

## **Analysis of Rural WASH Budget: Findings from 4 Gram Panchayats of Ganjam district in Odisha, India**



**July 2021**

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Published under the Series

**Decentralised Public Finance for WASH: Policy and Practice Learnings**



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This paper is a product of the Watershed *Empowering Citizens* programme (2016-2020). The data for this paper was collected during the course of the programme and analysed in January 2021.

The paper comprises of two parts, namely – Part 1: Allocations and Expenditure on Rural WASH, and Part 2: Using the Life-Cycle Cost Approach to understand Rural WASH budget. As the name suggests, Part I analyses the trends in allocation and expenditure on rural water and sanitation over four years in 4 Gram Panchayats (GPs) - Agastinuagaon, Aryapalli, Kanamana and Podapadar – of Chhatrapur block in Ganjam district of Odisha. It discusses the allocation and expenditure of public finance by the respective local self-government (the GP). Part II of the series dives deep into the analysis of the nature of budgetary allocations made on water and sanitation in the same GPs.

We are grateful to our colleagues at Gram-Utthan, the Gram Panchayat (local government) members and government officials, who helped us in getting access to data, understanding the documents and discuss the issues on the ground. We are thankful to our project partner – Centre for Budget and Governance Accountability – for the many discussions leading to the ideation of this series. We are extremely grateful to Arjen Naafs (IRC) for patiently reviewing and providing critical inputs, especially on data visualisation. Comments received on the earlier version of the briefs from Jawed A. Khan and Trisha Agarwala of the Centre for Budget and Governance Accountability have significantly contributed to shaping the paper into its current form. We value the support of Tettje van Daalen (copy editing) in making the paper readable and look respectable.

## Acronyms

BASUDHA scheme: Buxi Jagabandhu assured drinking water to all habitation scheme

CFC: Central Finance Commission

FY: Financial Year

GP: Gram Panchayat

GPDP: Gram Panchayat Development Plan

INR: Indian National Rupee

LCCA: Life-Cycle Cost Approach

PWS: Piped Water Supply

SBM: Swachh Bharat Mission

SEM: Self-Employed Mechanic

SFC: State Finance Commission

## Contents

|                                                                                           |    |
|-------------------------------------------------------------------------------------------|----|
| PART I: ALLOCATIONS AND EXPENDITURE ON RURAL WASH.....                                    | 4  |
| Key Takeaways.....                                                                        | 4  |
| Allocations and Expenditures across the 4 GPs.....                                        | 5  |
| Per Capita allocation and expenditure in the 4 GPs .....                                  | 10 |
| Prioritisation of WASH in total allocations and total expenditures in the 4 GPs.....      | 11 |
| Resource absorption capacity of GPs .....                                                 | 12 |
| Conclusion .....                                                                          | 14 |
| <br>PART II: USING THE LIFE-CYCLE COST APPROACH TO UNDERSTAND THE RURAL WASH BUDGET ..... | 16 |
| Key Takeaways.....                                                                        | 16 |
| Life-cycle Cost Approach .....                                                            | 16 |
| Water Supply Cost Categories identified from the GDPs of the 4 GPs .....                  | 18 |
| Gram Panchayat wise LCCA .....                                                            | 18 |
| Additional information .....                                                              | 27 |
| Conclusion .....                                                                          | 28 |

## Part I: Allocations and Expenditure on Rural WASH

### Key Takeaways

1. WASH expenditure across the GPs reduced after 2017. This may have been due to the initiation of the state government's piped water supply scheme – BASUDHA – with the line department undertaking the capital expenditure. However, ensuring sustainability of the service depends on investments made in keeping the assets running i.e. investments made on minor and major operation and maintenance, and the costs towards direct support to monitor coverage, quality and quantity of water supply, etc. In the post construction phase, GPs have a critical role to play to ensure that the assets keep functioning.
2. Lack of cooperation and transparency from the line department, including in terms of completion of projects, has been found to discourage the GPs from incurring WASH expenditure. Often this is due to lack of resources at the line department. There is, thus, a need to capacitate line departments.
3. Irregularities in getting approvals for works such as WASH also discourage expenditure. There is thus a need to capacitate civil society organisation and local governments to be able to demand transparency and accountability.

This note is an attempt to look at the trends in allocation and expenditure on rural water and sanitation over four years in 4 Gram Panchayats (GPs) - Agastinuagaon, Aryapalli, Kanamana and Podapadar – of Chhatrapur block in Ganjam district of Odisha. It discusses the allocation and expenditure of public finance by the respective local self-government (the GP). GP finances comprise of Central Finance Commission funds (14th Finance Commission, 2015-2020) and State Finance Commission (4th State Finance Commission, 2016-2020) funds. These funds are untied in nature, that is they can be used at the discretion of the GP for various development initiatives<sup>1</sup>, including provision of drinking water and sanitation.

It is pertinent to mention here that in 2017 the Odisha state government issued an advisory for GPs to utilise at least 30 per cent of the untied funds on the provision of safe drinking water.<sup>2</sup> In addition to the untied funds, there are other funds invested by the central and state governments for the provision of water supply through dedicated programmes/schemes. Spent directly by the line department (the Rural Water Supply and Sanitation Department in the case of Odisha), these funds are outside the purview of the GP public finance planning procedure, and thereby beyond the scope of this note.

In terms of sanitation, the period under study - 2015 to 2019 - coincided with the implementation of the Swachh Bharat Mission (SBM). SBM funds (as incentives for household toilet construction) are transferred directly from the district to the individual beneficiary. Being a transaction between the district and the individual beneficiary, these funds are outside the realm of the GP public finance planning procedure, and thereby outside the scope of this note.<sup>3</sup>

This note is based on information collected by the Watershed landscape partner – Gram Utthan - from various government offices. The data on GP allocations were sourced from the Gram Panchayat

<sup>1</sup> As listed in the XI Schedule of the Constitution of India.

<sup>2</sup> <https://odishapanchayat.gov.in/English/download/CFC%20SFC%20letter%20No%203420%20on%2028.02.2017.pdf>

<sup>3</sup> Our analysis of the GP expenditure budget reveals that the expenditures made on sanitation by the GP comprise of investments made towards construction of storm water drains.

Development Plans (GPDPS)<sup>4</sup>, as made available by the GPs and the Panchayat Executive Officers. Data on GP expenditure were sourced from the Gram Panchayat Extension Officer after approval of the Block Development Officer.<sup>5</sup>

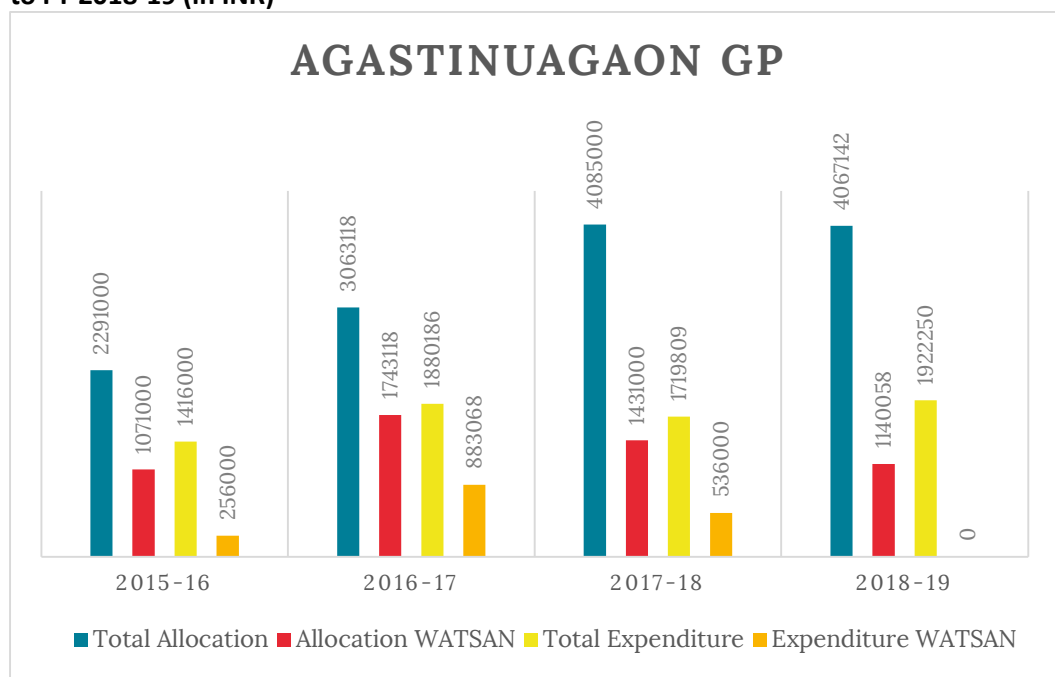
## Allocations and Expenditures across the 4 GPs

### Allocations and Expenditures on WASH in Agastinuagaon GP from FY 2015-16 to FY 2018-19

Agastinuagaon GP comprises of two villages, Agastinuagan and Gedalanaidupalam. As per the Census of 2011, the GP has 1702 households with a population of 8365 persons. 65% of the population in this Gram Panchayat belong to the Other Backward Caste category, while 15% are from the General Caste category.

In Agastinuagaon GP, as shown in Fig. 1, the total amount allocated for development works increases from FY 2015-16 to FY 2017-18, and marginally decreases in FY 2018-19. In the period under study, FY 2017-18 accounts for the highest amount allocated by the GP at Rs. 40,85,000. For works related to Water and Sanitation, however, FY 2016-17 records the highest allocation at Rs. 17,43,118. In terms of total expenditure FY 2018-19 records the highest amount, at Rs. 19,22,250. However, the expenditure on Water and Sanitation works in FY 2018-19 is recorded to be at 0.

**Fig 1. Allocations and Expenditures on Rural WASH in Agastinuagaon GP, Ganjam from FY 2015-16 to FY 2018-19 (in INR)**



Source: Consolidation of the GPDPS for the 4 financial years

The total allocations and expenditures in the GP need to be viewed in the context of the total resource envelope of the GP (as shown in Table 1). As per data available in the public domain for FY 2017-18 and FY 2018-19, it is visible that the total allocations (as provided in GPDPS) for both these years are higher in comparison to the resource envelope (as provided in Plan Plus) for the same. This

<sup>4</sup> The GPDPS are plans for economic development and social justice prepared by the GPs utilizing the resources available to them. Post preparation, GPs are expected to get the plans approved by the administration in order to access the funds.

<sup>5</sup> It is to be noted that budget data is public information, however, the team faced several challenges in getting access to the same.

is because preparation of the development plan for the GP (GPDP exercise) is carried out prior to the announcement of the resource envelope for the GP. However, the total expenditures (incurred post the announcement of the resource envelope for the GP) in the given financial years are manifold lower than the resource envelope.

**Table 1: Total Resource Envelope (14 Central Finance Commission (CFC) and 4 State Finance Commission (SFC) funds) for Agastinuagaon GP (in INR)**

| Financial Year | 14CFC Basic Grant | 4SFC Grant | Total (14CFC + 4 SFC) |
|----------------|-------------------|------------|-----------------------|
| 2017-18        | 26,00,000         | 6,70,000   | 32,70,000             |
| 2018-19        | 30,00,000         | 8,17,000   | 38,17,000             |

Source: Plan Plus<sup>6</sup>

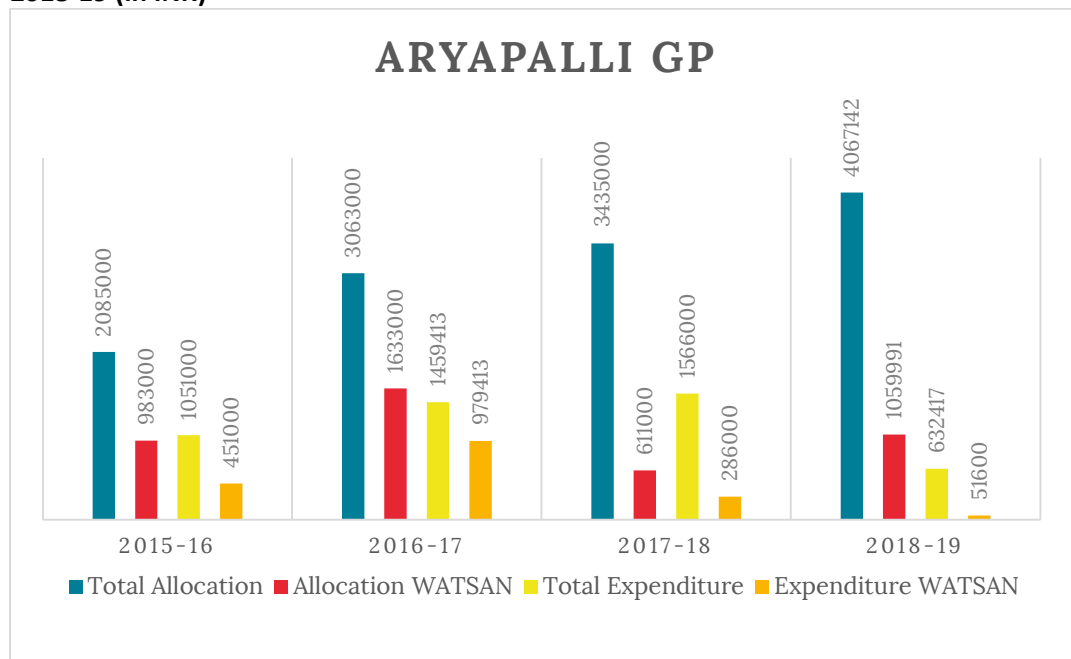
### **Allocations and Expenditures on WASH in Aryapalli GP from FY 2015-16 to FY 2018-19**

Gram Panchayat Aryapalli comprises of one village. As per the Census of 2011, the GP has 1721 households with a population of 8001 persons. 85% of the population in this Gram Panchayat belong to the Other Backward Caste category, 7% are from Scheduled Castes and the remaining are from the General category.

