

# Economic Impacts of Childhood Lead Exposure in Low- and Middle Income Countries

Dar es Salaam, Tanzania

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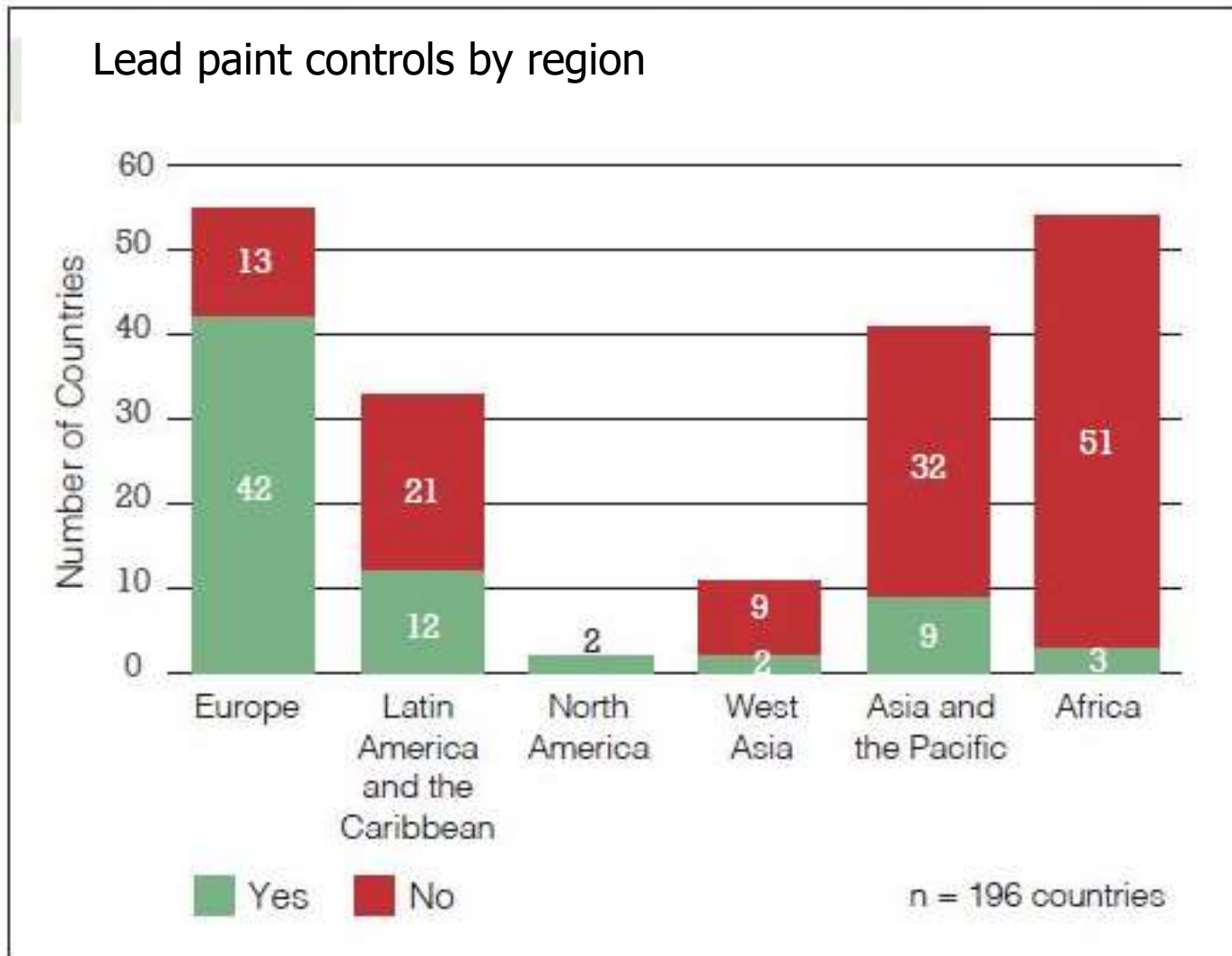


