



WATER AND RELATED ISSUES

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FICE FLS**

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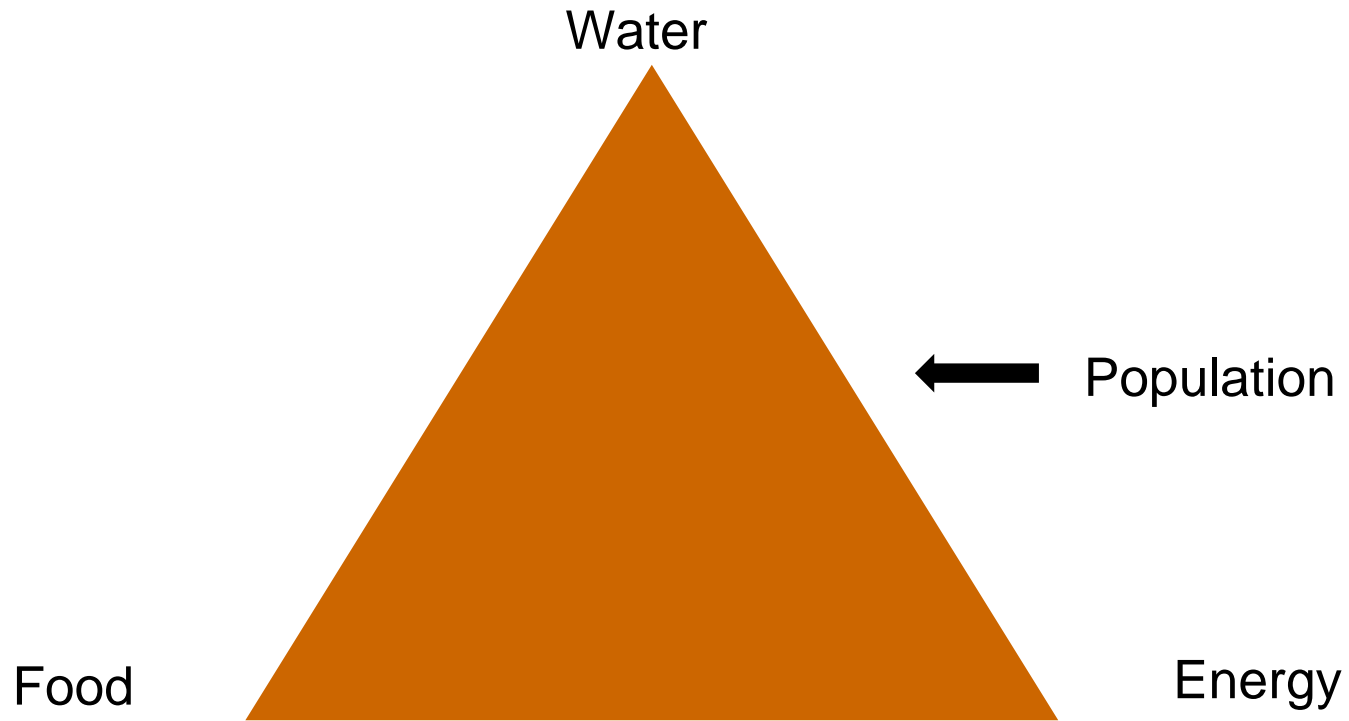
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BALANCE OF WATER, FOOD AND ENERGY



WATER – THE FOUNDATION OF LIFE: In General

- Many nations of the world face a daunting challenge in delivering clean water to their populations - Arguably, the availability of clean water is the most serious global crisis of the 21st century (Chairman, Nestle Davos).
- Over 1 billion people (approx. 17% of the world population) remain without clean water.
- More than 1.6 million die every year as result of water-borne diseases.
- Approx. 2.6 billion people (about 40% of the world population) do not have access to a basic (clean) and safe form of sanitation (WHO 2005).
- Water and sanitation related diseases account for 10% of global ill health – involving over US\$7 billion in healthcare costs (probably a low figure).



