



POTENTIAL FOR A DEVELOPMENT IMPACT BOND IN WATER, SANITATION & HYGIENE

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POTENTIAL IMPACT BOND INTERVENTIONS

	1	2	3	4
	Chlorine Dispensers	Handwashing Behavior Change	Community Managed Sanitation Blocks	Fecal Sludge Management
Intervention:	Dispenser installation and training with ongoing management	Unilever's school and home-based programme to promote soap usage	Sanitation blocks for use by community members who pay monthly fee	E.g. Omni-processor or PivotWorks – turning fecal waste into fuel / water
Current Applications:	Kenya (rural) Malawi (rural) Uganda (rural)	24 countries, incl. India (mainly urban)	Many countries incl. India, Bangladesh, South Africa (urban)	Omni-processor: Dhaka PivotWorks: Kigali (Both urban)
Aims of Impact Bond:	<ul style="list-style-type: none"> • Expand scale • Maximise sustained use • Test health outcomes 	<ul style="list-style-type: none"> • Test in new settings (e.g. hospitals) • Test in urban areas • Test health outcomes 	<ul style="list-style-type: none"> • Test health outcomes • Improve supply chain • Improve block management 	<ul style="list-style-type: none"> • Increase scale • Improve efficiency of waste collection
Key Organisations:	Evidence Action	Unilever	SPARC; WSUP; Georgia Tech	Janicki Bio-energy; PivotWorks BMGF
Advantages of DIB over OBA	A DIB would provide the up-front capital required to fund installation and training, and would allow the model to be refined for a new context	Successful behavior change benefits from the adaptive learning inherent in a DIB, especially in untested and challenging environments	A DIB provides up-front funding, and makes it easier to tailor the management of sanitation blocks to local circumstances	A DIB provides the significant up-front capital needed, and allows continuous refinement of a technically and operationally new FSM model

●■ I. CHLORINE DISPENSERS

- Aims of the Impact Bond**
- To trial the model in a new context – potentially urban India
 - To accelerate expansion of the model by providing working capital
 - To further explore ways of maximising sustained usage over time, and of measuring potential health benefits
 - To test whether an Impact Bond offers advantages (improved outcomes or lower cost) over fee-for-service approaches

What might investors fund?

- Purchase and installation of dispensers
- Training in using dispensers
- First 2-3 years of management / maintenance

Note:
There is potential for this intervention to trigger carbon credits to pay for ongoing management/ maintenance costs

What outcomes might donors pay for?

- Payments linked to proportion of households using chlorinated water after [3], [6], [12], [24], [36] months
- Payments for health outcomes?

What other outcomes might it be useful to measure?

- Prevalence of self-reported diarrhoea compared to a baseline
- Additional health outcomes?

Key Questions

- Are the suggestions above the most relevant / appropriate for what investors might pay for, what the payable outcomes might be, and what other outcomes might be suitable for measurement?
- Are there other ways in which an Impact Bond could add value for this intervention?
- In which geographies might an Impact Bond to expand this intervention be most suitable? (especially cities/states in India)

2. HANDWASHING BEHAVIOR CHANGE

- Aims of the Impact Bond**
- To test whether the intervention could be delivered through new settings – e.g. hospitals
 - To further test how the intervention works in an urban context
 - To grow the scale of the programme in India
 - To test whether an Impact Bond offers advantages (improved outcomes or lower cost) than fee-for-service approaches

What might investors fund?

- *Delivery of 21 day school programmes on soap usage*
- *Delivery of home-based programme for new mothers*

What outcomes might donors pay for?

- *Payments linked to soap usage/sales after [3], [6], [12], [24], [36] months*
- *Payments for health outcomes?*

What other outcomes might it be useful to measure?

- *Sustained increases in soap usage*
- *Prevalence of self-reported diarrhoea compared to a baseline*
- *Additional health outcomes?*

Key Questions

- **Are the suggestions above the most relevant / appropriate for what investors might pay for, what the payable outcomes might be, and what other outcomes might be suitable for measurement?**
- **Are there other ways in which an Impact Bond could add value for this intervention?**
- **In which geographies might an Impact Bond to expand this intervention be most suitable? (especially cities/states in India)**

3. COMMUNITY MANAGED SANITATION BLOCKS

- Aims of the Impact Bond**
- To test the sustainability of outcomes by providing upfront capital costs (tackling weak supply chain) with ongoing costs coming from users
 - To use adaptive management to ensure efficient management of the block, through capacity building and embedding local management structures
 - To test and potentially build the evidence base for **Community Managed Sanitation Blocks**

What might investors fund?

- *Up-front capital costs of installing sanitation blocks*
- *Costs associated with providing training and embedding usage of the block among residents*

What outcomes might donors pay for?

- *Proportion of toilets that are functioning*
- *Proportion of households using sanitation facilities*
- *Proportion of excreta safely managed*

All of the above could be measured regularly over [36] months following installation

What other outcomes might it be useful to measure?

- *Prevalence of self-reported diarrhoea compared to a baseline*
- *Additional health outcomes?*

Key Questions

- **Are the suggestions above the most relevant / appropriate for what investors might pay for, what the payable outcomes might be, and what other outcomes might be suitable for measurement?**
- **Are there other ways in which an Impact Bond could add value for this intervention?**
- **In which geographies might an Impact Bond to expand this intervention be most suitable? (especially cities/states in India)**

4. FECAL SLUDGE MANAGEMENT

- Aims of the Impact Bond**
- To scale-up innovative and potentially sustainable new technologies in this area, on a relatively large scale (< city-wide)
 - To maximise collection of fecal sludge through these programmes, particularly from poorer areas

What might investors fund?

- *Up-front design and construction of Omni-processor or Pivotworks plant*
- *Working capital to operate plant until sustainable volumes of fecal sludge are being delivered to plant (likely c. 12-36 months)*

What outcomes might donors pay for?

