

**Prof. Marcos Vinícius Folegatti**

Gestão das Águas nos Comitês de  
Bacias Hidrográficas

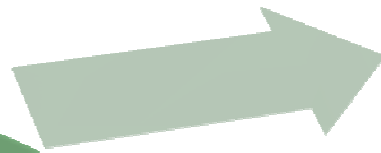
# Disponibilidade de recursos hídricos no mundo



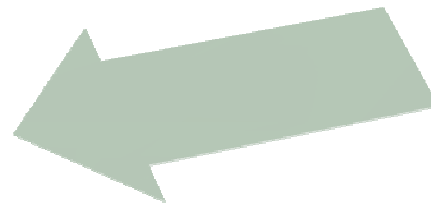
Instituto Nacional  
de Ciência e Tecnologia  
Engenharia da Irrigação

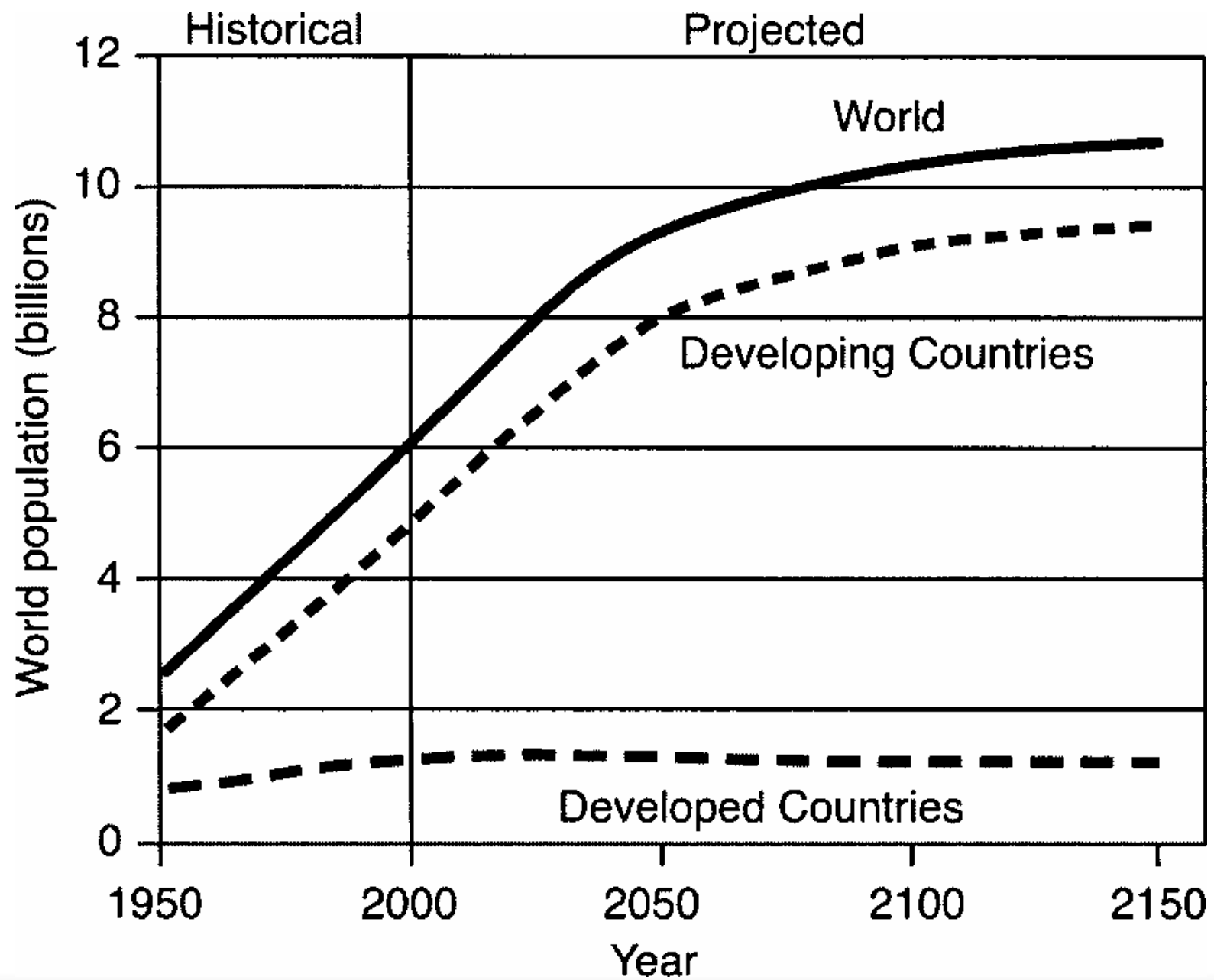


Elemento  
essencial  
para a  
vida



A vida é  
inerente a  
presença  
de água





Historical and projected world population (adapted from UNDESA, 2002).

