

# Addressing Risk and Uncertainty

## The role of economic instruments and financing mechanisms

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# Estimating the Cost of Adapting Water Systems

## Expenditure in water infrastructures to meet water demand in 2030

	Total (Climatic + Social Economic Pressures) USD Billion	Due to Climatic Pressures Only in 2030 – 25% assumption USD Billion	Due to Climatic Pressures Only in 2030 – 15% assumption USD Billion	Due to Climatic Pressures Only in 2060*– 25% assumption USD Billion	Due to Climatic Pressures Only in 2060*– 15% assumption USD Billion
Africa	223	56	33	100	60
Developing Asia	230	58	35	103	62
Latin America	23	6	3	10	6
Middle East	148	37	22	66	40
OECD Europe	25	6	4	11	7
OECD North America	16	4	2	7	4
OECD Pacific	1	0	0	0	0
Transition economies	54	14	8	24	14
<b>Total</b>	<b>720</b>	<b>180</b>	<b>108</b>	<b>321</b>	<b>193</b>

Sources: UNFCCC, 2007 (IPCC B1 SRES); Agrawala, S. et al, 2010; \* AD-WITCH calculations



# First-ever Comprehensive Data on Aid for Climate Change Adaptation

- In 2010, total bilateral climate change adaptation-related aid by members of OECD's Development Assistance Committee (DAC) was estimated at **USD 9.3 billion**.
  - Mitigation-related aid: 17.6 billion; with an overlap for activities tagged as both adaptation and mitigation-related of USD 4 billion.
- An estimated **USD 1.8 billion** was allocated to the water supply and sanitation sector

# A Focus on the Policy Environment

Can improve the prospects for spending adaptation investments well by:

- supporting a “mainstreaming”, rather than “climate-driven” approach at the policy level
- accounting for both “planned” and “autonomous” adaptation
- promoting long-term sustainability of investments
- explicitly addressing uncertainty and risk by embedding into policy approach

How to facilitate timely and efficient adaptation decisions (and avoid mal-adaptation) and manage risk in the face of uncertainty?

- Consider *expected* costs and benefits
  - Discounting rates appropriate for long time frames
- Minimise timing errors, which are likely in either direction – too early or too late
  - e.g. Real Options Approach for UK's Thames Estuary 2100 project
- Explicitly address water-related risks (e.g. consequence, likelihood, degree of predictability and distribution)
  - Risk-response framework

# Water markets

Murray Darling Basin, Australia



Colorado River Basin, US



Water markets can promote flexibility and efficiency in allocation, while taking into account critical thresholds for specific uses, e.g. environmental flows. The system of water rights which underlie water markets can be used to more equitably share risks, e.g. establishing proportional rights as opposed to rights defined in fixed quantities.



# Microfinance



Bangladesh

Microfinance has the potential to be more widely used to finance autonomous adaptation measures to reduce the vulnerability of poor by expanding coping strategies to deal with climate risks.

Can serve as a delivery mechanism for scaled-up funding, to channel funds to the sub-national level and target poor (often most vulnerable).

# Water Pricing

Pricing water to effectively signal scarcity value can reduce demand for water during periods of scarcity and signal optimal for new investments



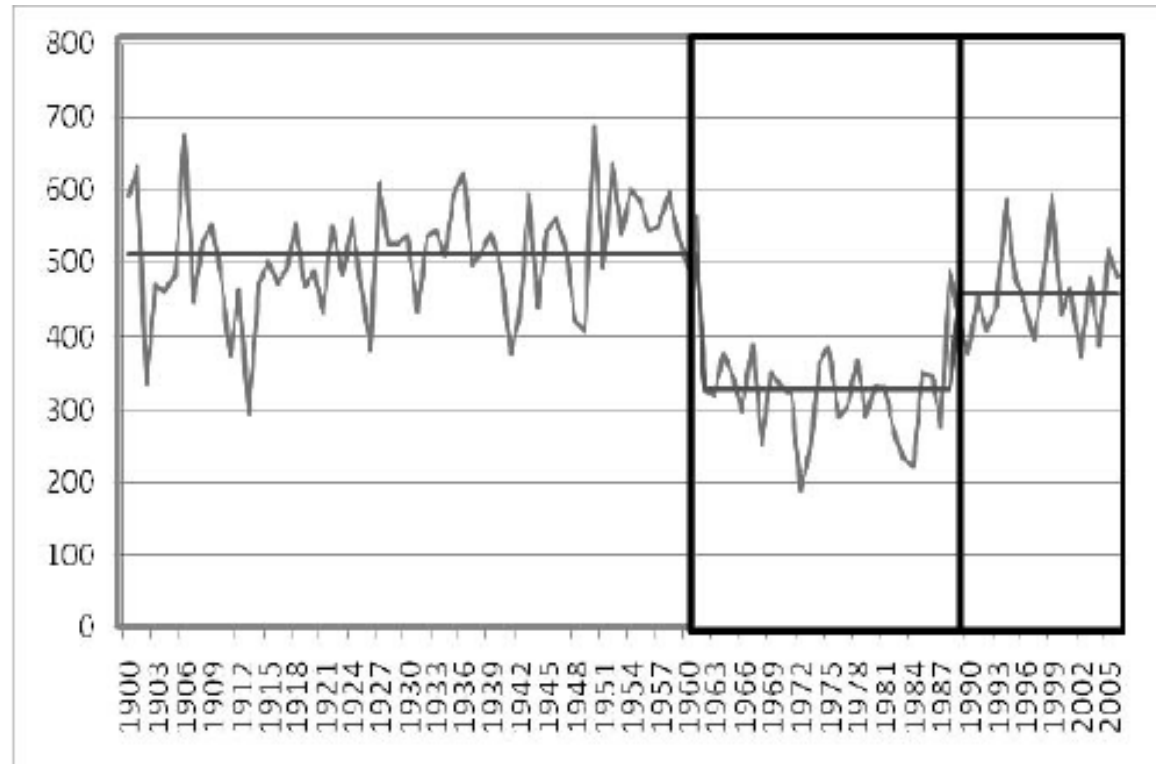
Desalination plant in Sydney, Australia



# Insurance Schemes

Insurance can provide incentives for adaptation and reducing exposure to risk; efficiently spread risks; and help mitigate adverse impacts of disasters.

Sahelian rainfall, weather data adjusted for trends



Pricing weather risk in the future, however, is extremely difficult, (premiums usually based on historical data). Depending on time period used, premiums may be very different and thus send very different signals in terms of adaptive responses.

# Public Private Partnerships



Thames Barrier, UK

Public private partnership (PPP) contracts should be climate proofed to explicitly address climate change risks. PPP schemes may be suitable to finance, build and operate dedicated defence structures, such as flood barriers.

# Eco-system Based Adaptation

Ecosystems based adaptation (e.g. restoring wetlands, protecting catchments) can be a cost-effective element of adaptation strategies.



Valle de Cauca, Columbia

As they are less capital intensive and often less costly, more easily scalable and reversible than engineered (“built”) alternatives, they can be a particularly good strategy in the context of uncertainty. Require a thorough understanding and assessment of the value of ecosystem services.



# Thank you

[www.oecd.org/water](http://www.oecd.org/water)

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