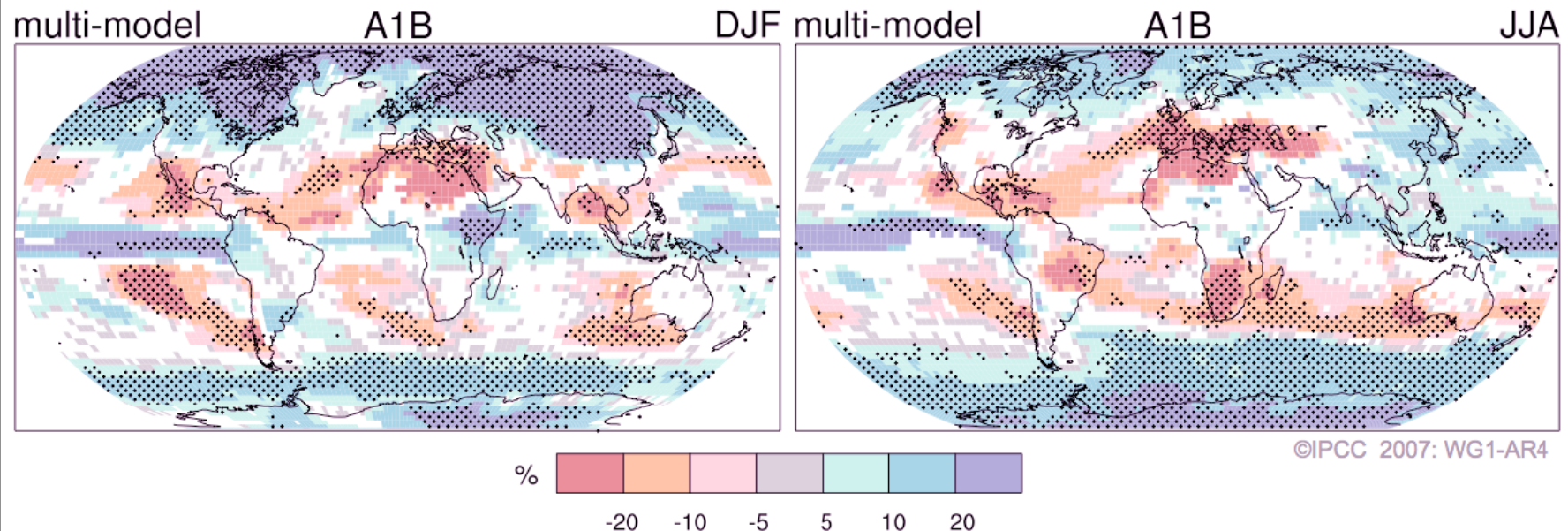
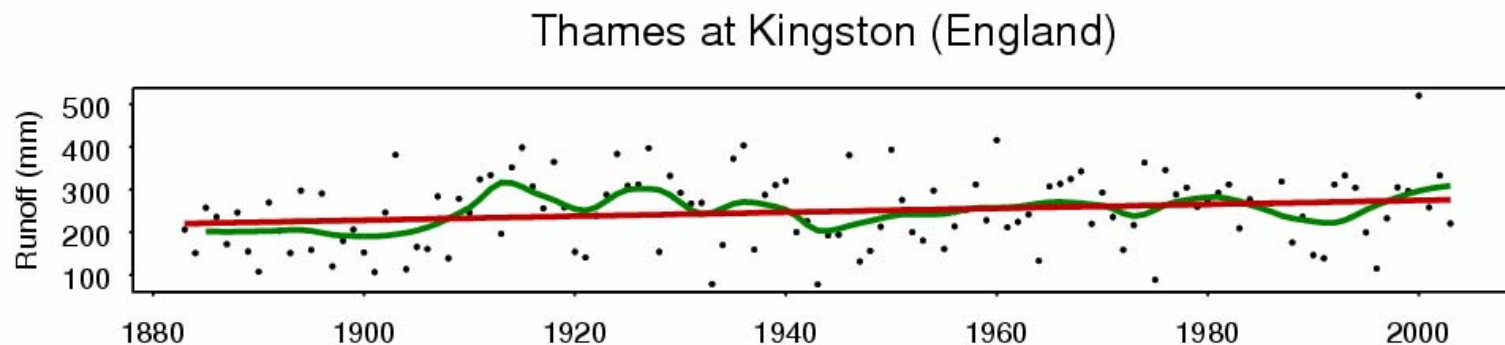