Bem-estar

Onde

Água

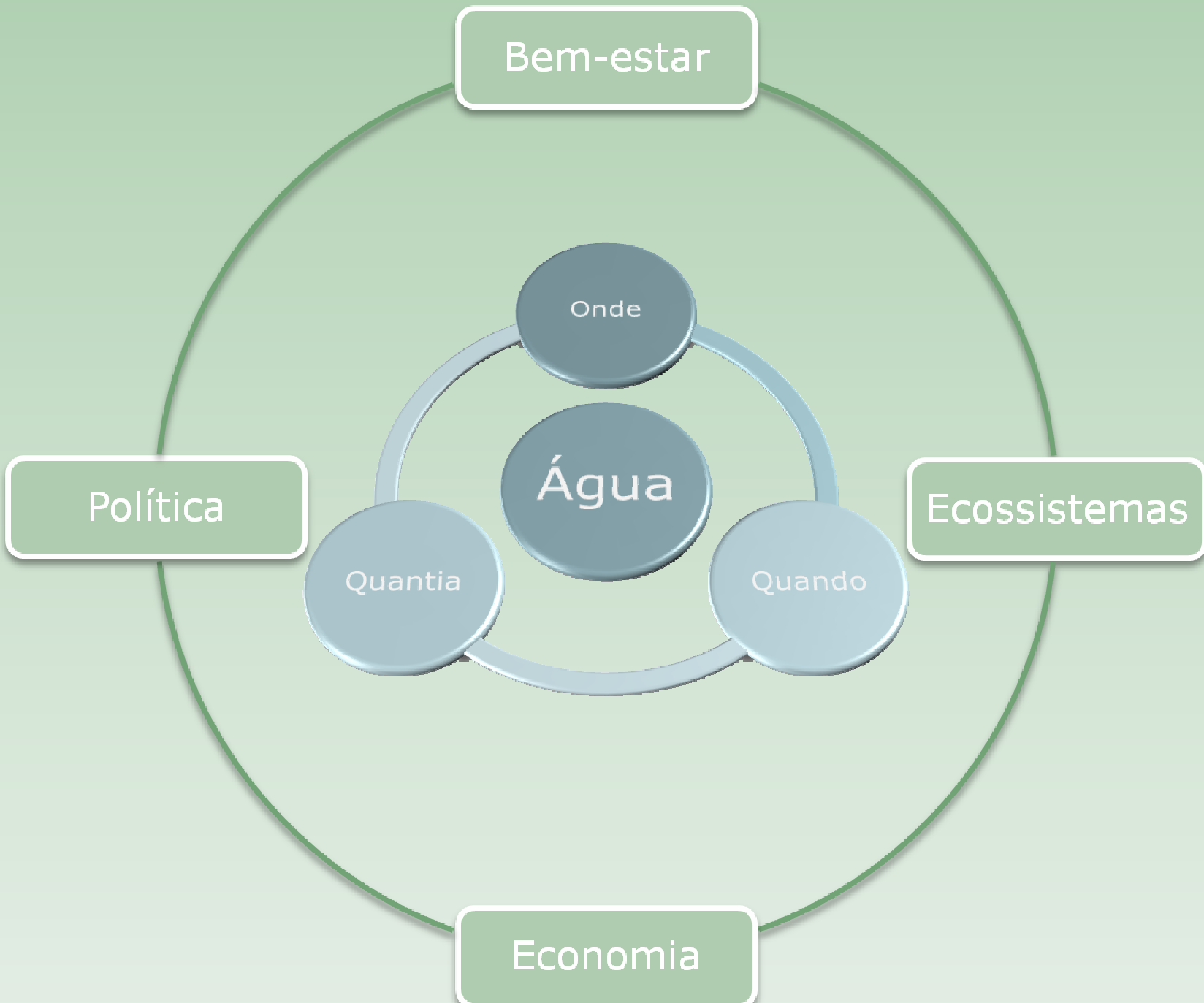
Quanta

Quando

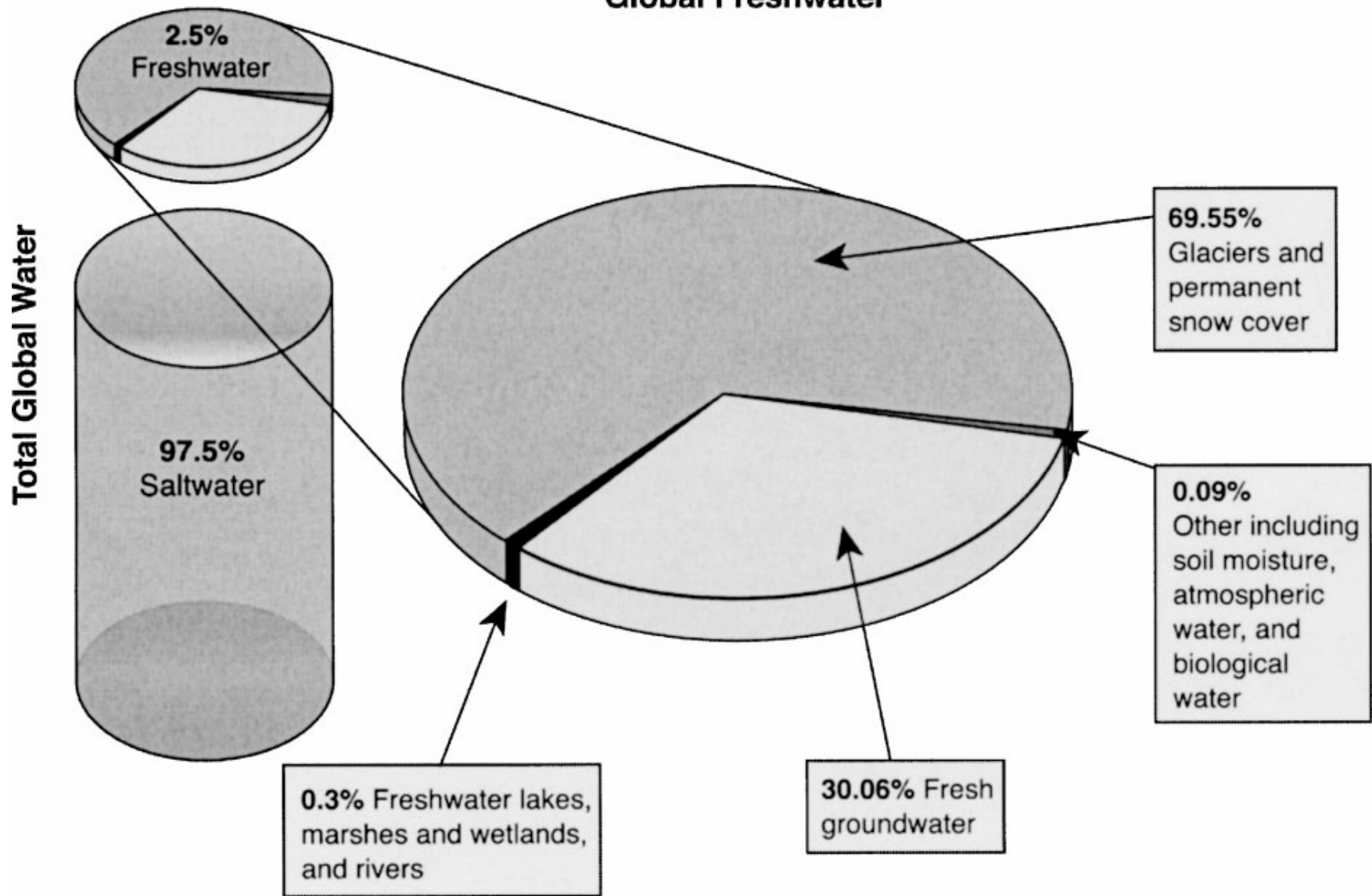
