

# Innovative financing mechanisms for Climate resilient WASH services

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Global South Academic Conclave on WASH and Climate linkages  
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AHMEDABAD

# Context of climate change is increasingly relevant in urban development and social investment sector . . .



United Nations  
Framework Convention on  
Climate Change



Water Scarcity and  
Droughts



Variable Seasonal Rainfall,  
floods



Temperature rise and  
Heatwaves

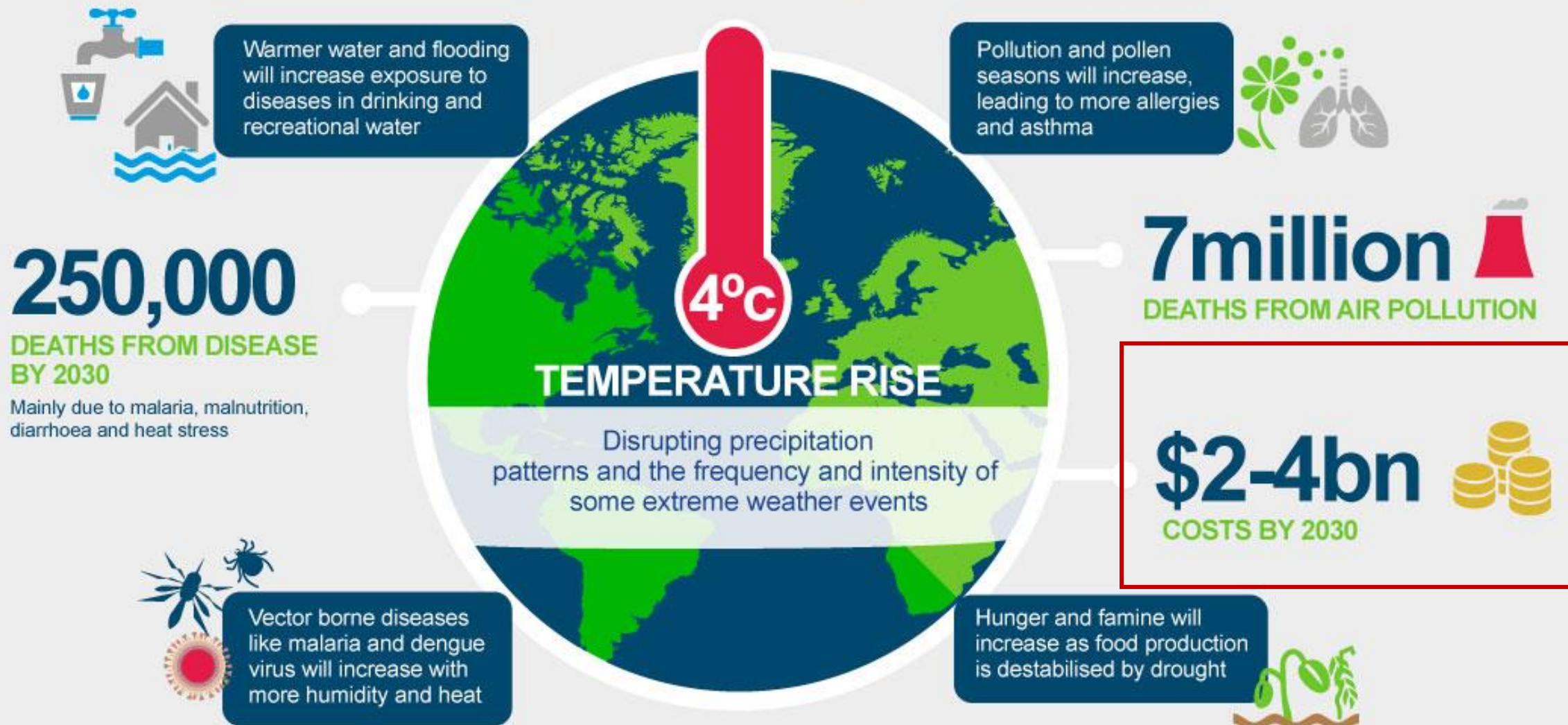


Rise in Sea Level and  
threat to coastal cities





# How climate change could impact the world



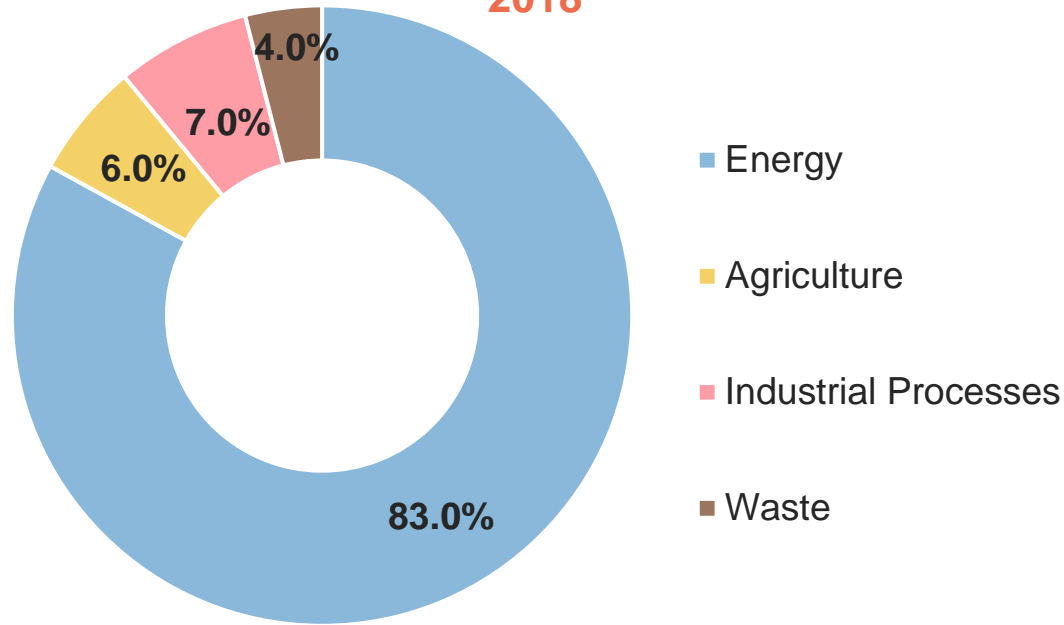
Source: WHO

Credit: Rebecca Robinson/LSHTM

Source: <https://www.lshtm.ac.uk/research/research-action/features/how-climate-change-affecting-your-health>

