



## **Swiss Re – its history and Sharing Solutions programme**

The Swiss Re Group is one of the world's leading reinsurance companies, providing risk transfer, risk financing and asset management to its global client base. Founded in Zurich in 1863, the company has 70 offices in more than 30 countries with over 8,000 employees.

As experts in risk and risk management, Swiss Re encourages debate and exploration into the hazards and events that shape today's society – water and climate change and their devastating effects on communities and businesses are of particular interest. Anticipating, identifying and understanding the implications that these issues have on global society will help to ensure that sound precautionary measures are developed, thus leading to a sustainable future.

Some of Swiss Re's most visible contributions to good corporate citizenship are its sponsoring initiatives branded as 'Sharing Solutions'. The company places high importance on supporting communities in which it serves, fostering solid relationships with stakeholders and raising awareness for sustainable resource management practices.

To reflect Swiss Re's core values and expertise, several of the Sharing Solutions initiatives are aimed towards raising awareness for access to and conservation of clean drinking water resources and global climate change. These include:

- Working Water – Swiss Re has supported the Museum of London's reconstruction of a full-scale replica of a Roman water-lifting machine discovered in the City of London
- Planting trees in Haiti – supporting the planting of over 600,000 trees, which will make an important contribution towards protecting the country's water sources
- Water is Life – an integrated water management project to combat drought effects in the semiarid north-east region of Brazil
- RiverSmart – a public awareness and education campaign for clean rivers and drinking water in the US
- RE-Source Award - worth USD 100 000 in total and is granted annually to one or several projects which genuinely seek to contribute to raising awareness of the ecological, social and

economic significance of water sources

## **The Water Issue**

Research from Swiss Re shows that half of the world's population will live in water-stressed conditions by 2025 and a third will face water scarcity unless significant changes in water management are made by governments, private industries and consumers alike.

This shortage, the report finds, has been exacerbated by a growth in global population, excessive recreational and industrial use, and most significantly, agricultural practices, which consume vast quantities of freshwater worldwide – industries and services account for 20 per cent of global withdrawals.

Domestic freshwater use accounts for around 8 per cent of global withdrawals, or 120–200 litres per person/day. In many large cities in developed countries, municipal freshwater withdrawals provided for the immediate needs of local small businesses and households alone amount to 300–600 litres per person and day. Meanwhile, the equivalent figure for Asia, Africa and Latin America approximates only 50–100 litres.

Irrigation-based agriculture is one of the main causes of unsustainable water demand, accounting for 69 per cent of water usage worldwide. Strategies need to be revised and consumer behaviour addressed to, not only help prevent the impending water crisis, but also resolve the current problems in developing countries.

The financial services industry has a role to play in this debate, both as financial backer and as product innovator.

## **Water, water everywhere, nor any drop to drink**

### **Water availability – facts**

- Water covers more than two-thirds of the Earth's surface.
- 97 per cent of it consists of non-potable salt water, which cannot be consumed by humans or used in agriculture or industry. Another two per cent is currently frozen within icecaps and



glaciers. The remainder – less than one per cent of the Earth's total volume of water – is available to cover human needs.

- In 1995, 41 per cent of the world population was living in so-called "water-stressed" conditions, water stress being defined as per capita/year water availability of 1,700 m<sup>3</sup> or less.
- By 2025, 49 per cent of the world population (3.5 billion people) will be living in water-stressed conditions if current supply and demand trends continue.
- One third will be living in regions facing water scarcity, ie with less than 1000 m<sup>3</sup> freshwater available per capita/year.
- The agricultural sector accounts for almost 70 per cent of water withdrawals worldwide. Inefficient irrigation practices in agriculture account for up to 90 per cent of net freshwater use in developing countries.

