

Another 'Great Stink' is needed: Sanitation and hygiene in poor urban areas

Ben Fawcett

The slums of Kolkata



The slums of London

"We are ... as it may be living in [a] wilderness, so far as the rest of London knows anything of us, or as the rich and great people care about. We live in much dirt and filth. We ain't got no priviz, no dust bins, no drains, no water splies and no drain or suer in the hole place ... The stench of a Gully-hole is disgustin. We, all of us, suffer and numbers are ill, and if Colera comes Lord Help Us ... we are living like pigs and it ain't fair we should be ill treted."

Letter to The Times of London, July 1849

The slums of London



The Great Stink, London, 1858



THE SILENT HIGHWAYMAN
'Your money or your life'.

The Great Stink, London, 1858

"For the first time in the history of man, the sewage of nearly three millions of people had been brought to seethe and ferment under a burning sun, in one vast cloaca lying in their midst. The results we all know. Stench so foul, we may well believe, had never before ascended to pollute this lower air. Never before, at least, had a stink risen to the height of an historic event."

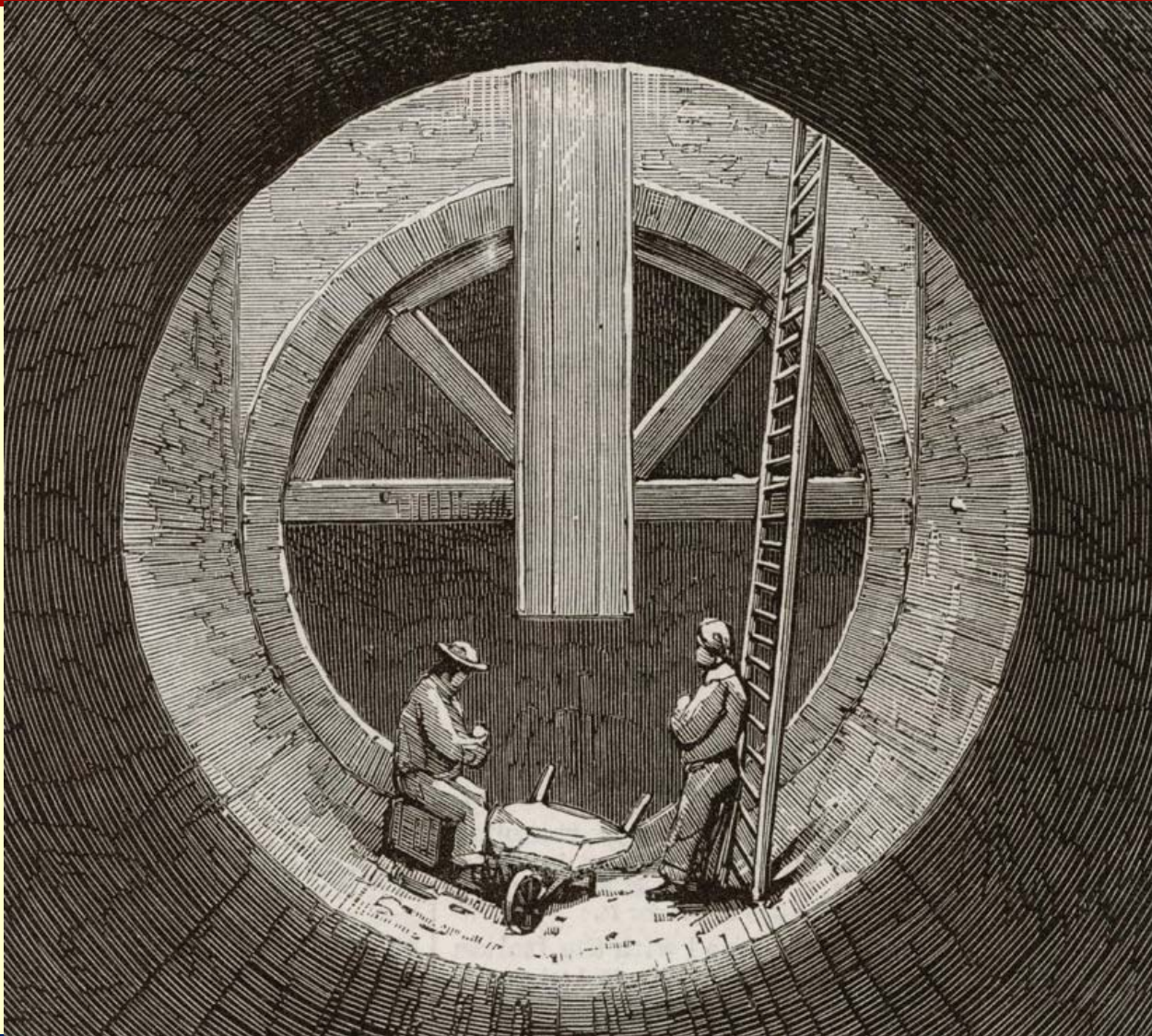
Dr William Budd FRS

(Identified the transmission of typhoid)

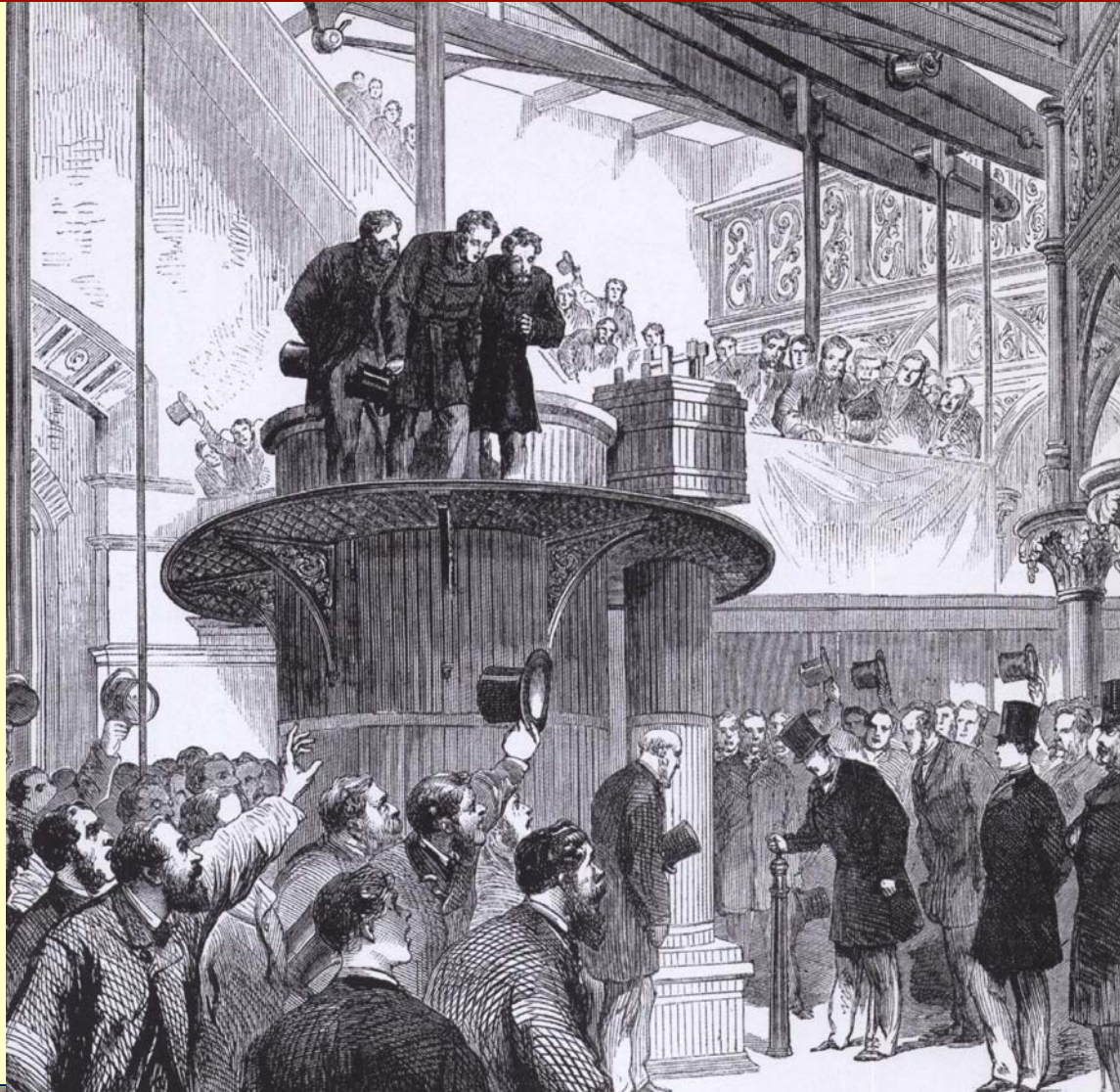
London's interceptor sewers



Construction of London's interceptor sewers, 1860s



Opening the Crossness pumping station, 1865



Manhattan in 1873



Lessons from the 19th century

- We are concerned with public health

Lessons from the 19th century

- We are concerned with public health; a government responsibility

Urban contrasts



Lessons from the 19th century

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The costs and benefits of sanitation