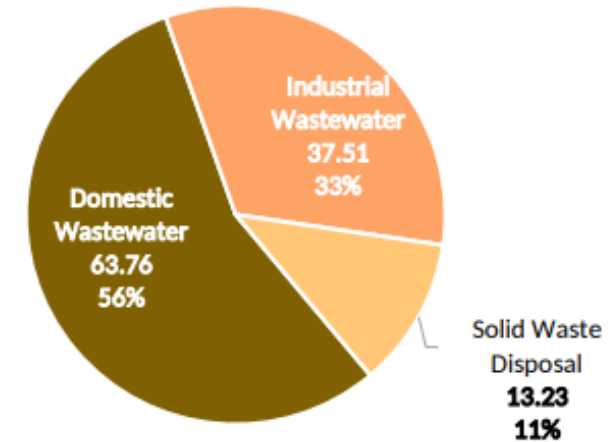
# WASH is only 4% contributor to GHG emission however climate change impacts are huge on water and sanitation infrastructure

Sector Wise distribution of GHG Emissions in India, 2018

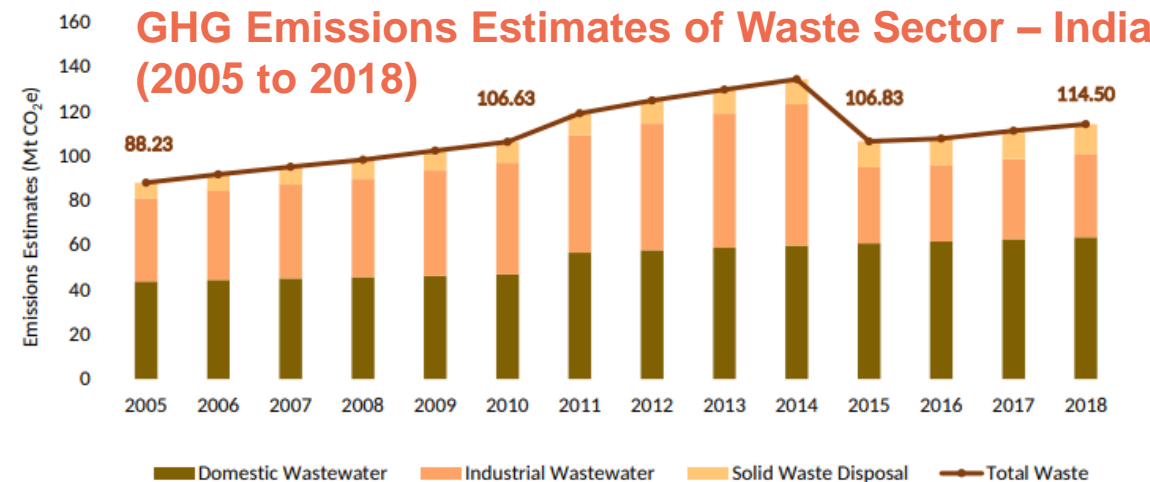


Waste Sector contributes to **4%** of India's GHG emissions (2018)

Sub-sector Emissions (Mt CO<sub>2</sub>e) and Percentage Share in Total Waste Sector Emissions (2018)



GHG Emissions Estimates of Waste Sector – India (2005 to 2018)



Source : Greenhouse Gas Emissions in India, 2018; <http://www.ghgplatform-india.org/> and [https://www.ghgplatform-india.org/wp-content/uploads/2022/09/GHGPI\\_Trend-Analysis\\_2005-to-2018\\_India\\_Sep22.pdf](https://www.ghgplatform-india.org/wp-content/uploads/2022/09/GHGPI_Trend-Analysis_2005-to-2018_India_Sep22.pdf)



# Impact of climate change on WASH



Floods impact drinking water access



Women walking to collect water



Droughts impacting water access

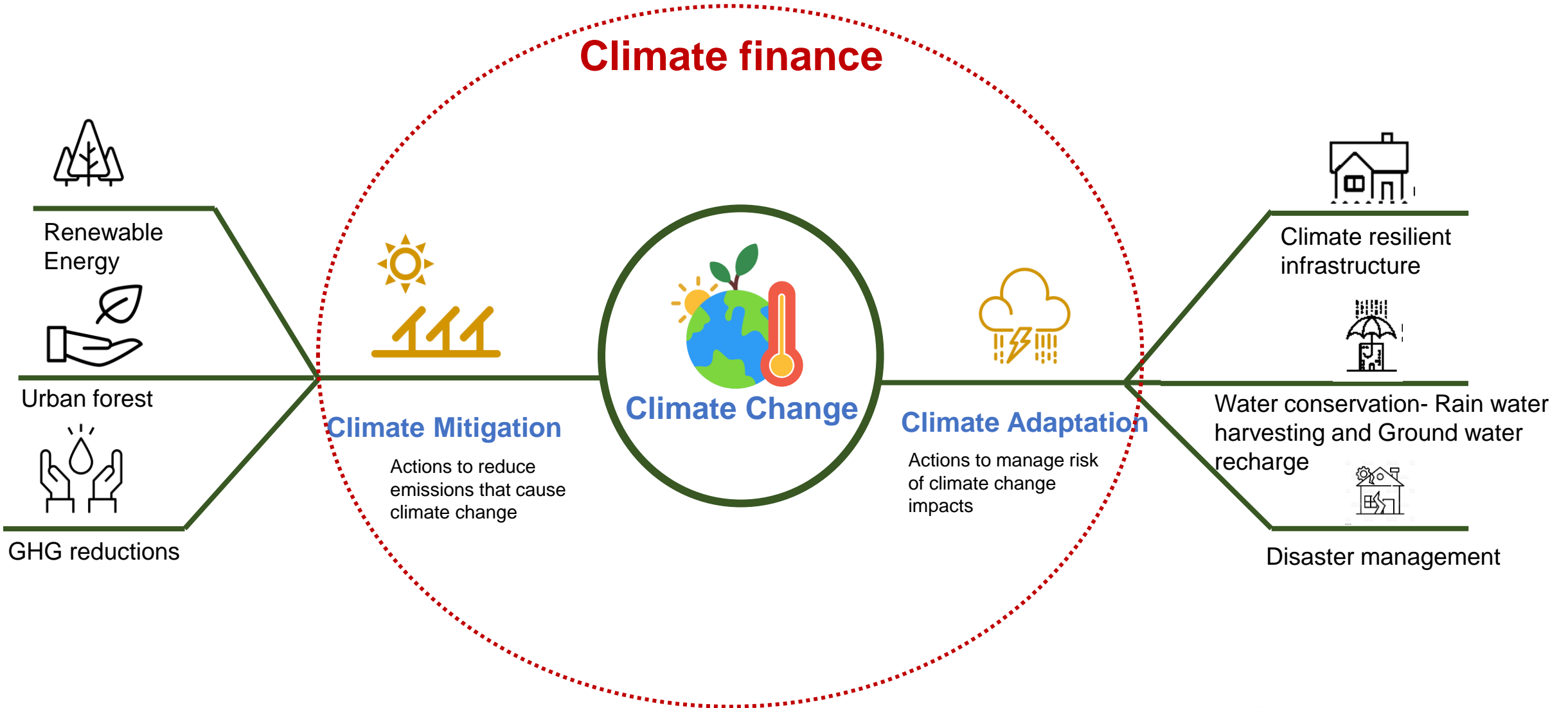


Increase in pollutants load

- ✓ Acute **shortage of clean drinking water** during disasters
- ✓ Open drains > Impact on **quality of water supplied**
- ✓ Increase in **water borne diseases**- Diarrhea and cholera
- ✓ Impact **sanitation and hygiene practices**

The impacts of climate change on the water supply and sanitation infrastructure are long-lasting and irreversible.