FIGURE SPM-6. Relative changes in precipitation (in percent) for the period 2090–2099, relative to 1980–1999. Values are multi-model averages based on the SRES A1B scenario for December to February (left) and June to August (right). **White areas are where less than 66% of the models agree in the sign of the change and stippled areas are where more than 90% of the models agree in the sign of the change.**

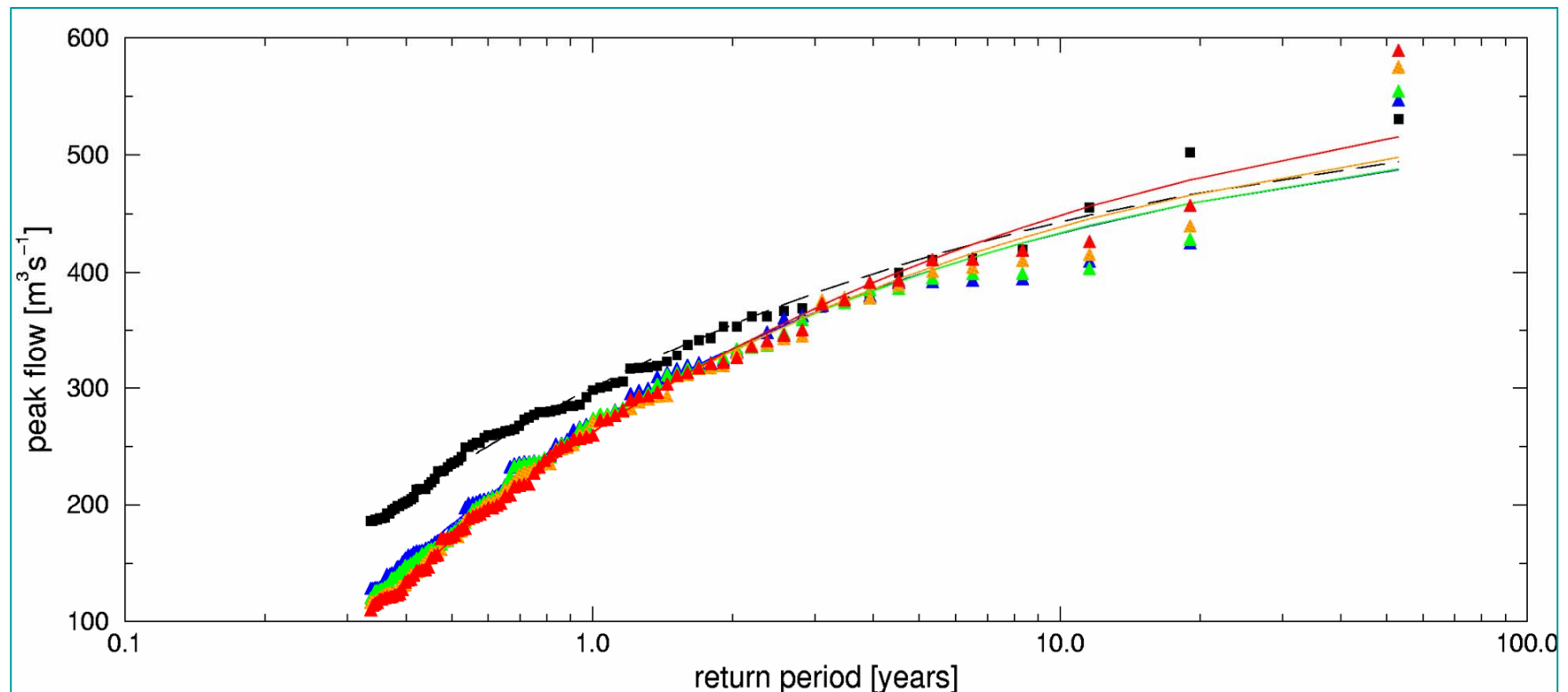
Problems in adapting to climate change – Stationarity

Climate change undermines a basic assumption, stationarity, that historically has facilitated management of water supplies, demands and risks.

It implies that any variable (eg. Mean annual flow or maximum annual flood peak) has a time-invariant probability density function whose properties can be estimated from the instrument record.



Flood frequency – climate change impacts



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Conclusion

RISK of not meeting policy demands is high!!

As a result of;

- 1. Policy conflicts**
- 2. Lack of scientific understanding of measures/impacts**
- 3. Current uncertainty with respect to climate change**

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Conclusion

It is good to have high ambition with regard environmental objectives with policies that will deliver this ambition BUT current ambition/legislation is running ahead of scientific understanding

There will be surprises

There will be new issues emerging

There will be failures

Future needs

- **Better data (spatial and temporal)**
- **Better process understanding**
- **Better climate predictions**