Benefit : cost of universal sanitation by 2015
= **11.2 : 1**

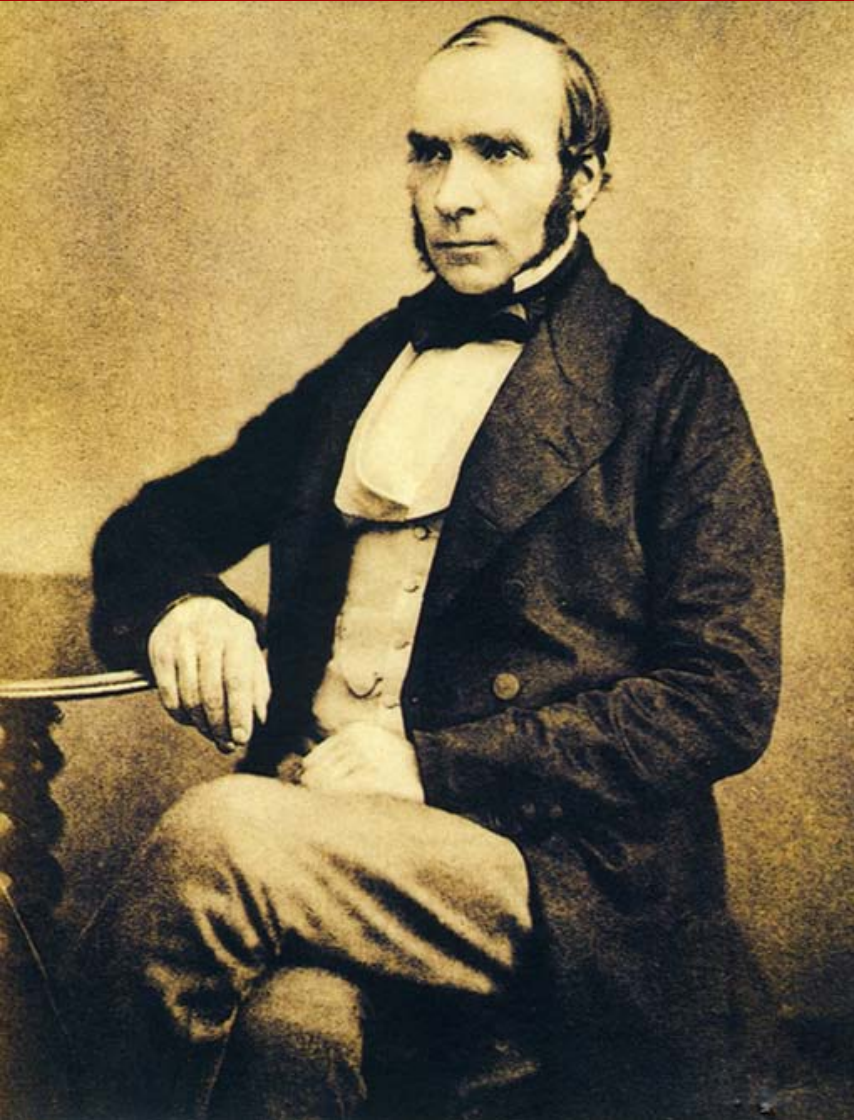
Total annual cost of universal sanitation (2005-15)
= **US\$14.5bn per annum**

Total impact of inadequate sanitation
(in six countries of S and SE Asia, inc India)
= **5.3% of GDP**
= **US\$42 per capita per year** (ave.)

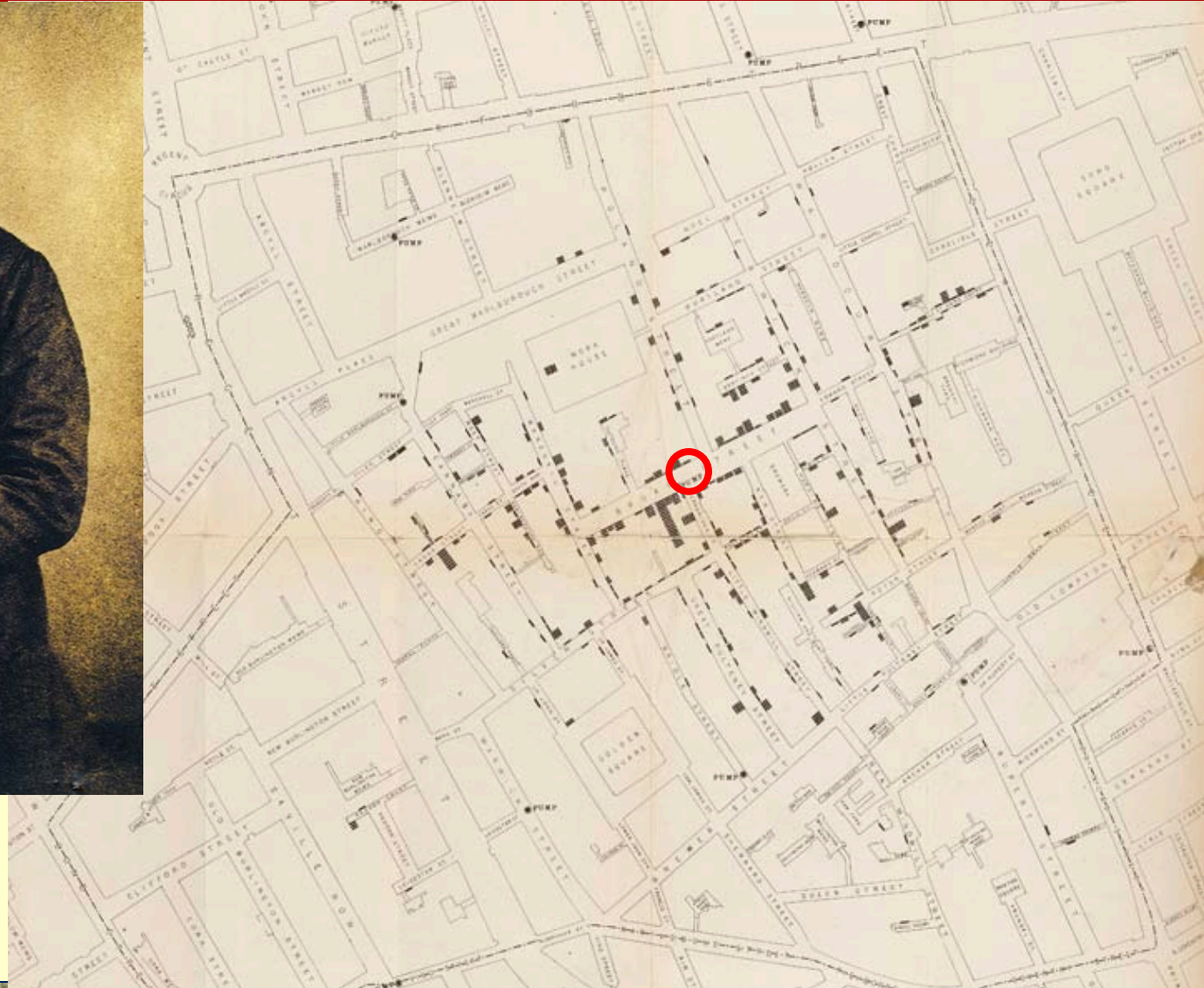
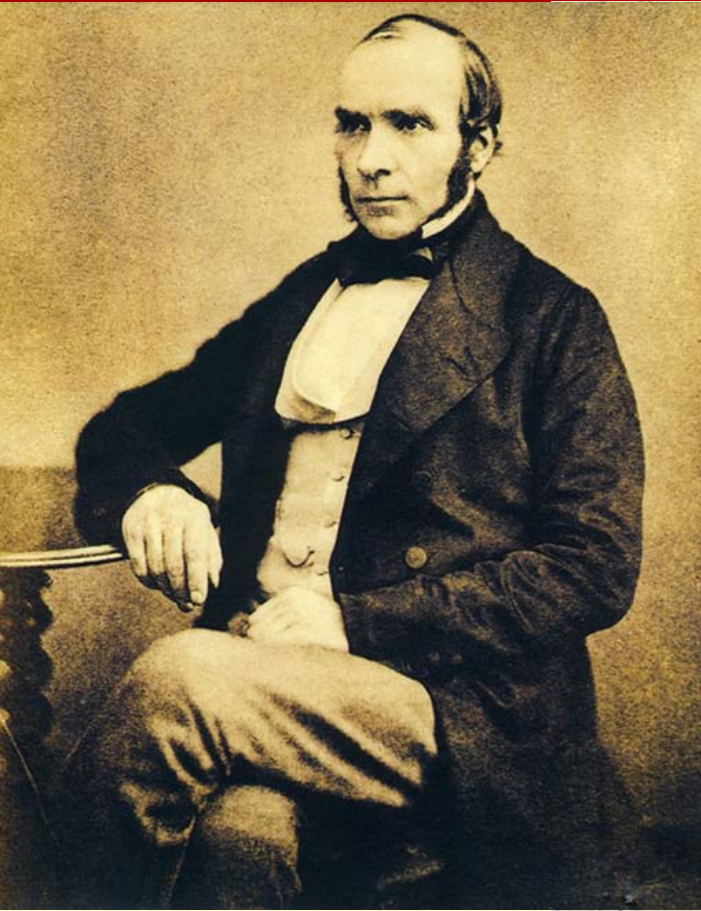
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- We are concerned with public health; a government responsibility
- Diseases of interest are excreta-related, not just water-related