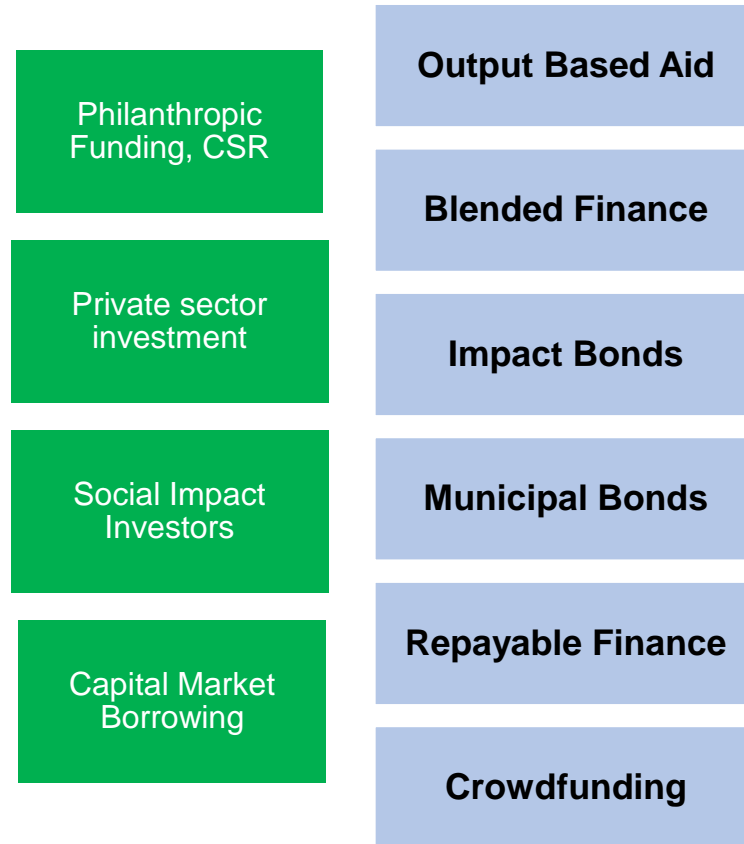
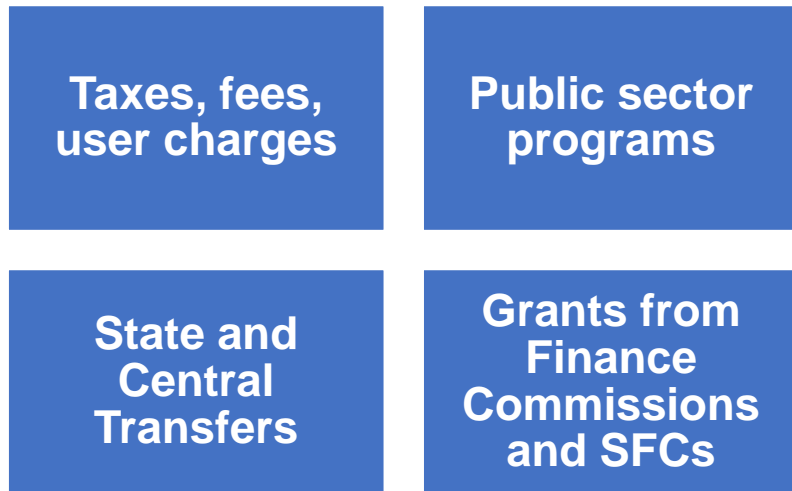
# Climate finance is key for Mitigation and Adaption measures for climate change



# Innovative financing mechanisms for climate resilient WASH services

Urban infrastructure has been generally financed through public funds but innovative options are emerging

## Own sources, Transfers and programs



- ✓ Additional funding
- ✓ Efficiency of private sector
- ✓ Performance linked approaches
- ✓ Social & environmental impacts with emerging global interest in impact investing

# Options to leverage private resources and impact investments

## Outcome based funding



Funder makes payments only if pre-agreed outcomes are achieved

## Blended finance



The combination of private (with returns) and public capital to achieve development outcomes

## Municipal / Green Bonds



Accessing debt market resources for 'green investments' in cities

Source: Social India Finance presentation, 2020; Convergence and the Brookings Institution (2017) "Impact Bonds in Developing Countries: Early Learnings from the Field"



# BLENDING FINANCE FOR THE SUSTAINABLE DEVELOPMENT GOALS

## BRINGING DEVELOPMENT AND COMMERCIAL FINANCE TOGETHER

Blended finance could help bridge the investment gap for the Sustainable Development Goals in developing countries. Donor governments need to ensure blending approaches attract commercial sources of finance and directs these to development outcomes.

### MORE FINANCING NEEDED TO MEET THE \$2.5 TRILLION INVESTMENT GAP FOR SDGs IN DEVELOPING COUNTRIES

Sources of external finance to developing countries



### ...BLENDED FINANCE COULD HELP BRIDGE THE INVESTMENT GAP...

## What is blended finance?

Blended finance is the strategic use of development finance for the mobilisation of additional finance towards sustainable development in developing countries.

**Additional finance = commercial finance**



BLENDED FINANCE CAN SHIFT THE RISK-RETURN PROFILE OF PROJECTS IN DEVELOPING COUNTRIES TO ATTRACT COMMERCIAL INVESTMENT.