## **Water quality - facts**

- 1.1 billion people today have no access to clean drinking water: 63 per cent of them live in Asia, 28 per cent in Africa, 7 per cent in Latin America and the Caribbean and 2 per cent in Europe.
- 2.9 billion people today have no access to adequate wastewater treatment and sanitation facilities: 80 per cent of them live in Asia, 13 per cent in Africa, 5 per cent in Latin America and the Caribbean and 2 per cent in Europe.
- Throughout the world, vast quantities of industrial waste containing more than 100,000 different chemical compounds are still discharged directly into the waterways – and this figure is growing!
- Endocrine-disruptive chemicals, antibiotics and other chemicals: many of these pollutants may only be present in low concentrations but are widely spread and their consequences are nevertheless severe.
- In the US, some 40 per cent of surface water is considered unsafe for swimming or fishing.
- In Bangladesh, 20 million people are suffering from arsenic poisoning, 40 million are affected by natural arsenic in drinking water. Vietnam has similar problems and it is also an emerging issue in North America.

## **Water problem – actions**

Swiss Re's commitment can be characterised as follows:

- We promote awareness for water-related problems and expertise among our clients, shareholders and employees.
- We promote a constructive dialogue on water issues to help establish legal frameworks, guidelines and best practices methods.
- We include specific criteria for both risk selection and safety and preventative measures in our risk transfer concepts. These same fundamentals apply for managing investments and our corporate properties.
- We support eco-efficient water initiatives launched by government, science and industry.



## Relevance to insurance

Swiss Re is one of the world's leading reinsurers. Reinsurance is in effect insurance for insurance companies - i.e., the acceptance by one or more insurers of all or part of another insurer's risk.

The demand for innovative financial instruments and insurance coverage related to water will increase, as will the demand for other so-called "risk transfer" measures.

For example:

- Population growth, excessive water usage and climate change will create regional water stress, with agriculture, water suppliers and the energy sector put at increased risk. This will lead to a growing demand for what are called weather and water derivatives. These are relatively new products for organisations to offset the effects that weather and water issues can have on business. For example, a payout from a weather derivative could be triggered if a certain rainfall level is not reached - so, if the limit were set at, say, 300 mm precipitation in a defined period, the pay-out would increase depending on how much lower the final rainfall was.
- As water supply and sanitation systems become obsolete and inefficient, it is estimated that global annual investments of USD 180 billion are required, which brings the need for credit risk guarantees - i.e. to cover the risk that borrowers default on the repayment of a loan.
- Deregulation of water supply and sanitation is on the increase, and as water shifts from being a public commodity to a commercial product new investment requirements are created, while the demand for product liability cover is expected to increase.
- The range and quantity of pollutants is increasing, such as endocrine disrupters and antibiotic-resistant microorganisms, which in turn have a negative impact on sea and freshwater quality. This brings with it more insurance liability claims such as environmental impairment liability.
- And finally, over 45,000 large dams (i.e. at least 15 metres high and 3 million cubic metres capacity) are in use around the world, which are exposed to a multitude of property, political and reputational risks requiring specific risk transfer solutions.



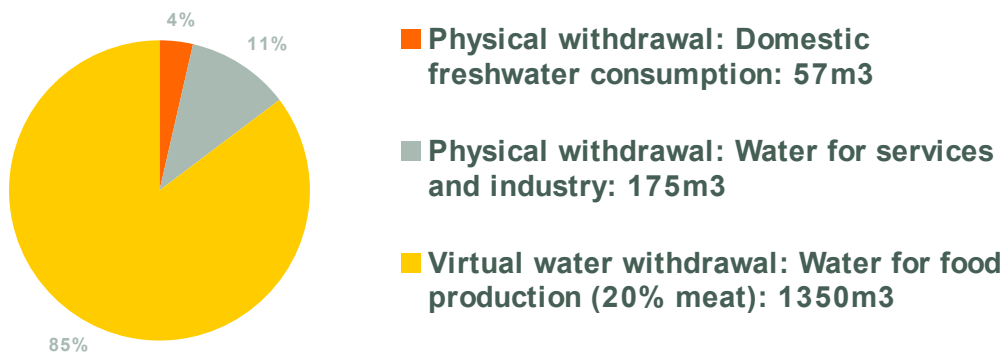
## Graphs and data

### Freshwater consumption

Human freshwater consumption includes domestic freshwater usage for cooking, washing and sanitation, and water used by the industrial and service sectors, all of which is provided by municipal or private water supply systems. To quantify total human water withdrawals, we must also take into account the additional element of 'virtual water'. This is the theoretical equivalent of freshwater used for food production to meet human nutritional requirements.

