

물의 과학기술과 산업

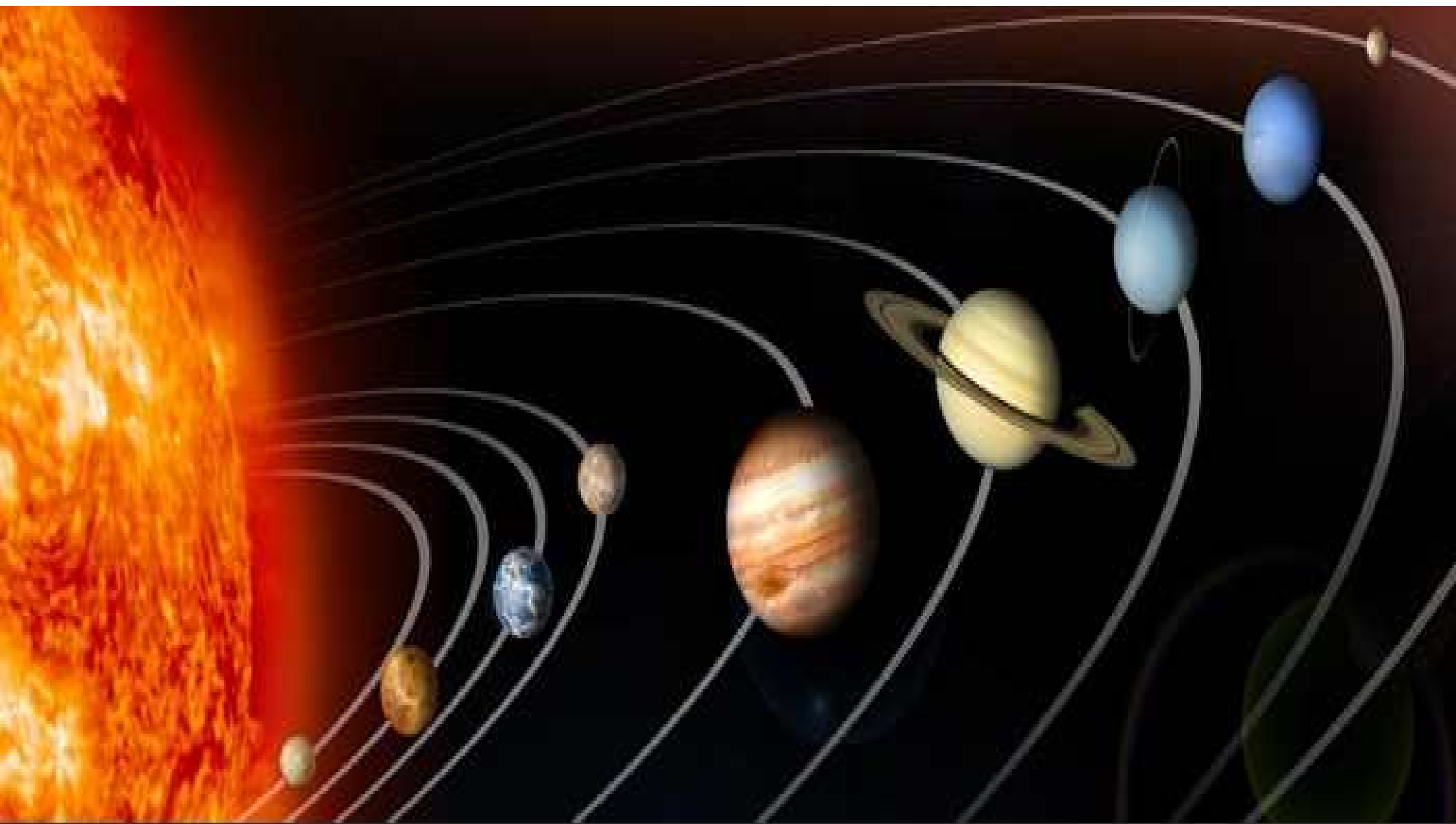


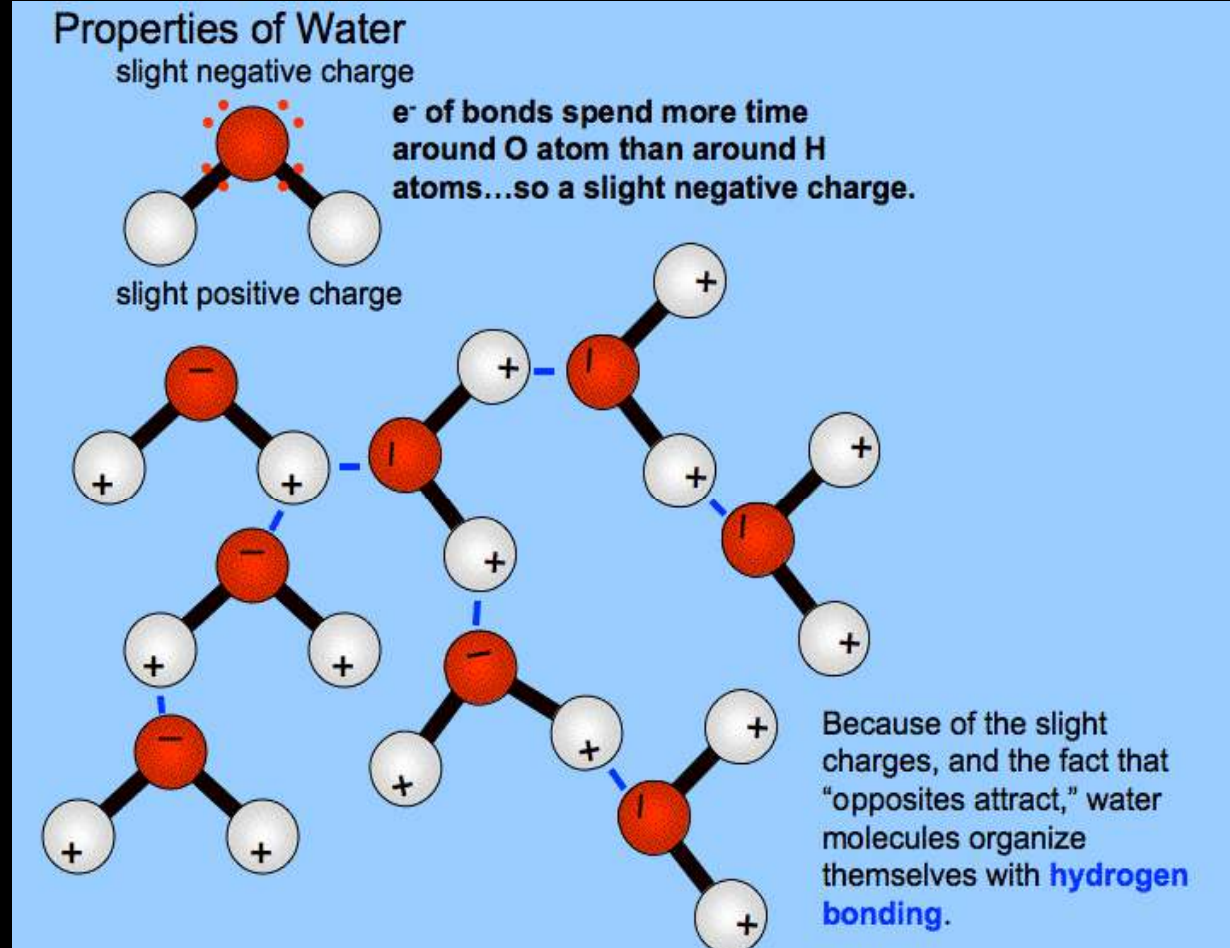