**\$81 billion**

private finance mobilised by development finance 2012-2015

BLENDED FINANCE IS GAINING TRACTION AMONG DEVELOPMENT FINANCE PROVIDERS

**17** of the OECD Development Assistance Committee members now engage in blending

**167** facilities launched, 2000 - 2016, to pool finance for blending

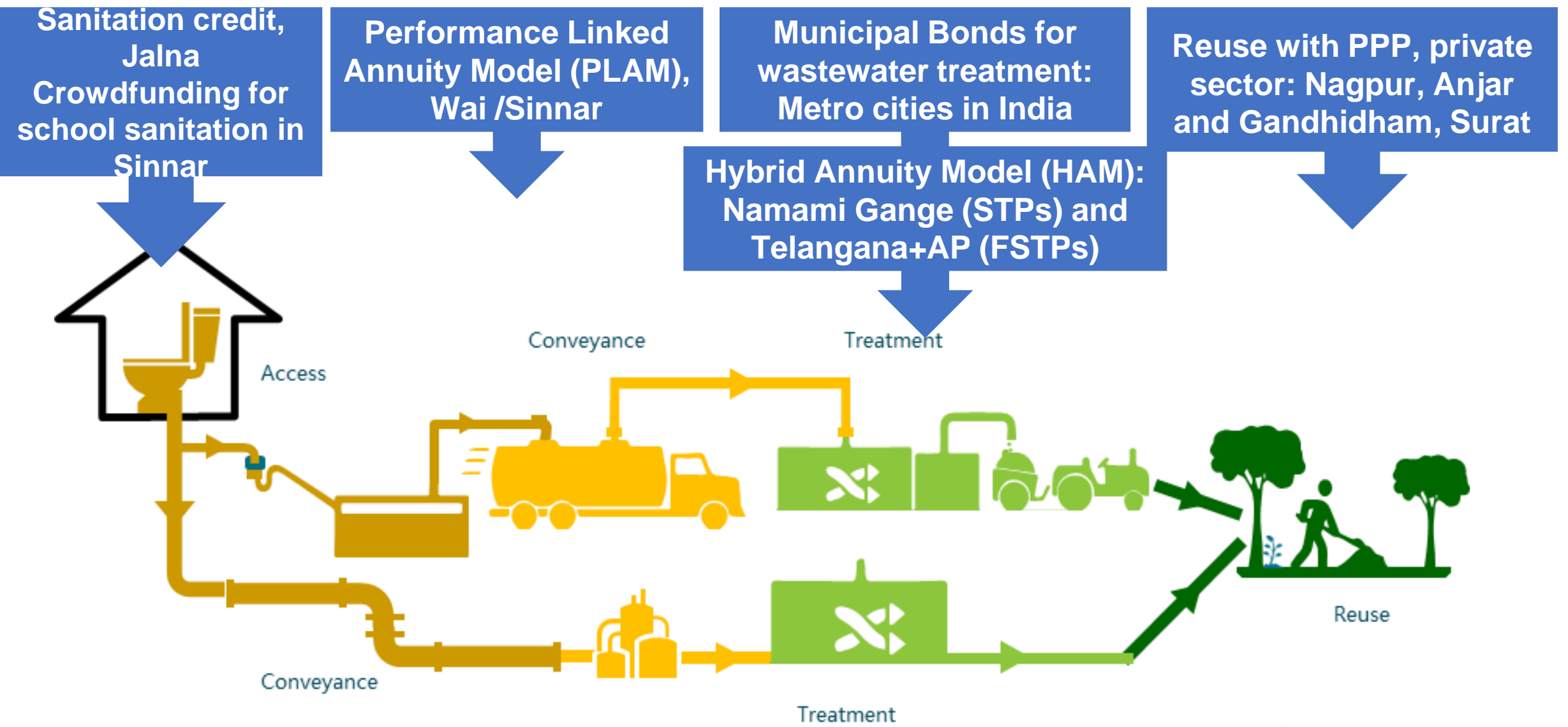
## What is blended finance?

“Strategic use of development finance and philanthropic funds to mobilize private capital flows to emerging and frontier markets” (OECD)

Blended finance can help risk-return profile of projects to attract private and commercial finance to project and activities that help achieve SDGs in different sectors

Source: OECD (2018), *Making Blended Finance Work for the Sustainable Development Goals*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264288768-en>.

# Blended Finance: examples of commercial finance mobilized across the sanitation service chain in India



# Greening of public infrastructure investments

## SBM 2.0



एक कदम स्वच्छता की ओर



More emphasis on **reuse**



Ensure **universal coverage** of toilets

## AMRUT 2.0



Should have more focus on **water security**

- **Rain-water harvesting** structures

- **Aquifer** management

- **Flood control** and management



Development of **green spaces**

## Green Initiatives by GoI



भारत सरकार  
GOVERNMENT  
OF INDIA

सत्यमेव जयते

**Green Credit Scheme** is environmental and climate friendly but needs **strong regulations** to work to avoid greenwashing.

**Carbon Credit Trading Scheme** to reduce GHG emissions with strong regulatory market to buy and sell carbon credits.

**Urban Infrastructure Development Fund:** Under the UIDF, climate adaptive plans and projects should be prioritized under this fund for **Tier 2 & 3 cities** (NABARD has a dedicated National Adaptation Fund for rural projects)

# Improving municipal finance for urban local bodies...(1/2)

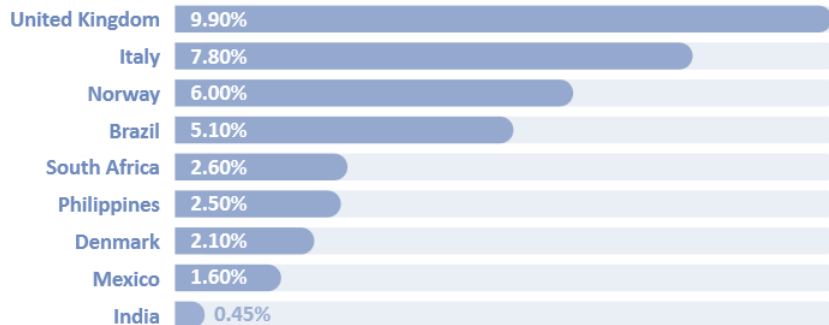
“Indian cities will require an investment of **\$840 billion** in the areas of infrastructure and municipal services till 2036 to meet the needs of its fast-growing urban population”

-Recent estimates by World Bank in the report Financing India’s Infrastructure Needs: Constraints to Commercial Financing and Prospects for Policy Action

## Need to focus on greater transfers (IGTs) to ULBs...

- Indian cities contribute **2/3<sup>rd</sup> of GDP** but are fiscally poor

Figure 10: IGT to Municipal Governments as a Proportion of GDP



Sources: UK, Denmark, Norway, Italy and India – Mohanty (2016) as cited in Ahluwalia et al. (2019) p.11; Brazil – Organisation for Economic Co-operation and Development (OECD) (2016a); Mexico – OECD (2016b); South Africa – OECD (2016c); Philippines – Diokno-Sicat, J. (2019) p. 10

- Making **IGTs predictable and untied.**

## Share of ULBs in GST?

- Cities do not get any benefit from their **economic vibrancy** as all the buoyant local taxes – such as the octroi, entry tax and local body tax – have been abolished.
- “...sharing of the revenues from GST among all three levels of government.”
- Need for a **Separate list of revenue sources** for local governments in the Constitution?

Sources: CWAS (2020), “Strengthening finances of Municipal governments” ; and World Bank (201), “Financing India’s Infrastructure Needs: Constraints to Commercial Financing and Prospects for Policy Action”



# Improving municipal finance for urban local bodies...(2/2)



Significant untapped revenue from **property taxes and other own revenue sources** of ULBs

**Municipal strengthening for improved property tax collections...**



**Incentivising local governments to improve own revenues**

Figure 16: Property Tax as a Percentage of GDP in Select Countries



Sources: For India 2017-18: Ahluwalia et al. (2019), p. 9; for Organisation for Economic Co-operation and Development (OECD) and developing countries in the 2000s: Bahl and Martinez (2007), Table 1, p. 16; and for 18 OECD and 29 developing countries, based on International Monetary Fund Government Finance Statistics, various years.