WATER – THE FOUNDATION OF LIFE: Indonesia



- One of Indonesia's MDGs set out in 2000 is to halve the number of people without access to clean water and sanitation by 2015. New sanitation almost did not make the list of priorities set out in the MDGs due to the low esteem held by sanitation activities.
- In 1999, Indonesia devolved responsibility for provision of water services to the regions, even though certain functions regarding political cross boundary jurisdictional issues or technical matters are still referred to central government.
- Approaches towards use of water are fundamental to sustainable development. Depending on function, planning or implementation and size of responsibility, provision of water would be handled at either the meso or micro community level.



WATER – THE FOUNDATION OF LIFE: Indonesia (Cont'd)

- Indonesia, like most developing countries, realises that it will not achieve its MDG goals; however, positive steps are being taken in a number of regencies where there is awareness of the MDG targets.
- These include issues on gender, women empowerment and other plausible aims as well as targets for provision of clean water and sanitation.
- Healthier people contribute to the betterment of communities – there is absolutely no reason why most people in the world (Indonesia in particular) cannot have access to clean water and sanitation.
- Not a question of money, rather, it is a question of empowering people who are going to be directly benefitted from actions taken – bottom-up sustainable development.

WATER – THE FOUNDATION OF LIFE: Indonesia (Cont'd)

- Indonesia is well blessed with water with availability of some 3,085 billion m³/year (not always evenly distributed) – Only about 0.55% of overall water resources has been developed.
- Some 89% of the water harnessed has been used for rice irrigation and support for other crops emphasising dependence on agriculture sector – balance used for domestic, municipal and industrial (DMI) purposes.
- In Java, usage ratio is changing due to paddy land being converted to real estate and industrial developments at rate of approx. 37,000 ha/annum. (Java produces 60% of rice crop)
- Significant damage to the majority (75%) of Indonesia's 131 water basins (International Standards: 14,000m³/person/year – safe level, 5,000m³/person/year – critical level; and 1,000 m³/person/year – very serious condition) e.g.:
 - Ciliwung – Cisadane water balance only amounts to 504m³/person/year
 - Jratun – Seluna water balance amounts to 880m³/person/year
 - Bengawan Solo water balance only amounts to 1,810m³/person/year

- 2010 : 125m People : 75m Urban
- 2020 : 155m People : 110m Urban
- Today : Produces 60% of all rice on 37% of Irrigated land, with 6% of total water. Supports 83% of national industry (50% in W. Java/ Banten)
- Moving away from agriculture.
- Need to develop different and more efficient forms of agriculture.
- Dramatic increase in DMI Water Supply
- Environmental Stress
- Flooding



SIGNIFICANCE: Much of the industry is not developing



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WATER – THE FOUNDATION OF LIFE: Indonesia (Cont'd)