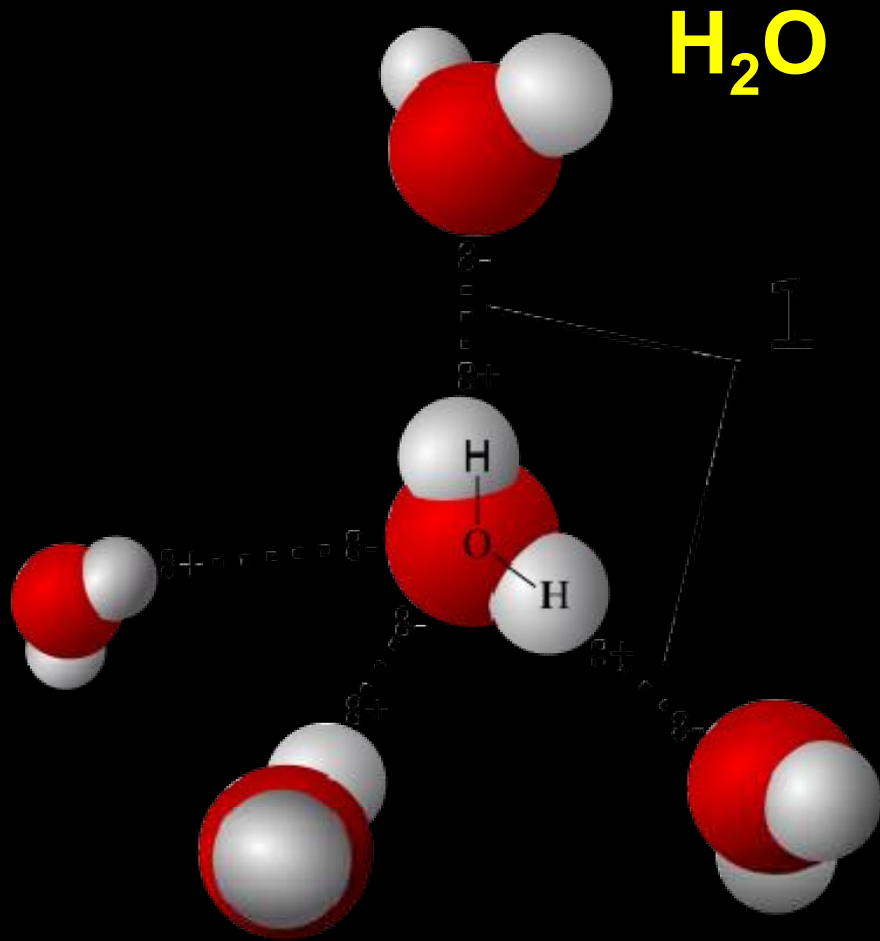
Global Networking (IDW2012)