John Snow – cholera in Battersea, London, 1848

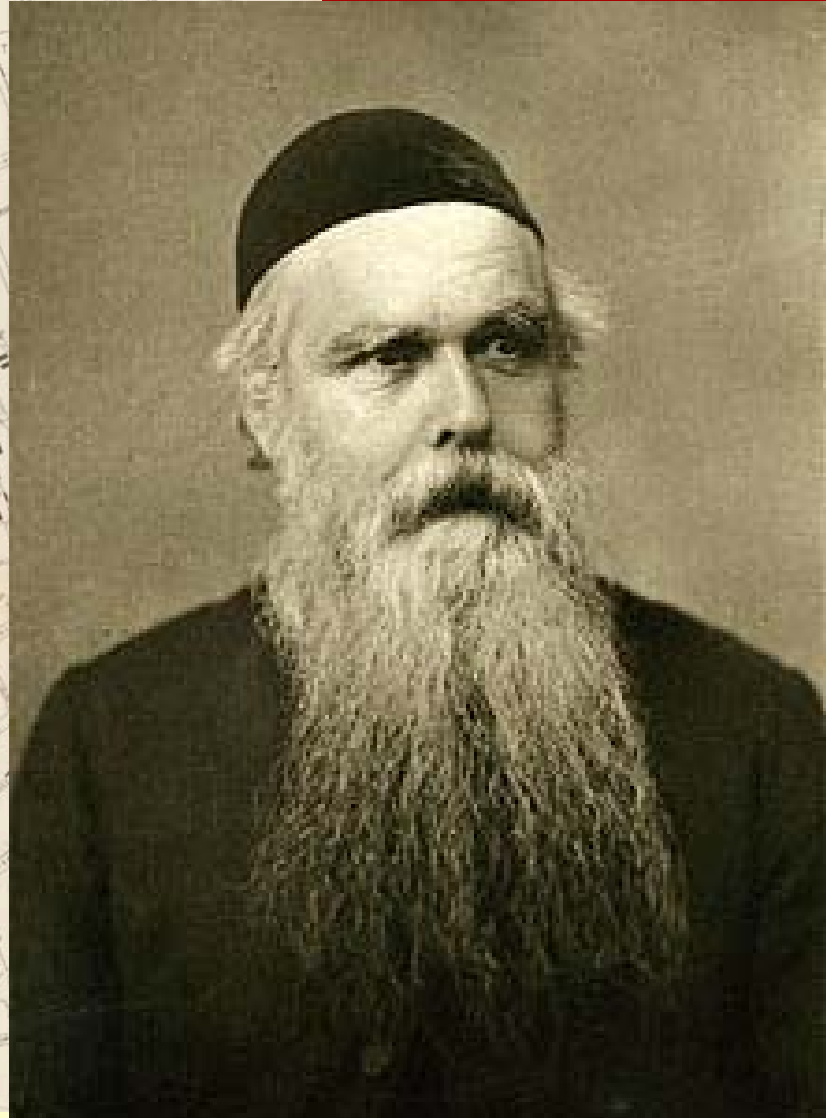
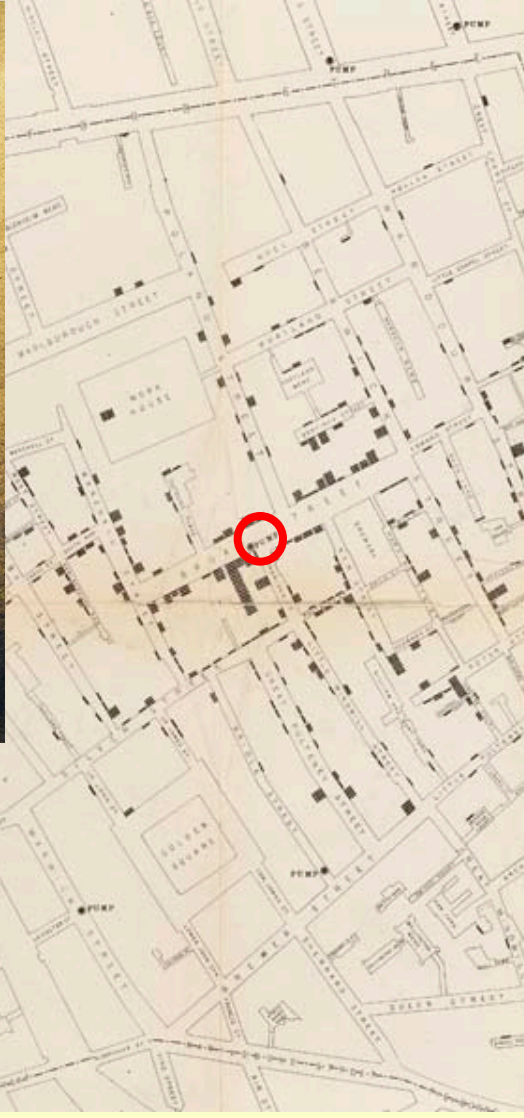
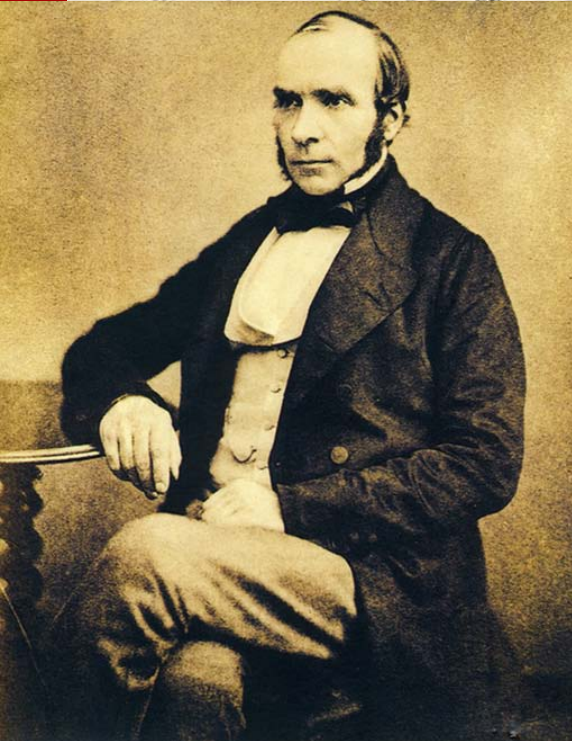


