WATER GLOBAL PRACTICE

Review of Armenia's Experience with Water Public-Private Partnerships

Philippe Marin,
Dambudzo Muzenda,
and Andranik Andreasyan

WORLD BANK GROUP

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This report was written by Philippe Marin (Senior Water and Sanitation Specialist) and Dambudzo Muzenda (Water and Sanitation Specialist)—both of the World Bank's Water Global Practice—with Andranik Andreasyan, the former Chairman of the State Committee for Water Economy (SCWE) whose tenure ran through most of the water PPP reform. It is largely based on an extensive background paper written by Andranik Andreasyan. Patrick Lorin, former SAUR Managing Director of the Armenian Water and Sewerage Company (AWSC), also contributed a background paper from the private operator's perspective. Both Andranik Andreasyan and Patrick Lorin provided substantial comments and additional inputs during the drafting stage, for which the authors are grateful. Mr. Arsen Harutyunyan (current Chairman of the SCWE) and his team's willingness to provide access to their data is gratefully acknowledged. In addition, Vahram Avanesyan, Melik Gasparyan, and other key staff of AVAG Solutions Ltd (Armenia) provided useful data and valuable inputs for the report. A number of background documents, listed in the bibliography, were also consulted.

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Executive Summary

Armenia's 16 years of experience with public-private partnerships (PPPs) in the water sector is a rich illustration of how partnering with private operators in a well thought out manner can improve water services in a developing country. The government took a phased and cautious approach to the PPP reform, gradually increasing the geographical scope of the PPPs as well as the level of transfer of risks to private operators. It began in 2000 with a 5-year management contract in the capital city Yerevan, and in 2006 transitioned to a more complex, 10-year lease contract in Yerevan, while initiating additional management contracts to manage water services in secondary cities and towns in the rest of the country.

Water Services Challenges before PPPs

The decade following independence from Soviet rule in 1991 saw the introduction of liberal, market-oriented policies but the needs of the water sector remained largely unaddressed. By 2000, 60 percent of the water mains and connections in Yerevan were 30 to 40 years old and in very bad shape, a situation exacerbated in Yerevan and Shirak by the impact of the devastating 1988 earthquake on the distribution network. The average daily water supply in 1998 was 6 hours in most parts of the country, including Yerevan, and breakdowns in supply were common. Tariffs covered only 30 percent of operations and maintenance (O&M) costs and central budget allocations had to fill the gap. There were also administrative and managerial gaps within the water utilities, namely Yerevan Water and Sewerage Enterprise (YWSE),[1] Armenia State Water Company (ASWC),[2] and municipal utilities in the regions of Nor Akunq, Shirak, and Lori. Recognizing the challenges and limitations of public service provision, the government of Armenia decided to introduce private sector participation, starting with Yerevan in 2000.

Creating an Enabling Environment for Water PPPs

Throughout the reform, the government exerted significant effort, with donors' support, to create an environment conducive to successful PPPs. The National Assembly passed some 20 new legal acts regarding water metering, billing, revenue collection, taxation, and other financial matters to support the PPP program and the move toward financial sustainability and operational efficiency. Another important step was the creation of the State Committee for Water Economy (SCWE) to serve as the central body for water sector management. In addition, the government established project monitoring units (PMUs) to monitor the implementation of projects and the performance of PPP contracts.

Careful PPP Contract Preparation and Tendering

The government, together with its development partners, spent considerable effort preparing for the PPP contract and sought external support as needed. In both the Yerevan and AWSC

management contracts, preparation took 2 years. Tendering for all contracts was satisfactory. The specific terms across all contracts showed significant similarities, suggesting a cross-fertilization of lessons learned with each successive contract. All contracts included clauses for amendments and extensions, which were applied in all cases. In addition, all contracts obliged the private partner to implement donor-funded capital expenditure (capex) programs. All the management contracts included a fixed fee for the contractor and a variable fee based on incentive payments (bonuses and penalties). While the number and type of key performance indicators (KPIs) differed (93 for the Yerevan management contract, 10 for the regional utilities), all contracts included a few core indicators: duration of water supply; collection of fees; and installation of water meters. Staff productivity, water losses, and electricity consumption were also common indicators.

Implementation of the Capex Program under the PPPs

Under the successive management contracts and the Yerevan lease contracts, financing for capital works was provided by the government of Armenia through loan programs with its development partners. **An important feature of the various PPP schemes is that the private operators were left with significant flexibility and control in the execution of the capital works**, under the supervision of the SCWE, an arrangement which facilitated the prompt implementation of the investment programs. Overall, the amount of capex spent on a per capita basis differed significantly between the various water PPPs: ranging from about $5-6 per year for the Yerevan management contract and lease, to $24 and $30 per year for the management contracts for AWSC and the three regional utilities respectively.

The Successive Water PPPs Achieved Strong Improvements in Services Quality and Efficiency

The series of water PPP contracts across the country, implemented over a 16-year period, led to major improvements in operational performance, service quality, and the financial situation of the water sector. The quality of water services improved considerably, with continuous 24/7 water supply achieved in most of Yerevan by 2015, and a significant increase in the average number of service hours in secondary cities and towns. These improvements were essential to getting water systems across the country out of the vicious circle of intermittent supply, accelerated deterioration of networks, dubious quality of drinking water, poor customer satisfaction, and low willingness to pay for water bills. In addition, improved customer service and modern commercial practices were introduced and billing based on actual, metered consumption became widespread.

Operational efficiency was also significantly enhanced, especially through **remarkable improvements in energy efficiency, bill collection,** and **labor productivity**—although there was little or no improvement in the reduction of water losses as measured by the non-revenue water (NRW) indicator. However, this lack of improvement in NRW was not due to poor

performance of the private operators, but to the following factors: (i) the direct impact of reducing intermittent supply (which increases the average pressure in the network); (ii) the shortage of funds to rehabilitate dilapidated networks; and (iii) the availability of plentiful and cheap water resources, making the need to reduce leakage less compelling than in other countries. Operational improvements were carried out in parallel with gradual tariff increases, approved by the government in careful sequence so as to broadly match the improvement of services and reduce the risk of public opposition. By 2015, Armenia enjoyed a level of water tariffs well below that of neighboring countries—ranging from $0.35 to $0.45 per m^3—in exchange for a much higher level of services. Opinion polls have shown that the population widely approved of the water PPPs, and that a large majority (70%) would oppose a return to public management of water services.

Progress was also made toward increasing the financial viability of the water sector, especially in the capital city Yerevan. Water services in Yerevan, under a lease contract from 2006 to 2016, became financially self-sufficient by 2011, with tariffs covering all O&M costs and debt services for investment (financed by the government). However, tariffs were still below full cost recovery in the rest of the country—that is, the areas served by the two management contracts for AWSC and the three regional utilities of Shirak, Lori, and Nor Akunq—when these two contracts ended in 2016.

Looking Ahead: The New 15-Year National Lease that Started in 2017

Building on these achievements, the government decided to move to the next step in PPP reform, and signed a 15-year national lease contract with one single private operator in November 2016. The new national lease contract, which began in January 2017, covers all geographical areas previously served by the various PPPs (that is, Yerevan, secondary cities and towns across the country, and some villages), home to about 2.2 million people or two-thirds of the total population. The goal of this new water PPP is to consolidate the positive results achieved under the first 16 years, expanding continuous 24/7 water supply to all cities and towns across the country and allowing for more efficiency gains based on scale economies. In practice, the new national lease contract is introducing a cross-subsidy between Yerevan and the rest of the country, with the establishment of a single national water and sanitation tariff of about $0.43/$m^3$. The private operator has to pay the government a total lease fee of about $190 million over the 15 years of the national lease, an amount that is supposed to cover fully the debt service of the water and sanitation sector (capex is financed by the government) by the 10^{th} year of the contract when the water sector in Armenia should become fully self-financed through tariff revenues.

The year 2017 therefore represents a major turning point for water PPP reforms in Armenia, marking the end of the lease contract in Yerevan and the two management contracts covering the rest of the country (AWSC and the three regional utilities), and the start of the new, 15-year national lease contract covering all areas previously served under the first generation of PPPs. At this pivotal point, the World Bank's Water Global Practice, with support from the

Public-Private Infrastructure Advisory Facility (PPIAF), undertook this study with the goal of documenting the many lessons learned from Armenia's rich experience with water PPPs, for the benefit of other developing countries considering PPP as an option to improve their water services.

Notes

1 Subsequently renamed Yerevan Water and Sewerage Company (YWSC).

2 Subsequently renamed Armenian Water and Sewerage Company (AWSC).

ԱՄՓՈՓԱԳԻՐ

Ջրային ոլորտում պետական-մասնավոր գործընկերությունների (ՊՄԳ-ներ) ուղղությամբ Հայաստանի տասնվեցամյա փորձը զարգացող երկրում ջրային ծառայությունների բարելավման նպատակով մասնավոր օպերատորների հետ լավ մտածված եղանակով գործընկերության հաստատման հիանալի օրինակ է: Կառավարությունը որդեգրեց ՊՄԳ բարեփոխումների փուլային և զգուշավոր մոտեցում՝ աստիճանաբար մեծացնելով ՊՄԳ-ների աշխարհագրական շրջանակը, ինչպես նաև մասնավոր օպերատորներին փոխանցվող ռիսկերի մակարդակը: Սկզբում՝ 2000 թ.-ին, կառավարման հնգամյա պայմանագիր կնքվեց մայրաքաղաք Երևանում, ապա 2006 թ.-ին Երևանում անցում կատարվեց ավելի բարդ՝ տասը տարվա վարձակալության պայմանագրի՝ կառավարման լրացուցիչ պայմանագրեր նախաձեռնելով երկրի մնացած երկրորդային մեծ և փոքր քաղաքներում ջրային ծառայությունների կառավարման նպատակով:

Ջրային ծառայությունների մարտահրավերները նախքան ՊՄԳ-ները

1991 թ. խորհրդային իշխանությունից անկախությանը հաջորդած տասնամյակում ներդրվեցին ազատական, շուկայամետ քաղաքականություններ, սակայն ջրային ոլորտի կարիքներին հիմնականում անդրադարձ չկատարվեց: Մինչև 2000 թ. Երևանում ջրատարների և միացումների 60 տոկոսը 30-40 տարվա հնության էր և շատ վատ վիճակում, ընդ որում իրավիճակը Երևանում և Շիրակում վատթարացել էր բաշխիչ ցանցի վրա 1988 թ. ավերիչ երկրաշարժի ազդեցության պատճառով: 1998 թ. երկրի մեծ մասում, այդ թվում՝ Երևանում, ջրամատակարարումը օրական միջինը վեց ժամ տևողություն ուներ, իսկ խափանումները սովորական բնույթ էին կրում: Սակագինը հոգում էր շահագործման և պահպանման ծախսերի ընդամենը 30 տոկոսը, իսկ ճեղքվածքը ստիպված լրացվում էր կենտրոնական բյուջեի հատկացումների միջոցով: Ջրամատակարար կոմունալ ընկերությունների, մասնավորապես՝ Երևանի ջրմուղկոյուղի ձեռնարկության (ԵՋԿՋ)[1], Հայաստանի ջրամատակարարման պետական ընկերության (ՀՋՊԸ)[2] և Նոր Ակունք, Շիրակի և Լոռու մարզերի համայնքային ջրամատակարար ընկերությունների մոտ առկա էին վարչական և կառավարչական բացեր: Հաշվի առնելով հանրային ծառայությունների մատուցման մարտահրավերները և սահմանափակումները՝ Հայաստանի կառավարությունը որոշեց ներդնել մասնավոր հատվածի մասնակցությունը, նախապես 2000 թ.-ին սկսելով Երևանից:

Ջրային ոլորտի ՊՄԳ-ների համար նպաստավոր միջավայրի ստեղծում

Բարեփոխումների ողջ ընթացքում Կառավարությունը, դոնորների աջակցությամբ, ՊՄԳ-ների համար նպաստավոր միջավայր ստեղծելուն ուղղված նշանակալի ջանքեր է գործադրել: Ազգային Ժողովն ընդունել է շուրջ քսան նոր իրավական ակտեր ջրաչափման, հաշիվների ներկայացման, եկամուտների հավաքման, հարկման և այլ ֆինանսական հարցերի վերաբերյալ՝ ՊՄԳ ծրագրին և ֆինանսական կայունության և գործառնական արդյունավետության ուղղությամբ քայլերին օժանդակելու համար: Մյուս կարևոր քայլը Ջրային տնտեսության պետական կոմիտեի (ՋՏՊԿ) ստեղծումն էր, որը ծառայելու էր որպես ջրային ոլորտի կառավարման կենտրոնական մարմին: Բացի այդ, կառավարությունը ստեղծեց Ծրագրերի

մոնիթորինգի միավորներ (ԾՄՄ)՝ ծրագրերի իրականացման մոնիթորինգի և մասնավորապես՝ ՊՄԳ պայմանագրերի մոնիթորինգի համար:

ՊՄԳ հանգամանալից պայմանագրերի կազմում և մրցույթների անցկացում

Կառավարությունը, զարգացման գծով իր գործընկերների հետ միասին, զգալի ջանք է գործադրել է ՊՄԳ պայմանագրի կազմման ուղղությամբ և ըստ անհրաժեշտության հայցել արտաքին աջակցություն: Ինչպես Երևանի, այնպես էլ ՀՋԿԸ կառավարման պայմանագրերի կազմումը երկու տարի տևեց: Բոլոր պայմանագրերի համար անցկացվեցին բավարար մրցույթներ: Բոլոր պայմանագրերի պայմաններում զգալի նմանություններ կային, ինչից հետևում է, որ յուրաքանչյուր հաջորդ պայմանագրից քաղված դասերը համադրվում էին: Պայմանագրերը ներառում էին նաև փոփոխությունների և երկարաձգումների վերաբերյալ դրույթներ, որոնք բոլոր դեպքերում կիրառվել են: Բացի այդ, բոլոր պայմանագրերը մասնավոր գործընկերոջը պարտադրում էին իրականացնել դոնորների կողմից ֆինանսավորվող կապիտալ ծախսերի ծրագրեր: Կառավարման բոլոր պայմանագրերը ներառում էին կապալառուի համար հաստատուն վճար և խթանիչ վճարումների վրա հիմնված փոփոխական վճար (պարգևավճարներ և տույժեր): Թեև կատարողականի հիմնական ցուցանիշների թիվն ու տեսակը տարբերվում էր (93-ը Երևանի կառավարման պայմանագրում, 10-ը մարզային ընկերությունների համար), բոլոր պայմանագրերում կային մի քանի առանցքային ցուցանիշներ՝ ջրամատարակարարման տևողությունը, վարձավճարների հավաքագրումը և ջրաչափերի տեղադրումը: Աշխատակիցների արտադրողականությունը, ջրային կորուստները և էլեկտրաէներգիայի սպառումը ևս տարածված ցուցանիշներ էին:

ՊՄԳ-ների շրջանակում կապիտալ ծախսերի իրականացում

Կառավարման հաջորդական պայմանագրերի և Երևանի վարձակալության պայմանագրերի շրջանակում կապիտալ աշխատանքների ֆինանսավորումն իրականացվում էր ՀՀ կառավարության կողմից՝ զարգացման գծով իր գործընկերների վարկային ծրագրերի միջոցով: ՊՄԳ տարբեր սխեմաների կարևոր առանձնահատկությունն այն է, որ կապիտալ աշխատանքների կատարման համար մասնավոր օպերատորներին զգալի ճկունություն և հսկողություն թողնվեց, ՋՏՊԿ-ի վերահսկողությամբ՝ մեխանիզմ, որը խթանեց ներդրումային ծրագրերի շուտափույթ իրականացումը: Ընդհանուր առմամբ կապիտալ ծախսերի մեկ շնչի հաշվով ծախսված գումարը տարբեր ՊՄԳ-ների դեպքում զգալի տարբերվում էր՝ տատանվելով Երևանի կառավարման պայմանագրի և վարձակալության դեպքում տարեկան 5-6 ԱՄՆ դոլարից ՀՋԿԸ կառավարման պայմանագրի և մարզային երեք կոմունալ ընկերությունների դեպքում տարեկան 24-30 ԱՄՆ դոլարի միջև:

Ջրային ոլորտի հաջորդական ՊՄԳ-ներն ապահովեցին ծառայությունների որակի և արդյունավետության ընդգծված բարելավումներ

Երկրի ջրային ոլորտում 16 տարվա ընթացքում իրականացված ՊՄԳ պայմանագրերի շարքը ջրային ոլորտի գործառնական արդյունավետության, ծառայությունների որակի և ֆինանսական

իրավիճակի լուրջ բարելավումների հանգեցրեց: Ջրային ծառայությունների որակը զգալի բարելավվեց՝ մինչև 2015 թ. Երևանի հիմնական մասում ապահովելով շարունակական շուրջօրյա ջրամատակարարում շաբաթվա յոթ օրերին և զգալի չափով ավելացավ երկրորդային մեծ և փոքր քաղաքներում սպասարկման ժամերի միջին քանակը: Նշված բարելավումներն էական էին երկրի տարբեր ջրային համակարգերը ընդհատումներով ջրամատակարարման, ցանցերի արագացված մաշվածության, խմելու ջրի կասկածելի որակի, սպառողների գոհունակության ցածր մակարդակի և ջրի հաշիվների դիմաց վճարելու ցածր պատրաստակամության արատավոր շրջանից դուրս բերելու հարցում: Բացի այդ, սպառողների սպասարկման բարելավման և արդի առևտրային գործելակերպեր ներդրվեցին և ըստ ջրաչափերի ցուցմունքի փաստացի սպառման դիմաց հաշիվների ներկայացումը համատարած դարձավ:

Գործառնական արդյունավետությունը ևս զգալի բարելավվեց՝ հատկապես էներգաարդյունավետության, հաշիվների հավաքագրման և աշխատանքի արտադրողականության ուշագրավ բարելավումների միջոցով՝ թեև չհաշվառվող ջրի ցուցանիշով չափվող ջրային կորուստների նվազման հարցում բարելավումը փոքր էր կամ բացակայում էր: Չհաշվառվող ջրի ցուցանիշի բարելավման բացակայության պատճառները պայմանավորված չեն մասնավոր օպերատորների արդյունավետության պակասով, այլ՝ (i) ընդհատումներով ջրամատակարարման ուղղակի ազդեցությամբ (որն ավելացնում է ցանցի միջին ճնշումը), (ii) խարխլված ցանցերի վերականգնման համար ոչ բավարար միջոցների առկայությամբ և (iii) առատ և էժան ջրային ռեսուրսներով, որոնք արտահոսքի նվազեցմանն ուղղված ջանքերի անհրաժեշտությունն այլ երկրների համեմատ պակաս հրատապ են դարձնում: Գործառնական բարելավումներն իրականացվել են սակագնի աստիճանական բարձրացումներին զուգահեռ, որոնք կառավարության կողմից հաստատվեցին զգուշավոր հաջորդականությամբ՝ ընդհանուր առմամբ ծառայությունների որակի բարելավմանը համապատասխանելու և հասարակության ընդդիմանալու ռիսկը նվազեցնելու նպատակով: Մինչև 2015 թ. Հայաստանի բնակչությունը ծառայությունների շատ ավելի լավ որակի դիմաց օգտվում էր հարևան երկրներից զգալիորեն ցածր սակագնի մակարդակից, որը գտնվում էր մեկ խորանարդ մետրի դիմաց 0.35-0.45 ԱՄՆ դոլարի միջակայքում: Կարծիքի հարցումները ցույց են տվել, որ ընդհանուր առմամբ բնակչությունը հավանություն էր տալիս ՊՄԳ-ներին և որ զգալի մեծամասնությունը (70 տոկոսը) դեմ կլիներ ջրային ծառայությունները հանրային կառավարմանը վերադարձնելուն:

Առաջընթաց էր գրանցվել նաև ջրային ոլորտի ֆինանսական կենսունակությունը բարձրացնելու ուղղությամբ, հատկապես մայրաքաղաք Երևանում: Երևանում ջրային ծառայությունները, որոնք 2006-2016 թթ. իրականացվում էին վարձակալության պայմանագրի շրջանակում, դարձան ֆինանսապես ինքնաբավ, ընդ որում սակագներն ընդգրկում էին մինչև 2011 թ. բոլոր շահագործման և կառավարման ծախսերը և (Կառավարության կողմից ֆինանսավորվող) ներդրումների համար պարտքի սպասարկումը: Սակայն երկրի մնացած մասում՝ այսինքն ՀՋԿԸ և մարզային երեք ընկերությունների՝ Շիրակ, Լոռի և Նոր Ակունք, կառավարման երկու պայմանագրերով սպասարկվող տարածքներում, 2016 թ.-ին այս երկու պայմանագրերի ավարտի ժամանակ սակագները դեռևս լիարժեք ծախսածածկում չէին ապահովում:

Նայելով ապագային. նոր՝ 2017 թ. մեկնարկած Հայաստանի բոլոր ջրամատակարար ընկերությունների համակարգերի 15 տարով վարձակալությունը

Նշված ձեռքբերումների վրա հենվելով՝ կառավարությունը որոշեց անցնել ՊՄԳ-ի բարեփոխումների հաջորդ քայլին և 2016 թ. նոյեմբերին մասնավոր մեկ օպերտատորի հետ ստորագրեց երկրի բոլոր ջրամատակարարման համակարգերը 15 տարով վարձակալության հանձնելու պայմանագիր: Վարձակալության նոր պայմանագիրը, որի ժամկետի սկիզբը 2017 թ. հունվարն է, ընդգրկում է նախկինում տարբեր ՊՄԳ-ների սպասարկման բոլոր տարածքները (այսինքն՝ Երևանը, երկրի երկրորդային մեծ և փոքր քաղաքները և որոշ գյուղեր), որը համարժեք է շուրջ 2.2 միլիոն մարդու կամ բնակչության երկու-երրորդին: Ջրային ոլորտում այս նոր ՊՄԳ նպատակն առաջին 16 տարիներին ապահովված դրական արդյունքների համախմբումն է, ընդլայնելով բոլոր մեծ ու փոքր քաղաքների շարունակական՝ ողջ շաբաթվա ընթացքում շուրջօրյա ջրամատակարարումը և արդյունավետության բարձրացման ավելի մեծ հնարավորություն տալու համար՝ մասշտաբի արդյունքի միջոցով: Գործնականում վարձակալության նոր պայմանագրի միջոցով խաչաձև սոբսիդիա է սահմանվում Երևանի և երկրի մնացած մասի միջև՝ հանրապետության ողջ տարածքում սահմանելով ջրի և ջրահեռացման միասնական սակագին՝ մեկ խորանարդ մետրի դիմաց շուրջ 0.43 ԱՄՆ դոլար: Մասնավոր օպերատորը պատասխանատու է կառավարությանը շուրջ 190 միլիոն ԱՄՆ դոլար ընդհանուր վարձակալության վճարը վարձակալության 15 տարվա ընթացքում վճարելու համար, որը սահմանվել է ջրամատակարարման և ջրահեռացման ոլորտի պարտքի սպասարկումը (կառավարության կողմից ֆինանսավորվող կապիտալ ծախսերը) մինչև պայմանագրի 10-րդ տարին ամբողջությամբ ապահովելու համար, որի ժամանակ Հայաստանը պետք է դառնա ամբողջությամբ սակագնային եկամտի միջոցով ինքնաֆինանսավորվող:

Հետևաբար, 2017 թ. Հայաստանի ջրային ոլորտի ՊՄԳ բարեփոխումների համար լուրջ շրջադարձային կետ է. Երևանի վարձակալության պայմանագրի և երկրի մնացած մասն ընդգրկող կառավարման երկու պայմանագրերի ավարտը (ՀՋԿԸ և երեք մարզային ընկերությունները) և նոր՝ 15 տարով Հայաստանի բոլոր ջրամատակարար ընկերությունների համակարգերի վարձակալության պայմանագրի մեկնարկը, որն ընդգրկում է առաջին սերնդի ՊՄԳ-ների նախկինում սպասարկված բոլոր տարածքները: Այս վճռորոշ պահին Համաշխարհային բանկի ջրային գլոբալ պրակտիկան, պետական-մասնավոր ենթակառուցվածքների խորհրդատվական գործիքի (PPIAF) աջակցությամբ, ստանձնել է սույն ուսումնասիրության իրականացումը՝ նպատակ ունենալով արձանագրել ջրային ՊՄԳ-ների հետ կապված Հայաստանի հարուստ փորձից քաղված դասերը՝ ի նպաստ այլ զարգացող երկրների, որոնք ՊՄԳ-ն դիտարկում են որպես իրենց ջրային ծառայությունների բարելավման տարբերակ:

Ծանոթագրություն

1. Հետագայում վերանվանվեց «Երևանի ջրմուղկոյուղի» ընկերության (ԵՋԿԸ)
2. Հետագայում վերանվանվեց «Հայջրմուղկոյուղի» ընկերության (ՀՋԿԸ)

Abbreviations

ADB	Asian Development Bank
AMD	Armenian drams
ASWC	Armenia State Water Company
AWSC	Armenian Water and Sewerage Company
CJSC	closed joint stock company
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EU	European Union
EUR	euros
GDP	gross domestic product
IDA	International Development Association
KPI	key performance indicator
KfW	*Kreditanstalt für Wiederaufbau*
MDP	Municipal Development Project
MWWP	Municipal Water and Wastewater Project
NIF	Neighborhood Infrastructure Fund
NRW	non-revenue water
O&M	operations and maintenance
PMU	project monitoring unit
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	public-private partnership
PRSC	Public Services Regulatory Commission
RA	Republic of Armenia
SCWE	State Committee for Water Economy
TMP	total management plan
UNDP	United Nations Development Programme
US$	United States dollars
VAT	value added tax
WSC	Water and Sewerage Company
WWS	water and wastewater services
WWTP	wastewater treatment plant
YWSC	Yerevan Water and Sewerage Company
YWWP	Yerevan Water and Wastewater Project

All dollar amounts are U.S. dollars unless otherwise indicated.