# Significant Benefits of Reducing Lead:

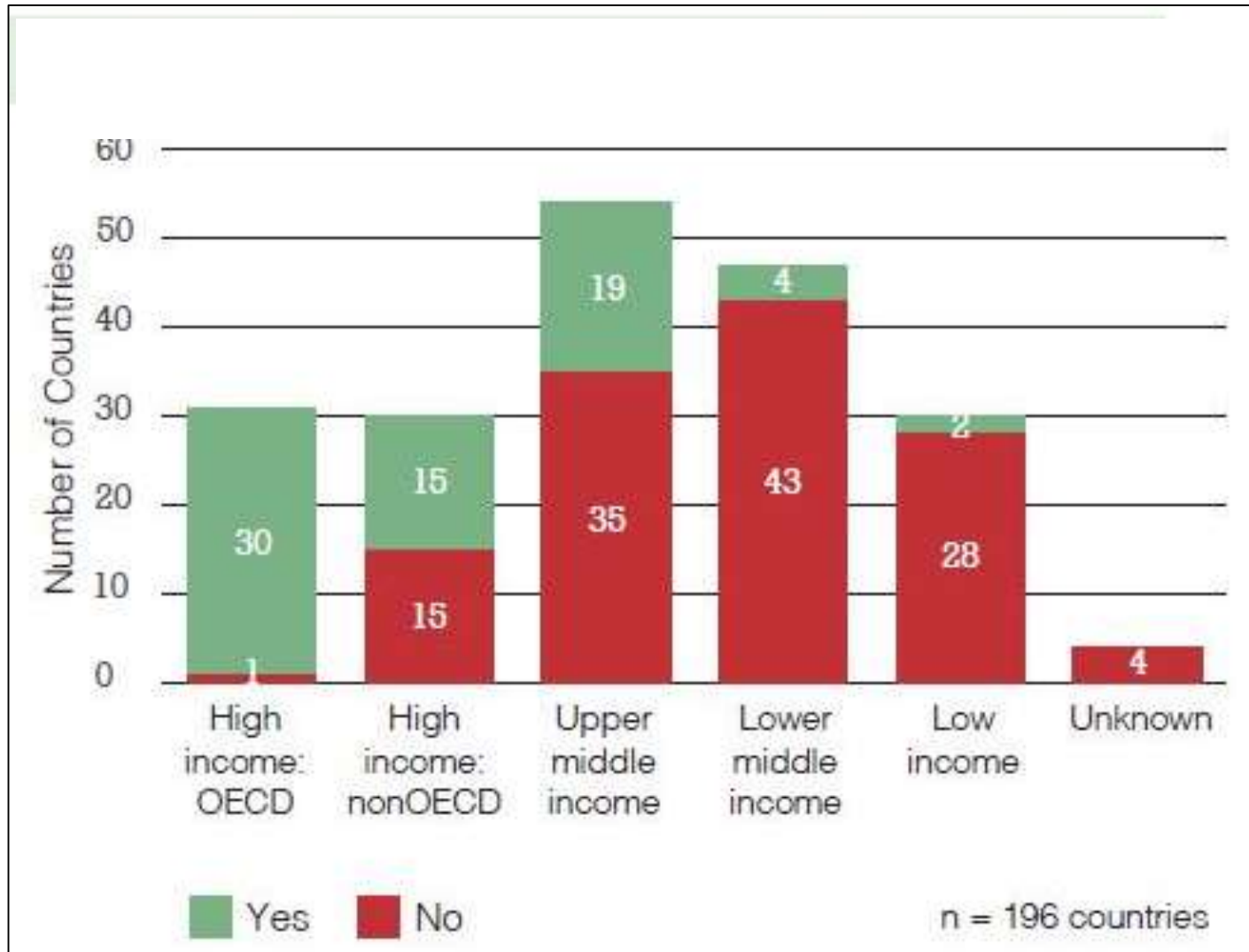
## *Removal of lead from gasoline*

- Average child born today 4-7 IQ points smarter than children born in the 1970s
- One of major public health victories of past 50 years
- Annual benefits ongoing and range from \$1-\$6 trillion/year, with a best estimate of \$2.45 trillion/year (4% of global GDP)

