wisy .de
Rainwater Harvesting

Carbon footprint of water

Y.T. Tzeng, Director Rainwater Management Training Center

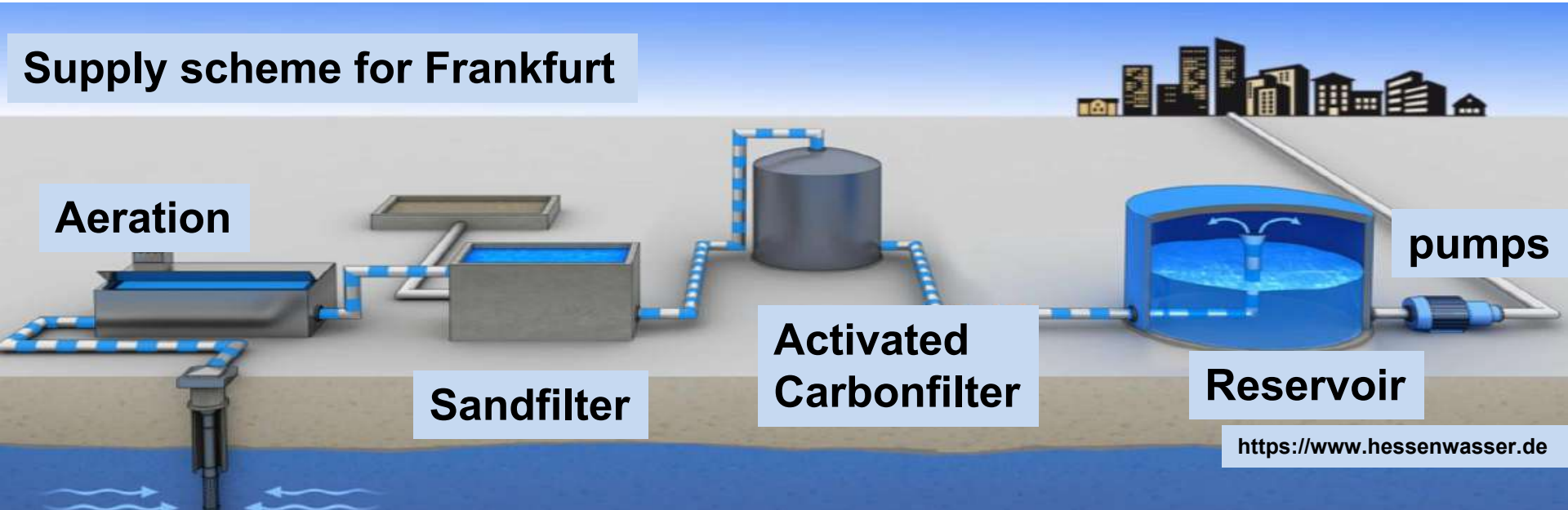
Jan Maurer, CEO WISY AG, Germany

wisy .de
Rainwater Harvesting

Carbon footprint of water自来水碳足迹

Municipal water supply is not for free, before the water arrives at the tap it has been pumped, mostly from an underground source, filtered and chemically treated