- *Payments based on amount of fecal sludge collected, potentially with focus on poorer areas*
 - *Payments linked to sales of fuel / electricity / water output from processor*
- All of the above could be measured regularly over [36] months following installation*

What other outcomes might it be useful to measure?

- *Cubic metres of waste water properly treated and disposed of / reused*
- *Quarterly or annual effluent characteristics that indicate if plant is functioning as intended*
- *Health impacts in areas with waste collected through the programme*

Key Questions

- **Are the suggestions above the most relevant / appropriate for what investors might pay for, what the payable outcomes might be, and what other outcomes might be suitable for measurement?**
- **Are there other ways in which an Impact Bond could add value for this intervention?**
- **In which geographies might an Impact Bond to expand this intervention be most suitable? (especially cities/states in India)**

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APPENDIX I

Further detail on the four interventions



CHLORINE DISPENSERS – INTRODUCTION

Chlorine dispensers are a well-known intervention to improve water quality. We are especially interested in a model called ‘Dispensers for Safe Water’, which is run by Evidence Action.

What is the intervention?

- Chlorine dispensers installed next to water sources in **rural areas**. Chlorine effectively removes bacteria and viruses, though not protozoa, and it has been shown that its proper use can reduce diarrhoeal disease by 22-84%.
- Ongoing maintenance (incl. refilling with chlorine) and local promotion of the dispenser carried out by an **elected community ‘promotor’**.
- Usage and functionality of all dispensers closely monitored by **field workers** (in this case from Evidence Action).
- Programme generates **carbon credits** which can cover most costs, though there is a 2-3 year lag between installation and payment, and unless a carbon credit buyer can be identified in advance, revenues will be uncertain.

What is the evidence base?

For chlorine dispensers in general:

- Reasonable evidence of chlorine dispensers having **sustained usage** and **strong cost-effectiveness**
- Literature shows links to health outcomes, but attribution difficult

For this programme:

- Good evidence on **sustained usage** of chlorine dispensers (households sampled every month); limited research into impact/health outcomes beyond this
- Ongoing cost (based on Uganda data) is typically c.\$0.50 per person per year (compared to c.\$13 per person per year to provide running water in the first place to rural areas)

Where is it currently used?

- Kenya, Malawi and Uganda – all in rural areas.
- Have plans to expand the model elsewhere, but through **local partnerships** rather than direct delivery; Evidence Action would provide technical assistance, training of staff, and monitoring and evaluation.

Who are key organisations?

- Evidence Action – *designed and are implementing the model*
- USAID Global Development Lab – *incubated the model*

CHLORINE DISPENSERS – POSSIBLE IMPACT BOND

Possible aims of an Impact Bond

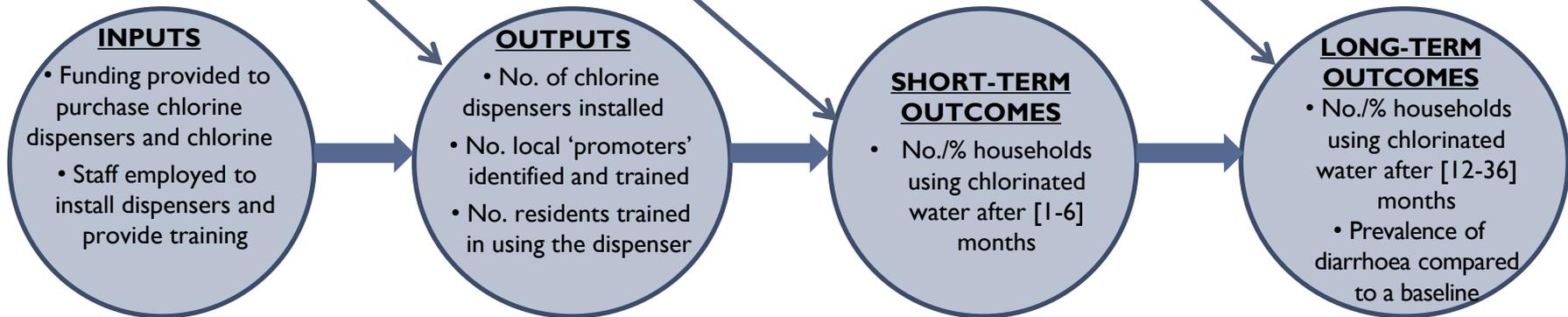
- To trial the model in a new context – potentially urban India
- To accelerate expansion of the model by providing working capital (see box below)
- To further explore ways of maximising sustained usage over time, and of measuring potential health benefits
- To test whether an Impact Bond offers advantages (improved outcomes or lower cost) compared to fee-for-service approaches

Possible key outcome payment metrics

Adaptive management could ensure/improve a) **effectiveness of distribution** of chlorine dispensers in a new context, and b) **behavior change** leading to an increase in the proportion of households using chlorine. These two areas could potentially form the basis for outcome payments.

Possible additional outcomes to measure

There may be significant value in measuring the longer-term impact of the programme in both a) **sustained usage of chlorine**; and b) **health outcomes**, e.g. levels of diarrhoea (though attribution would remain difficult). Provision for assessing progress in these areas could be built into the programmes' design, and some or all of the return to investors could potentially be linked to measurable progress.