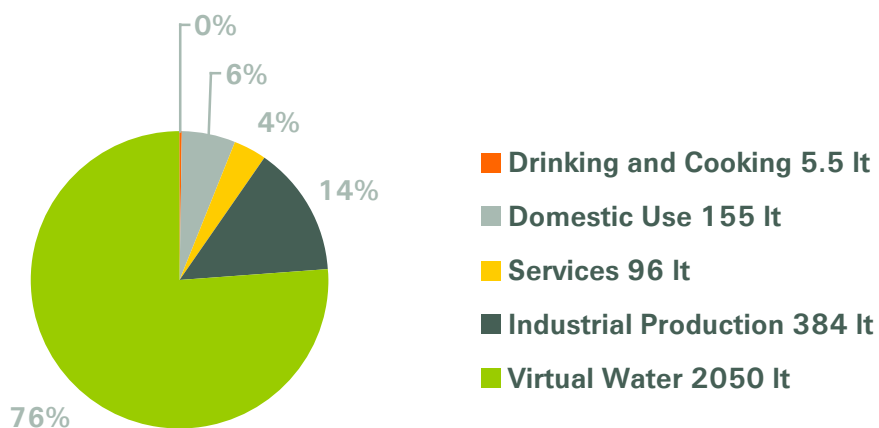
**Figure 1: Total annual water withdrawal per person: 1500-1800 m<sup>3</sup>:**

This chart shows the average amount of freshwater consumed by a European adult (average net income), 20 per cent of whose diet consists of meat. Total: approx. 1,600 m<sup>3</sup>.



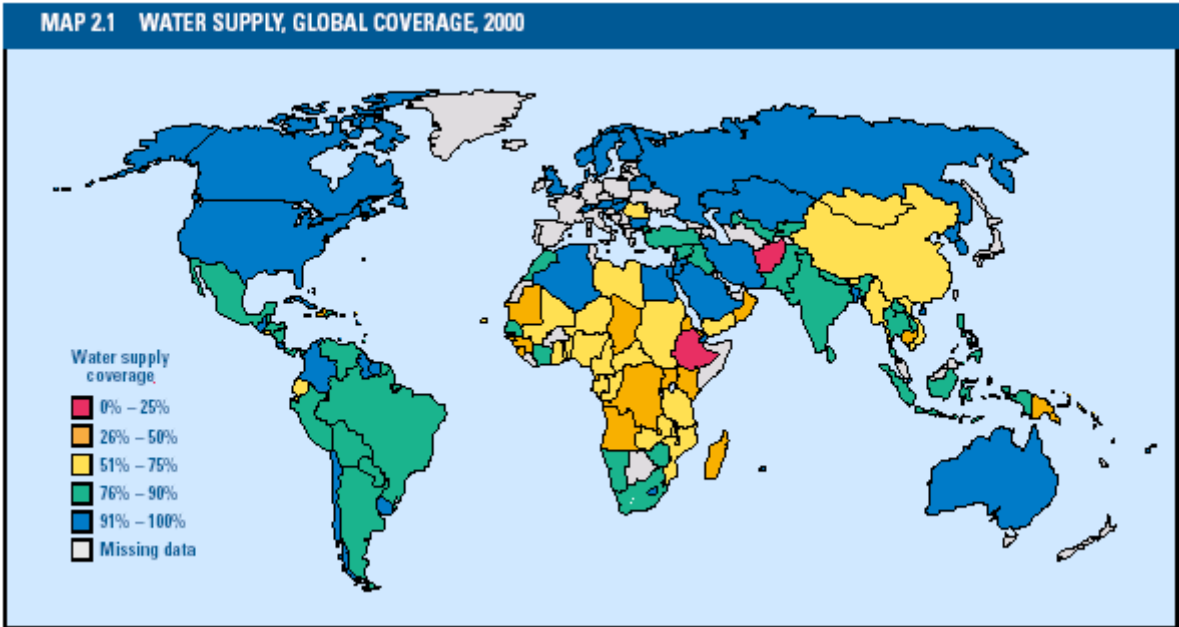
**Figure 2: Daily freshwater consumption per person:**

This chart shows the average amount of freshwater a European adult (average net income), whose diet is entirely vegetarian, consumes per day. Total: approx. 2,700 lt. (Where the diet contains 20 per cent meat, total daily consumption amounts to 4,400 lt.)



