

ENDING the 6 *madnesses*.....

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Columbia University, 2017

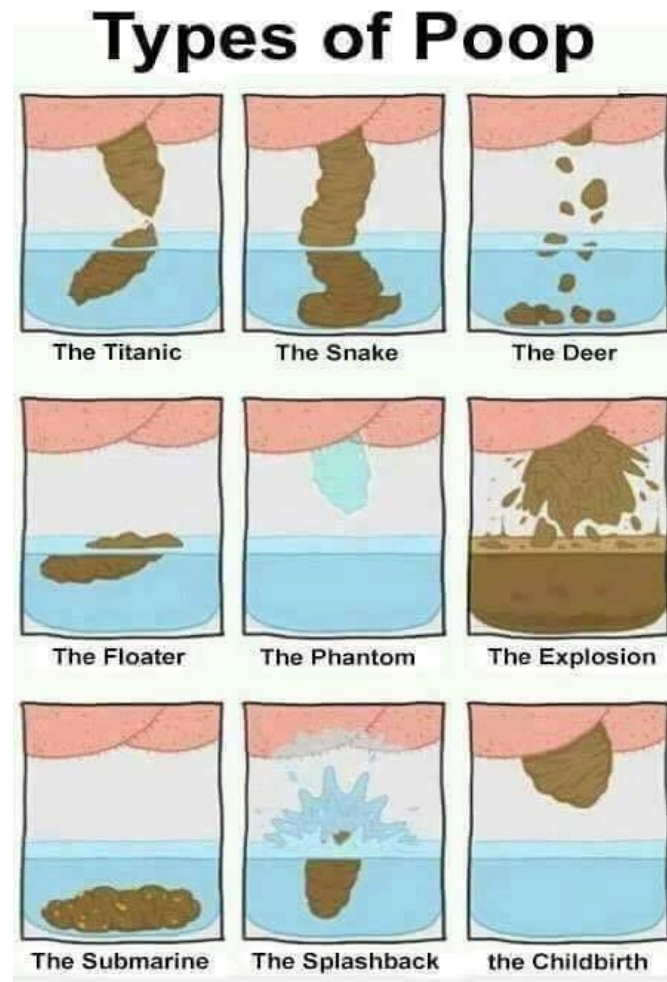


WATER
RESEARCH
COMMISSION



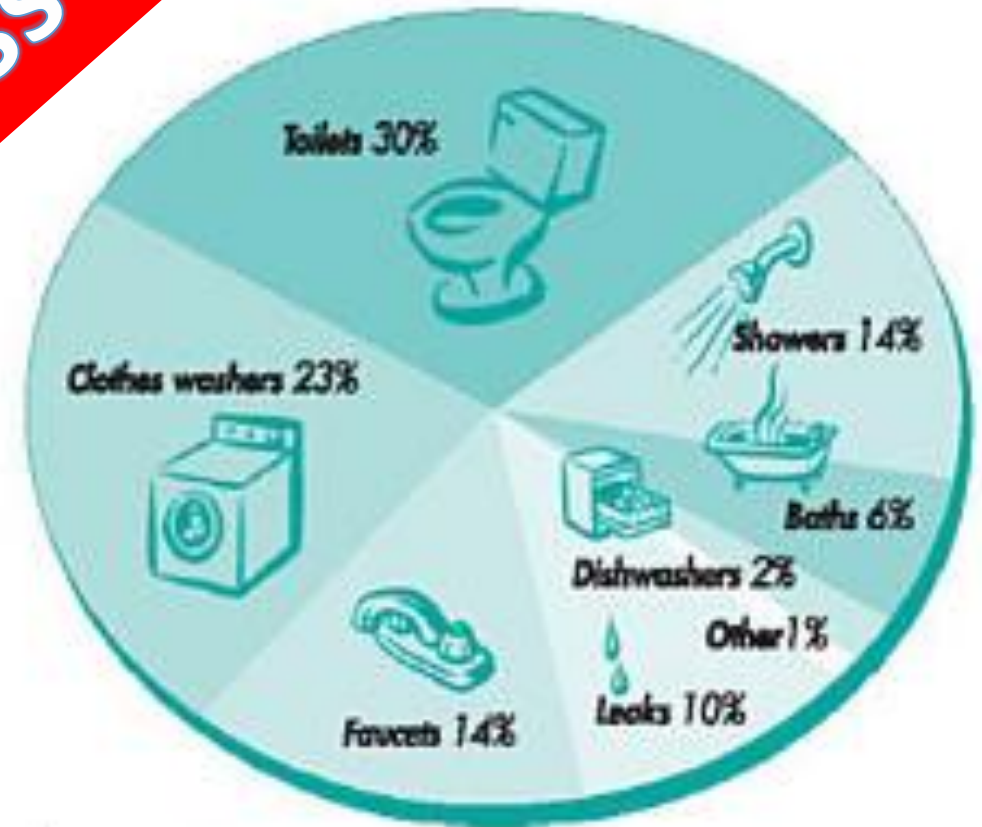
150 to 200 grams

Madness 1



Madness 2

- An individual flushes the toilet on average 6 times a day
- Uses a flush volume from 8 to 13 litres per flush (That's nearly 25 to 35% of domestic use)
- That to move around 150g to 200g of human wastes
- Then we use another 150 to 200l per capita to convey it down the sewer



* Source GVRD

We have subjected nearly 200l per capita per day to pollution



Evolution of the toilet over 200 yrs.....



Madness 3



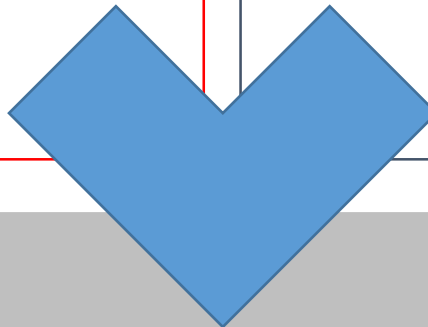
Current Binary Model

Conventional WWTW

- FLUSH-&-FORGET
- Considered “gold standard”
- Resource intensive (Capital, Sewers, Water, Energy, etc.)
- Challenge to meet urbanisation & population growth
- Expensive & beyond reach of developing countries
- Established technologies (discharge standards, guidelines, policies, etc.)

On-Site Sanitation

- DROP-&-STORE
- Most prevalent tech in SSA
- Little / no water
- 5-50% cheaper (than activated sludge)
- Can be scaled at urbanisation rates
- Faecal Sludge Management – lack of policies & standards, disposal routes, O&M overlooked.
- Viewed as “temporary” solution



SOLUTION??

