

Climate change heralds dry times ahead

Fresh water from rivers will be in even shorter supply as climate change gathers pace. Increasing temperatures will dramatically impact on the world's great rivers. Combined with population growth and more competition for water resources, rivers are becoming the new political battleground, according to three recent international reports.

While some flows will increase, many that provide water for the majority of the world's population will simply dry up.

Climate change is now recognised as a real and significant worldwide trend. Rising levels of carbon dioxide pollution, caused by the burning of oil, coal and gas, warm the atmosphere and affect water vapour, cloud cover, solar radiation and ozone, which in turn will have an impact on evaporation and rainfall. This is expected to shift precipitation patterns so that some regions already receiving abundant rainfall will get more, while others receiving little rainfall may get less, according to climate modelling recently undertaken at Princeton University and published in the journal *Climate Change* (vol 64, p 59).

The changes will present a "profound challenge" to the world's water managers, says the report's lead author Syukuro Manabe. They are also likely to fuel calls for a new generation of super-dams and canals to move water round the planet, like China's current scheme to transfer water between north and south.

Some of the predicted changes are already happening.

Once-great rivers like the Yellow in China, the Ganges and Indus in India, and the Rio Grande on the border of Mexico and the United States now regularly dry up or clog up, with obvious consequences for aquatic species, and human health and sanitation, especially for people who depend intimately upon their rivers for drinking, bathing, and cooking water.

And in a global warming study published recently by the journal *Science*, scientists say Africa's rivers face dramatic disruption that will leave a quarter of the continent severely short of water by the end of the century.

In the first detailed assessment of climate change on the Africa's waterways, researchers found that watercourses on the continent are highly sensitive to shifts in rainfall patterns. Even modest decreases in rain in western Africa will see rivers lose as much as 80% of their water, triggering a surge of what the scientists call "water refugees".

Worldwide, freshwater shortages are likely to trigger increased environmental damage over the next 15 years, according to another United Nations Environment Programme report of the world's waters. Falls in river flows, rising saltiness of estuaries, loss of fish and aquatic plant species and reductions in sediments to the coast are expected to rise in many areas of the globe by 2020. These in turn will intensify farmland losses, food insecurity and damage to fisheries along with rises in malnutrition and disease.

Overall, agriculture ranks highest as the key concern on the freshwater front among the 1,500 experts involved in the final report of the Global International Waters Assessment (GIWA). The report, *Challenges to International Waters: Regional Assessments in a Global*

Perspective, released in March 2006 by UNEP, was funded by the Global Environment Facility and several national governments.

So what can we do? The complex issue of climate change and fresh water from rivers will be tackled at this year's International Rivers*symposium*, which Australia hosts each year in Brisbane. The theme, '*Managing rivers with climate change and expanding populations*' looks at the challenge of meeting human needs for water under changing climatic conditions.

And it's not all about doom and gloom. The symposium's breadth of presentations show how good science and community action can improve the health of river systems, how new technology can maintain water quality, and how knowledge can be used to sustain community needs with adequate environmental flows. Hundreds of symposium participants share case studies and examples on how to tackle threats to their rivers. Often, it's about tackling social problems that require political action.

The symposium is an integral part of Brisbane's annual broad-based cultural event, the *Riverfestival*. Now in its ninth year, the symposium provides a global forum which aims to make a difference to the declining state of rivers and waterways globally. Sessions include river issues such as planning for climate change; managing wetlands; responding to natural disasters; the role of NGOs in managing rivers; challenges for rivers in the Pacific; Indigenous river management; environmental flow for rivers and estuaries; and community catchment management. It's a event where participants learn how to act locally.

Rivers*symposium* attracts leading water experts from around the world and Brisbane's Convention Centre will be buzzing from 4 - 7 September 2006 with new ideas, policies, agreements, debates and technology to address some of the world's most pressing water related issues.

This year's keynote presenters include David Grey (World Bank), Dr John Olley (CSIRO Land and Water), Dr Caroline Sullivan, (UK Centre for Ecology and Hydrology), Professor Pedro Arrojo Agudo (New Water Culture Foundation), Roberto Epple (European Rivers Network), Emilio Gabbrielli (Global Water Partnership), David Molden and Max Finlayson (International Water Management Institute).

Once again, the four-day event includes announcement and presentation of the prestigious International and National Thies River*prize*. The prize recognises outstanding achievements by groups involved with river conservation and management. Finalists will present their work in both plenary and concurrent sessions.

A number of Australian river and catchment case studies will be studied. Overseas case studies such as the Congo, Amazon, Vistula and Chao Phraya rivers will be offered.

Special workshops are planned for climate change, AusAID regional plans, World Water Monitoring Day, and water planning in Australia. Several Cooperative Research Centres (CRCs) have young postgraduate students competing for the Young Water Scientist of the Year Award.

The 2006 International Rivers*symposium* is open to everyone and early bird registrations are available. For information, program outline and booking visit: www.riversymposium.com

Media enquires: Don Alcock, phone 0418 882 063 or Jenni Metcalfe, 0408 551 866