



**EC EXTERNAL SERVICES  
EVALUATION UNIT  
OUTCOME AND IMPACT LEVEL  
INDICATORS  
WATER AND SANITATION SECTOR**

**WORKING PAPER:  
DRAFT - APRIL 2009**

**This working paper outlines a set of indicators at the outcome and impact level for the water and sanitation sector. It does not focus on implementation (e.g. output level indicators such as kilometres of water network), or indicators at the global level (e.g. economic growth and poverty reduction) but aims to improve the development of indicators between these two levels (i.e. the 'missing middle').**

**It is hoped, by setting out a clear set of indicators, that this work can be used to guide the development and monitoring of programming level tools, such as CSP's. These indicators should also increase our ability to understand the wider impact of development assistance.**

**This work builds upon existing international best practices.**

## WATER AND SANITATION SECTOR: OUTCOME AND IMPACT INDICATORS

### Introduction

This short paper outlines a key set of effects and indicators covering expected outcomes and impacts of country support to the water and sanitation sector. It is designed to assist country teams to develop a set of indicators for the programming level and guide the production of documents such as Country Strategy Papers (CSP). It also aims to fill, as much as possible, the 'missing middle' between implementation indicators (e.g. kilometres of water network) and global impact indicators (e.g. poverty reduction).



### Methodology

This paper is based on intervention logic that outlines a chain of expected effects (outputs, outcomes and impacts) for a successful intervention. For each outcome and specific impact, a set of indicators has been identified that can measure their achievement. These indicators are colour coded according to three sub-sectors:

- Public Health (blue);
- Economy (red); and
- Sustainable eco-system (green).

The full set of effects is outlined in the intervention logic diagram on page 3, while intervention logics for the three sub-sectors can be found on pages 7-10. The full list of indicators are summarised in Annex A.

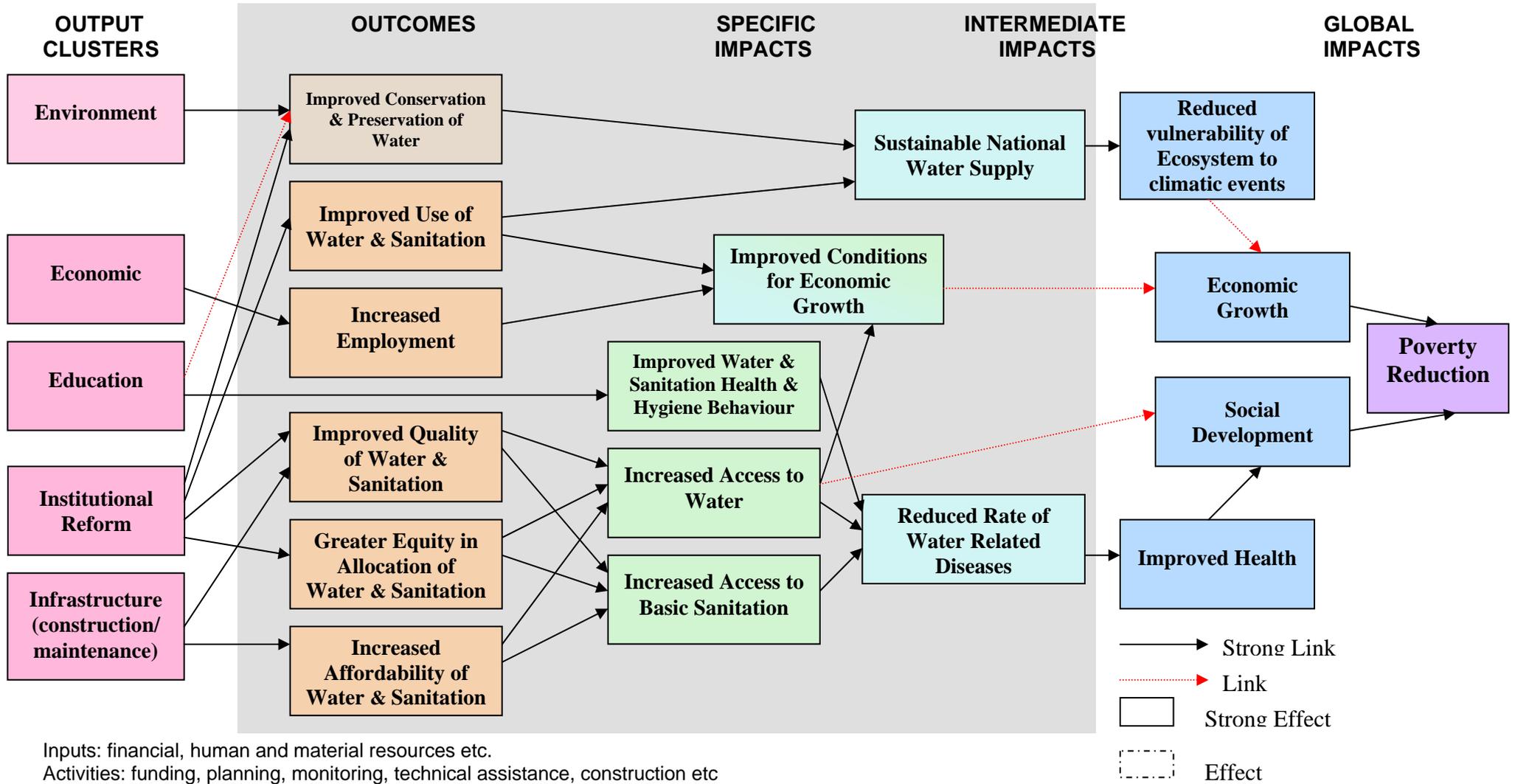
For full details on the methodology used for this working paper, please see the 'methodological approach' paper.