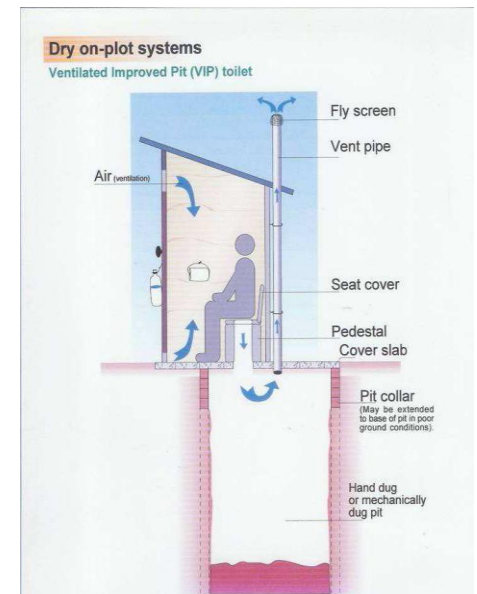
Madness 4



Gold Standard



Hole Standard



Current solutions full of problems

Hanging toilets



Pit latrines



Chemical solutions



Flush: Septic tank



Flush: Sewer



Foul odors

Poor user experience

Potential safety concerns

Risk of environmental contamination

Frequent maintenance

Poor waste disposal

Difficult to retrofit

Risk of leakage

Expensive

Needs running water

Requires infrastructure

Time consuming to build



Human Excreta

Faeces and urine

