

Country Name	The Project for Water Supply Service Improvement in the Mamminasata Metropolitan Area					
Republic of Indonesia						
I. Project Outline						
Background	<p>While the Mamminasata Metropolitan Area in South Sulawesi Province had been the largest urban area in eastern Indonesia and played a role of leading the economy of the region, water supply coverage of Makassar was about 70% and that of Maros, Gowa and Takalar was about 15% (as of 2005). Construction of water supply infrastructures was slower than the progress of urbanization, because non-revenue water ratio (NRW) was as high as 30% to 50% (as of 2005), burden of debt repayment was heavy, and water tariff was set too low, all of which made management of the regional water supply companies (Perusahaan Daerah Air Minum: PDAM) difficult and investment fund for water pipe renewal and expansion of service area could not be sufficiently allocated. Moreover, in small scale water treatment plants (WTPs), even fundamental equipment for water quality analysis was not installed and water was distributed without conducting water quality analysis. This low service quality deteriorated willingness to pay water tariff by residents and was the cause of high NRW ratio. Furthermore, there was no coordination mechanism for solving interregional issues among PDAMs in the Mamminasata Metropolitan Area.</p>					
Objectives of the Project	<p>Through strengthening inter-regional cooperation and coordination mechanism among PDAMs¹, their financial administration capacity and their technical capacity for NRW reduction, establishment of GIS² database and water quality management, the project aimed at enhancing capacity of PDAM staff for technical management and financial administration of water supply service in the Mamminasata Metropolitan Area, thereby contributing to improvement of capacity and quality of water supply service by PDAMs in the Area. The project objectives set forth are as follows:</p>					
	<ol style="list-style-type: none"> Overall Goal: Capacity and quality of water supply service by PDAMs in Mamminasata Metropolitan Area is improved. Project Purpose: Capacity of PDAM staff for technical management (O&M³) and financial administration of water supply service in Mamminasata Metropolitan Area is enhanced. 					
Activities of the Project	<ol style="list-style-type: none"> Project site: Mamminasata Metropolitan Area (Makassar City, a part of Maros Regency⁴, a part of Gowa Regency, and the entire Takalar Regency), South Sulawesi Province Main activities: (1) Establish inter-regional cooperation and coordination mechanism among four PDAMs; (2) Develop business plans of four PDAMs and conduct on-the-job trainings (OJT) on tariff collection efficiency, simulation on cost recovery of new investment and enhancement of customer satisfaction etc.; (3) Install master meters to measure accurate NRW ratio, conduct OJT on leak detection skills and techniques, and prepare and implement annual implementation plan for NRW reduction; (4) Establish GIS database in model areas of each PDAM, conduct OJT on effective use and maintenance of GIS database, and prepare and implement an implementation plan to expand GIS database to the whole water supply areas in each PDAM; and (5) Prepare water quality analysis equipment and guideline on water quality management (WQM), conduct trainings on water quality analysis, adjustment of chemical injection and WQM etc. 					
	<ol style="list-style-type: none"> Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Japanese Side <ol style="list-style-type: none"> Experts: 13 persons Trainees received in Japan: 17 persons Provision of equipment (computers for financial management, leak detector, flow meter, GIS server, GIS software, equipment for water quality analysis etc.) Overseas activities cost </td> <td style="width: 50%; vertical-align: top;"> Indonesian Side <ol style="list-style-type: none"> Staff allocated: Project Director, Project Manager, staff allocation for each field from each PDAM Land and facilities: office space with necessary facility and meeting rooms for trainings Local cost (counterparts' travel cost, installment cost and O&M cost of customer meters and water quality analysis equipment, and cost for electricity, water and internet connection in office space etc.) </td> </tr> </table> 					Japanese Side <ol style="list-style-type: none"> Experts: 13 persons Trainees received in Japan: 17 persons Provision of equipment (computers for financial management, leak detector, flow meter, GIS server, GIS software, equipment for water quality analysis etc.) Overseas activities cost
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Ex-Ante Evaluation	2009	Project Period	September 2009 to March 2012		Project Cost	432 million yen
Implementing Agency	<p>Project Managing Organization: Directorate General of Human Settlements, Ministry of Public Works and Housing Project Implementing Organization: Department of Spatial Planning and Settlement, South Sulawesi Provincial Government, four PDAMs in the Mamminasata Metropolitan Area</p>					
Cooperation Agency in Japan	Nagoya City Waterworks & Sewerage Bureau, Okayama City Waterworks Bureau, Nihon Suido Consultants Co., Ltd., KRI International Corp.					