### Output Clusters

Output clusters cover products resulting from development interventions:

- Environment – “Increased awareness of, and action on, environmental issues related to water and sanitation”
- Economic – “Increased public and private investment in the economy as a outcome of water and sanitation construction and maintenance”
- Institutional Reform – “Strong government reforms to improve capacity, accountability and responsiveness to develop policies and enforce regulation in the management of water and sanitation ”
- Education – “Increased awareness on why and how best to use water and sanitation for: a) public health; and b) environmental sustainability”
- Infrastructure – “Improved methods to take forward the development and implementation of water and sanitation infrastructure and ensure sustainable maintenance”

## FULL WATER AND SANITATION INTERVENTION LOGIC



## Outcomes

Outcomes relate to the likely or achieved short-term and medium-term effects of an intervention's outputs:

### Improved Conservation & Preservation of Water

#### 1. Availability of water

Example: change in water levels for lakes, rivers and water table

#### 2. Preservation of water

Example: area of protected wetlands, lakes and rivers

#### WATER AND SANITATION FACT

The total volume of water on Earth is about 1.4 billion km<sup>3</sup>. The volume of freshwater resources is around 35 million km<sup>3</sup>, or about 2.5 percent of the total volume.

Source: United Nations Environment Programme (UNEP)

### Improved Use of Water and Sanitation

#### 3. Irrigation requirements

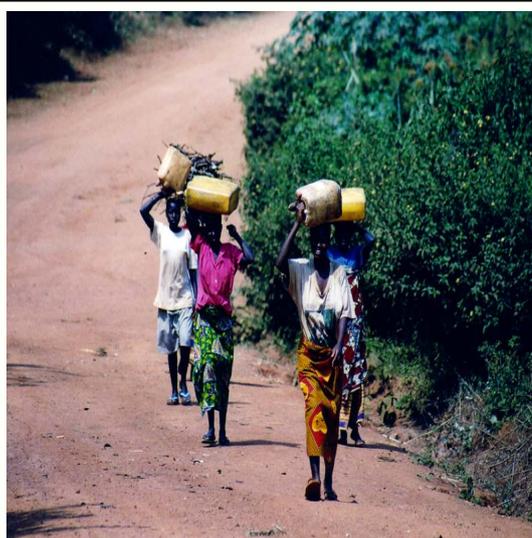
Example: amount of water needed to produce x m<sup>2</sup> of x food

#### 4. Water leakages

Example: % of water lost through water systems due to leakages

#### 5. Recycling of water

Example: amount of sanitation water that is recycled  
amount of water used in industry that is recycled



The Long Walk for Water in Burundi

### Increased Employment

#### 6. Employment resulting from water and sanitation construction and maintenance

Example: Number of people directly and indirectly employed in water and sanitation construction and maintenance projects

### Improved Quality of Water and Sanitation

#### 7. Pollution of water and soil

Examples: levels of chemicals, minerals, metals, pesticides etc in soil and water (surface and ground water).