# Global Status of Lead Paint Laws



# Lead Paint Laws by Income Level



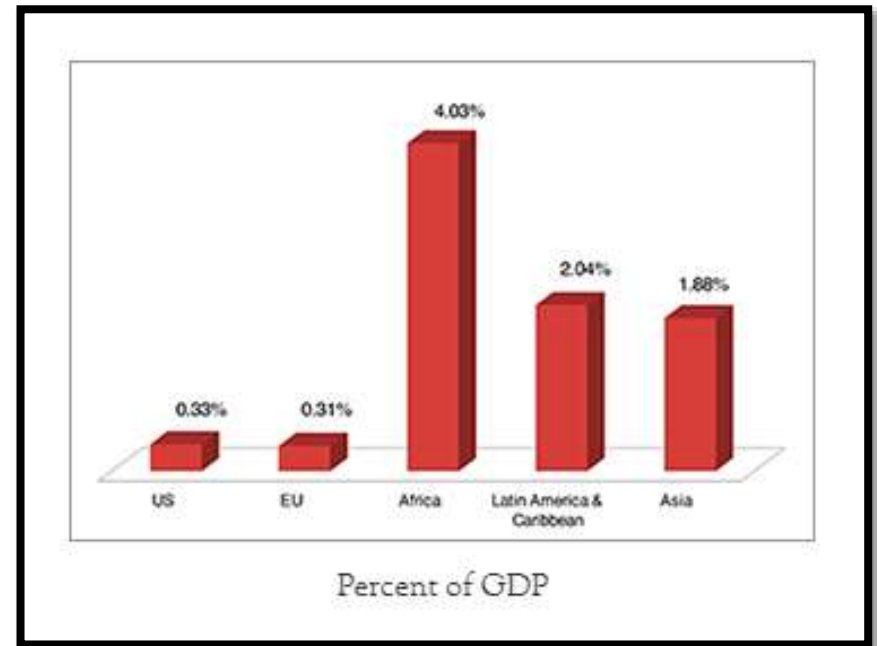
# Estimated Costs of Childhood Lead Exposure in Low- and Middle-Income Countries

- Total estimated cost in LMICs = \$977 billion (range \$728.6–1162.5 billion) of international dollars in 2008
- Regional economic losses estimated as:
  - Africa: \$134.7 billion, i.e. 4.03% of regional GDP