- Linking Property Tax Base to **Market Prices**
- Continued Focus on Reforms to **Increase Coverage and Collection Efficiency** of Property Tax



**Performance grants to ULBs**

- **Improved data collection** and making it available through audited accounts
- Improvement in **own revenues** >90% property tax and water tax collections
- **State level incentives** as by Government of Maharashtra



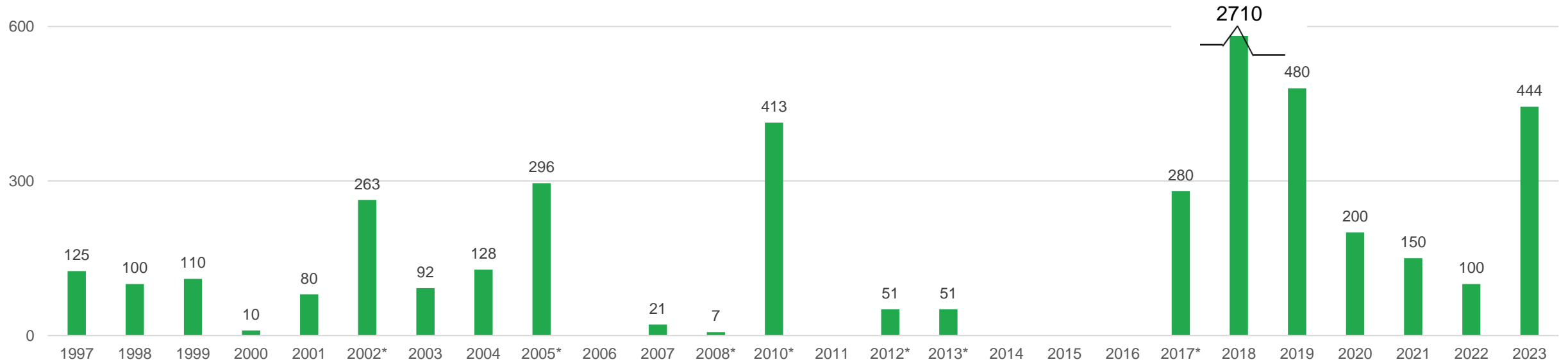
**Exploring the Potential of other Non-Tax Sources and Land Value Capture to Enhance Local Resources**

- Rental income, parking fees
- **Land value capture tools-** impact fees, Tradeable Development Rights

• Source: Strengthening finances of Municipal governments, CWAS, 2020

# Raising the importance of municipal bonds in wider public finance

Issuance of 33 Municipal bonds worth INR 6,031 crore in India (1997-2023)



Note: \*Pooled bonds issues years marked

Most Municipal Bonds in India have been raised to finance **water supply and sewerage projects**. GoI can offer additional incentives to promote green projects. The new UIDF window at NHB can focus on **Green Bonds**

**Incentives by GoI on raising municipal bonds**

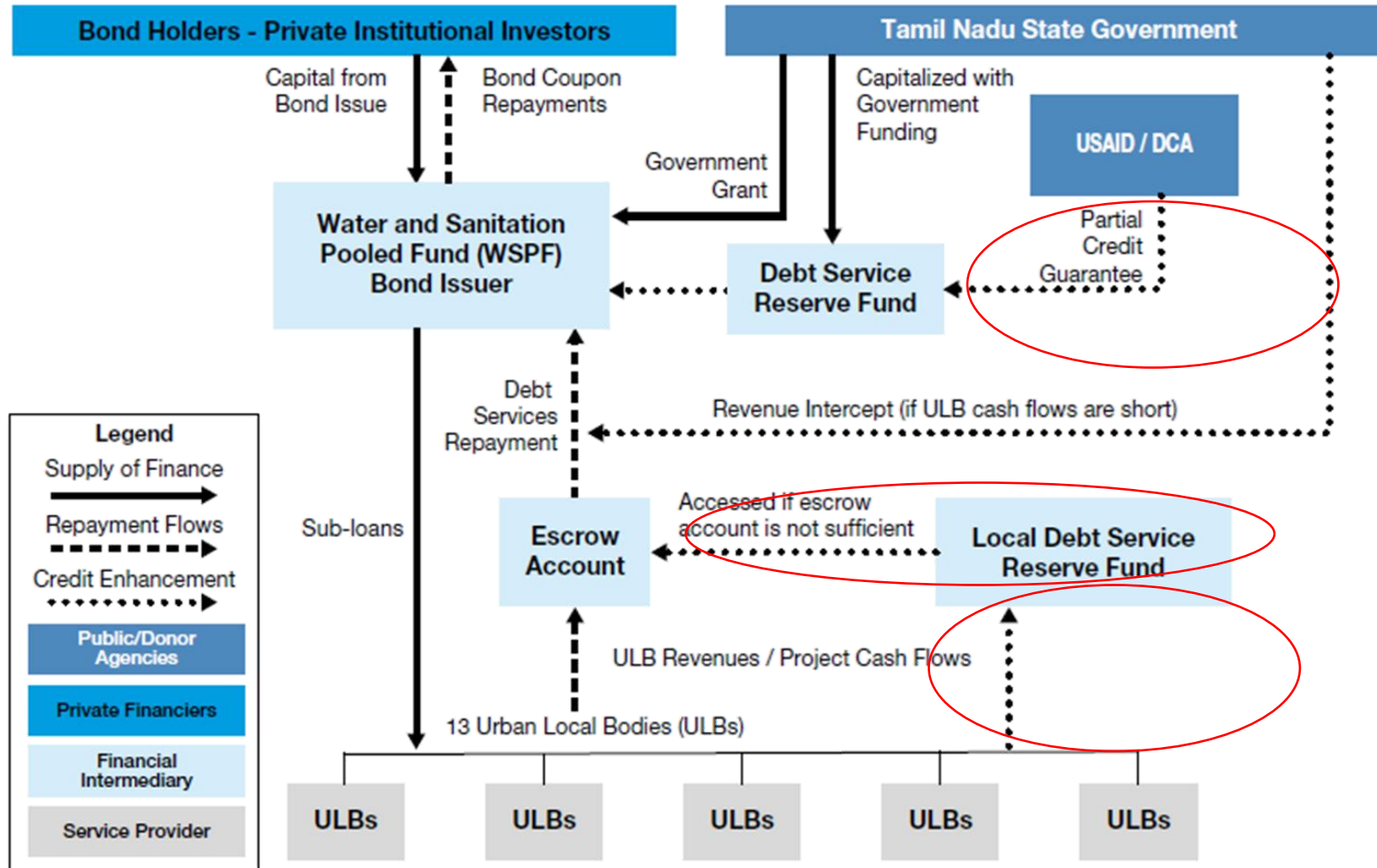
**13% of bond amount**

Bond amount	Incentive
100 cr	13 cr
200 cr	26 cr (Max)

Source: [www.sebi.gov.in](http://www.sebi.gov.in), [www.mohua.gov.in](http://www.mohua.gov.in), 2018, AMRUT 2.0 operational guidelines, MoHUA, 2021

# Pooled bond funds from capital market in Tamil Nadu, India

FIGURE 1 Pooled Municipal Bond Issuance in Tamil Nadu, India: Financial Structure



WSPF has been successful in mobilizing funds from the capital markets through over 5 successive issues .

