Wasted Health: the tragic case of dumpsites

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Scope of work

- The purpose of this report is to highlight the severe health risks that are posed by dumpsites to tens of millions of people
- The main part of the report presents the scientific evidence for health risks from dumpsites, the impacts on workers, informal recyclers and nearby residents and the factors affecting the extent of those impacts.
- We want to remind all governments and local authorities, all international stakeholders that waste management is first and above all a public health issue

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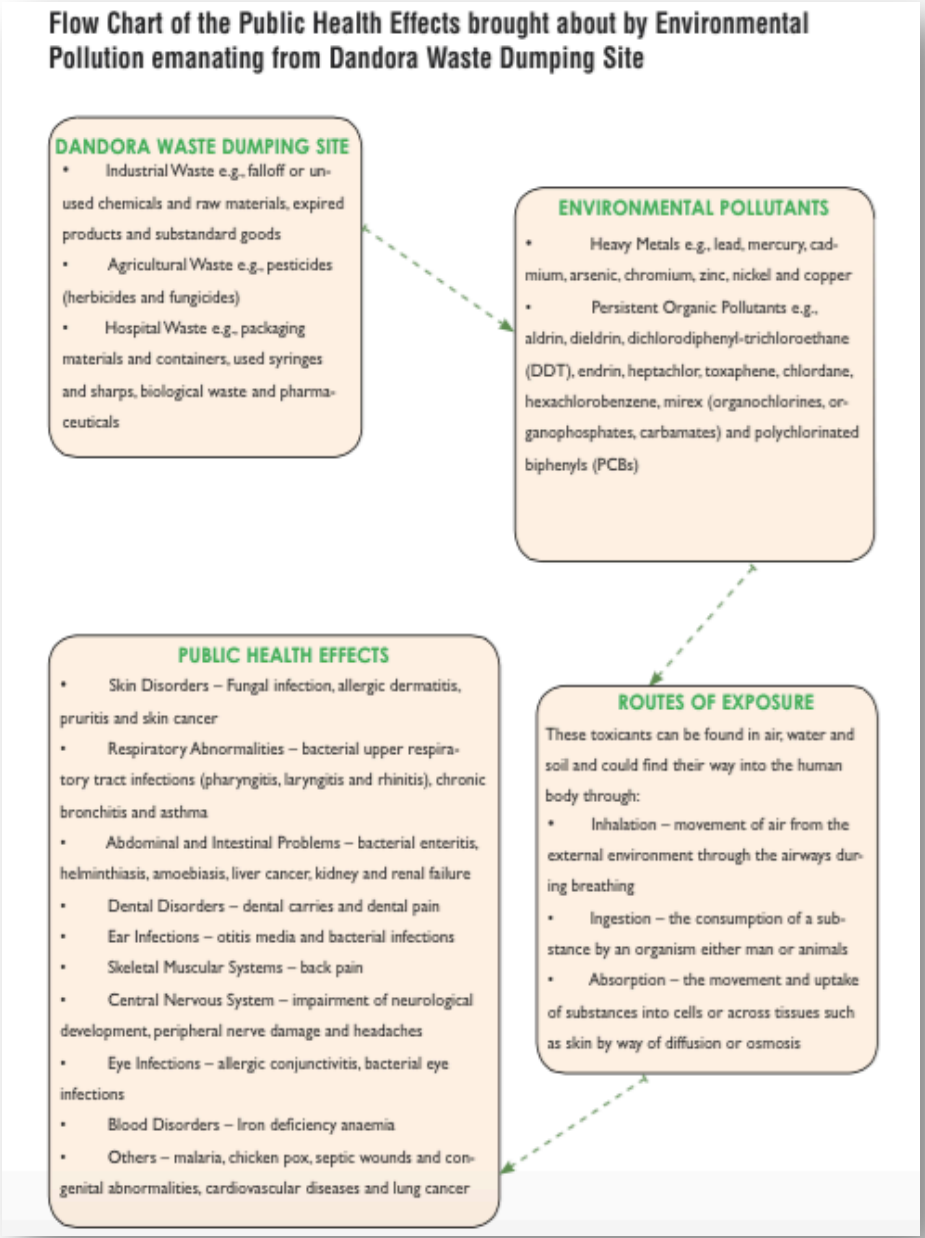
ISWA
International Solid Waste Association

Dumpsites and environment

Dumpsites Vs controlled disposal

Figure 3: Interactions between a dumpsite and the environment

Conceptual Framework



Source: UNEP, Environmental Pollution and Impacts on Public Health: Implications of the Dandora Municipal Dumping Site in Nairobi, Kenya, Summary Report, 2007

Key-findings: Great gains by sanitary landfills!