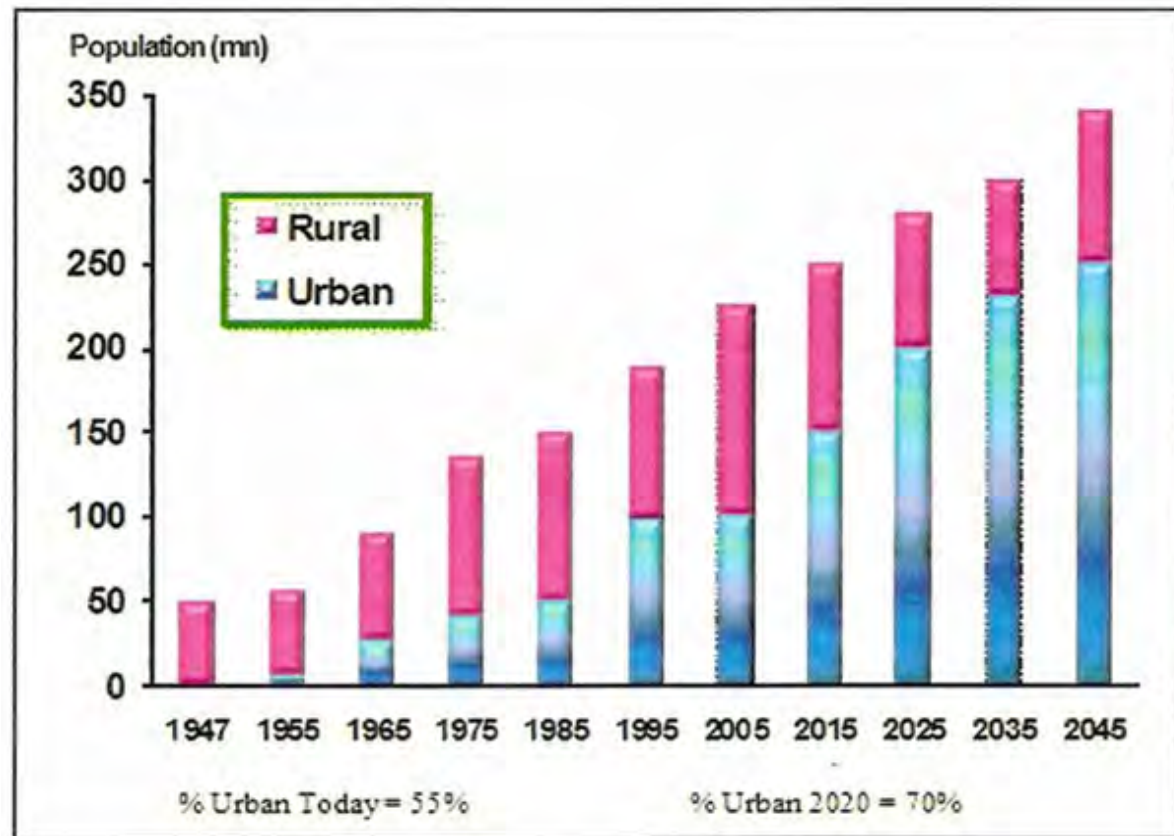


Figure 1. Key Water Sector Indicators

ISSUES: Water Stress

Island	River Basins	Condition
Java	22	10 Stressed, 7 Badly
Sumatra	47	2 Marginal
Kalimantan	18	No Problem
Sulawesi	23	3 Stressed; 2 Badly
NTT, NTB, Bali	9	2 Badly Stressed
Maluku & Papua	12	No Problem
Total	131	17 Stressed; 11 Badly



WATER – THE FOUNDATION OF LIFE: Indonesia (Cont'd)