II. Result of the Evaluation**I Relevance**

<Consistency with the Development Policy of Indonesia at the time of ex-ante and project completion>

¹ In the Mamminasata Metropolitan Area, each PDAM in Makassar City, Maros Regency, Gowa Regency, and Takalar Regency is responsible for water supply services (there are four PDAMs in total in the Area).

² GIS = geographical information system

³ O&M = operation and maintenance

⁴ In this report, kabupaten is always translated to "regency", while it is translated to "district" in some reports.

The project was consistent with Indonesia's development policy on 'redressing regional disparity' and 'promoting improved management of PDAMs' as set forth in "National Medium Term Development Plan (RPJMN) (2005-2009)", "PDAM Health Program 2007" and "RPJMN (2010-2014)" etc. at the time of both ex-ante evaluation and project completion.

<Consistency with the Development Needs of Indonesia at the time of ex-ante and project completion>

The Mamminasata Metropolitan Area was one of national strategic regions in Indonesia in terms of spatial management, and enhancement of water supply coverage and improvement of water supply service including improvement of water quality were important issues related to urban development of the Area at the time of both ex-ante evaluation and project completion. Thus, this project was consistent with the local needs.

<Consistency with Japan's ODA Policy at the time of ex-ante evaluation>

The project was consistent with Japan's ODA policy, as stated in "the Country Assistance Program for Indonesia (2004)", which prioritized 'creation of a democratic and fair society'. 'Poverty reduction' and 'governance reform' were regarded important for 'creation of a democratic and fair society', and this project was consistent with the aim, as it was to support eastern Indonesia where poverty rate was high and to develop the capacity of PDAMs.

<Evaluation Result> In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for Project Purpose at the time of Project Completion>

The Project Purpose was mostly achieved by the time of project completion. Performance indicators showed improvement compared to before project implementation in all or three out of the four target PDAMs regarding cost recovery ratio, water tariff collection ratio, NRW ratio and the number of connections, and the water quality compliance rate was higher than the target in eight out of 12 WTPs targeted under this project (Indicator 1). Counterparts of all PDAMs utilized the water tariff calculation manual, the guideline for WQM and Standard Operation Procedures (SOP) prepared under the project in their daily water supply activities (Indicator 2).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have mostly been maintained since project completion. By the time of ex-post evaluation, the improved performance indicators have been maintained and/or further improved in all PDAMs regarding water tariff collection ratio, NRW ratio and the number of connections, and cost recovery ratio has been maintained and/or further improved in three out of the four PDAMs. The water quality compliance rate was above the target in eight plants, below the target in two plants, and the data was not available in two plants. Trained skills and techniques, such as GIS, tools for leakage detection, replacement of water meters, and water quality control etc., have been utilized in O&M works of water supply service in PDAMs since project completion.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal was partially achieved at the time of ex-post evaluation as Indicator 2 was not verified about more than a half of the WTPs in the Mamminasata Metropolitan Area⁵. The piped drinking water service coverage in the Mamminasata Metropolitan Area in 2015 is expected to be approximately 52%, calculated based on the annual increasing rate of water service coverage in the Area from 2012 to 2014, which is 91% of the national target (57.4%) (Indicator 1). Among 12 WTPs directly targeted by the project, the actual compliance rate of water quality is 60% to 63% of target in two plants, while the rate is over 80% of target in eight plants in 2014 (data is not available in two plants). For additional 28 WTPs in the Mamminasata Metropolitan Area, actual compliance rate is available only in four WTPs, and thus the compliance situation among non-project targeted WTPs is not clear. However, actual compliance rate in these four WTPs is 100% in 2014 (Indicator 2). Water quality is based on the standard from Ministry of Health of the Republic of Indonesia, which is turbidity 5NTU, 6.5<pH<8.5 (Indicator 3).