SOURCES OF EMISSIONS

a. The wastes as they are brought onto site, normally in heavy vehicles,

b. Emissions from transport and bulldozers, compactors etc.

c. Waste blown by the wind as it is tipped or deposited at the dumpsite,

d. Dust generated from the surface of the dumpsite and when waste is tipped or unloaded

e. Historical waste that have been already disposed off,

f. Any gas generated as the waste decomposes (if not collected and treated)

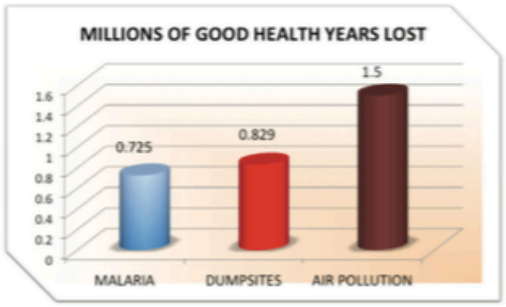
g. Any leachate produced as the waste decomposes

h. The discharges from any processes used to treat the leachate (if any at all).

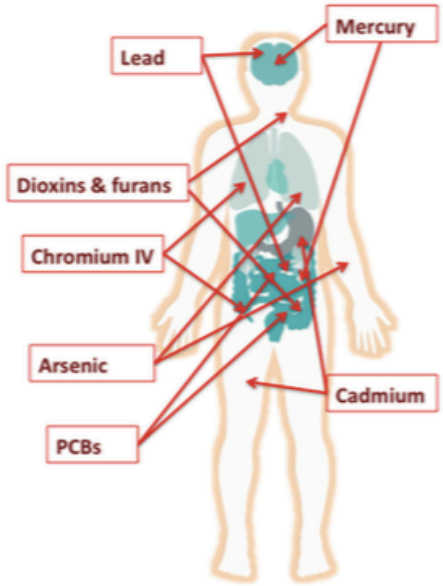
Key-findings: Hazardous waste dumpsites are worst than malaria!

TOXIC DUMPSITES Vs MALARIA

8.6 million people exposed to **373** dumpsites



Health impacts from exposure to selected hazardous waste components



Source: K. Chatham-Stephens et al, Burden of Disease from Toxic Waste Sites in India, Indonesia, and the Philippines in 2010, http://dx.doi.org/10.1289/ehp.1206127, Environmental Health Perspectives, 2013

D-WASTE™ waste management for everyone

Key-findings: E-waste poses new threats

	Component of electrical and electronic equipment	Ecological source of exposure	Route of exposure
Persistent organic pollutants			
Brominated flame retardants	Fire retardants for electronic equipment	Air, dust, food, water, and soil	Ingestion, inhalation, and transplacental
Polybrominated diphenyl ethers			
Polychlorinated biphenyls	Dielectric fluids, lubricants and coolants in generators, capacitors and transformers, fluorescent lighting, Ceiling fans, dishwashers, and electric motors.	Air, dust, soil, and food (bioaccumu-lative in fish and seafood)	Ingestion, inhalation or dermal contact, and transplacental
Dioxins			
Polychlorinated dibenzodioxins and dibenzofurans	Released as combustion byproduct	Air, dust, soil, food, water, and vapor	Ingestion, inhalation, dermal contact, and transplacental
Dioxin-like polychlorinated biphenyls	Released as a combustion byproduct but also found in dielectric fluids, lubricants and coolants in generators, capacitors and transformers, fluorescent lighting, ceiling fans, dishwashers, and electric motors	Released as combus-tion byproduct, air, dust, soil, and food (bioaccumulative in fish and seafood)	Ingestion, inhalation, and dermal absorption
Perfluroalkyls	Fluoropolymers in electronics	Water, food, soil, dust, and air	Ingestion, dermal contact, inhalation, and transplacental
Polyaromatic hydrocarbons			
Acenaphthene, acenaphthylene, an-thracene, benz[a]anthracene, benzo[a] pyrene,benzo[e]pyrene, benzo[b]fluoranthene, benzo[g,h,i] perylene, benzo[j] fluoranthene,benzo[k] fluoranthen e,chrysene,dibenz[a,h]anthracene, fluoranthene, fluorene,indeno[1,2,3-c,d] pyrene, phenanthrene, and pyrene	Released as combustion byproduct	Released as combus-tion byproduct, air, dust, soil, and food	Ingestion, inhalation, and dermal contact

