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Complex assessment of housing and communal sector in the region's municipalities



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At present, the functioning of housing and communal sector in most regions of the country is characterized by mounting crisis. The key problems in this sphere include poor quality of provided services, high depreciation of fixed assets, large non-productive resource losses, etc. These are the issues that the authorities should address to at all levels. At the same time it should be noted that municipal entities may considerably differ in the level of housing improvement, state of engineering infrastructure, and the possibilities of introducing market mechanisms of economic management. Therefore, the state policy in the housing and communal sector should be based on the use of economic instruments and incentives, taking the fullest account of the current state, sectorial and regional peculiarities. The article analyses the state of housing and utilities infrastructure in the Vologda Oblast municipalities on the basis of the integral estimation methodology; it distinguishes the territories with similar characteristics and problems concerning the functioning of this sphere, presents group characteristics. The key directions and instruments of state policy, the implementation of which will make it possible to use limited financial resources more efficiently, to optimize the territorial-production structure and to enhance the overall functioning efficiency of housing and communal services in different types of the region's municipalities, are offered.

Housing and communal sector, municipalities, typologization, investment processes, public and private partnership, Vologda Oblast.

Housing and communal services (HCS) is one of the key spheres of the national economy, providing vital services to population, and

necessary resources for manufacturing activities (electricity, heat, water, etc.) to the industrial, agricultural and other sectors.

At present, however, housing and communal services of Russia are in crisis, being one of the main sources of social tensions. Thus, in 2013, 60% of the population identified this problem as one of the most important in the country (only 40% of the Russians adhered to such opinion in 2010) [5].

High level of fixed assets depreciation, breakdown rate, annual tariffs increase without significant improvement in the quality of provided services, considerable waste of utility resources – it is by far not the complete list of the problems of the Russian housing and communal sector.

The cause of the crisis in the housing and communal services is not only its persistent underfunding over the past decades, but inefficient management system, as well. It is obvious that under modern conditions the administrative principles of management have outrun themselves, however, the vector of further reforming, purely focused on the use of market mechanisms and the reduction in the volume of state support, does not contribute to the successful resolution of the accumulated problems.

This fact is especially relevant for rural areas with small service zone and low solvency of the final consumer. In turn, most of the enterprises for housing and communal services are unprofitable and unfavourable for private investments. The engineering infrastructure is in a critical condition, costs of providing services several times exceed similar figures for urban areas, but still, it is impossible to cover

the need for financial resources for its proper modernization by the final consumer and local budgets.

The afore-mentioned problems are typical of the majority of the subjects of the Russian Federation, including the Vologda Oblast. Thus, an increase in the share of failing housing stock has been observed over the last few years, amounting to 6% of the total area of the region's housing in 2012, that is higher than the Russian average (3%) and the average across the Northwestern Federal District (3.2%) (*tab. 1*).

Moreover, significant territorial differences are hidden under this average figure. Thus, in 2012, the extremely high share of failing housing stock was registered in Mezhdurechensky (31.1%), Vytegorsky (22%) and Belozersky (20.8%) districts. The best condition of housing is observed in Cherepovets (0.1%) and Kaduysky District (1.6%) [1, p. 22].

Low quality of public services and amenities is another major problem of the Vologda Oblast housing and communal infrastructure. In 2012, only 58.7% of the region's housing stock was provided with hot water supply, 59.6% – with baths (showers), 63.3% – with drainage (sewage). For comparison, 65.5% of the housing stock is supplied with hot water on average in Russia, 73.9% in the NWFD.

Particularly low quality of public services and amenities is typical for the rural areas. Thus, only 5.5% of housing is supplied with water in Kichmengsko-Gorodetsky District, 14.4% in Nikolsky District. The similar situation is observed with regard to central heating

Table 1. Failing housing stock, as a percentage of total housing

Territory	Year							2012 to 2000, p.p.
	2000	2005	2008	2009	2010	2011	2012	
Vologda Oblast	2.1	5.5	5.6	6.0	6.0	5.9	6.0	+3.9
NWFD	2.2	3.3	3.3	3.2	3.3	3.2	3.2	+1.0
Russian Federation	2.4	3.2	3.2	3.1	3.1	3.0	3.0	+0.6

Sources: Russian regions. Socio-economic indicators. 2012: statistical digest. Rosstat. Moscow, 2012; Unified interdepartmental information and statistical system. Available at: <http://www.fedstat.ru/indicator/data.do>

services: 0.4% in Babushkinsky District, 0.6% in Kichmengsko-Gorodetsky District, 3.4% in Verkhovazhsky District [1, p. 24-25].