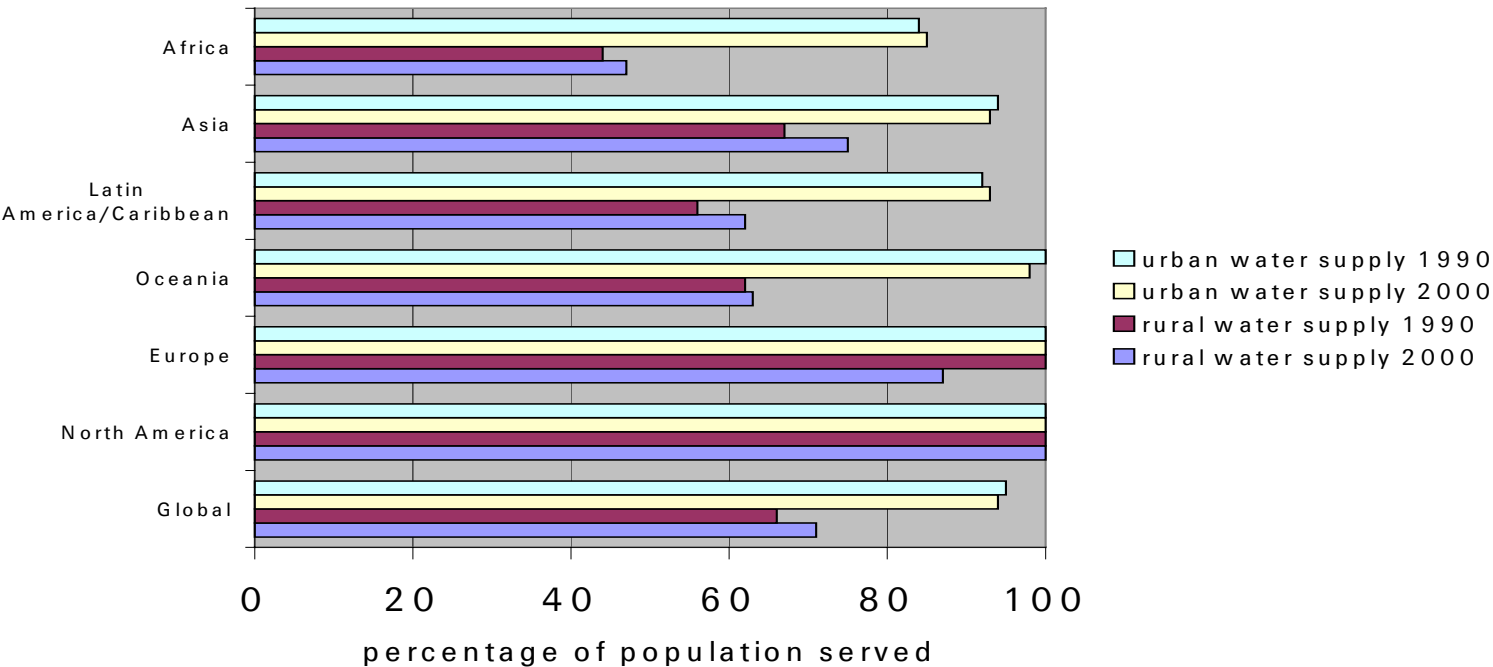
Water supply

Figure 3: Water supply coverage in 2000 (percentage of inhabitants served by adequate water supply)