The 6th IDW2013: Melbourne, Australia







Water – The Most Important Liquid on Earth

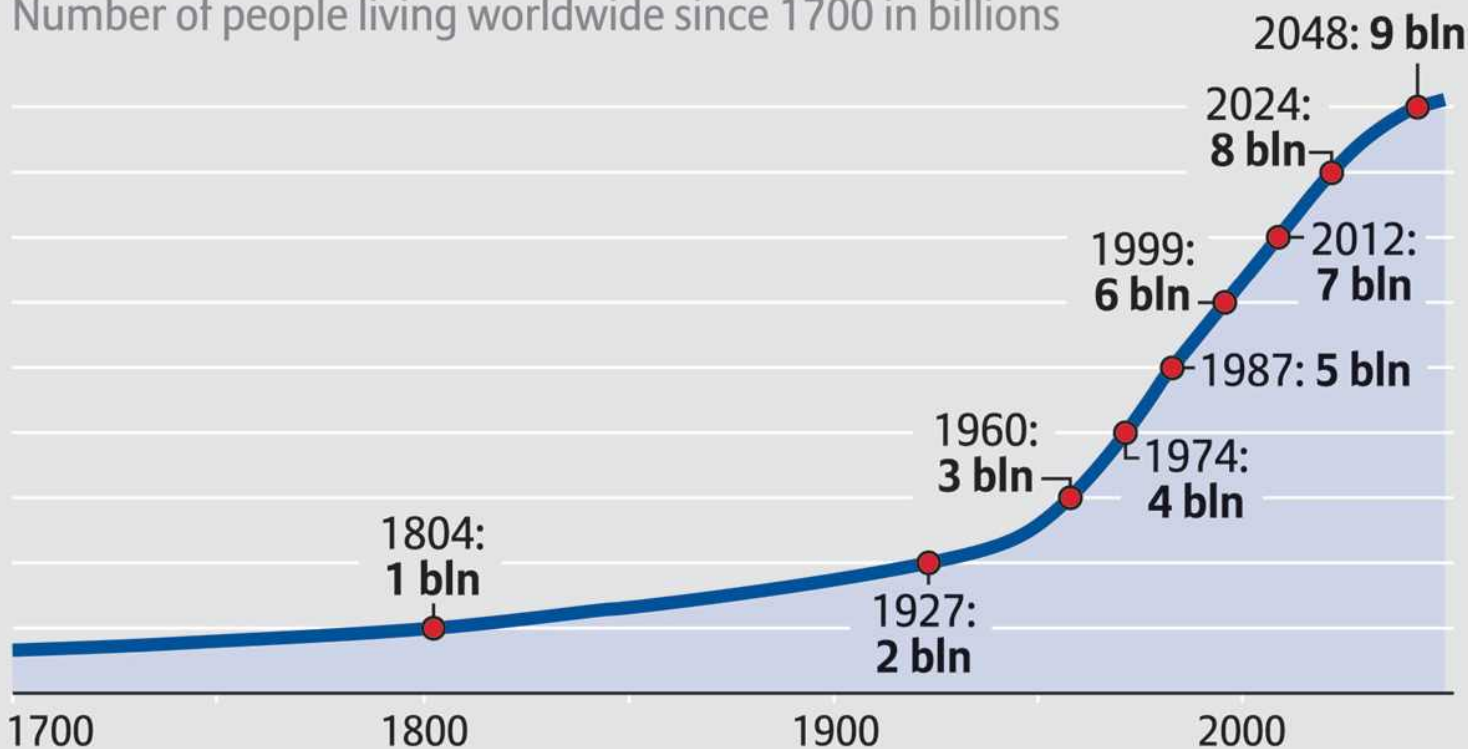


Rapid Population Growth

POPULATION OF THE EARTH

Number of people living worldwide since 1700 in billions

Allianz 



Source: United Nations World Population Prospects, Deutsche Stiftung Weltbevölkerung

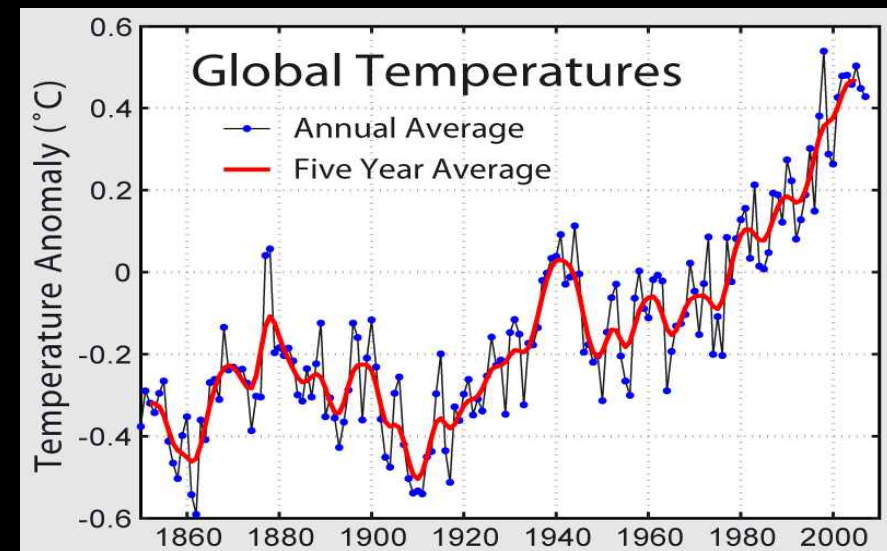
For further information please visit: www.knowledge.allianz.com

- Advance in Med-tech
- Economic success
- Improvement of living conditions



- Increase on**
- Population
 - Water Consumption

Severe Climate Change



Jones, P.D. and Moberg, A. (2003) "Hemispheric and large-scale surface air temperature variations: An extensive revision and an update to 2001". *Journal of Climate*, 16, 206-223.

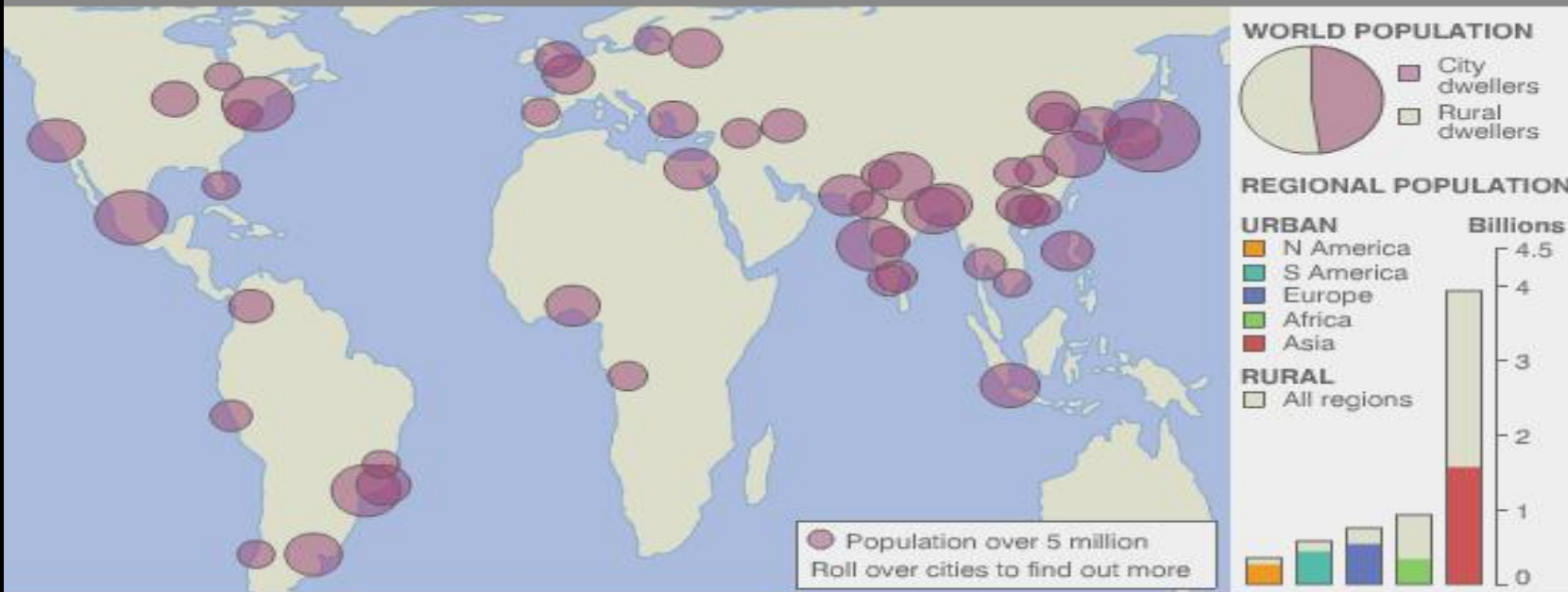
**Water is getting polluted by
human activity.**





Urbanization & Megacity

2005: World nears 50% urban threshold



The world's population is expected to have crossed the 50% urban threshold by 2010. By 2005, most industrial countries' urban-rural balance is stabilising at 70-80% urban. The few countries with annual urban growth above 5% are mainly poorer African and Asian countries facing conflict or political change.