<Other Impacts at the time of Ex-post Evaluation>

The project activities and the strengthened capacity of resource persons have contributed to the "Center of Excellence (COE) program" which is currently implemented by the Ministry of Public Works and Housing (PU) in selected provinces including the South Sulawesi Province. All of the four PDAMs targeted by this project were categorized as "healthy" PDAMs, which is meant that they are regarded as trainers of "Trainings-of-Trainers (TOT)" by the Directorate General of Human Settlement (DGHS) of PU⁶.

<Evaluation Result> Targets set in indicators for the Project Purpose were mostly achieved, and project effects have been mostly maintained after project completion. The degree of achievement of the Overall Goal is partial at the time of ex-post evaluation: although the piped drinking water service coverage nearly achieved the target, the impact of this project on water quality of the other WTPs than those directly targeted under this project was not fully confirmed due to limited availability of data. Therefore, effectiveness and impact of the project are fair.

3 Efficiency

The project cost was higher than planned (ratio against the plan: 117%) and the project period was as planned (ratio against the plan: 100%). The project cost exceeded the planned cost due to the price escalation during the project implementation. Therefore efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

RPJMN (2015-2019) states that Indonesia should achieve 100% access to safe drinking water by 2019, and development of regional water supply system is put on the priority project list (BLUEBOOK) for future foreign loan project.

<Institutional Aspect>

At the time of ex-post evaluation, the number of staff is 517 in PDAM Makassar, 101 in PDAM Maros, 141 in PDAM Gowa and 80 in PDAM Takalar. The current number of staff in all PDAMs is sufficient, as there is no case where necessary tasks of water supply services including NRW reduction, GIS database expansion, water quality management, and water tariff collection etc. are not conducted appropriately due to a lack of manpower.

⁵ In this evaluation, the Project Purpose-level effects were assessed about the 12 WTPs that were directly targeted under this project, and the Overall Goal-level effects (impacts) were assessed about the mentioned 12 WTPs plus the 28 other WTPs operated in the Mamminasata Metropolitan Area.

⁶ In the COE Program, DGHS provides Trainings-of-Trainers (TOT) to selected staff of "Healthy" PDAMs and these trained trainers give trainings to other PDAMs back in their home province. The Program started in two provinces (South Sulawesi and South Sumatra) in 2012, and was extended to another province (Bali) in 2013. Since 2014, the Program has been implemented in all province except a few.

The draft agreement on the inter-regional cooperation and coordination mechanism among PDAMs, which was considered to be important to increase the service population in the Mamminasata Metropolitan Area, was prepared under the project. Regarding agreements on water supply to areas under another PDAM, agreements were concluded between Gowa and Takalar and between Makassar and Takalar during the project implementation period (there has not been occasions of actually supplying water between Makassar and Takalar yet). In addition, although an agreement has not been concluded, water is supplied between Makassar and Gowa as a result of this project.

