Participatory life cycle costing assessment (LCCA) for water supply: Samaki Meanchey District

1. Introduction

National and subnational authorities, and NGOs conducted a participatory Life Cycle Costing Assessment (LCCA) for water supply in Samaki Meanchey District to better understand the full costs of providing and sustaining water services in the district. Four water supply scenarios have been analysed to support more informed decision-making on water supply planning and financing with the aim of meeting sustainable and universal access by the district's target of 2023.

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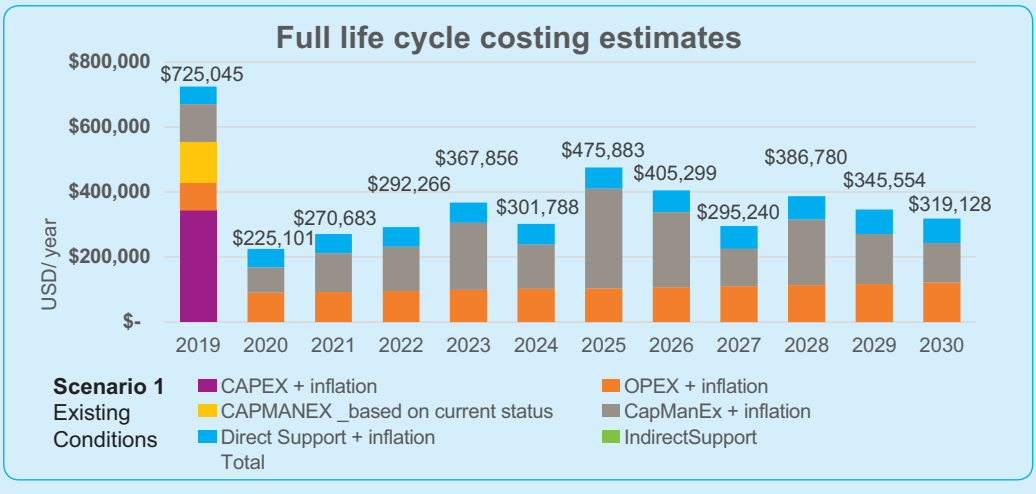
2. Result

The graph results show the amount of annual budget that district need for provide water service from 2019 to 2030. The cost is different for each scenario. the explicit cost component of 2019 is also shown in the graph.

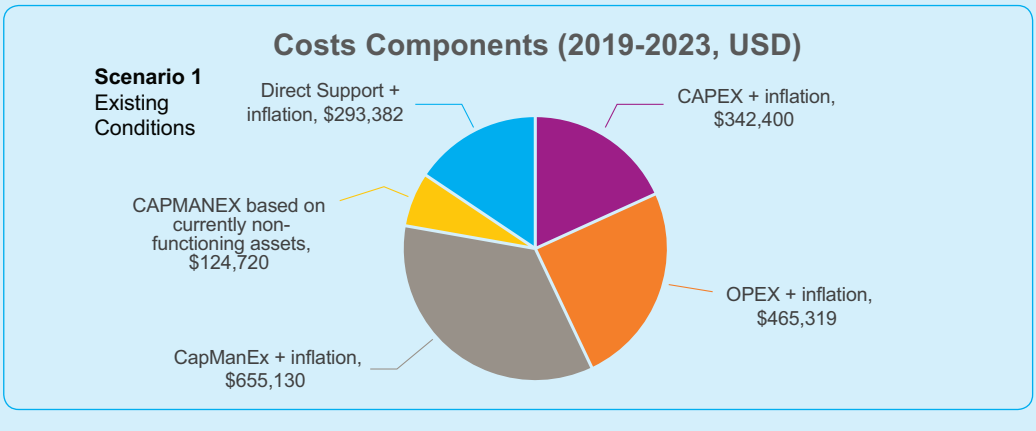
Scenario 1 : District and communes maintain the current community-owned water supply assets, with the current amount of staff time.