In Aryapalli GP, as shown in Fig. 2, there has been a steady increase in the total amount allocated for development works since FY 2015-16. FY 2018-19 accounts for the highest amount allocated by the GP at Rs. 40,67,142. For works related to Water and Sanitation, FY 2016-17 records the highest allocation at Rs. 16,33,000. In terms of total expenditures, there has been a gradual increase from FY 2015-16 to FY 2017-18. In FY 2018-19, the total expenditures decreased by nearly 60% compared with the previous financial year. Expenditures on Water and Sanitation increase from FY 2015-16 to FY 2016-17 by approximately 117% but subsequently decrease in FY 2017-18 (by nearly 71% since the previous year) and FY 2018-19 (by nearly 81% since the previous year), with the latter recording the lowest in the period under study.

<sup>6</sup> <https://planningonline.gov.in/ReportData.do?ReportMethod=getprogressivereport> . Last accessed in January 2021.

**Fig 2. Allocations and Expenditures on Rural WASH in Aryapalli GP, Ganjam from FY 2015-16 to FY 2018-19 (in INR)**



Source: Consolidation of the GPDPs for the 4 financial years

The total allocations and expenditures in the GP need to be viewed in the context of the total resource envelope of the GP (as shown in Table 2). It is visible that the total allocations for FY 2017-18 and FY 2018-19 marginally exceed the resource envelope for the same. As mentioned above, this is because the GPDP exercise is carried out prior to the announcement of the resource envelope for the GP. However, the total expenditures in the given financial years are manifold lower than the resource envelope.

**Table 2: Total Resource Envelope (14 CFC and 4SFC funds) for Aryapalli GP (in INR)**

| Financial Year | 14CFC Basic Grant | 4SFC Grant | Total (14CFC + 4 SFC) |
|----------------|-------------------|------------|-----------------------|
| 2017-18        | 26,00,000         | 6,70,000   | 32,70,000             |
| 2018-19        | 30,00,000         | 8,17,000   | 38,17,000             |

Source: Plan Plus<sup>7</sup>

### Allocations and Expenditures on WASH in Kanamana GP from FY 2015-16 to FY 2018-19

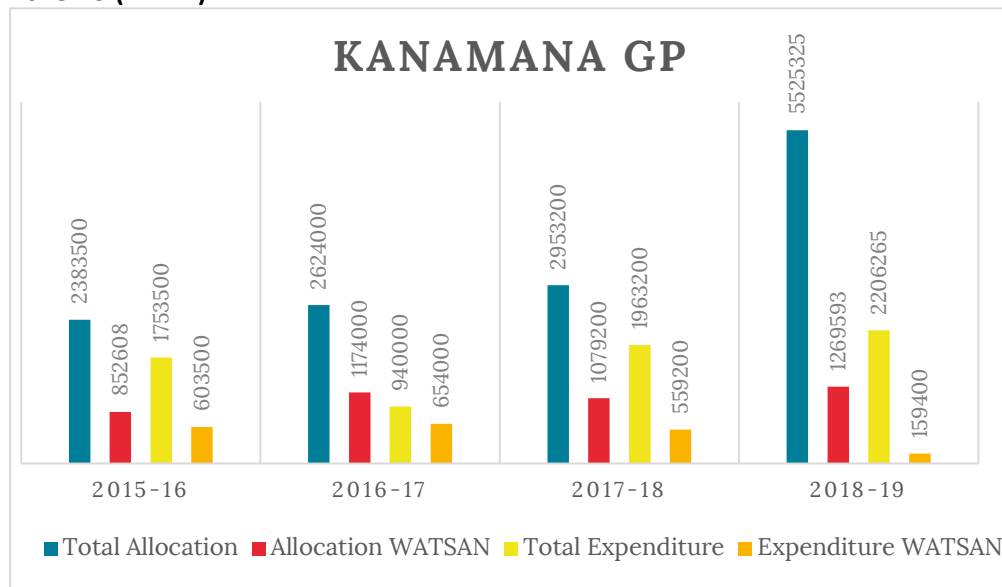
Gram Panchayat Kanamana comprises of four villages. As per the Census of 2011, the GP has 1749 households with a population of 7610 persons. 57% of the population in this Gram Panchayat belong to the Other Backward Caste category, 34% are from Scheduled Castes and the remaining are from the General category.

In Kanamana GP, as shown in Fig. 3, there has been a steady increase in the total amount allocated for development works, since the FY 2015-16 to FY 2017-18. In FY 2018-19 the total allocated amount to the GP, at Rs. 55,25,325, was the highest in the period under study, with an increase of nearly 87% since the previous financial year. At Rs. 12,69,593, FY 2018-19 also accounts for the highest amount allocated for works related to Water and Sanitation. At Rs. 22,06,265, FY 2018-19

<sup>7</sup> <https://planningonline.gov.in/ReportData.do?ReportMethod=getprogressivereport> . Last accessed in January 2021.

records the highest in terms of total expenditures as well. However, in terms of expenditure on Water and Sanitation works, FY 2018-19 recorded the lowest in the period under study (with a decrease of nearly 71% since the previous financial year). Even with the lowest in total expenditures, FY 2016-17, interestingly, accounts for the highest in expenditures on Water and Sanitation.

**Fig 3. Allocations and Expenditures on Rural WASH in Kanmana GP, Ganjam from FY 2015-16 to FY 2018-19 (in INR)**



Source: Consolidation of the GPDPs for the 4 financial years

The total allocations and expenditures in the GP viewed in the context of the total resource envelope of the GP (as shown in Table 3), show that in FY 2017-18, both, the total allocations (Rs. 29,53,200) and the total expenditures (Rs. 19,63,200) are lower than the resource envelope for the said financial year (Rs. 31,74,000). The total allocations for FY 2018-19 (Rs. 55,25,325) exceed the resource envelope (Rs. 41,17,000) for the same year. The total expenditure, however, at Rs. 22,06,265, is much lower compared to the resource envelope for the financial year.

**Table 3: Total Resource Envelope (14 CFC and 4SFC funds) for Kanamana GP (in INR)**

| Financial Year | 14CFC Basic Grant | 4SFC Grant | Total (14CFC + 4 SFC) |
|----------------|-------------------|------------|-----------------------|
| 2017-18        | 26,00,000         | 5,74,000   | 31,74,000             |
| 2018-19        | 30,00,000         | 11,17,000  | 41,17,000             |

Source: Plan Plus<sup>8</sup>

#### Allocations and Expenditures on WASH in Podapadar GP from FY 2015-16 to FY 2018-19

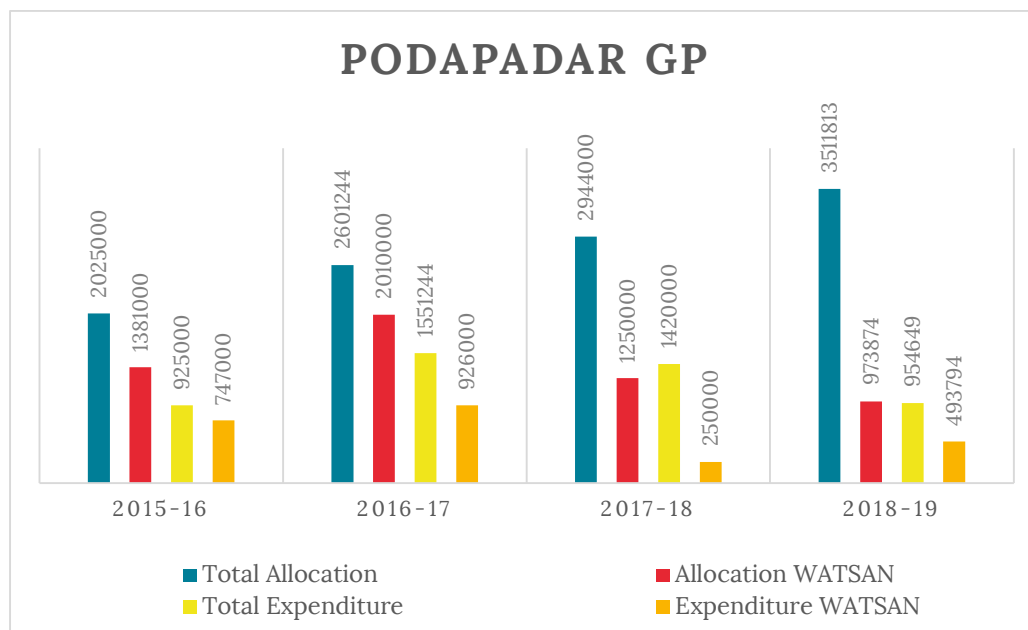
Gram Panchayat Podapadar comprises of three villages. As per the Census of 2011, the GP has 1243 households with a population of 5653 persons. 63% of the population in this Gram Panchayat belong to the Other Backward Caste category, 17% are from Scheduled Castes and the remaining are from the General category.

As shown in Fig.4, in Podapadar GP, there is a steady increase in total amount allocated for development works, since the FY 2015-16. In FY 2018-19 the total allocated amount by the GP, at Rs.

<sup>8</sup> <https://planningonline.gov.in/ReportData.do?ReportMethod=getprogressivereport>. Last accessed in January 2021.

35,11,813, is recorded to be the highest in the period under study. In terms of allocations for Water and Sanitation works, the amount allocated increases from FY 2015-16 to FY 2016-17, following which it decreases, with the lowest allocated in FY 2018-19. Total expenditures in Podapadar GP increase from FY 2015-16 to FY 2016-17 but subsequently decrease in FY 2017-18 and FY 2018-19 (the latter decreasing by nearly 33% since the previous financial year). In terms of expenditure on Water and Sanitation works, however, the amount increases from FY 2015-16 to FY 2016-17, then drops by nearly 73% in FY 2017-18, and increases again in FY 2018-19 (by nearly 98%).

**Fig 4. Allocations and Expenditures on Rural WASH in Podapadar GP, Ganjam from FY 2015-16 to FY 2018-19 (in INR)**



Source: Consolidation of the GPDPs for the 4 financial years

When viewed in the context of the resource envelope (Table 4), in FY 2017-18 and FY 2018-19, the total allocations at Rs. 29,44,000 and Rs. 35,11,813 are marginally higher than the resource envelope for the said years (Rs. 28,74,000 and Rs 33,26,000, respectively). In terms of total expenditures incurred, as in the case of the other GPs, the figures are lower than the total resource envelope by manifolds.

**Table 4: Total Resource Envelope (14 CFC and 4SFC funds) for Podapadar GP (in INR)**

| Financial Year | 14CFC Basic Grant | 4SFC Grant | Total (14CFC + 4 SFC) |
|----------------|-------------------|------------|-----------------------|
| 2017-18        | 23,00,000         | 5,74,000   | 28,74,000             |
| 2018-19        | 26,00,000         | 7,26,000   | 33,26,000             |

Source: Plan Plus<sup>9</sup>

<sup>9</sup> <https://planningonline.gov.in/ReportData.do?ReportMethod=getprogressivereport>. Last accessed in January 2021.

### Per Capita allocation and expenditure in the 4 GPs

Table 5 tabulates the per capita allocation and expenditure across the 4 GPs from FY 2015-16 to FY 2018-19. Per person total allocations, as expected, were the highest across all the GPs, as compared with total expenditures, on allocation for WASH and expenditure on WASH. All the GPs had a steadily increasing per capita amount for total allocations every financial year. Agastinuagaon GP and Aryapalli GP had similar per capita total allocation amounts across the four years. From FY 2015-16 through FY 2016-17 to FY 2017-18, Podapadar GP recorded the highest per capita total allocations. In FY 2018-19, Kanamana GP at Rs 726 recorded the highest per person.

In terms of total expenditure, apart from Aryapalli GP, all the GPs recorded a decline in per capita amount in FY 2017-18, after having increased from FY 2015-16 to FY 2017-18. Across the financial years, Podapadar GP recorded the highest per capita expenditure. In FY 2018-19, at Rs. 79, Aryapalli GP recorded the lowest per capita expenditure, across the GPs and financial years.