Regarding the agreement on area-wide water supply under the initiative of the provincial government, on the other hand, the head of the regional technical implementation unit (UPTD) for the Mamminasata Metropolitan Area, which is in charge of coordination among local governments, explained that the UPTD water supply in charge of planning and implementation of water supply projects in the Mamminasata Metropolitan Area has not been established yet. However, Makassar City and the three regencies have already signed the agreement, and the decision by the provincial parliament is being awaited. Also, as shown in the Attachment, actual number of connections in the Area has increased since project completion and is over 90% of the planned number in 2014 in all PDAMs. Therefore, while the implementation of the "area-wide water supply under the initiative of the provincial government" might be needed in the long-term, the current institutional setting including inter-regional cooperation and coordination among individual PDAMs is sufficient for maintaining water supply in the area at present and in the foreseeable future. In addition, the four PDAMs play a role in interregional coordination as they are members of the South-west Sulawesi branch of the Indonesian Water Supply Companies Association (PERPAMSI) with the PDAM Gowa as the branch head and the PDAM Makassar as the branch secretary, as well as the two other PDAMs playing central roles of the branch.

<Technical Aspect>

Project counterparts still work in four PDAMs at the time of ex-post evaluation. The current skill level of staff is sufficient in the PDAMs. Training materials and manuals prepared under the project have been utilized in daily works, and trainings have periodically been conducted on GIS, NRW, water tariff etc. in four PDAMs, although the number of trainees is small (several persons/PDAM/ year). A problem of equipment was found in PDAM Maros: there is a technical problem with GIS, as the server was damaged by a flood and satellite image is limited. The measures such as use of the backed-up data in another computer have been taken, and more fundamental solutions such as replacement of the server is being considered.

<Financial Aspect>

The annual income amount in PDAMs at the time of ex-post evaluation is approximately 260 billion Rupiah in Makassar, approximately 15 billion Rupiah in Maros, approximately 25 billion Rupiah in Gowa and approximately 11 billion Rupiah in Takalar. The current income amount in four PDAMs is sufficient to conduct necessary tasks of water supply services in the Mamminasata Metropolitan Area, as the cost recovery ratio is higher than 100% in all PDAMs except Takalar, where expenditure exceeds income due to increase in operation and maintenance expenditures and inclusion of depreciation in expenditure. The other performance indicators for the Project Purpose also show good financial status of the PDAMs (see Indicator 1 for the Project Purpose in the table below).

<Evaluation Result> No major problems have been observed in the policy, institutional and financial aspects. In the technical aspect, a problem of equipment has been observed in one of the four PDAMs, and the countermeasures are being taken. Therefore, sustainability of effects of the project is high.

5 Summary of the Evaluation

The targets set in indicators for the Project Purpose were mostly achieved, and project effects have been mostly maintained after project completion. The degree of achievement of the Overall Goal is partial at the time of ex-post evaluation, as impact of this project on water quality of the other WTPs than directly targeted under this project was not fully confirmed, although the piped drinking water service coverage nearly achieved the target. In terms of sustainability, no major problems have been observed in the policy, institutional and financial aspects, and a problem of equipment in one of the PDAMs is being addressed. For efficiency, the project cost exceeded the plan.

In light of the above, this project is evaluated to be Satisfactory.

III. Recommendations & Lessons Learned

<Recommendations for Implementing Agency>

For drastic decrease of water leakage, rehabilitation and replacement of aged pipes are necessary, especially in case of PDAM Makassar. Although most of the PDAMs still face budget constraint to make such investment, the cost-effective measures for decreasing the water loss from the water supply system should be implemented by PDAMs thoroughly, and the revision of water tariff should be considered by local government to increase cost recovery ratio along with public campaigns to enlighten the customers on its necessity. The water income may be increased by the larger coverage of piped water supply services through implementation of the Mamminasata Metropolitan area-wide water supply projects, while the above issues shall be examined thoroughly at the time of formulation of the project.