Ref.: 1) UN DESA(2005), 2) <http://news.bbc.co.uk/2/shared/spl/hi/world/06/urbanisation/html/urbanisation.stm>

1955:

Appearance of
Megacity in
Europe & North
America

2005:

Half of people in the
world live in
Megacity

by Piraphon Phantaweepon
KOREA
CITY OF LOVE



**WHAT DO WE
NEED?**

Water-Energy Nexus



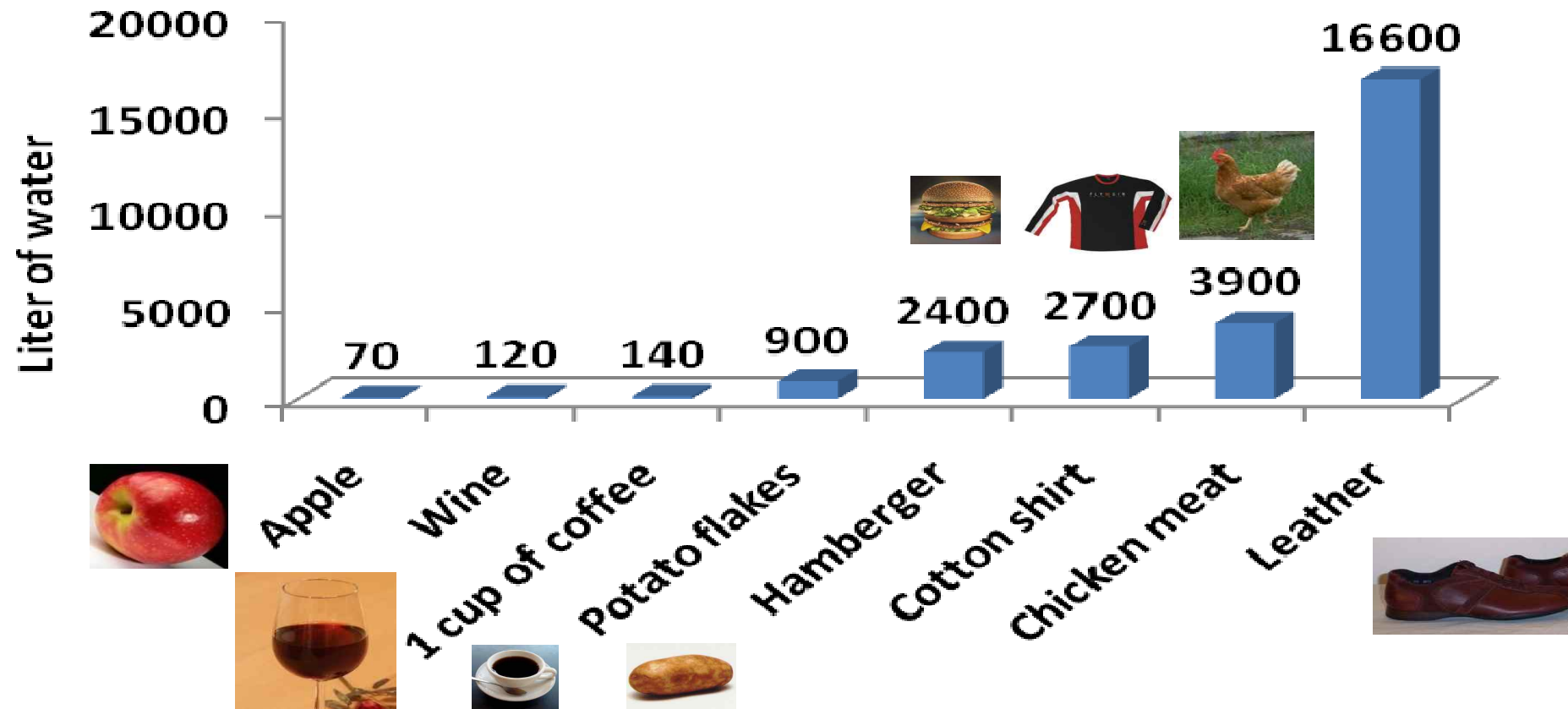
Energy Production



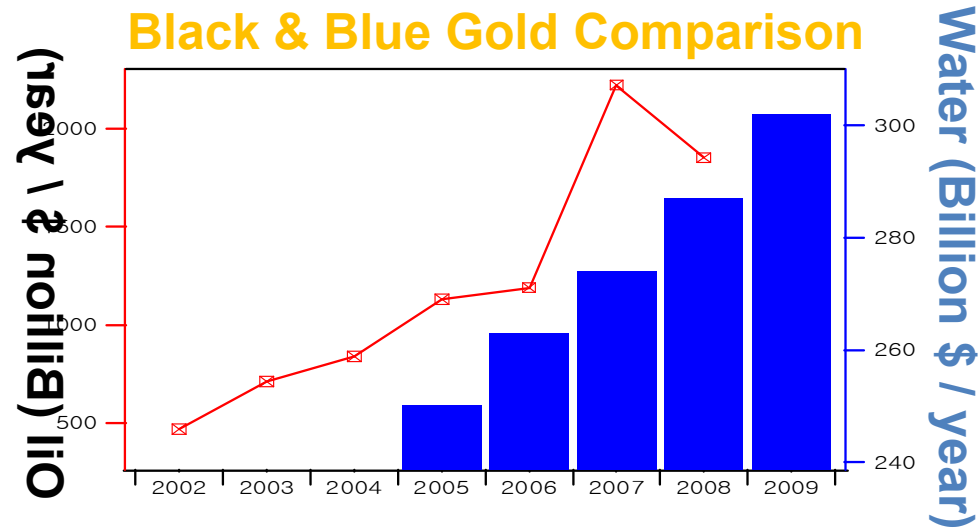
Water Transport



Virtual Water



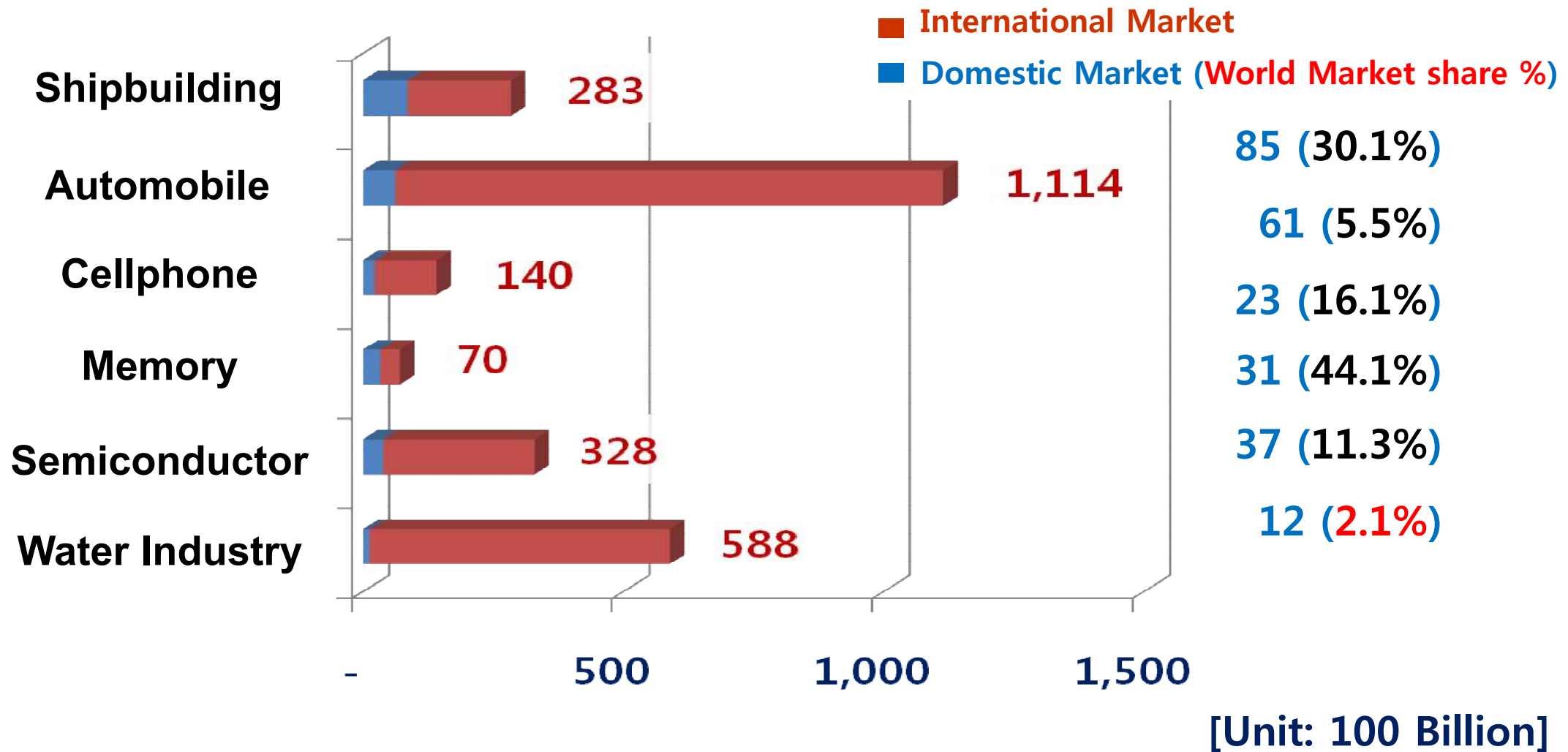
21st century “Blue Gold”: 17% of “Black Gold” Industry



21st century



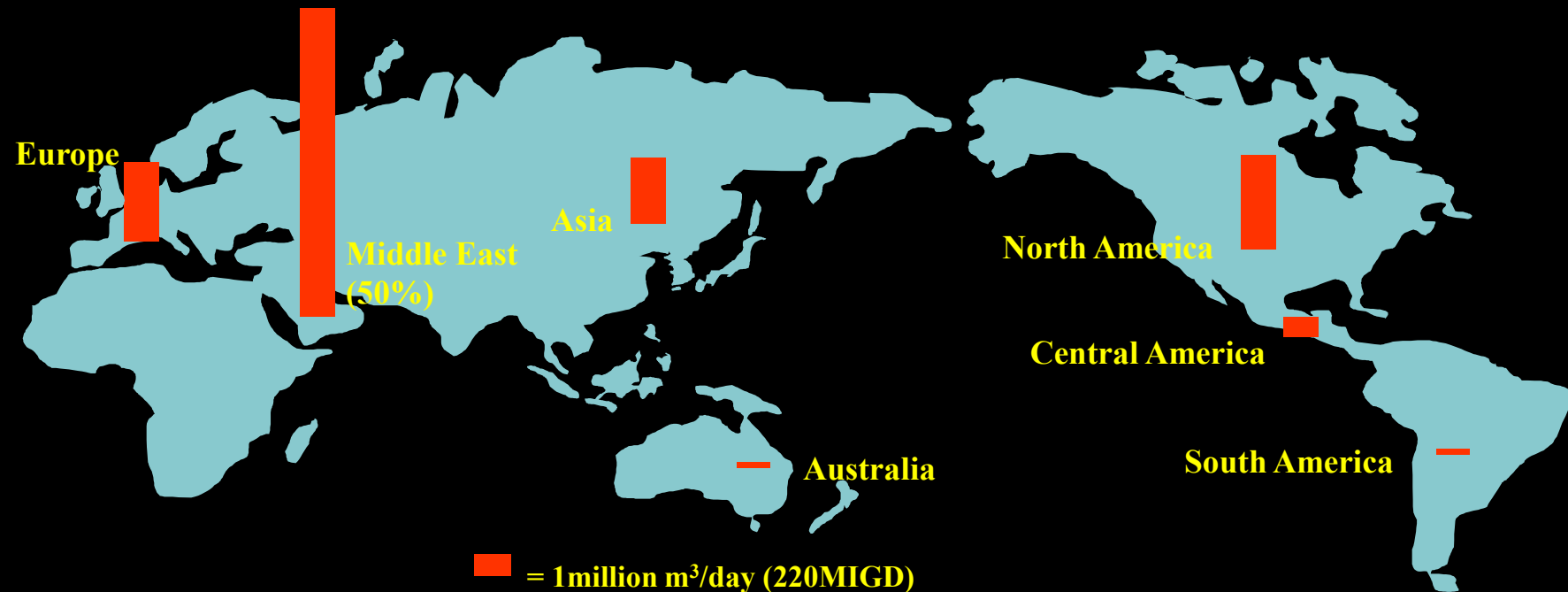
* National budget in Korea (2009) : 224.7 Billion \$