Overview

Armenia's 16 years of experience with public-private partnerships (PPPs) in the water sector is a rich illustration of how strategic partnering with private operators can improve water services in a developing country. **The government took a phased and cautious approach to the PPP reform**, gradually increasing the geographical scope of the PPPs as well as the level of transfer of risks to private operators while learning lessons as it moved forward. The sequence of PPPs was as follows:

- Armenia's experience with water PPPs began in 2000 with a **5-year management contract in the capital city Yerevan, which had a service area of about 1.2 million people;**
- **In 2004, a management contract was put in place for the Armenian Water and Sewerage Company (AWSC)**, a utility that covered almost 320 cities, 37 urban centers, and 283 rural communities with a total population of about 620,000 spread out across most of the secondary cities, towns, and villages in the rest of the country;
- **In 2006, the management contract in Yerevan was replaced by a 10-year lease contract** whereby a private operator assumed all commercial and operating risks and was remunerated through the tariff revenues collected;
- **In 2009, another management contract was put in place for the three regional utilities** that were still under public management. This contract centered on the cities of Lori, Shirak, and Nor Akunq (about 330,000 people).

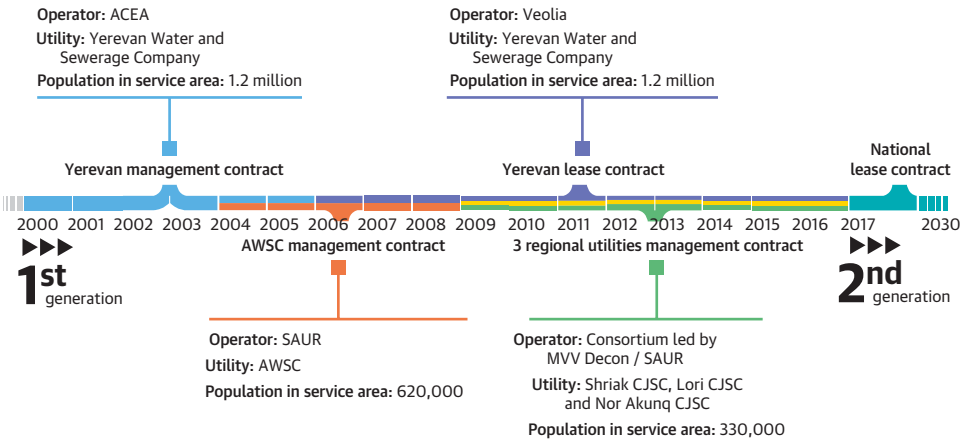
These four contracts represent what can be called the first generation of water PPPs, as the Yerevan lease contract and the two management contracts for AWSC and the three regional utilities all ended at the same time in 2016. Figure O.1 presents the chronology and key data of this first generation of water PPPs undertaken in Armenia from 2000 to 2016. Figure O.2 shows the geographical scope of the PPPs.

Structure of the Report

The report is organized into eight closely related chapters. **The first chapter provides an overview of the context leading up to the start of water PPPs in Armenia**, marked by the dire situation of water services before the introduction of private operators, and followed by a discussion of the decision process that led the government to embark on a PPP reform. It also provides an outline of the steps taken to create a favorable environment for water PPPs under the first management contract in Yerevan (which in turn an enabling environment for subsequent contracts).

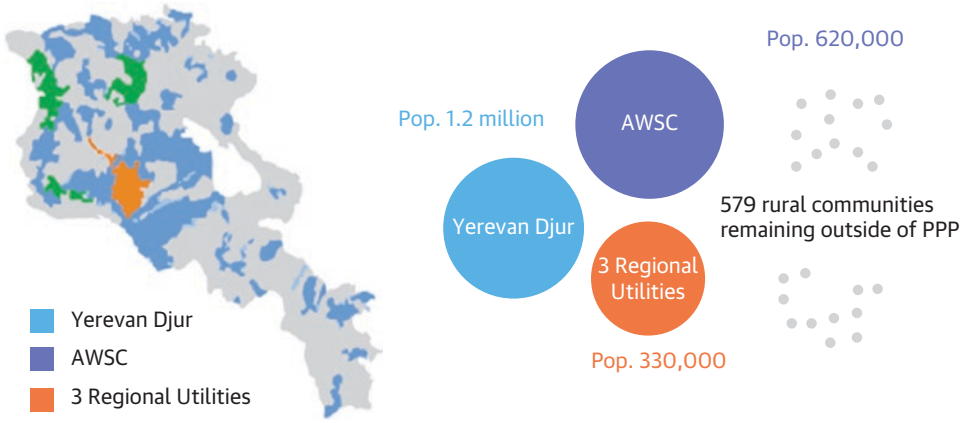
The report then sequentially approaches each PPP contract, **analyzing in detail each of the four water PPP contracts that were implemented in Armenia between 2000 and 2016. This analysis is done in a specific chapter**, starting with the Yerevan management contract in 2000 (chapter 2), and followed by the Yerevan lease contract in 2006 (chapter 3), the AWSC management contract in 2004 (chapter 4), and the three regional utilities management contract in 2009 (chapter 5). To facilitate comparison, the report adopts the same analytical structure for each contract, successively reviewing the situation at the start of each contract, the tendering process and key contract design issues, the most noteworthy elements during implementation, the main results achieved, and the most relevant lessons learned.

FIGURE O.1. Overview of Water PPPs in Armenia



Note: AWSC = Armenian Water and Sewerage Company; CJSC = closed joint stock company.

FIGURE O.2. Water and Sanitation Service Providers in Armenia



Note: AWSC = Armenian Water Sewerage Company.

Chapter 6 brings the analysis of all the contracts together and summarizes the key lessons learned from the first 16 years of water PPP reform in Armenia. This chapter aims to capture the main messages and experiences from the four water PPP contracts. **It may well be the report's most important chapter**, and the reader who is primarily interested in the main lessons from the Armenia water PPP reform could focus on this chapter.

Chapter 7 briefly presents the new, national lease contract that has been in place since January 2017. This latest PPP contract in a way represents the culmination of the first 16 years of PPP reforms. Its design incorporates many lessons drawn from the previous contracts. It is an "enhanced lease" arrangement whereby the private sector is expected to finance 12.5 percent of the investment needs through collected tariff revenues. Moreover, NRW was introduced as a performance indicator for the first time in Armenia's water PPPs, entailing penalties for parties that fail to meet a contractually agreed schedule of targets.

Chapter 8, the final chapter, discusses the key policy issues that will need to be addressed in the future as Armenia continues pursuing its water PPP reform. These issues relate to the need to make the planned infrastructure investments—to be largely financed by the government under the terms of the lease contract—efficiently and in full, how to expand wastewater services in a viable manner, and most importantly, the importance of ensuring that the benefits of the PPP reform gradually also reach the 650,000 people living in remote villages and settlements that currently lack proper water services and that did not benefit from the first generation of PPPs.

Chapter 1 Water Services at the Onset of PPP Reforms

Context of Water and Wastewater Services in Armenia before PPPs

In the late 1990s, the country's water infrastructure was highly dilapidated. Most of it had been constructed during the Soviet era, and typically was built with excess capacity and little regard for economic or operational efficiency (especially energy efficiency). Due to inadequate maintenance, these facilities seriously deteriorated over time. The state of water infrastructure worsened after Armenia attained its independence in 1991, as the country was facing multiple pressing challenges and competing sector priorities. By 2000, 60 percent of the water mains and connections in Yerevan were more than 30 years old and in need of rehabilitation. Even though 20 wastewater treatment stations had been built before 1990, they had gradually been abandoned and the collected wastewater was disposed of untreated into rivers and other receiving bodies. Photos 1.1 and 1.2 illustrate the poor state of the infrastructure at the time.

A devastating earthquake in 1988 in Yerevan had further undermined an already fragile water system. In addition to taking a dramatic toll on human life (about 45,000 people died), it damaged 4,574 kilometers of the water supply network and 2,094 kilometers of the sewerage network. The volume of water supplied to customers fell by more than 42 percent (down to 40 million m^3). Moreover, it was estimated that the level of leakage in the system increased by about 25 percentage points as a direct consequence of the earthquake.

The average daily water supply stood at only 6 hours in 1998 in Yerevan, and even less in most of the rest of the country. Variations in pressure within apartment buildings meant that upper floors sometimes did not receive any water in the summer months and received only one or two hours a day in the wintertime, if at all—creating much hardship for the population and especially the poor, who had no access to coping mechanisms such as water tanks and private water trucks. The problem of intermittent supply became so pressing that a Financial Times advisory warned business travelers that while hot water was available in Yerevan's main international hotel, the hours of supply were very limited.

Water service companies throughout Armenia were on the verge of bankruptcy. Cost recovery was extremely weak during this period, as tariffs covered only about 30 percent of operations and maintenance (O&M) costs, and central budget allocations had to fill the gap. A huge unpaid debt had been accrued with the power companies. In 2002, the government's subsidies to the water sector amounted to 3.4 percent of total budget expenditure. This was due to a combination of inefficient operation, low tariffs, and poor collection discipline. Moreover, most customers were billed based on estimates,[1] resulting in rampant nonpayment of bills, as customers found it unfair that they were charged an amount that did not take into account how much water they had actually consumed. By 1999, payment discipline

had largely disappeared: only 15 percent of domestic consumers—and almost no government institutions—paid their water bills.[2]

The macroeconomic situation of the country was also quite dire, making continuous subsidization of the water sector unsustainable. In the early 1990s, GDP fell by almost 50 percent, budget expenditures shrank by a factor of three, and population incomes halved, reflecting the country's difficult transition to a market economy. In this context, there was not enough revenue available from either the general budget or consumers to cover water operational costs, let alone rehabilitation or expansion. In addition, an energy crisis had led to a sharp increase in electricity prices, putting the water sector under additional financial strain.

Another challenge was the disastrous management and operations of public water companies. The two main water supply companies, Yerevan Water Company (under the municipality of Yerevan, serving about 1.2 million people) and Armenia Water Company (AWSC, under the Ministry of Urban Development, serving about 620,000 people across the country), supplied water to most of the urban areas in Armenia. However, they were chronically underfunded and characterized by poor operating practices and dismal customer service. Overstaffing was rampant, with poorly motivated personnel and low salaries. The best trained employees typically moved to the private sector or left to go abroad. The three other regional water utilities, partly controlled by local authorities and serving the areas around the cities of Shirak, Lori, and Nor Akunq (about 330,000 people in total) were in no better situation. Many small rural settlements (about 650,000 people) were not even served by these public utilities and relied on standpipes or natural water sources.

PHOTO 1.1. Masis Pumping Station

Source: Patrick Lorin.

PHOTO 1.2. Distribution Network in Village

Source: Patrick Lorin.

The Government's Decision to Embark on Water PPP Reforms

By the late 1990s, there was a growing realization within government that public management of water services alone could not address the daunting challenges of the sector. While donor financing could help meet some of the infrastructure investment needs, it was not enough to address the range of challenges in the sector—the huge infrastructure backlog, chronic operational inefficiencies, weak utility management, poor financial performance, and bad service quality. Partnering with the private sector seemed a viable option to address these

capacity and efficiency gaps. This was at a time when many other developing countries across all continents were also experimenting with water PPPs as a way to turn around their failing water services.

In the context of the preparation of a new World Bank project (the Municipal Development Program, MDP), the government considered bringing on board an international private operator under a management contract for Yerevan, as well as possibly ASWC. Wanting to better understand what this would entail, the government requested the World Bank to organize a study tour of private sector experience in water service provision in the region. Stakeholders interviewed during this study emphasized that **the study tour proved pivotal in catalyzing the government's decision to embark on water PPP reforms**. The tour was organized in March 1998 with a delegation from Armenia visiting Hungary (leases in Budapest), Poland (lease in Gdansk) and France (management and *affermage*/lease contracts). The country visits provided concrete examples of water PPPs where the private sector concentrated on improving service quality and operational efficiency, while the government retained responsibility for investment in water infrastructure. Upon returning to Armenia, the head of the delegation—who later became the Chairman of the State Committee for Water Economy (SCWE)—reported the delegation's positive assessment to the country's president. Discussions within the government were then initiated on the best water PPP approach to adopt for Armenia. A management contract model was initially chosen, as it would allow for a cautious phased approach, given the considerable risks for private operators entering the Armenian water sector at that time.

A sequenced approach to water PPPs was part of the design of sector reform from the onset. From the beginning, the government intended to expand PPPs beyond the first management contract in Yerevan, but it was also keen to move in a cautious and progressive manner. While the inherent value of the lease contract approach was recognized—as it involved more responsibilities being passed to the private sector and better incentives for performance—the government felt that it would be too risky as a first PPP. Considering the dire state of the water services in Yerevan in the late 1990s (notably the extremely low tariff levels and collection rates), a management contract was seen as a first, necessary step before possibly moving to a lease contract at a later stage. While discussions for a management contract in secondary cities and towns (AWSC) also began in 2000, this second contract started only 4 years later.

Putting in Place an Enabling PPP Environment

Major structural changes were made to the water companies operating in Armenia. Following a national decentralization reform in 1996, responsibility for providing water services had been transferred to newly established local authorities. However, when it became apparent that these authorities lacked the necessary organizational and financial capacities, the government reversed course. In 2000, water sector management was again centralized under a single body: the SCWE.[3] SCWE became the asset owner and 100

percent shareholder of AWSC and Yerevan Water and Sewerage Company (YWSC). The government restructured those entities' debts by splitting them into two separate entities—one part became a "shell company" and the other was reconstituted as a new water supply company with a clean balance sheet. The decentralization of water services was partly maintained for the areas around the cities of Shirak, Lori, and Nor Akunq, where regional water utilities were established with 51 percent of the shares held by the central government and the rest by local authorities.

The National Assembly passed some twenty new legal acts as part of the water PPP reform. The laws related to water metering, billing, revenue collection, taxation, and other financial matters. In 1999, it passed Decision No. 149, which required the installation of water meters for consumers, and allowed YWSC to cut off water supply for public enterprises that failed to pay their bills. The latter decision proved to be important later in enforcing payment discipline among consumers generally. In 2002, a Law on Forgiveness of Customer Debts was passed, which allowed old debt to be canceled in exchange for accepting the installation of meters. In 2002, a new Water Code that defined the framework of private sector participation in water services was adopted, and in 2003 the national regulator was established (box 1.1). In 2005, the Law on Fundamental Provisions

BOX 1.1. Regulating Water PPPs: New Water Code (2002) and National Regulator (2003)

The new Water Code, which was passed in 2002, that is, two years after the start of the first management contract in Yerevan, excluded the outright privatization of water systems (in other words, private ownership of infrastructure) but explicitly allowed for various forms of PPPs, namely service contracts, management contracts, leases, and concessions. The Natural Monopolies Regulatory Commission, subsequently renamed the Public Services Regulatory Commission (PRSC), was created in 2003, with responsibility for issuing permits and approving tariffs. It was also made responsible for developing market rules and regulations; setting service quality requirements; and reviewing investment programs presented by license holders.

The Water Code defined the general principles for water sector governance in Armenia, including tariff policy, based on two approaches to tariff setting. Under the standard approach, utilities had to present requests for tariff adjustments through a tariff application to the regulator according to an established procedure. This approach was to be applied to the utilities that remained under public management (initially in Shirak, Lori, and Nor Akunq) and to those moving to management contracts (since the remuneration of the private operator was not linked to the tariff level). The second approach to tariff setting was to be applied in the case of lease contracts, whereby tariffs could be adopted based on the result of a tender. The second approach was first applied during the tender of the Yerevan lease contract in 2005.

of the National Water Policy came into effect, outlining the strategic use and protection of water resources and systems. A year later, the 2006 National Water Program was developed, addressing water resources use and sustainability measures to meet the needs of the population and the economy.

Notes

1. In Yerevan, fewer than 100 blocks out of some 4,230 covering 1.25 percent of the total population of 1.2 million were fitted with block meters, making it difficult to measure water consumption accurately. Bills were set based on normative per capita consumption of 200 liters per registered inhabitant for nonmetered customers.
2. The collection rates from other customers were much higher: 90 percent of billed volumes.
3. SCWE initially functioned as an adjunct body to the government. It was later transferred to the Ministry of Territorial Administration and currently operates under the Ministry of Energy Infrastructures and Natural Resources.

Chapter 2 Yerevan Management Contract: 2000–05

Water Sector Context in Yerevan before the Management Contract

As already mentioned, **water services suffered greatly during the period of transition to a market economy in the 1990s.** The water and sewerage infrastructure in Yerevan was inefficient and seriously deteriorated, the public utility Yerevan Water and Sewerage Company (YWSC) was in a weak financial condition, and the quality of services was poor. Most of the city's population received water only twice a day for a mere two hours, and some districts sometimes did not receive any water on a given day. A 2003 study found that approximately 240,000 households were relying on communal taps and had to carry back to their homes about 15 liters per capita per day. The rate of average revenue collection, which had been about 47 percent in 1997, had dropped to 20 percent by 2000.

Tendering and Contract Terms

Tendering process: The preparation of the Yerevan management contract took 2 years, allowing the government to carry out in parallel the first reforms outlined above, to consult stakeholders—including soliciting donor support—and define its expectations. Following a competitive bidding process that involved three qualified bidders, the Italian utility ACEA (the private operator for water and electricity services in Rome) won the contract. A 4-year management contract was signed in February 2000, and ACEA took over the day-to-day operations and maintenance (O&M) of water services in Yerevan in June 2000.

Terms of the contract: The contract was initially scheduled for completion on April 30, 2004, but was extended by another year (until April 30, 2005). Most of the remuneration was based on a fixed fee, so as to reduce the operator's financial risk, but a variable fee was also included to incentivize the operator to perform better. The contract was quite specific with regards to the scope of work, with a long and detailed list of activities to be carried out by the private operator. These activities included operational tasks, for example, implementing a leak detection program, supervising meter installation and repairs, preparing a digitized mapping system for water networks, enhancing the energy efficiency of pumps and other electrical equipment, and improving chlorination of water. Commercially, the contractor had to implement a program to collect accounts receivable, identify illegal connections, and implement computerized administrative systems for billing. Other deliverables included establishing a customer service system, carrying out a public information campaign, implementing a management training program for YWSC staff, developing standard operating procedures, and producing various manuals to improve the utility's administrative systems.

Performance monitoring: The contract included as many as 93 key performance indicators (KPIs), a very large number that was typical of the management contracts designed in the late 1990s. However, only a few were linked to bonuses, and none were associated with

BOX 2.1. Incentive Compensation in the Yerevan Management Contract

The government paid the private operator a fixed fee of $5 million for a 4-year period, which formed the basis of the bidding process. It capped the maximum performance payment at $1.5 million over the term of the contract and set a ceiling of $375,000 in any given year. The terms for this "maximum annual incentive compensation" were quite strict. An Incentive Compensation Chart provided performance ratings from "excellent" to "poor," with weights for the different performance indicators. For example, continuity of water supply had a weight factor of 0.08, whereas electricity use had a weight factor of 0.05. If the operator failed to achieve an excellent rating, it had to make up the shortfall in the following contract year. If it achieved a poor rating, it was not eligible for incentive compensation in the following year. The operator ended up receiving $1.41 million in incentive payments, 94 percent of the maximum possible.

penalties (box 2.1). The four KPIs linked to bonuses were: (i) continuity of water supply; (ii) electricity usage; (iii) leak detection survey[1] and (iv) installation of meters.[2] While the contract was largely input-based, the government deemed the use of bonuses (and no penalties) essential because the partnership was new and therefore entailed higher risks for the private partner, so providing some financial upside would generate more competition for the tender. The operator had to submit regular reports to YWSC, including Base Year Data, a Human Resources Plan, Procurement Guidelines and an Annual Operating Investment Fund Plan.

The Yerevan management contract was mostly funded by the World Bank. The World Bank provided $28 million under the new Municipal Development Project (MDP) (1998 to 2006), a complete financing package for both the preparation and implementation of the management contract. This loan provided funding for the investment program and paid for the operator's fees and bonuses as well as technical assistance and auditing of the operator's performance. The investment portion included both funding for capital investments for the rehabilitation of water systems (as determined jointly by YWSC and the contractor), and an Operating Investment Fund to support essential, short-term expenditures (with the private operator in charge of managing the fund).

There was no retrenchment of staff under the Yerevan management contract. As part of the contract deal, YWSC transferred close to 1,800 staff to the management company. However, YWSC continued to pay the salaries of the transferred staff. At the end of the ACEA contract, the staff were transferred to Veolia, the operator for the new Yerevan lease contract, which began in 2006.