Key-findings: Open burning is criminal

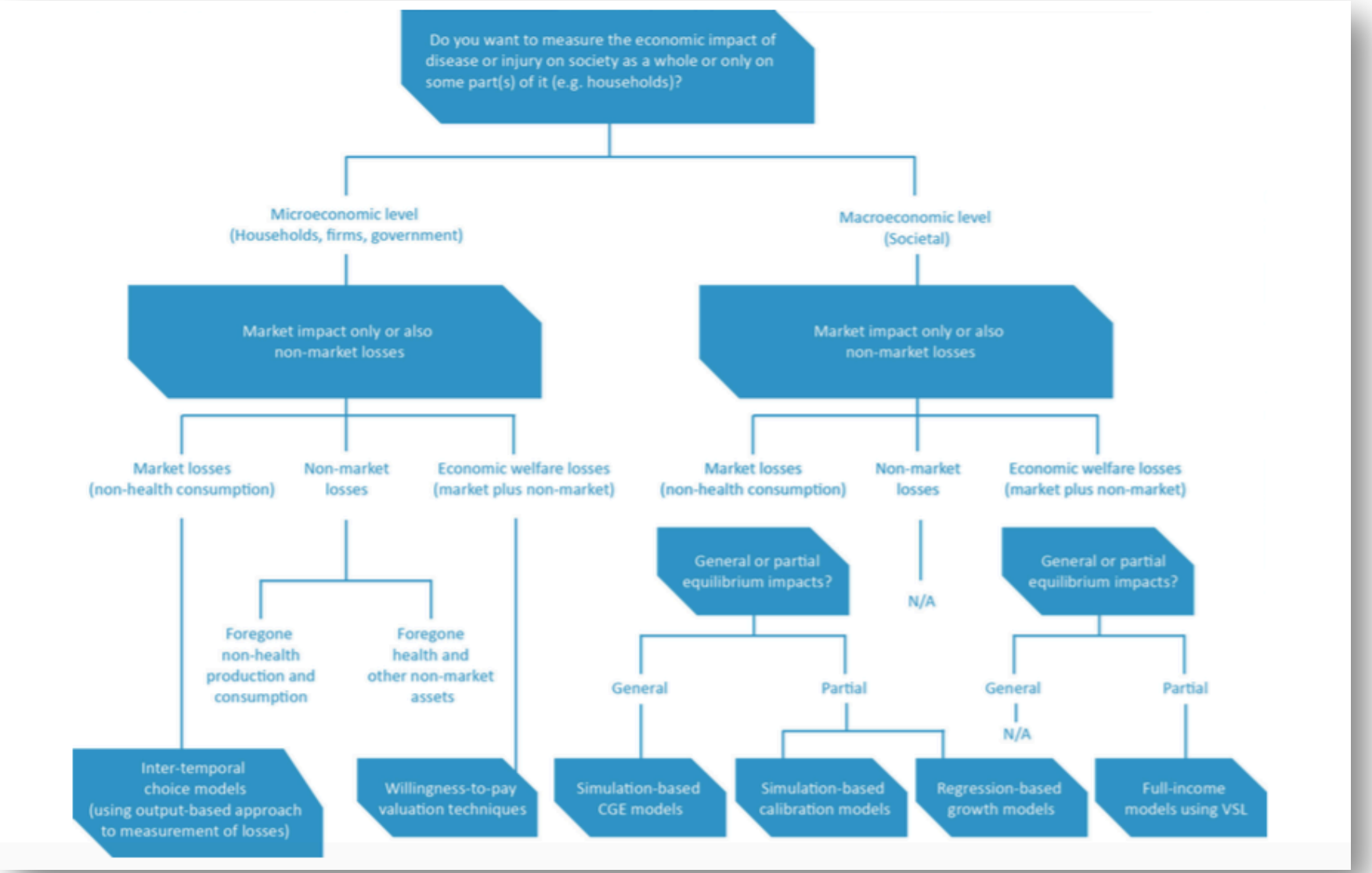
Table 5: Emissions from burning dumps and landfill fires (ng/m3)[63]