Madness 5

***The major global
environmental
pollutant***

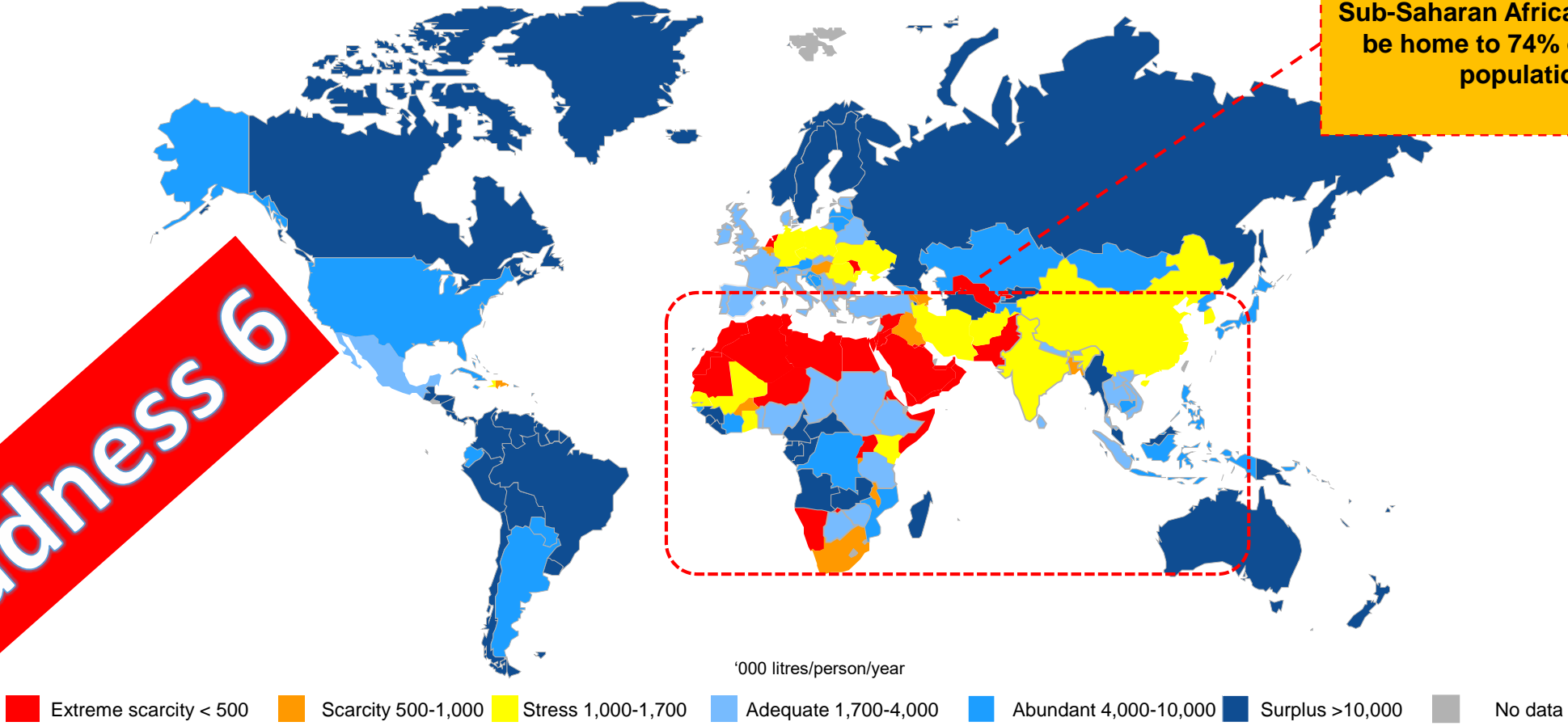
And possibly.....KILLER

WATER SCARCITY WILL MAKE OFF THE GRID MANAGEMENT EVEN MORE IMPORTANT

Future: 2030

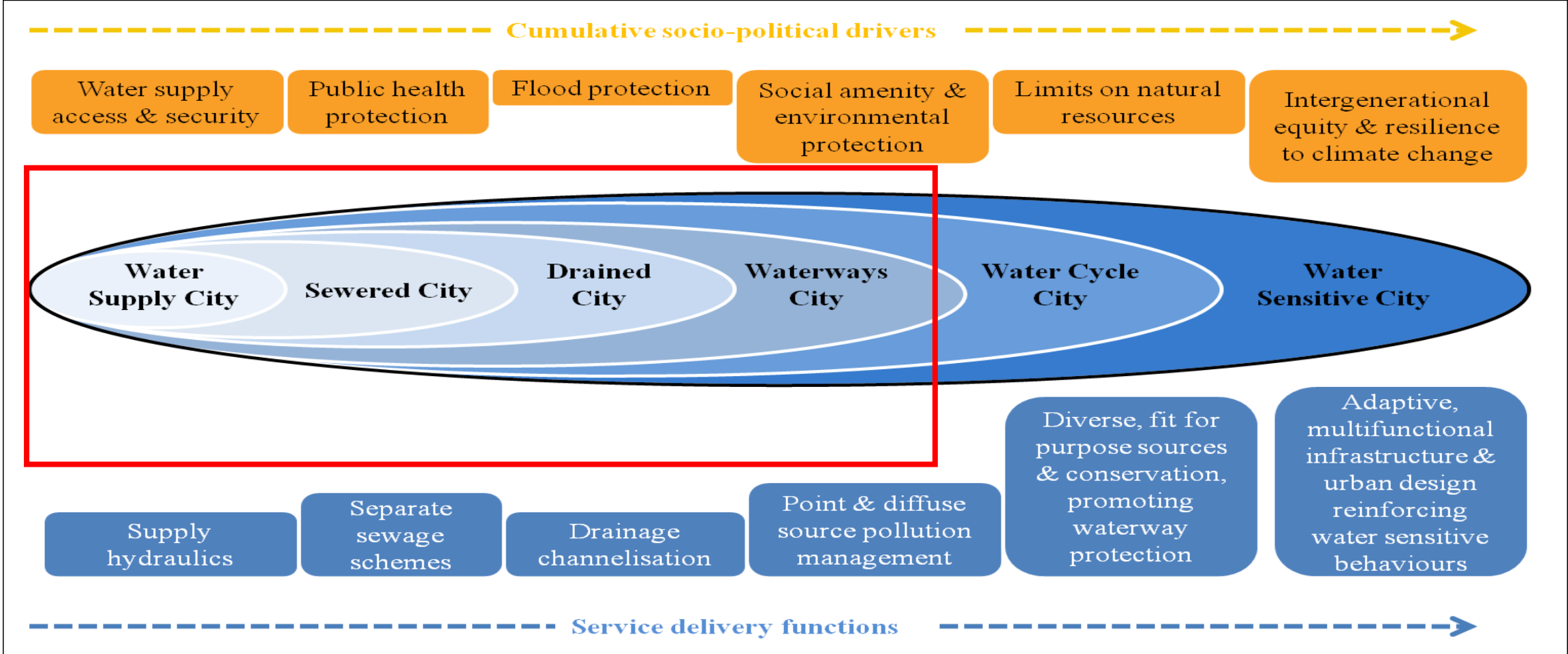
Sub-Saharan Africa & Asia will be home to 74% of world's population

Madness 6



1. United Nations environment programme
Source: 'Global Water Initiative' (June 2005), GEF International Waters Conference, The Coca-Cola Company, Grail Research, BCG Analysis