Per capita allocation on WASH for all GPs, but Kanamana, was the highest in FY 2016-17. In FY 2015-16, FY 2017-18, and FY 2018-19, Kanamana GP recorded the highest per capita allocation on WASH. At Rs. 290 in FY 2018-19, Kanamana GP had the highest per capita allocation on WASH across the four GPs and financial years. At Rs. 76 in FY 2017-18, Aryapalli has the lowest per capita allocation on WASH across the four GPs and financial years.

FY 2016-17 recorded the highest per capita expenditure on WASH for all GPs. Podapadar GP recorded the highest per capita expenditure on WASH in FY 2015-16, FY 2016-17 and FY 2018-19. At Rs. 164 in FY 2016-17, Podapadar GP recorded the highest per capita expenditure on WASH across the GPs and financial years. In FY 2018-19, in GPs Aryapalli and Agastinuagaon, the per capita expenditure on WASH had reduced to single digits, at Rs. 6 and 0.

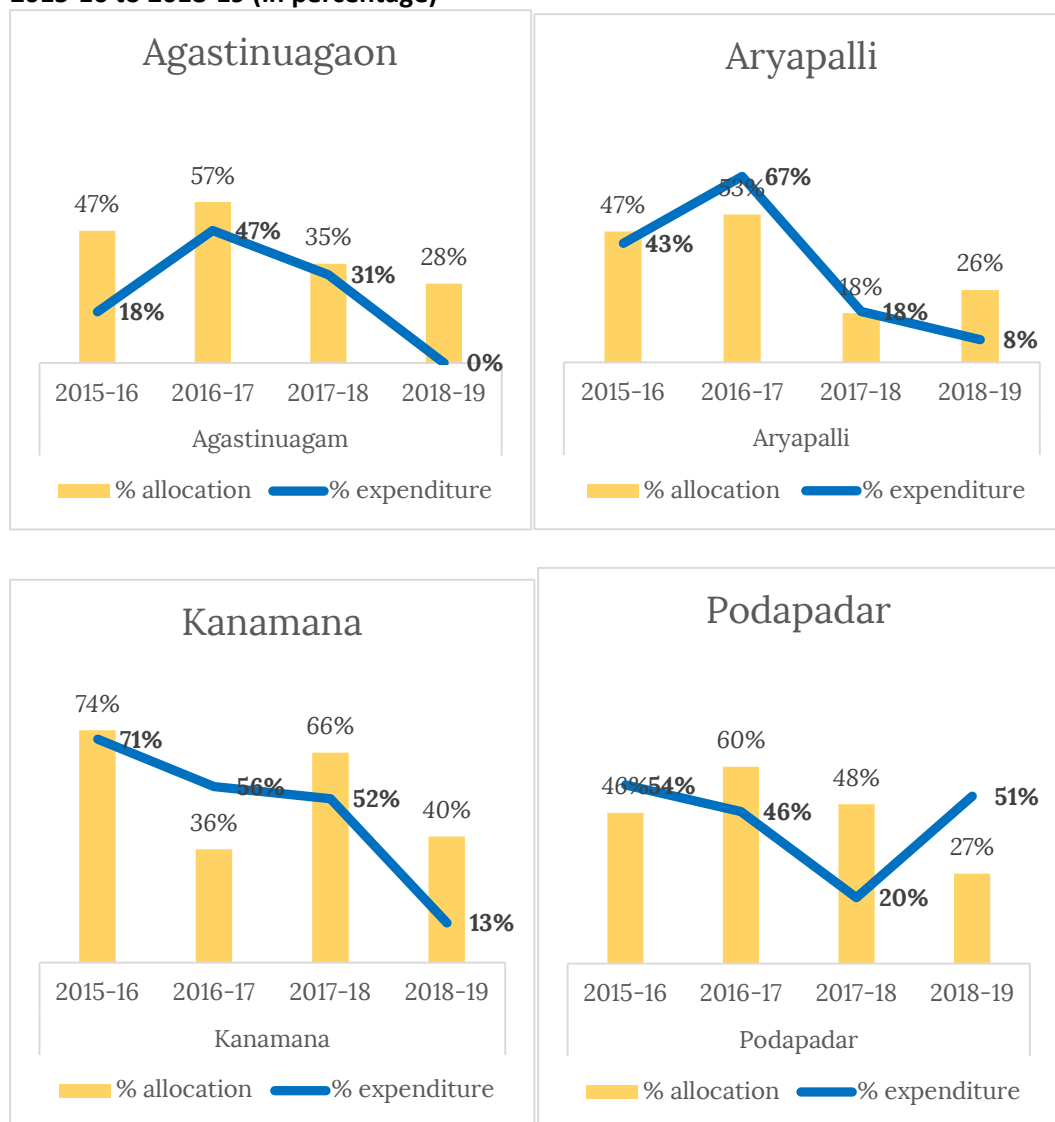
**Table 5: Per Capita Allocation and Expenditure in the 4 GPs (in INR)**

| GP            | Category          | Financial Years |         |         |         |
|---------------|-------------------|-----------------|---------|---------|---------|
|               |                   | 2015-16         | 2016-17 | 2017-18 | 2018-19 |
| Agastinuagaon | Total Allocation  | 274             | 366     | 488     | 486     |
|               | Total Expenditure | 169             | 225     | 206     | 230     |
|               | Allocation WASH   | 128             | 208     | 171     | 136     |
|               | Expenditure WASH  | 31              | 106     | 64      | 0       |
| Aryapalli     | Total Allocation  | 261             | 383     | 429     | 508     |
|               | Total Expenditure | 131             | 182     | 196     | 79      |
|               | Allocation WASH   | 123             | 204     | 76      | 132     |
|               | Expenditure WASH  | 56              | 122     | 36      | 6       |
| Kanamana      | Total Allocation  | 313             | 345     | 388     | 726     |
|               | Total Expenditure | 112             | 154     | 142     | 167     |
|               | Allocation WASH   | 230             | 124     | 258     | 290     |
|               | Expenditure WASH  | 79              | 86      | 73      | 21      |
| Podapadar     | Total Allocation  | 358             | 460     | 521     | 621     |
|               | Total Expenditure | 244             | 356     | 221     | 172     |
|               | Allocation WASH   | 164             | 274     | 251     | 169     |
|               | Expenditure WASH  | 132             | 164     | 44      | 87      |

## Prioritisation of WASH in total allocations and total expenditures in the 4 GPs

Figure 5 showcases the trends in percentage for Water and Sanitation allocations over total allocations and the percentage of Water and Sanitation expenditures over total expenditures, across the 4 GPs from FY 2015-16 to FY 2018-19. In FY 2015-16, allocation on Water and Sanitation works was more than 45% of the total allocations across all the 4 GPs, with the highest allocation in Kanamana at 71%. In Aryapalli and Kanamana GPs, the percentage expenditure on Water and Sanitation works over total expenditures (at 43% and 71%, respectively) nearly matched the Water and Sanitation allocations (at 47% and 74%). In Podapadar GP, however, Water and Sanitation expenditure (54%) was higher than Water and Sanitation allocation (46%). In Agastinuagaon GP, on the other hand, Water and Sanitation expenditure (18%) was severely less compared to the Water and Sanitation allocation (47%).

**Fig. 5: Trends in allocations and expenditures on rural WASH across the 4 GPs in Ganjam from 2015-16 to 2018-19 (in percentage)**



In FY 2016-17, the allocation for Water and Sanitation works increased from the previous financial year in GPs Agastinuagaon, Aryapalli and Podapadar. In Kanamana GP, however, the WASH allocation

decreased. This may be because of the high WASH allocation in the previous financial year. In terms of WASH expenditure, as in the case of WASH allocations, in GPs Agastinuagaon and Aryapalli it increased from the previous financial year. In GPs Kanamana and Podapadar, the WASH expenditure decreased from the previous financial year. In GPs Agastinuagaon and Podapadar WASH expenditure (at 47% and 46%, respectively) compared to WASH allocation (at 57% and 60%, respectively) was lower. In GPs Aryapalli and Kanamana, WASH expenditure (at 67% and 56%, respectively) was higher than the WASH allocation (53% and 37%, respectively).

In FY 2017-18, percentage WASH allocations over total allocations decreased compared to the previous financial year, in GPs Agastinuagaon (35%), Aryapalli (18%) and Podapadar (48%). In Kanamana GP, however, the WASH allocation increased from 36% in FY 2016-17 to 66% in FY 2017-18. In terms of WASH expenditure, a decrease from the previous financial year can be noted across all the GPs. In GPs Agastinuagaon and Aryapalli, the WASH expenditure (at 31% and 18%, respectively) nearly matched/matched WASH allocation (35% and 18%, respectively). In GPs Kanamana and Podapadar, WASH expenditure (at 52% and 20%, respectively) was lower than WASH allocation (66% and 48%). It is important to note that the percentage expenditure on Water and Sanitation works over total expenditures in Aryapalli GP<sup>10</sup> (18%) and Podapadar GP (20%) was lower than the recommended 30% as mentioned in the government advisory issued in 2017.

In FY 2018-19, percentage allocations on Water and Sanitation works over total allocations decreased in GPs Agastinuagaon, Kanamana and Podapadar, compared to the previous financial year. In GPs Agastinuagaon (28%), Aryapalli (26%) and Podapadar (27%), the WASH allocations was below the 30% mentioned in the state government advisory. The percentage expenditure on Water and Sanitation works over total expenditure in GPs Agastinuagaon (0%), Aryapalli (8%) and Kanamana (13%) was not only lower compared to that in the previous financial year but the lowest in all the four years under study. It is important to mention here that the state government's flagship drinking water scheme - Buxi Jagabandhu, Assured Water Supply to Habitations, (BASUDHA) – was launched in 2018. In February 2018, work on the scheme commenced in Aryapalli GP, followed soon by Kanamana GP and Agastinuagaon GP. Implemented directly by the line department, commencement of BASUDHA may explain the low expenditure of untied funds on WASH by the GPs. In Podapadar GP, with the sanction of the BASUDHA scheme only in 2019 (and work yet to commence) may explain the high WASH expenditure (at 51%).

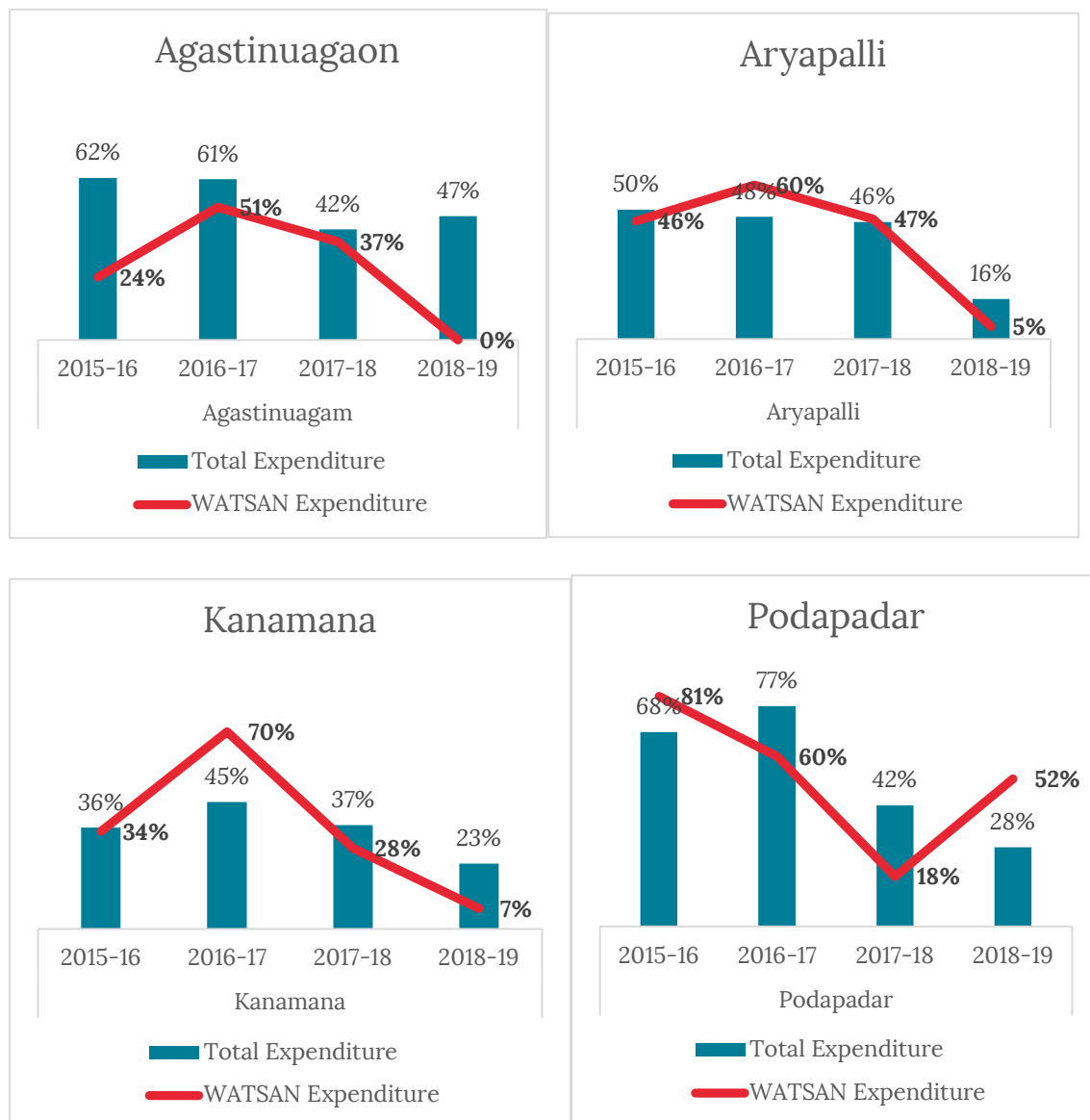
### Resource absorption capacity of GPs

Low expenditures on Water and Sanitation works and continuing service level gaps may be indicative of bottlenecks in budget processes. It is important to look into the overall resource absorption capacity of the GPs for this purpose. Figure 6 displays the trends in percentage of total expenditure over total allocations and percentage of expenditure on Water and Sanitation works over allocation on the same. With Figure 6 it is possible to compare the overall absorption capacity of the GPs with that in WASH, and thereby analyse if low or reducing expenditure on WASH was a consequence of limited capacity to absorb resources overall, or specific to WASH.<sup>11</sup>

<sup>10</sup> WATSAN allocation in Aryapalli GP is also lower than the suggested 30% in the advisory issued by the state government in 2017.