Compound	Controlled landfill fire	Uncontrolled landfill fire
Acenaphthylene	90	60
Acenaphthene	50	30
Fluoranthene	100	50
Phenanthrene	520	30
Anthracene	160	85
Fluorene	120	180
Pyrene	120	170
Benzo [a] anthracene	60	60
Chrysene	80	70
Benzo [b&k] fluoranthene	50	20
Benzo [a] pyrene	20	15
Indeno [1,2,3-cd]pyrene	10	10
Dibenz [a,h] anthracene	10	10
Benzo [g,h,i]perylene	10	10
Total PAHs	1480	810
Total PCBs	15.5	590

OCCUPATIONAL HEALTH ISSUES

Prevalence	Seriousness
Joint pain	Infectious diseases
Injuries / cuts	Respiratory issues
Respiratory issues	Skin infection
Gastrointestinal disorders	Gastrointestinal disorders
Fatigue	Injuries / cuts
Skin infection	Joint pain
Infectious diseases	Fatigue

ECONOMIC COSTS



AN ISSUE OF INEQUALITY

Key-findings: An assessment of the dumpsites cost in Brazil!

METHODOLOGY

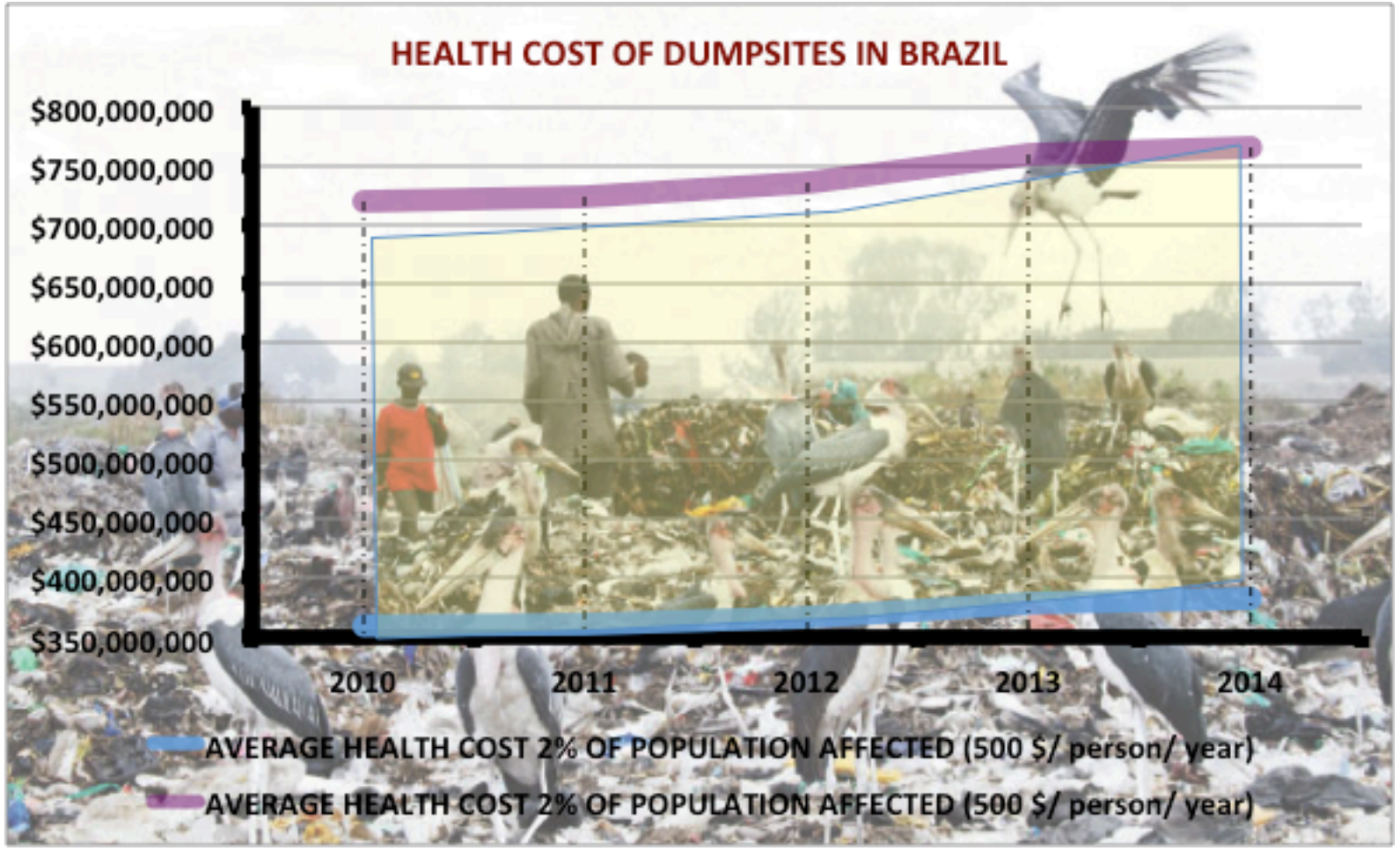
a. ABRELPE PANORAMA data as basis for calculations