Implementation of the Yerevan Management Contract

The private operator started rehabilitating the Yerevan water distribution network through sectorization. This approach involved dividing water distribution and pressure zones into

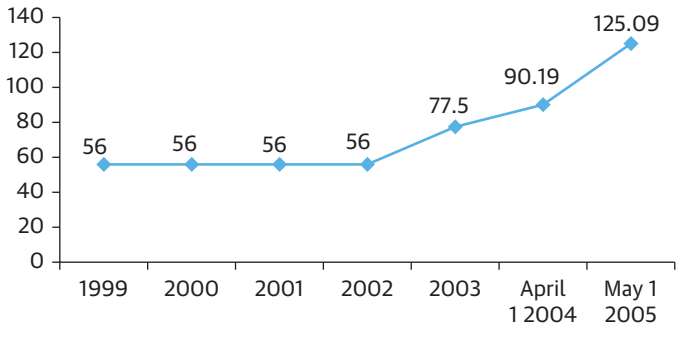
sectors for which bulk water meters and, as required, pressure-regulating valves were installed to control incoming water flows, manage water pressure, and reduce leakage in the distribution system. Sectorization also enabled better long-term planning for rehabilitation/replacement of water mains. The contractor spent about 61 percent of the capital investment fund on sectorization. Under the project, about 50 percent of the YWSC service area was sectorized.[3] Another priority of the contractor was to install block water meters in apartment buildings. In addition, it retrofitted internal plumbing systems in many buildings and undertook partial repairs. The Japanese Social Development Fund provided subsidies to defray the cost of installing retail water meters for poor families.

As for commercial aspects, stagnant tariffs and weak revenue collection undermined YWSC's financial position. In 1999, before the beginning of the management contract, tariffs were very low, at 56 Armenian drams (AMD) (or $0.10) per cubic meter. Tariffs stayed flat until 2002 because the government preferred to see improvement in bill collections and service quality first before increasing tariffs. At the same time, revenue collection stayed well below the 35 percent target set in the contract, mainly because it took some time for the metering program to reach a critical mass. Moreover, even though the operator launched a communication strategy to familiarize customers with the concept of payment for actual use, such an endeavor required behavioral change that took time to materialize. Operating expenses did not decrease as much as expected, leading to quite disappointing financial results on the whole. As a result, YWSC continued to face a cash shortfall, leading to some late payments to staff and delays in implementing maintenance and rehabilitation of the water system. The situation was only rectified toward the end of the management contract, when tariffs were steadily increased to reach $0.27 per m^3 (an increase of 123 percent) by 2005, thus allowing a marginal improvement in YWSC's financial situation (figure 2.1).

Another implementation challenge was that initially counterpart funding from the government of Armenia did not materialize as planned. In 2001, the second year of the contract, the government budgeted $158,000 instead of $470,000 for capital investment, as counterpart funding for the World Bank financed MDP's Operating Investment Fund. As this funding was essential for covering the cost of procurement, investment, and system improvements, the delay put the capital expenditure (capex) program at risk. The private operator and the government eventually agreed on a financing plan to secure government funding at the beginning of each year for both the Operating Investment Fund and the Capital Investment Program. Given the many difficulties encountered during the first years, the relationship between the government and the private operator remained somewhat strained.

The private operator undertook capacity building of YWSC staff. In early 2002, ACEA launched a major reorganization of YWSC, hired new Armenian directors and branch managers,

FIGURE 2.1. Yerevan Water Supply Company Tariff, 1999–2005



Note: Tariffs are expressed in Armenian drams per cubic meter (AMD/m^3).

and increased salaries. It also conducted multiple training sessions for utility managers on topics such as personnel management, financial systems, budgeting, and planning. The contractor provided hardware, software, and licenses at no cost. All these measures were meant to build the administrative and technical capacity of the utility.

Although improving customer service was not a priority under the Yerevan management contract, given the more urgent need for infrastructure improvements, the private operator launched a customer service program, which entailed installing new software for billing and collections and delegating some of its operation to YWSC branch offices. The contractor also initiated a public information campaign to explain the nature of private management of the utility.

Results and Key Factors

YWSC registered tangible improvements in its operational and financial performance under the management contract (table 2.1). The most concrete benefit for the population was a major reduction in intermittent supply and a quadrupling of the average number of hours of water services. Customers were able to save on coping costs such as private water trucks, individual pumping and storage, and time spent fetching water. Moreover, most customers started being billed based on actual metered consumption, as opposed to being billed on estimates, as before.

One of the strongest improvements was the major reduction in electricity consumption and electricity costs. In the first year of the contract alone, there was a 14 percent decrease in electricity consumption, equivalent to $60,000 in monthly savings. The hydraulic structure of the network was gradually rationalized to favor cheaper, gravity-based intakes, and three pumping stations were shut down to enhance operational efficiency. As a result, energy consumption decreased by almost half, from 240.3 million kWh in 2000 to 124.2 million kWh in 2005.

TABLE 2.1. Main Technical and Economic Indicators of Yerevan Water and Sewerage CJSC during the Management Contract

Indicator	Base year (2000)	End year (2005)	Notes
Water supply duration (hours/day)	4-6	18.4	The contract intended 18 hours/day.
Energy consumption (kWh, millions)	240.3	124.2	Decreased by 48.3%, against a 25% target
Number of meters installed	3,856	379,580	Water meters installed for 90% of customers
Metered water consumption volume (m^3, millions)	8,5	48,6	
Share of metered water in water consumption volume (%)	7	63.4	The contract target was 25%
Total water intake from water sources (m^3, millions)	436.2	358.2	Decreased by 78 million m^3, or 18 percent
Gravity water intake (m^3, millions)	158.5	202.6	Increased by 44.1 million m^3, or 28 percent.
Collected fees (AMD, millions)	1,349.9 ($2.5 M)	4,434.9 ($9.7 M)	
Fee collection rate (%)	20.9	79.2	

Note: AMD = Armenian drams; CJSC = closed joint stock company.

TABLE 2.2. Financial Results of Yerevan Water and Sewerage Company during the Management Contract

	2001	2002	2003	2004[c]	2005
Total current revenue (AMD, millions)	**6,059.4**	**5,976.0**	**4,003.6**	**5,026.1**	**5,350.9**
Revenues (including VAT) from provision of services (AMD, millions)[a]	6,059.4	5,976.0	4,003.6	5,026.1	5,350.9
Collection rate (percentage)[b]	26.7%	45.1%	75.0%	83.3%	85.3%
Collection (AMD, millions)	1,617.9	2,695.2	3,002.7	4,186.8	4,564.3
Total current expenses (AMD, millions)	**6,780.1**	**7,651.1**	**8,565.6**	**7,628.0**	**9,251.7**
Salary and social security payments (AMD, millions)[b]	456.1	975.6	1,905.8	1,867.7	2,418.0
Electricity (AMD, millions)[b]	3,729.0	3,877.5	3,334.2	2,444.8	1,800.0
Materials (AMD, millions)[b]	1,172.0	352.0	439.6	432.5	845.0
Other current expenses (AMD, millions)[b]	1,423.0	2,446.0	2,886.0	2,882.9	4,188.7
Financial gap (AMD, millions)	**–720.7**	**–1,675.1**	**–4,562.0**	**–2,601.9**	**–3,900.8**
Financial gap (collection) (AMD, millions)	**–5,162.2**	**–4,955.9**	**–5,562.9**	**–3,441.2**	**–4,687.4**
Subsidy for current activity (AMD, millions)[b]	**277.0**	**270.0**	**2,063.0**	**1,008.0**	**1,202.3**
Financial gap (collection) after subsidy (AMD, millions)	**–4,885.2**	**–4,685.9**	**–3,499.9**	**–2,433.2**	**–3,485.1**

Note: AMD = Armenian drams; CJSC = closed joint stock company; VAT = value added tax.
a. Data source: the financial statements of Yerevan Water and Sewerage CJSC.
b. Data are based on the calculations of financial flows of Yerevan Water and Sewerage CJSC.
c. Expenses for 2004 have been assessed based on actual data for the I–III quarters.

Despite the technical improvements achieved under the contract, YWSC's financial results remained unsatisfactory. The company continued to operate at a significant loss, accumulating nearly AMD 20.9 billion ($37.6 million) in losses during the management contract period (table 2.2). The main reason for this was that costs more than doubled while the revenue increases were not high enough.

The Yerevan management contract also failed to make a dent in the high levels of non-revenue water (NRW). The contract included an activity on enhancing leak detection and repair, with a target of 4,000 km by the fourth year. While NRW decreased in terms of volume of water lost (by 17 percent), it did not decrease as a percentage of water production. The main reason for this lack of progress was twofold: insufficient funding for the rehabilitation of the dilapidated distribution system in Yerevan, and the fact that the improvement in service continuity had a negative concomitant impact on water losses, as the network was under pressure (and therefore leaking) for many more hours than before. Moreover, from a monitoring point of view, the base year estimate for "unaccounted for water" was calculated using unmetered consumption and therefore misleading. Given these circumstances, the performance targets for NRW that were introduced in the contract were clearly not realistic.

Overall, the private operator earned $1.41 million in incentive payments (bonuses) over the 5-year management contract, in addition to the fixed management fee of $4.8 million. When the contract ended in April 30, 2005, the operator continued in an advisory capacity for two

months, until June 2005. The aim was to ensure continuity until the new lease operator for Yerevan took over. Key staff of the management contract, including the former Managing Director, were hired as individual consultants to serve in operational positions.

Main Messages and Lessons Learned

As PPP was a new modality for the country, the government decided to focus on a few key priority areas. The first was reducing intermittent supply while implementing demand-side management, particularly metering, debt forgiveness, and bill enforcement. Managing demand was a prerequisite for further capital investment because without a good basis for monitoring and collecting revenues, there would not be enough financing for investment. Secondly, the government decided to prioritize water supply and address sanitation later. The lesson learned is that for a management contract of limited scale and size, it is better to define a few essential activities that the private contractor can deliver quickly and efficiently. The gains from this experience laid the ground for further technical and operational improvements in subsequent PPP contracts.

The introduction of a private operator proved an important driver of public sector reforms. A major contribution of the private sector was not only the improvements it made on technical and financial performance, but also the impetus it gave to making difficult political decisions that would have been easy to defer under public service provision. The decision to turn to private sector operation brought major issues to the fore, such as customer debts, that would otherwise have festered unattended. Private management also increased expectations and scrutiny for water services, at a time when many citizens had resigned themselves to suboptimal results under public management.

The government made efforts to act as an equal partner (despite a sometimes shaky relationship) and took concrete actions to create an enabling environment for the PPP—instead of trying to push all responsibilities to the private operator. This attitude stands in sharp contrast to the one seen in many management contracts that were being implemented during the same period in other developing countries around the world, where accumulated frustrations with the many implementation challenges led to a return to public management. The continuous and welcomed support of donors as "honest brokers" was also important for supporting the partnership between private and public partners.

Another clear lesson is that the number of performance indicators should be limited and based on good asset inventory. The initial poor state of the infrastructure system made it difficult to set appropriate targets, such as for reducing NRW, which resulted in contractual targets not being achieved. In hindsight, 93 KPIs were just too many and set unreasonable expectations about what the private contractor could deliver in a limited amount of time and with limited transfer of responsibilities. The spirit of the Yerevan management contract was very much "input-based," as most of the KPIs related to the development of standard operating procedures, O&M plans, and other management plans. It might have been better to let the private operator focus on key performance issues, rather than the preparation of reports.

Notes

1. Only for the first 3 years of the contract.
2. In the first year of the contract, the indicator referred to the installation of *production* meters; in the second to fourth years of the contract, the indicator referred to the installation of *customer* meters.
3. The rest of the network sectorization was completed under the Yerevan lease contract, with a different operator.

Chapter 3 Yerevan Lease Contract: 2006–16

Water Sector Context in Yerevan Leading up to the Lease Contract

The relative success of the Yerevan management contract emboldened the government to expand private sector involvement in Yerevan and switch to a lease contract. This was, in many respects, a remarkable move. On face value, while the Yerevan management contract did achieve several notable improvements in performance, not all the KPI targets specified in the contract were achieved, and it failed to deliver the hoped-for improvement in the financial situation of the Yerevan water utility. Furthermore, the State Committee of Water Economy (SWCE) acknowledged that the daily relationship with the private operator was not always an easy one, and that ensuring a proper interaction and interface required considerable attention.

Overall, the Yerevan experience in the early 2000s was not radically different from the outcome of other management contracts that were piloted during this period in developing countries around the world. **All of these other contracts ended with a return to public management**, as the respective governments abandoned the PPP route.[1] However, in Armenia, the government took a radically different view. Rather than considering that with the Yerevan management contract the "glass was half empty" and the PPP had failed to meet expectations, it took the view that the "glass was half full" and felt encouraged to keep on the PPP road. Recognizing the inherent limitations of a *management* contract—with only limited transfer of risks and responsibilities to the private operator in a relatively short time span—the government did not choose to end the PPP experiment but instead decided to take it to a new level, shifting in 2006 to a 10-year *lease* contract in Yerevan.

The main goal of the Yerevan lease was to deepen the achievements under the YWSC management contract and make them sustainable, with the operator assuming more operational and commercial risks. The government remained responsible for financing the rehabilitation program—and undertaking overall contract supervision—with continued donor support to finance capital works. The service area of the new lease contract covered the city of Yerevan and 30 surrounding villages.

Tendering and Contract Terms

A competitive tendering process began in 2005 and resulted in the award of the contract to French operator *Compagnie Générale des Eaux* (CGE, now Veolia). Under the lease contract model, the private operator was remunerated entirely through the collection of tariff revenues from customers. Veolia offered the lowest average tariff, derived from a "base tariff" and "tariff adjustment factors" (billed water, inflation, exchange rate, and energy costs) for the whole 10-year period of the lease contract, as explained below. Following the contract award, Yerevan Djur, a closed joint stock company, was formed to execute the lease contract in Yerevan, with CGE as its sole owner and shareholder. The lease contract was signed on

December 14, 2005, for a 10-year period and officially began on June 1, 2006. The newly established company became the water utility providing services and directly billing customers.

The contract was designed as an "enhanced lease" with the private sector in charge of financing some minor investments and subject to penalties in the case of failure to meet some KPI targets. The private operator had to repair properties, plants, and equipment with short depreciation periods by setting aside a portion of its tariffs revenues—meaning that it had to finance a portion of the capital expenditure (capex) by itself, instead of through government transfers. Four KPIs were subject to penalties: continuity of supply (average number of hours per day), quality of water (potability), time to respond to customers' complaints, and timeliness in execution of the investment plan (portion financed by the operator). Sales revenues had to cover the lessee's expenses and profits, at the operator's own risk and based on the tariff level that had been specified in the bid.

The private operator had to pay a leasing fee to SCWE, the yearly amount being defined under the contract, to service the debt attached to donor-financed programs as well as to cover the rental of operating equipment.[2] This meant that apart from retaining the obligation to fund most of capex, the government no longer had to subsidize a portion of the operational costs or the debt service of water services in Yerevan—effectively setting the water services in the capital city on a course to become self-financed.[3]

Performance monitoring: The lease contract had clear annual objectives and the private operator had to submit semiannual performance reports. The PMU retained an Independent Technical Auditor and two financial auditors. SCWE and the private operator renegotiated the KPIs in 2009 to make the evolution of some targets more realistic, based on the experience gained during the initial 5 years of operation. For example, the negotiations reduced the target hours of water supply for the 3rd to 7th contract years, increased them for the 8th and 9th years, and left them unchanged for the final year.

Tariff setting: A 10-year program of tariff levels was established, with criteria for tariff adjustments. The base tariffs for the lease period were set during the tender process and were fixed in the license issued by the regulator in parallel with the signing of the lease (table 3.1). The customer tariff for the first year of the contract was AMD 173/m^3 ($0.39/$m^3$), compared to a prelease tariff of AMD 125/m^3 ($0.28/$m^3$). It must be noted that although this represented an increase of 38 percent, the water tariff in Yerevan still remained well below the average tariff level in other countries of the region. The license issued by the Public Services Regulatory Commission (PRSC) in parallel with the signing of the contract outlined the factors and formulas on which the base tariffs were to be reviewed, based on volume of retail water sold to consumers, inflation, EUR/AMD exchange rate and energy costs (in accordance with tender documents).

Implementation of the Contract

The staff of the former YWSC public utility was transferred to the private operator at the onset of the lease contract. This was done on a voluntary basis. Although this meant a change in

TABLE 3.1. Tariffs for the 10-Year Yerevan Lease Contract (Base and Actual)

	LC Y1 (2006–07)	LC Y2 (2007–08)	LC Y3 (2008–09)	LC Y4 (2009–10)	LC Y5 (2010–11)	LC Y6 (2011–12)	LC Y7 (2012–13)	LC Y8 (2013–14)	LC Y9 (2014–15)	LC Y10 (2015–16)
Retail services, AMD/m³ (including VAT)										
Retail tariff/base/	172.8	172.8	172.8	154.8	154.8	118.8	118.8	106.8	106.8	90.0
Retail tariff/actual/	172.8	172.8	172.8	181.0	181.0	174.1	174.1	170.3	170.3	170.3
Actual adjustment	0.0	0.0	0.0	26.2	26.2	55.3	55.3	63.5	63.5	80.3
Adjustment amount based on formula by factors, AMD/m³ (including VAT)										
Water sales	0.0	5.1	15.1	13.8	21.6	36.9	34.2	38.3	38.9	38.5
Inflation (CPI)	0.0	2.3	3.4	13.2	14.7	16.6	22.0	21.5	25.5	25.9
Exchange rate (AMD/EUR)	0.0	-3.8	-10.2	-10.8	-6.0	-6.3	-4.1	-3.9	-1.5	-0.8
Electricity price	0.0	0.0	0.0	6.4	6.4	3.3	3.3	7.6	9.9	9.2
Total adjustment required by formula	0.0	3.6	8.4	22.6	36.6	50.5	55.3	63.5	72.8	72.9

Source: Calculations based on Yerevan Djur CJSC's annual reports and technical auditor's reports.
Note: AMD = Armenian drams; CPI = consumer price index; EUR = euros; LC = lease contract; VAT = value added tax.

the benefits structure, switching to a private employment statute, a large portion of YWSC staff chose to join the private operator, as it gave them more prospects for salary increases and professional advancement.

The private operator was left with significant flexibility for implementation of investments. In the first year, the operator had to define an investment program jointly with SCWE and execute it under the umbrella of the $20 million World Bank- and government-funded loan for the Yerevan Water and Wastewater Project (YWWP).[4] In practice, the operator enjoyed significant flexibility in identifying investments, preparing tenders, and supervising civil works—an arrangement that was considered essential to ensuring that the capex program would be implemented efficiently. In addition, the government borrowed from other donors to carry out investments in Yerevan for a total amount of capex of about $68 million (table 3.2). The donors adopted the approach followed by the World Bank for the identification and execution of civil works, leaving significant flexibility to the private operator under the control of SCWE. Overall, the total amount of capex invested over the 10-year duration of the lease was fairly modest, considering it represented a per capita cost of less than $6 per year.

The actual evolution of tariffs broadly followed what had been agreed initially. For the first 5 years, the actual tariff adjustment was lower than the one allowed under the contract, as a result of negotiations between the government and the private operator in exchange for some limited tariff subsidies.[5] The volume of water sales as well as inflation were the factors that contributed most to tariff increases compared to the base tariff, while the exchange rate had a small negative impact. The low base tariffs at the start of the contract caused challenges for Yerevan Djur and made it difficult to carry out the necessary volume of

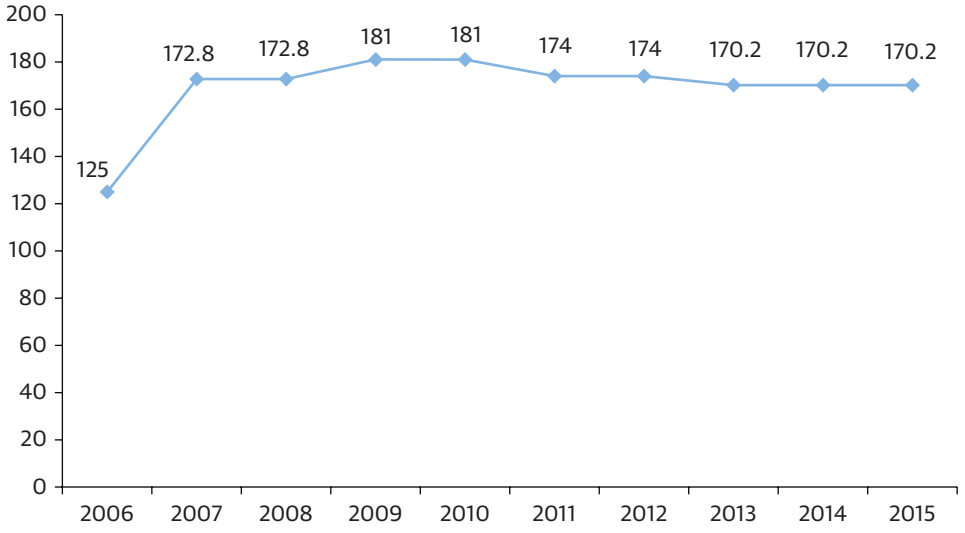
TABLE 3.2. External Loans and Credits in the Yerevan Djur Service Area as of December 31, 2015

Creditor	Loan/credit	Loan currency	Loan amount in contracted currency (millions)	Loan amount in US$ equivalent (approx.), millions
IDA	Yerevan Water & Wastewater Project	SDR	13	20
EBRD – EIB – EU	Yerevan Water Supply Improvement	US$	21	21
France	Yerevan Water Sector and Wastewater Improvement	EUR	24.4	27
Total amount: $68 million				

Note: EBRD = European Bank for Reconstruction and Development; EIB = European Investment Bank; EU = European Union; EUR = euros; IDA = International Development Association; SDR = special drawing rights; US$ = United States dollars.

maintenance and repair works initially. Moreover, customers had at first a mixed perception of the level of water tariffs in Yerevan. A survey found that 46 percent of households considered the level of the water bill to be "adequate," 39 percent considered it "rather high," and 16 percent "very high," even though the water bill represented only a small fraction of household budgets. Figure 3.1 shows how tariffs evolved during the lease contract (in nominal terms, as there was a significant reduction in real terms when accounting for inflation).

FIGURE 3.1. Evolution of Lease Tariffs in Yerevan: Retail Services



Note: Retail services refer to tariffs for households with a metered connection. Tariffs are expressed in Armenian drams per cubic meter (AMD/m³).

Monitoring of intermittent supply was carefully designed. Pressure loggers were installed in 60 zones of Yerevan to register the duration of water supply to customers as required by contract. The performance standards on continuous water supply applied only to Yerevan but villages supplied directly from the same transmission mains as Yerevan benefitted from 24-hour water supply as well. For the other villages, 10 in all, that did not have a connection to the main intakes, the minimum supply requirement was four hours. By law, the operator had to publish the hours of intended water supply service for each area of Yerevan twice a year in the press, and to enhance accountability, water supply hours were included in the customers' bills as of February 2010.

The Yerevan lease contract placed greater emphasis on customer service than the Yerevan management contract (box 3.1). It included a provision setting the permissible average response and repair times to major breakdowns during a given contract year at 24 hours. For written enquiries, the response time could not exceed 15 business days. Moreover, the

BOX 3.1. Customer Service under the Yerevan Lease Contract

The operator set up a Customer Service Department, which dealt with subscribers' calls, e-mails, and written complaints/inquiries. In the first year of the contract, it set up a "1-85" Call Center and a generic "1-85" number that all Yerevan Djur clients could access by landline and cell phone. After March 2014, it added three additional phone lines to the existing 10 lines. Subsequently, in 2015, the operator implemented new software at the 1-85 Call Center to localize calling subscribers on a map in order to better understand their issues. Following these improvements, the average number of calls received by the Call Center increased and the number of messages left decreased. The number of callbacks consequently went up by about 4,000 per month, which resulted in about 340,000 calls in 2014. About 30 percent of the calls were on commercial issues and the rest on operational and technical matters. Yerevan Municipality and independent audits verified that subscribers' complaints were less serious than in the past and that the number of "persistent" cases had dropped.