<sup>11</sup> In this exercise, the amount allocated is taken as a proxy for the resource envelope due to lack of data for all the financial years under study. Further, as seen above, the difference between the amount allocated and the resource envelope across all the GPs is lower than the difference between the resource envelope and the expenditure incurred.

**Fig. 6: Trends in resource absorption across the 4 GPs in Ganjam from 2015-16 to 2018-19 (in percentage)**



In FY 2015-16, the percentage WASH expenditure over WASH allocation, in the case of GPs Aryapalli and Kanamana (46% and 34%, respectively) was close to the percentage total expenditure over total allocation (50% and 36%). Podapadar GP displayed a better capacity to absorb WASH funds (81%) as compared to capacity to absorb total funds (68%). In Agastinuagaon GP, however, the capacity to absorb WASH funds at 24% was manifolds lower as compared to the overall absorption capacity (62%).

The percentage total expenditure over total allocation in FY 2016-17 across the GPs was nearly as much as in the previous financial year. The percentage WASH expenditure over WASH allocation increased from the previous financial year in the case of GPs Agastinuagaon, Aryapalli and Kanamana; being the highest in the four years under analysis. In the case of Podapadar GP, the percentage WASH expenditure over WASH allocation reduced from 81% in the previous year to 60%. The resource absorption capacity in WASH compared to the overall absorption capacity was higher for GPs Aryapalli and Kanamana, for FY 2016-17.

In FY 2017-18, in terms of both - overall absorption capacity and that in WASH - there has been a decrease across all the GPs. In the case of GPs Agastinuagaon and Aryapalli, the trends in the absorption capacities of each have been similar. In the case of GPs, Kamana and Podapadar, on the other hand, resource absorption capacity in WASH has been lower to overall absorption capacity.

In FY 2018-19, in terms of overall resource absorption capacity, a significant decrease from the previous financial year is visible in GPs Aryapalli, Kanmana and Podapar. In the case of Agastinuagaon GP there has been a marginal increase in overall absorption capacity, as compared to the previous financial year. A decrease in resource absorption capacity in WASH, as compared to the previous financial year, is visible in GPs Agastinuagaon, Aryapalli and Kanamana. As discussed above, one of the reasons for the dip in WASH expenditure over WASH allocation may have been the initiation of work on the BASUDHA scheme by the line department. In the case of Podapadar GP, however, a steep rise is visible in WASH expenditures over WASH allocations, as compared to the previous financial year, as well as to total expenditures over total allocations.

Overall, in terms of percentage total expenditure over total allocations, the GPs display a better absorption capacity in financial years 2015-16 and 2016-17. Most GPs, in FY 2018-19, on the other hand, display poor overall financial absorption capacity. In terms of capacity to absorb WASH funds, FY 2016-17 appears to be the best and FY 2018-19 the worst year for most GPs. Podapadar GP remains an anomaly in this respect. Kanamana GP, in general, appears to be the most conservative among the GPs in terms of total expenditures over total allocations. Comparatively, it displays better capacity to absorb WASH funds. This may be because of the existence of a strong Village Water and Sanitation Committee, resulting from years of NGO engagement in the GP.

## Conclusion

From the above discussion, it can be concluded that across the 4 GPs, WASH received greater priority in FY 2016-17. Post 2017, in spite of the directive issued by the state government, expenditures on WASH, across the GPs reduced (even below 30%). The lowest for most GPs being in FY 2018-19. As mentioned above, one of the reasons for low expenditure on WASH in the GPs may have been the initiation of the state government's piped water supply scheme – BASUDHA – with the line department taking up the Capital Expenditure.

Additional reasons for low WASH expenditure emerged during the district dissemination workshop held in Ganjam in January 2020. Lack of cooperation and transparency from the line department was stated by the elected representatives of the GPs as factors discouraging them from incurring expenditure on WASH. Typically, GPs transfer the entire cost of the WASH work to the line department - the implementing agency - at the very beginning of the year. However, delays in completion of the work are usual and result in loss of bank interest (on the amount transferred to the line department) for the GPs. The delays are often the result of lack of capacities at the line department's end and thus calls for attention to capacitate the same.

Further, the elected representatives allege that on completion of the work the line department does not share the breakdown of the costs with them. Consequently, the elected representatives are reluctant to utilise the budgets for works on which they have no financial clarity. Corruption was cited as another reason for low WASH expenditure; the elected representatives decided against incurring any expenditure on WASH works in order to avoid paying 'commissions' to individuals at key positions in-charge of approving such works. This calls for attention to increase civil society and GPs capacity to seek accountability and transparency.

Any planning, allocation or expenditure on WASH needs to be seen in the context of the available services. As per the Watershed programme baseline data (sample survey), collected in 2017, 59%, 73%, 42% and 31% of the households had access to private sources of water in GPs Agastinuagaon, Aryapalli, Kanamana and Podapadar, respectively. Since collection of this data, the state government announced its flagship scheme to provide a piped water supply (PWS) connection to every household by 2024-25. As per government data, in Chhatrapur block 25% of the households (as on 3 March 2020) have been connected to a PWS.<sup>12</sup> Provision of a PWS connection involves huge capital cost (currently being undertaken by the line department). Sustainability of the same, however, relies on investments made in keeping it running i.e., investments made in minor and major operation and maintenance, and direct support costs to monitor coverage, quality and quantity monitoring of water supply, etc. In the post-construction phase GPs have a critical role to play to ensure that the assets keep functioning. To ensure the functioning, it is important to analyse the different categories under which the expenditures have been made.<sup>13</sup> This analysis for the stated 4 GPs has been done in Part II of the paper - Using the Life-Cycle Cost Approach to understand Rural WASH budget.

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<sup>12</sup>[https://ejalshakti.gov.in/IMISReports/Reports/Physical/rpt\\_CoverageIndividualHousePipConnection\\_B.aspx?Rep=0&RP=Y](https://ejalshakti.gov.in/IMISReports/Reports/Physical/rpt_CoverageIndividualHousePipConnection_B.aspx?Rep=0&RP=Y). Last accessed in January 2021.

<sup>13</sup> This exercise, ideally done at the GP and at the district level, provides a better understanding of the nature of investments being made to ensure sustainable water and sanitation service delivery.

## Part II: Using the Life-Cycle Cost Approach to understand the Rural WASH budget

### Key Takeaways

1. Across the 4 GPs, the annual allocations on water and sanitation services primarily comprised of Capital Expenditure and Operation and Maintenance (minor) Expenditure.
2. 3 of the 4 GPs, in addition, allocated for Capital Maintenance (major) Expenditure.
3. Budgeting for routine and major maintenance is crucial to avoid breakdown of assets and service downtime.
4. No allocations were found to have been made for direct support expenses. Even if budgeted, these expenses would have covered the cost of direct support for all (not just water and sanitation related) development works in the GP.

In Part I of the paper, we analysed the allocations and expenditures made on water and sanitation from the 14<sup>th</sup> Finance Commission and 4<sup>th</sup> State Finance Commission funds in the 4 Gram Panchayats (GPs) of Ganjam District, Odisha.

In Part II of the paper, we will discuss the nature of planning and budgeting for existing and new water and sanitation facilities to ensure ongoing services to all households in the 4 GPs of Ganjam District, Odisha. For this purpose, we analyse the nature of budgetary allocations made on water and sanitation by the GPs.

### Life-cycle Cost Approach

To ensure sustainable water and sanitation services for everyone, planning and implementation need to consider - water source sustainability, regularity of services, and waste management. In this section, we will focus on planning and budgeting for ongoing services and management of waste.

Ensuring continued services to all entails the one-time investment in **Capital Expenditure** for the facility or infrastructure, as well as annual investments in **Operations and Minor Maintenance** for regular functioning of the service and addressing minor repairs. Further, every few years, based on the functionality and status of the facility, there is a requirement to invest in **Capital Maintenance Expenditure** for major repairs. Often due to the lack of investments in Capital Maintenance, the infrastructure becomes defunct over time, resulting in slippage of services and making the Capital Expenditure redundant. Hence, it is key to ensure that funds for major maintenance of facilities are considered in the planning and budgeting processes. Additionally, the processes of planning and monitoring (access, quality, quantity, operations, etc.) require budgeting for human resources, travel, communication, etc. The support activities help track, improve, and expand services as and when required. The lack of the human resources and support also lead to low coverage and service levels of water and sanitation to communities. The budget commitment/investment towards human resources and support activities is referred to as **Direct Support**.

Additionally, there are costs incurred on financing a system, such as the interest on loans taken to construct a system. This is called **Cost on Capital**. Further, there are expenses incurred that contribute to the sector working capacity and regulation, such as those for macro-level support, capacity-building, policy, planning, and monitoring. Such costs are called **Expenditure on indirect support**.

As per estimates of the World Bank, achieving universal safely managed water and sanitation (SDG targets 6.1 and 6.2) would entail a capital expenditure of approximately 114 billion USD per year.

The recurring costs of sustaining and maintaining the infrastructure, it is estimated, would exceed the annual capital cost requirements by approximately 1.5 times.<sup>14</sup>

Therefore, it is important to understand the different costs involved in water and sanitation services for informed planning, budgeting and decision making. The different costs (as described above) together are called the **life-cycle costs** i.e., the aggregate costs of ensuring delivery of adequate, equitable and sustainable WASH services to a population in a specified area, indefinitely. The **life-cycle cost approach (LCCA)**<sup>15</sup> is a methodology to comprehensively identify and analyse the full costs of delivering WASH services.

### **Allocations, underspending and low services**

The cost categories relevant to understand GP level budgets for water and sanitation services are – Capital Expenditure, Operations and Minor Maintenance, Capital Maintenance Expenditure and Direct Support. The other elements - Expenditure on Indirect Support, and Cost to Capital – are more relevant to understand the budgets at the state and national level.

Often financial resources exist but are underspent (as captured in Part I). Consequently, communities continue to experience low or slippage in the service levels. To make efficient use of resources, thus, it is essential to have clarity on the **responsibilities against each of the cost categories** and ensure that these respective elements are adequately budgeted/allocated.

The possible institutional responsibilities against the respective cost elements, in the context of Ganjam, are -

- Capital Expenditure – Line department [Rural Water Supply & Sanitation (RWSS)]/GP funds [FC/SFC]
- Operation and Minor Maintenance – GP funds/Households
- Capital Maintenance Expenditure – Line department [RWSS]/GP funds [FC/SFC]
- Direct Support - Line department [RWSS] and GP funds [FC/SFC]

In Part I, we studied the allocations and expenditures on water and sanitation services utilising the 14<sup>th</sup> Central Finance Commission (CFC) and 4<sup>th</sup> State Finance Commission (SFC) funds made at the GP level. In this part, we have attempted to disaggregate and understand the nature of allocations made by the GPs.<sup>16</sup> For a holistic understanding of the commitment towards water and sanitation services at the GP level, however, it is important to understand the allocations and expenditures made at the district level as well. The district level information will capture the different sources of funds (available to the line departments and GPs) as well as the expenditures made by the line departments on human resources (engineers, water quality labs, material, staff) and other support activities.

<sup>14</sup> Financing WASH: how to increase funds for the sector while reducing inequities Position paper for the Sanitation and Water for All Finance Ministers Meeting April 19, 2017. Available at [https://water.org/documents/48/Water.org\\_Financing\\_SDG\\_Position\\_Paper\\_April\\_2017.pdf](https://water.org/documents/48/Water.org_Financing_SDG_Position_Paper_April_2017.pdf). Last accessed in January 2021.