b. Assessment of environmental cost through externalities

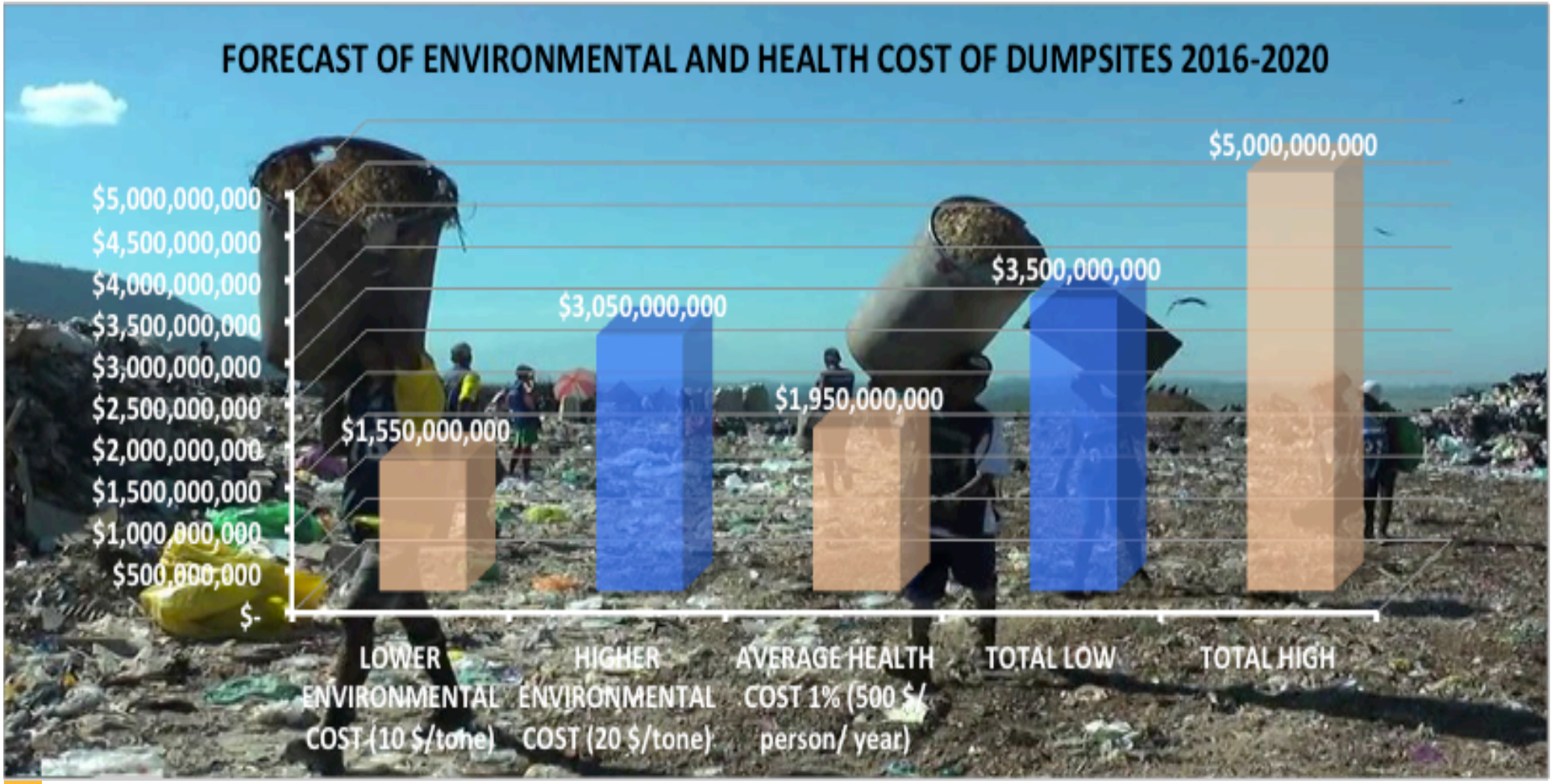
c. Assessment of health cost through benefits' losses