Política

Ecossistemas

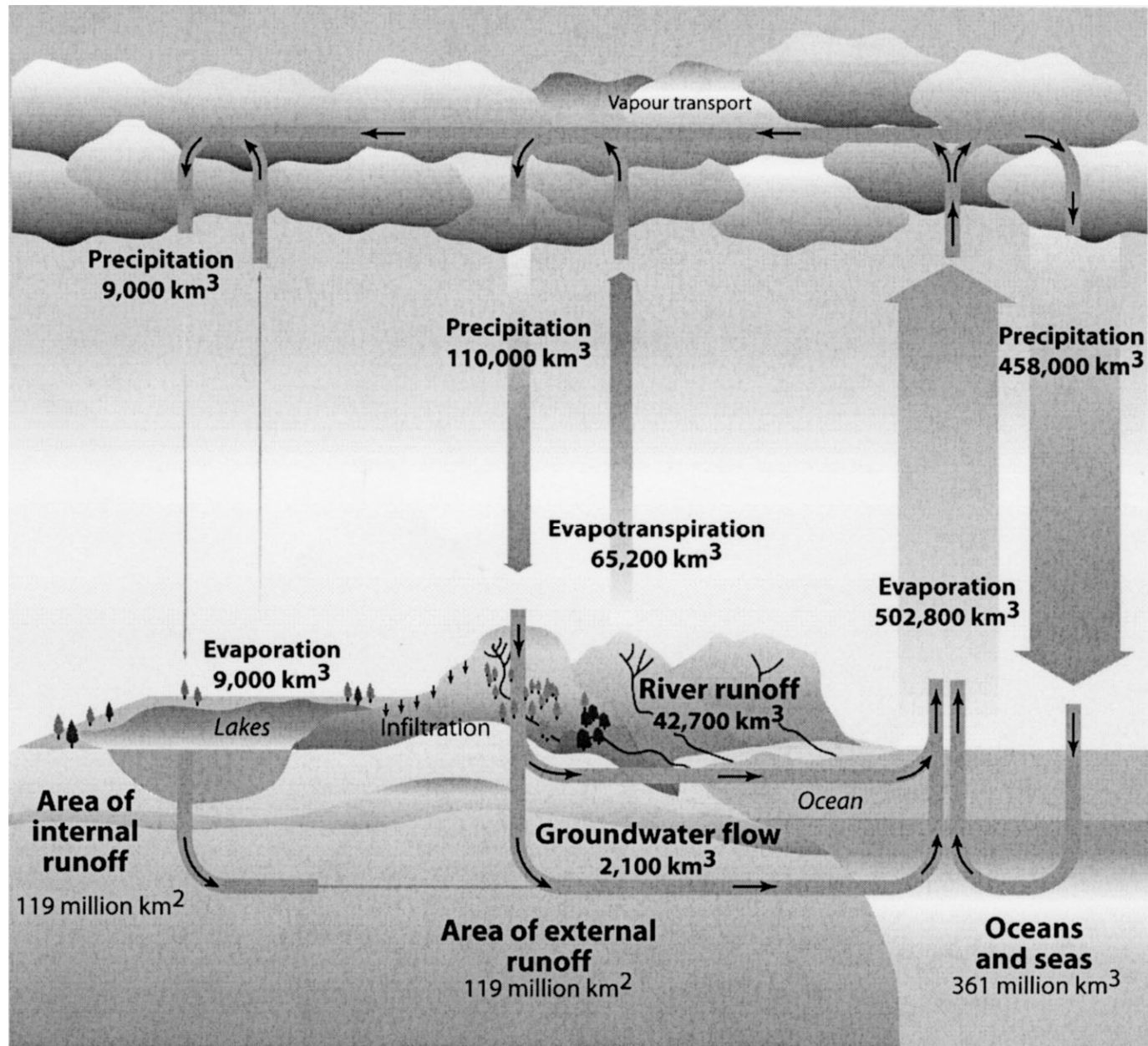
Economia



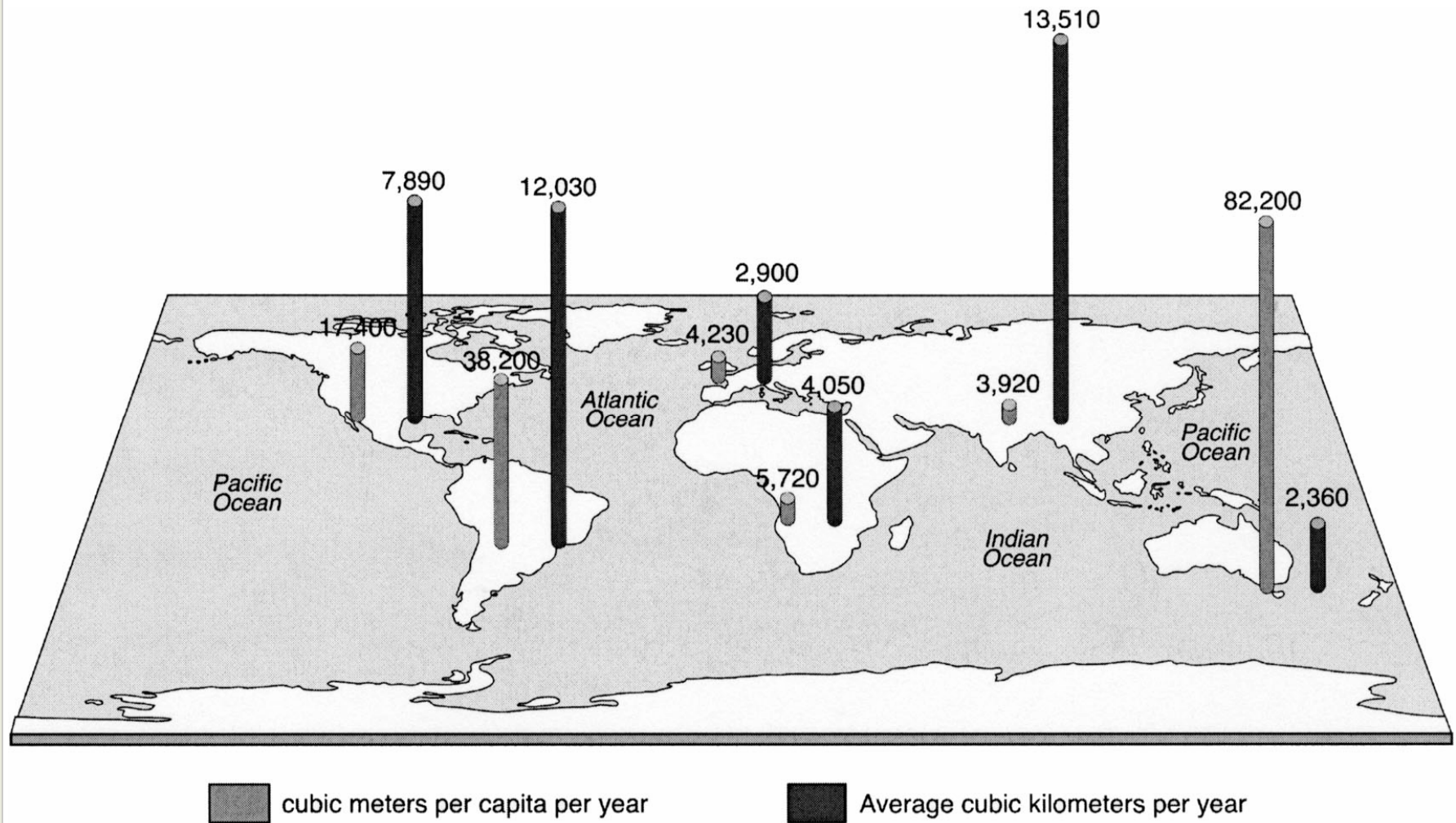