#### WATER AND SANITATION FACT

In developing countries, 70 percent of industrial wastes are dumped untreated into waters where they pollute the usable water supply.

Source: World Water Assessment Programme (WWAP)

#### 8. Treatment of waste water

Example: proportion of domestic, agricultural and industrial waste water that is treated before being discharged

## Greater Equity in Allocation of Water and Sanitation

### 9. Equity in domestic water and sanitation allocation

Examples: rate of connection to water/sanitation network for slums/shanty towns compared to national average

level of rural poor connection to water/sanitation network compared to national average

### 10. Equity in allocation of water between sectors

Examples: implementation of transparent public or public/private mechanisms to allocate water (e.g. public allocation, marginal cost pricing, user-based allocation, market allocation etc)

#### **WATER AND SANITATION FACT**

How the world uses freshwater:

- about 70 percent for irrigation
- about 22 percent for industry
- about 8 percent for domestic use

Source: WWAP

## Increased Affordability of Water and Sanitation

### 11. Household expenditure on water and sanitation

Example: x% of household expenditure on water and sanitation by each income group in society

### 12. Cost of water for businesses

Examples: water as a x% cost of agricultural value  
water as a x% cost of industrial value

## **Specific Impacts**

Specific impacts cover positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended:

## Improved Water and Sanitation Health & Hygiene Behaviour

### 13. Water and sanitation hygiene awareness

Examples: improved collection and storage of drinking water

proportion of people hand washing  
use of hygienic sanitation facilities

## Increased Access to Safe Water

### 14. Domestic access to safe water (inc. time savings)

Examples: number of households connected to water network for x months of year

number of households within 1km of safe water for x months of year

number of households who receive more than 20 litres of water per day

### 15. Business access to water

Examples: x% of agricultural water needs meet for x months of the year

x% of industrial water needs meet for x months of the year



### Increased Access to Basic Sanitation

#### 16. Access to basic sanitation

Example: number of people with access to basic sanitation

#### **WATER AND SANITATION FACT**

Today 2.5 billion people, including almost one billion children, live without even basic sanitation. Every 20 seconds, a child dies as a outcome of poor sanitation. That's 1.5 million preventable deaths each year.

Source: Water Supply and Sanitation Collaborative Council (WSSCC)

### **Specific/Intermediate Impact**

There is one effect which is between a specific and an intermediate impact.

### Improved Conditions for Economic Growth

#### 17. Business productivity

Examples: x% change in food production/yield and processing costs  
x% change in industrial production costs

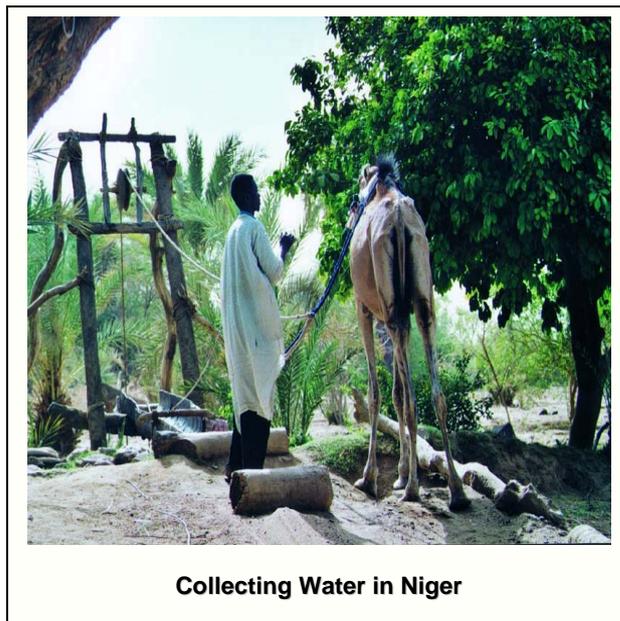
### **Intermediate Impacts**

Intermediate impacts are similar to specific impact but are longer-term in nature and are the last cause and effect chain level that can be monitored effectively and at the same time demonstrative sufficient attribution to the output clusters:

### Sustainable National Water Supply

#### 18. Sustainable extraction of water

Example: annual extraction from surface and ground water, in relation to its minimum annual recharge (i.e. water balance sheet)



**Collecting Water in Niger**

### Reduced Rate of Water Related Diseases

#### 19. Rate of water borne diseases

Examples: inflection rates for diseases such as diarrhoea, intestinal worms, parasitic infections etc.

#### **WATER AND SANITATION FACT**

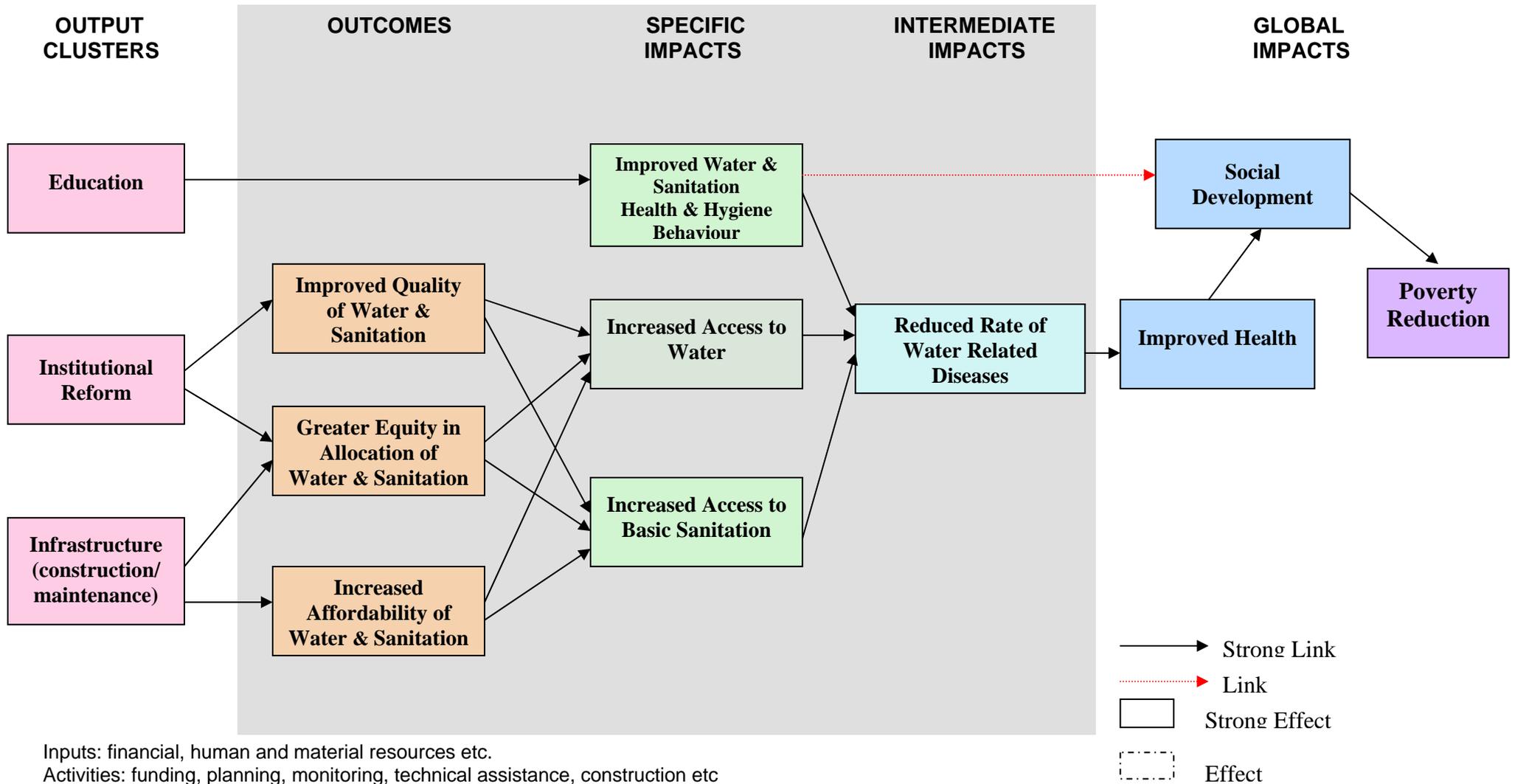
Globally, diarrhoea is the leading cause of illness and death, and 88 per cent of diarrhoeal deaths are due to a lack of access to sanitation facilities, together with inadequate availability of water for hygiene and unsafe drinking water.