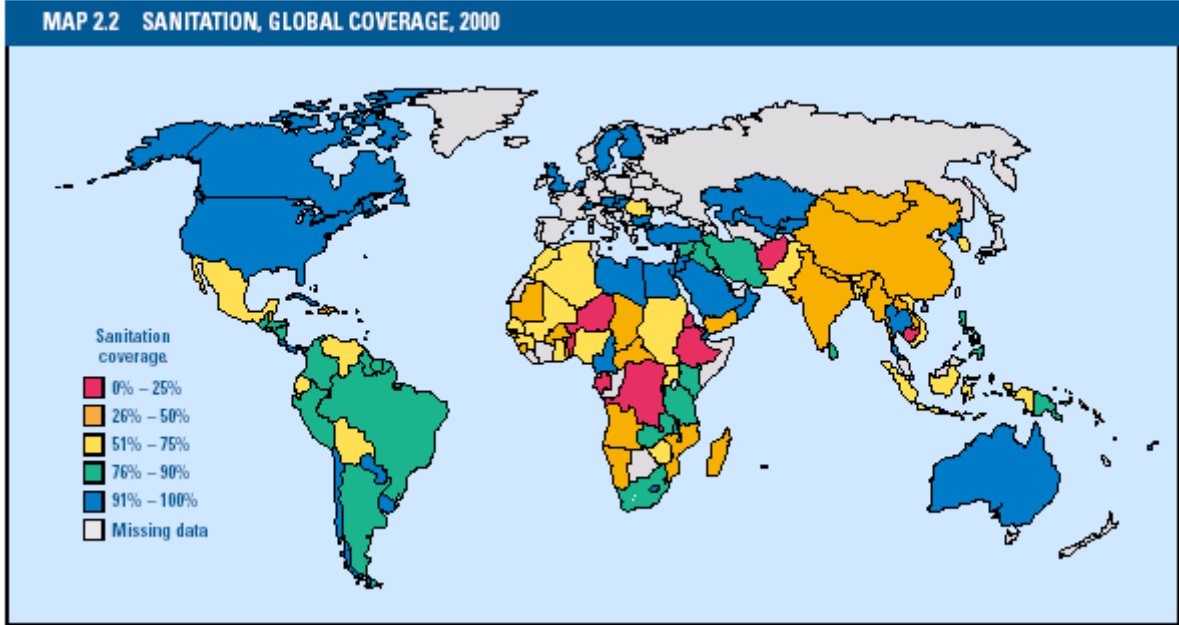
Source: WHO, UNICEF (2000)