John Snow – cholera in Soho, 1854



2nd International WaTER Conference, Oklahoma 2011

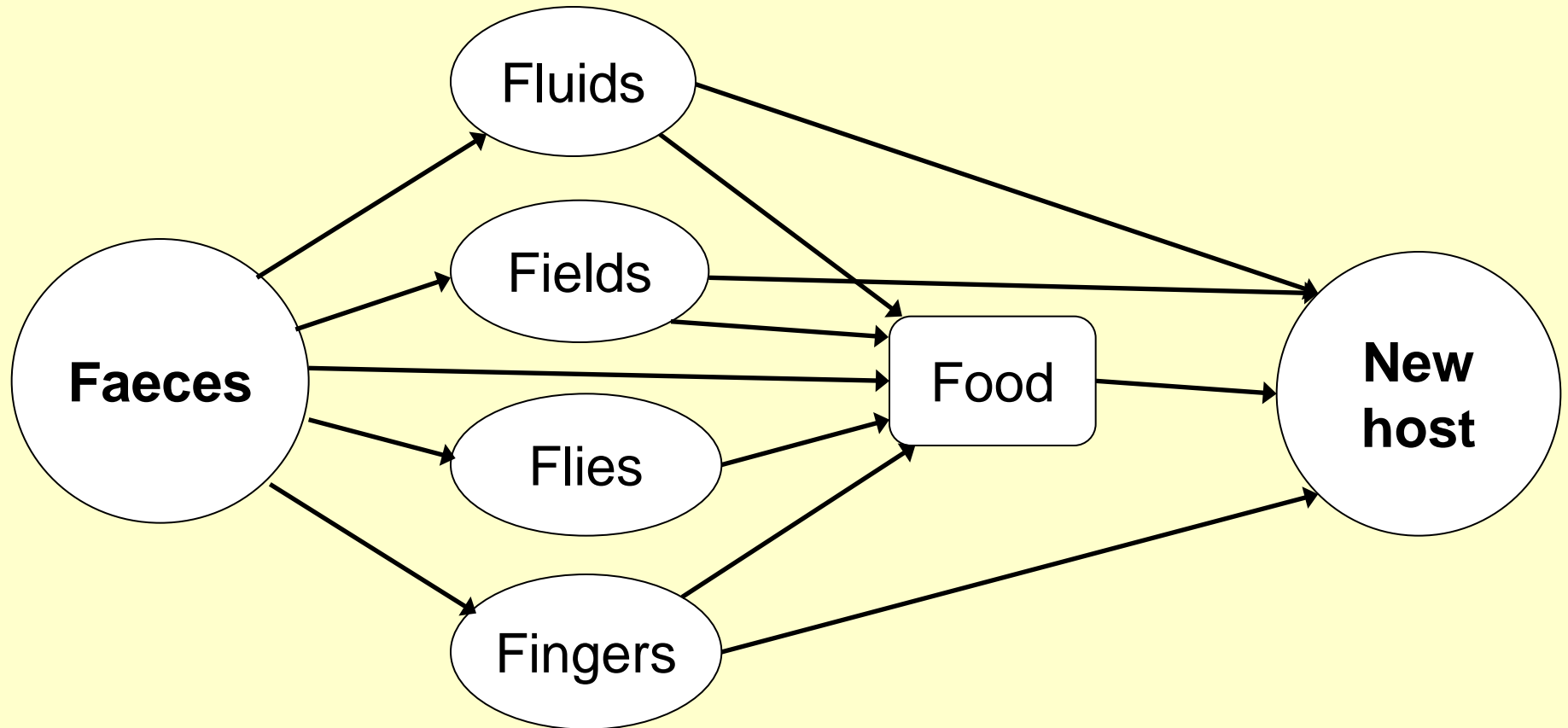
John Snow, Henry Whitehead – cholera in Soho



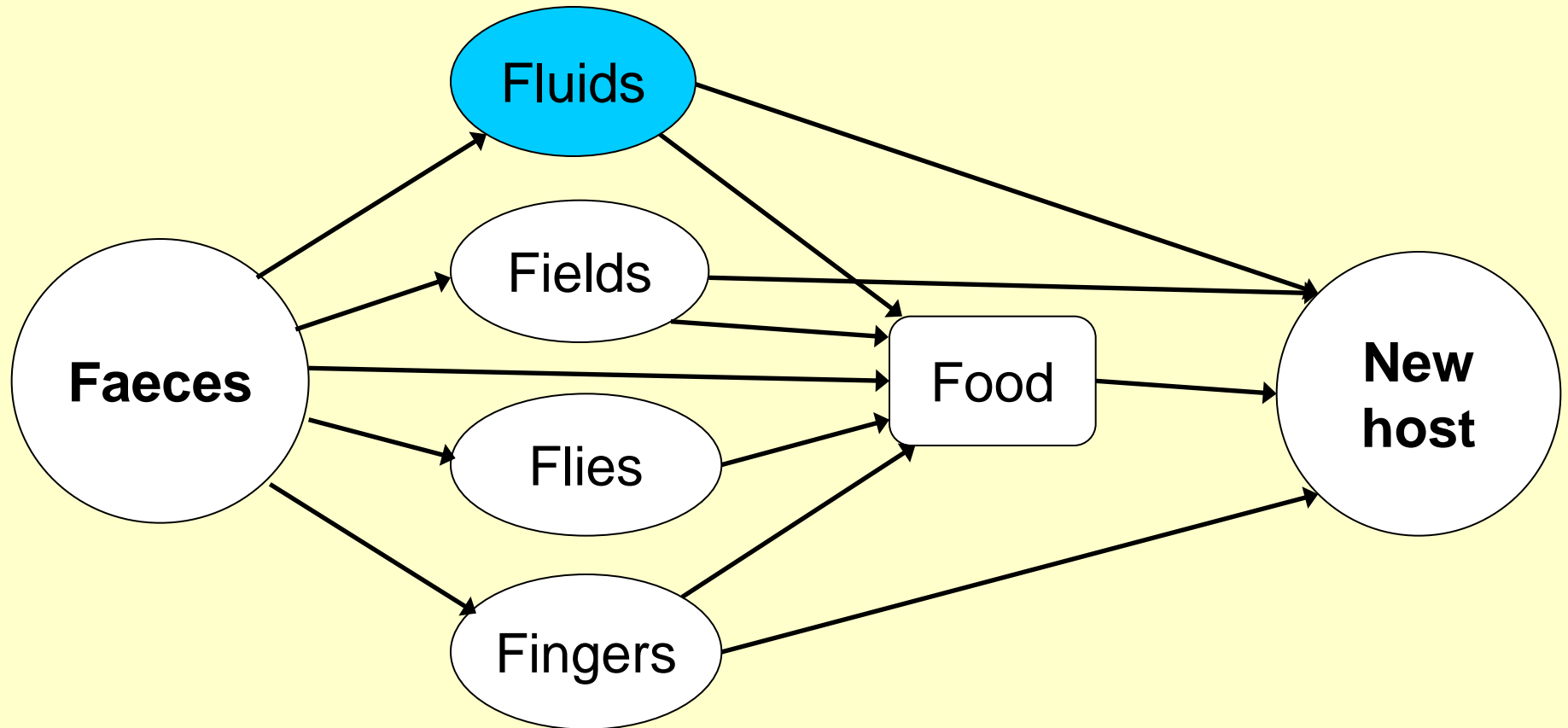
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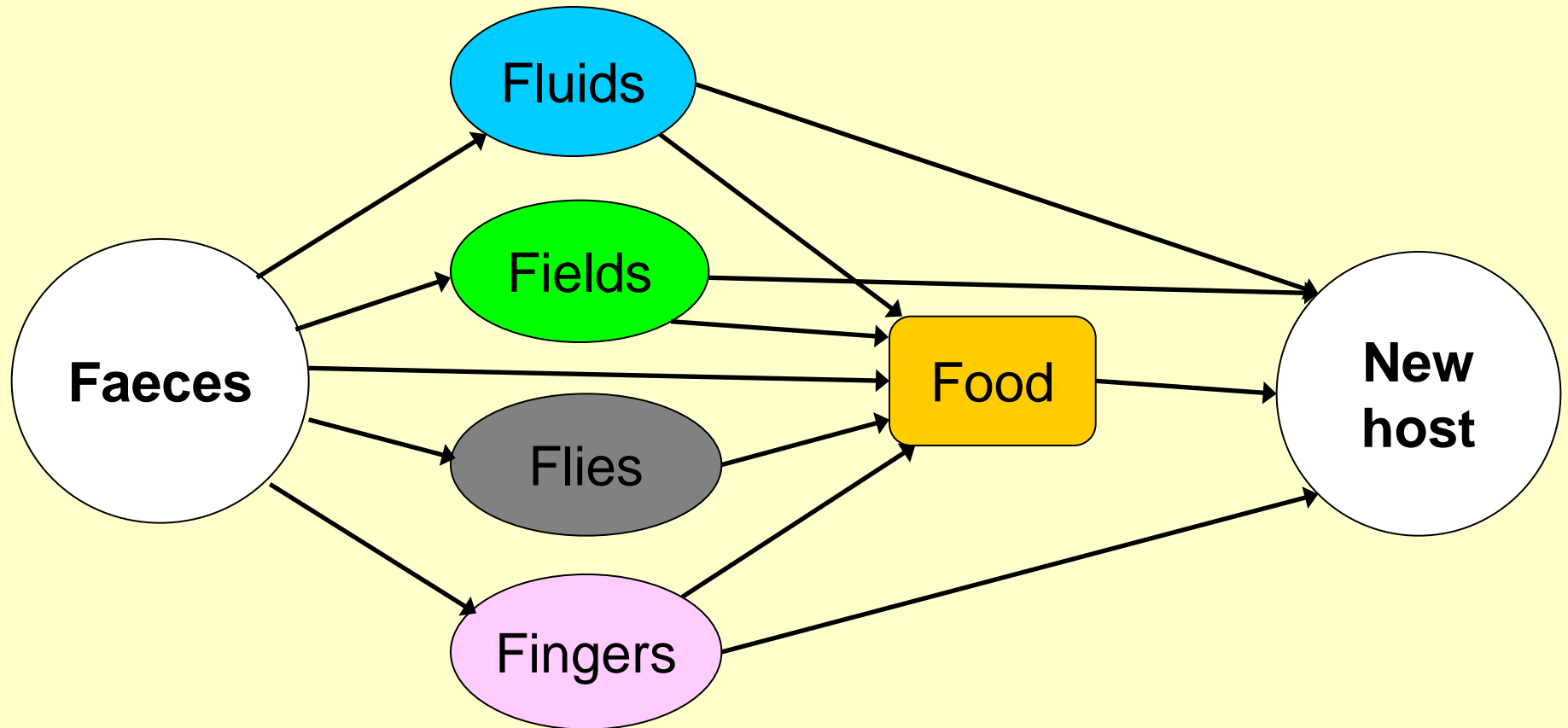
The F-diagram (faecal-oral transmission)