Source: JMP

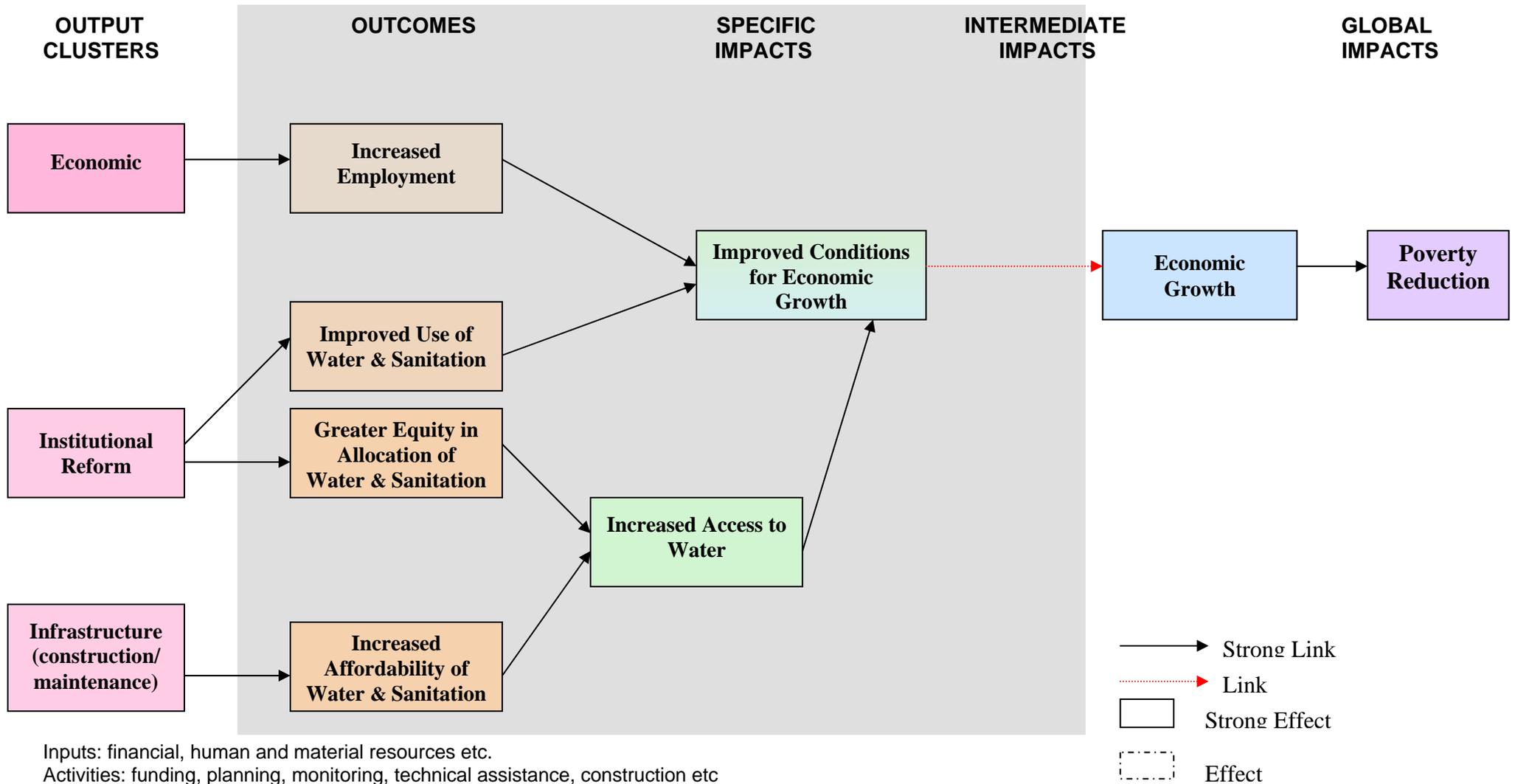
### **Global Impacts**

Finally, the effects of support to the water and sanitation sector should contribute to the longer term global impacts of social development, economic growth and poverty reduction. However, due to the complexity of their achievement and the numerous factors influencing them, it is not possible to draw a direct cause and effect link to the water and sanitation sector. As a outcome, no water and sanitation sector related indicators have been identified for this level.