<Lessons Learned for JICA>

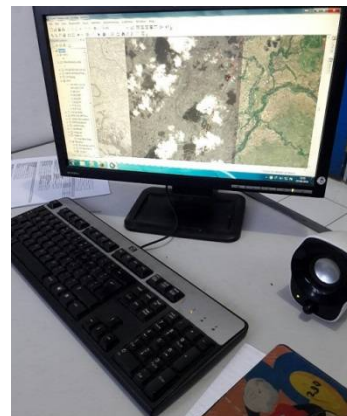
At the formulation stage of technical cooperation project, the establishment of the dissemination mechanism of the project's effect across the country is often included in the project activities, while unfortunately it does not always show the effect as expected. Therefore, in this project, it was not intended to disseminate the outputs of the project to the other PDAMs considering the limited project period. However, after the completion of the project, particular PDAMs that were targeted under the technical cooperation were fit into the mechanisms such as the new training programs of the central government and the information sharing mechanism through existing organization such as PERPAMSI, and consequently led to outcomes beyond those targeted PDAMs. From this, it is learned that positive considerations of coordination with other programs and existing organizations are utmost effective to disseminate the outputs of the project and important for achieving maximum outcomes from limited time and inputs of a single project.



New reservoir and water treatment plant of PDAM Gowa



Monitoring System newly procured by PDAM Makassar



GIS Database installed by the Project (PDAM Takalar)