Source :1) www.isuppli.com, 2) Reuters, KOTRA,2006.1.12,

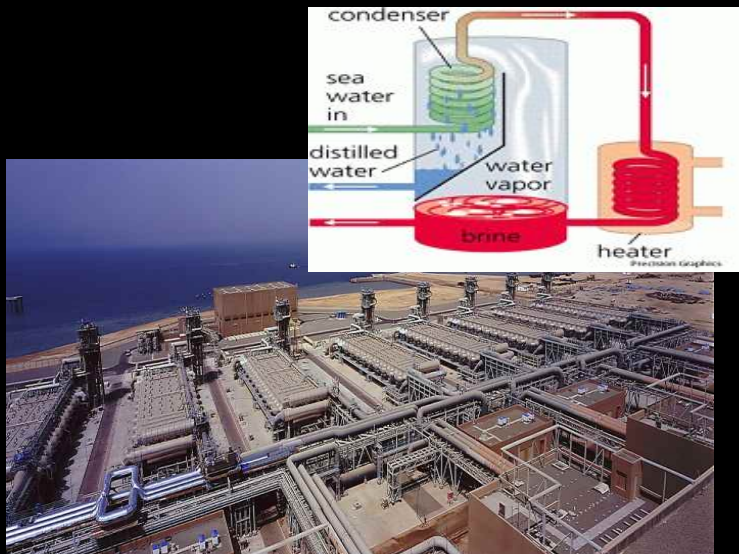
Desalination Market

◆ Total market growth rate : $\sim 11\%$ /year (SWRO: $\sim 17\%$ /year)