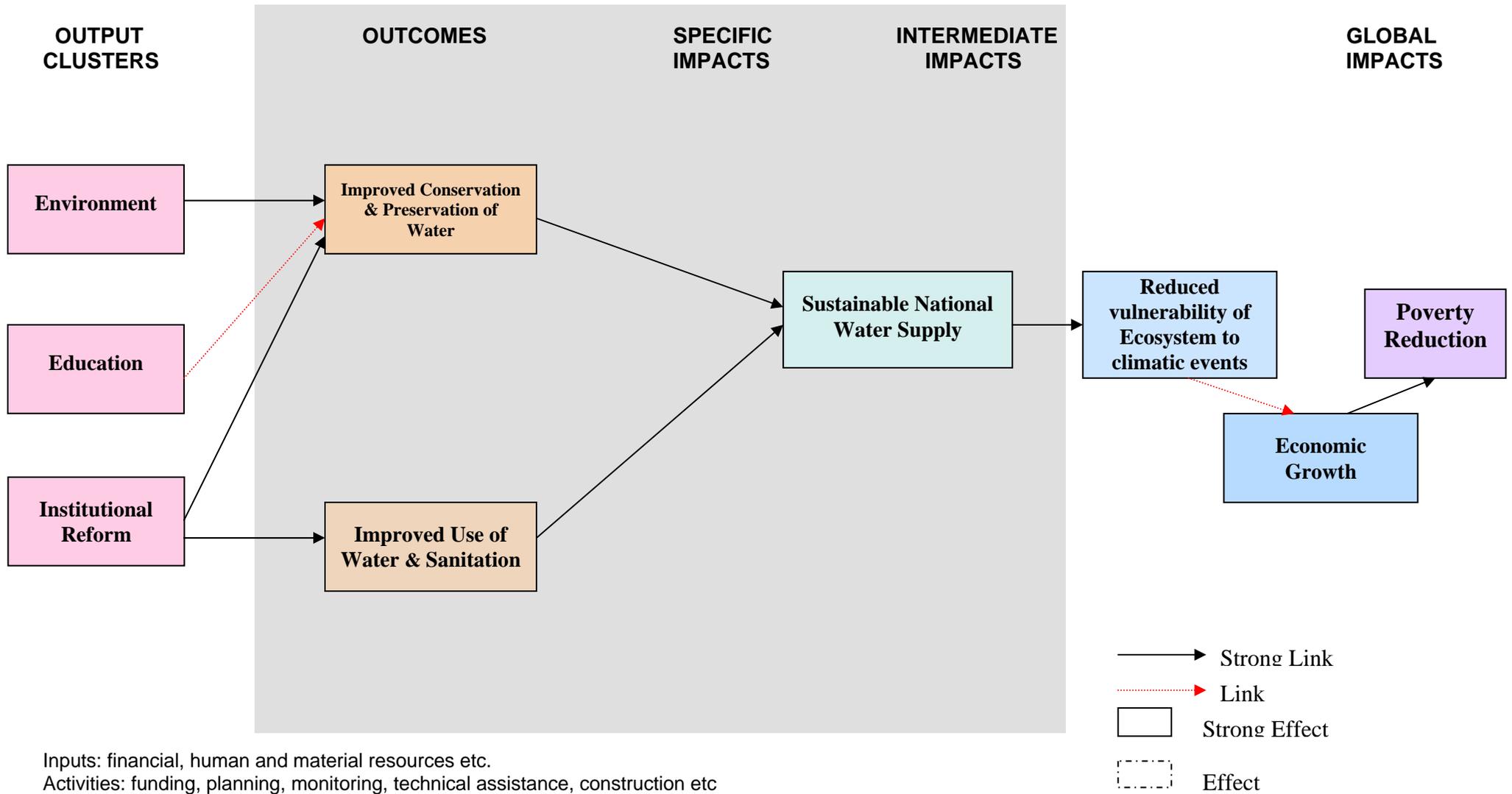
## WATER AND SANITATION PUBLIC HEALTH INTERVENTION LOGIC



## WATER AND SANITATION ECONOMY INTERVENTION LOGIC



## WATER AND SANITATION SUSTAINABLE ECO-SYSTEM INTERVENTION LOGIC



## Annex A: List of Key Indicators for Water and Sanitation Sector

<p><b>Outcomes</b></p> <p><b>1. Availability of water</b> - Change in water levels for lakes, rivers and water table</p> <p><b>2. Preservation of water</b> - Area of protected wetlands, lakes and rivers</p> <p><b>3. Irrigation requirements</b> - Amount of water needed to produce xm<sup>2</sup> of x food</p> <p><b>4. Water leakages</b> - % of water lost through water systems due to leakages</p> <p><b>5. Recycling of water</b> - Amount of sanitation water that is recycled - Amount of water used in industry that is recycled</p> <p><b>6. Employment resulting from water &amp; sanitation construction and maintenance</b> - Number of people directly and indirectly employed in water &amp; sanitation construction and maintenance projects</p> <p><b>7. Pollution of water and soil</b> - Levels of chemicals, minerals, metals, pesticides etc in soil and water (surface and ground water).</p> <p><b>8. Treatment of waste water</b> - Proportion of domestic, agricultural and industrial waste water that is treated before being discharged</p> <p><b>9. Equity in domestic water &amp; sanitation allocation</b> - Rate of connection to water/sanitation network for slums/shanty towns compared to national average - Level of rural poor connection to water/sanitation network compared to national average</p> <p><b>10. Equity in allocation of water between sectors</b> - Implementation of transparent public or public/private