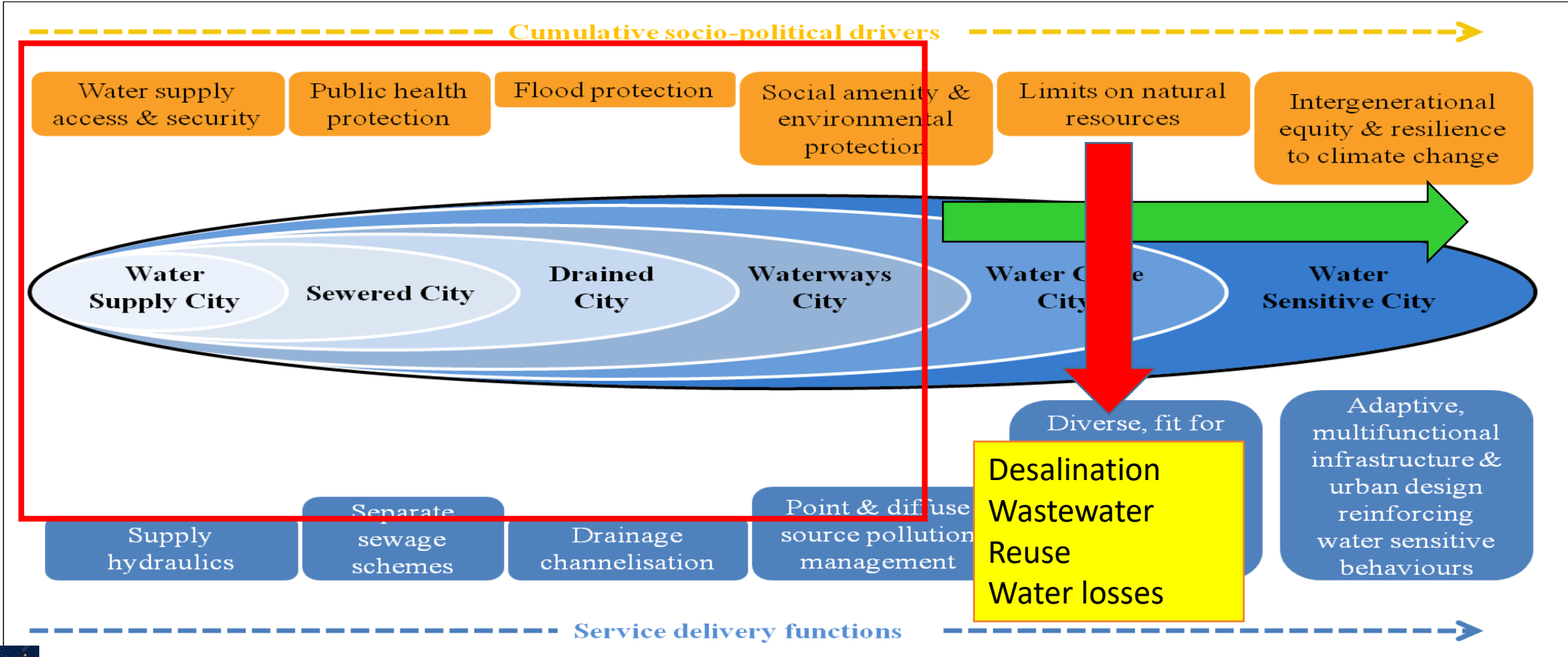
Water Management Transition States



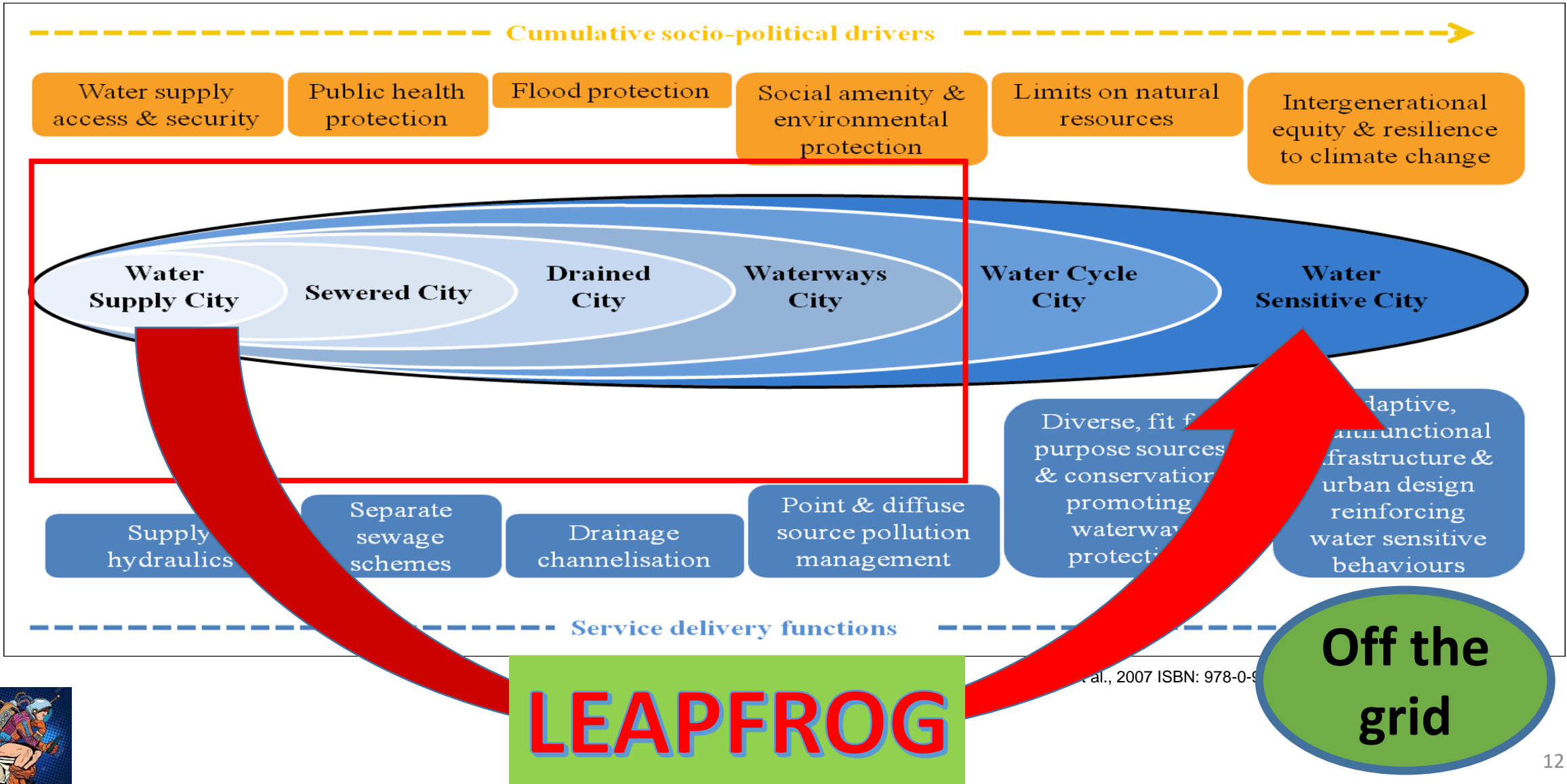
Brown et al., 2007 ISBN: 978-0-9804298-2-4.



Water Management Transition in Developed Countries



Water Management in the Developing World



The Economist

JANUARY 12TH-18TH 2013

[Economist.com](http://economist.com)

Obama's controversial new men
Pressure for change builds in China
Men close the longevity gap
The ghastly gurus of personal finance
Microchipping your children

**Will we ever
invent anything this
useful again?**



The growing debate about
dwindling innovation



Disruption is
necessary.....not an evil

- **USER** BEHAVIOUR
- **INSTITUTIONAL**
BEHAVIOR
- **ENVIRONMENTAL**
BEHAVIOUR
- **TECHNOLOGY**
BEHAVIOR
- **FINANCIAL** BEHAVIOUR