<sup>15</sup> For more on the life-cycle cost approach for water and sanitation, read [https://www.ircwash.org/sites/default/files/briefing\\_note\\_1a\\_-\\_life-cycle\\_cost\\_approach.pdf](https://www.ircwash.org/sites/default/files/briefing_note_1a_-_life-cycle_cost_approach.pdf)

<sup>16</sup> It is important to mention here that due to lack of details in the expenditure statement, this exercise has only been done with the allocation statement as given in the Gram Panchayat Development Plan (GPDP) of the 4 GPs under study.

The analysis has been done using GP development plans (GPDPs) of the four GPs under study for five financial years (FY 2015-16, FY 2016-17, FY 2017-18, FY 2018-19, and FY 2019-20).<sup>17</sup> The various budget lines mentioned in the GPDP have been segregated into different cost components. It is important to mention here that this part focuses only on allocations made for water supply. This has been done in line with the budget items included in the GPDPs. In terms of WASH, the GPDPs of the period primarily comprise of budget allocations on water supply. This is because budgets for sanitation for the period (particularly, the Swachh Bharat Mission toilet construction incentive), have been directly credited into the beneficiary accounts, hence not included in the GPDPs.<sup>18</sup>

### Water Supply Cost Categories identified from the GPDPs of the 4 GPs

As mentioned above, the various budget lines mentioned in GPDPs were categorised into different costs. These were:

**Capital Expenditure:** In all the five years under study, allocations were made for the provision of infrastructure for water supply, covering costs for the installation of new tube wells, digging for new tube wells, extension of piped water supply, installation of solar water supply, and *Jal Chatras*.<sup>19</sup>

**Operations and Minor Maintenance:** In all the five years, allocations were made for operations and minor maintenance expenses, covering costs such as purchase of spare parts, repair and maintenance of water supply, contribution towards the block mobile van used for repair visits, the electricity bill and the honorarium paid to the Self-Employed Mechanic (SEM).<sup>20</sup> Electricity bills were found to vary across the GPs, depending on their size, the number of constituent villages, and usage of electricity.<sup>21</sup>

**Capital Maintenance Expenditure:** This comprised of allocations made towards the repair and maintenance of tube well platforms, tank and pipeline, and other major repairs.

**Direct Support:** No allocations were found to have been made for direct support expenses. Even if budgeted, it would have covered the cost of direct support for all development works in the GP.

### Gram Panchayat wise LCCA

The following section provides analysis of the various cost categories per GP.

#### Agastinuagaon GP

Allocations on **Capital Expenditure** for water supply were made in all the five years: with around Rs. 1,50,000 in both FY 2015-16 and FY 2016-17, increasing sharply in FY 2017-18, further increasing in FY 2018-19, and then decreasing significantly in FY 2019-20. The minimum allocation was Rs. 1,40,000 in FY 2016-17 and the highest was Rs.6,74,000 in FY 2018-19. (Figure 1)

<sup>17</sup> Allocation statements were available for FY 2019-20, hence the analysis in Part II covers five financial years. Due to the unavailability of expenditure statement for FY 2019-20, the analysis in Part I has been restricted to four financial years.

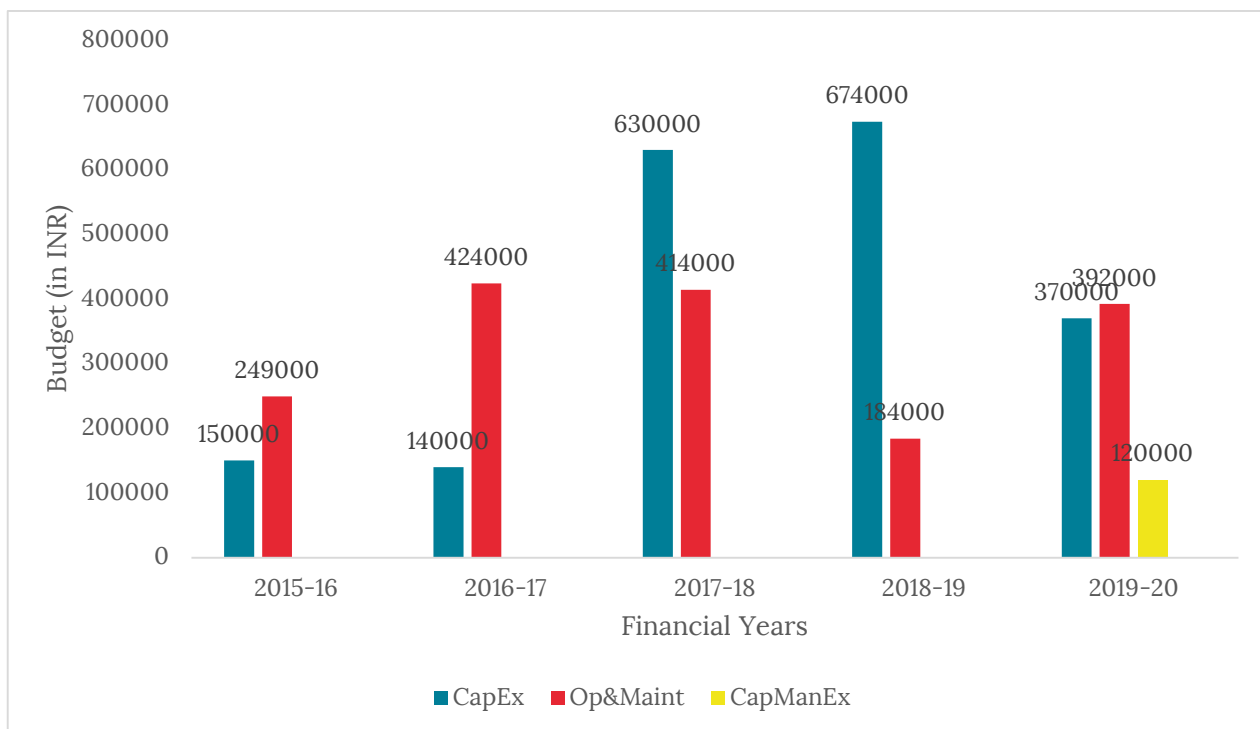
<sup>18</sup> Some of the sanitation related items that have been mentioned in the GPDPs are – ‘disinfectant’ budgeted for by one of the GPs, and construction of drains (liquid waste management).

<sup>19</sup> Jal Chatra is a temporary setup in the summer season for providing cold drinking water at certain public points. The cost includes that of an earthen vessel, probably a stand, ladle and an honorarium to the person managing this drinking water point for a certain number of hours a day.

<sup>20</sup> Self-Employed Mechanics are deployed at GP level under the supervision of Sarpanch. They are responsible for repair and maintenance of Tube wells in a GP.

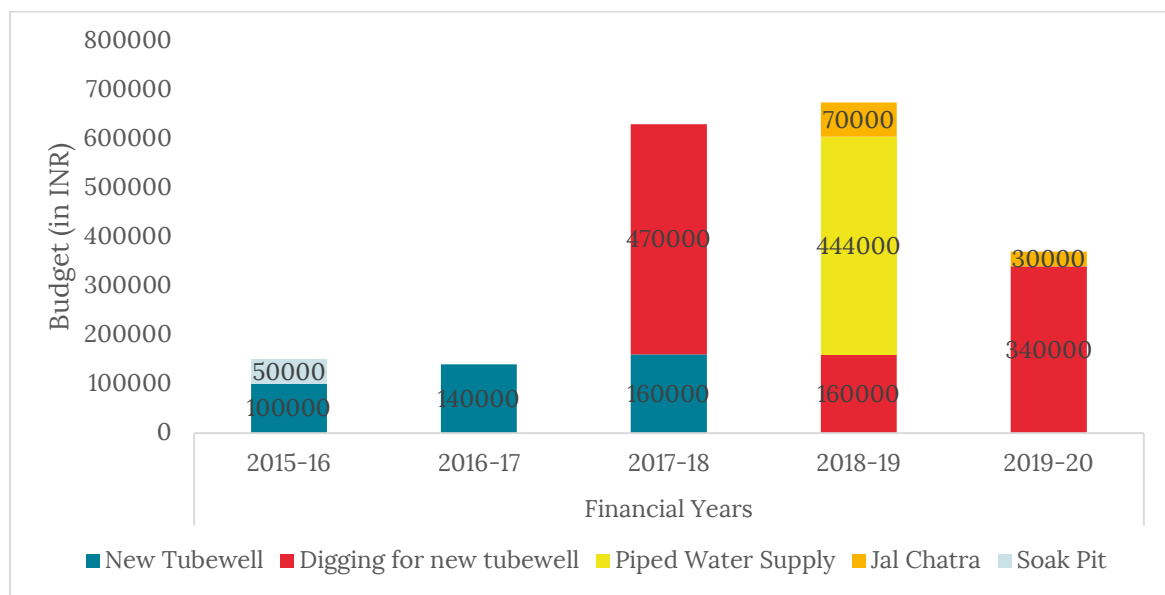
<sup>21</sup> The electricity bill may comprise of charges for uses other than water supply (such as for pumping). However, the information available does not provide such details. Therefore, for the purpose of this write up the entire amount allocated for electricity charges by the GP has been taken for operation and minor maintenance cost.

**Figure 1: Water supply budget of Agastinuagaon GP (in INR)**



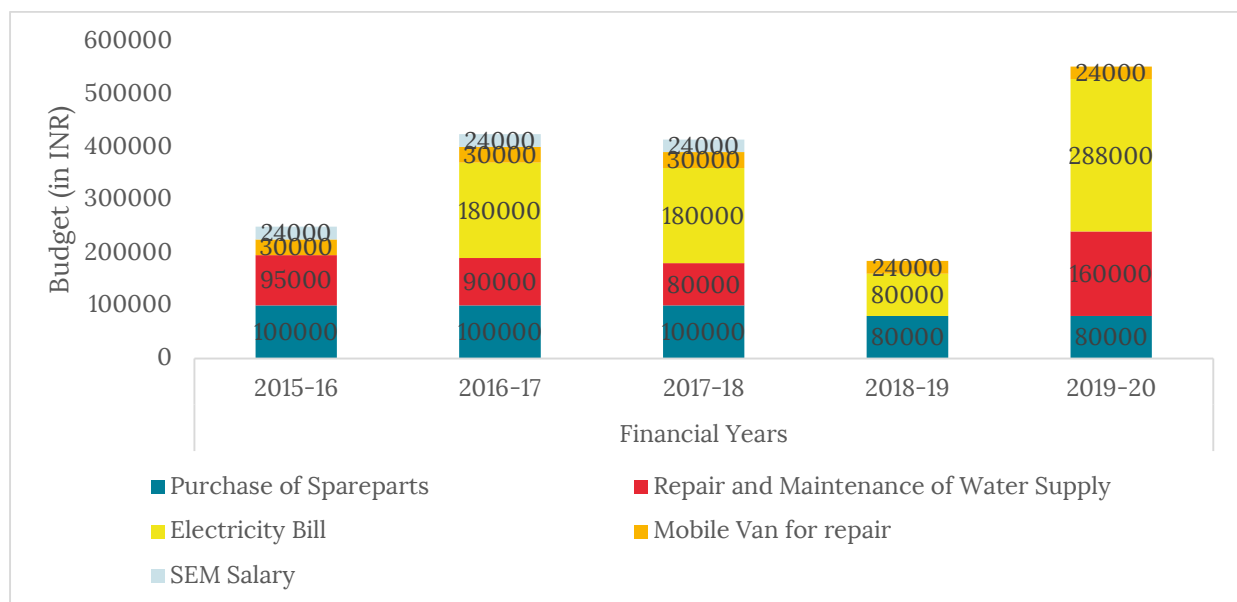
As per Figure 2, in Agastinuagaon GP, allocations were made for water supply via tube wells across all the financial years under study. In the first two years, allocations were made for provision of new tube wells, in FY 2017-18 allocations were made for both provision of new tube wells and digging for tube wells, and in the last two years allocations were made for digging for tube wells. In FY 2018-19, the extension of the piped water supply, comprising of the majority (66%) of the capital expenditure allocated for water supply, can be said to have pushed the allocation on capital expenditure to the highest in the five years under study (Figure 1). Allocation for *Jal Chatras* began to be made from FY 2018-19 onwards (that is in the last two years). Further, in FY 2015-16, allocation was made for the construction of soak pits.

**Figure 2: Details of Capital Expenditure in Agastinuagaon GP (in INR)**



As per Figure 1, allocation for **Operation and Minor Maintenance** expenditure was higher than that for capital expenditure in FY 2015-16, FY 2016-17, and (marginally) in FY 2019-20. It ranged between a minimum of Rs. 2,49,000 (FY 2015-16) to maximum of Rs. 4,24,000 (FY 2016-17).