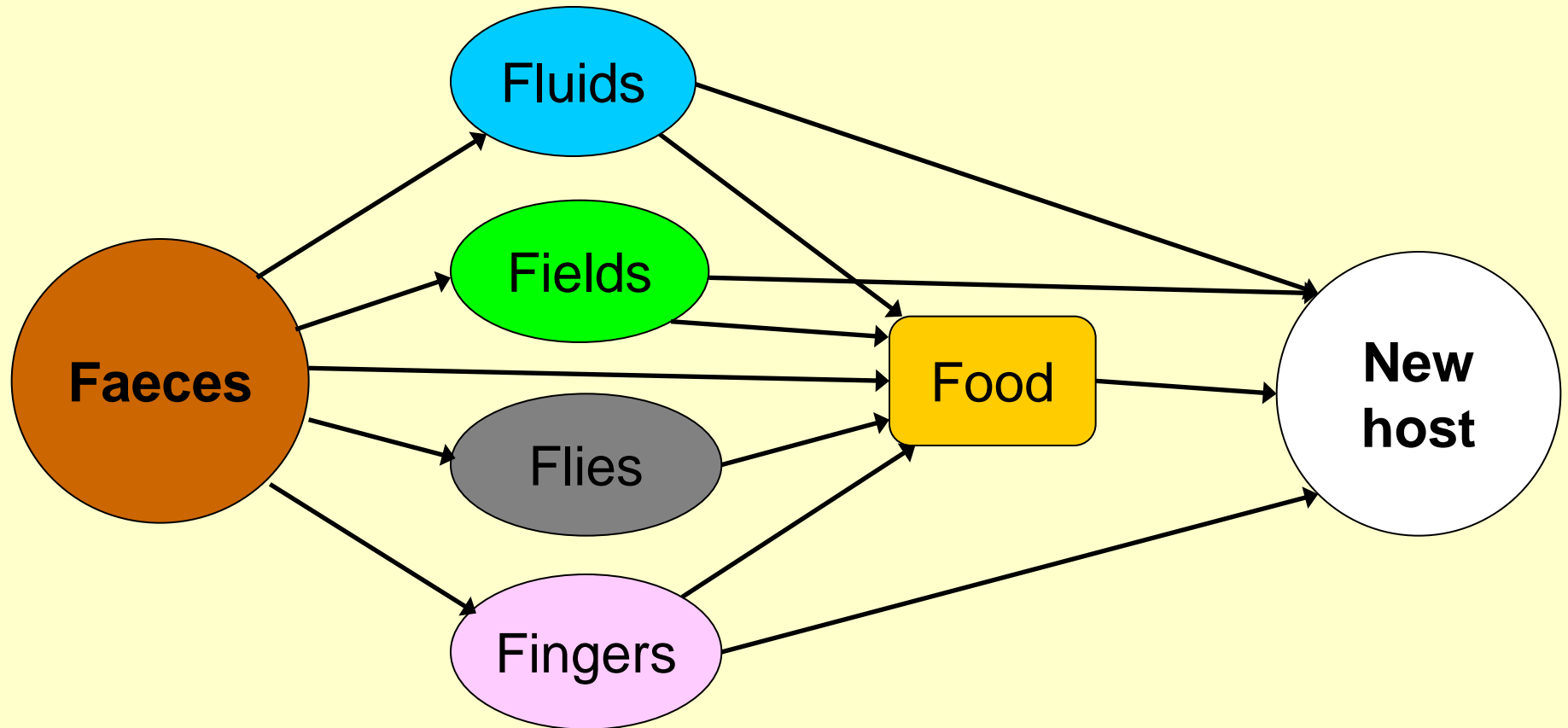
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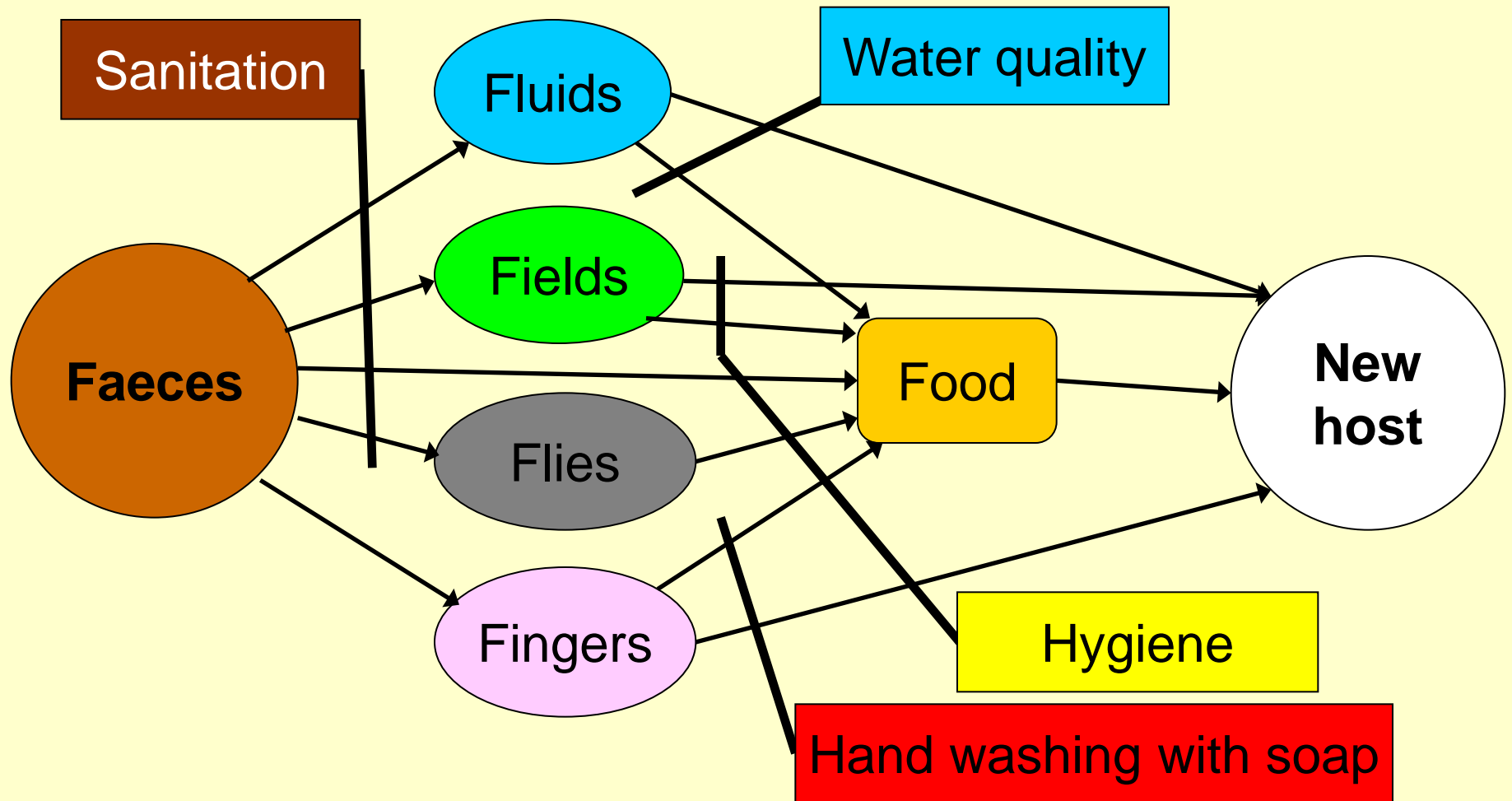
The F-diagram