This approach can be used for pooling fund requirements for small towns

# Green Bonds for climate finance

## What are Green bonds?



Raised capital for environmental and climate focused green projects



Fixed income debt instrument



SEBI guidelines for issuing Green Bonds

## Sectors eligible for Green bonds



Renewable energy



Sustainable water and waste management



Pollution prevention



Clean transportation



Climate change projects

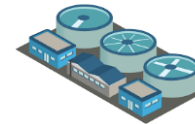
## India's green bond market



The Government of India raised **USD 1 billion** the Sovereign Green Bonds January 2023



**India's first green bond** was raised in 2015 by Yes bank ltd.



**Ghaziabad** raised first municipal green bond for water and sanitation treatment infrastructure



**Indore** raised a green bond to build largest solar plant - for pumping and supplying water from Narmada



**INR 10 crore incentives by GoI** on raising green bonds worth **INR 100 crore**

Sources: Author's literature review on green bonds ; India sets sights on record green bond issuance entering 2022 access at <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/india-sets-sights-on-record-green-bond-issuance-entering-2022-67940627>



# Innovative approach of raising finance through green bonds and carbon credits - Case of Indore

## Green Bonds



**Green bonds over municipal bonds** as it was easier to obtain carbon credits for a “green” project



**Prerequisite checklist** helped with ready made data availability

## Carbon Credit Mechanism



**Bundling** of solar projects to obtain carbon credits



**Verification and authorization** through EKI



**Selling of carbon credits** worth INR 52 lakhs which is encashed for O&M of WASH solar project



- Currently, there is a **voluntary carbon credit market in India**..Gol plans to develop the Indian Carbon Market (ICM) where a national framework will be established to decarbonize Indian economy by pricing GHG.
- Bureau of Energy Efficiency, Ministry of Power, along with Ministry of Environment, Forest & Climate Change are developing the **Carbon Credit Trading Scheme** for this purpose.

# Development Impact Bonds for WASH services..

**DIB is an innovative financing tool** that: a) focuses on outcomes; b) ensures proper monitoring systems, c) fosters collaboration among different partners, and d) attracts social impact investors.

## Monitoring systems

Introduce a culture of good and strong monitoring systems



## Focus on outcomes

Rather than only inputs or outputs



## Collaboration

Collaboration and partnerships are critical



## Attract new investors

Create opportunities to attract new impact investors for sanitation



## Structure to attract large and small investors

Create structures to attract both large impact investors (new generation of families/ Foundations) ones, but also smaller ones of the type that have invested in HDFC Cancer Debt Fund



## Attract CSR funding

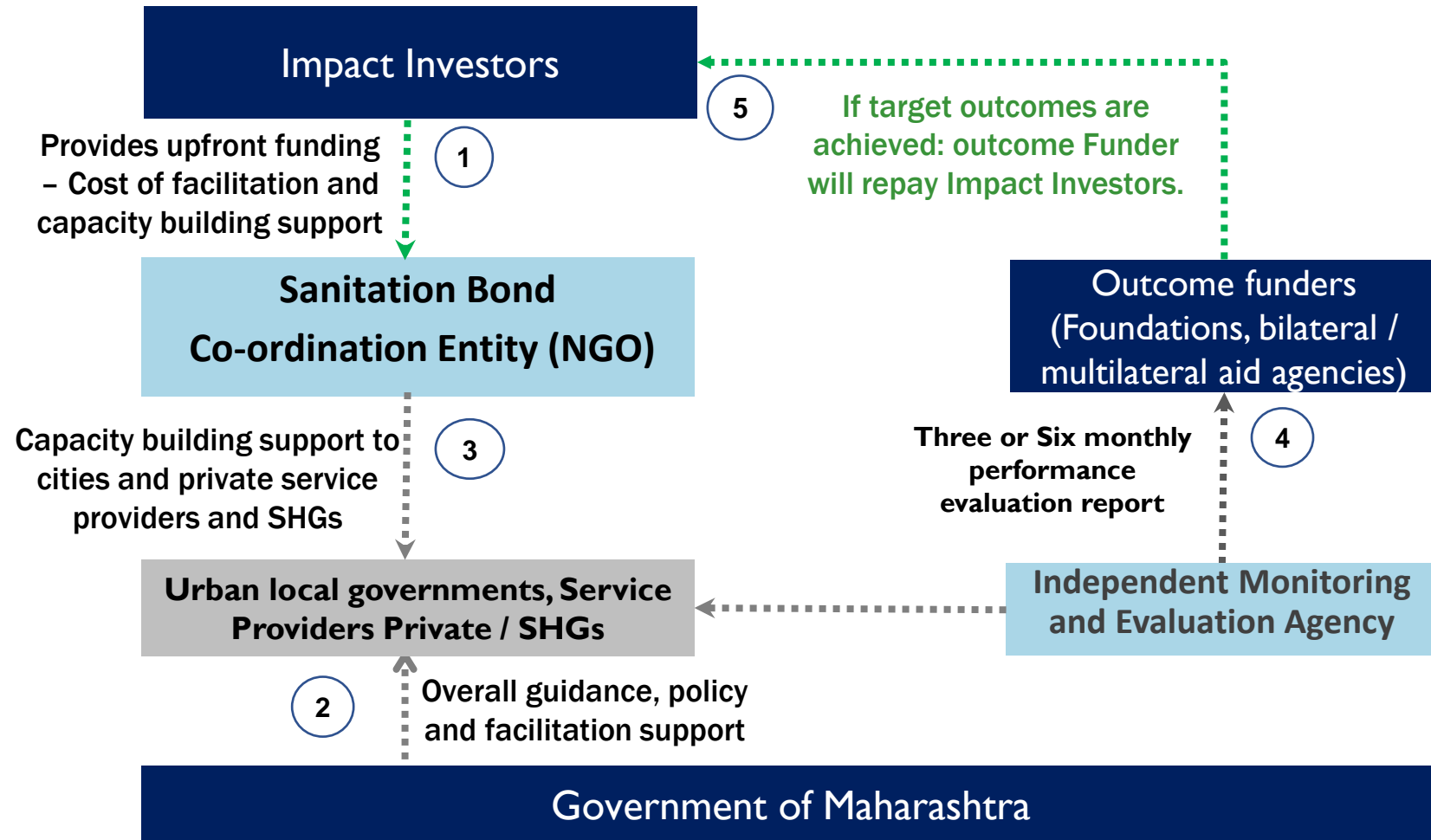
Attract CSR funding focusing on to results based outcomes and for sanitation- possibly as outcome payers



Sources: Center for Water and Sanitation, CRDF, CEPT University (2019) "Exploring Development Impact Bonds for FSSM, Urban Sanitation" A Roundtable discussion.