Total cost needed to maintain existing assets until 2023 in Scenario 1 is $1,880,951

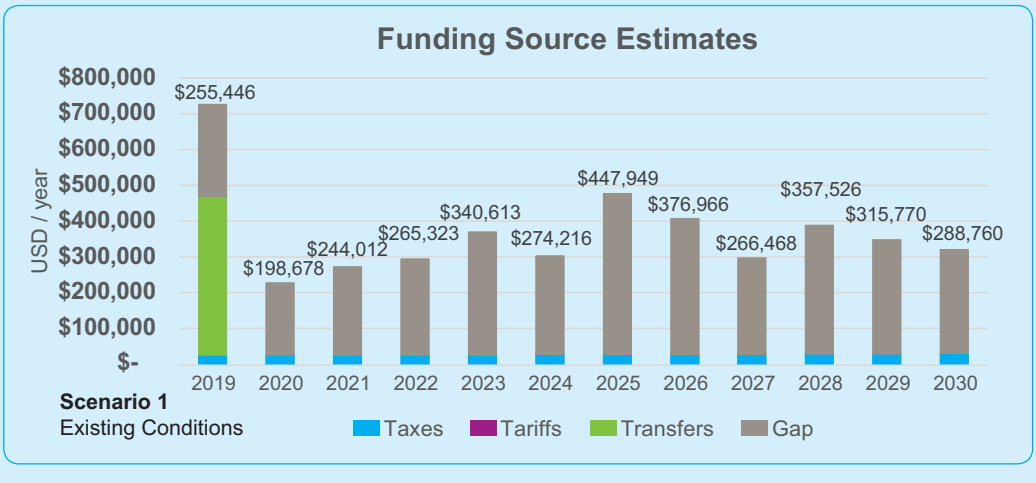
Graph 1.1: Full life cycle costing estimates 2019 – 2030, USD



Graph 1.2: Costs Components (2019-2023, USD)



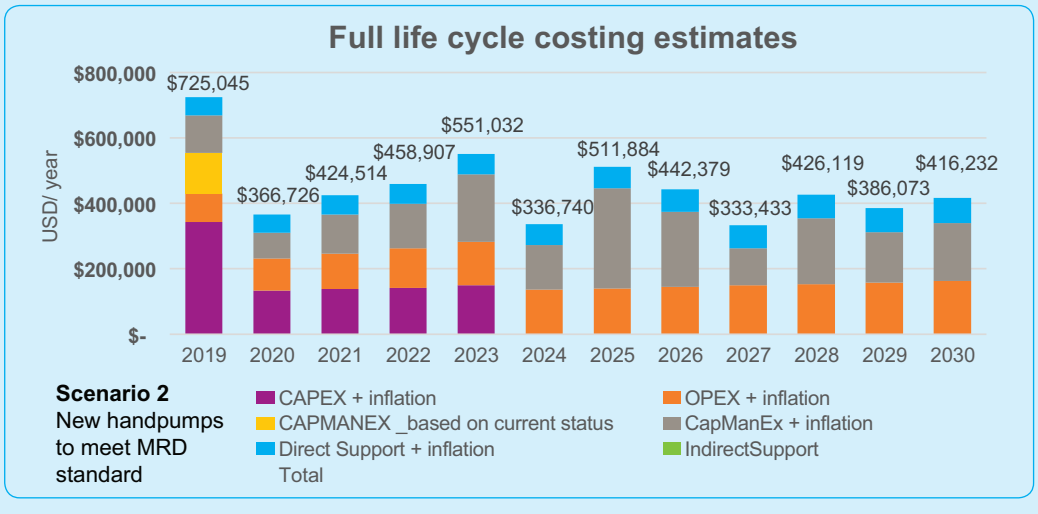
Graph 1.3: Funding sources and funding gap (2019-2030, USD)