**Figure 3: Details of Expenditure on Operation and Minor Maintenance in Agastinuagaon GP (in INR)**

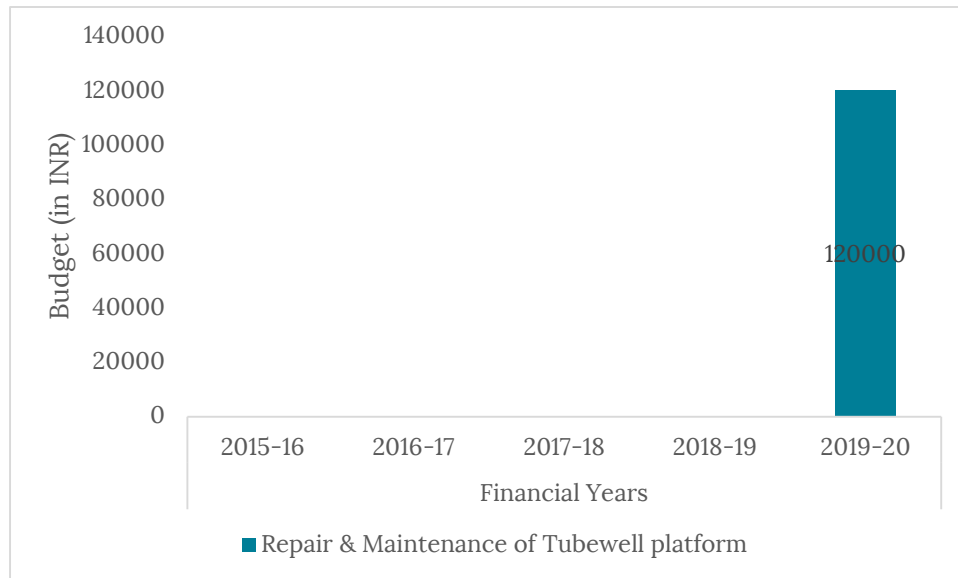


As can be seen in Figure 3, across all the financial years under study, consistent allocations were made for the purchase of spare parts and for the mobile van used for repair visits. Similarly, contribution towards the mobile van at the block level was at Rs.30,000 for the first three years and then reduced to Rs. 24,000 in FY 2018-19 and FY 2019-20.

Barring FY 2018-19, there were allocations made for repair and maintenance of water supply annually. The addition of the electricity bill since FY 2016-17, can be seen to comprise a significant

percentage of the total allocations made for operation and minor maintenance, with the highest (at 52%) in FY 2019-20. The SEM salary of Rs. 24,000 was allocated only for the first three years of the period under study. This raises the question - why the SEM honorarium was stopped.

**Figure 4: Details of Capital Maintenance Expenditure in Agastinuagaon GP (in INR)**

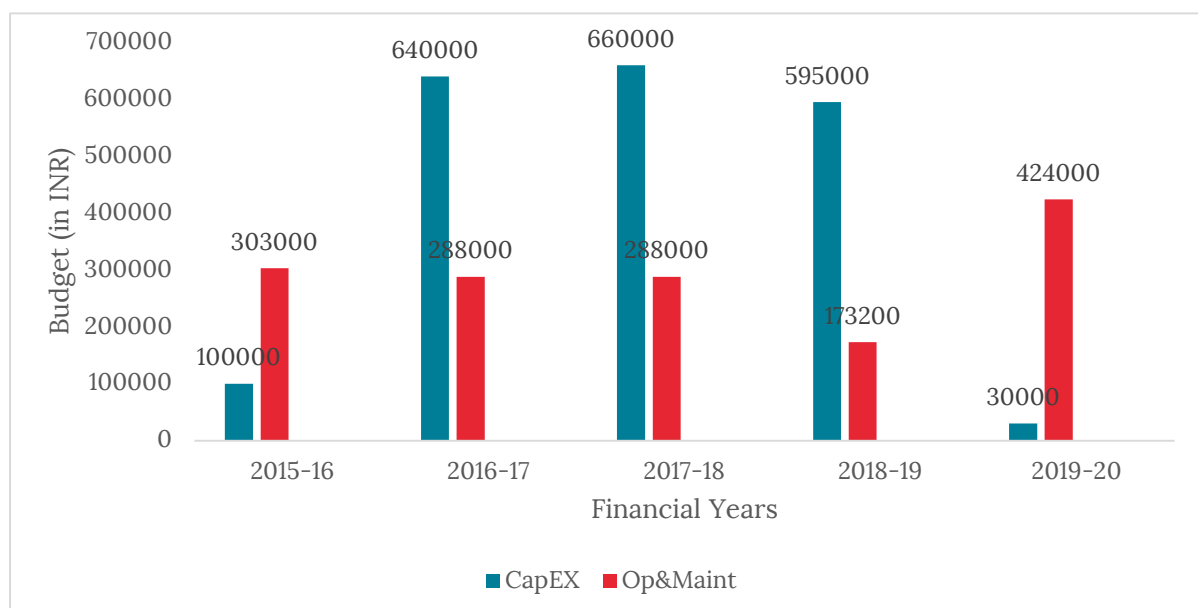


Budget for **Capital Maintenance Expenditure** in Agastinuagaon GP was allocated only in FY 2019-20. The amount of Rs. 1,20,000 was allocated entirely for the repair and maintenance of the tube well platform (Figure 4).

#### Aryapalli GP

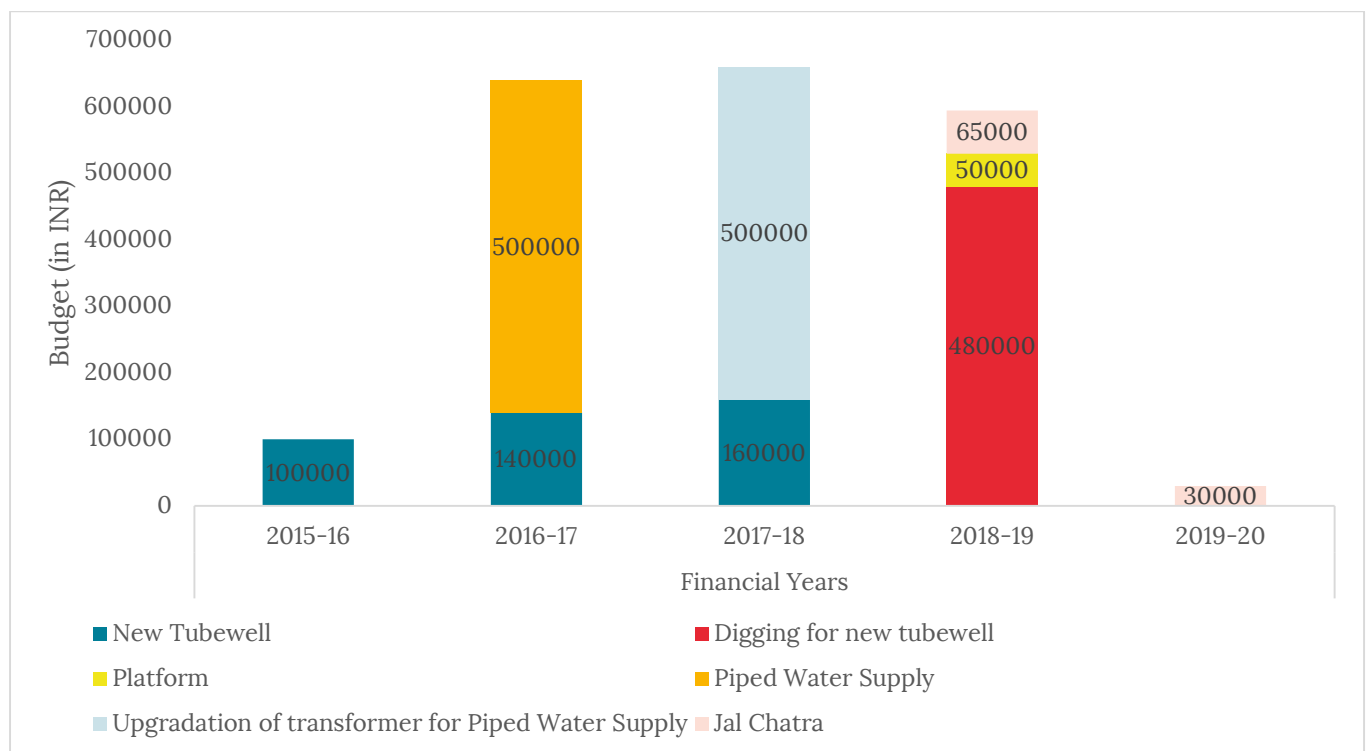
In Aryapalli GP, allocations for **Capital Expenditure** for water supply were made in all the five financial years, ranging from the lowest of Rs. 30,000 in FY 2019-20, to the highest of Rs. 6,60,000 in FY 2017-18 (Figure 5).

**Figure 5: Water supply budget of Aryapalli GP (in INR)**



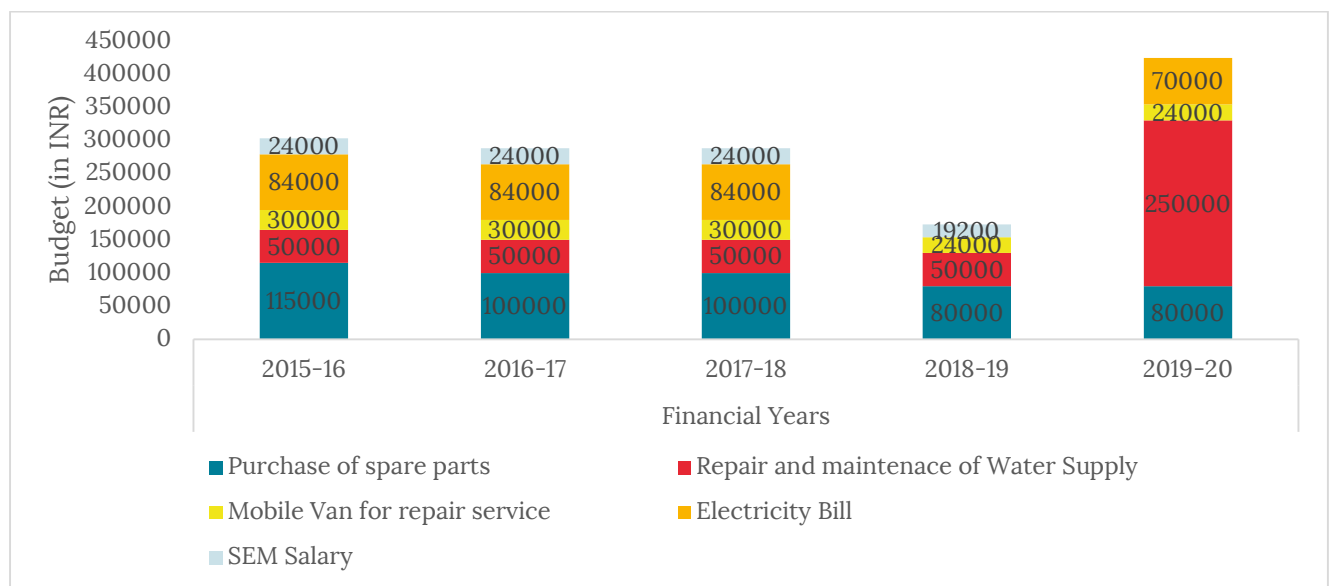
As shown in Figure 6, the allocation for Capital Expenditure in the first year comprised entirely of provision for new tube wells. In the second year, allocations for capital expenditure comprised of provision for new tube wells and piped water supply (majority share at 78%). Similarly, in the third year, piped water supply, particularly, the upgradation of transformers for piped water supply (at 76% of the entire capital expenditure budget allocation) took precedence over tube well water supply. The allocations for piped water supply in FY 2016-17 and FY 2017-18 (costing Rs. 5,00,000 each year) were responsible for the high allocation on capital expenditure in these two years. In FY 2018-19, the majority of allocations were made for tube well (digging for new tube wells in six locations in the GP and construction of five platforms), followed by on Jal Chatras. In FY 2019-20, allocations were made only for Jal Chatras which explains the low allocation on capital expenditure in this year (Figure 5).

**Figure 6: Details of Capital Expenditure in Aryapalli GP (in INR)**



In terms of **Operation and Maintenance**, there was a budget each year, varying between Rs.1,73,200 in FY 2018-19 and Rs. 4,24,000 in FY 2019-20 (Figure 5). In FY 2015-16 and FY 2019-20, in fact, the allocations for operation and minor maintenance were higher than that for capital expenditure allocations for the respective years. As per Figure 7, in all the five years, consistently, budget was allocated for purchase of spare parts and for the mobile van for repairs. It is also interesting to see, that no budget was allocated for electricity in FY 2018-19, in spite of capital expenditure on piped water supply and the upgradation of transformers for piped water supply in the previous years (Figure 6). The allocation for repair and maintenance increased sharply in FY 2019-20, comprising 59% of the total allocation for operation and minor maintenance in the year.