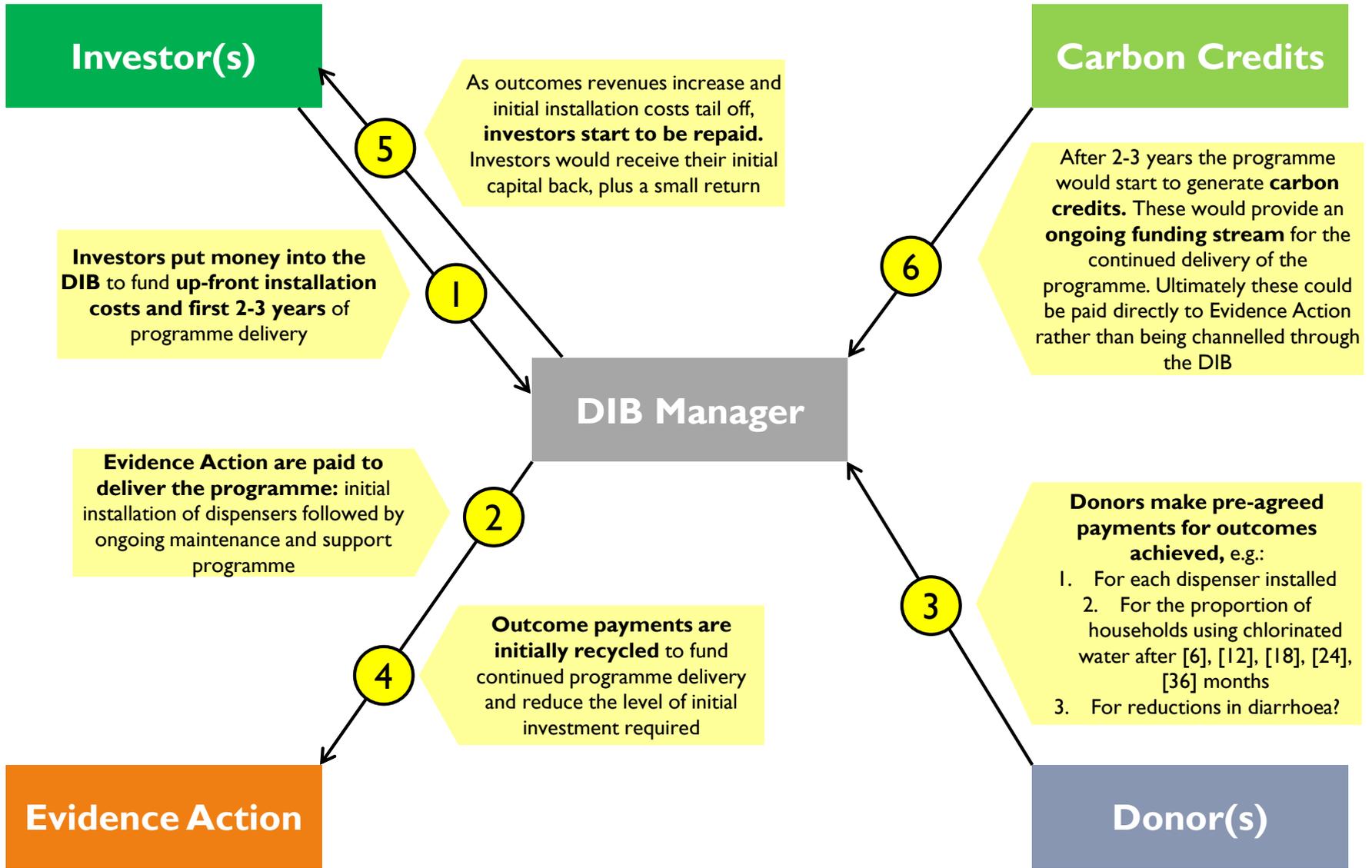
Possible interaction of Impact Bond with Carbon Credits

A key challenge facing Evidence Action in scaling up this intervention is the amount of working capital required before carbon credit revenues are received – typically 2-3 years, and the volatility in carbon credit prices. An Impact Bond could potentially fill this working capital gap – see next slide.

Key Questions

- Are the suggestions above the most relevant / appropriate for what the payable outcomes might be, and what other outcomes might be suitable for measurement?
- Are there other ways in which an Impact Bond could add value for this intervention?
- In which geographies might an Impact Bond to expand this intervention be most suitable? (especially cities/states in India)

CHLORINE DISPENSERS – POSSIBLE IMPACT BOND STRUCTURE



● ■ HANDWASHING BEHAVIOR CHANGE - INTRODUCTION

There are a variety of behavior-based handwashing interventions. One is Unilever's Lifebuoy programme, which aims to increase soap usage among children and mothers.

What is the intervention?

- Several different handwashing interventions, including **Unilever's Lifebuoy programme** – Lifebuoy is a brand of Unilever soap.
- Programme focuses on increasing consistent soap usage, mainly through a **school-based 21-day programme** including four specific interventions, and **home visits to new mothers**.
- Has been delivered through range of different programme and funding arrangements, including a **DFID payment-by-results project** led by Plan International.
- Unilever keen to work in **partnership with others**.

What is the evidence base?

- Unilever's overall **output data for the programme** is audited by PWC.
- **Individual programmes are also evaluated** – e.g. results are publically available for the DFID PBR programme.
- London School of Hygiene and Tropical Medicine has also been involved in evaluating the programme.
- Target cost per contact is \$0.50 in Asia and \$1 in Africa.

Where is it currently used?

- **Began in India** and has since expanded worldwide, reaching 326m people.
- Unilever has **flexibility on geography**, but selects areas based on need, local capability and commercial interest.