Human Excreta

Faeces and urine

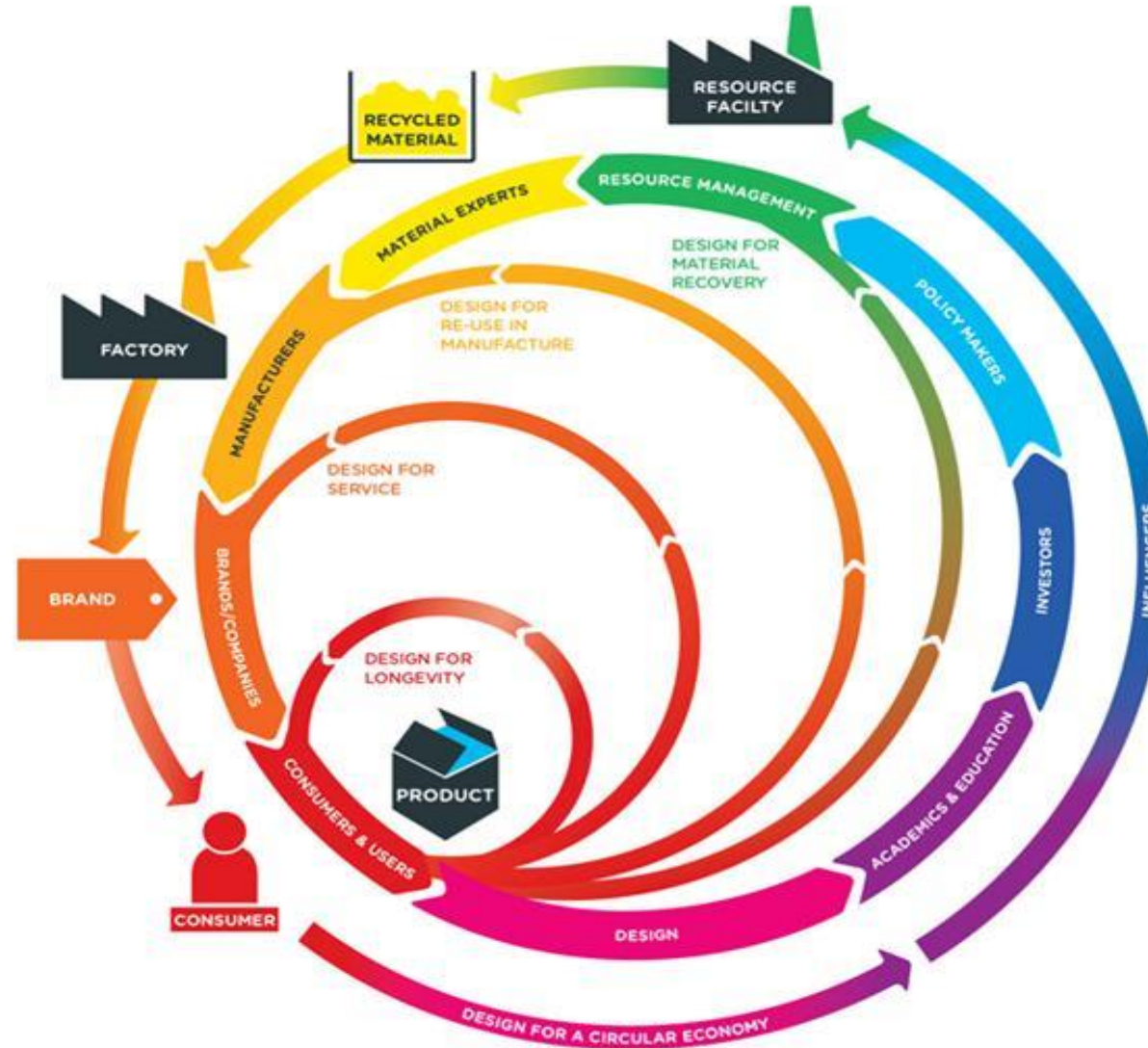
***The major global
opportunity and
resource.....***



Sanitation Transformation Initiative



New Sanitation Model



Not a Flush in the Pan – There is Impetus



EntrePOOnership

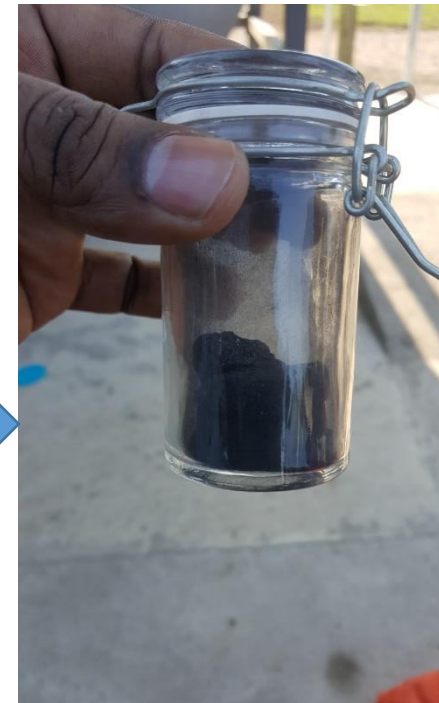


In Durban, faecal waste is collected and is being processed by Black Soldier Fly larvae which can be re-used for other commercial products.



← A Palm oil substitute is made from the larvae which feed on the waste

→ The charcoal by-product is being considered by large fragrant company for its products





Time to stop
shitting in water.™





It is P00werfull.....

Thanks

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