TABLE 3.3. Main Technical and Economic Indicators for Yerevan during the Lease Contract Period

Indicator	Base year (2005)	Lease contract (Year 10)
Hours of supply (hours/day)	18.4	23.4
Water quality compliance (percentage)	97.2	100.0
Response times for major breakages (hours)	nd	6.43
Response times for written enquiries (days)	nd	7.37
Electricity consumption (kWh, millions)	124.2	23.6
Share of subscribers with water meter (percentage)	87.0	98.4
Water supplied to network (m^3, millions)	359	270
By gravity (percentage)	56.6	78.5
By pumps (percentage)	43.4	21.5
Water losses (percentage)	83.0	74.6
Collected revenue (AMD, millions)	4,435	11,298
Collection rate (percentage)	79.2	97.2
Number of staff per 1,000 subscribers	4.9	3.2

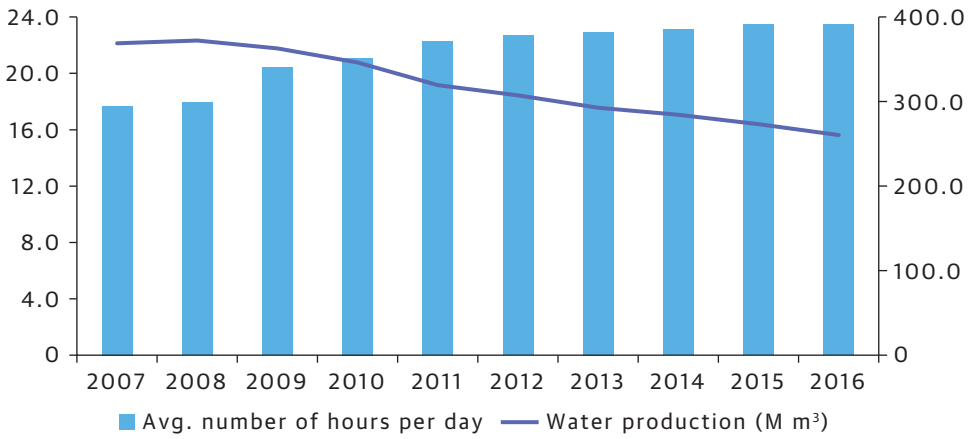
Note: AMD = Armenian drams; nd = not determined.

operator was obliged to develop and maintain a computerized register of all customer complaints. They also had to report on customer complaints and response times every year and the Independent Technical Auditor verified the report.

As table 3.3 shows, **the lease contract was successful in building on the early progress made under the Yerevan management contract, entailing significant additional improvements in service quality and operational performance.** By the end of the 10-year lease, most of the population of

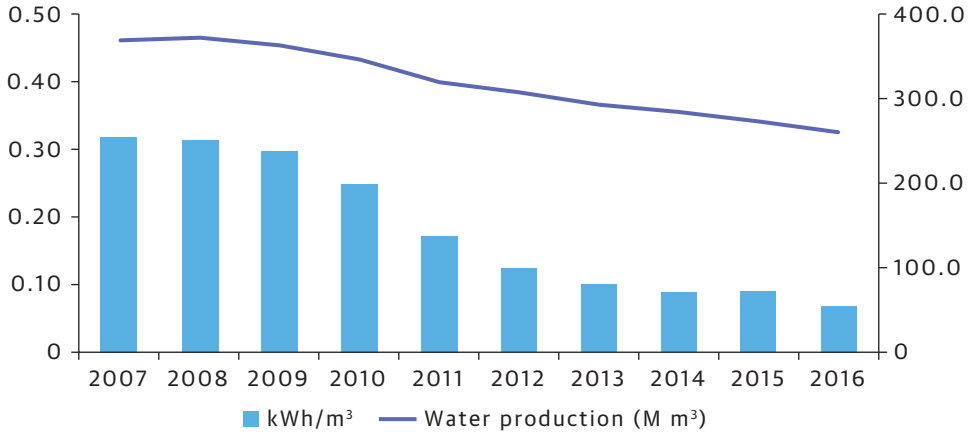
Yerevan enjoyed continuous 24/7 water supply (figure 3.2) and water that fully complied with potability parameters.[6] The improvement in water supply continuity was not due to more water being introduced into the network—as the actual volume of water went down—but to improvements in the hydraulics of the network. Almost all customers became metered and billed based on their actual consumption.

FIGURE 3.2. Evolution of Continuity of Water Supply under the Yerevan Lease



Note: M m³ = millions of cubic meters.

FIGURE 3.3. Evolution of Energy Efficiency under the Yerevan Lease



Note: Energy efficiency is measured by energy usage (expressed in kWh) per m³ of water produced.

Major improvements were also recorded in operational efficiency, with the most impressive result being the reduction in the consumption of energy by a factor of five compared to the level 10 years before, and a concomitant dramatic increase in energy efficiency (as shown in figure 3.3 by the reduction in the amount of energy needed to produce 1 million m³ of water—from 0.32 kWh/m³ to 0.07 kWh/m³). This was achieved by further investing in the modernization of network hydraulics (change in the intake structure to increase the proportion of gravity fed supply), as well as in new energy savings pumps. The bill collection rate was also significantly increased (up to 97.2 percent) and the labor productivity ratio was improved to 3.2 staff per thousand connections—figures that are comparable to well performing utilities in more developed countries.

One area where no improvement in performance was recorded is the level of water losses. While the level of losses did go down by 8 percentage points, it still remained stubbornly high at about 75 percent. This aspect deserves further discussion. The switch to continuous 24/7 supply in Yerevan was not achieved by increasing the volume of water injected into the distribution network—as is typically the case when a water utility attempts to move from intermittent to continuous supply. On the contrary, the actual volume of water production

dropped by about 25 percent over a decade (from 359 million m^3 in 2005 to 270 million m^3 in 2015). In practice, there is little question that the overall functioning of the distribution network did improve, with the generalization of pressure-reducing valves and the introduction of zoning to help identify leakages. But as the distribution network was also put under pressure for a longer duration (from an average of 18.4 to 23.4 hours per day, a 27 percent increase), the total volume of water lost through leakages was bound to increase given the absence of a major network rehabilitation program to replace highly deteriorated pipes on a large scale.

Under the lease contract, financing for such a network rehabilitation investment would have been the responsibility of the government, but **the total amount of donor financing that was ultimately available during the 10 years of the lease contract (about $60 million) was insufficient for the private operator to deal with the scope of the water network rehabilitation needs**. In fact, carrying out a massive rehabilitation of the water distribution network in Yerevan was not a priority for the country, considering that overall donor funding had to be allocated across multiple priorities and sectors. Given the availability of plentiful and cheap water resources for the Yerevan distribution system, it is likely that the actual "economical level of water losses" (i.e., the level of leakages at which the cost of repairs exceeds the benefits from water saved) is quite high. The new lease contract, which includes a specific financial incentive for the operator to reduce water losses (see chapter 8) will hopefully result in significant NRW reductions—provided of course there is enough capex funding.

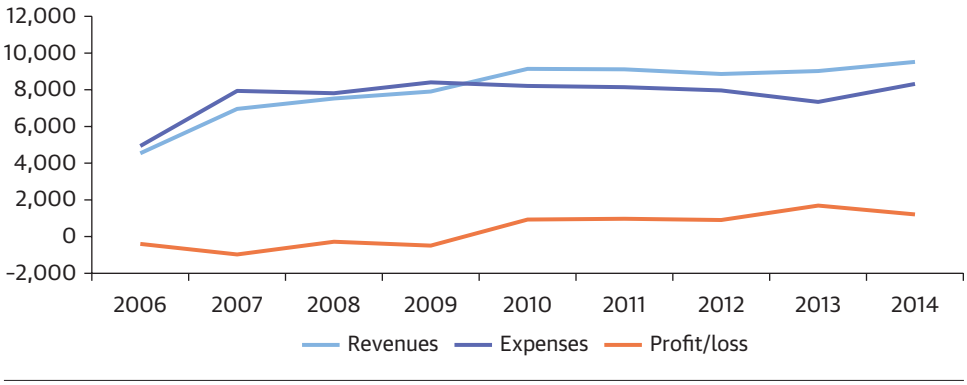
One of the reasons for the good performance of the lease contract was that the operator was responsible for the implementation of the investment program, and did so efficiently. It was made possible by the flexibility left by SCWE to the private operator for identifying, designing, and supervising civil works. While this project was still subject to SCWE scrutiny, assigning significant responsibility to the operator meant the limited capex funding available could be directed to those investments with the highest impact on service quality and operational performance. It also reduced time spent execution, as the private operator had clear incentives to complete each work as soon as possible.

Importantly, Yerevan Djur gradually transformed from a foreign-operated company to one managed nationally. During the contract, Veolia raised the salary levels of its staff several times to boost performance, in parallel with a gradual reduction in the total number of staff through retirement attrition. It also invested in personnel development by sending many staff members for training to France. By 2012, an entirely Armenian team was managing Yerevan Djur, which continued until the end of the lease, with no expatriates and only limited support from headquarters in France. There is wide consensus among stakeholders that significant knowledge was transferred from the operator to local staff under the lease.

In the early stage of the lease contract, Yerevan Djur did not generate enough operating cash surplus for the private operator to be able to contribute to capex. This was a direct

consequence of CGE having a rather aggressive financial proposal in the tender in order to win the lease contract—effectively taking the risk that it might not be able to make the company profitable in the end. Over the first 2 years, operational costs increased by 60 percent, as the private operator made efforts to raise the level of service and operational practices. As a result, Yerevan Djur ran an operating loss during the first 4 years of the contract (appendix A, tables A.1 and A.2). To make up for the early financial shortfall, Veolia (the operator's sole owner) had to provide bridge financing of €4 million in 2006-07.[7]

FIGURE 3.4. Evolution of Revenues and Expenses for the Yerevan Lease Contract



Note: All figures are expressed in millions of Armenian drams.

Water services in Yerevan became fully self-financed by 2011. By year 3 of the lease, operational costs had been contained and the company started to reach financial equilibrium, as revenues gradually increased with the collection rate—indicating that it was on a course toward becoming financially viable based on tariff revenues alone with full recovery of O&M costs (figure 3.4). Yerevan Djur turned a first year of profit in 2010 (due partly to an operational subsidy from the municipality of Yerevan), and was financially self-sustainable by 2011. Over the period 2006-15, the private operator made a cumulative operational profit of about $4.1 million or $0.45 million per year on average (before taxes).

A **beneficiary survey conducted in December 2011** found that the majority of respondents (65 percent) felt the water system management in Yerevan had significantly improved since the beginning of the lease contract. Only 6 percent thought the trend was negative. The survey also found that 16 percent of respondents deemed the tariff at the time very high and 46 percent deemed it adequate, although in reality the average water bill did not exceed 2 percent of households' overall monthly per capita spending. Only 30 percent of respondents wanted to revert to state-managed services rather than continue with a PPP.

Main Messages and Lessons Learned

The clear success of the Yerevan lease contract shows the overall benefits of a lease model over a management contract. The lease contract generated a "cultural shift" toward improving the quality and efficiency of water services, with a wider transfer of risks and responsibilities and much sharper incentives. The private operator was henceforth assuming all operational and commercial risks, but in exchange had much more flexibility to make operational decisions, with all employees placed under private contract. The operator was also involved for a much longer duration, enjoying enough time to make in-depth cultural changes in the way

the utility functioned. The lease contract introduced a simpler and sharper "built-in" incentive framework, pushing the private operator to reduce its operating costs and increase billing and collection rates. The **adoption of an "enhanced lease" structure with some capex funded by the private operator and a few key KPIs subject to penalties made the incentive framework even more effective**.

The positive experience of the Yerevan lease also shows the benefits of a sequenced approach to PPPs. Despite its obvious benefits, the implementation of the lease/*affermage* model (which was originally developed in France and Spain) in a developing country has had a rather mixed record over the last two decades. While it was successfully replicated in the Czech Republic (where about 70 percent of the urban population is now served by private water operators under municipal leases), as well as a few cities in Slovakia and Poland, the track record in developing countries has been more uneven. *Affermage* contracts have proved very successful in Senegal and Niger at improving services, and gradually achieving financial sustainability of the water sector (just like in Yerevan), but attempts to implement lease contracts in other African countries have been disappointing. For instance, the lease contract that started in 1999 in Maputo (Mozambique) had rather mixed results, and the lease contract in Dar El Salam, Tanzania (2003-04), was canceled in its second year amidst acrimonious disagreement between the public and private partners. The mixed results across these countries suggest that **the complexity of the lease/*affermage* approach requires careful preparation and entails significant risks** in developing countries with limited capacities and widespread governance issues, and that their implementation may be enhanced by adopting a gradual approach like in Armenia.

In the case of Armenia, there are indications that the earlier implementation of the management contract in Yerevan did facilitate the implementation of the lease contract later on, as confirmed by interviews with SCWE staff in charge at the time. If the government had immediately gone for tendering a lease in 2000, the uncertainties with baseline data and overall country risks—not to mention the lack of previous experience with water PPPs—would have made it unlikely that the winning bidder would have accepted to take on the kind of financial risks that Veolia did. The foundation set by the Yerevan management contract made the future lessee more willing to plan on a major turnaround in revenues and collections and more accepting of financial losses in the early years. Had the government immediately opted for tendering a *lease* contract—without first going through the *management* contract—the tender would probably have resulted in a higher tariff hike for customers and an even higher end tariff—which would probably have endangered the entire PPP reform. It would also have been difficult to implement an "enhanced lease" structure with targets for key KPIs without a reliable baseline.

Finally, **one key element of the success of the Yerevan lease is the flexibility that was left to the private operator for designing and implementing the capital investment program**. This was based on an arrangement that gradually evolved as SCWE and donors became comfortable that the private operator could be trusted to implement capex in an efficient manner.

This assessment was confirmed in all interviews conducted with donors who supported the Yerevan lease contract, as part of the preparation of this study. Given the fairly limited funding available from donors during the 10 years of the lease, this arrangement was key to ensuring that investments would target those actions that had the largest positive impact on service quality and operational efficiency.

Notes

1. This key matter is discussed in more detail in chapter 8, which captures the main lessons from the four PPPs.
2. It is important to underline that the yearly lease fee was preset in a specific schedule of the contract. This represents the fundamental difference between a lease contract and an *affermage* contract, whereby the lease fee is replaced by a tariff structure in which a portion goes to the private operator (operator's fee) and another portion goes to the government to cover the debt servicing of capex.
3. The total amount of the lease fee was almost AMD 4 billion ($8.7 million). The lease fee paid by Yerevan Djur to the government over the 10 years of the lease contract had been set in the contract so as to cover the repayment (principal and interest) of the two World Bank loans provided for Yerevan PPPs (the first one under the management contract, and the new one for the lease).
4. The first component of YWWP was the $18.75 million YWWP Fund, which covered investments in system rehabilitation and upgrading. In addition, a Project Preparation Facility financed consultants to draft the lease.
5. The larger difference was in year 5, when the actual tariff adjustment was 28 percent lower than the amount allowed per the contract, with the municipality of Yerevan providing in exchange a one-off subsidy of $1 million.
6. The 23.4 hours per day figure reported in the table for 2016 is an average across all service areas of Yerevan Djur, including a few small towns outside of Yerevan not connected to the main water supply system that still had an intermittent supply, and some areas in Yerevan that still suffer from moderate shortages in the summer.
7. Of which €1 million was equity and €3 million was debt. The debt was fully paid off as of January 1, 2015. The municipality of Yerevan also provided a one-off operational subsidy in 2010.

Chapter 4 Armenian Water and Sewerage Company Management Contract: 2004–16

Water Sector Context in Secondary Towns and Cities before the Management Contract

The Armenian Water and Sewerage Company (AWSC)'s service area included almost 320 cities, 37 urban centers, and 283 rural communities covering a **total population of about 620,000 people outside Yerevan**. AWSC had been operating as a national public water company since the recentralization of water services in the late 1990s, and was fully owned by the State Committee for Water Economy (SCWE). At the start of the management contract, about 15 percent of the population received water from public standpipes. AWSC had about 250,000 connected customers spread throughout the country, with infrastructure consisting of 441 abstraction points, over 8,000 km of water supply networks, 12 water treatment plants, and a multitude of reservoirs, pumping stations, and chlorination points. The sewerage system consisted of 2,000 km of pipes and served about 53 percent of water customers. Many of the water systems were gravity-fed due to the local topography.

Prior to the start of the management contract, AWSC faced many serious challenges in delivering services. The structures and pipelines of the water and wastewater system were dilapidated and assets had been insufficiently maintained and rehabilitated for many years. Because of widespread water leakages, deteriorated electrical and mechanical installations, and poor operational management, the average daily supply of water was only about six hours. Operating costs were high, due in part to the heavy power consumption needed to keep the few operable but inefficient pumps in service. There were frequent leaks and overflows in the sewerage system. Photo 4.1 illustrates the poor state of the infrastructure at the time.

AWSC was in poor financial shape before the start of the management contract. Even though the customer tariff had almost doubled since 2002, it still stood at only AMD 100 per m^3 (about \$0.21/m^3). Collected revenues were not enough to cover operations and maintenance (O&M) costs. The residents of the small towns and rural areas that were part of AWSC's service area had relatively low incomes (about half that of Yerevan), so their capacity to pay was small. At the same time, the unreliable service provided and poor billing system (60 percent of customers were billed based on estimates) resulted in low willingness to pay. Illegal connections were widespread, involving many businesses such as hotels, workshops, and industrial bakeries close to pumping stations. As a result, the bill collection rate was a mere 47.9 percent, with four out of five customers having more than 4 months' debt with AWSC.

There were considerable water leakages, but the actual volume could not be properly calculated because of a total lack of customer and bulk metering. Operating costs, which had

increased from $5.45 million in 2001 to $7.1 million in 2003, exacerbated the already precarious financial situation caused by weak revenues. A bloated workforce, at 9.45 employees per 1,000 connections, further compounded the problem. To cover its growing cash deficit, AWSC had to rely on subsidies from the government, including exemption from paying VAT. The government also had to pay the company's bills to the electric power company and the bulk water supplier. The situation was clearly becoming unsustainable by the early 2000s.

PHOTO 4.1. State of Water Infrastructure before the AWSC Management Contract

Burst pipes leading to spectacular leaks

Distribution chamber

Pumping station

Source: Patrick Lorin.

Tendering and Contract Terms

While **the idea of undertaking a management contract with AWSC had germinated at the same time as that for the Yerevan management contract**, the government decided to wait until initial improvements were made, and early lessons could be drawn, from the Yerevan experience. In 2002, the government decided to go ahead, but only after restructuring AWSC's balance sheet in order to prepare it properly for private management. The Law on Debt Forgiveness in 2002 led to the write-off of AWSC's debts and reduced its deferred liabilities and other arrears significantly. The goal of the restructuring was to shield AWSC from debt accumulated prior to the start of the management contract.

The contract was prepared as meticulously as the Yerevan management contract and the preparation process also began two years before tendering. In addition to hiring a consultant firm to review available options, prepare bidding documents, and draft the management contract, the government prepared an outline of the priority works program that AWSC would implement under the private contractor. Although this capital expenditure (capex) program was merely indicative and the contractor was given the flexibility to refine it, defining the program early minimized the risk of implementation delays.

In 2003, the government issued a call for tenders for a 4-year, performance-based management contract. A total of 10 firms submitted Expressions of Interest and four international

operators from France, Germany, and Italy ultimately submitted bids. The government evaluated the bids from January to April 2004, reviewing both the technical and financial proposals, and finally selected the French water operator SAUR as the winner. The management contract was signed on August 19, 2004, and transferred the powers of the Executive Body of AWSC to the new private operator, who in turn established a dedicated local subsidiary company (Saur Sevan Services) to implement the contract. Appendix B has more details on the tendering process, which was carried out with the technical assistance of the World Bank.

The contract duration was originally set at 4 years, with the possibility of a 2-year extension, but finally lasted 11 years. The contractor had two sets of responsibilities under the management contract. The first was to administer AWSC's daily operations, including technical, commercial, financial, and personnel issues. The second was to define, prepare, implement, and manage the capex program. The private operator would formally apply for tariff revisions on behalf of AWSC, with the Public Services Regulatory Commission (PRSC) responsible for reviewing the request and making a decision on the proposed tariff—but this could not affect the remuneration of the private operator, which came (partly) from its performance-based management fee and not from tariff revenues. At the beginning of the management contract, the average share of the water bill in household expenditure was about 1 percent in the area served by AWSC.

As with the other PPP contracts in Armenia, donors financed the investment program and supported the overall partnership. The World Bank's Municipal Water and Wastewater Project (MWWP) provided a $43 million loan package to finance the implementation of the investment program. In addition to supporting the preparation and tender of the AWSC management contract, the project components financed (i) the fixed fee and performance bonus of the private contractor for the first 4 years of the management contract; (ii) various costs associated with improving operations, including a redundancy program to reduce AWSC's staff, the purchase of communication equipment, and the setting up of training facilities, staff training activities, and laboratories to test water quality; (iii) a revolving fund for the installation of block meters in condominiums, and for financing some of AWSC's operating expenses, such as the purchase of spare parts and chemicals; and (iv) the rehabilitation of water supply and sewerage networks and other branch investments, such as offices and operating equipment. Other donors—EBRD, EIB, NIF, and ADB—also provided financing for capex, bringing the total amount to $180 million (table 4.1).

The contractor's fees comprised a fixed fee and a Performance Incentive Compensation. This performance-based remuneration consisted of a schedule of bonuses and penalties. The fixed fee was a monthly lump sum paid to cover the expenses of implementing the management contract. When the contract was amended in 2011, the Performance Incentive Compensation was set so as not to exceed the equivalent of 25 percent of the annual base management fixed fee. The penalties could not exceed the equivalent of 20 percent of the annual base fixed fee for the same period. In addition, the management contractor had to

TABLE 4.1. Overview of Loans Received by AWSC during the AWSC Management Contract

Source	Description	Period	Amount
World Bank (IDA)	Municipal Water and Wastewater Project; two credits provided by IDA	2004–11 2012–15	$43 million
EBRD – EU – EIB	Armenia Small Municipalities Water Project	2011–15	€20 million ($26 million)
EBRD	Armenia Lake Sevan Basin Environmental Project	2006–12	€7.0 million ($9.5 million)
EU	Armenia Lake Sevan Basin Environmental Project	2006–12	€5.0 million ($6.5 million)
ADB	Water Supply and Sanitation Sector Project, which had two components: (i) upgrading and rehabilitation of WWS systems in 16 towns and 125 villages, and (ii) improvements in management and operational efficiency.	2008–13	$50 million
ADB	Additional financing of the WWS Sector Project	2012–17	$45 million
Total			**$180 million**

Note: ADB = Asian Development Bank; AWSC = Armenian Water and Sewerage Company; EBRD = European Bank for Reconstruction and Development; EIB = European Investment Bank; EU = European Union; IDA = International Development Association; WWS = water and wastewater services.

provide a performance guarantee of 10 percent of the total amount of the management fixed fee for the duration of the contract.

The AWSC management contract included 25 performance indicators—much less than the 93 indicators in the Yerevan management contract. The rationalization of indicators reflects a significant lesson learned, as having 93 KPIs had been cumbersome to manage and proved unnecessary. Similarly, NRW was not included as a contractual indicator in the AWSC management contract, in recognition that the contract was not designed to make an impact on the NRW level. Of the 25 contractual indicators, only four were linked to incentive compensation and were the actual focus of the management contract: (i) continuity of water supply, (ii) effectiveness of meter installation program, (iii) water safety compliance, and (iv) company operating efficiency (collection ratio)—with different weights for calculating the bonuses and penalties. In the case of service duration, the bonuses/penalties could not be higher than 10 percent of the base management fixed fee for a given year. The contract defined three groups of cities and set differentiated targets for each group, as well as separate targets for rural communities.