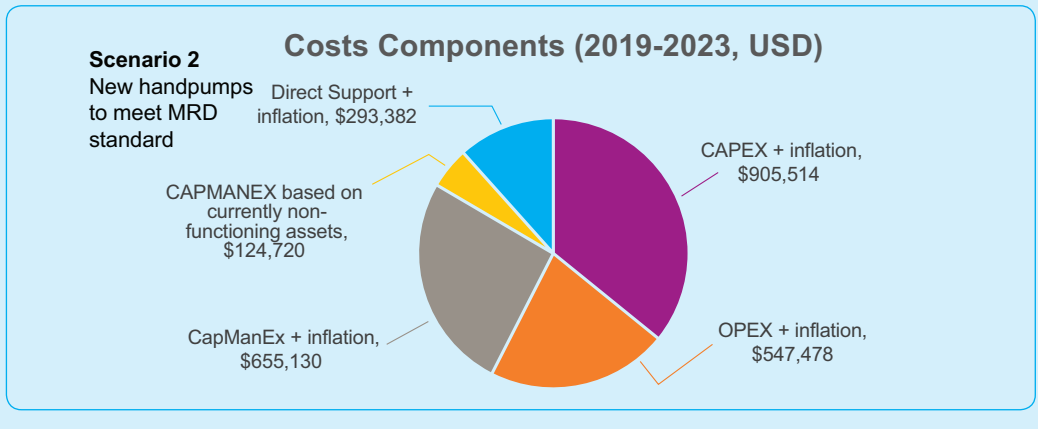
Scenario 2 : District and communes maintain the current community-owned water supply assets and construct new handpumps to meet the minimum MRD requirement of one handpump for every 25 households or within 150m of every handpump, and work additional days estimated to support these assets.

Total cost needed to achieve universal access by 2023 in Scenario 2 is $2,526,224

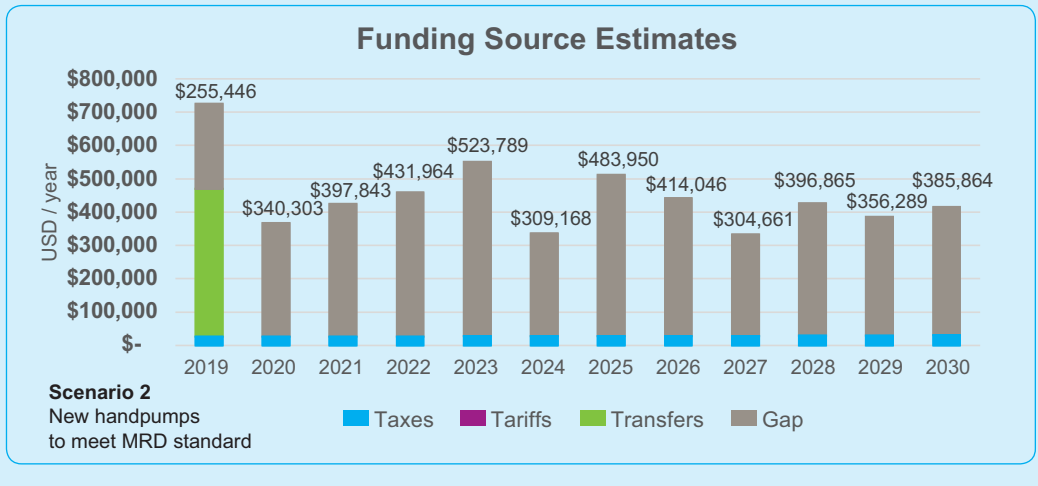
Graph 2.1: Full life cycle costing estimates 2019 – 2030, USD



Graph 2.2: Costs Components (2019-2023, USD)



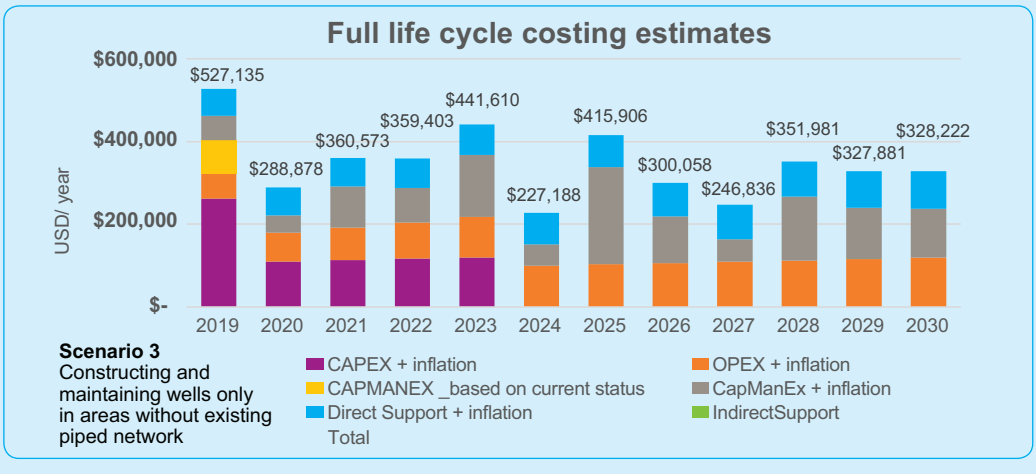
Graph 2.3: Funding sources and funding gap (2019-2030, USD)