d. Scientific evidence in key-documents of EU Commission, OECD reports etc.


ENVIRONMENTAL COST OF DUMPSITES IN BRAZIL
$600,000,000
$550,000,000
$500,000,000
$450,000,000
$400,000,000
$350,000,000
$300,000,000
$250,000,000
2010
2011
2012
2013
2014
LOWER ENVIRONMENTAL COST (10 $/tone)
HIGHER ENVIRONMENTAL COST (20 $/tone)


HEALTH COST OF DUMPSITES IN BRAZIL
$800,000,000
$750,000,000
$700,000,000
$650,000,000
$600,000,000
$550,000,000
$500,000,000
$450,000,000
$400,000,000
$350,000,000
2010
2011
2012
2013
2014
AVERAGE HEALTH COST 2% OF POPULATION AFFECTED (500 $/ person/ year)
AVERAGE HEALTH COST 2% OF POPULATION AFFECTED (500 $/ person/ year)


TOTAL COST OF DUMPSITES IN BRAZIL
$1,000,000,000
$950,000,000
$900,000,000
$850,000,000
$800,000,000
$750,000,000
$700,000,000
$650,000,000
$600,000,000
2010
2011
2012
2013
2014
TOTAL LOW
TOTAL HIGH


FORECAST OF ENVIRONMENTAL AND HEALTH COST OF DUMPSITES 2016-2020
$5,000,000,000
$4,500,000,000
$4,000,000,000
$3,500,000,000
$3,000,000,000
$2,500,000,000
$2,000,000,000
$1,500,000,000
$1,000,000,000
$500,000,000
$-
$1,550,000,000
$3,050,000,000
$1,950,000,000
$3,500,000,000
$5,000,000,000
LOWER ENVIRONMENTAL COST (10 $/tone)
HIGHER ENVIRONMENTAL COST (20 $/tone)
AVERAGE HEALTH COST 1% (500 $/ person/ year)
TOTAL LOW
TOTAL HIGH

Useful comparisons

- 1.5 $ million / day
- 3.5 - 5 $ billions in the next five years

ISWA
International Solid Waste Association

Who and how pays this cost?

- Healthcare cost
- Cost for water purification
- Cost of soil degradation
- Cost of fires due to dumpsites
- Cost transferred to their closure and rehabilitation
- Cost of environmental degradation transferred to next generations

CONCLUSIONS - 1

Close the dumpsites

National Campaign

Develop local road maps and transit solutions

CONCLUSIONS - 2

Review of the legal, institutional and financial framework for advanced treatment schemes

Support measures for market development

Step by step guides for SW treatment plans

Decision-making seminar for MPs