**Figure 7: Details of Expenditure on Operation and Minor Maintenance in Aryapalli GP (in INR)**

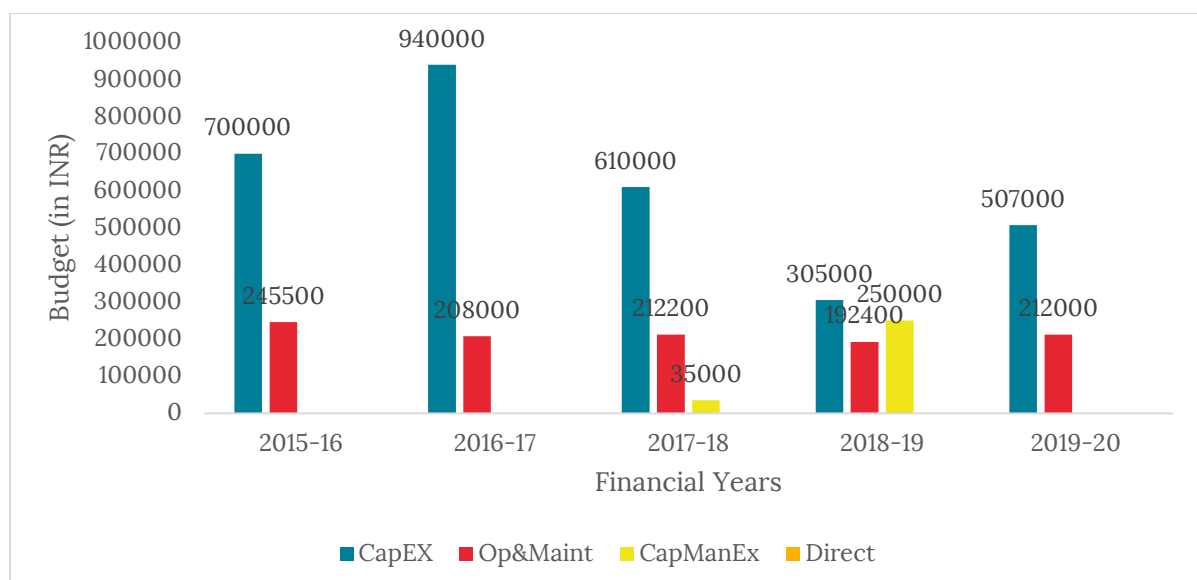


There were no resources budgeted for **Capital Maintenance Expenditure** and **Direct Expenditure** in Aryapalli GP in the five years under study.

#### Kanamana GP

In Kanamana GP, allocations were made for **Capital Expenditure** for water supply in all the five years, ranging from the lowest at Rs. 3,05,000 in FY 2018-19 and the highest at Rs. 9,40,000 in FY 2016-17 (Figure 8).

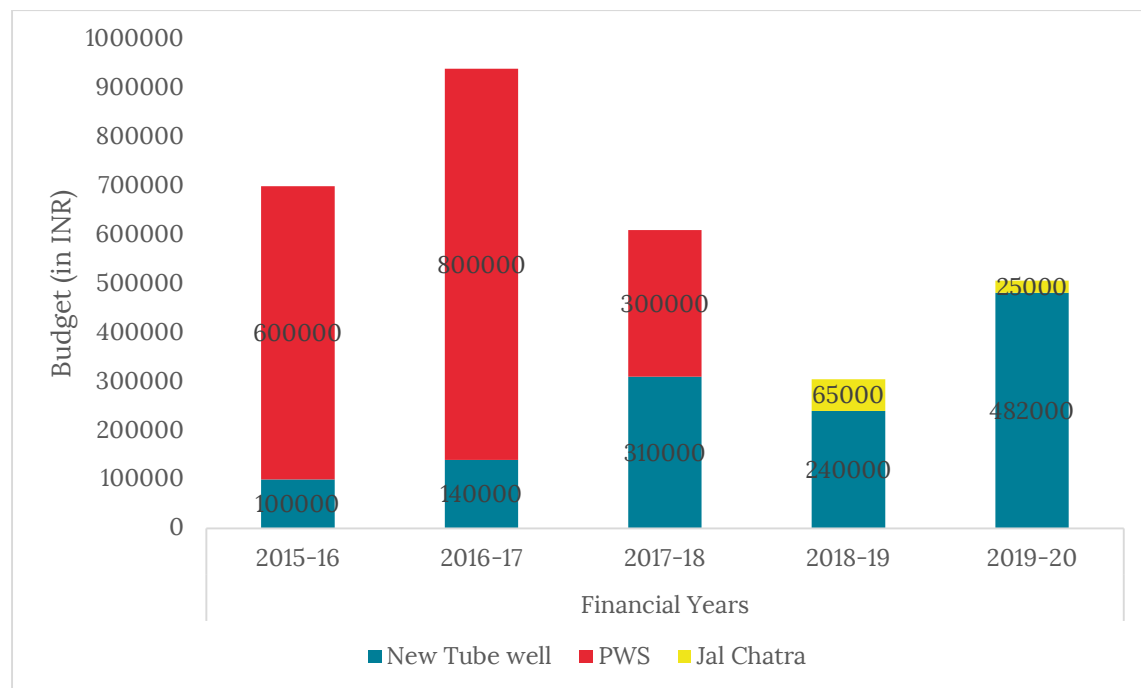
**Figure 8: Water supply budget of Kanamana GP (in INR)**



As per Figure 9, in Kanamana, the allocations for Capital Expenditure were primarily towards piped water supply in the first two years. Allocations for piped water supply can be argued to have pushed up the total allocations on capital expenditure in these two years (as shown in Figure 8). In FY 2017-2018, the allocation towards new tube wells was marginally higher than piped water supply.

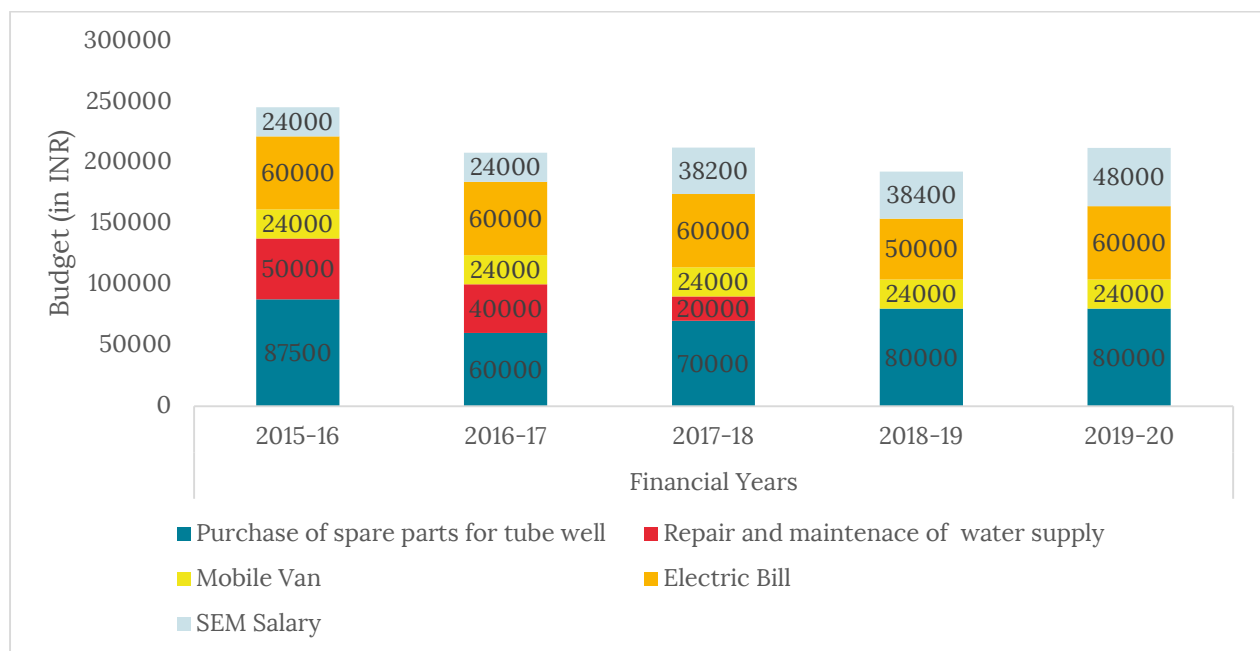
However, in the subsequent years, most capital expenditure was on new tube wells, followed by on Jal Chatras.

**Figure 9: Details of Capital Expenditure in Kanamana GP (in %)**



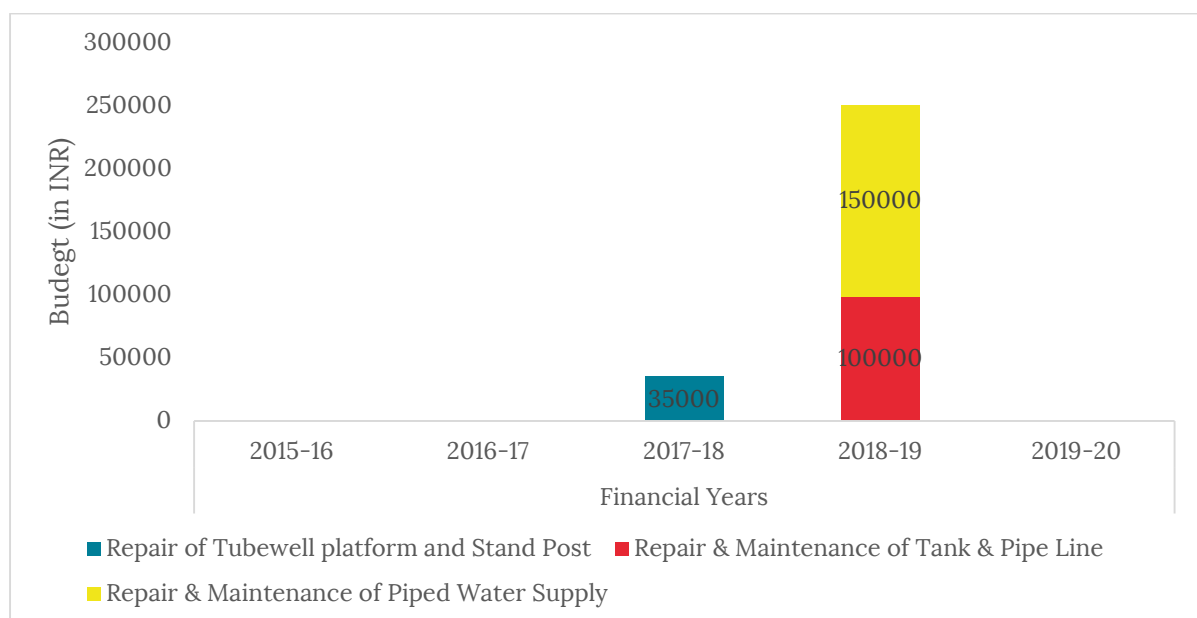
As seen in Figure 8, for **Operation and Minor Maintenance**, the budget allocated in Kanamana GP was at an average of Rs. 2,14,020 each year (varying between Rs.1,92,400 in FY 2018-19 and the highest in 2015-16 at Rs. 2,45,500). As per Figure 10, in all the years, purchase of spare parts comprised the major share of the budget allocations, followed by the electricity bill. The SEM salary budget share, as in figure 10, increased in actuals since FY 2015-16. This was because unlike other GPs, Kanamana had budgeted for two SEMs.

**Figure 10: Details of Expenditure on Operation and Minor Maintenance in Kanamana GP (in %)**



As seen in Figure 8, in Kanamana GP, allocations for **Capital Maintenance Expenditure** were made in two financial years – FY 2017-18 and FY 2018-19. These allocations were, specifically, for repair of tube well platforms and stand posts (in FY 2017-18), and repair and maintenance of PWS, and tank and pipelines (in FY 2018-19).