The F-diagram



The F-diagram



Other excreta-related diseases

- Soil-transmitted helminths (*Ascaris*, *Trichuris*, *hookworm*)

Ascariasis (roundworm)

Other excreta-related diseases

- Soil-transmitted helminths (*Ascaris*, *Trichuris*, *hookworm*)

Other excreta-related diseases

- Soil-transmitted helminths (*Ascaris*, *Trichuris*, *hookworm*)
- Trachoma
- Schistosomiasis
- Filariasis

Filariasis (elephantiasis)



Lessons from the 19th century

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- Sanitation goes beyond the toilet

Sewage disposal

"The solution to pollution is dilution"

It isn't!

Polluted rivers in India



Sludge removal



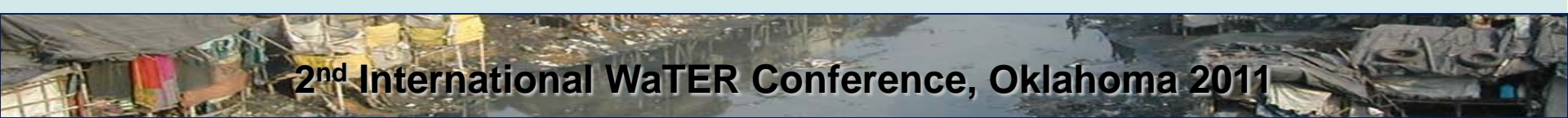
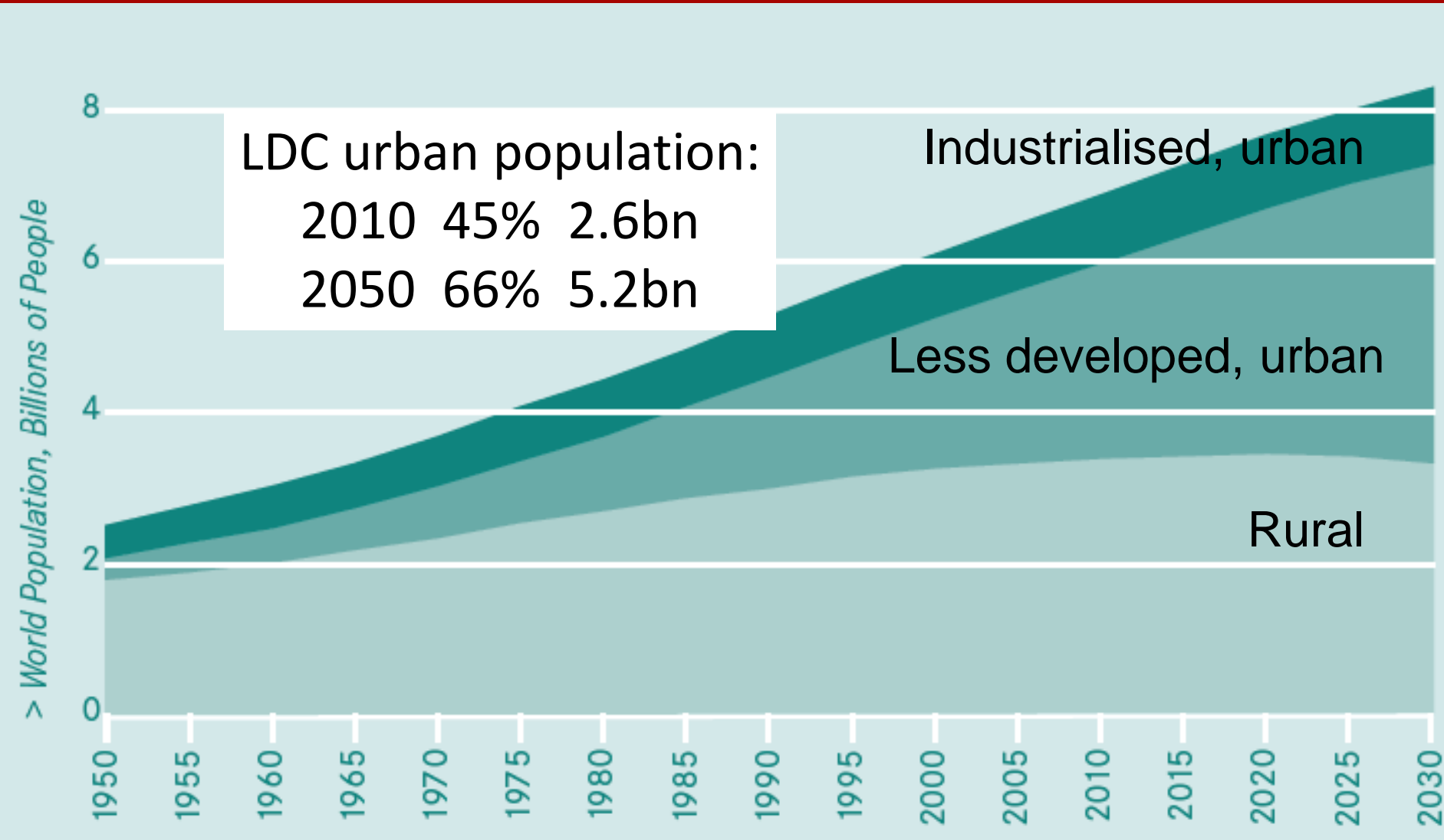
Sludge disposal



Lessons from the 19th century

- We are concerned with public health; a government responsibility
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- Sanitation goes beyond the toilet; effective services are needed as well as facilities

Global population trends 1950-2030 (Source UNDESA)



Slums: population

Global slum population:
2011: 1.05 billion



2nd International WaTER Conference, Oklahoma 2011

Slums: population

Global slum population:
2011: 1.05 billion
2030: 2 billion
2050: 3 billion? of 9bn