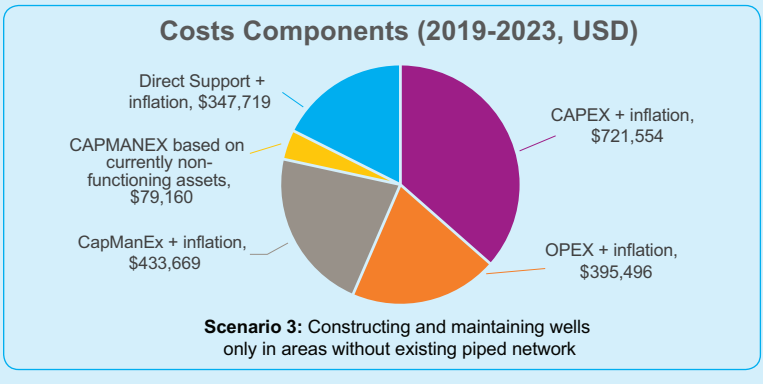
Scenario 3 : District and communes maintain the current community-owned water supply assets only in the areas that are not serviced by existing piped water systems. In the areas with piped water systems, households are encouraged to connect and use piped water. In the areas with no piped water, additional water points are constructed to meet the minimum MRD requirement of one handpump for every 25 households or within 150m of every handpump, and government staff work an estimated number of days to support the changed numbers of assets.

Total cost needed to achieve universal access by 2023 in Scenario 3 is $1,977,598

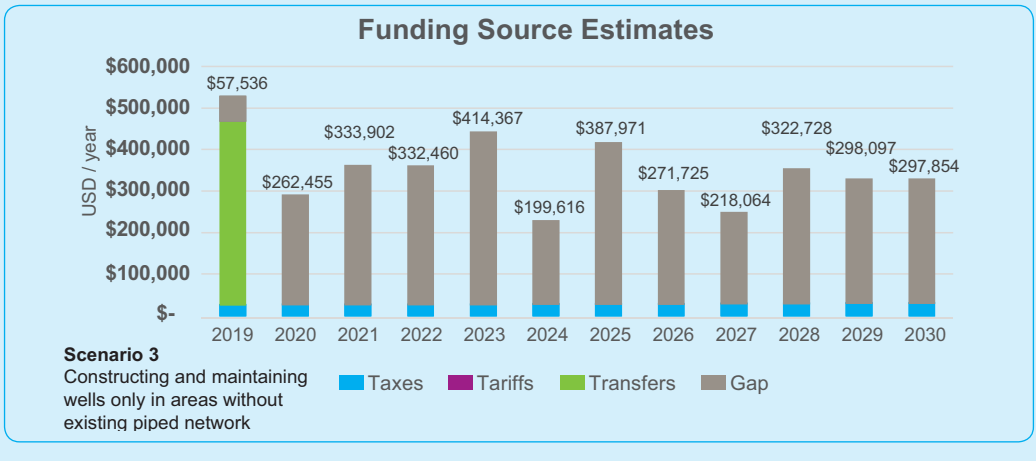
Graph 3.1: Full life cycle costing estimates 2019 – 2030, USD



Graph 3.2: Costs Components (2019-2023, USD)