Attachment

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results																																																																																																																																																																																		
<p>(Project Purpose) Capacity of PDAM staff for technical management (O&M) and financial administration of water supply service in Mamminasata Metropolitan Area is enhanced.</p>	<p>1. Performance indicators related to management and O&M are improved. (The indicators are to be determined within three months from the commencement of the project from candidates like cost recovery ratio, number of connections, number of days meeting water quality standard, and so on)</p> <p>(supplemental information) Indicators used for ex-post evaluation are (1) cost recovery ratio, (2) water tariff collection ratio, (3) NRW ratio, (4) number of connections and (5) water quality.</p>	<p>Status of achievement: Mostly achieved (mostly continued)</p> <p>(1) Cost recovery ratio (%)⁽¹⁾</p> <table border="1" data-bbox="667 745 1481 1081"> <thead> <tr> <th rowspan="2">Year</th> <th colspan="2">Makassar</th> <th colspan="2">Maros</th> <th colspan="2">Gowa</th> <th colspan="2">Takalar</th> </tr> <tr> <th>Plan</th> <th>Actual</th> <th>Plan</th> <th>Actual</th> <th>Plan</th> <th>Actual</th> <th>Plan</th> <th>Actual</th> </tr> </thead> <tbody> <tr><td>2007</td><td>-</td><td>92</td><td>-</td><td>75</td><td>-</td><td>93</td><td>-</td><td>77</td></tr> <tr><td>2008</td><td>-</td><td>93</td><td>-</td><td>86</td><td>-</td><td>108</td><td>-</td><td>83</td></tr> <tr><td>2009</td><td>84</td><td>94</td><td>80</td><td>78</td><td>93</td><td>105</td><td>96</td><td>78</td></tr> <tr><td>2010</td><td>87</td><td>89</td><td>92</td><td>97</td><td>94</td><td>104</td><td>96</td><td>76</td></tr> <tr><td>2011</td><td>93</td><td>108</td><td>95</td><td>105</td><td>95</td><td>93</td><td>104</td><td>75</td></tr> <tr><td>2012</td><td>140</td><td>170</td><td>105</td><td>103</td><td>100</td><td>101</td><td>127</td><td>66</td></tr> <tr><td>2013</td><td>160</td><td>170</td><td>101</td><td>99</td><td>100</td><td>98</td><td>133</td><td>61</td></tr> <tr><td>2014</td><td>160</td><td>170</td><td>103</td><td>100</td><td>100</td><td>105</td><td>160</td><td>54</td></tr> </tbody> </table> <p>(Project Completion) The actual ratio was improved in 2010 and/or 2011 compared with that of 2007 (before project) in all PDAMs except for Takalar, because the depreciation rate was revised to a large degree in Takalar. PDAM Takalar possessed facilities mostly constructed using subsidy and the depreciation of these facilities was recorded as expense, which affected the cost recovery ratio.</p> <p>(Ex-post Evaluation) Improved cost recovery ratio has been maintained and/or further improved in all PDAMs except for PDAM Takalar, which has shown the decreasing trend due to increasing O&M cost including electricity cost, employee remuneration and chemical materials cost, in addition to inclusion of depreciation. The reason for the large increase in Makassar PDAM after 2012 is due to the revision of water tariff (partial increase) in June 2011.</p> <p>(2) Water tariff collection ratio (%)⁽²⁾</p> <table border="1" data-bbox="651 1529 1497 1865"> <thead> <tr> <th rowspan="2">Year</th> <th colspan="2">Makassar</th> <th colspan="2">Maros</th> <th colspan="2">Gowa</th> <th colspan="2">Takalar</th> </tr> <tr> <th>Target</th> <th>Actual</th> <th>Target</th> <th>Actual</th> <th>Target</th> <th>Actual</th> <th>Target</th> <th>Actual</th> </tr> </thead> <tbody> <tr><td>2007</td><td>90</td><td>86</td><td>64</td><td>76</td><td>81</td><td>94</td><td>78</td><td>83</td></tr> <tr><td>2008</td><td>90</td><td>89</td><td>66</td><td>82</td><td>89</td><td>88</td><td>82</td><td>83</td></tr> <tr><td>2009</td><td>90</td><td>94</td><td>82</td><td>88</td><td>89</td><td>97</td><td>85</td><td>93</td></tr> <tr><td>2010</td><td>90</td><td>96</td><td>88</td><td>84</td><td>94</td><td>95</td><td>85</td><td>92</td></tr> <tr><td>2011</td><td>93</td><td>96</td><td>90</td><td>82</td><td>96</td><td>110</td><td>92</td><td>99</td></tr> <tr><td>2012</td><td>95</td><td>95</td><td>82</td><td>99</td><td>75</td><td>89</td><td>85</td><td>94</td></tr> <tr><td>2013</td><td>96</td><td>93</td><td>84</td><td>99</td><td>75</td><td>94</td><td>85</td><td>94</td></tr> <tr><td>2014</td><td>95</td><td>98</td><td>85</td><td>97</td><td>75</td><td>97</td><td>85</td><td>81</td></tr> </tbody> </table> <p>(Project Completion) The actual ratio in 2011 was improved from that of 2007 (before project) in all PDAMs. Moreover, the actual ratio was higher than the target ratio in 2011 in all PDAMs except for PDAM Maros. The target was not achieved in Maros due to the unpaid bills of the large customers (Air force, Military, Police) in 2011. These large customers paid their 2011 water bills in 2012. The actual collection ratio in 2011 would be 90% if it includes the payment made by the large consumers in 2012. Similarly, the actual in Gowa in 2011 includes the amount paid in that year for the bills issued in the previous year.</p> <p>(Ex-post Evaluation) The improved water tariff collection ratio of all PDAMs has been</p>	Year	Makassar		Maros		Gowa		Takalar		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	2007	-	92	-	75	-	93	-	77	2008	-	93	-	86	-	108	-	83	2009	84	94	80	78	93	105	96	78	2010	87	89	92	97	94	104	96	76	2011	93	108	95	105	95	93	104	75	2012	140	170	105	103	100	101	127	66	2013	160	170	101	99	100	98	133	61	2014	160	170	103	100	100	105	160	54	Year	Makassar		Maros		Gowa		Takalar		Target	Actual	Target	Actual	Target	Actual	Target	Actual	2007	90	86	64	76	81	94	78	83	2008	90	89	66	82	89	88	82	83	2009	90	94	82	88	89	97	85	93	2010	90	96	88	84	94	95	85	92	2011	93	96	90	82	96	110	92	99	2012	95	95	82	99	75	89	85	94	2013	96	93	84	99	75	94	85	94	2014	95	98	85	97	75	97	85	81
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maintained and/or further improved through establishing more payment points and intensifying the collection activities by employing more collectors. The reasons for the large increase in Maros after 2013 and the decrease in Takalar in 2014 were not available.