Figure 4: Access to improved water supply by region



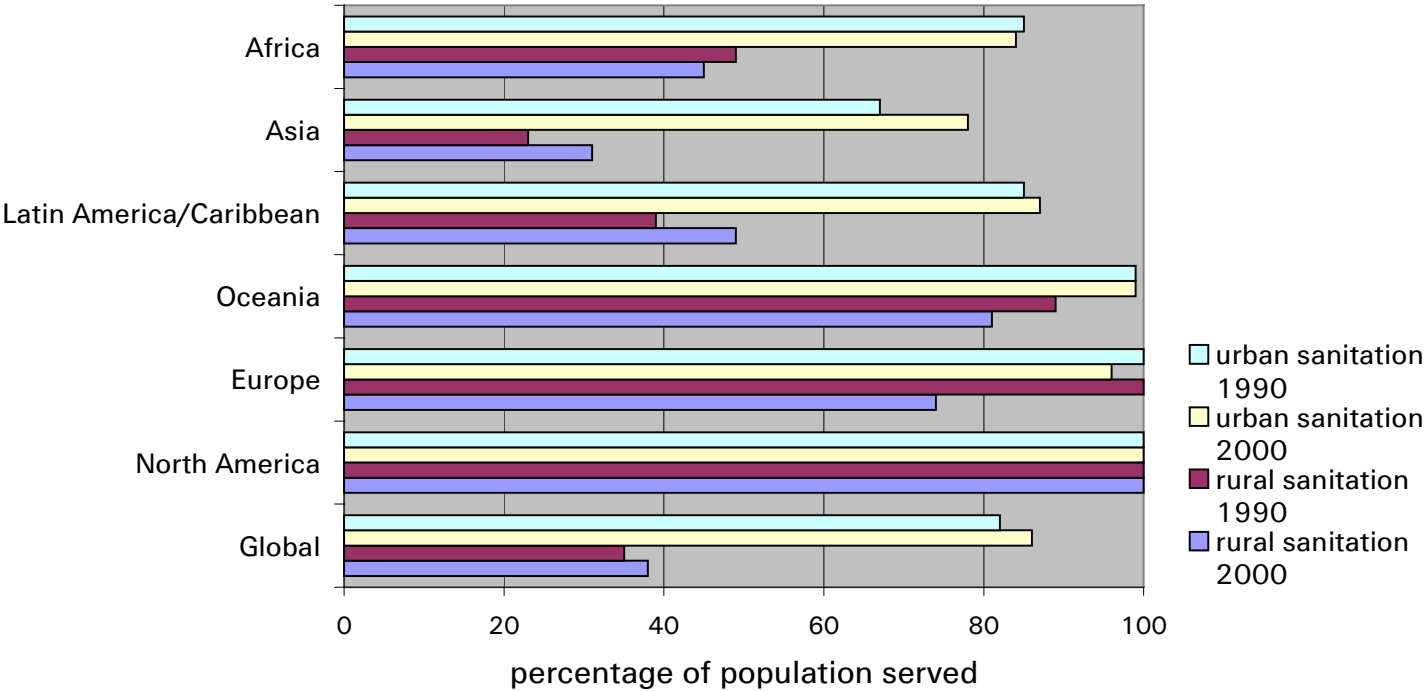
Water sanitation

Figure 5: Water sanitation coverage in 2000 (Percentage of inhabitants served by adequate sanitation)



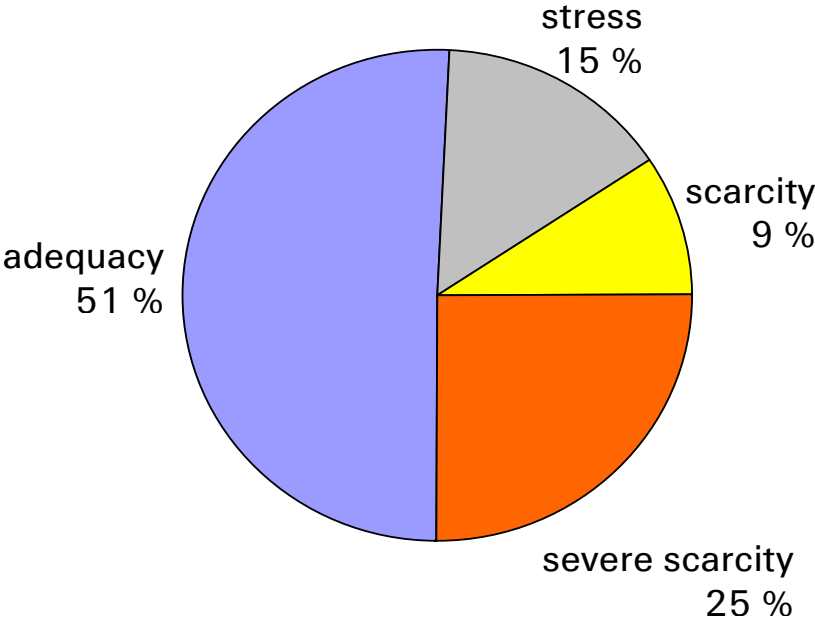
Source: WHO, UNICEF (2000)

Figure 6: Access to improved water sanitation by region



Water availability

Figure 7: Projected world water availability 2025



**Availability categories** (per person and year)

- severe scarcity: < 500 m<sup>3</sup>
- scarcity: 500–1,000 m<sup>3</sup>
- stress: 1,000–1,700 m<sup>3</sup>
- adequacy > 1,700 m<sup>3</sup>

**Water and health**

**Figure 8: Water-related illnesses and deaths**

<b>Disease</b>	<b>Average annual illnesses and deaths</b>
<i>Fecal-oral infections (waterborne and waterwashed)</i>	
Diarrhoea	1.5 billion cases for children under 5, 3.3 million deaths (5 million deaths all ages)
Cholera	500 000 cases, 20 000 deaths
Typhoid fever	500 000 cases, 20 000 deaths
Ascariasis (roundworm)	1.3 billion infected, 59 million clinical cases, 10 000 deaths
<i>Water-washed infections (poor hygiene)</i>	
Trachoma	146 million cases, 6 million people blind
<i>Infections related to defective sanitation</i>	
Hookworm	700 million infected

Source: Van der Hoek, Konradsen, and Jehangir 1999