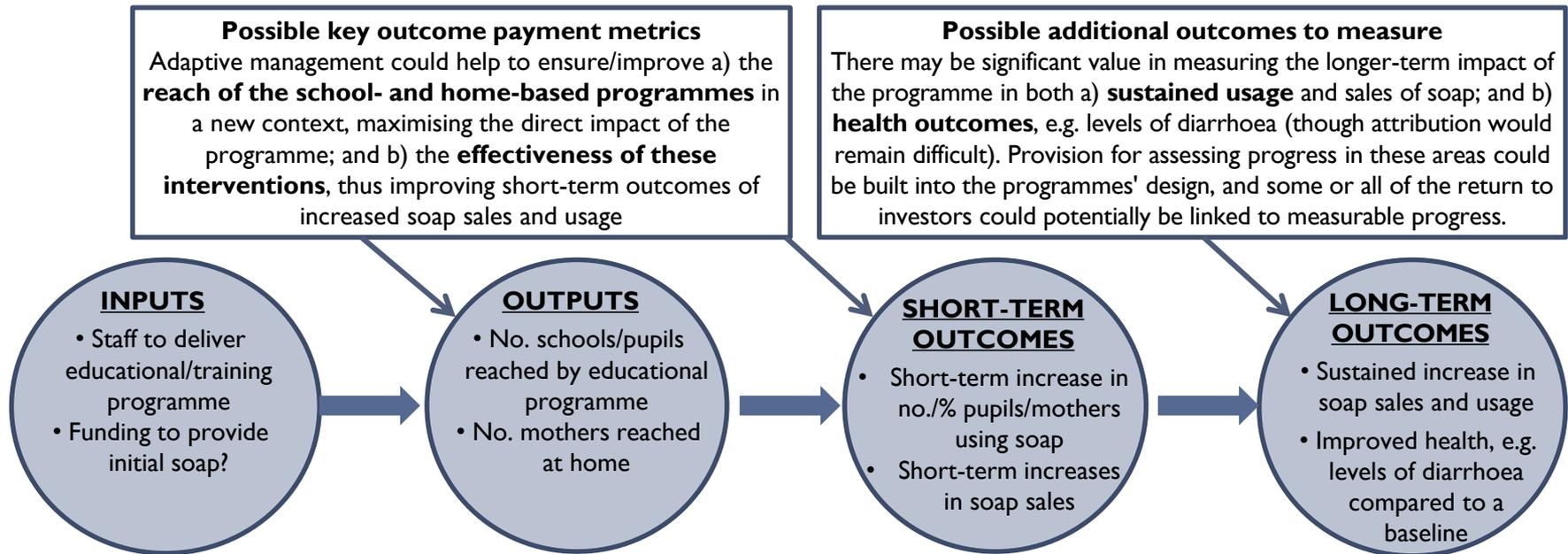
Who are key organisations?

- Unilever – *designed and leads the Lifebuoy programme*
- Plan Intl – *led implementation of DFID PBR programme*
- WSUP – *worked with Unilever as part of DFID PBR programme*
- WaterAid – *worked with Unilever as part of DFID PBR programme*

IMPACT BOND OPPORTUNITY 2:

HANDWASHING BEHAVIOR CHANGE – POSSIBLE IMPACT BOND

- Possible aims of an Impact Bond**
- To test whether the intervention could be delivered through new settings – e.g. hospitals
 - To further test how the intervention works in an urban context(?)
 - To grow the scale of the programme in India
 - To test whether an Impact Bond offers advantages (improved outcomes or lower cost) than fee-for-service approaches



- Key Questions**
- Are the suggestions above the most relevant / appropriate for what the payable outcomes might be, and what other outcomes might be suitable for measurement?
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 - In which geographies might an Impact Bond to expand this intervention be most suitable? (especially cities/states in India)

COMMUNITY MANAGED SANITATION BLOCKS - INTRODUCTION

Community Managed Sanitation Blocks are a well-established intervention (though there are variants within it), delivered by a wide variety of implementing organisations.

What is the intervention?

- Community Managed Sanitation Blocks are **for the use of defined community members** – who design, build and manage the blocks.
- Typically a **family will pay a monthly fee** in order to access the sanitation block or alternatively they may be charged a levy on their rent.
- **Capital costs** (as opposed to running costs) are sometimes **subsidised by external organisations** or NGO-managed credit schemes to make the project affordable.
- However **community must have the capacity to fund and manage running costs**, making capacity building within the community as important as providing the capital funding.

What is the evidence base?

- There are a number of projects currently taking place (e.g. Mumbai Sewerage Disposal Project 1 & 2). However, **measurement focuses on outputs** (e.g. number of toilets constructed etc), rather than outcomes.
- Evidence will shortly be released on the **health impacts of shared toilets from the Maputo Sanitation study**, a controlled before-and-after (CBA) trial to evaluate the health impacts of a WSUP-implemented shared sanitation intervention in low-income neighbourhoods of Maputo (Mozambique), involving construction of 250 shared latrines and 50 larger communal sanitation blocks. Early evidence does not show a link to positive health outcomes, probably because of fecal material that still exists in the environment.

Where is it currently used?

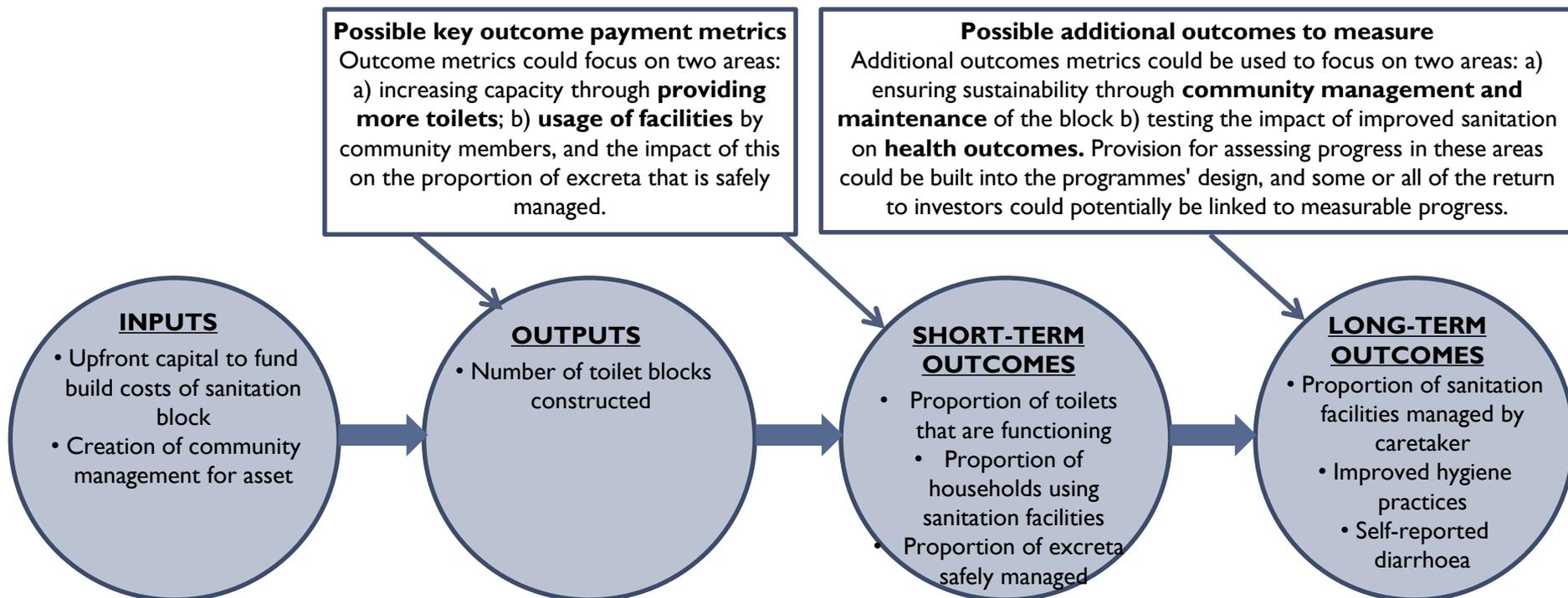
- Typically used in **urban environments**.
- Implemented in **India, SA and Bangladesh** by SPARC, the urban poor federations and women's cooperatives (Mahila Milan).