Implementation of the Contract

One of the main challenges of improving AWSC performance was the geographical fragmentation of the services, spread over the country's entire territory. Initially, the team consisted of 21 experts, including seven SAUR Group staff (the expatriate staff had been reduced to three by the fourth year). During the first year, the contractor rationalized 36 former AWSC branches into four well-organized and operationally autonomous regional branches,

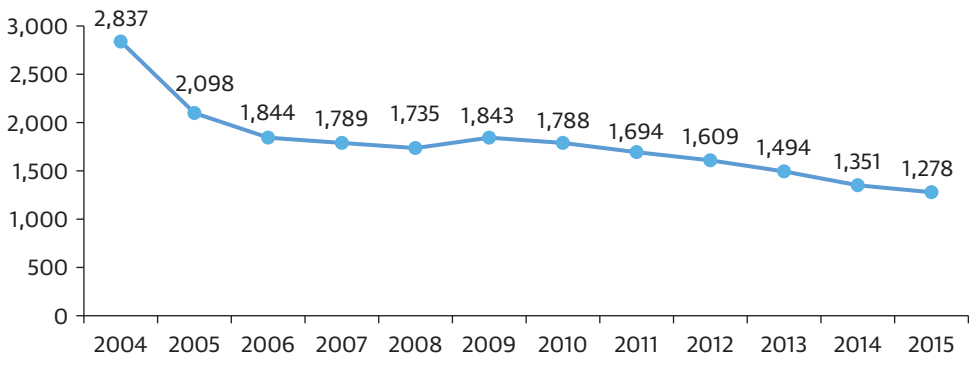
with procurement and revenue centralized at head office. While this rationalization process generated resistance from local authorities, the contractor was able to go ahead thanks to the backing of SCWE and the powers granted to it in the contract.

The contractor also worked on optimizing staffing arrangements. In 2004, AWSC employed 2,837 people, of which 2,250 were based in more than 37 territorial branches and the rest at headquarters in Yerevan. The staffing ratio—at 9.45 staff per 1,000 water connections—was clearly excessive, even when allowing for the wide dispersion of infrastructure systems across the AWSC service area. Moreover, staff members were poorly motivated and had limited opportunities for professional development. Through natural attrition as well as a voluntary redundancy program financed by the MWWP, the private operator managed to rationalize the workforce and gradually reduce its size until it reached the more reasonable staffing ratio of 6 employees per 1,000 subscribers (figure 4.1). Staff members reportedly welcomed the retrenchment and many volunteered to leave because of the attractive terms offered.[1] At the same time, the average salary for the remaining staff was raised significantly, from AMD 32,000 ($70) to AMD 56,000 ($120) per month for the duration of the management contract.

Some early challenges to implementing the management contract are worth noting. The Electrical Network Company unilaterally decided to cut off electricity supply to all AWSC facilities within hours of the management contract's signature, because of large unpaid bills—an issue that had to be dealt with, as a matter of priority, with the help of SCWE. While MWWP subsidized the cost of installing residential meters for low-income households, benefiting about 2,000 households, residents of rural areas offered some resistance when the contractor wanted to regulate the flow of water to villages, as many considered water an ancestral possession and refused to come under the remit of the contractor.[2]

In the context of the MWWP, **the AWSC investment program prioritized water production, water distribution, and wastewater collection in small and medium towns** so as to reach the maximum number of people given the limited funding available for investment. In villages and smaller settlements, activities focused first on providing sufficient bulk water supplies and renovating pumping stations. Faced by a rather daunting task, given the state of disrepair of most water infrastructure across the country, the private operator worked on establishing priorities. It focused on "quick win" solutions, including improving valve operations, modernizing chlorination points, performing

FIGURE 4.1. Average Number of AWSC Employees, 2004–15



Note: AWSC = Armenian Water and Sewerage Company.

urgent repairs and replacing equipment, as well as simply rationalizing the network to reduce losses.

There was a notable effort to improve commercial practices—much more than under the first management contract in Yerevan. A dedicated customer call center was opened. To deal with illegal connections, the operator installed water chamber meters at the borders of each property to prevent illegal connections upstream of the water meter. Some creative measures were taken to promote payment discipline among customers, such as the creation of a national lottery for customers who regularly paid their monthly bills and had a water meter installed.[3]

The contract was extended several times until 2016—finally lasting for 11 years in total, a reflection that the government was both satisfied with the gradual improvements and cognizant that the private operator needed time to make an impact on AWSC given, among other things, the fragmentation of services across the service area. In October 2008, the contract was first extended by 2 years and then for an additional year until October 2011. In 2011, an amendment introduced penalties to the contract (bonuses had been included from the beginning). Another extension was granted until 2014, as part of a negotiation whereby SAUR joined the consortium of the management contract for Lori, Shirak, and Nor Akunq. Finally, when the government made the policy decision in 2014 to adopt one single operator for the whole country under a lease contract, the end date of the AWSC contract was extended further—until May 31, 2016, to align with the end date of the Yerevan lease contract. There was a final contract extension, from June 2016 to December 21, 2016, to accommodate the late tender process for the national lease contract (see chapter 7).

When the parties extended the contract in October 2011, they reformulated it as an "enhanced management contract." The change was to allow the operator to maintain a certain level of performance once it had achieved the targets set in the respective KPIs. The operator had to both manage AWSC and prepare a "total management plan" (TMP) as part of the enhanced management contract approach. According to the contract amendment, the TMP included a business plan and an open format financial forecasting to advise the government on developing a long-term funding strategy. The TMP's aim was to help SCWE make better decisions on when it was most appropriate to repair, replace, or rehabilitate particular assets. The contractor had to develop an asset inventory, undertake sectorization of the water distribution system, and set a timeline for rehabilitating critical assets.

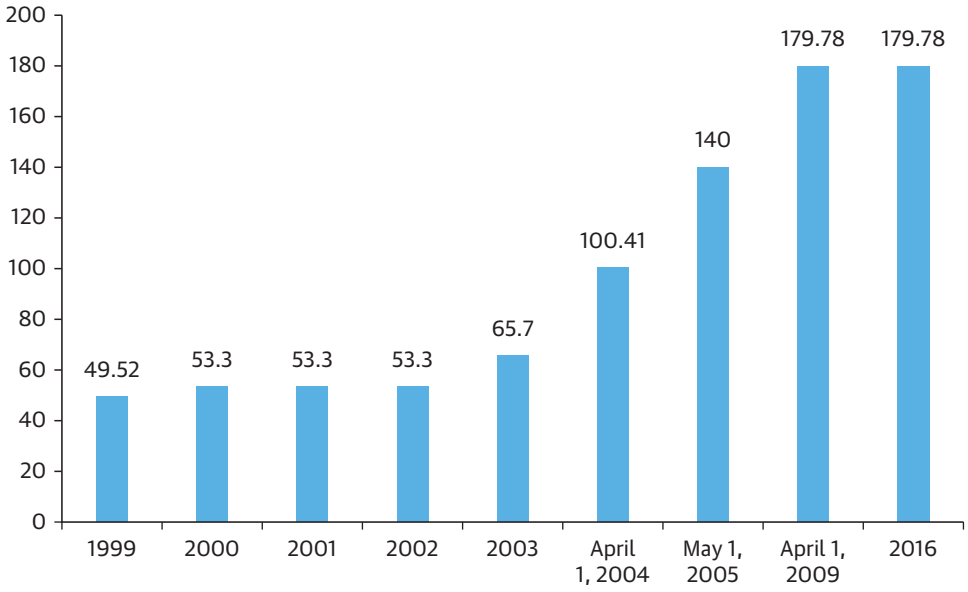
The first tariff increase under the management contract was introduced at the end of 2005. Tariffs went up from AMD 100/m^3 ($0.21/$m^3$) in 2004 to AMD 140/$m^3$ ($0.30/$m^3$), a 40 percent increase. The tariff was increased a second time in 2008, this time by 25 percent. By 2016, the combined water supply and sewerage tariff had reached AMD 180/m^3 ($0.38/$m^3$) (table 4.2 and figure 4.2). The cumulative increase led to a significant income boost for AWSC, which allowed it, among other things, to pay for increases in staff salaries. However, it proved

TABLE 4.2. Average Water and Wastewater Tariff, AWSC Management Contract

Service	Measurement unit	2004	2005–March 2009	April 2009–16
Water supply	AMD/m³	90.36	115.65	154.47
Sewerage	AMD/m³	10.05	24.35	25.31
Water supply and sewerage	*AMD/m³*	*100.41*	*140.00*	*179.78*

Note: AMD = Armenian drams; AWSC = Armenian Water and Sewerage Company.

FIGURE 4.2. Average Water and Wastewater Tariff under the AWSC Management Contract



Note: All tariffs are expressed in Armenian drams; AWSC = Armenian Water and Sewerage Company.

insufficient to allow AWSC to become financially self-sustaining. **AWSC continued to receive subsidies from the government every year.** The subsidies increased from 8 percent of operating revenues in 2004 to 35 percent by 2010 (table 4.3). These subsidies covered debt service as well as a portion of O&M costs, and were provided in a manner that was neither transparent and targeted nor time-bound.

The private operator introduced several technological innovations to AWSC's operations. These included HDPE pipes, loggers with online flow and pressure in strategic points, and a GPS system to track all vehicles. These technologies helped optimize the company's technical operations. In addition, the contractor switched to reading the water meter by photo camera, which transmitted the photo directly to the billing center. This move helped reduce the number of human errors and the risk of tampering by meter readers. Building on the early successes of the initial investments, the contractor focused on reducing energy consumption—by rehabilitating the biggest pumping stations, improving pumping time by using the night tariff, switching to gravity supply as much as possible, and decreasing water losses.

During the third phase of the contract, the emphasis shifted to strengthening customer relations. The contractor established a customer service center with a call center and centralized billing. Initially, customers were worried about lodging complaints to the customer center or using the customer hotline, as they had been discouraged by some AWSC employees from doing so. In response, the contractor invested in training its staff to be more welcoming to customers. The contractor also initiated a public relations and education campaign, using the media and NGOs.

TABLE 4.3. Subsidies to AWSC during the Management Contract Period

AMD (millions)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total subsidy	1,366.5	1,381.3	1,381.3	1,213.5	863.4	811.6	811.6	1,076.2	1,509.5	1,547.3	2,170.7
Operational subsidy	1,366.5	1,381.3	1,381.3	1,213.5	863.4	811.6	811.6	1,003.2	1,404.2	899.4	1,226.8
Subsidy for debt service	0	0	0	0	0	0	0	73	105.3	647.9	943.9

Note: AMD = Armenian drams; AWSC = Armenian Water and Sewerage Company.

TABLE 4.4. Selected Performance Indicators, AWSC, 2004–15

Performance indicator	Measure unit	Base year (2004)	End year (2015)
Hours of supply	hours	6.04	18.00
Share of costumers with water meter	%	40.2	86.1
Water quality compliance	%	93.8	98.7
Share of communities with the minimal hours of supply	%	68.1	99.3
Revenue collected on domestic subscribers per registered inhabitant	AMD	166.00	552.00
Collection rate	%	47.9	90.1
Share of subscribers with the more than 4 months debt	%	79.5	19.5
Average domestic metered consumption per registered inhabitant	liters	81.00	120.00
Number of staff per 1,000 subscribers	person	9.45	4.80
Electricity consumption	kWh/m^3	0.43	0.22

Note: AWSC = Armenian Water and Sewerage Company.

Results and Key Factors

The AWSC management contract proved efficient in significantly improving the continuity and quality of water supply throughout the country. At the beginning of the contract, water supply was only 6 hours a day and continuity was the most important challenge. As customers were not willing to pay for such poor water supply, improving the reliability of services was crucial for catalyzing a virtuous circle and increasing willingness to pay. Throughout the contract, **improvement in water supply averaged a steady 1 additional hour per year** and increased threefold over the life of the contract—with **on average about 18 hours of service per day** by the end of the contract (table 4.4). At the same time, the quality of the water delivered improved markedly, with up to 98.7 percent water potability compliance by the end of the contract.

These results were achieved by focusing on some key operational actions: repairing the most visible leaks, modernizing the reservoirs, rationalizing the distribution network, through generalization of pressure reduction valves, the installation of more efficient pumps, and fighting illegal connections.[4] The improvements proved generally stronger in towns than in villages, reflecting the lack of sufficient funding for investment for smaller settlements, where unit costs were higher. A beneficiary survey conducted in

December 2011 found that 74 percent of respondents thought the quality of water and wastewater management had improved since 2004, while only 21 percent thought it had remained the same and 5 percent felt it had worsened. At the end of the management contract, only 33 percent of respondents wanted to revert to state-managed services.

The operational efficiency of AWSC also significantly improved under the management contract. The bill collection rate went up from 47.9 percent in 2004 to 90.1 percent in 2015. Labor productivity doubled. The proportion of metered customers more than doubled, up from 40.2 percent to 86.1 percent. Energy efficiency improved twofold, with unit power consumption down from 0.43 kWh/m^3 to 0.22 kWh/m^3.

However, little progress was made in improving the financial situation of AWSC, despite a more than threefold increase in the collected revenues from water sales. While unit operating costs continued to be very high—due in part to the wide dispersion of services across the country, which stymied the achievement of economies of scale—the tariff level was still below the one in Yerevan by the end of the management contract. As a direct consequence, AWSC continued to depend on government subsidies for its financial survival. Over time, AWSC's equity decreased from the equivalent of $56 million in 2004 to $2.6 million in 2010. Part of the difficulty was that the funds available for capex were too low, given the overall deteriorated state of the system, compared to what would have been needed to carry out modernization works and significantly reduce operating costs.

While **NRW was not part of the performance indicators at the beginning of the contract**, targets were set for water losses (defined as NRW in the contract) in the fourth contract amendment in 2011. The target was to reduce water losses from 83 percent in 2010 (which had gone up from 76 percent since 2005) to 70 percent in 2014. There was only marginal improvement and the target was not met, as the level of NRW stood at 78.4 percent in 2013. AWSC did make significant efforts to rationalize the distribution systems—among other things, by installing pressure-reducing valves, replacing 180 km of pipes, and replacing leaking pipes and valves in the basements of apartment buildings—but these actions more or less merely compensated for the negative impact on leakages from improved continuity of supply (as increasing duration and pressure also increases leakages). The government could simply not afford the massive investment required to rehabilitate the water distribution system across the 320 towns and smaller villages covered by AWSC. Again, as in Yerevan, the economic level of leakages for AWSC is probably quite high anyway, given the abundance of low-cost water resources across most of Armenia and the fact that most distribution systems are gravity-based.

Between 2004 and end 2011, the contractor earned a total $17 million in management fees. Of this amount, $14.5 million represented the fixed fee and $2.5 million the performance bonus. Up to year 9 (2013), the management fee was paid by the World Bank but, as of 2014, the German government-owned development bank KfW started doing so. The fee was net of VAT and Enterprise Profit Tax, as per the specific terms of the management contract.

Main Messages and Lessons Learned

The AWSC contract shows an evolution in the design of management contracts in Armenia. First it focused on both managing and supervising the construction of infrastructure. This approach was in contrast to that of the Yerevan contract, which focused on a smaller set of activities, particularly metering and some limited rehabilitation. Second, the number of KPIs was significantly reduced.

As in the case of Yerevan and despite a more challenging environment, **the AWSC management contract achieved significant improvements in service quality and operational efficiency**. However, the dispersion of systems across the country made this process lengthier, more difficult, and more costly. The 12-year duration of the management contract is unusual for what should be a short-term arrangement, reflecting the many adjustments that had to be made in the course of implementation and the lengthy decision-making process the government went through, with the support of its development partners, on the timeline and structure of the second generation of water PPPs that started in 2017.

Achieving financial sustainability for AWSC proved elusive. Although the private operator delivered efficiency gains, reduced operating costs (especially electricity), and improved bill collection, these actions were insufficient to fill the gap between revenues and operating costs, largely because of insufficiently high tariff levels. The AWSC experience suggests that the approach of seeking first to improve quality and raising tariffs only after service has improved considerably may undermine the objective of reaching financial autonomy. In this case, while service quality undoubtedly improved in terms of reliability, new connections, customer service, and water quality, customers' willingness to pay did not increase concomitantly. Tariffs would have had to increase by 50 percent more to cover O&M alone, and the government showed no desire to take this action.

As in the case of the Yerevan management contract, **the overall outcome of the AWSC management contract is positive yet somewhat mixed**. While the AWSC contract achieved significant improvements in service quality and operational efficiency, it failed to make a significant impact on the financial situation of the utility. Like in Yerevan, the government's answer to this problem was not to move away from the PPP, but instead to upgrade to a new level under the second generation of PPP reform initiated in 2016—bypassing the 320 towns and many other settlements served by AWSC under a lease contract, following the successful approach implemented in Yerevan since 2005. Contrary to the earlier Yerevan case, there was recognition that such a lease would not be financially viable on its own because of the higher unit costs associated with the smaller size of many systems, and the additional costs of managing services spread through the whole territory of the country. The government therefore decided to tender a single *national* lease contract in 2016, thus allowing cross-subsidies between Yerevan and the rest of the country.

As with the experiences of the Yerevan management contract and the lease contract, AWSC's management contract confirms the **benefits of giving the operator autonomy to**

manage the water company and execute the investment program. The government's role was restricted to supervising and monitoring the performance of the contractor, with minimal interference in how the operator did its job. The operator designed and executed the investment program, managed the financial resources, and contributed working capital. This provided for an efficient alignment of incentives, as the private operator had a strong interest to ensure that civil works were carried out diligently and would be directed at actions having the greatest impact on the performance indicators monitored under its contract. At the same time, the government, as well as the donors financing capex, still had a strong role through supervision.

Notes

1. The severance packages covered all debts to employees, including late salaries, up to 10 years of unused vacation, and indemnities derived from the termination of the contract.
2. In Odzun, for instance, the village consumed a significant volume of water that was actually needed downstream by several other towns. Through sustained discussion, the village eventually acquiesced to having water meters installed and allowing an increased water flow to be made available downstream for other villages.
3. Every 4 months, the AWSC lottery draw took place on live television for a prize of $1,000, equivalent to about the 6 months' average salary in Armenia at the time. The lottery—which began with three winners every 4 months and reached up to 10 winners at its peak—was a notable success with the public.
4. Two water treatment plants in Dilijan (northeast) were fully rehabilitated, two water reservoirs were built in Sevan, and leaky pipes in Dilijan and Sevan were replaced. The contractor also rehabilitated 10 pumping stations and 13 storage reservoirs, installed 221 km of water distribution pipes in 14 urban areas, and installed 59 energy- efficient pumps in other urban and rural areas.

Chapter 5 Regional Utilities Management Contract: Nor Akunq, Lori, and Shirak: 2009–16

Water Sector Context: Regional Utilities before the Management Contract

A history of municipal water management: The three regional water utilities, Shirak Water and Sewerage Company (WSC), Lori WSC, and Nor Akunq WSC provided water and sewerage services to a combined population of 330,000 people in five towns and 60 rural settlements. These services were separate from AWSC, as the municipalities of Shirak, Lori, and Nor Akunq had been directly managing these companies since the 1996 decision by the government to decentralize water and sanitation services. Lori WSC supplies one town and 16 rural communities, Shirak WSC supplies two towns and 35 rural communities, and Nor Akunq WSC supplies two towns and nine rural communities. The three regional utilities were organized as joint stock companies—the central government (through SCWE) holding majority control with 51 percent of the shares and local authorities owning the rest of the shares.

The decentralization of water services in the 1990s had proved to be unworkable, as **municipalities lacked the capacity to provide quality services and maintain the infrastructure**. However, when the decentralization reform was reversed, the three utilities were not integrated into AWSC, as the German government-owned development bank KfW singled them out with a program to support municipal management of water services. Under its Communal Infrastructure Programs, KfW provided a total of €95 million to these three regional utilities over three successive phases: 2001-05, 2012-15, and post-2015—combining investment with extensive technical assistance. However, despite all these efforts, the attempt at turning around these municipal utilities proved quite disappointing. The poor service quality and performance largely continued, despite the investments and technical assistance provided under the KfW project—with the notable exception of the bill collection ratio, which improved significantly under public municipal management. This situation contrasted sharply with the wide, positive improvements achieved under the *government's* PPP program, especially the management contract for AWSC, which served most of the remaining towns and villages in the country, under technical conditions comparable to those in these three cities. KfW subsequently revised its approach and agreed to the government's request to provide support for another management contract targeted at the three regional utilities.

Tendering and Contract Terms

Because these three companies were too small to tender separately, **the government decided to bundle them under one management contract with a single private operator**. KfW provided assistance for the design and tendering process. A competitive tender was issued in 2008, and the bidding documents were prepared with technical assistance from KfW. A consortium of MVV Decon, MVV Energy, and AEG Services (an Armenian firm) was selected as

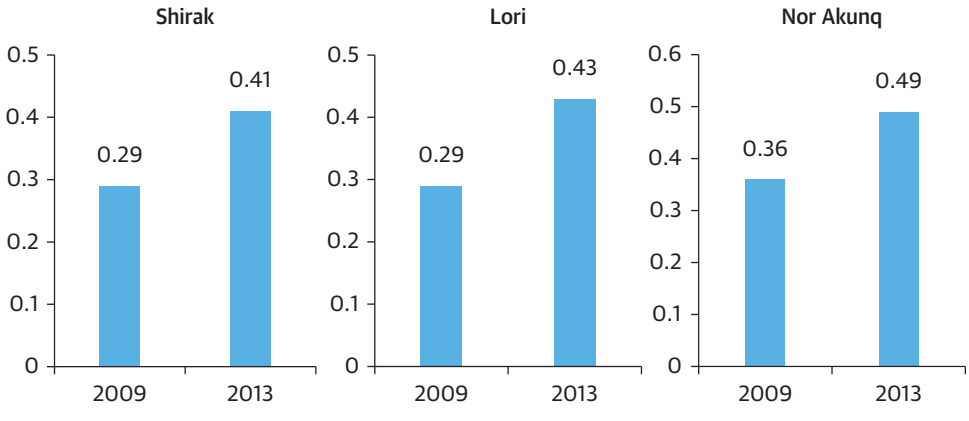
the private operator for Nor Akunq WSC, Shirak WSC, and Lori WSC. The 3-year management contract was signed in 2009, with the explicit possibility of further extension. Following an amendment to the contract in 2013, penalties were introduced and were applied from 2014 onward.

The contract value was $7.4 million for the overall management fee, financed by KfW, which also provided financing for capex under its Communal Infrastructure Programs (II and III), to the tune of €68 million ($70 million) during the span of the management contract—a capex amount equivalent to $212 per capita or $30 per capita per year. The government, as the majority shareholder, remained responsible for developing and funding the capital investment program. Tariffs were slightly lower in Shirak and Lori than in Nor Akunq at the beginning of the contract, but all three cities saw tariff increases during the contract period (figure 5.1). The average tariff for all three cities increased from $0.31/m^3 in 2009 to $0.44/m^3 in 2013, representing a 42 percent increase. Because major tariff increases had already been introduced under public management, this tariff increase was smaller than that faced by AWSC. The final tariff for the three utilities stood well above the one applied by AWSC in other towns and villages across the country, which was about $0.30 per m^3.