(3) NRW ratio (%)

Year	Makassar	Maros	Gowa	Takalar
2010	48.0	41.6	42.8	31.2
2011	48.7	37.3	40.4	31.0
2012	49.7	35.2	38.4	20.9
2013	47.4	29.7	33.6	19.9
2014	44.2	34.5	30.6	18.0

(Project Completion) NRW ratio of the whole water supply areas of four PDAMs was gradually decreased in 2011 from the previous year except for Makassar. It should be noted that the scope of NRW reduction activities within this project was limited to the pilot districts, and NRW ratio of each pilot district was largely reduced by approximately 17% on average.

(Ex-post Evaluation) The improved NRW ratio of all PDAMs has been maintained and/or further improved through countermeasures for the physical leakage, replacement of old or broken water meters, improving customers' recording system, and relocation of ineffective and leakage-prone networks. In Takalar, the ratio significantly decreased after 2012, following the replacement of old pipes with new ones through grant assistance projects by the central government in 2008-2013.

(4) Number of connections

Year	Makassar		Maros		Gowa		Takalar	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
2007	-	135,013	-	7,477	-	11,092	-	2,623
2008	-	140,457	-	8,441	-	12,714	-	3,344
2009	146,110	146,658	9,341	9,375	14,314	12,954	4,994	4,909
2010	154,860	150,281	10,341	9,755	15,814	14,771	6,395	6,065
2011	163,110	154,500	11,341	10,424	17,314	18,418	7,490	7,239
2012	163,259	158,779	11,210	11,050	19,635	20,555	11,025	11,038
2013	165,504	160,439	11,850	12,127	24,555	23,399	12,622	12,554
2014	176,665	162,984	12,898	13,524	27,399	27,734	16,925	15,608

(Project Completion) Actual number of connections increased since 2007 and was over 90% of the planned number in 2010 and 2011 in all PDAMs.

(Ex-post Evaluation) Actual number of connections has increased since project completion and is over 90% of the planned number in 2014 in all PDAMs. The coverage of pipelines digitized in GIS database has also increased in all PDAMs since project completion.

(5) Water quality

(Project Completion) The compliance rate of water quality was calculated under the project by the number of days meeting the water quality standard divided by the number of days in one target year⁽³⁾. The actual compliance rate in eight out of 12 WTPs targeted under the project was higher than the target, while that in the remaining four plants (one in Maros and three in Gowa) was lower than 80% of the target (32% to 79% of target) in 2011.

(Ex-post Evaluation) The actual compliance rate is over 80% of the target in eight plants, and lower than 80% of the target (60% to 63% of target) in two plants in 2014, due to insufficient use of coagulant chemical or non-regular measurement (i.e. sometimes, testing is not conducted and the result is recorded as zero, which lowers the average value). Data is not available in two plants in 2014 due to sometimes insufficient communication between the laboratory and the plants).

2. Trained skill and techniques are utilized in routine management and O&M works of water supply service.

Status of achievement: Achieved (continued)

(Project Completion) Counterparts of four PDAMs utilized the water tariff calculation manual prepared under the project in calculating the water tariff for 2011 and 2012. Also, the guideline for WQM and SOP prepared under the project were utilized in daily activities.

(Ex-post Evaluation) The four PDAMs listed activities such as GIS, tools for leakage detection, replacement of water meters, and water quality control etc., as the skills and techniques they have kept utilizing since project completion.