都市自来水从水源使用水泵加压，净化消毒，需要付出相当的代价。

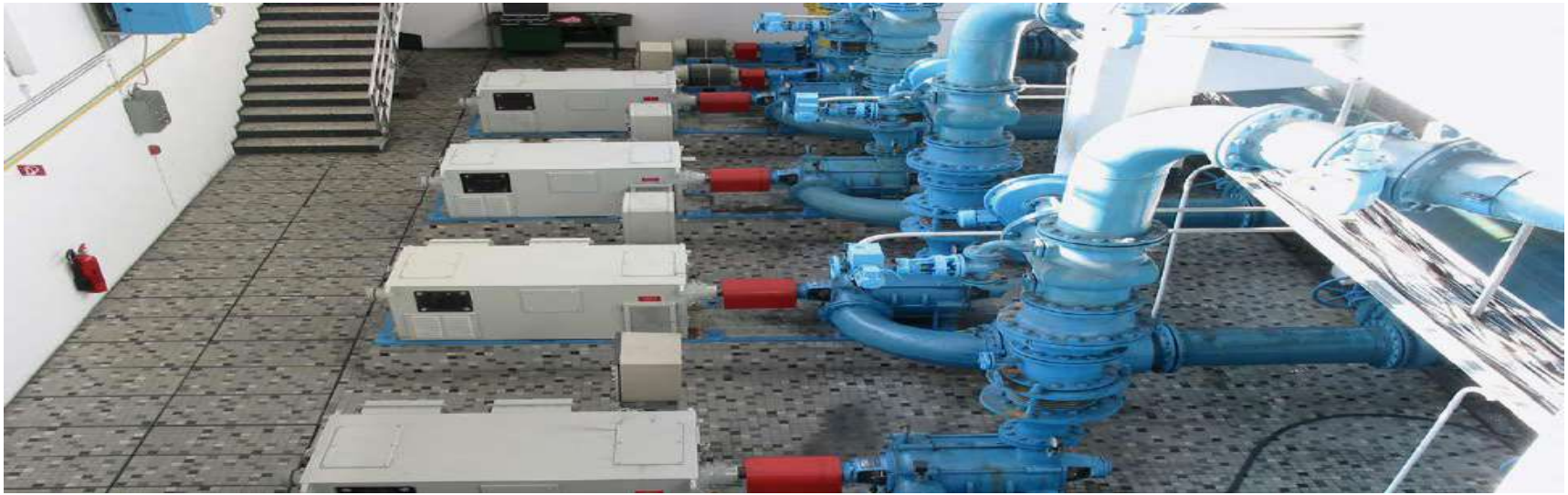


wisy .de
Rainwater Harvesting

Carbon footprint of water

Pumps for public Water supply in Pfungstadt, Germany 4 x 75 kW
Depth of Groundwater is 90 Meter, delivery of 12.000 m³ per day

德国芬斯塔自来水加压泵，**4x75kW**，地下水深**90**米，每天**12,000**立方



wisy .de
Rainwater Harvesting

Carbon footprint of water

Consumption of electricity for the public domestic supply of water

Germany :	1,400,000 MWh	in 2012	about 0,6 kWh per Liter
United Kingdom:	2,314,100 MWh	in 2007	about 0,78 kWh per Liter
USA:	31,910,000 MWh	in 2005	

家用自来水供水总耗电
德国**2012**年**140**万**MWh** 每公升**0.6**度电
英国**2007**年**231**万**MWh** 每公升**0.7**度电
美国**2005**年**3191**万**MWh**

Öffentliche Wasserversorgung nach Ländern, Statistisches Bundesamt, 2012
http://oco-carbon.com/wp-content/uploads/2011/10/WaterTable.jpg
River Network Report Bevan Griffiths-Sattenspiel, Wendy Wilson Table 4.1

wisy .de
Rainwater Harvesting

Carbon footprint of water

"We estimate that U.S. water-related energy use is at least 521million MWh per year, equivalent to 13% of the nation's electricity consumption."

估计美国自来水耗电每年至少
521,000,000MWh，相当于全国耗电的13%

River Network Report www.rivernetwork.org
by Bevan Griffiths-Sattenspiel and Wendy Wilson

wisy .de
Rainwater Harvesting

Carbon footprint of water

Comparison to a standard domestic rainwater Harvesting System:
Energy Consumption
of harvested Rainwater :