## Global Freshwater



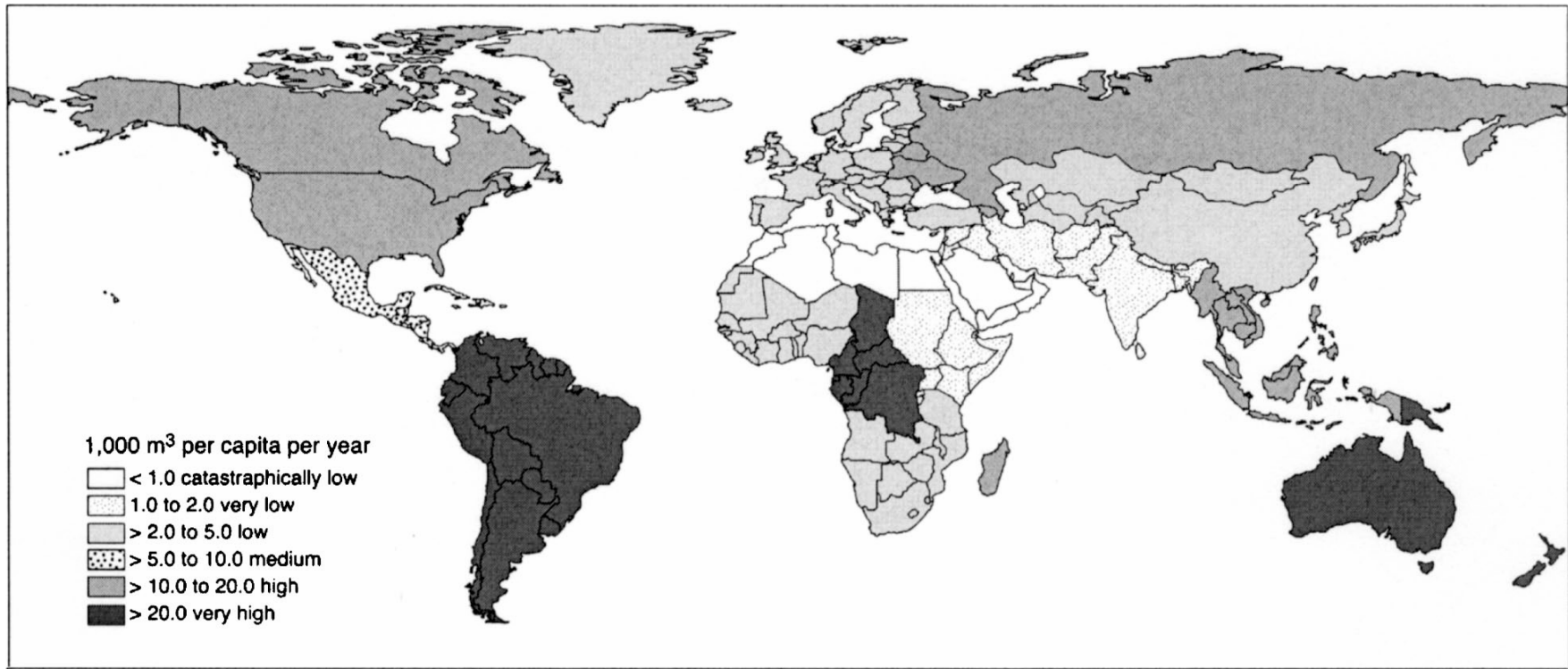
Global freshwater distribution (adapted from Shiklomanov, 1998).