# Exploring Development Impact Bonds for urban sanitation

- **CWAS** developed the DIB structure and financing model.
- Based on a review of various DIBs in India, potential structures were developed for an urban sanitation bond, focused on **integrated FSSM services for cities in Maharashtra**. It was developed for measurable outcomes for: **i) scheduled desludging, and ii) treatment**.
- A number of options for DIB structure were developed and assessed.




Sources: Center for Water and Sanitation, CRDF, CEPT University (2019) "Exploring Development Impact Bonds for FSSM, Urban Sanitation" A Roundtable discussion.



# What is needed to get impact investors to cities and to WASH?


## Advocacy and research around the benefits and impacts of investing in WASH



The public health consequences of untreated sewage are immense; for example, diarrheal diseases contribute to 20% of deaths in children under the age of 5.<sup>2</sup>


### THE VALUE OF WATER

Water is essential for life, supporting food and energy production as well as healthcare delivery and hygiene.



**24 - 700**  
MILLION PEOPLE

By 2030, water scarcity will drive the displacement of huge numbers of people globally. Currently 450 million children are in areas of high or very high water vulnerability



**\$114bn**  
ANNUAL INVESTMENT

To achieve SDG 6, the World Bank estimates an annual spend of \$114bn is required until 2030. Currently 80% of countries report insufficient funds to achieve current WASH targets, often lower than SDG 6 objectives

**6% REDUCTION**


The World Bank estimates that failure to invest in the water sector will reduce global growth by up to 6% by 2050

**\$1 = \$4.30**

The economic benefit to individuals and society of investment in water and sanitation is more than \$4 for every \$1 invested.


**50% ROI**

Investing in WASH in healthcare is an immediate impact item, generating a 50% return on investment



**WATER IS A HIGH VALUE COMMODITY**

Investing in water and sanitation is not only 'doing good', it is a sound investment to create sustainable global growth across industry and agriculture.



The health and environmental impacts of inadequate sanitation in India add up to Rs. 2.44 trillion (US\$53.8 billion) a year —this was the equivalent of 6.4 percent of India's GDP in 2006.<sup>3</sup>

## Relevant instruments for promoting impact investments

**THE EDUCATE GIRLS DEVELOPMENT IMPACT BOND:**  
A NEW FINANCE MODEL FOR INTERNATIONAL DEVELOPMENT

**THE UTKRISHT IMPACT BOND.**

*Social Impact Bonds*



**Nabard raises ₹1,041 crore in India's 1st social impact bond**

Sets a coupon of 7.63% on the issue

Higher yields Nabard's new bond structure for special category bond. The number of investors for each tranche.

Managed by the lower tier A & B Capital Services, ICICI Securities, Pioneer, IDBI, and Citic

PNB, Canara Bank



**Development Impact Bond for Safe Sanitation**



**GREEN BONDS**



**ESG**

**MUNICIPAL BONDS**

Learn about the advantages and tactics of investing in munis.

**Creditworthiness Assessment**

An approach for Indian Cities

## Programs to align investor interests and national goals/programs

**Toilets 2.0**  
Partners for Toilets

**Adopt a Public / Community Toilet in your City**

**ADOPT A VILLAGE**

Our holistic and sustainable development model

**Aa**

Education, Clean Water & Sanitation, Alternative Income & Livelihood, Agriculture & Food Security



**SUSTAINABLE DEVELOPMENT GOALS**

**CORPORATE SOCIAL RESPONSIBILITY**

एक कदम स्वच्छता की ओर

**LiFE**

Lifestyle for Environment

-  Improving access to WASH in public facilities
-  Improving access to WASH through affordable household financing
-  Improving water infrastructure and management
-  Increasing access to non-sewered sanitation services
-  Increasing access to sewered sanitation



# Creditworthiness assessment of urban local bodies in India

## Benefits of Creditworthiness Assessment



Improved access to capital



Lower borrowing costs



Investor confidence & economic development



Less time-consuming process



Reliance of publicly available datasets



Cost effective

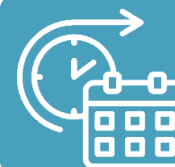
## Parameters of Creditworthiness Assessment



Enhanced financial management



Enhanced service delivery



Long-term planning & sustainability

Source: Based on forthcoming report by CWAS –Creditworthiness Assessment of Indian Cities

# Accessing impact finance - Exploring ESG ratings for Indian Cities



**ESG Assessments, disclosures and investing**

Measuring sustainability and societal impact to better determine future performance

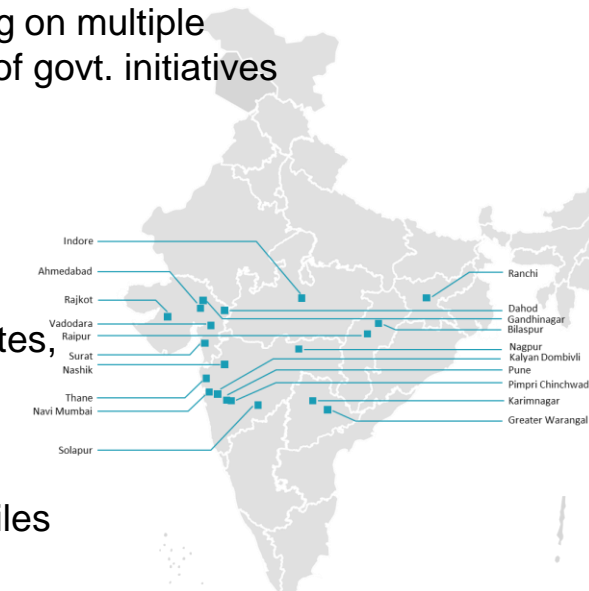
**Popular in corporate but city governments are also adopting**

Access new markets for development funds  
Build credibility for investors

## ESG for Indian cities



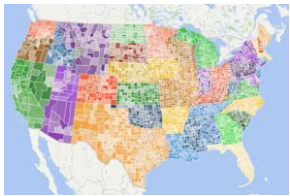
Indian cities already reporting on multiple ESG relevant topics as part of govt. initiatives – publicly available data