Who are key organisations?

- SPARC – *manufacturer of toilets and implementer of CMSBs in India, SA and Bangladesh*
- SHRI – *implementer of sanitation programmes in India (rural)*
- Samagra – *implementer of sanitation programmes in India (urban)*
- WSUP – *implementer of CMSBs in Mozambique*
- Georgia Tech – *involved in evaluation of CMSBs*
- London School of Hygiene and Tropical Medicine – *involved in evaluation of CMSBs*

COMMUNITY MANAGED SANITATION BLOCKS – POSSIBLE IMPACT BOND

- Possible aims of an Impact Bond**
- To test the sustainability of outcomes by providing upfront capital costs (tackling weak supply chain) with ongoing costs coming from users
 - To use adaptive management to ensure efficient management of the block, through capacity building and embedding local management structures
 - To test and potentially build the evidence base for **Community Managed Sanitation Blocks**



- Key Questions**
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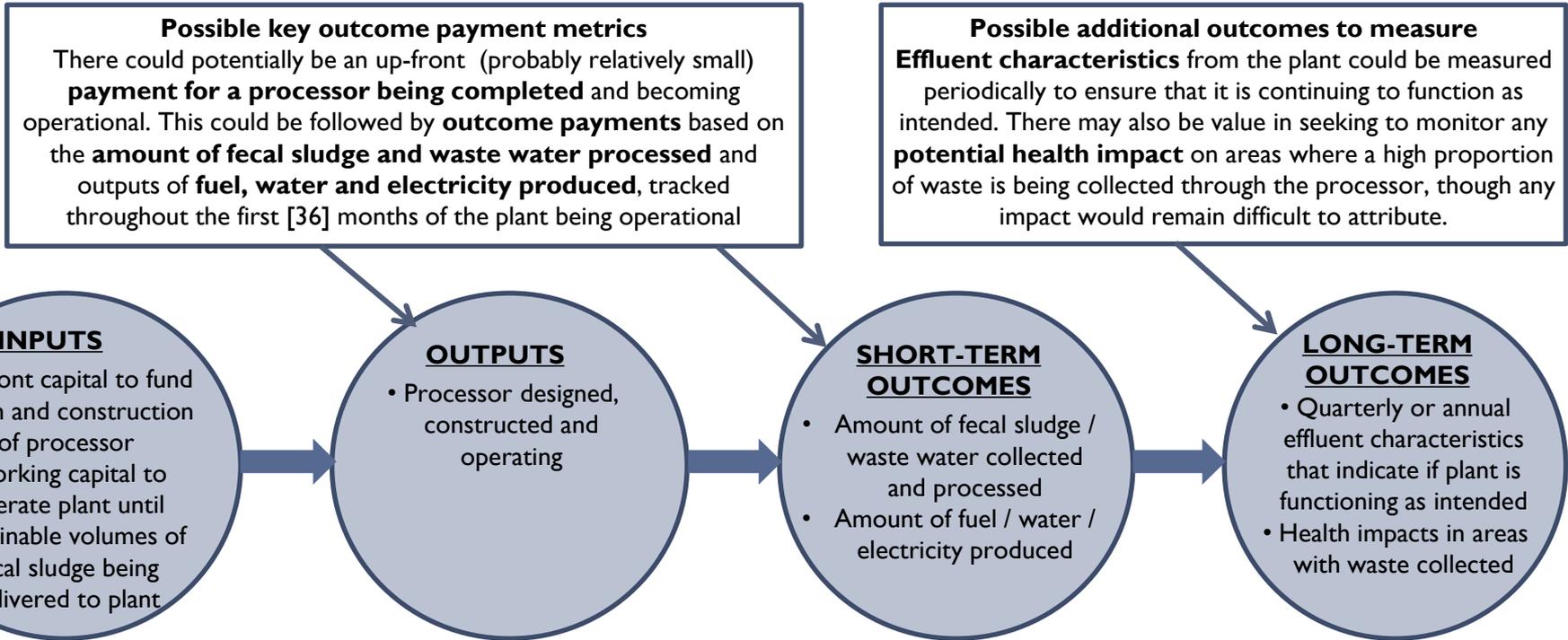
IMPACT BOND OPPORTUNITY 4: FECAL SLUDGE MANAGEMENT