World's water cycle (adapted from UNEP, 2002b).

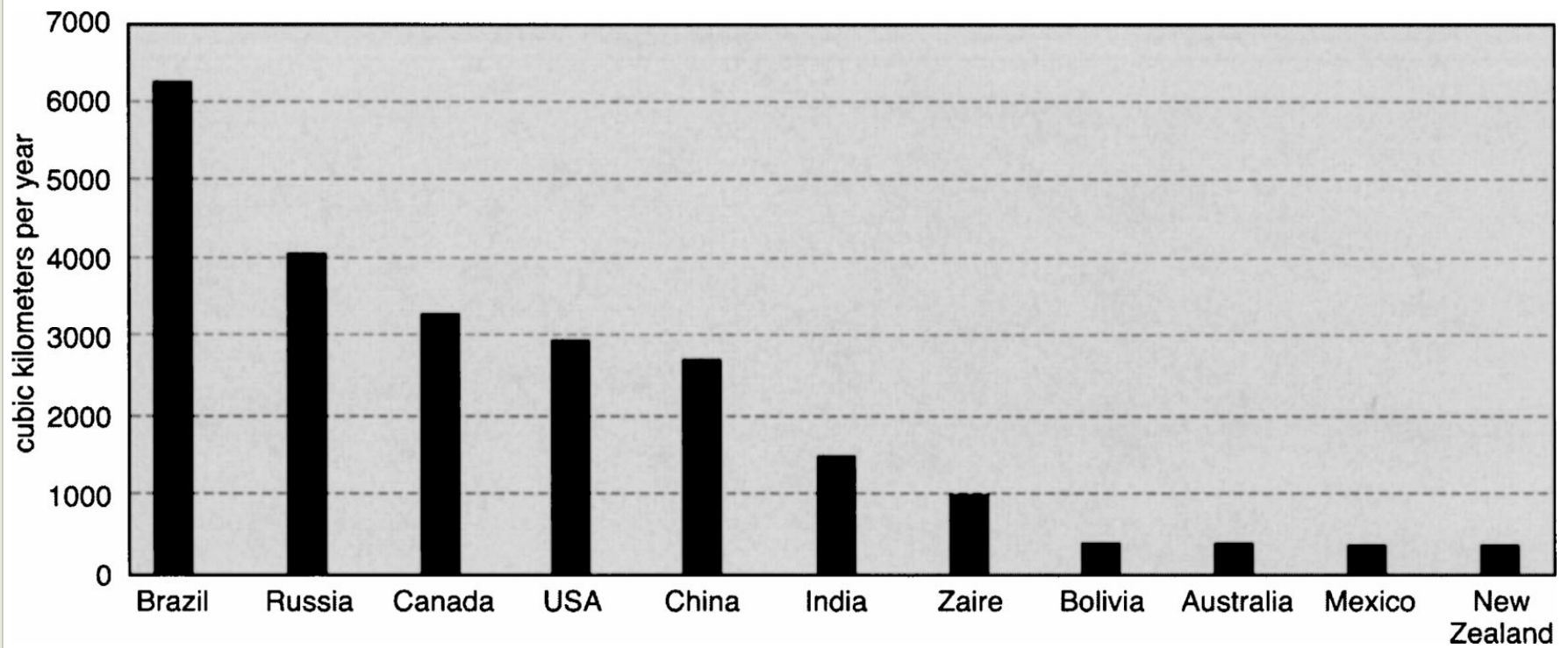


Continental water availability and specific water availability per capita (Shiklomanov, 2000).

