

## **CONTENT OF THE ENCLOSED DOCUMENT:**

### **Research gap**

More than 3.5 billion people around the world live without safely managed sanitation (source: <https://www.gatesfoundation.org/our-work/programs/global-growth-and-opportunity/water-sanitation-and-hygiene>).

The potential solutions can be classified into 3 categories

1. Conventional sewerage transport and treatment in a conventional centralized wastewater treatment plant
2. Non-sewered sanitation technology and service delivery
3. Hybrid solutions (combination of categories 1 and 2 and new technologies)

Financial costs are one of the major obstacles in the way of solving the sanitation problem. Currently, decision makers lack the information necessary to compare the alternatives in terms of construction and operating costs.

### **Method**

The material flow of the 3 potential solutions will be described from the toilette to the point of discharge to the environment (river, ocean, landfill, etc)

A cost model will be built to calculate construction and operating costs

The desktop study will review existing literature and data sources

To facilitate comparison to existing research and to facilitate diffusion of the results, standard economic and sanitation engineering analysis methods will be used.

### **Results**

The major results will be expressed as key cost and performance indicators such as:

Construction cost/person/year

Operating cost/person/year

Maintenance cost/person/year

Energy consumption/person/year

Resource recovery/person/year

GHG emissions/person/year

Pollution reduction effectiveness

Pollution reduction costs

Net present value

Etc.