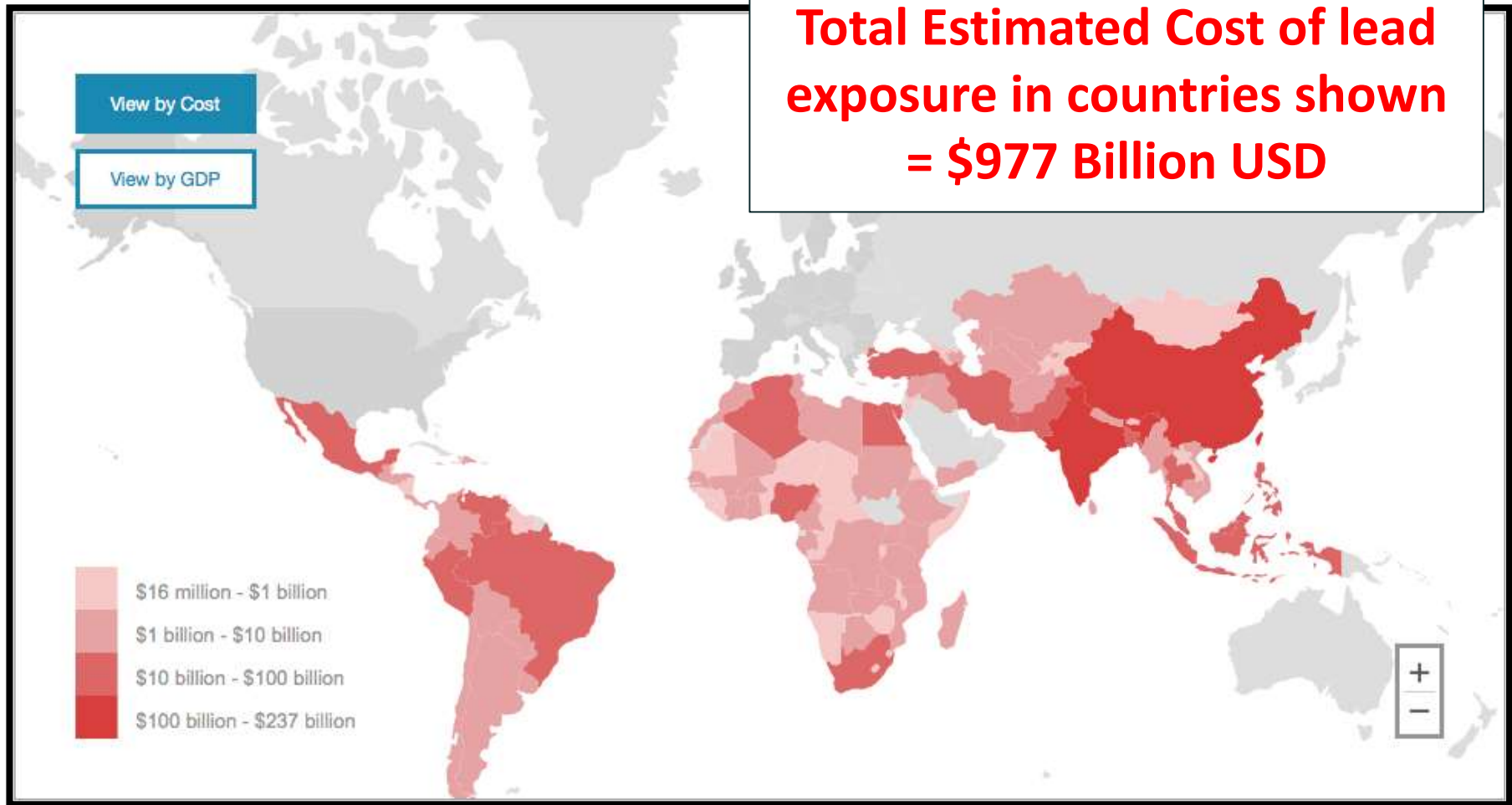
Source: Attina TM, Trasande L (2013) Economic Costs of Childhood Lead Exposure in Low- and Middle-Income Countries. Environ Health Perspect 121(9): 1097-110

# Developing Countries have been left behind

- Overall burden associated with childhood lead exposure in LMICs amounted to 1.20% of world GDP in 2011; approximately \$977 billion international dollars in 2008
- For comparison, economic impact of lead exposure in the **U.S. and in EU** countries is \$50.9 and \$55 billion, respectively