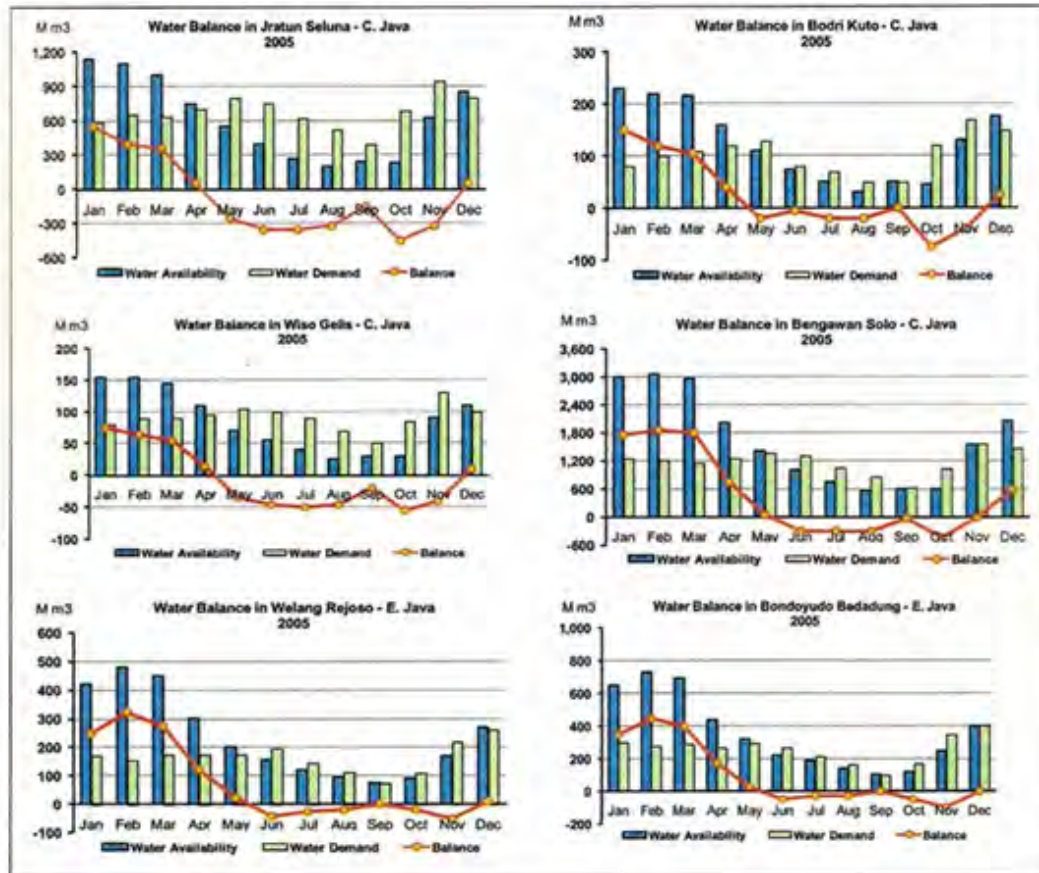


Figure 2. Water Balance Profile of Six Key River Basin in Java



ISSUES:

Reservoirs, deforestation, flooding, etc.

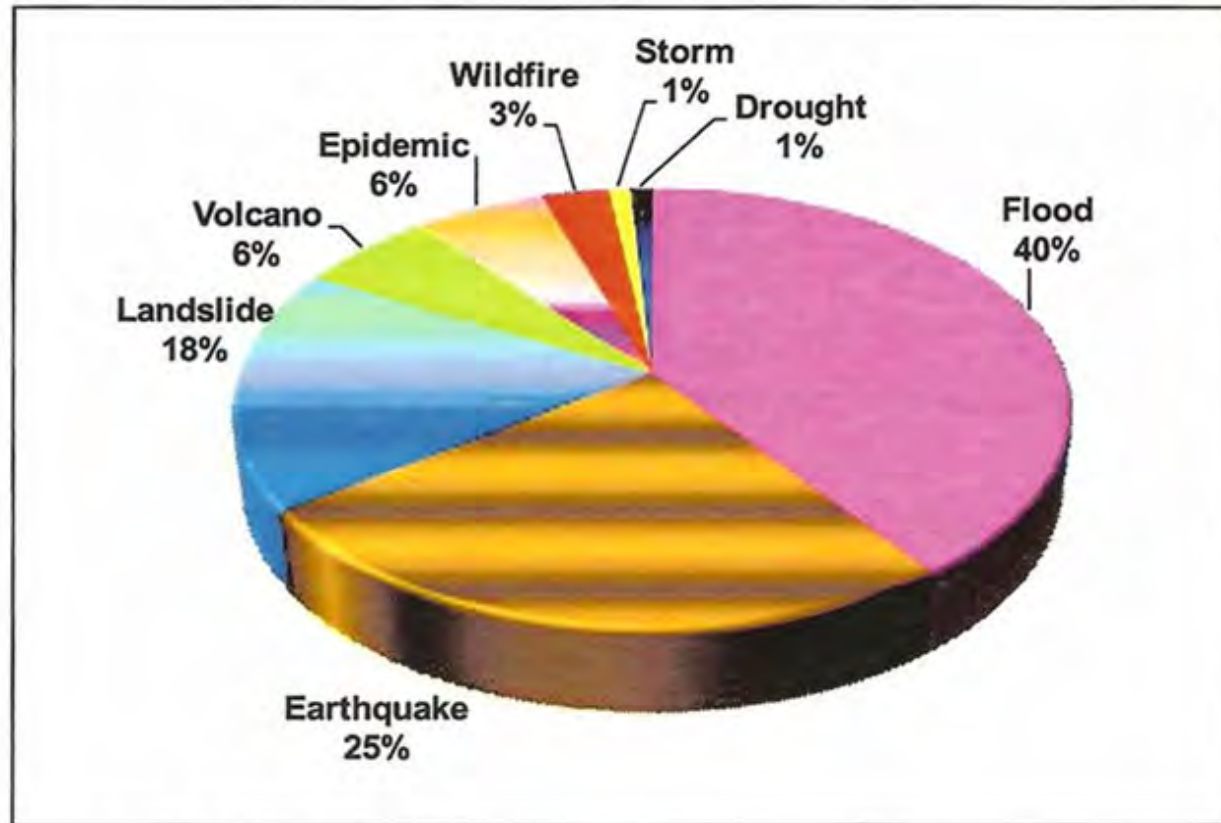
- Lengthy periods without rain now cause problems for these and other smaller river catchments, particularly in drier areas such as East Java.
- The most important river basin, the Citarum, is one of the most polluted in the world.
- Government has been trying to push ahead plans to construct a series of water storage reservoir in the Greater Bandung Upper Citarum area, in addition to the already existing reservoirs.
- Combination of more storage with stabilization of deforested areas will be necessary to prevent rapid siltation of the reservoirs from erosion.
- Upstream deforestation is prime reason for wet season downstream flooding – uncontrolled stripping of forest areas for building on slopes in the Puncak area.
- Uncontrolled groundwater abstraction in Jakarta has increased flooding in the past 20 years – Resultant subsidence of more than 2m in some places.