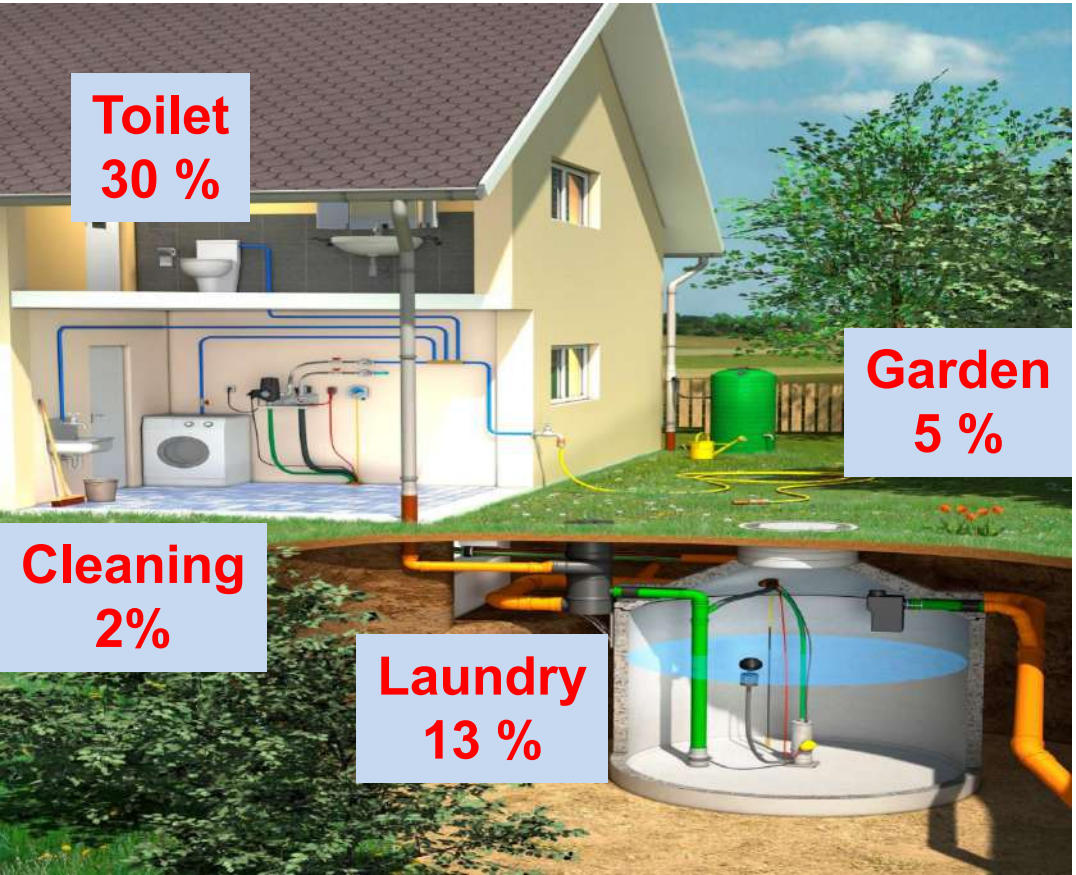
0,15 kWh / m³

(650 Watt, 65 Liter/ minute)

一般家用雨水回收系统
回收雨水耗电每立方
0.15kWh
每分钟**65**升**650**瓦

wisy .de
Rainwater Harvesting

Carbon footprint of water



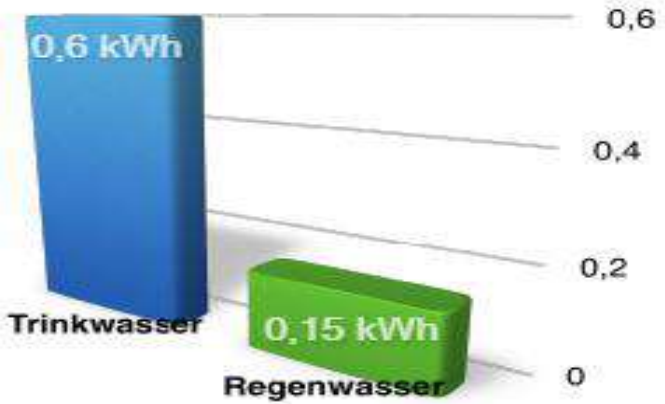
50 % !

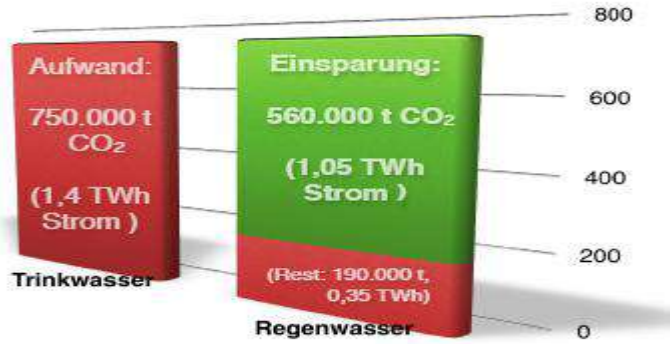
Possible Substitution of municipal water with Rainwater (German Average)

德国一般雨水取代自来水比率**50%**

wisy .de
Rainwater Harvesting

Carbon footprint of water





Rainwater supply needs only 1 quarter of the energy which is needed for municipal water supply

Consequently the energy emission of Germany with 80 million Inhabitants could be reduced by 560.000 tons of CO_2

What would it mean for China?
雨水供应耗电为自来水的**1/4**，
德国**8**千万人碳排放可以减低到
56万吨。中国情况如何？

wisy .de
Rainwater Harvesting

Carbon footprint of water

Best practice:

Maracanà Olympia Stadium 2016 in Rio de Janeiro

Cistern size 3.000 m³ Rainwater is used for Irrigation and Sanitation

wisy .de
Rainwater Harvesting

Carbon footprint of water

Best practice:

Coca Cola Femsa Itabirito| Brazil

Reservoir size 1.200 m³ Rainwater is used for Irrigation and Cooling

wisy .de
Rainwater Harvesting

Carbon footprint of water

Best practice:

Mercedes Benz Production Plant Bejing China

Reservoir size : 2000 m³ Rainwater is used for Irrigation and Cooling

wisy .de
Rainwater Harvesting

Carbon footprint of water

"As the world struggles to reduce its carbon emissions in response to global warming, investments in water conservation, efficiency and reuse are among the largest and most cost-effective energy and carbon reduction strategies available."

全世界努力减少碳排放，对付暖化，最大的最省钱节能减碳投资就是省水，提高效率与回用水

River Network Report 2008 www.rivernetwork.org
by Bevan Griffiths-Sattenspiel and Wendy Wilson