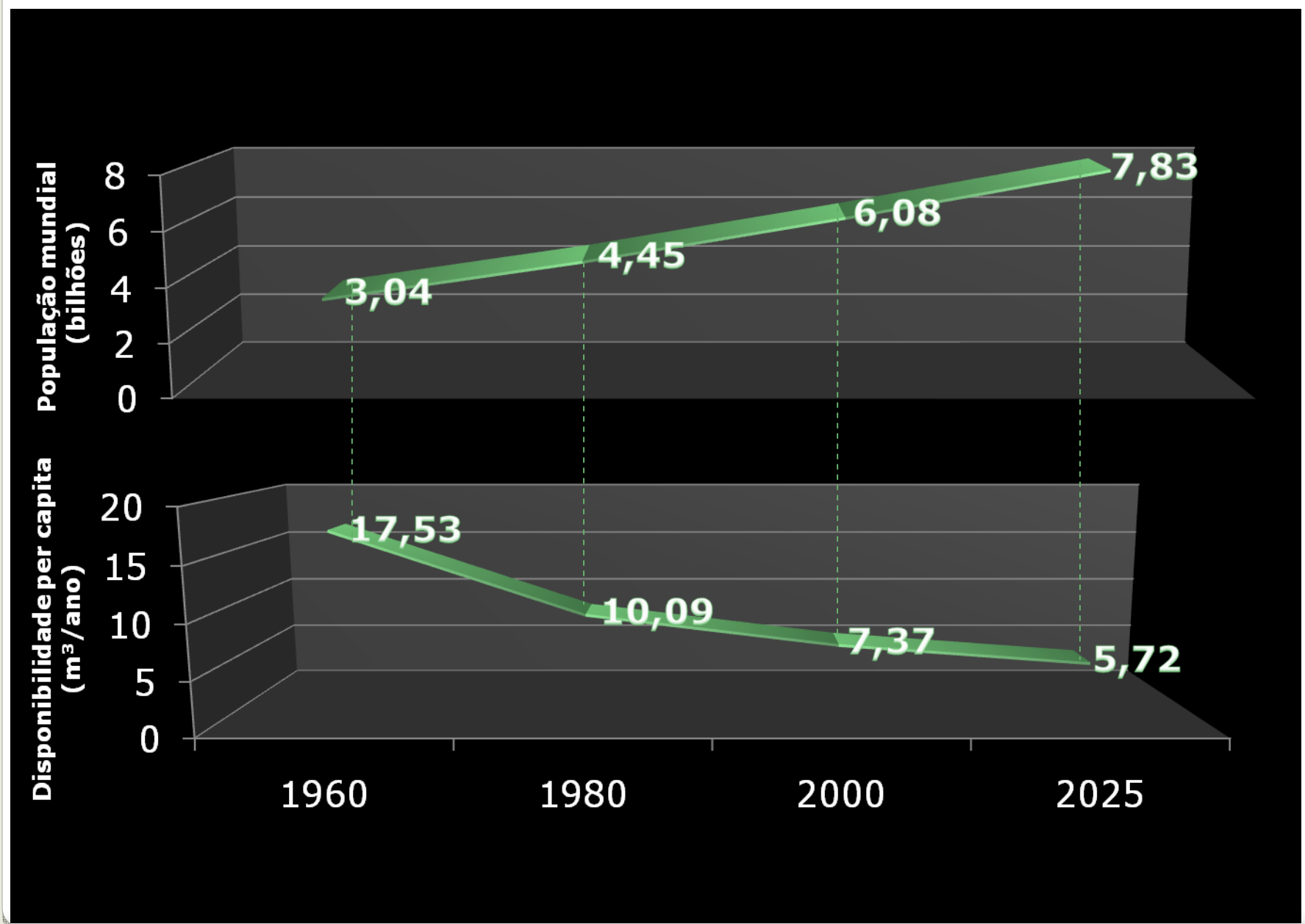


Water availability by subregion in 2000 measured in terms of 1000 m<sup>3</sup> per capita per year (adapted from UNEP, 2000a).