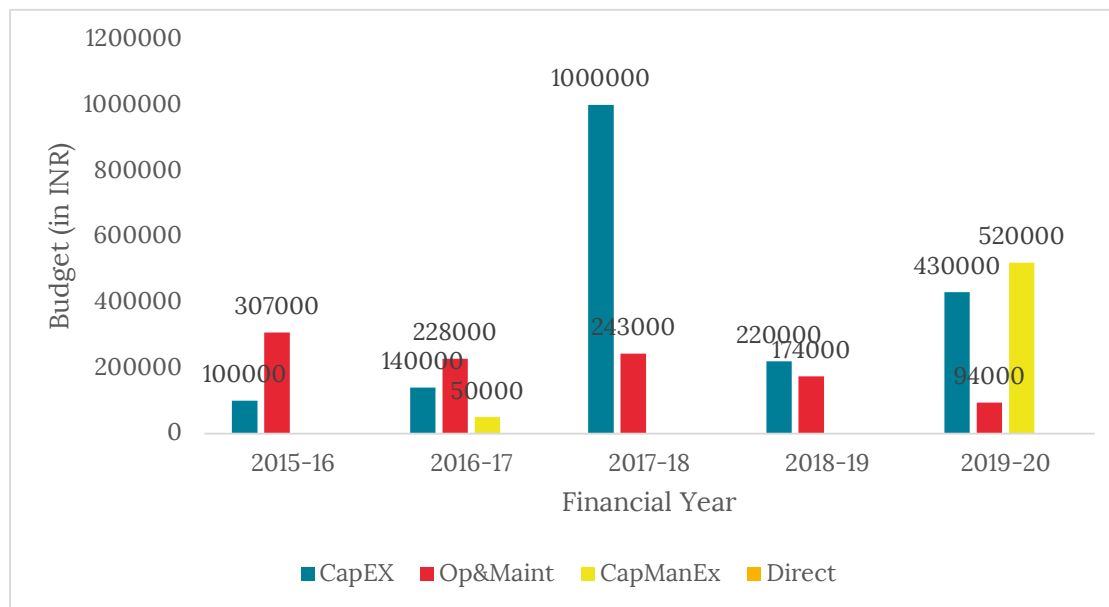
**Figure 11: Details of Capital Maintenance Expenditure in Kanamana GP (in %)**



## Podapadar GP

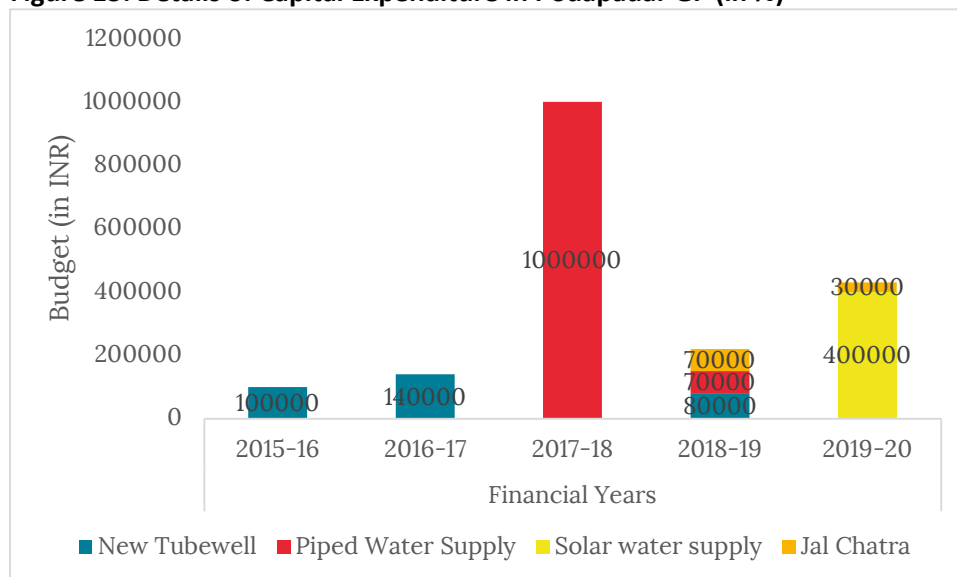
In Podapadar GP, allocations for **Capital Expenditure** were made across the five financial years, with the lowest at Rs 1,00,000 in FY 2015-16 and highest at Rs. 10,00,000 in FY 2017-18 (Figure 12).

**Figure 12: Water supply budget of Podapadar GP**



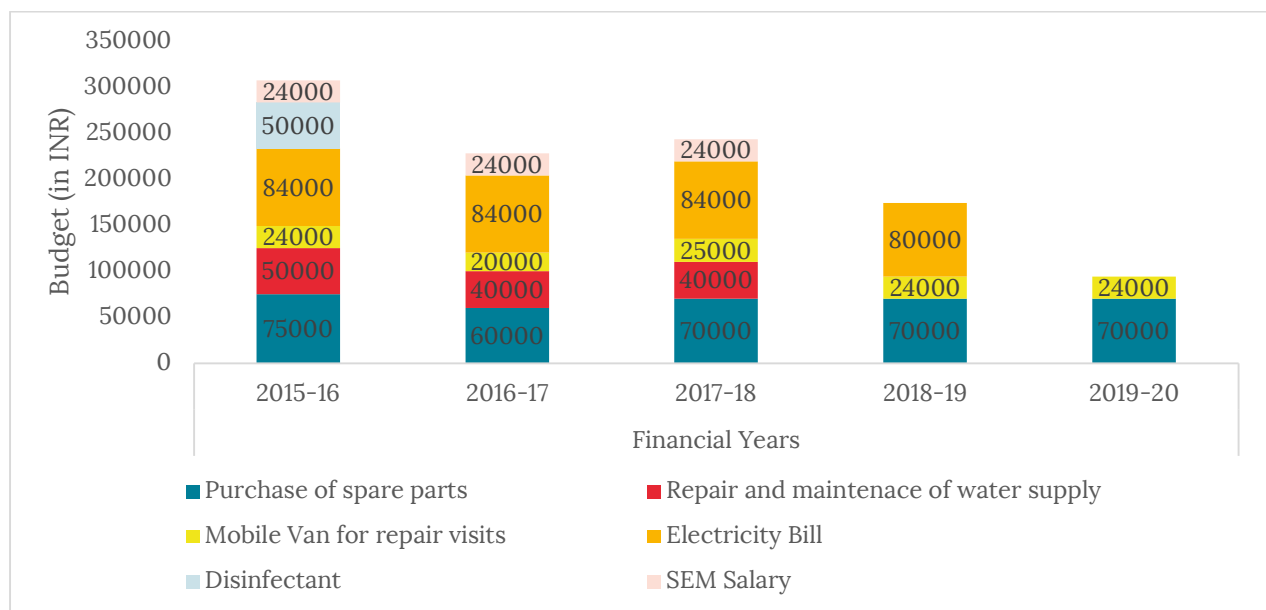
As shown in Figure 13, 100% of allocations for Capital Expenditure in the first two years were for tube wells. In the third year, the entire amount (of Rs. 10,00,000 – the highest amount allocated for capital expenditure in the five years) was allocated for piped water supply to support the state government scheme – BASUDHA. In FY 2018-19, capital expenditure was on tube wells, pipe water supply and Jal Chatras. In FY 2019-20, the majority (at 93%) of allocations on capital expenditure was on solar water pumps.

**Figure 13: Details of Capital Expenditure in Podapadar GP (in %)**



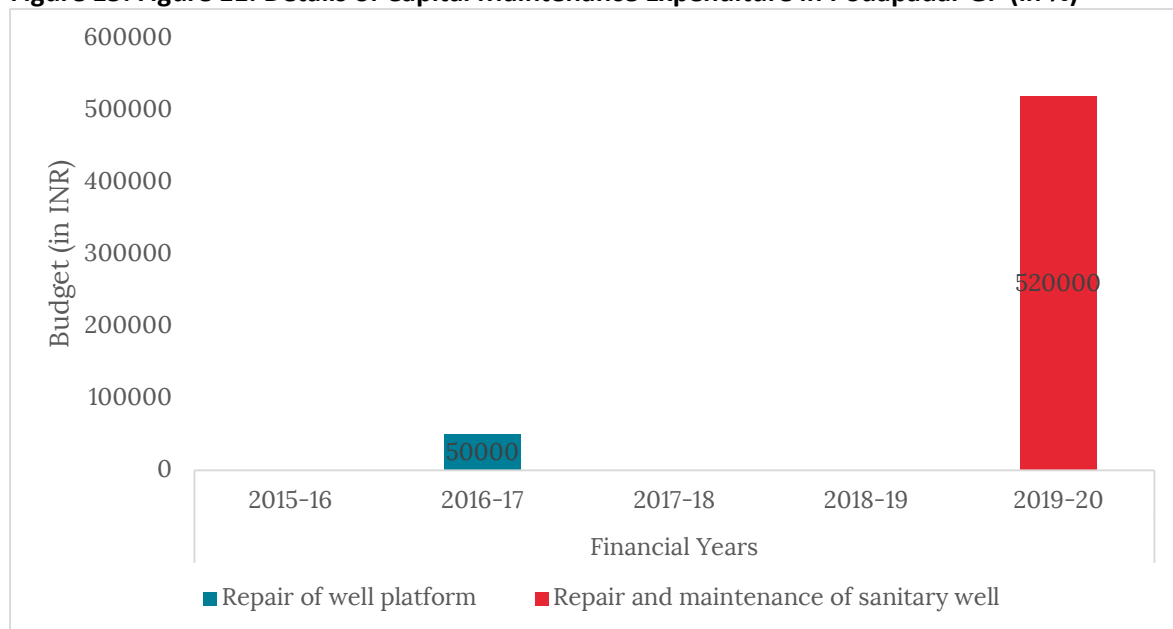
As seen in figure 12, in all the five years budget was allocated for **Operation and Minor Maintenance**, varying between Rs.94,000 (FY 2019-20) and Rs. 3,07,000 (FY 2015-16). Allocations for purchase of spare parts and the mobile van for repair visits were consistently made in all the five years. It is worth noting that no budget was allocated for the SEM in FY 2018-19 and FY 2019-20, and for the payment of the electricity bill in FY 2019-20 (Figure 14).

**Figure 14: Details of Expenditure on Operation and Minor Maintenance in Podapadar GP (in %)**



As seen in Figure 12, budget for **Capital Maintenance Expenditure** was allocated in FY 2016-17 and FY 2019-20. In fact, in FY 2019-20, the allocations for capital maintenance were higher than for capital expenditure or operations and minor maintenance. In FY 2016-17, it was earmarked for the repair of well platforms. In FY 2019-20, it was earmarked for the repair and maintenance of sanitary wells (Figure 15).

**Figure 15: Figure 11: Details of Capital Maintenance Expenditure in Podapadar GP (in %)**



### Additional information

1. We have not taken into account budget lines that include renovation of dug wells, for their use may include purposes other than domestic consumption (such as agriculture, fisheries, etc.).
2. We have differentiated between Operation and Minor Maintenance and Capital Maintenance Expenditure in the budget line description, the budget amount (bigger repair expenses such as

- Capital Maintenance Expenditure) and the frequency of the budget line across the financial years (bigger repairs being fewer in frequency as compared to routine repair and maintenance).
3. For the use of the mobile van and purchase of spare parts, the Gram Panchayat writes an annual cheque for the planned amount to the Block Committee at the beginning of the financial year.
  4. Similarly, for the installation of new systems, and major repair and maintenance, the Gram Panchayat writes a cheque in the name of Executive Engineer, Rural Water Supply and Sanitation, to carry out the work in the financial year.

## Conclusion

Across the 4 GPs, the annual allocations on water and sanitation services primarily comprised of Capital Expenditure and Operation and Maintenance (minor) Expenditure. 3 of the 4 GPs, in addition, allocated for Capital Maintenance (major) Expenditure. The budgeting for Capital Maintenance Expenditure in some of the GPs has been a positive change, as it shows due attention being given to the maintenance of existing assets. To avoid breakdowns or slippage in services, it is crucial that all GPs budget for routine and major maintenance. Timely budgeting for maintenance and repairs requires an understanding of the status of the assets. Thus, it is crucial that GPs maintain an asset register, updating the functionality status of the assets as well as the water quality parameters of the water points. This will help GPs to ensure preventive maintenance and reduce the downtime as well as the costs over the longer term.

It is extremely important that development of GP plans and the accompanying budgetary processes include community representation, including those from the marginalised sections, to ensure that the needs and demands of all are reflected. Further, GPs need to ensure transparency of funds, in terms of allocations as well as utilisation of the same, with community members.

In addition to addressing urgent needs, GP annual plans should also reflect the long-term goal for the GP such as water and sanitation services for all. For this purpose, it is important that GPs practice participatory visioning exercises.

## PUBLICATION SERIES

This paper on Analysis of Rural WASH Budget is part of the list of publications produced under the series - Decentralised Public Finance for WASH: Policy and Practice Learnings. This series has been jointly developed by CBGA, IRC and WaterAid India. As on date, the series comprises of the following titles:

- 1a. Mapping of Water & Sanitation Programs, Institutions and Fund Flow Architecture for Samastipur, Bihar. (December 2018)
- 1b. Mapping of Water & Sanitation Programs, Institutions and Fund Flow Architecture for Ganjam, Odisha. (December 2018)
2. Strengthening the Role of Rural Local Bodies in WASH Financing and Services: Policy Learnings from a Multi-Stakeholder Workshop. (March 2019)
- 3a. Tracking Budgets for Rural WATSAN: An Assessment of districts Gaya and Samastipur in Bihar, India. (April 2020)
- 3b. Tracking Budgets for Rural WATSAN: An Assessment of districts Ganjam and Nuapada in Odisha, India. (April 2020)
4. Central and State Finance Commission Grants to Panchayati Raj Institutions (PRIs): Implications for Financing of Rural WATSAN. (July 2020)
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7. Analysis of Rural WASH Budget: Findings from 4 Gram Panchayats of Ganjam district in Odisha, India. (July 2021)
  - Part 1: Allocations and Expenditure on Rural WASH
  - Part 2: Using the Life-Cycle Cost Approach to understand Rural WASH budget