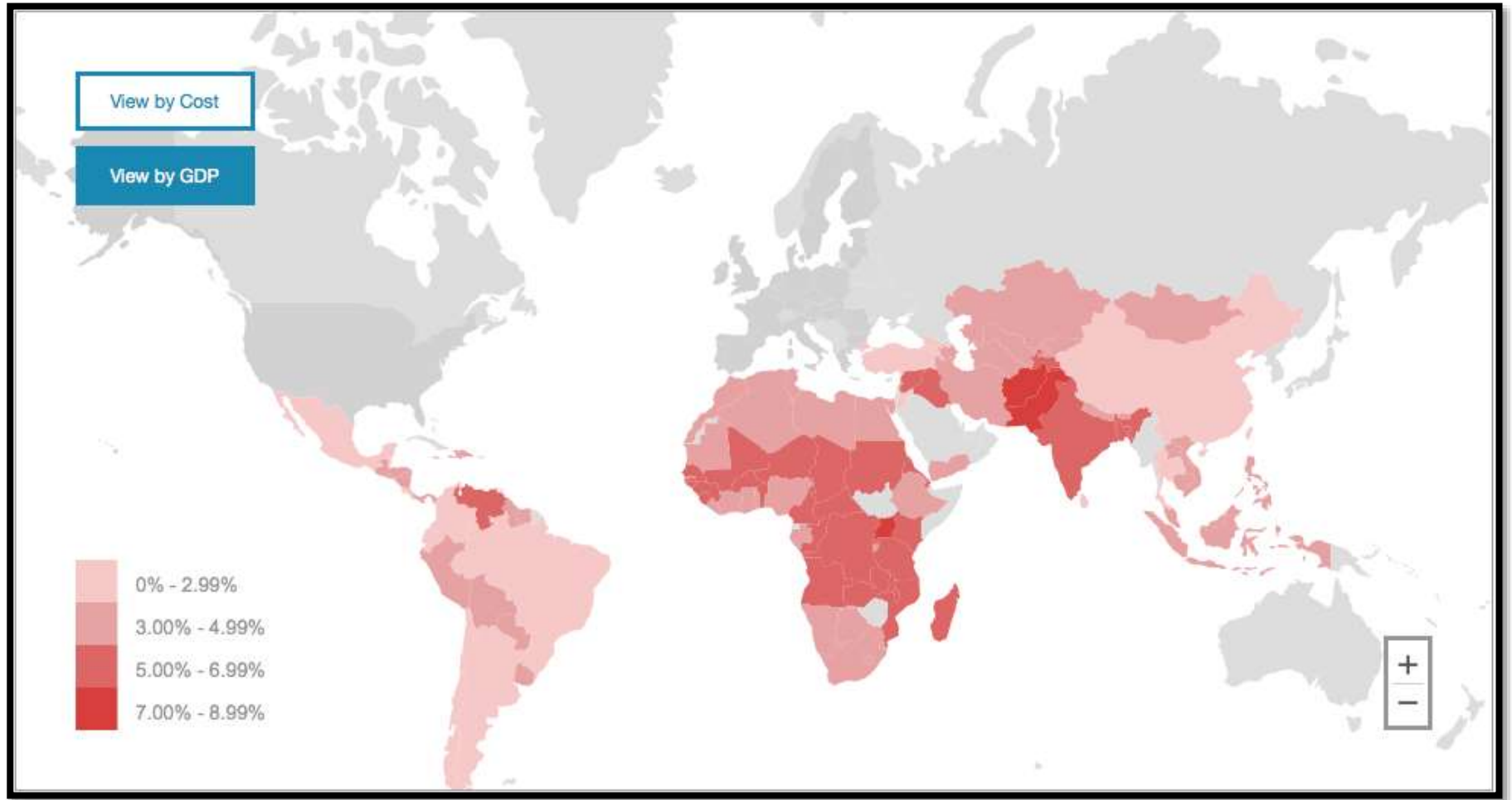


# Costs of Childhood Lead Exposure



<http://www.med.nyu.edu/pediatrics/research/environmentalpediatrics/leadexposure>

# Costs of Childhood Lead Exposure, % of GDP





# Country specific example: Tanzania

## United Republic of Tanzania

Region: Africa

Sub-Region: Eastern Africa



Cost: ?

**\$4.14 billion**

Cost as percent of GDP: ?

**6.06%**

Average Blood Lead Level: ?

**6.45  $\mu\text{g}/\text{dl}$**

Presumed IQ Loss: ?

**5 million points**

Lost Lifetime Economic Productivity per IQ Point: ?

**\$780**

Population under 5 years of age: ?

**2 million children**

Cost Compared to the region: ?



Percent GDP Loss Compared to the region: ?



# Country specific example: Kenya

## Kenya

Region: Africa

Sub-Region: Eastern Africa



Cost: ?