Implementation of the Contract

While SCWE monitored the performance of the private operator, the **management contract of the three regional utilities was different from the other management contracts** in that the municipalities were strongly involved at Board and managerial level. In theory, this arrangement could have promoted transparency and accountability, and enhanced the supervision of the private operator. In reality, it ended up allowing undue interference by local officials in the utilities' daily management. For instance, even though the three utilities were grossly overstaffed, it was difficult for the private operator to initiate a serious rationalization effort because of multiple pressures from local governments. Moreover, the regional utilities did not benefit from the same kind of retrenchment fund set up under the World Bank loan for AWSC. This governance challenge seriously affected the capacity of the private operator to achieve significant performance improvements. Another difference is that the private operator had less flexibility in the identification and execution of investments, as the municipalities wanted to stay involved.

FIGURE 5.1. Increase in Tariffs Compared to Base Year (2009)



Note: All tariffs are expressed in United States dollars per cubic meter (US$/m^3).

Starting in January 2014, following a renegotiation of the contract

among the parties, SAUR joined the consortium as the lead private operator. The obvious benefit of the enlarged consortium was that it allowed some cross-fertilization on the operational experience gained from 9 years of implementation of the AWSC management contract. Moreover, the incorporation of SAUR brought an experienced international water operator at the helm of this challenging management contract in the three regions, one who could leverage on lessons learned from the implementation of the AWSC contract. However, having several private players in the consortium had drawbacks, with higher transaction costs and some difficulties arising from occasionally divergent managerial approaches among the consortium partners.

Results and Key Factors

As with the other management and lease contracts, **progress was made on three key performance indicators**: average duration of daily water supply, bill collection rate, and share of customers having water meters (table 5.1). Arguably though, **these improvements were of somewhat lesser magnitude than the ones achieved by AWSC** in other cities and towns across the country.

The performance in terms of labor productivity was disappointing. The labor productivity ratio did improve in Nor Akunq, but much less than in the case of the AWSC management contract. It remained broadly the same in Lori, and even deteriorated further in Shirak. In line with the poor performance in terms of labor productivity, salary costs represented a

TABLE 5.1. Key Performance Indicators for Nor Akunq, Shirak, and Lori Water Utilities, 2009-15

Indicator	Company	Measurement unit	2009	2015
Average duration of water supply	Nor Akunq	hours/day	21.14	23.54
	Shirak Water Sewerage		7.69	22.01
	Lori Water Sewerage		6.46	21.62
Water losses	Nor Akunq	percentage	74.4	67.5
	Shirak Water Sewerage		82.3	79.3
	Lori Water Sewerage		70.3	73.8
Collection of fees	Nor Akunq	percentage	100.0	98.0
	Shirak Water Sewerage		76.0	98.0
	Lori Water Sewerage		77.0	99.0
Share of customers having water meters	Nor Akunq	percentage	97.0	100.0
	Shirak Water Sewerage		68.0	94.0
	Lori Water Sewerage		86.0	98.0
Number of employees per 1,000 customers	Nor Akunq	people	10.40	6.40
	Shirak Water Sewerage		3.70	5.70
	Lori Water Sewerage		5.00	5.80

significant share of operating costs for the three companies, accounting for 48 percent of costs in Lori, 44 percent in Shirak, and 24 percent in Nor Akunq (appendix B)—underlining that little progress had been made in controlling operating costs.

The improvements recorded for all three companies in customer metering and collection rate helped to boost revenues. Fee collection indicators reached 100 percent for all utilities within 4 years of the management contract (i.e., before SAUR took over).[1] However, these efforts were not enough to cover O&M and debt service costs. The utilities continued to depend on subsidies to cover their operational and debt service costs, in the case of Nor Akunq for the entire management contract duration,[2] and only to cover debt service, in the case of Shirak and Lori during the last 2 years of the contract (table 5.2)—even though the tariff level was higher than for towns in the rest of the country under AWSC.

Main Messages and Lessons Learned

The experience of the three regional utilities under municipal management underlines the challenge of turning around a publicly managed utility, when the political economy does not provide for sufficient barriers against political meddling and interference, to name just one factor. **It did bring some tangible improvements, but the parallel—and more successful—implementation of the AWSC management contract provides an interesting point of comparison**, especially since the latter was not allocated as much funding for capex and technical assistance as the three regional utilities in their early years. Unfortunately, the governance issues that had existed under the municipal public management model were not entirely resolved under the management contract, as local authorities continued to play a role.

TABLE 5.2. State Budget Subsidies to the Three Regional Water Utilities, 2009–16

	2009	2010	2011	2012	2013	2014	2015	2016 (budget)
Total	**38.5**	**26.1**	**279.7**	**233.3**	**255.3**	**261.1**	**2,088.3**	**2,210.0**
Total US$ (actual)	*105,979*	*69,850*	*750,872*	*580,695*	*623,245*	*627,765*	*4,369,560*	*4,624,205*
Operational	**38.5**	**26.1**	**46.4**	**0.0**	**0.0**	**27.8**	**66.3**	**98.5**
Debt service	0.0	0.0	233.3	233.3	255.3	233.3	2,022.0	2,111.5
Nor Akunq	38.5	26.1	279.7	233.3	255.3	261.1	299.6	331.8
Operational	38.5	26.1	46.4	0.0	0.0	27.8	66.3	98.5
Debt service	0.0	0.0	233.3	233.3	255.3	233.3	233.3	233.3
Shirak	0.0	0.0	0.0	0.0	0.0	0.0	1,031.8	794.5
Operational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt service	0.0	0.0	0.0	0.0	0.0	0.0	1,031.8	794.5
Lori	0.0	0.0	0.0	0.0	0.0	0.0	756.9	1,083.7
Operational	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt service	0.0	0.0	0.0	0.0	0.0	0.0	756.9	1,083.7

Note: All figures, except for the ones printed in italics (which represent United States dollar amounts), are expressed in millions of Armenian drams.

Nevertheless, the private consortium that took over was able to focus on improving the administrative, commercial, and technical operations, with a level of attention not possible for municipal authorities.

The bundled management contract proved to be a good way to make the utilities attractive for private management, even though it initially attracted only the local private sector. It also allowed for economies of scale through a common investment program and operational approach. The later incorporation of SAUR, which already operated the AWSC management contract, provided further opportunities for scale economies. It also underlines again the flexible approach taken by the government throughout the implementation of its water PPP reform, confirming its ability to adjust to evolving needs.

While continuity of water supply increased under this contract, the performance on water losses was weak, even more so than under the Yerevan lease contract and the AWSC management contract. Only in the case of Nor Akunq was there some reduction in NRW (by 10 percentage points, down to the still high level of 64.7 percent) while in the case of Shirak and Lori, the level of NRW actually went up. As in the other cases, this was the direct result of the steady improvement in the continuity of water supply and the associated increase in average pressure in the distribution systems, combined with insufficient funds to rehabilitate the old water distribution networks.

As in the case of the Yerevan and AWSC management contracts, there was no turnaround of the financial situation of the three utilities, despite the improvement in bill collection. The regional utilities continued to receive state subsidies despite significant tariff increases and a tariff level well above the one applied for AWSC in the other towns across the country (and by the lessee in Yerevan). Again, this shows that while management contracts can be efficient in improving some key aspects of service quality and operational efficiency, they are not necessarily effective at improving the overall financial situation of a water utility—unless a government is able and ready to sharply raise tariffs and control costs in parallel.

Notes

1. A significant improvement had been achieved under public management with the bill collection rate even before the start of the management contract, especially in Nor Akunq, where it already stood at 100 percent in 2009.
2. Nor Akunq had rather high operating costs because the water supply system was dependent on pumping and electrical costs, which made up 16 percent of its operating costs, compared to 6 percent in Shirak, and 9 percent in Lori.

Chapter 6 Lessons Learned from the First Generation of Water PPPs: 2000–16

Remarkable and Sustained Improvements Achieved over 16 Years of PPP Reforms

The water PPP reform in Armenia has clearly been a success. Private operators brought significant technical and operational gains, as the four PPP contracts succeeded (albeit to varying degrees) in improving the service quality and operational efficiency of water services. Table 6.1 povides an overview of the main operational results of the four PPP contracts. Appendix C provides more detailed data on the key indicators for each water utility under PPP, on a year-by-year basis.

There is no doubt that the Armenian population benefited from the implementation of the PPPs, in terms of improved reliability of water supply and elimination of intermittent service and water shortages. The continuity of water supply—measured as the average number of hours per day when water is available at the tap—went up significantly under the three management contracts, from between 6 and 12 hours per day to about 18 hours a day. Under the lease contract, continuous 24/7 water supply was established in most of Yerevan and is well on its way in secondary towns and cities. The large improvements in the energy efficiency of water systems also stand out as a remarkable success.

The overall success of the water PPP reform in Armenia has been confirmed by positive opinion polls—that is, it is not only based on an expert's assessment. Several opinion polls have confirmed that a majority of customers are satisfied with services and show no opposition to the presence of foreign operators under the existing PPPs—in contrast to the rather negative perceptions held in Armenia about the privatizations carried out in other sectors. For instance, in a 2011 survey of customers in Yerevan, only 30 percent of respondents wanted to revert to publicly managed services rather than continue with a private water operator. On the same question, the result was 33 percent of Armenian Water Sewerage Company (AWSC) customers. The Armenia story confirms earlier studies that demonstrated that a PPP is a viable option for improving poorly performing water utilities in developing countries—provided it is properly implemented.

This improvement in water service quality was achieved in a cost-effective manner, with Armenia enjoying a level of **water tariffs among the lowest in the region** (between $0.35 and $0.45 per m^3 in 2015) (figure 6.1). **In Yerevan, the lease contract succeeded in making water services fully self-financed by 2011**, with tariff revenues covering all operating costs and debt services. Full cost recovery in Yerevan was achieved through **major efficiency improvements, both in operations and capital investments:**

- **In operations, energy efficiency was dramatically improved,** and it is very likely that the country's carbon footprint and its imports of fossil fuels were reduced significantly over the 16-year

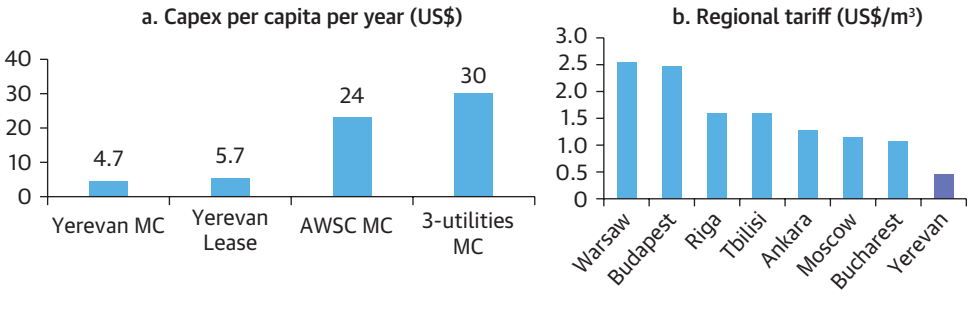
TABLE 6.1. Summary of Main Results of the First Generation of PPPs

	Yerevan management contract (2000–05)	Yerevan lease contract (2006–16)	AWSC management contract (2004–16)	3 Regional utility management contracts (2009–16)
Water supply continuity	From 4 to 18 hours per day	From 18 to 23 hours per day	From 6 to 18 hours/day	From 12 to 22 hours/day
Electricity consumption	Decreased by 48%	Decreased by 82%	Decreased by 49%	—
Water losses (NRW)	—	83% → 75%	76% (2005) → 74% (2015)	85% → 77% (2015)
Bill collection rate	20% → 80%	80% → 97%	48% → 90%	84% → 98% (2015)
Share of customers with water meters	7% → 63%	87% → 98%	40% → 86%	84% → 96% (2015)
Tariff changes	Precontract (1999): AMD 56/m³ ($0.10) End of contract (2005): AMD 125/m³ ($0.27) 170% increase	Prelease: AMD 125/m³ ($0.28) End of lease: AMD 170/m³ ($0.35) 36% increase	Precontract 2003: AMD 66/m³ ($0.11) End of contract (2016): 180 AMD/m³ ($0.38) 245% increase	Average in 2009: $0.31/m³ Average in 2016: $0.44/m³ 42% increase
Operating cost recovery	Net operating loss of $19.5 million	Net operating profit of $9.6 million net profit (after year 5) No operational subsidy (except in 2010)	Operational subsidy decreased from 100% to 56%	Operational subsidy increased by 155%
Capex	Total capex: $28 million Capex per capita per year: $4.7	Total capex: $68 million Capex per capita per year: $5.7	Total capex: $180 million Capex per capita per year: $24	Total capex (Shirak & Lori): $70 million Capex per capita per year: $30

Note: — = not available; AMD = Armenian drams; capex = capital expenditure; NRW = non-revenue water.

period of the water PPP reform. Major improvements were also recorded in **bill collection and labor productivity.** By 2015, most connections had been equipped with meters and billing was based on actual consumption, resulting among other things in a major increase in billed volumes and a "fairer" way of billing customers. Equally important, customer orientation, sound operational practices, and modern management were gradually established;

FIGURE 6.1. Yearly Capex Per Capita for the Four PPP Contracts and Tariffs in Yerevan Compared to the Rest of the Region, 2011



Note: The capex figures for the four PPP contracts refer to donor financing only. MC = management contract.

- **As for investments, the amount of capex successively spent over the 15-year period and covered by donor funding was relatively moderate, considering the results achieved.** On an

annual per capita basis, the amount spent on capex stood at about $5-6 in Yerevan (both under management and lease contracts). The capex allocated for the PPPs outside of Yerevan was significantly higher, at $24 per capita per year under the AWSC management contract and $30[1] for the 3-utilities management contract—reflecting the higher unit costs of serving smaller and less dense towns and settlements spread throughout the country's entire territory (figure 4.3) The largest capex program was for AWSC, with investments through donors' lending reaching a total of $180 million over 12 years (figure 6.1).

Key Lessons: What Are the Main Factors that Explain this Success?

It is important to reiterate that the success of water PPPs in Armenia was never a foregone conclusion—especially when considering that many developing countries that had initiated management contracts around the same period in the late 1990s or early 2000s (such as Venezuela, Lebanon, Jordan, Guyana, Trinidad, Ghana, Uganda, Zambia, and Albania)[2] decided after a few years not to continue with PPP reform and went back to public management only. Clearly though, Armenia's success is not the result of chance: **Armenia did several things well, compared to how water PPPs were implemented in other developing countries in the early 2000s.**

Perhaps the most crucial moment in the water PPP reform in Armenia was toward the end of the first PPP—that is, the Yerevan management contract—when the **government had to decide whether to continue with the PPP experiment, or revert to public management.** While this first PPP had undoubtedly brought tangible improvements, it had also failed to meet the government's initial expectations, and the first 2 years of implementation had been quite difficult. While the overall results were slightly more positive than in many other management contracts tried elsewhere, the outcome was not radically different either.

The crossing point of the Armenia water PPP experience was probably around the end of the management contract in Yerevan, when the government did not feel discouraged by the somewhat mixed results and challenges of implementation. As previously mentioned, instead of considering that with the Yerevan management contract the "glass was half empty" and PPP had failed to meet expectations, the government took the view that the "glass was half full" and decided to stay the course. Recognizing the inherent limitations of a management contract—with limited transfer of risks and responsibilities to the private operator under a relatively short duration—it did not end the PPP experiment but instead decided to take it to a new level, shifting in 2006 to a 10-year lease contract in Yerevan, and also expanding management contracts to the rest of the country, in preparation for another switch to a lease model later on.

One possible reason for this more positive attitude toward water PPPs was that popular sentiment against foreign private companies was less pronounced than in some other developing countries. Armenia, a landlocked country with a dramatic history, was open to international engagement and eager to develop closer links with the West. Its openness to outside advice and willingness to study concrete experiences from other countries before making a

decision about PPPs proved wise, as this approach shaped realistic expectations about what an initial PPP could achieve. The decision to defer the start of the management contract for AWSC until early lessons had been drawn from the Yerevan contract underscores this sober and realistic attitude.

Throughout the 16 years of water PPP reforms, the government of Armenia's commitment to acting as a true partner to the private operator was essential. This commitment was not merely stated but also demonstrated through multiple concrete actions that helped the PPPs to succeed. The extensive measures taken ahead of the first management contract made the conditions for partnership with the private sector favorable for success (e.g., for customer debt relief and restructuring the debt-ridden companies). The role of SCWE as an efficient public counterpart was also essential, due to a combination of factors. SCWE had strong and constant leadership, with the same Chairman at the helm for most of the first generation of PPPs, thus providing stability and fostering trust with the private operators. As the PPPs evolved, the government proved to be flexible, amending contracts when needed and performing its monitoring functions with the support of an Independent Technical Auditor.

Another major benefit of the water PPP reform in Armenia was the adoption of a sequenced approach—both for expanding the geographical scope of PPPs and for transferring risks and responsibilities to the private sector. Armenia is quite unique among developing countries for having adopted such a gradual strategy, but it ended up paying off handsomely. The phased approach allowed the government to build capacity for the design and implementation of PPPs gradually, learning on the way and adjusting to lessons learned. It also allowed tariffs to increase gradually, in parallel with improvements in service quality, so as to reduce potential opposition from the population and keep momentum for the reform. In the case of Yerevan, starting with a management contract before transitioning to a lease contract also turned out to be a good move: it allowed a reliable database to be built first and reinforced the government's capacity to interact as a strong public counterpart. Consequently, there were lower risks for the private sector to bid on the lease when the tender was carried out in 2005, resulting in more favorable financial offers from bidders than if the lease had been initiated immediately in 2000. The phased approach also proved key to ultimately achieving full cost recovery in Yerevan while keeping the water tariff at a low level compared to regional benchmarks.

The gradual approach adopted for water PPPs in Armenia also shows **that the common belief that establishing an appropriate institutional framework is a prerequisite for successful water PPPs is largely misplaced**. While the government did implement major reforms during the first years of PPPs, the first management contract in Yerevan was launched in 2000, well before the new national Water Law (2002) was enacted, the national regulator put in place (2003), and almost all the new legal acts required (e.g., on metering and debt collection) were passed. Instead of a dogmatic view of water PPP reform, Armenia chose to be practical: **had the country first tried to put in place, before embarking on its first PPP, all the new laws and**

reforms deemed necessary for a PPP to succeed, it might have lost the whole momentum for reform. The experience of Armenia indicates that reform should be viewed as a gradual process, and that putting in place (and fine-tuning) the appropriate institutional framework can be done in parallel with the implementation of PPPs rather than completed beforehand as a prerequisite.

Leaving the private operator in charge of implementing capex, and giving it flexibility on investment decisions and supervision, while the government remained responsible for financing investment, is a rather specific feature of the Armenia water PPP experience, one that proved crucial for success. The private operators had direct incentives to use the limited funds available for investment in an efficient manner, focusing on those actions that would have the maximum impact on service quality and operational efficiency, and ensuring that procurement and civil work were carried out in a diligent manner. This flexibility allowed the various PPPs to achieve remarkable results regarding service quality and efficiency, despite the fact that the overall amount of funds allocated by the government to support investments under the PPP reform was modest by international standards.

The mixed results on achieving financial sustainability of the water companies largely reflect political decisions linked to water tariff levels, rather than an inherent weakness of the PPP approach. The successive PPPs have eased the financial burden of the water sector on the government's budget and improved creditworthiness in a general manner. However, only in Yerevan have water services managed to achieve operational cost recovery (in 2011), and this took more than a decade. This was achieved under a lease contract whereby the tariff level had been set as a result of the tender process, with the private operator taking a calculated risk that such a tariff would ensure full cost recovery after efficiency improvements had been carried out. AWSC and the regional utilities remained dependent on subsidies to cover their operating costs: even though the government had allowed tariff increases in all cases, these were insufficient to ensure full cost recovery. The two key lessons here are that:

- **A management contract alone is not by itself sufficient to achieve full cost recovery**, unless the government is willing to take the necessary measures to raise tariffs so as to accompany the expected improvements in bills collections and operational costs reduction;
- **A lease can be more efficient than a management contract in promoting a move to self-financing sustainability** of the water sector. Under a lease contract, the private sector has sharper incentives, and more flexibility and responsibilities for operating the system if the tariff is set through the tender process. This has also been illustrated by water PPP reforms in other developing countries, such as Senegal and Niger, where a private operator was able to bring service quality to international levels and achieve full cost recovery through tariff revenues after about a decade.[3]

All four PPP contracts have highlighted the difficulty of addressing non-revenue water (NRW), which remains stubbornly high even after 16 years of presence of a private operator

in Yerevan. The NRW level still lies between 70 and 90 percent, depending on the service area. While this could at first seem a setback, the review of individual PPPs showed that this was largely due to the fact that the private operators were concentrating on reducing intermittent supply—that is, increasing the average number of hours that water was available at the tap—which also had the direct negative effect of increasing the average pressure in the network and thereby the level of leakages. While the private operators did take actions to reduce leakages—such as introducing district zoning and installing pressure valves—the fact that only a limited amount of funds was available under the capex program to rehabilitate the distribution network made it impossible to achieve more than keeping the NRW at the same level (but with increased average pressure). Another important element is that as water resources in Armenia are cheap and plentiful, and the private operators also took major actions to switch distribution networks toward being gravity-fed, there were considerably fewer incentives for investing in leakage reduction and much fewer financial/economic benefits to be derived from doing so.

The Armenia PPP experience also highlights the **importance of designing "smart" incentives for achieving results under PPPs**. The private sector is driven by clear financial incentives, and it is essential that these incentives are properly designed in the contract to guide the private operators' behavior toward what a government wants in terms of improvement. In this context, the incentives framework applied in Armenia gradually evolved as lessons were learned. The large number of contractual KPIs under the first management contract in Yerevan was reduced in the AWSC and 3-cities management contracts. While remuneration under the first management contract in Yerevan was largely based on a fixed management fee (reflecting the high risks associated with the first water PPP contract in the country), the AWSC management contract not only introduced more variable payments but also established a cap for bonuses and penalties (at respectively +25 percent and −20 percent of the fixed fee), an acknowledgment of the risks associated with having to turn around water services scattered across the entire territory of the country. Another insight from Armenia's management contracts is that it is advisable to start with bonuses when there is a significant risk of failing to attract operators, but then move on to add penalties once better services have been established. The adoption of an "enhanced lease" structure for the second PPP in Yerevan sharpened the incentives structure and was key to the good results achieved over a decade.

Finally, continuous donor support proved crucial for the success of the water PPP reform in Armenia. The PPP results were the fruit of a sustained partnership not just between the government and private operators, but also between the government and donors. Donors financed most of the investment carried out under the PPP contracts as well as funding for preparation of PPPs, staff retrenchment, and remuneration of the operators under the management contracts. Yet this was not just about providing funds. The technical assistance provided through the supervision of donor-financed investment projects during regular donor missions and visits was also important. Technical support was

especially important as SCWE was open and eager to seek advice based on international experiences in order to deal with the inevitable challenges encountered throughout the implementation of the PPPs. In the early years, the World Bank played a leading role in this process, gradually withdrawing after more than a decade as the reform became more mature and other donors were willing to step in and take over for the second generation of water PPPs.

Notes

1. Total amount spent by donors on investments in the three regional utilities of Shirak, Lori, and Nor Akunq is actually underestimated, as it does not include all the relevant expenditures covered by KfW funding between 2000 and 2008, when the utilities were under public management.