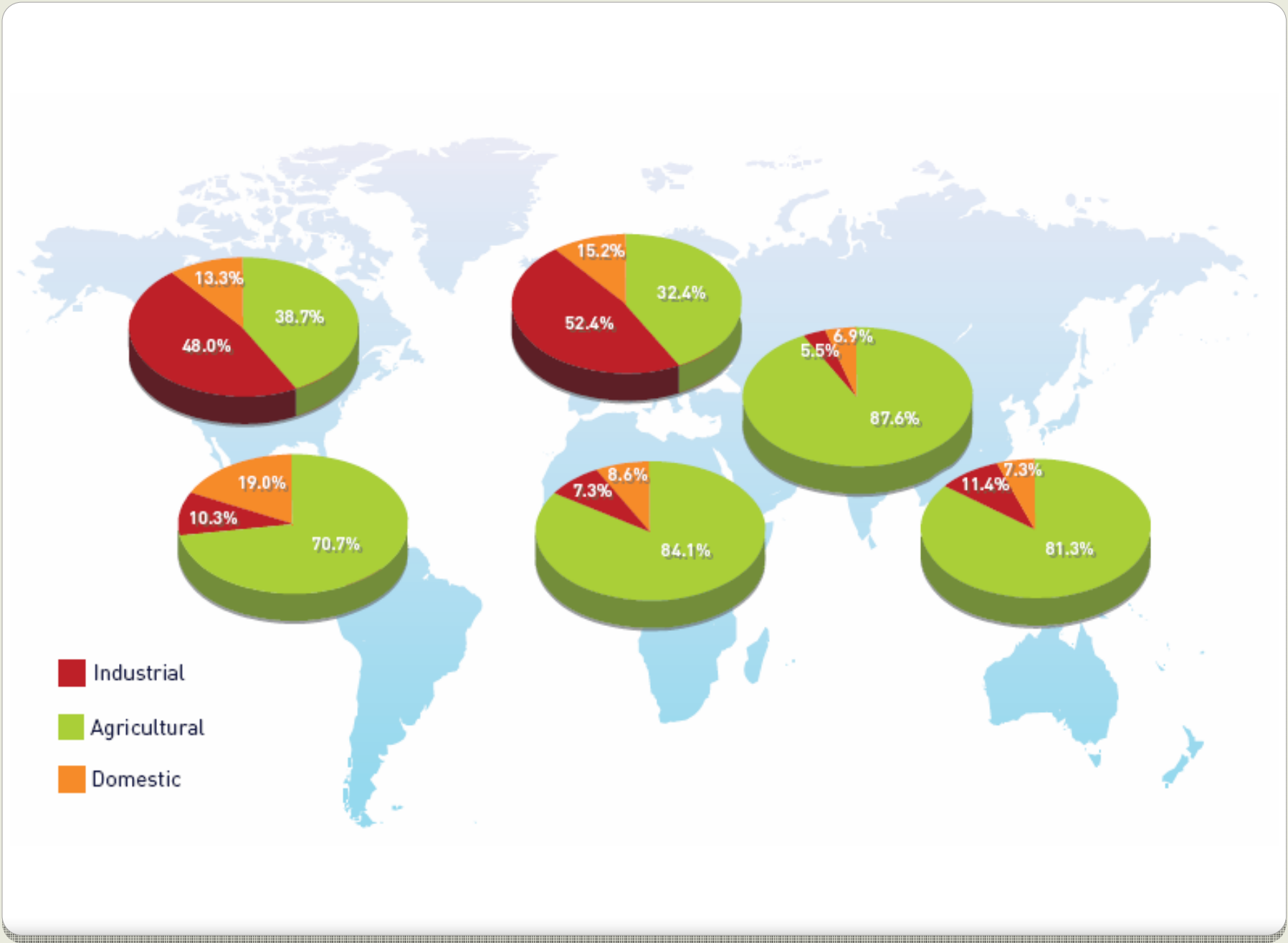




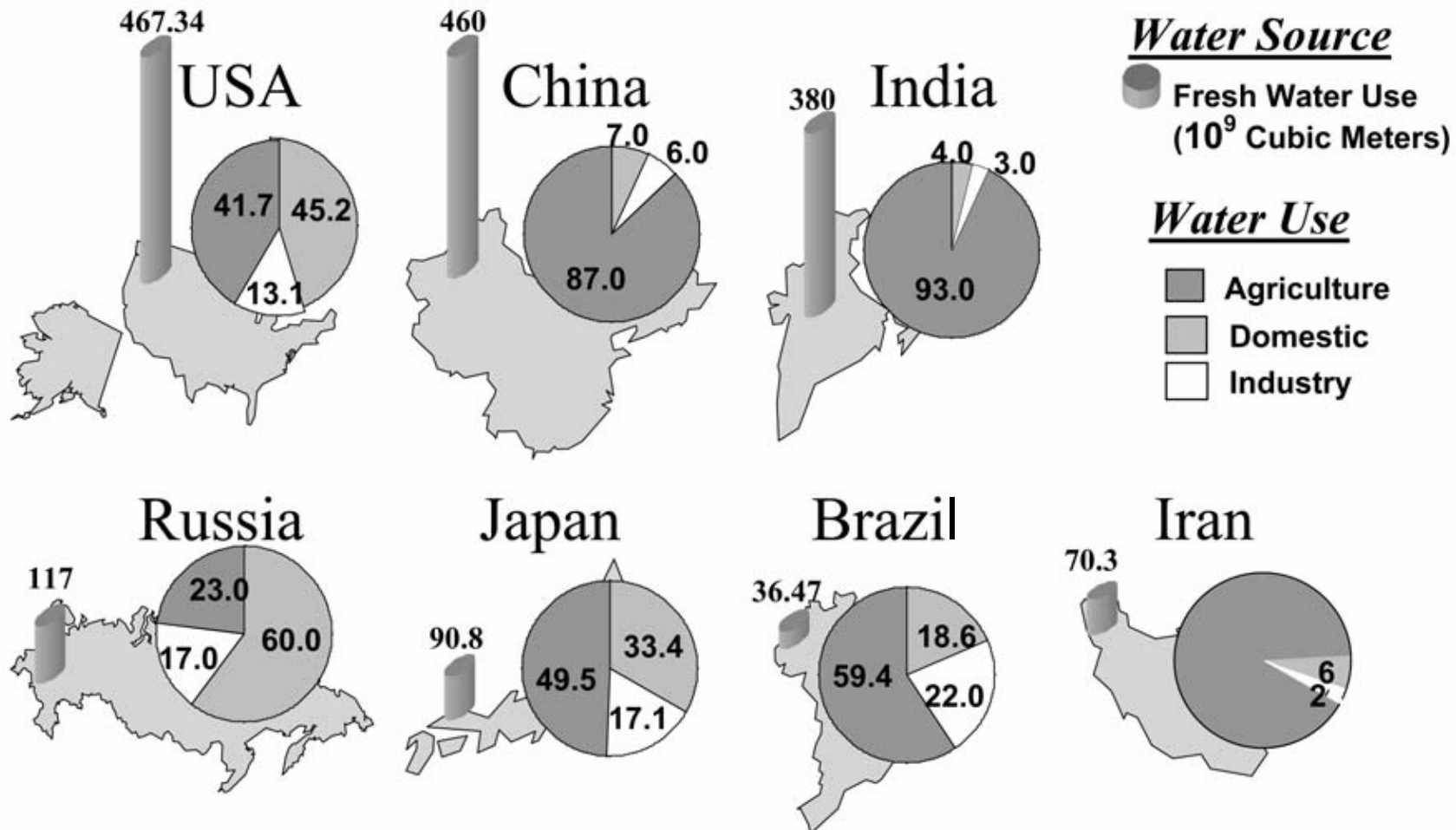
Average annual water availability for selected countries, 1921–1985 (adapted from Gleick, 2000).



População mundial X Disponibilidade de água per capita(Adaptado de SOPHOCLEUS, 2004)



How freshwater is being used. (FAO)



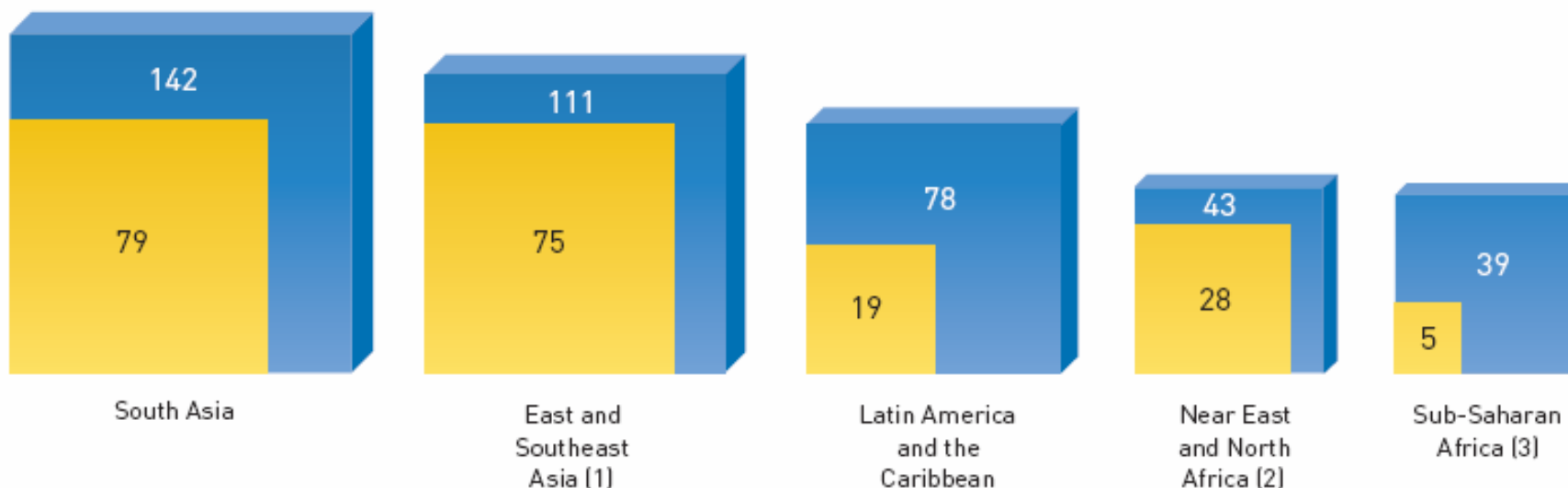
Distribution of freshwater use. (Sorooshian, 2002)