**\$3.76 billion**

Cost as percent of GDP: ?

**5.26%**

Average Blood Lead Level: ?

**5.98  $\mu\text{g}/\text{dl}$**

Presumed IQ Loss: ?

**4 million points**

Lost Lifetime Economic Productivity per IQ Point: ?

**\$920**

Population under 5 years of age: ?

**1 million children**

Cost Compared to the region: ?



Percent GDP Loss Compared to the region: ?

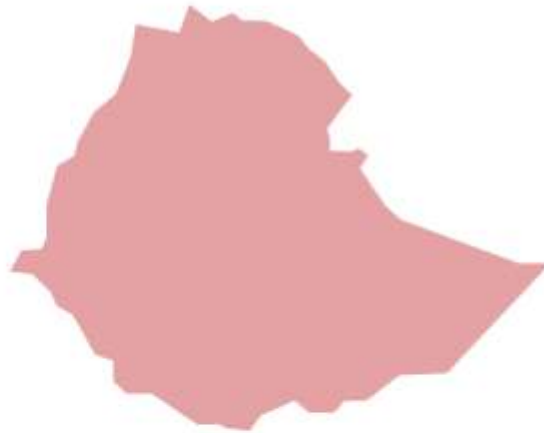


# Country specific example: Ethiopia

## Ethiopia

Region: Africa

Sub-Region: Eastern Africa



Cost: ?

**\$4.47 billion**

Cost as percent of GDP: ?

**4.73%**

Average Blood Lead Level: ?

**6.45  $\mu\text{g}/\text{dl}$**

Presumed IQ Loss: ?

**8 million points**

Lost Lifetime Economic Productivity per IQ Point: ?

**\$567**

Population under 5 years of age: ?

**2 million children**

Cost Compared to the region: ?



Percent GDP Loss Compared to the region: ?

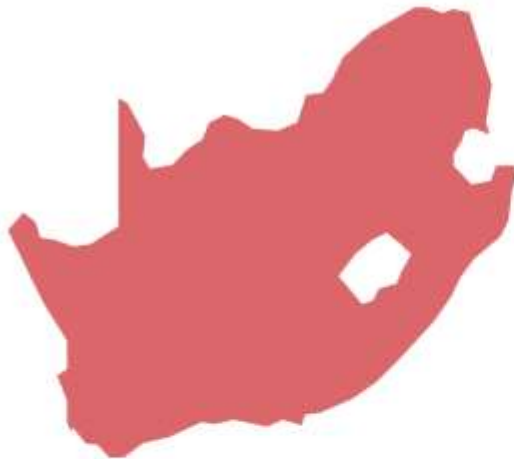


# Country specific example: South Africa

## South Africa

Region: Africa

Sub-Region: Southern Africa



Cost: ?

**\$17.7 billion**

Cost as percent of GDP: ?

**3.17%**

Average Blood Lead Level: ?

**5.95  $\mu\text{g}/\text{dl}$**

Presumed IQ Loss: ?

**3 million points**

Lost Lifetime Economic Productivity per IQ Point: ?

**\$5,754**

Population under 5 years of age: ?

**1 million children**

Cost Compared to the region: ?



Percent GDP Loss Compared to the region: ?



# Comparison with Net Overseas Development Assistance in Africa

Country	Net ODA for 2008 (US \$, millions)	Lost economic productivity per each 1-year cohort of children under 5yrs (US \$, millions)
Cameroon	\$299	\$1,260
Côte d'Ivoire	\$200	\$881
Ethiopia	\$1,845	\$1,790
Ghana	\$726	\$860
Kenya	\$955	\$1,504
Mozambique	\$1,345	\$812
Nigeria	\$638	\$4,866
Rwanda	\$452	\$316
South Africa	\$882	\$8,854
Tanzania	\$1,373	\$1,241
Uganda	\$1,009	\$1,062
Zambia	\$705	\$721

Sources: Attina & Trasande, 2013; OECD iLibrary; ODA Official development assistance disbursements



Thank you!

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