mechanisms to allocate water</p> <p><b>11. Household expenditure on water &amp; sanitation</b> - x% of household expenditure on water &amp; sanitation by each income group in society</p> <p><b>12. Cost of water for businesses</b> - Water as a x% cost of agricultural value - Water as a x% cost of industrial value</p>	<p><b>Specific Impacts</b></p> <p><b>13. Water &amp; sanitation hygiene awareness</b> - Improved collection and storage of drinking water - Proportion of people hand washing - Use of hygienic sanitation facilities</p> <p><b>14. Domestic access to safe water (inc. time savings)</b> - Number of households connected to water network for x months of year - Number of households within 1km of safe water for x months of year - Number of households who receive more than 20 litres of water per day</p> <p><b>15. Business access to water</b> - x% of agricultural water needs meet for x months of the year - x% of industrial water needs meet for x months of the year</p> <p><b>16. Access to basic sanitation</b> - Number of people with access to basic sanitation</p>
	<p><b>Specific/Intermediate Impact</b></p> <p><b>17. Business productivity</b> - x% change in food production/yield and processing costs - x% change in industrial production costs</p> <p><b>Intermediate Impacts</b></p> <p><b>18. Sustainable extraction of water</b> - Annual extraction of from surface and ground water, in relation to its minimum annual recharge (i.e. water balance sheet)</p> <p><b>19. Rate of water borne diseases</b> - Inflection rates for diseases such as diarrhoea, intestinal worms, parasitic infections etc.</p>

Public Health indicators (blue)

Economy indicators (red)

Sustainable eco-system indicators (green)