	<u>Omni-Processor</u>	<u>PIVOT</u>
Prototype Site:	Dakar, Senegal	Kigali, Rwanda
Typical minimum size:	100,000 people (developing larger and smaller options)	500,000 people (though can be made for larger or smaller scale)
Outputs:		
Ash (fuel?)	✓	X
Solid fuel	X	✓
Electricity	✓ (250kW continuous)	X
Water	✓ (70,000l per day, drinkable)	✓ (typically treated to agricultural or industrial standard, could potentially be made drinkable)
Revenue sources:	1. Tipping fees; 2. Sales of ash; 3. Sales of electricity; 4. Sales of water	1. Tipping fees; 2. Sales of fuel output; 3. Sales of water
Assembly period:	2 – 4 weeks (plus build time in USA)	12-18 months (incl. design and on-site construction)
Up-front cost:	\$2-4m	\$4-5m
Other key criteria:	TBC	Requires energy from sun as part of production process so works best in cities with high proportion of hot and sunny days
Can operate without external electricity?	✓ (requires propane or butane for 30 mins after start up, then expected to run 24/7)	Site specific – currently exploring options to use solar power in some locations
Physical footprint:	11.5m x 20-30m, plus 12 x 2.5m for water purification unit. 1200m ² recommended overall	Variable according to site and scale (but <1 hectare)

IMPACT BOND OPPORTUNITY 4:

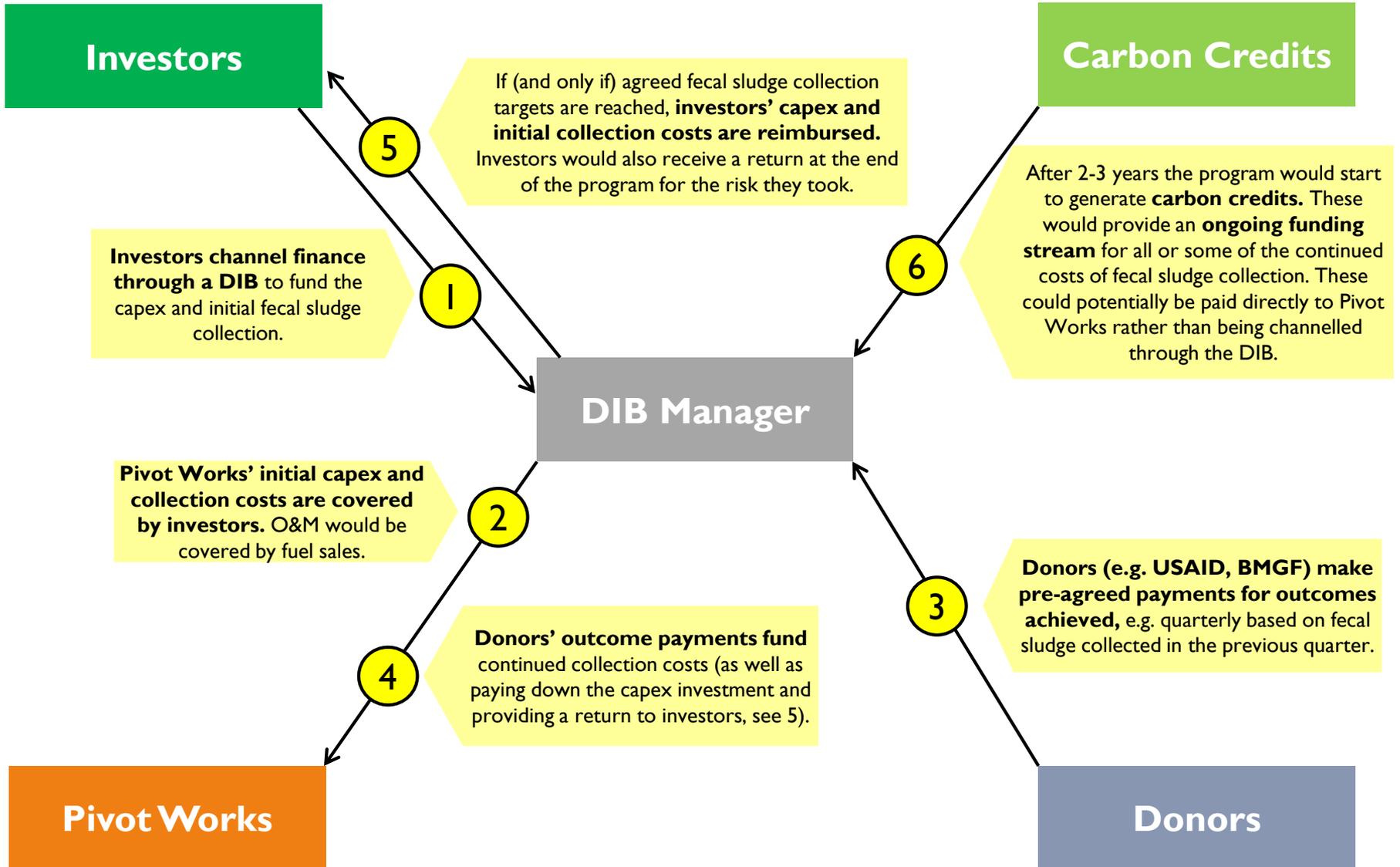
● ■ **FECAL SLUDGE MANAGEMENT – POSSIBLE IMPACT BOND**