2. These management contracts include Amman (Jordan), Georgetown (Guyana), Trinidad, Ghana, Johannesburg (South Africa), Uganda, Zambia mining towns, Tripoli (Lebanon), Lara and Monagas (Venezuela), and Durres (Albania). All these management contracts were developed at about the same time with support from donors (especially the World Bank), followed a broadly similar design and contractual structure, and brought equally mixed results—bringing improvements in some areas of performance but not in all areas.

3. Full cost recovery was achieved, though, with a higher tariff level than in Armenia. Moreover, in a few other cases of lease contracts, for instance, the Maputo lease in Mozambique and the Dar el Salam lease in Tanzania (2003-04), the PPP reform actually failed.

Chapter 7 Second Generation of Water PPPs: National Lease Contract since 2017

Addressing Remaining Water and Wastewater Challenges

As early as 2013—as the three PPP contracts in Yerevan, the Armenian Water and Sewerage Company (AWSC) service area, and the 3 regions were drawing to a close—the government started to review its options for the next phase. As the validity of working with private operators had by then been solidly demonstrated, it was keen to pursue the PPP reform through a "second generation" of contracts that would expand the role of the private sector, but it was not clear what form this would take. While the first generation of PPPs had resulted in considerable gains, there was still a need to improve continuity of water supply, quality of services, efficiency of water resource management and financial viability, especially outside of Yerevan. Considering what had already been achieved under the various PPPs, the government faced three different challenges:

- **In Yerevan:** How to sustain the remarkable gains achieved over 16 years of efforts under the successive management contract (2000-05) and lease contract (2006-16)—especially in terms of achieving self-financing of the sector—while also continuing with further improvements in areas not previously or not fully addressed (e.g., NRW reduction, wastewater treatment);
- **In towns and cities across the rest of the country** (covered by AWSC and the 3 utilities in Shirak, Lori, and Nor Akunq): How to consolidate and further enhance the gains achieved under the two management contracts—especially for reaching continuous, 24/7 supply nationwide—and how to phase out government subsidies and move to financial sustainability, as happened in Yerevan;
- **In the 579 smaller settlements that had been left outside of the PPP reform and lacked proper water systems:** What to do in order to improve access to piped water for this population in a sustainable manner—either by gradually incorporating them under the new lease or through other schemes.

This last point was particularly critical, as the population of these 579 villages is estimated at about 650,000 (about one quarter of the country's total population), who were not covered by the PPP reform and therefore did not benefit from it. These residents mostly live in remote and poor areas, where they were not receiving water and sanitation services from any formal providers. Some villages relied on local schemes with distribution through rudimentary pipes or community standpipes. Others relied on water trucks. Because disinfection is not a common practice in these areas, they face a high risk of water contamination (although in the absence of monitoring, incidences of bacteriological pollution are not well documented). Local village organizations typically carry out some basic form of operations and maintenance (O&M) with little outside support—and tariffs are either nonexistent or very low.

The decision-making process leading to the choice of a single national lease involved extensive consultations with stakeholders, including drawing on donors' experiences elsewhere. Many options were reviewed,[1] and the government finally leaned toward a single national lease contract that would combine the service areas of all utilities served by the previous PPPs: Yerevan, towns and villages served by AWSC, and the three utilities in Shirak, Lori, and Nor Akunq.

The main advantages of this approach were twofold. First, having only one private operator would allow for economies of scale to be reaped through lower operating costs for the operator and lower supervision costs for the government. Second, it would result in a single national water and sanitation tariff for the whole country, allowing for cross-subsidization between Yerevan (where the unit operating cost was lower and residents had already benefited from improved services) and the rest of the country (which had higher operating costs on average, more needs for service provision investments and improvements, and a higher incidence of poverty). Given the relatively small size of Armenia, the national lease contract would serve a total population of just about 2.2 million, which was not excessive by international standards. The main downside of this single, national PPP approach was that the government would lose the "competitive edge" that it had enjoyed until then by having different private water operators in the country. However, provided that the contract was awarded to a truly competent operator and proper regulation could be ensured, this disadvantage was considered manageable.

By mid-2014, the final decision to go with a single national contract had been made and the government issued two decrees[2] stipulating that after the expiration of the first set of PPP contracts, a single lease operator would be selected on a competitive basis. The plan was to transfer the right to operate water systems and other property then operated by Yerevan Djur, AWSC, Lori WSC, Shirak WSC, and Nor Akunq WSC to one private water operator for 15 years. A single tariff would be established for water supply and sanitation services throughout the country, effectively expanding the geographical cross-subsidies already in place between the secondary cities, towns, and villages served by AWSC, to include cross-subsidies between Yerevan (as well as the three regional utilities) and the rest of the country.

Tendering and Contract Terms

As with the previous PPP contracts, **donors provided the funding and technical support necessary to prepare and carry out the tendering process.** The European Bank for Reconstruction and Development (EBRD) provided a grant to finance the recruitment of three international consulting companies that would help organize the tender. The PPP transaction advisor was Fichtner (Germany), in association with AVAG Solutions (Armenia). Two other international consulting firms were recruited: one engineering firm, to carry out the technical audit of the water companies, and one accounting firm, to provide support for

property registration, evaluation, and cadastral registration. Appendix D provides more details on the tendering process.

The package of tender documents specified that **the future lessee would not receive any operating subsidies during the lease contract**, which meant that the future national tariff for water and wastewater services was expected to cover all O&M costs in full. The successful bidder had to meet the technical evaluation requirements and submit the lowest tariff for water supply and sanitation services. **The lessee had an obligation to pay a lease fee of AMD 89.75 billion (about $190 million) over the duration of the 15-year contract**, based on a contractual schedule of payments (two installments in each year of the contract). The lease payment schedule was set up so as to gradually cover the loan servicing costs of the five water supply companies—up to 25 percent of the water companies' loan servicing costs in 2017, and reaching 100 percent after 8 years (i.e., by 2025).

The national lease contract was structured as an "enhanced lease," continuing the successful approach followed with the Yerevan lease. It defined minimum levels of mandatory capital works program for each contract year, with **the lessee having an obligation to finance from its own funds a certain amount of mandatory capital spending** with an annual average of AMD 2.5 billion (about $5 million per year), which is equivalent to about 12.5 percent of total capex for the whole contract duration. The contract also included **four priority key performance indicators (KPIs)—continuity of supply and water quality**, which were already tracked under previous PPPs, **plus two new indicators for NRW[3] and consumer satisfaction[4]**—with penalties to be paid if targets were not met. A large number of internal benchmarking indicators was also included, which are not subject to penalties.[5] Performance monitoring continues to rely on independent technical auditors. With the inclusion of NRW as a KPI with penalties and the rather aggressive schedule of KPI improvement targets, **the incentive structure of the new national lease has been significantly sharpened compared to the previous Yerevan lease**.

Relative responsibilities for implementation of capex by the private operator and the State Committee for Water Economy (SCWE) have been modified under the new national lease. In a significant departure from the previous PPPs, the government—through SCWE as lessor—will be taking back control of the execution of most of the investment program financed with public funds.[6] While this is the typical approach under a standard lease contract, it represents a major change compared to the approach that had been followed under the Yerevan lease and AWSC management contracts, where the private operators had been given significant flexibility for the identification, design, tender, and supervision of civil works and other investments. It is important to note that by taking over the capex execution responsibility, **the government is modifying the risk balance of the PPP, and by gaining more control is also effectively taking more risks.** Untimely execution of the scheduled capex by SCWE would become the government's responsibility and, since it would probably also affect the financial equilibrium of the lease (as some of the cost reductions

expected through upgrading investments would be delayed), this could lead to a call for renegotiation by the private operator. The position of SCWE is that it preferred to regain control over investments because it felt that it had acquired sufficient capacity to be able to carry out capex functions efficiently on its own.

During the tendering process, **four consortia were initially prequalified but in the end only two companies submitted a full bid**—Veolia (which had been successfully operating the lease contract in Yerevan for the previous 10 years) and an Armenian-Russian consortium. As its *technical* bid was the only one considered satisfactory, Veolia was awarded the lease contract with a financial offer that was also deemed acceptable. The contract was signed on November 21, 2016, and set for 15 years. The new national water operator was formally established as Veolia Water CJSC.

After the award of the lease contract, Veolia Water applied for a formal tariff approval to the PRSC. The PSRC approved the tariff in December 2016, and it has been in force since January 1, 2017. **The overall tariff for retail water supply and wastewater treatment services was set at 180 AMD/m³—equivalent to about $0.37/m³**—inclusive of VAT for the entire country. Of this amount, 85 percent is for water supply and 15 percent for sewerage services. This tariff level represents a reduction for customers outside of Yerevan, and remains among the lowest in the region (table 7.1).

A noteworthy element of the lease tender is that it introduced the concept of "affordable tariff." The government's latest development program (2014-25) requires that drinking water charges not exceed 2.5 percent of consumer spending in the poorest quintile of the population, given an estimated daily consumption volume of 70 liters per capita. The PPP transaction advisor carried out an assessment of tariffs based on a financial model specifically developed for this purpose, to ensure that the financial offers would meet that criterion (box 7.1). The tariff level with which Veolia won the tender of the national lease does meet the national water affordability threshold, which is also much stricter than the affordability threshold typically applied in other countries—meaning that **affordability for the poor should be ensured**.

TABLE 7.1. Water and Wastewater Tariff under the National Lease Contract, 2017

	Item	Tariff	
		excl. VAT	incl. VAT
1	Overall tariff for retail water supply and sewerage (wastewater treatment) services, of which:	150.00	180.00
1.1	• water supply services	127.50	153.00
1.2	• sewerage (wastewater treatment) services	22.50	27.00
2	Services for removal of underground water	9.00	10.80
3.1	Bulk water supply services	30.00	6.00
3.2	Bulk sewerage services	15.00	18.00

Source: PSRC (approved by PSRC decree no. 398N dated December 09, 2016).
Note: Tariffs are expressed in Armenian drams per cubic meter of water (AMD/m³).

BOX 7.1. Introducing a Tariff Threshold in the Tender Evaluation of the National Lease

According to 2014 household survey data, consumer spending in the poorest quintile of the population was AMD 15.7 ($37.8) per capita, and the maximum affordable drinking water tariff was AMD 187 ($0.45)/$m^3$.[a] An affordable tariff forecast for the coming years was carried out based on the assumption that consumer spending in the poorest quintile of the population would increase annually by 4 percent per capita.

It should be noted that international standards normally use lower requirements for the affordable tariff than the one adopted in Armenia. For example, the United Nations Development Programme (UNDP) recommends that for a tariff to be considered affordable, the charges for drinking water should not exceed the median of 3 percent of household income. Based on the 2014 household survey data, the affordable tariff by UNDP standards was AMD 542 ($1.11) per cubic meter[b]—well above the current tariff level under the three PPPs and the national tariff that would result from the tender of the national lease.

a. The amount was calculated as follows: (AMD 15,742 x 2.5%) / 2.1 cubic meters = 187.4 drams / m^3, where 2.1 cubic meters is obtained by multiplying 70 liters by 30 days (source of information: *Social Snapshot and Poverty in Armenia*, Statistical Analytical Report, RA NSS, Yerevan, 2015).

b. The amount was calculated as follows: (AMD 15,742 x 2.5%) / 2.1 cubic meters = 187.4 drams / c^3, where 2.1 cubic meters is obtained by multiplying 70 liters by 30 days (source of information: *Social Snapshot and Poverty in Armenia*, Statistical Analytical Report, RA NSS, Yerevan, 2015).

Notes

1. For instance, moving to a concession in Yerevan and a lease for the rest of the country was also regarded as an option (in which case the operator would finance all capex from tariff revenue)—but this was dependent on the future pricing policy and availability of long-term debt financing in local currency (for a concession in Yerevan). It would have required significant new increases in tariff levels, which might have been rejected by the population.
2. RA Government Decrees N 883-N and N 888-N dated August 14, 2014.
3. Compared to the 2017 baseline level, the contractual targets for NRW under the new national lease call for a reduction of 3 percentage points for each of the first 4 years, a reduction of 18 percent by year 8, and of 30 percentage points by the end of the contract.
4. Previous contracts focused on reaction time to customer enquiries/ complaints. The Independent Technical Evaluator will conduct an annual customer survey on the quality of water services provided by the operator. The first survey should be available in 2018.
5. Including for sanitation services (e.g., treated water quality).
6. The contract still specifies that the Lessee should be involved in the planning, design and development of tender documents for the award of contracts for works, services and goods. It also states that international financial institutions can request it to undertake the design, specification, procurement, supervision and commissioning of the works, after agreement on the terms of compensation, as well as to support tendering and supervision.

Chapter 8 Conclusion and Looking Ahead

The long and generally successful story of Armenia's water PPPs offers a wealth of knowledge and lessons for those interested in using PPPs as a delivery model for improved water services. Armenia's experience is remarkable for a number of reasons. First is the diversity of contracts, including a classic management contract, a lease, and a bundled management contract for three service areas. The second is the success (to varying degrees) of each contract. While operations and maintenance (O&M) cost recovery did not materialize except in Yerevan, and water losses remained very high, these results reflect policy choices (tariffs and investment funding) rather than fundamental flaws in the PPPs themselves. Third, the evolution in PPPs illustrates the benefits of learning from experience. Lastly, Armenia is one of the few countries in the world that has a significant proportion of its population (about 75 percent) receiving water services under private provision over many years. Armenia is also distinct because the foreign private water operators have been well accepted by the population, a feat that is difficult to accomplish in many other countries.

While Armenia's 16 years of PPP experience has largely been positive, **the implementation of the new national lease contract begins a new phase, involving a greater transfer of risks to the private sector and also to the government, which is now responsible for the capital program**. For the government, having to deal with one single private operator rather than several, as in the previous reform, will also represent an important change. **Three issues deserve emphasis at this stage because they will need to be prioritized for the second phase of the water PPP reform in Armenia to continue bringing sustained benefits to the country**: (i) timely implementation of scheduled capital expenditures (capex); (ii) improvement of water services for currently unserved communities; and (iii) expansion of wastewater collection and treatment in a responsible way.

The Timely Implementation of the Scheduled Capex Will Be Critical

According to the "Water Supply and Sanitation Strategy and Finance Program" approved by the Republic of Armenia (RA) government in August, 2015, the total investment costs for water and wastewater systems for 2017-32 are estimated at AMD 300 billion (about $628 million, or **about $42 million per year**). Of this amount, AMD 262.5 billion (87.5 percent) should be from state investment and AMD 37.5 billion (12.5 percent) from investments made directly by the lessee for the entire contract duration.

In order to finance the investment program under the national lease contract, **donors have so far committed to providing $200 million for the first 5-year period**. The timely execution of this investment program is essential for the private operator to be able to expand the successful results already achieved in Yerevan to the rest of the country, and meet the performance improvement targets set by the contract's key performance indicators (KPIs): non-revenue water (NRW) and service continuity. It is also **essential for maintaining the financing equilibrium of the lease**, since a portion of it will be directed at investments to

improve operational efficiency, and the private operator made its financial offer in the tender (i.e., level of national tariff) based on the expectation that operating costs could be reduced in part thanks to these new, upgrading investments.

At the early stage of the national lease contract, ensuring that all funding committed by donors will materialize, and the capex program will be implemented by the State Committee for Water Economy (SCWE) in a timely manner, remains a critical issue. Enhanced donor support for capacity building may be necessary to ensure that SCWE has the capacity to carry out this new responsibility in a diligent manner. Uncertainties regarding the evolution of the government's fiscal situation may create some challenges to finalizing all required borrowing.

How to Provide Improved Water Services for the 650,000 Residents of Unserved Communities?

The design of the second generation of water PPPs took into account the challenge of the remaining 650,000 people living in remote settlements (579 villages) who so far have not benefited from the reform. The lease contract stipulates that **the private operator has an obligation to incorporate, upon SCWE's request, new settlements into its service area each year, up to a total of 20,000 additional people,** without the need for renegotiation of the financial terms. However, as of January 2017, there was no clear policy or strategy yet for incorporating these unserved communities into the service area.

One key limitation is that while these remote settlements currently have a poor water supply, the population for a large part also pays very little or nothing for that water (except for the residents who are served by trucks). As these remote areas tend to have a high poverty rate, **it is unclear whether these rural populations would easily accept being incorporated into the service area of the private operator and have to start paying the new national water tariff in exchange for better service**. Furthermore, for these communities to agree, significant investments in systems rehabilitation and expansion would be required considering the typically high unit costs of small remote settlements. As funding is the government's responsibility, the uncertainty about funding may end up jeopardizing the policy objective of achieving financial self-sufficiency for the water sector by 2025.

A new €10 million KfW grant from the EU-NIF has been earmarked to incorporate about 30 villages in the short term. The villages were identified based on technical feasibility and the residents' willingness to join the national service area—but the question of what to do with the remaining majority of villages remains open. **For the poorest settlements, provision of improved services through community standpipes may remain a more viable solution in the first stage**, or an operational subsidy may be needed in case individual household connections are chosen. An alternative option to explore would be to promote some form of contractual technical assistance for critical operational processes (for instance, chlorine disinfection) between the private operator and some of the village communities. This arrangement could allow a domestic private sector to gain competence in water operations, which is important for the country in the long term.

How to Expand Wastewater Collection and Treatment in a Sound and Sustainable Manner?

Investment in wastewater treatment was largely left out during the first 16 years of water PPP reforms in Armenia, in recognition that more urgent priorities had to be tackled first. It is to be hoped that, under the new national lease contract, the country will be able to start investing in wastewater collection and treatment, at least regaining the level of wastewater treatment achieved during the time of the Soviet Union, when secondary treatment was available in Yerevan and a number of other secondary cities. There are nascent signs that progress has already started, as the new wastewater treatment plant (WWTP) in Yerevan (photo 8.1) is expected to start operation in 2017—restricted at first to primary treatment only—and some donors have expressed interest in financing new WWTPs in secondary cities.

While more emphasis on wastewater treatment in the future is a welcome development for the protection of water resources in the country, expectations on how far wastewater treatment can go should be tempered. The environmental and health benefits should not distract from the fact that wastewater treatment is costly, not just in terms of investment but even more in terms of O&M. In addition, realistic goals should be set, bearing in mind that secondary treatment of effluent may need to be deferred until a later stage when the economic case for it is stronger. The experience of the implementation of the Urban Wastewater Directive in the EU, with many countries from Central and Eastern Europe experiencing major difficulties in trying to comply, underlines the many challenges involved. **Armenia is still far from the level of economic development that makes implementation of wastewater water treatment affordable on a large scale**.

PHOTO 8.1. New Wastewater Treatment Plant in Yerevan

Source: Veolia (with permission).

In this context, it will be essential for donors to maintain a sound policy when considering investing in new WWTPs in Armenia, recognizing in particular that any new WWTP will represent a financial burden in terms of O&M costs, and that this will need to be paid for by the population through tariffs under the national lease contract. **Future funding for WWTP investments should therefore be focused on areas where they can have the maximum environmental and public health impact** (i.e., on pollution hot spots such as around Lake Sevan). Investments in new WWTPs will always need to ensure that the utility will have sufficient financial means—through tariff revenues—to finance sustainable O&M. Against this background, the development of a national wastewater treatment program with donor support could be a positive first step.

Appendix A Operational and Financial Results of the Yerevan Lease Contract

TABLE A.1. Yerevan Djur Operational Indicators during the 10-Year Lease Contract

Yerevan Djur	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Hours of water supply/day		19.7	17.4	18.9	20.4	20.8	22	22.2	22.5	22.7	22.9
Water supplied to network (1,000 m³)	**353,630**	**355,595**	**368,834**	**372,114**	**362,825**	**346,211**	**319,520**	**307,322**	**292,723**	**284,250**	**273,142**
By gravity (1,000 m³)	212,188	213,401	227,895	229,502	226,003	225,951	237,593	233,716	224,297	216,673	212,581
By pumps (1,000 m³)	141,442	142,193	140,938	142,612	136,822	120,260	81,927	73,606	68,426	67,577	60,561
Water losses (1,000 m³)	**291,807**	**298,380**	**313,416**	**312,623**	**307,313**	**289,220**	**259,253**	**245,297**	**228,823**	**218,025**	**204,150**
Water losses (%)	**83**	**84**	**85**	**84**	**85**	**84**	**81**	**80**	**78**	**77**	**75**
Water billed (1,000 m³)	**63,837**	**57,214**	**55,418**	**59,491**	**55,513**	**56,992**	**60,267**	**62,025**	**63,900**	**66,225**	**68,993**
Households (1,000 m³)	39,400	34,931	31,491	33,162	33,745	34,968	36,419	37,693	39,460	40,320	41,311
Government organizations (1,000 m³)	5,332	5,485	4,919	4,862	4,366	4,311	4,152	4,189	4,297	4,372	4,463
Commercial customers (1,000 m³)	17,092	14,691	16,933	17,695	15,883	16,524	17,960	18,187	17,552	19,287	20,979
Bulk water customers (1,000 m³)	2,014	2,107	2,074	3,773	1,520	1,190	1,735	1,956	2,590	2,248	2241

TABLE A.2. Yerevan Djur CJSC's Financial Results, 2006–14

AMD (millions)	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total revenue	**4,537.33**	**6,959.65**	**7,526.66**	**7,908.33**	**9,138.98**	**9,114.44**	**8,862.23**	**9,024.48**	**9,521.36**
Revenue (from core activities) without VAT)	4,396.98	6,920.24	7,434.60	7,708.84	8,662.52	8,803.37	8,650.63	8,824.38	8,994.61
Other revenue	140.35	39.41	92.06	199.49	476.45	311.07	211.60	200.09	526.75
Total expenses from core activities	**4,938.11**	**7,938.49**	**7,808.82**	**8,401.68**	**8,213.86**	**8,142.04**	**7,962.65**	**7,335.43**	**8,316.28**
Operations and maintenance expenses	3,093.47	5,333.50	5,223.81	5,947.17	5,917.74	5,687.33	5,326.37	5,789.85	6,516.40
Salaries, bonuses and equivalent	1,393.51	2,577.39	2,382.50	2,852.57	2,950.06	2,923.34	2,768.03	2,959.54	2,868.92
Materials	222.12	365.63	415.20	385.50	412.44	524.76	512.67	422.12	355.22
Electricity	1,031.60	1,755.09	1,762.64	1,928.72	1,628.43	1,039.67	738.89	667.15	683.15
Amortization	218.34	324.83	216.28	359.61	477.69	577.11	703.89	1,137.33	1,776.87

table continues next page

TABLE A.2. continued

AMD (millions)	2006	2007	2008	2009	2010	2011	2012	2013	2014
Current repair expenses	227.92	310.57	447.20	420.78	449.12	622.46	602.89	603.70	832.23
General and administrative expenses	739.80	1,697.71	2,520.77	2,083.16	2,040.76	2,702.05	2,501.89	1,417.15	1,692.84
Financial expenses	1,104.84	907.27	64.24	371.35	255.36	–247.33	134.39	128.43	107.04
Total operational profit/losses	**–400.78**	**–978.84**	**–282.16**	**–493.35**	**925.12**	**972.40**	**899.57**	**1,689.05**	**1,205.08**
Profit/losses as a percentage of revenues	**–8.8**	**–14.0**	**–3.8**	**–6.2**	**10.1**	**10.7**	**10.0**	**18.7**	**12.7**
Total operational profit/ losses (US$ millions)	**–0.96**	**–2.86**	**–0.92**	**–1.36**	**2.48**	**2.61**	**2.24**	**4.12**	**2.90**
Net operating profit: $4.1 million before taxes or about $0.45 million per year on average over the life of the contract.									

Note: All figures are expressed in millions of Armenian drams (AMD), unless indicated otherwise. CJSC = closed joint stock company; VAT = value added tax.