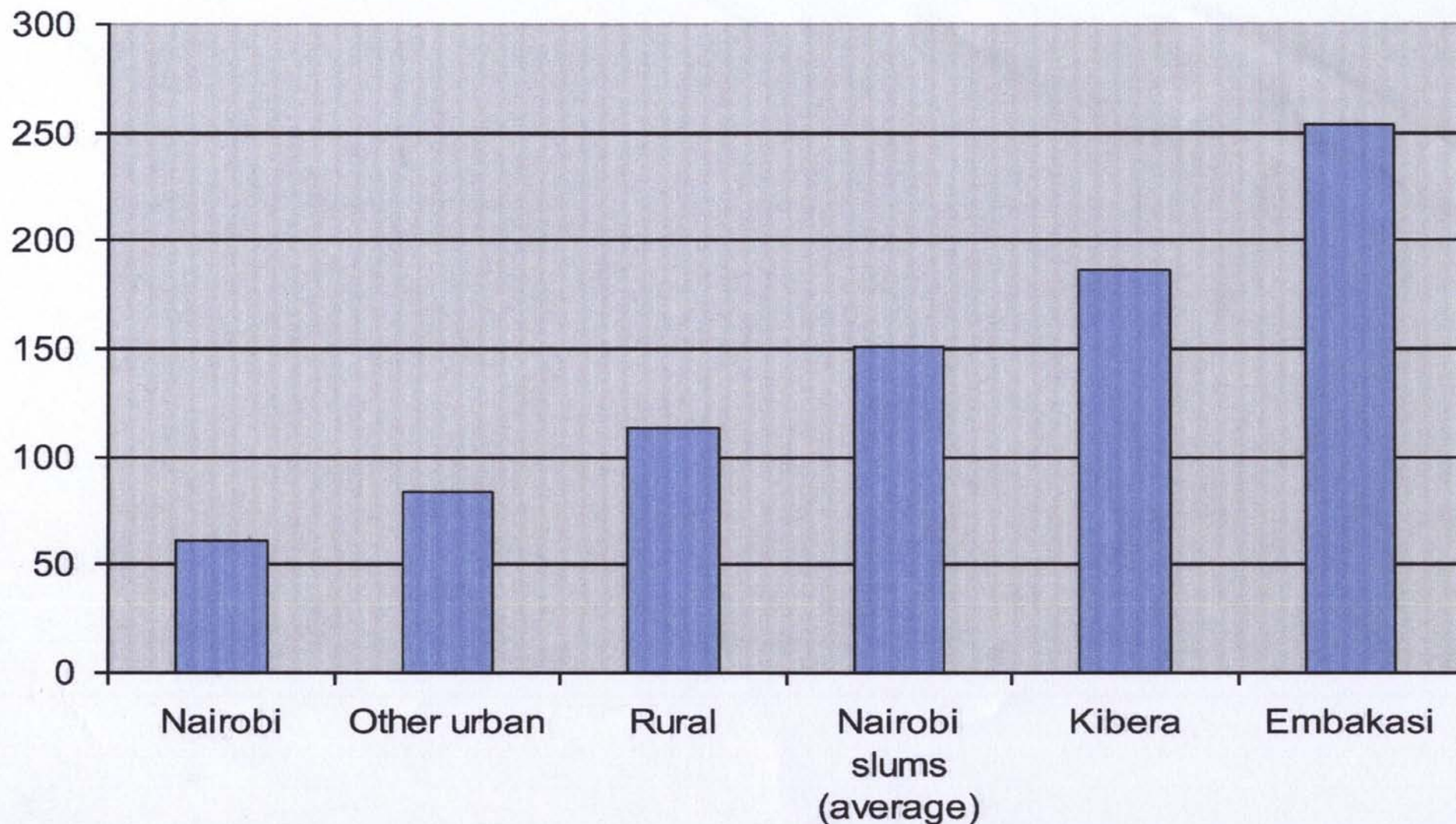
Slums: Mumbai, India

Slums:

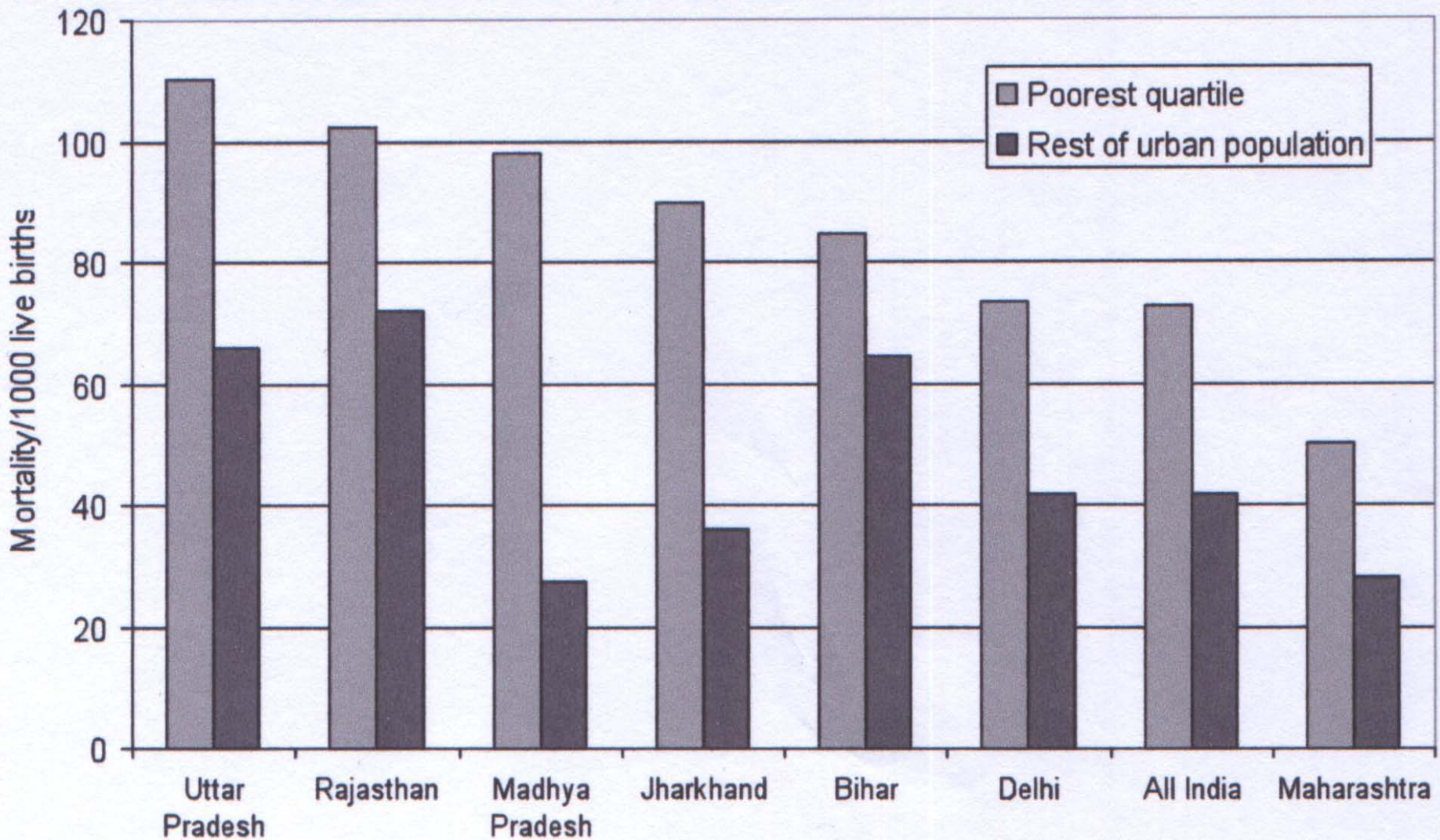
- overcrowding
- poor housing
- inadequate water & sanitation
- insecurity of tenure



Under-5 mortality rates in Kenya (per '000)



Urban under-5 mortality rates in India



Dirty urban environments

"High concentrations of people and wastes in urban areas create more opportunities for exposure to pathogens, and a correspondingly greater need for the levels of hygiene that adequate water and sanitation make possible.

In the poorest countries and neighbourhoods, unsanitary living conditions probably account for at least half of the burden of ill-health."

Sheridan Bartlett (2003)

Open defecation



The human right to dignity

"Sanitation, more than any other human rights issue, evokes the concept of human dignity; consider the vulnerability and shame that so many people experience every day when, again, they are forced to defecate in the open, in a bucket or a plastic bag. Dignity closely relates to self-respect, which is difficult to maintain when being forced to squat down in the open, with no opportunity to clean oneself and facing the constant threat of assault in such a vulnerable moment."

Report of the UN Special Rapporteur on the human right to water and sanitation, 2009

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The bathroom



The kitchen sink



What is wanted?



What is wanted?

'Clean toilets; not having to lift raw sewage and dump it into the Mwengenye River [which we also use for bathing and cleaning]; bathing spaces with warm water for the elderly and young children; water to clean clothes and homes; roads that are not always filled with [human and animal] wastes; roads, homes and toilets that don't flood in the rainy months - that is what I think is appropriate sanitation.'