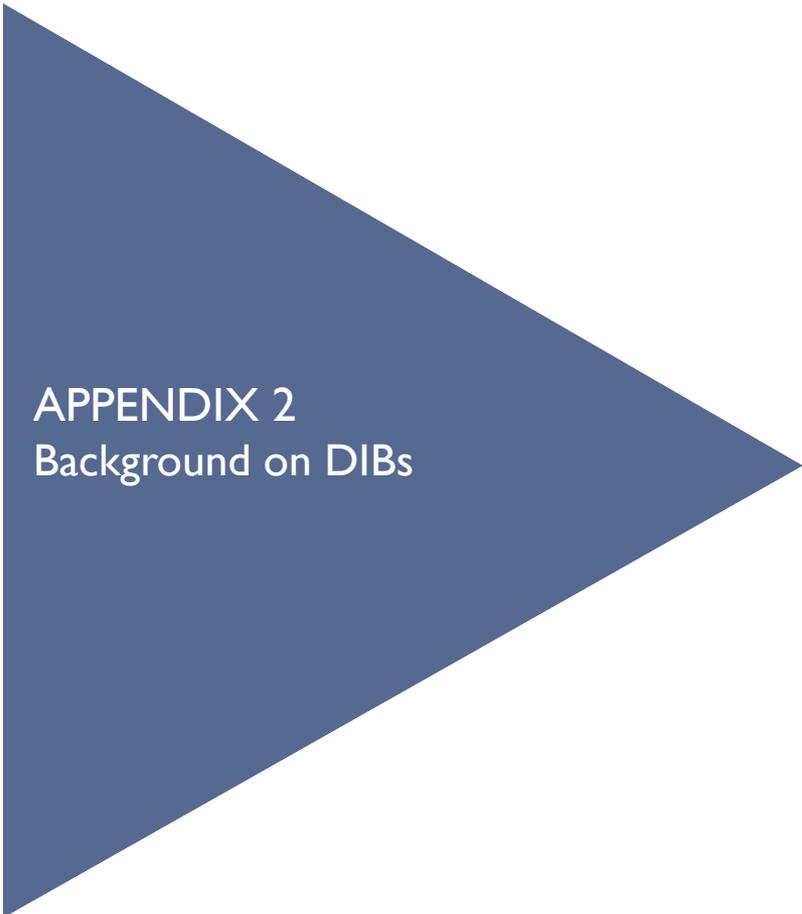
- Possible aims of an Impact Bond**
- To scale-up innovative and potentially sustainable new technologies in this area, on a relatively large scale (< city-wide)
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PIVOT WORKS – POSSIBLE IMPACT BOND STRUCTURE

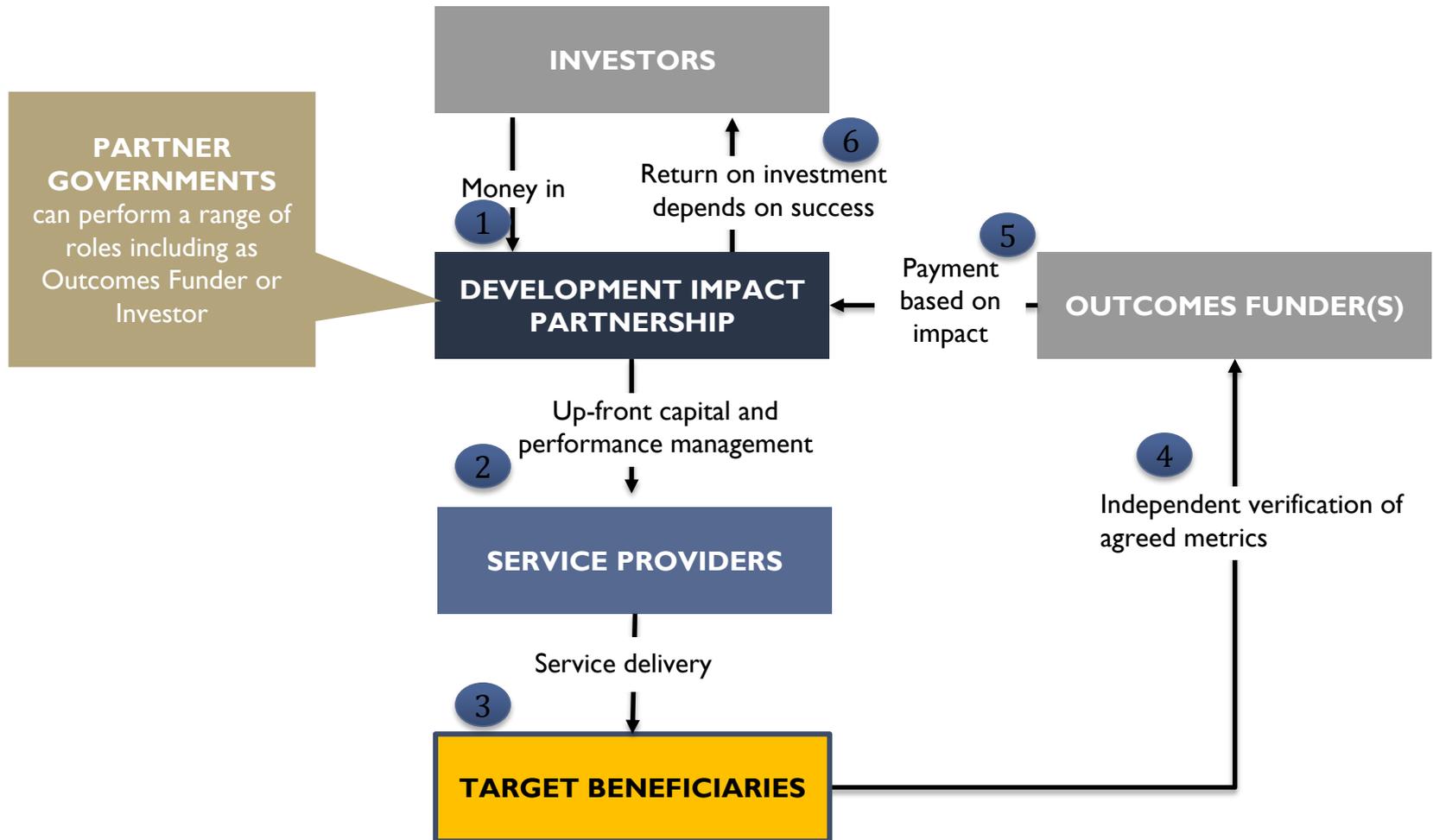


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APPENDIX 2

Background on DIBs

HOW DOES A DEVELOPMENT IMPACT BOND WORK?



The Impact Bond structure means that donors only pay when agreed outcomes have been achieved, and that implementers are provided with working capital by socially motivated investors.