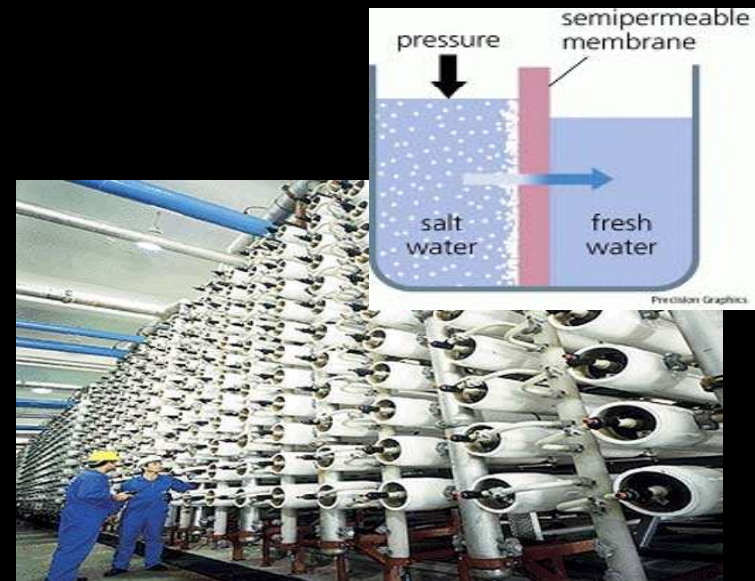


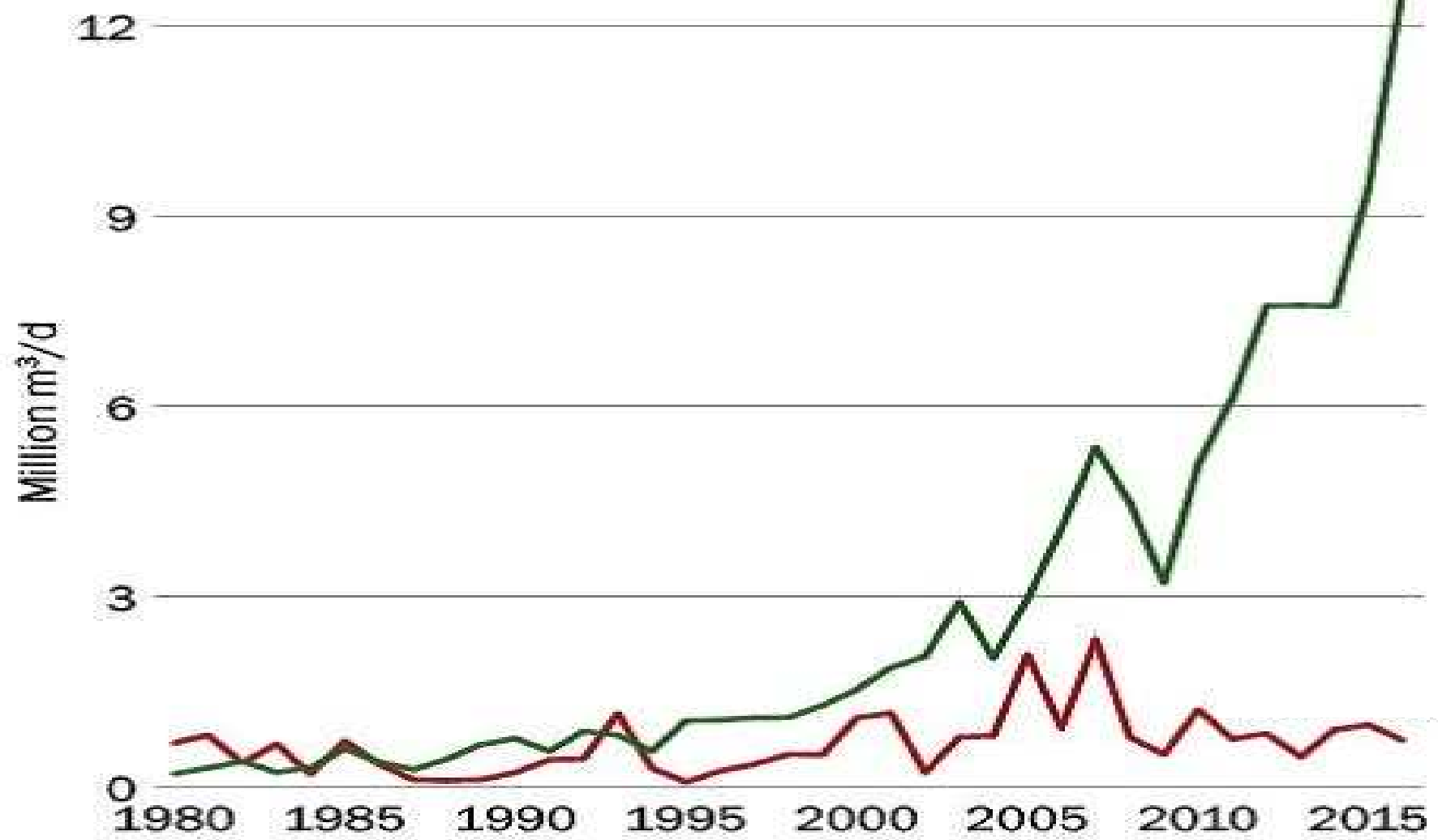
Seawater Desalination

Thermal Desalination



Membrane Desalination



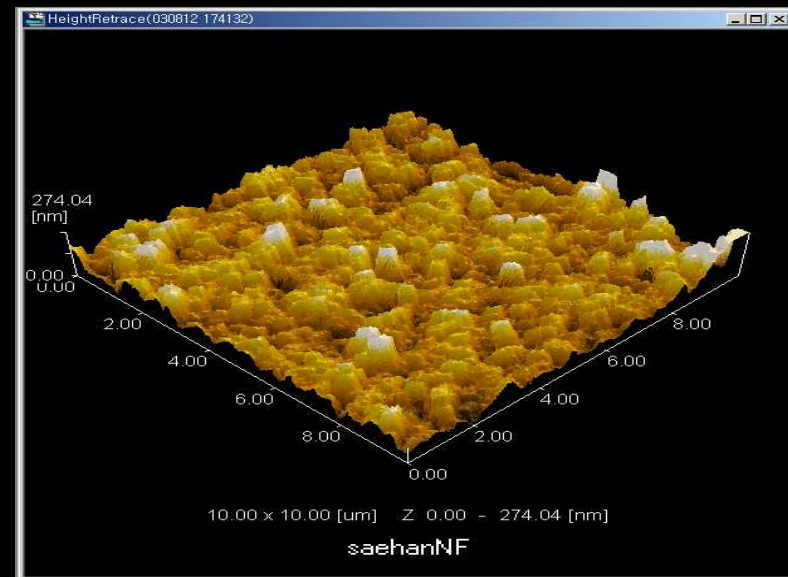
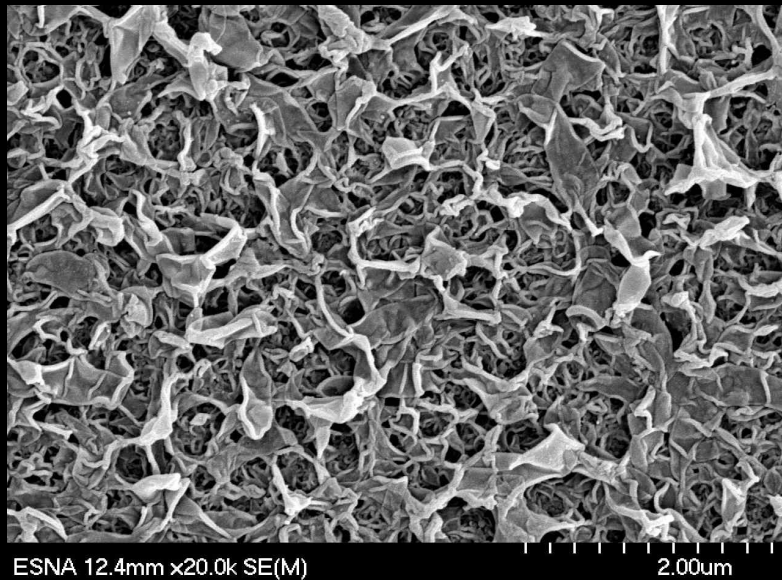


LOGO



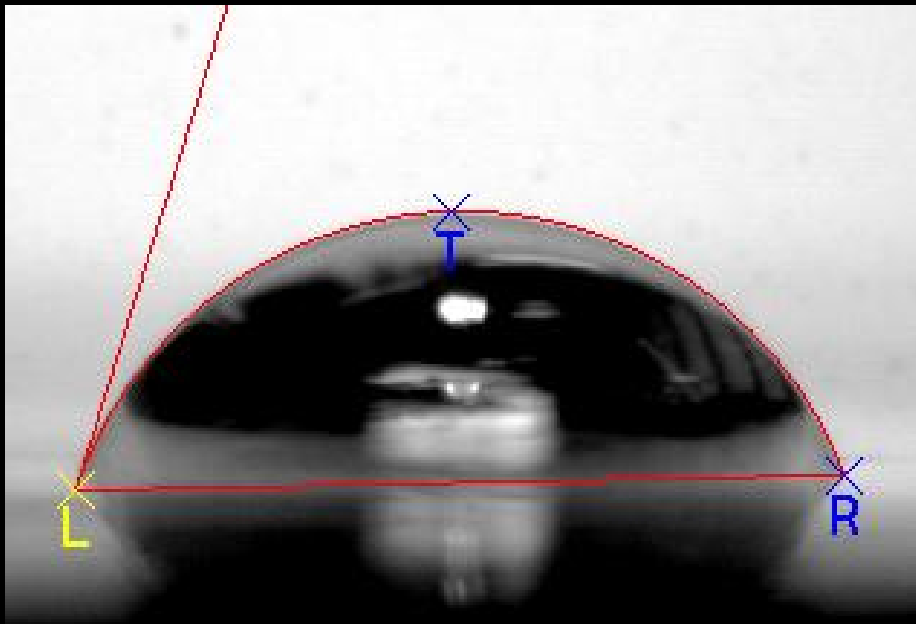
RO Membrane

◆ Surface Morphology (Left : SEM image, Right : AFM Image)