Appendix B Tendering Process for AWSC Management Contract

Management Contract Tender for Transferring Armenian Water Sewerage Company CJSC's Executive Powers to the Private Manager

The first phase of the management contract was signed with the firm on August 19, 2004, with a start date of October 19, 2004. According to the terms of the management contract, the breakdown of fixed payments/ year was as follows: 1st year: 23 percent; 2nd year: 21 percent, 3rd–6th years: 14 percent each year. Besides the fixed payment, according to the management contract, based on the performance indicators outcome results, a $1.3 million incentive fee was intended for the manager through yearly payments beginning from the second year. The Loan Agreement and the Project Agreement were signed between the IDA and the Republic of Armenia on June 14, 2004, for $25.56 million.

TABLE B.1. Investments for Selected Projects in the AWSC Service Area, by Type

Type of civil works done	Unit	ADB financed water supply and sanitation sector project, loan 2363-ARM		ADB financed water supply and sanitation sector project—additional financing, loan 2860-ARM		WB financed municipal water project, loan 8129-AM		Total		
		Scope	Amount (US$, millions)	Scope	Amount (US$, millions)	Scope	Amount (US$, millions)	Scope	Amount (US$, millions)	%
Water mains	km	120.0	5.93	42.0	1.88	8.0	0.38	170.0	8.19	9.40
Network	km	590.0	23.49	896.0	29.97	186.0	6.5	1,672.0	59.96	68.84
House connections	km	205.0	2.05	245.0	2.45	70.0	0.7	520.0	5.2	5.97
Water meter chambers	pcs	24,304	1.94	32,870	2.96	9,728	0.78	66,902	5.68	6.52
Pumping stations	pcs	15	1.52	6	0.35			21	1.87	2.15
Chlorination stations	pcs	4	0.07	5	0.12			9	0.19	0.22
Regulation reservoirs	pcs	35	2.02	30	1.65	4	0.29	69	3.96	4.55
Water plants	pcs	2	1.22	1	0.02			3	1.24	1.42
Sources	pcs	9	0.21					9	0.21	0.24
Deep wells	pcs	9	0.36			2	0.15	11	0.51	0.59
Sewerage	km	4.4	0.09					4.4	0.09	0.10
Total			**38.9**		**39.4**		**8.8**		**87.1**	**100**

Note: ADB = Asian Development Bank; AM = Armenia (World Bank); ARM = Armenia (Asian Development Bank); AWSC = Armenian Water and Sewerage Company; WB = World Bank.

Appendix C Detailed Indicators for the Five Utilities

Water Production and Consumption Structure by Company

TABLE C.1. Yerevan Djur CJSC—Water Production and Consumption Structure

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Hours of water supply/ day		19.7	17.4	18.9	20.4	20.8	22	22.2	22.5	22.7	22.9
Water entered into water supply system (1,000 m³)	**353,630**	**355,595**	**368,834**	**372,114**	**362,825**	**346,211**	**319,520**	**307,322**	**292,723**	**284,250**	**273,142**
Gravity water (1,000 m³)	212,188	213,401	227,895	229,502	226,003	225,951	237,593	233,716	224,297	216,673	212,581
Mechanical water (1,000 m³)	141,442	142,193	140,938	142,612	136,822	120,260	81,927	73,606	68,426	67,577	60,561
Total water losses in the system (1,000 m³)	**291,807**	**298,380**	**313,416**	**312,623**	**307,313**	**289,220**	**259,253**	**245,297**	**228,823**	**218,025**	**204,150**
Water losses (%)	**83**	**84**	**85**	**84**	**85**	**84**	**81**	**80**	**78**	**77**	**75**
Water supply (1,000 m³)	**63,837**	**57,214**	**55,418**	**59,491**	**55,513**	**56,992**	**60,267**	**62,025**	**63,900**	**66,225**	**68,993**
Population (1,000 m³)	39,400	34,931	31,491	33,162	33,745	34,968	36,419	37,693	39,460	40,320	41,311
Budgetary organizations (1,000 m³)	5,332	5,485	4,919	4,862	4,366	4,311	4,152	4,189	4,297	4,372	4,463
Other (1,000 m³)	17,092	14,691	16,933	17,695	15,883	16,524	17,960	18,187	17,552	19,287	20,979
Water sold to other water supplying companies (1,000 m³)	2,014	2,107	2,074	3,773	1,520	1,190	1,735	1,956	2,590	2,248	2,241
Water removal (1,000 m³)	**70,642**	**58,924**	**56,459**	**61,780**	**61,210**	**62,605**	**63,596**	**65,865**	**67,923**	**69,443**	**71,973**
Population (1,000 m³)	31,972	28,970	26,774	28,356	29,157	30,445	32,204	34,364	36,066	36,672	37,471
Budgetary organizations (1,000 m³)	4,661	4,781	4,095	4,053	3,868	3,853	3,710	3,754	3,825	3,796	4,036
Other (1,000 m³)	34,009	23,683	14,337	18,023	16,950	17,003	16,794	17,290	17,808	18,993	20,384
Water removal of other water supplying companies (1,000 m³)	0	1,490	11,253	11,348	11,236	11,304	10,888	10,457	10,223	9,982	10,083

Note: CJSC = closed joint stock company.

TABLE C.2. Armenian Water and Sewerage CJSC—Water Production and Consumption Structure

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Hours of water supply/ day	7.39	9.62	10.98	12.1	13.01	14.03	15.02	16	16.61	17.02	18
Water entered into water supply system (1,000 m³)	**165,875**	**168,281**	**178,057**	**188,983**	**182,231**	**172,792**	**159,975**	**160,267**	**155,818**	**142,523**	**145,729**
Gravity water (1,000 m³)	86,503	91,102	94,631	98,233	104,483	107,670	98,859	100,527	99,937	84,344	86,117
Mechanical water (1,000 m³)	70,322	69,295	75,048	80,645	68,999	59,026	55,544	51,886	49,454	51,895	54,005
Purchased water (1,000 m³)	9,050	7,884	8,378	10,105	8,748	6,096	5,573	7,855	6,427	6,283	5,607

table continues next page

TABLE C.2. Continued

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total water losses in the system (1,000 m³)	**125,388**	**140,449**	**152,466**	**161,885**	**155,778**	**147,037**	**133,866**	**128,683**	**121678**	**107,542**	**107,648**
Water losses (%)	**76**	**83**	**86**	**86**	**85**	**85**	**84**	**80**	**78**	**75**	**74**
Water supply (1,000 m³)	**40,490**	**27,832**	**25,591**	**27,097**	**26,453**	**25,755**	**26,109**	**31,584**	**34,140**	**34,981**	**38,081**
Population (1,000 m³)	34,529	21,508	17,742	18,616	18,855	18,083	18,300	19,249	20,604	22,389	22,963
Budgetary organizations (1,000 m³)	2,131	2,174	2,318	2,512	2,467	2,442	2,541	2,558	2,645	2,681	2,839
Other (1,000 m³)	3,830	4,150	5,531	5,970	5,131	5,230	5,269	9,777	10,891	9,910	12,279
Water removal (1,000 m³)	**18,966**	**15,320**	**14,969**	**15,725**	**15,399**	**15,023**	**15,390**	**170,44**	**17562**	**19,115**	**18,998**
Population (1,000 m³)	14,136	10,297	9,255	9,689	10,004	9,635	10,048	10,855	11,464	12,926	12,880
Budgetary organizations (1,000 m³)	2,057	2,042	2,158	2,291	2,260	2,240	2,309	2,254	2312	2,428	2,439
Other (1,000 m³)	2,773	2,981	3,556	3,745	3,136	3,148	3,033	3935	3,786	3,762	3,679

Note: CJSC = closed joint stock company.

TABLE C.3. Nor Akunq CJSC—Water Production and Consumption Structure

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water entered into water supply system (1,000 m³)	**9,902**	**7,442**	**6,722**	**6,482**	**6,667**	**5,862**	**5,493**	**6,030**	**6,365**	**7,552**	**7,737**
Gravity water (1,000 m³)	0	0	0	0	0	0	0	0	0	0	0
Mechanical water (1,000 m³)	9,902	7,442	6,722	6,482	6,667	5,862	5,493	6,030	6,365	7,552	7,737
Purchased water (1,000 m³)	0	0	0	0	0	0	0	0	0	0	0
Total water losses in the system (1,000 m³)	**8,337**	**6,028**	**5,154**	**4,886**	**4,894**	**3,906**	**3,534**	**3,961**	**4,253**	**5,322**	**5,527**
Water losses (%)	**84**	**81**	**77**	**75**	**73**	**67**	**64**	**66**	**67**	**70**	**71**
Water supply (1,000 m³)	**1,565**	**1,414**	**1,568**	**1,596**	**1,773**	**1,957**	**1,959**	**2,069**	**2,112**	**2,230**	**2,210**
Population (1,000 m³)	822	985	1,173	1,223	1,414	1,559	1,580	1,689	1,752	1,838	1,816
Budgetary organizations (1,000 m³)	226	251	251	262	264	291	286	281	273	289	310
Other (1,000 m³)	517	178	143	111	95	106	93	99	86	104	84
Water removal (1,000 m³)	**828**	**1,137**	**1,215**	**1,427**	**1,450**	**1,523**	**1,530**	**1,588**	**1,610**	**1,694**	**1,741**
Population (1,000 m³)	636	764	889	924	1,091	1,167	1,189	1,268	1,290	1,327	1,250
Budgetary organizations (1,000 m³)	62	89	101	95	94	124	139	150	148	155	280
Other (1,000 m³)	131	284	225	408	265	232	203	170	172	212	211

Note: CJSC = closed joint stock company.

TABLE C.4. Shirak Water and Sewerage CJSC—Water Production and Consumption Structure

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water entered into water supply system (1,000 m³)	**52,376**	**44,260**	**39,423**	**37,360**	**32,913**	**24,731**	**27,448**	**43,119**	**46,784**	**44,053**	**41,110**
Gravity water (1,000 m³)	52,376	44,260	39,423	37,360	32,913	24,731	27,448	43,119	46,784	44,053	41,110
Mechanical water (1,000 m³)	0	0	0	0	0	0	0	0	0	0	0
Purchased water (1,000 m³)	0	0	0	0	0	0	0	0	0	0	0
Total water losses in the system (1,000 m³)	**44,390**	**37,647**	**33,518**	**31,756**	**27,515**	**19,994**	**22,778**	**38,408**	**42,064**	**39,137**	**36,065**
Water losses (%)	**85**	**85**	**85**	**85**	**84**	**81**	**83**	**89**	**90**	**89**	**88**
Water supply (1,000 m³)	**7,986**	**6,612**	**5,905**	**5,604**	**5,399**	**4,737**	**4,671**	**4,711**	**4,720**	**4,915**	**5,046**
Population (1,000 m³)	6,731	5,545	4,892	4,610	4,268	3,620	3,581	3,673	3,652	3,841	3,931
Budgetary organizations (1,000 m³)	959	817	773	743	822	733	713	686	713	665	738
Other (1,000 m³)	297	251	240	251	309	384	376	351	356	409	376
Water removal (1,000 m³)	**5,910**	**4,937**	**4,491**	**4,332**	**4,180**	**3,711**	**3,688**	**3,768**	**3,826**	**3,947**	**4,009**
Population (1,000 m³)	4,937	4,111	3,686	3,498	3,327	2,846	2,838	2,950	2,961	3,070	3,113
Budgetary organizations (1,000 m³)	700	589	580	595	606	561	537	522	552	522	573
Other (1,000 m³)	273	237	225	239	247	304	312	296	313	355	323

Note: CJSC = closed joint stock company.

TABLE C.5. Lori Water and Sewerage CJSC—Water Production and Consumption Structure

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Water entered into water supply system, (1,000 m³)	**12,477**	**12,673**	**12,475**	**11,014**	**10,405**	**8,045**	**6,071**	**16,612**	**20,661**	**19,548**	**15,599**
Gravity water (1,000 m³)	12,477	12,673	12,475	11,014	10,405	8,045	6,071	16,612	20,661	19,548	15,599
Mechanical water (1,000 m³)	0	0	0	0	0	0	0	0	0	0	0
Purchased water (1,000 m³)	0	0	0	0	0	0	0	0	0	0	0
Total water losses in the system (1,000 m³)	**9,477**	**9,487**	**9,294**	**8,197**	**7,546**	**5,485**	**3,679**	**14,067**	**18,109**	**16,785**	**12,652**
Water losses (%)	**76**	**75**	**75**	**74**	**73**	**68**	**61**	**85**	**88**	**86**	**81**
Water supply (1,000 m³)	**3,007**	**3,186**	**3,181**	**2,817**	**2,860**	**2,560**	**2,392**	**2,545**	**2,553**	**2,763**	**2,947**
Population (1,000 m³)	2,678	2,873	2,862	2,485	2,501	2,188	2,066	2,183	2,191	2,355	2,545
Budgetary organizations (1,000 m³)	151	160	154	154	160	152	138	151	149	186	183
Other (1,000 m³)	178	153	165	179	199	221	188	210	213	221	219
Water removal (1,000 m³)	**1,981**	**2,313**	**2,297**	**1,985**	**2,024**	**2,134**	**2,038**	**2,207**	**2,265**	**2,437**	**2,568**
Population (1,000 m³)	1,674	2,023	1,996	1,674	1,702	1,802	1,740	1,885	1,936	2,073	2,228
Budgetary organizations (1,000 m³)	149	154	151	149	154	141	135	149	149	186	182
Other (1,000 m³)	158	136	149	162	168	191	163	174	180	179	158

Note: CJSC = closed joint stock company.

Billing and Collection of Fees by Water Supply Companies

TABLE C.6. Yerevan Djur CJSC—Billing and Collection of Fees

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total revenue of water supply and wastewater services (AMD, millions)	**6,663**	**8,009**	**9,120**	**9,588**	**9,527**	**10,083**	**10,382**	**10,499**	**10,657**	**10,996**	**11,473**
Population	4,314	4,973	4,934	5,593	5,826	6,180	6,354	6,468	6,709	6765	6,929
Budgetary organizations	591	800	823	812	744	762	722	713	724	725	744
Other water supplying companies	67	62	102	87	73	82	98	126	149	175	187
Other (AMD, millions)	1,691	2,174	3,261	3,096	2,884	3,059	3,208	3,191	3,075	3,331	3,614
Collection of fees (AMD, millions)	**5,689**	**6,757**	**8,403**	**9,024**	**9,443**	**10,019**	**10,493**	**10,501**	**10,620**	**10,847**	**11,154**
Population	3,199	3,863	4,502	4,978	5,718	6,077	6,430	6,437	6,680	6,687	6,862
Budgetary organizations	677	712	863	844	774	777	733	726	723	771	730
From other water supplying companies	47	58	105	85	73	80	97	124	146	176	188
Other (AMD, millions)	1,766	2,124	2,934	3,117	2,879	3,085	3,233	3,214	3,071	3,213	3,374
Collection of fees (%)	**85**	**84**	**92**	**94**	**99**	**99**	**101**	**100**	**100**	**99**	**97**
Population (%)	74	78	91	89	98	98	101	100	100	99	99
Budgetary organizations (%)	115	89	105	104	104	102	102	102	100	106	98
From other water supplying companies (%)	70	92	103	98	100	98	98	98	98	100	101
Other (%)	104	98	90	101	100	101	101	101	100	96	93

Note: AMD = Armenian drams; CJSC = closed joint stock company.

TABLE C.7. Armenian Water and Sewerage CJSC—Billing and Collection of Fees

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total revenue of water supply and wastewater services (AMD, millions)	**4,635**	**3,509**	**3,243**	**3,433**	**4,034**	**4,183**	**4,221**	**4,490**	**4,716**	**5,064**	**5,142**
Population	3,899	2,657	2,267	2,377	2,963	3,006	3,027	3,218	3,425	3,745	3,762
Budgetary organizations	269	301	320	346	411	434	448	450	463	473	495
Other	467	551	657	711	660	744	746	822	828	845	885
Collection of fees (AMD, millions)	**2,451**	**2,695**	**2,443**	**2,683**	**3,388**	**3,797**	**3,990**	**4,194**	**4,438**	**4,601**	**4,751**
Population	1,768	1,854	1,494	1,673	2,338	2,628	2,820	2,946	3,149	3,317	3,410
Budgetary organizations	245	301	330	340	405	434	423	446	463	477	480
Other	439	541	618	670	644	735	746	803	826	807	861
Collection of fees (%)	**53**	**77**	**75**	**78**	**84**	**91**	**95**	**93**	**94**	**91**	**92**
Population (%)	45	70	66	70	79	87	93	92	92	89	91
Budgetary organizations (%)	91	100	103	98	99	100	94	99	100	101	97
Other (%)	94	98	94	94	98	99	100	98	100	95	97

Note: AMD = Armenian drams; CJSC = closed joint stock company.

TABLE C.8. Nor Akunq CJSC—Billing and Collection of Fees

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total revenue of water supply and wastewater services (AMD, millions)	209	197	224	224	245	361	389	410	418	442	439
Population	118	135	161	167	192	286	313	334	346	363	357
Budgetary organizations	29	33	33	34	35	52	55	55	53	56	62
Other	62	30	29	23	18	23	21	21	19	23	19
Collection of fees (AMD, millions)	**188**	**172**	**205**	**220**	**251**	**354**	**391**	**410**	**419**	**436**	**430**
Population	105	119	145	164	193	278	324	335	346	361	348
Budgetary organizations	28	32	32	33	37	53	47	54	54	53	63
Other	55	22	28	23	21	23	20	22	19	22	20
Collection of fees (%)	**90**	**87**	**92**	**98**	**102**	**98**	**100**	**100**	**100**	**99**	**98**
Population (%)	89	88	90	98	100	97	103	100	100	99	97
Budgetary organizations (%)	97	97	96	97	107	103	86	99	102	95	101
Other (%)	88	73	95	99	114	100	94	100	98	97	103

Note: AMD = Armenian drams; CJSC = closed joint stock company.

TABLE C.9. Shirak Water and Sewerage CJSC—Billing and Collection of Fees

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total revenue of water supply and wastewater services (AMD, millions)	**843**	**717**	**624**	**618**	**596**	**715**	**778**	**787**	**790**	**821**	**842**
Population	709	599	512	506	472	546	598	614	611	641	656
Budgetary organizations	101	88	85	83	90	111	118	114	119	111	123
Other	33	30	28	30	34	58	62	59	60	69	63
Collection of fees (AMD, millions)	**420**	**429**	**416**	**410**	**496**	**708**	**736**	**760**	**815**	**849**	**826**
Population	280	305	299	305	371	543	547	601	637	663	644
Budgetary organizations	108	93	89	77	91	109	129	104	118	117	119
Other	31	30	28	29	34	56	60	55	60	69	63
Collection of fees (%)	**50**	**60**	**67**	**66**	**83**	**99**	**95**	**97**	**103**	**103**	**98**
Population (%)	40	51	59	60	79	99	92	98	104	103	98
Budgetary organizations (%)	107	106	105	93	101	98	109	91	100	106	97
Other (%)	94	102	100	97	99	96	97	94	100	100	99

Note: AMD = Armenian drams; CJSC = closed joint stock company.

TABLE C.10. Lori Water and Sewerage CJSC—Billing and Collection of Fees

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total revenue of water supply and wastewater services (AMD, millions)	**341**	**360**	**359**	**317**	**321**	**407**	**417**	**448**	**452**	**487**	**512**
Population	301	325	321	277	279	346	359	384	387	416	446
Budgetary organizations	19	17	19	19	19	25	25	27	27	34	33
Other	21	18	20	21	23	36	33	37	37	38	33
Collection of fees (AMD, millions)	**247**	**243**	**252**	**251**	**257**	**367**	**398**	**437**	**448**	**476**	**506**
Population	205	208	211	210	216	310	341	374	383	409	438
Budgetary organizations	20	17	18	19	19	24	25	27	27	31	35
Other	21	18	23	22	21	34	31	36	38	36	33
Collection of fees (%)	**72**	**67**	**70**	**79**	**80**	**90**	**95**	**97**	**99**	**98**	**99**
Population (%)	68	64	66	76	77	90	95	97	99	98	98
Budgetary organizations (%)	106	99	98	102	99	96	101	98	100	91	105
Other (%)	102	100	116	104	93	94	94	98	103	96	100

Note: AMD = Armenian drams; CJSC = closed joint stock company.

Appendix D Tendering Process for the New National Lease Contract: 2015–16

RA Government Decree N 1233-N of October 15, 2015, stated that the selection of the lessee would be organized through competitive dialogue. The same decree also defined the prequalification requirements for companies participating in the procurement procedure. With the support of the PPP transaction advisor, SCWE prepared the prequalification organization package of the tender, which the government then approved.[1] Under Article 21 of the RA "Law on Procurement," SCWE published the prequalification announcement both in the Official Journal of Procurement (www.gnumner.am), as well as on the international UN Development Business website (www.devbusiness.com) on December 15, 2015. Initially, January 21, 2016, was the deadline for submission of applications (the opening day of the prequalification applications). However, another government decree extended the closing date and February 22, 2016 was set as the new deadline for submission of prequalification applications in order to attract the maximum number of potential participants in the tender process while maintaining the competitive factors.

The following mandatory requirements were set for the tender participants by the prequalification procedure:

1. ***Compliance of professional activity with the contractual activity:***

a. For a period of not less than 5 years during the 15-year period, the operator should have implemented either: (i) one water systems management, operations and maintenance (O&M) project of no less than 5 years duration to provide water supply services to at least 600,000 people annually, or (ii) two or more water supply projects serving a combined total population of at least 800,000 (with at least one named project serving a population of more than 300,000).

b. The bidder should have water system management, O&M, and project implementation experience providing services in at least three different countries during the last 15-year period.

2. ***Professional experience:***

a. Should have performed reconstruction and rehabilitation of water systems for at least three projects, each costing not less than the equivalent of $5 million during the last 15-year period.

b. For a period of not less than 5 years during the preceding 15-year period, the bidder should have experience with implementing one project of water systems management, O&M providing services to at least 100,000 people in the territory of the RA.

3. ***Financial resources:***

a. Should have an average annual turnover of $50 million equivalent in respect of its water systems management, O&M over the last 5 years.

Following prequalification, SCWE announced the firms eligible to participate in the tender. In March 2016, invitations for participation in the tender package were sent out. As already mentioned above, the three PPP contracts were to expire on May 31, 2016. However, due to the extensive and time-consuming bidding process, under RA Government Decree N 1233-N of October 15, 2015, the closing date for the existing PPP contracts was extended until January 1, 2017, when the new lessee would assume its contractual obligations.

The following organizations/departments were directly involved in the tender process:

- The RA government, under whose decisions the bidding documents, the results of all bidding phases, and the final contract were approved.
- The State Committee of Water Economy of the RA Ministry of Agriculture as a customer, a procurement manager, a property leaser, and a lease contract party (RA Government Decrees N 883-N dated August 14, 2014, and N 1233-N, dated October 15, 2015).
- The InterGovernmental Committee formed under RA Government Decree N 140-A, dated February 19, 2015 (the Chairman is Minister-Chief of the RA Government Staff David Harutyunyan), with which the documents regarding the tender were agreed before being circulated and before relevant decisions were adopted by the government or the Prime Minister.
- The RA Public Services Regulatory Commission, which must provide water systems use permits to the tender winning company, and approve the drinking water tariff and its subsequent modification mechanism fixed in the lessee's contract.
- The Ministry of Environmental Protection, which issues water use permits.

Note

1. RA Government Protocol Decision N 49, dated November 5, 2015.

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