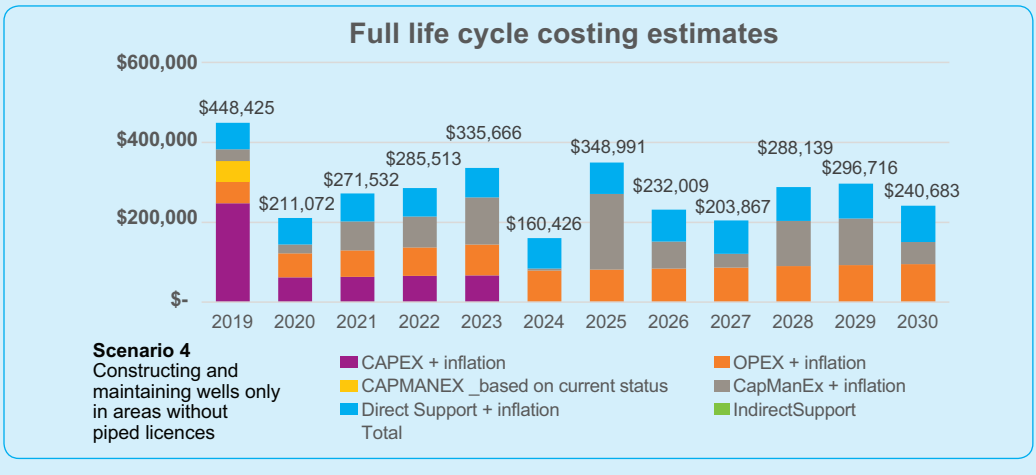
Graph 3.3: Funding sources and funding gap (2019-2030, USD)



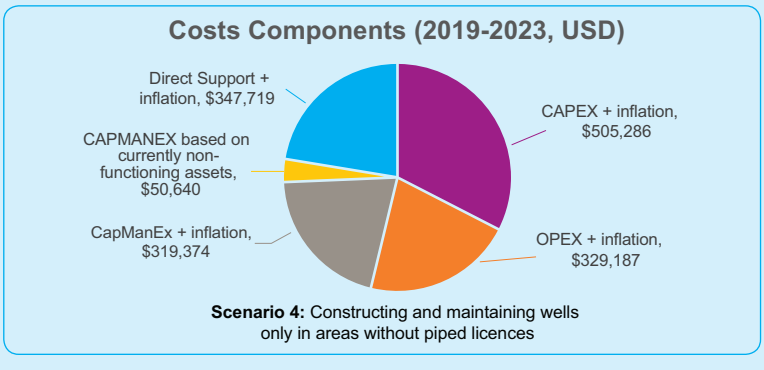
Scenario 4 : District and communes maintain the current community-owned water supply assets only in the areas that are not serviced by piped water systems and not licensed for piped systems. In the areas with piped water systems, households are encouraged to connect and use piped water. In the areas that were given licensed for piped water systems, private operators are encouraged to expand their pipe system to cover the area. In the areas with no piped water, additional water points are constructed to meet the minimum MRD requirement of one handpump for every 25 households or within 150m of every house, and government staff work an estimated number of days to support the changed numbers of assets.

Total cost needed to achieve universal access by 2023 in Scenario 4 is $1,552,206

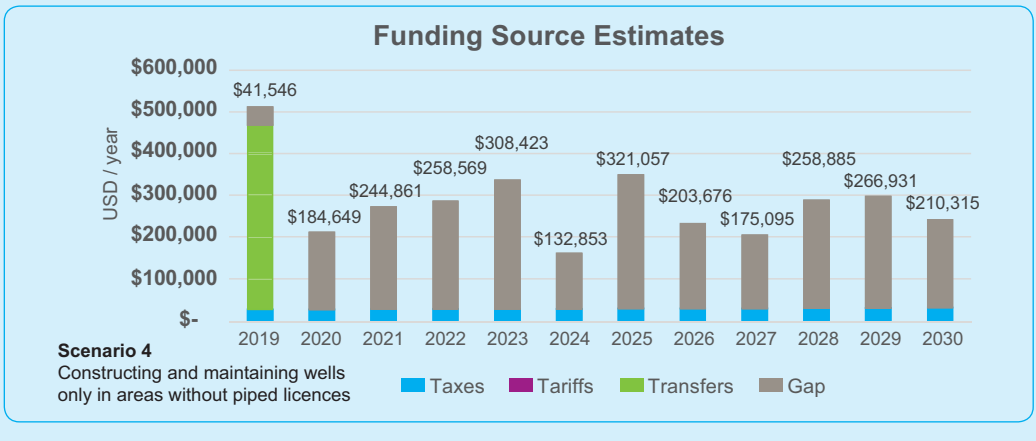
Graph 4.1: Full life cycle costing estimates 2019 – 2030, USD



Graph 4.2: Costs Components (2019-2023, USD)



Graph 4.3: Funding sources and funding gap (2019-2030, USD)



Glossary

CapEx – Capital expenditure. The cost of constructing new infrastructure.