● ■ HOW COULD AN IMPACT BOND OVERCOME COMMON CHALLENGES IN WASH?

<u>Aim</u>	<u>How an Impact Bond may add value</u>
<p><u>1</u> Enhancing sustainability</p>	<p>Some outcome payments could be made on the basis of sustained outcomes over a 2-3 year period – incentivising a focus on promoting behavior change</p>
<p><u>2</u> Evidencing health outcomes</p>	<p>An Impact Bond could include provision for measuring long-term health outcomes, perhaps with a ‘bonus’ outcome payment if successful</p>
<p><u>3</u> Increasing transferability</p>	<p>Many social investors are keen to replicate interventions with an emerging evidence base in new contexts, and would take the risk associated with this</p>
<p><u>4</u> Adaptive management</p>	<p>Investors have a strong incentive to work with providers to reflect on performance and adapt delivery to the local context to achieve success</p>
<p><u>5</u> Providing working capital</p>	<p>Investors provide up-front capital to fund delivery, and take the risk that the programme is unsuccessful and outcome payments are not made</p>

● ■ WHAT DO WE LOOK FOR WHEN SEEKING TO IDENTIFY POTENTIAL IMPACT BOND INTERVENTIONS?

✓ Objectives in line with **Government and donor priorities**

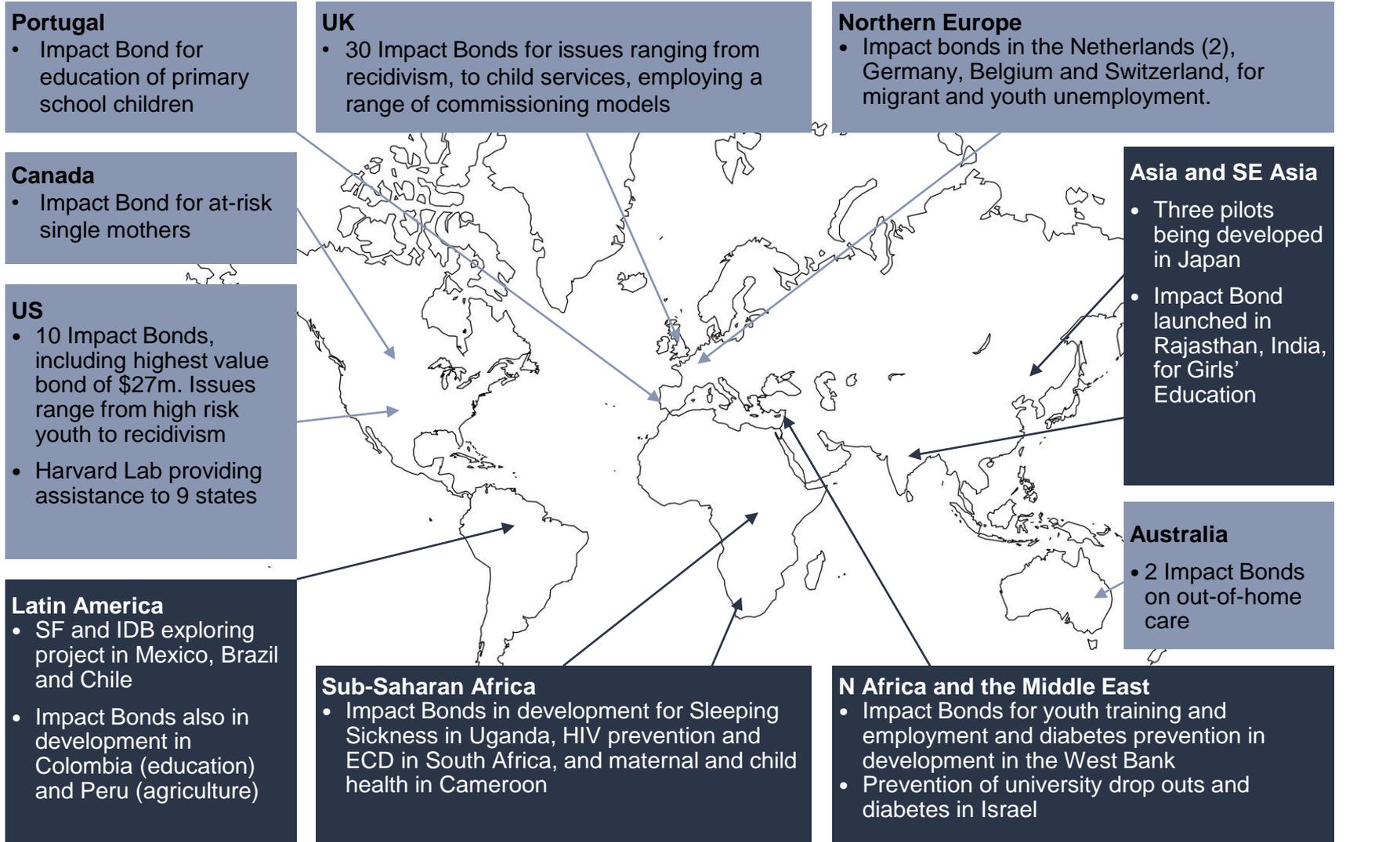
✓ **Scalable and cost-effective intervention**

✓ **Potential added value in adaptive performance management (typically a programme including behavior change)**

✓ **Outcomes that are both measurable and attributable to the intervention**

IMPACT BONDS: A RAPIDLY GROWING MARKET

Over 60 Impact Bonds raising \$150m have been launched, with at least as many in development.



ABOUT SOCIAL FINANCE

- A pioneering non-profit organisation that designed and launched the first Social Impact Bond (SIB), a results-based contract where private funding is used to scale up services and government pays *only if* the service is successful
- Have since launched 11 SIBs in the United Kingdom and supported 7 countries to set up Impact Bonds
- Established a Working Group with Centre for Global Development in 2012 to explore the potential of Development Impact Bonds (DIBs) that apply the Impact Bond model in developing countries