### Framework by CWAS and PwC India

**19 themes, 62 indicators** - City mandates, service performance, Laws and policy, National commitments/ programs

Tested on **20 cities** - ESG ratings, profiles



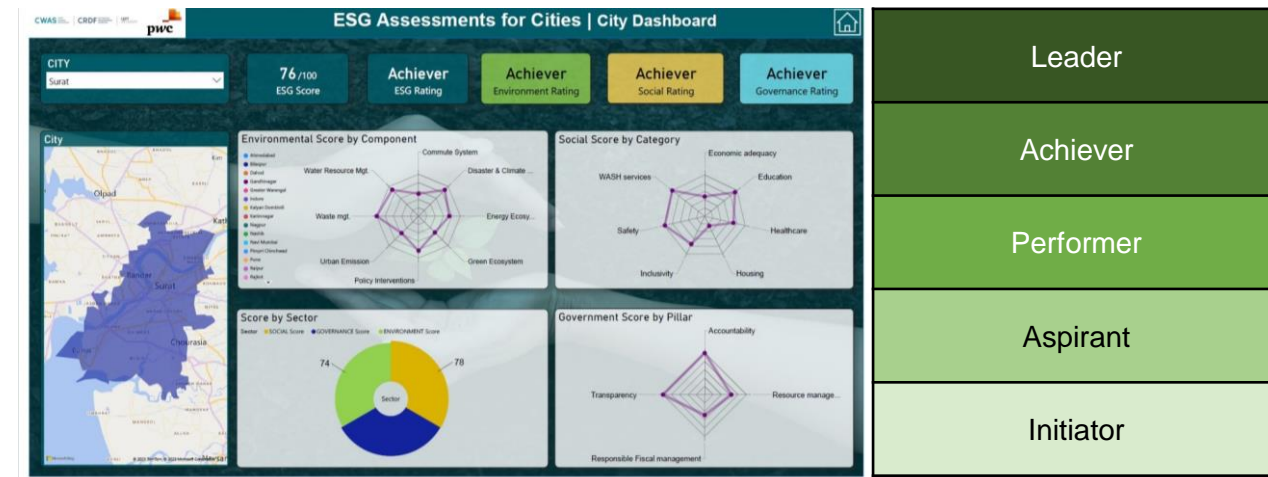
US Municipal Bond marketplace - ISS ESG Muni QualityScore (formerly ACRE Data) maintains ratings and data for all cities



Toronto's Debt Issuance Program linked to strategic ESG outcomes and reporting



Vancouver, Montreal adopting TCFD recommendations in financial reporting



# Summary

Important to recognize and tap the **new sources of funds** such as from social investors and from the domestic lenders and capital markets.

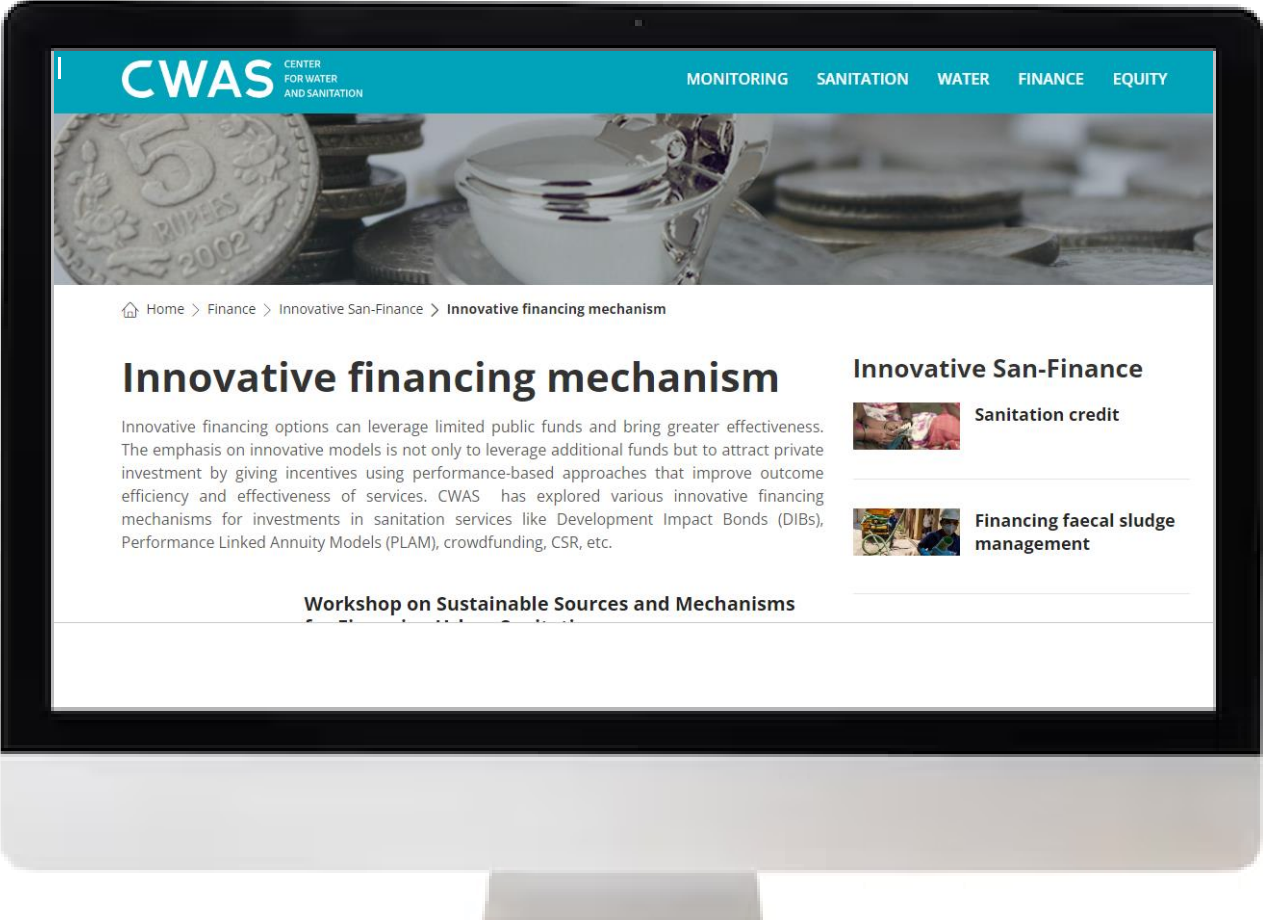
For this use of **results-based funding (RBF) mechanisms** will be key as funders look to ensure outcomes.

There is a **need to tap the emerging opportunities** for mobilizing private and commercial finance for sanitation sector across the value chain.

These maybe through locally designed PPP projects as well as by supporting Green Municipal Bonds

Need to make cities **creditworthy and ESG ready**

# Visit us at [www.cwas.org.in](http://www.cwas.org.in) to know more on Innovative financing...



<https://cwas.org.in/theme/finance/innovative-san-finance/innovative-financing-mechanism>



# Thank You

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**Global South Academic Conclave on WASH and Climate Linkages**