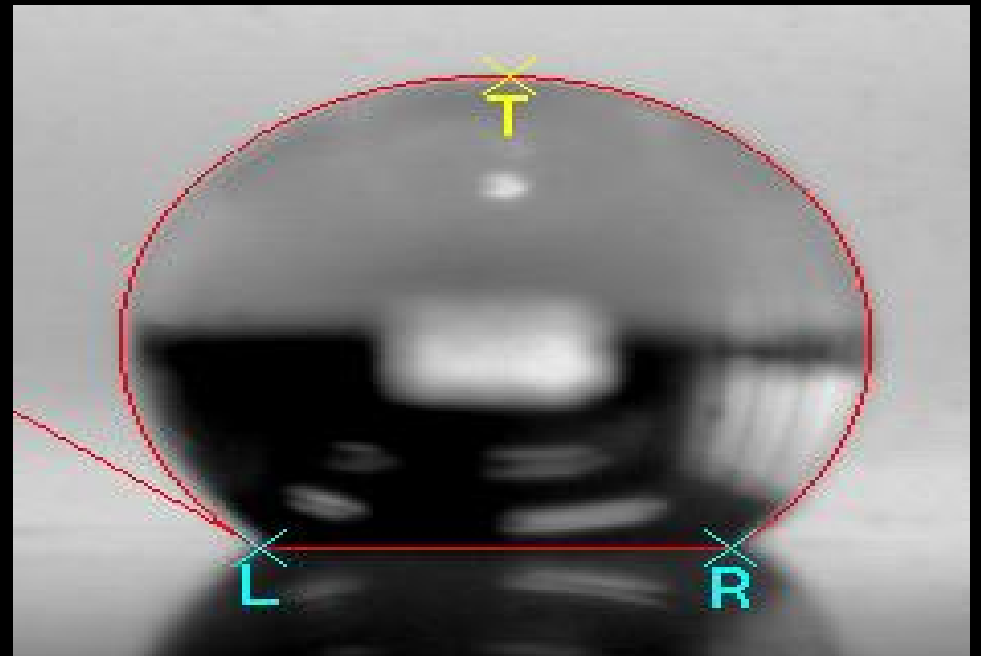
Membrane Property

High flux SWRO membrane



SHF

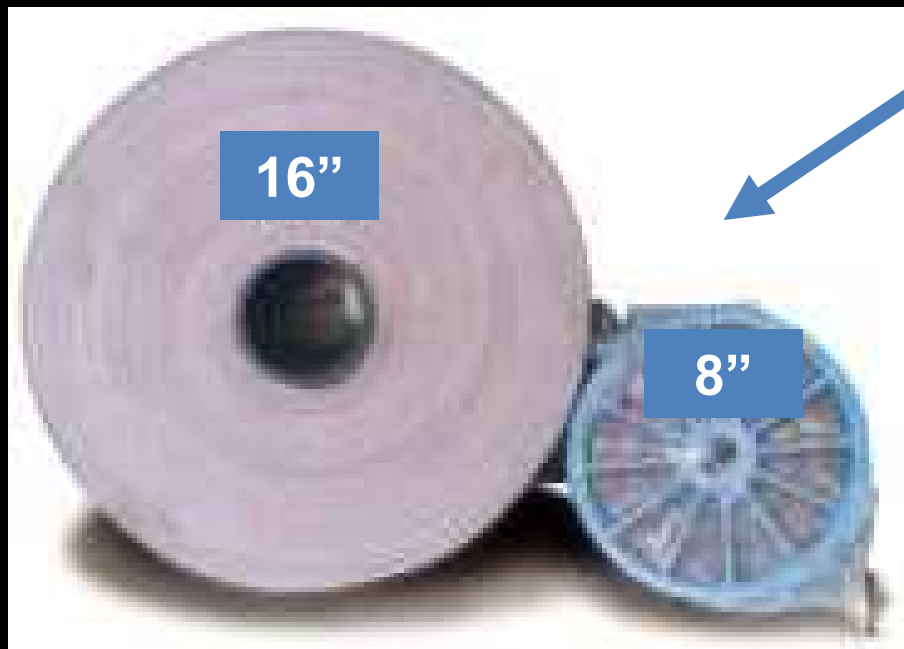
Fouling resistant SWRO membrane



SFR

**Diameter
2:1**

**Total surface area
4:1**



World-largest unit train size



SeaHERO RO plant in Busan, Korea

해수담 동아지
연암뉴스 서울경제

무신 일 밝혔

두산 (상보)17

머니투데이

두산중공 (장)와 사
참석한

사우디아
지역에
수화 플
용할 수

두산중공 (Engine
말에 완



해수담수화플랜트용 고압펌프 국내 최초 해외 수출 건교평, VC-10사업 실용화 쾌거 중동 진출 기반 확보

2010년 03월 09일 (화) 10:14:59

하중숙 hjs@cdaily.kr

장담기

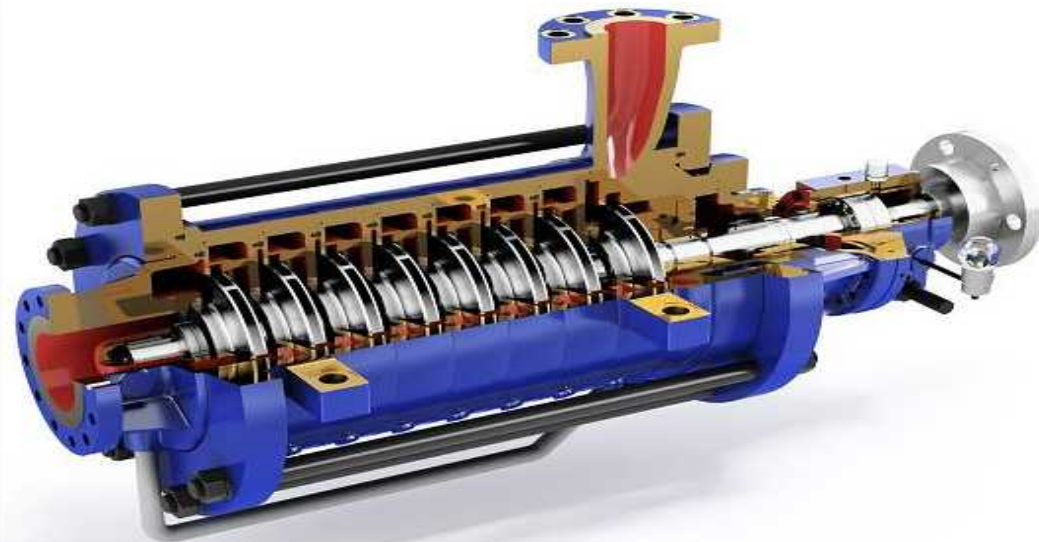
웅진캐

효성에바라, 비용절감 내구성 등 경쟁력 자랑

국가 건설교통기술 연구개발사업 핵심전략과제로 추진중인 해수담수화플랜트사업단에 참여하고 있는 효성에바라(株)가 최근 이란에서 발주된 해수담수화 설비 및 고압펌프를 수주, 국내 최초 해외 수출을 기록하는 쾌거를 달성했다.

23:37

효성에바라가 수주한 해수담수화설비는 이란 국영기업인 이란석유회사(The National Iranian Oil Company, NIOC)에서 발주한 시설용량 1일 1만7,000톤급의 플랜트 프로젝트로 역삼투(RO : Reverse Osmosis) 설비용 고압펌프.



웅진캐
출 계
업단
높은

수
트사
치가

Global Research Centers



Water Technology !!

Paradigm shift