Margaret Wangui, Maili Saba, Nairobi

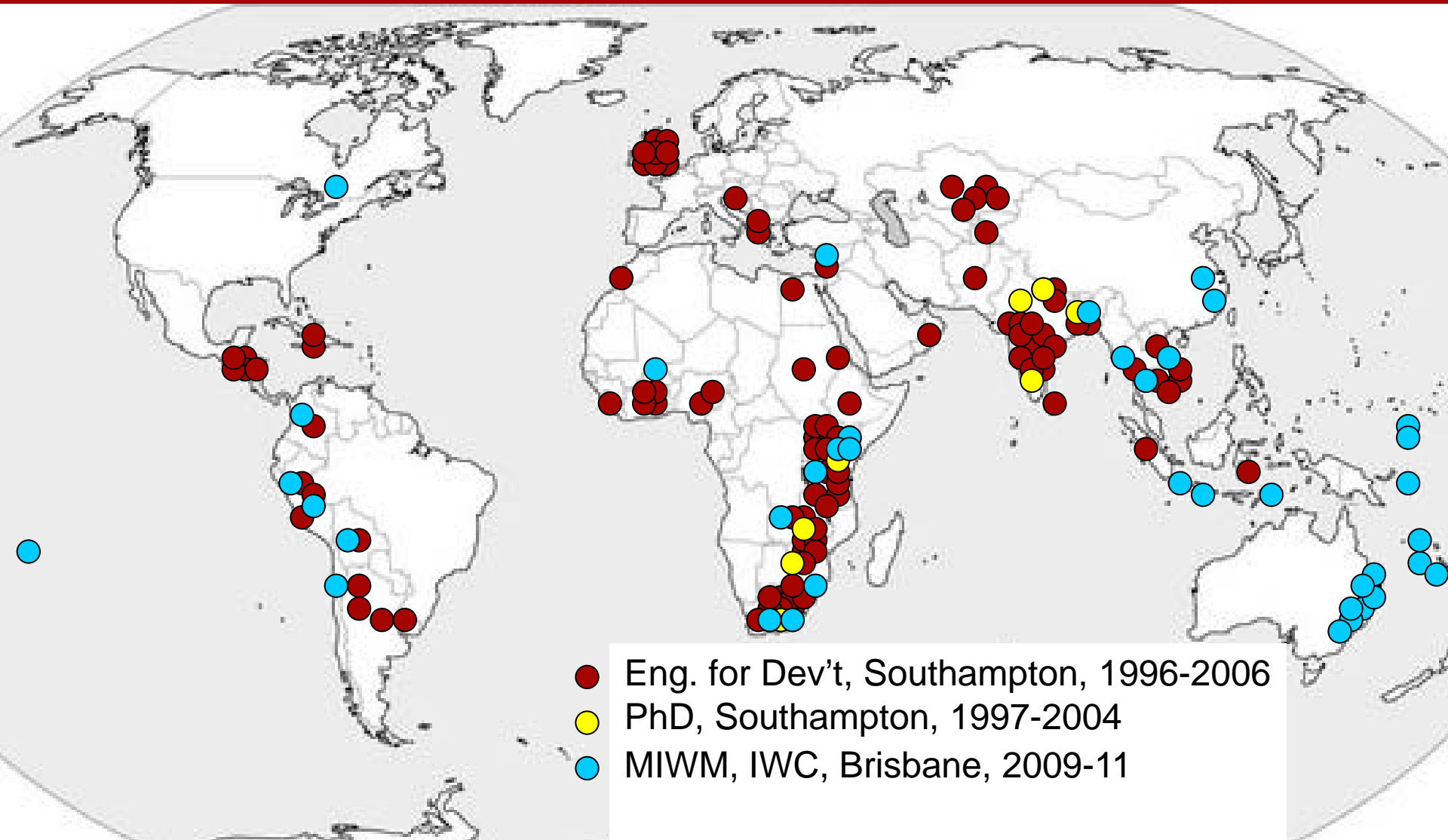
Urban population lacking sanitation (millions)

	JMP (WHO/UNICEF)		UN-HABITAT, 2003 Est for 2000
	2000	2008	
Africa	46 (16%)	175 (45%)	150-180m (50-60%)
Asia	297 (22%)	536 (34%)	600-800m (45-60%)
Latin America/ Caribbean	51 (13%)	64 (14%)	100-150m (25-40%)
Developing world	394 (19%)	775 (32%)	850-1130m (40-55%)

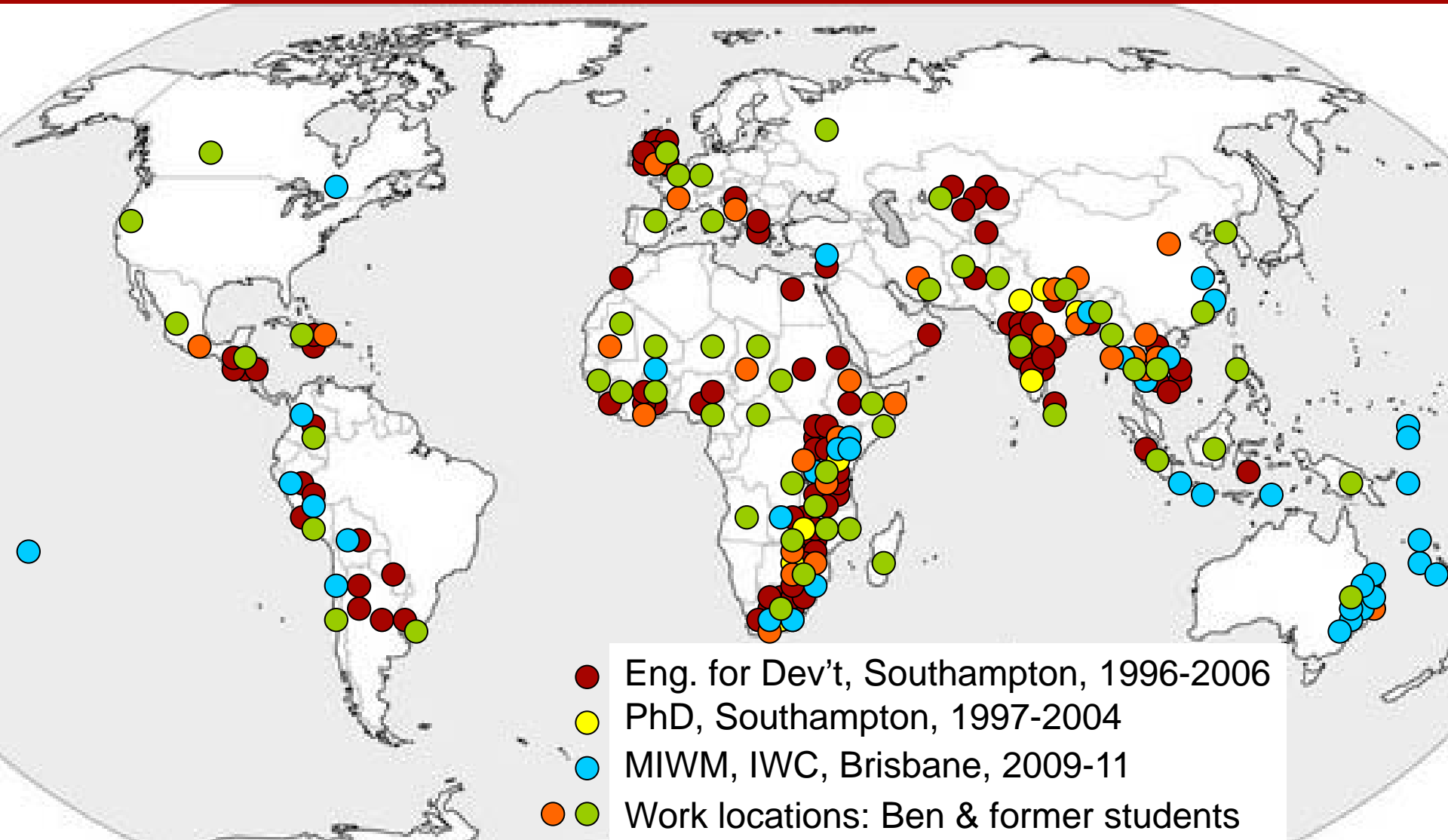
What is needed?

- Effective partnerships
- Facilities and services
- Creative financing
- Political commitment

Student research projects



Work locations



Gorgol Noir irrigation scheme, Mauritania, 1984



Water supply for refugees, northern Uganda, 1993



MSc Engineering for Development, Southampton



2nd International WaTER Conference, Oklahoma 2011

International WaterCentre students, Brisbane



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Pablo Casals



*"The situation is
hopeless;
we must now take the
next step"*

Pablo Casals



*"The situation is
hopeless;
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next step"*

JS Bach, Suite No 1
for solo cello in G major,
Sarabande

There's still a lot to do!