ISSUES:

Reservoirs, deforestation, flooding, etc.

- Once soils have been subject to consolidation, there is no reversing the subsidence that has taken place (Younger et al, 1990)
- High proportion of natural disasters related to flooding – significantly from deforestation.
- Landslides commonly triggered by uncontrolled runoff; 58% of recorded disasters can be related to water.
- Regional government should have disaster emergency systems in place to undertake responses to occurrence of localised flooding or landslide disasters (ADB 1990; Younger 2009).
- UN estimates in 2004 (considered optimistic to some)
 - Overall population access to water – 74%; distribution in urban areas – 89%, distribution in rural areas – 64%
 - Overall population access to sanitation facilities – 59%, distribution in urban areas – 74%, distribution in rural areas – 52%

ISSUES: Reservoirs, deforestation, flooding, etc.



Source: Centre for Research of Disaster

Figure 3. Relative Importance of Flood and Other Disasters in Indonesia

- There has been and are ongoing a number of initiatives in the sanitation sector over the past decade, however progress in the rural or peri-urban area has been slow.
- Lack of sanitation and treatment of waste and wastewater provides a foundation for disease and sickness – without containment is also a recipe for epidemic spread to other areas.
- Ignoring these issues seriously undermines local government plans for development to cope with rapid urbanization taking place at the country's main city centres.
- Rural poverty levels remain particularly high with lack of sanitation being a major contributory factor – long way yet to achieve MDGs across the world, particularly sanitation MDG (To meet this goal, 95,000 toilets must be installed every day, one toilet per second, every day for the next 5 years; George, 2009).
- While sanitation message is gradually getting through to people at the bottom end of society, this has not really got through to the legislators, who usually live in conditions unaffected by poor sanitation.

- Sanitation development has different emphasis between government jurisdictions – Reflecting different needs and priorities and stages of development, and varying degrees of understanding of how to improve the issues being faced in dealing with sanitation and solid waste.
- From review of local government, jurisdictions are often aware of the aims of the MDGs. Some are satisfyingly strong on all the aims and the importance of cleaning up the environment for their inhabitants, but others are less so.
- Key to successful operations is the direct involvement of the communities concerned, sustainable development from the bottom up.

ALLEVIATING POVERTY: A Rural Case (Cont'd)



Figure 6. Pipe Laying Across Dirt Road for Supplying the Community Reservoirs from Mountain Spring

ALLEVIATING POVERTY: A Rural Case (Cont'd)