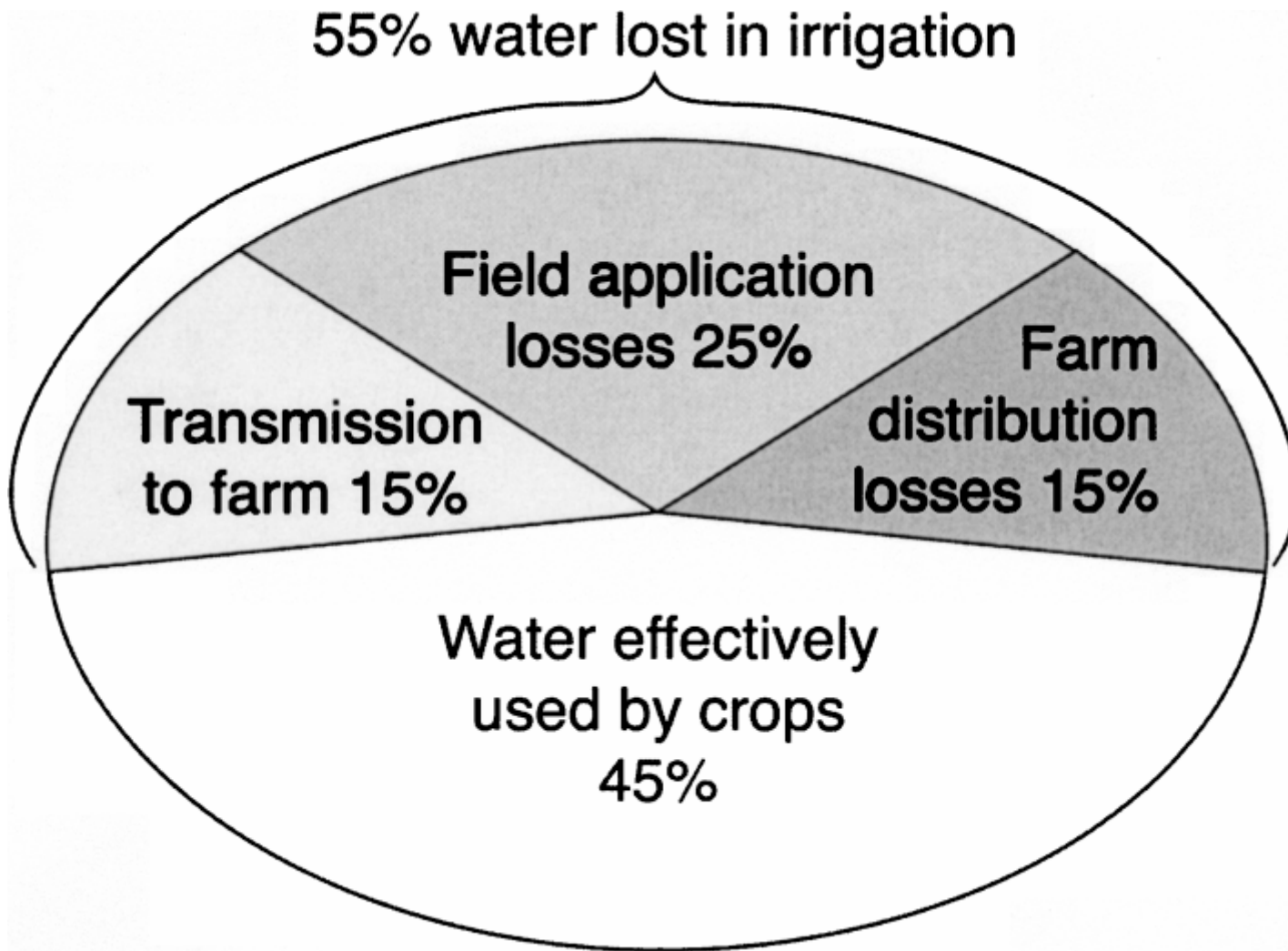
## Irrigated area and land suitable for irrigation, 2001 (million ha)

- Land area suitable for irrigation
- Irrigated area, 2001

The figure shows that the potential for expanding irrigated agriculture is relatively the greatest in sub-Saharan Africa and Latin America.

- (1) excluding Japan
- (2) excluding Israel
- (3) excluding South Africa





Estimated water lost in irrigation (adapted from FAO)

# Considerações finais

**Usando o critério proposto pelo índice de Falkenmark -  $1700\text{m}^3/\text{hab}/\text{ano}$   
Estresse hídrico e  $<1000$   
Escassez hídrica**

1995 - 31 países já enfrentavam problemas de estresse hídrico ou escassez hídrica - representando 500 milhões de pessoas

Em 2025, 48 países deverão sentir os impactos da disponibilidade hídrica (aproximadamente 3 bilhões de pessoas).

20 países do leste e norte africano serão os mais críticos

Se a escassez e/ou estresse hídrico forem estimados para regiões menores, certamente muitos países serão apontados como locais de risco.





# Reflexão: O Colapso dos Maias

**OBRIKADO!**

- FAO (Food and Agricultural Organization), 2008, **Water at a Glance** disponível em: [www.fao.org/nr/water/art/2007/flash/lance/gallery1.html](http://www.fao.org/nr/water/art/2007/flash/lance/gallery1.html)
- Kundzewicz, Z.W., L.J. et. al , 2007: **Freshwater resources and their management.** Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 173-210.
- O declínio dos Maias. **Scientific American, ed. 52 – setembro de 2006 disponível em: [www2.uol.com.br/sciam/reportagens/o\\_declinio\\_dos\\_maias\\_3.html](http://www2.uol.com.br/sciam/reportagens/o_declinio_dos_maias_3.html)**
- **Sophocleous. Marios, Global and Regional Water Availability and Demand: Prospects for the Future.** Natural Resources Research, Vol. 13, No. 2, June 2004