OpEx – Operation and minor maintenance expenditure (O&M). The cost of running services, paying for regular mechanical checks and replacing small parts.

CapManEx – Capital Maintenance Expenditure. The cost to renew, replace or rehabilitate assets after their design life. CapManEx has two components–the existing non-functioning assets that already need to be repaired, and the ones that will need to be repaired when after their expected design life.

Direct Support – The cost of support to keep the assets functioning. In these calculations we considered provincial, district and commune costs for planning, monitoring, and providing ongoing support for community-managed assets.

Taxes – Annual funds allocated to water services by government

Tariffs – Funds that community contribute as payment for water service

Transfers – Funds provided by NGOs and private sector (usually for new infrastructure)

Gap – The difference between funds needed for universal water services and the expected total funding.

Assumptions

- Households use the water supply options available in their community which in Samaki Meanchey includes community-managed handpumps, and pond and privately-managed piped systems. In reality many households have their own water sources. The LCCA was based on minimum MRD community water supply standards.
- Decentralization reforms continue beyond the current pilot with the district responsible for operation and maintenance of rural water supply assets.
- The target for universal water supply access is 2023 based on the district administration's target.
- An inflation rate of 3% per year was applied to costs from 2019 onwards.
- The time provincial, district and commune government staff allocate to water supply support constitutes 'direct support', paid proportionally from their existing salary.
- All operation and minor maintenance costs were paid for all assets every year (OpEx). The rate used for this was relatively high, but based on Provincial Department of Rural Development (PDRD) advice.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- The calculations were based on replacing infrastructure at the end of the expected life of each asset as outlined in MRD design guidelines (with the exception of commune ponds – the participants decided that a seven year lifespan was more reasonable than the five years specified by MRD).

Limitations

- Water point asset data was collected by commune and village focal points using simple asset inventory forms. The type of handpump, functionality and year of construction may vary slightly from the actual situation.
- The cost of new handpump construction and spare parts (minor maintenance) were estimated by PDRD and agreed by workshop participants.
- The ideal number of government staff and hours needed are estimated and agreed by workshop participants.

3. Feedback / Recommendations from LCCA participants

- By comparing the total cost of four scenarios, representatives from all level of government who participated in the workshop agreed that the 3rd scenario would be the best fit for Samaki Meanchey District: encouraging households to connect to piped networks where they exist and prioritizing handpump construction for the villages least likely to be connected to piped networks.
- There is a need to improve water supply asset data.
- Local authorities felt they need to have clear plans with budget allocation for operation and maintenance of handpumps
- There should be separate results for each commune to support them to integrate water supply in the commune investment plan.
- The excel-based LCCA tool should be more simplified so that government can use the tool for developing costed plans

- Results should be disseminated to development partners and national government and they should be actively engaged in a LCCA to understand the process.

4. Learnings

- The LCCA process and tool is helpful for district and PDRD to make informed strategic decisions on water supply investment and planning.
- The LCCA provides good evidence to show to decision makers at national level of the need to increase/allocate water supply budget to sub national level (district, commune) for WASH implementation.
- The LCCA provides good evidence for districts to use for mobilizing financial resource from other stakeholders.
- The result shows the budget gap in the district with the function transfer for water supply operation and maintenance. Currently District receive $2250 per year from MRD for operation and maintenance, so the gap is about $100,000/year.
- No communes reported any tariffs being regularly collected from households for using community-owned water supply infrastructure. This results in the operation and maintenance burden being borne almost entirely by commune and district government.
- The result showed that there is a huge budget needed for operation and minor and major maintenance to keep existing and new handpumps functioning. Districts do not receive enough budget to allocate for operation and maintenance to keep all handpump running.
- Decisions are being made at the national level about installation of new handpumps without consideration of existing licenced piped water networks. This results in duplication of water supply assets in some communes while other communes experience a lack of water supply assets.


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