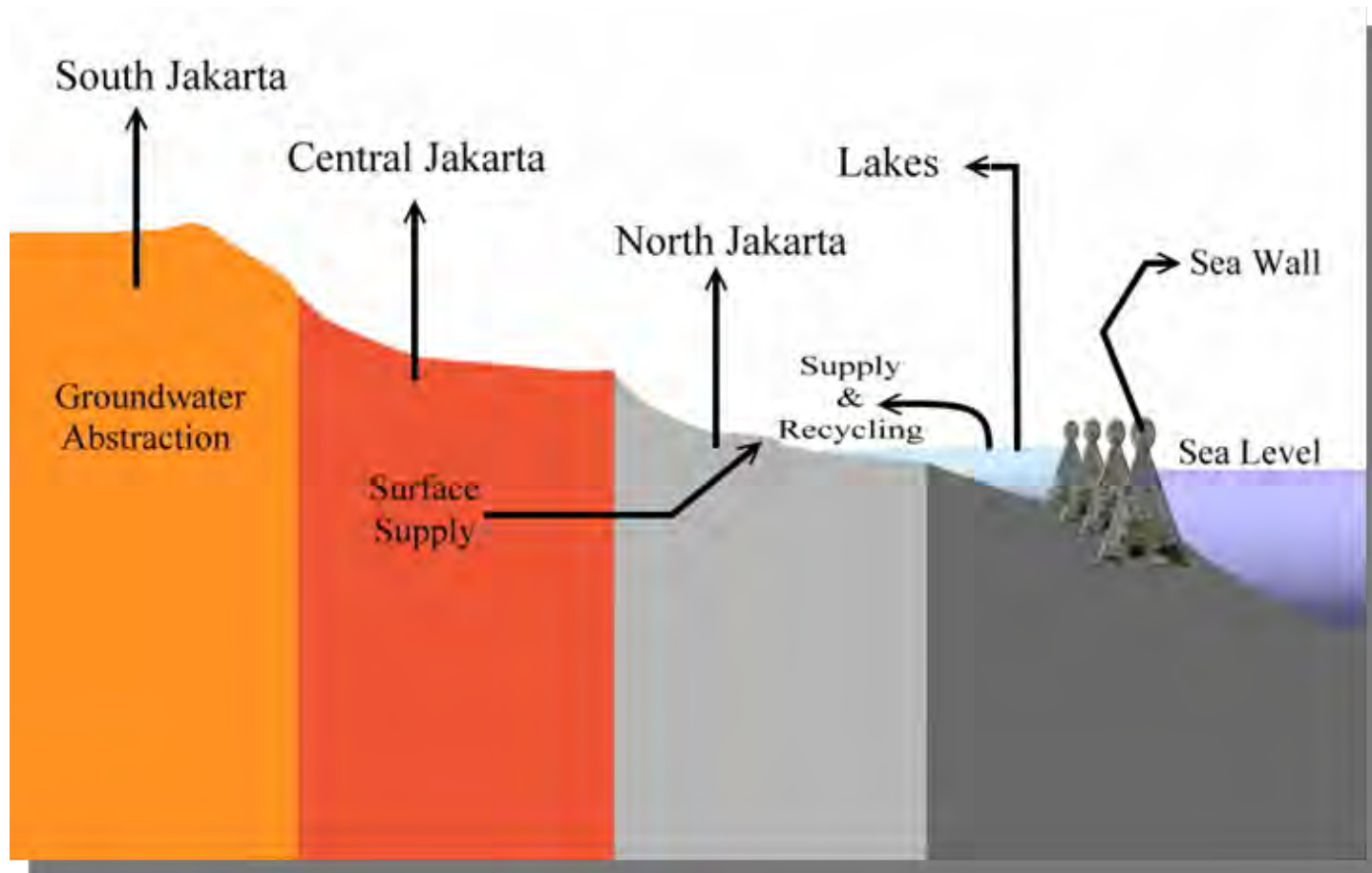


**Figure 7. Sponsored Toilets programme in
East Bali Poverty Project**

- Climate change has dominated many global discussions over the past decade and will continue to influence these
- Climate change impacts could have major influences over the environment throughout this century and possibly greatly affect the social and economic situations of several countries perceived as vulnerable.
- Is climate now in a period of unprecedented change as a result of major expansion of human activities in the past half century? Debate/historical perspective
- Will noted increase in greenhouse gases especially CO₂ have a permanent impact over the planetary environment as experienced today?
- Changes are gradual and historically have been frequently revised.

- Climate change issue has raised salutory points which would fit well into responsible sustainable development:
 - Expansion in the use of renewable energy solutions.
 - Reforestation, proper husbanding of forest preserves and application of REDD Scheme.
 - Reducing energy usage of cities and towns, the real hotspots of the world.
- It is important to understand that climate is always changing – But major changes take place over longer time periods than has been taken into account for any particular structure or multi faceted development .
- **Planning is usually or should be looking ahead for given periods of 50-100 years, with robust safety factors built in to meet extraordinary events.**

SUGGESTED WATER SUPPLY FOR FUTURE JAKARTA



- Water key to future human urban structures
- Key to food delivery (irrigation and changes in agriculture production)
 - Key to certain energy solutions
 - Importance of bottom up empowerment for sustainable rural community development
 - Re-use of water, especially in urban situations
 - Urban sanitation



Terima Kasih