(Overall Goal) Capacity and quality of water

1. Served population is increasing to the national target level (57.4% piped drinking water services

Status of achievement: Mostly achieved

(Ex-post Evaluation) The piped drinking water service coverage ratio in the Mamminasata Metropolitan Area in 2014 was 47.6% on average, however, the ratio in 2015 is not available. As

supply service by PDAMs in Mamminasata Metropolitan Area is improved.	coverage by the year 2015).	<p>the annual increasing rate in the Area from 2012 to 2014 is approximately 10%, the ratio in the Area in 2015 is expected to be approximately 52%, which is 91% of the national target (57.4%). Each PDAM explained about budget allocation as follows: in Makassar, neither national nor regional budget has been allocated, and it has relied on its own budget for expansion of pipe networks; in Gowa, national budget has been allocated every year for the construction of IKK (sub-district WTP) and local budget has been allocated for expansion of pipe networks, though the budget amount has not been sufficient to cover all parts of Gowa; in Maros and Takalar, sufficient amount of national and regional budget (province and district) has been allocated for development of water supply infrastructures (the actually allocated amount in each PDAM is not available).</p> <p style="text-align: center;">Piped drinking water service coverage ratio (%)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Year</th> <th>Makassar</th> <th>Maros</th> <th>Gowa</th> <th>Takalar</th> <th>Mamminasata</th> </tr> </thead> <tbody> <tr> <td>2012</td> <td>67.0</td> <td>53.4</td> <td>19.2</td> <td>18.0</td> <td>39.4</td> </tr> <tr> <td>2013</td> <td>69.0</td> <td>55.0</td> <td>23.8</td> <td>27.0</td> <td>43.7</td> </tr> <tr> <td>2014</td> <td>71.0</td> <td>59.4</td> <td>27.8</td> <td>32.0</td> <td>47.6</td> </tr> </tbody> </table>	Year	Makassar	Maros	Gowa	Takalar	Mamminasata	2012	67.0	53.4	19.2	18.0	39.4	2013	69.0	55.0	23.8	27.0	43.7	2014	71.0	59.4	27.8	32.0	47.6
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	2. Results of daily treated water quality test always satisfy water quality standard.	<p><u>Status of achievement: Partially achieved</u> (Ex-post Evaluation) For 12 WTPs targeted under the project, see Indicator 1 of Project Purpose ((5) Water quality). In addition to these 12 plants, there are two more WTPs in Makassar, eight more WTPs in Maros, ten more WTPs in Gowa and eight more WTPs (six WTPs and two water supply facilities) in Takalar at the time of ex-post evaluation (28 more WTPs in total). Water quality test is conducted daily in all these WTPs except for one WTP in Gowa (Parangloe plant), where water quality test is not conducted because the equipment provided by JICA has been broken (PDAM Gowa is under process of new procurement). Actual compliance rate of water quality of these WTPs is available only in four out of 28 additional WTPs (two WTPs in Makassar and two water supply facilities in Takalar), and the rate in these four WTPs is 100% in 2014.</p>																								
	3. Water quality is based on standard from Ministry of Health of the Republic of Indonesia.	<p><u>Status of achievement: Achieved</u> (Ex-post Evaluation) The standard values used (national standard) are turbidity 5NTU, 6.5<pH<8.5, which are the same as those used during project implementation.</p>																								

Source : Terminal Evaluation Report, Project Completion Report, Questionnaire survey to PDAMs.

Note: (1) Cost recovery ratio is calculated by (Water Revenue + Non Water Revenue) / (Direct Cost + Non Direct Cost). (2) In PDAM Gowa and Takalar, water tariff collection rate was calculated by dividing total collected amount from January to December of each year by the total billed amount for the same year. This collected amount also includes the amount paid in that year for the bills issued in the previous year, thus putting the collection rate of PDAM Gowa to 110% in 2011. In PDAM Makassar and Maros, the collection rate was calculated utilizing only the collected amount against the bills issued from January to December. (3) Compliance rates are calculated with days whose both turbidity and pH complied (as numerator) and days in the target period (as denominator), which means that days without measurement or with only one complied parameter are treated as “not complied”.