Thus, it is obvious that sustainable development of housing is impossible without its stable functioning throughout the region. In this context, the issue of conducting comprehensive and objective assessment of its current status and identifying the main problems in municipal housing and communal sector becomes relevant.

In order to solve this problem, it is necessary to develop the appropriate methodological tools. The system of indicators, comprehensively characterizing the current state of housing and communal services in the region's municipalities, has been formed, based on the generalization of research results with regard to the issue under consideration [9, 10, 13]. At that, all indicators are recognized equivalent (*tab. 2*).

The indicators are aggregated in the integral index in the following sequence.

1 stage. Determination of the special index value for each block of indicators (R_j):

$$R_j = \frac{\sum_{i=1}^n k_i}{n}; \tag{1}$$

where k_i – standardized rate;
 n – number of indicators in the block.

The standardized rate is calculated by the formula 2 for direct indicators, and in accordance with the formula 3 for reverse indicators¹:

$$k_i = \frac{x_i}{x_0}; \tag{2}$$

$$k_i = \frac{x_0}{x_i}; \tag{3}$$

¹ Direct indicator is the indicator, the increase in the values of which indicates the presence of positive tendencies, improvement of the situation in the housing and communal sector. The reverse indicator – an indicator, the increase in the values of which indicates the worsening of the situation in the given sphere of municipal services.

where x_i – the value of the i -th indicator in a municipal entity;

x_r – reference value of the i -th indicator.

2 stage. Computation of the integral index, characterizing the state of the housing and municipal sector in the municipality (R):

$$R = \frac{R_1 + R_2 + R_3 + R_4}{4};$$

where R_1 – section-based index, characterizing the state of municipal housing;

R_2 – section-based index, characterizing the condition of housing and communal sector (resources supplying industries);

R_3 – section-based index, reflecting the situation in the sphere of territorial improvement and municipal communal services;

R_4 – section-based index, characterizing the financial state of the housing and communal sector of the municipality.

3 stage. The groups of territories characterized by common problems in the housing and communal sector are selected. The range of possible values of the integral index ranges from 0 to 1, on the basis of which 4 types of municipalities have been determined². At that, the fourth group has wider interval boundaries, since it characterizes the municipalities, where the housing and municipal sector is in a critical condition, in the severe and systemic crisis. Moreover, the worse the situation in the sphere, the closer to zero values the integral index is. However, it should be noted that zero value in reality is basically unattainable (*fig. 1*).

Let us test the proposed tools, on the materials of the Vologda Oblast municipalities. The calculation results allow identifying 3 types of territories according to the state of housing and communal sector. At that, in 2012 none of the municipalities was included in the I group, characterized by the good working order of the given sphere (*tab. 3*).

² Considering that the municipality has a reference value by each indicator of all four sections, the maximum value of the integral index can be potentially equal to 1.

Table 2. Indicators, characterizing the state of municipal housing and communal sector

Indicator	Characteristic
Block 1. Housing	
1.1. Share of housing outside the failing housing category, as a percentage of the total municipal housing area	Disrepair of housing results in the resource waste increase (heat, electricity, etc.), and on the whole reduces dwelling comfortability. Furthermore, the presence of failing housing stock indicates not only insufficient rates of housing construction, but also ineffectiveness of the organizations engaged in its maintenance and management.
1.2. Amount of housing, provided with all amenities (water supply, sewerage, heating, gas or electric cookers), as a percentage of housing total area	One of the strategic goals of the state policy in the housing and communal sector is full supply of the population with all kinds of public utilities of standard quality. In this regard, the landscaping is one of the key indicators characterizing the overall development level of the territory's housing and communal services.
1.3. Apartment buildings managed by private management companies, homeowners associations (HOA), housing cooperatives (HC), as a percentage of the total	Under modern conditions of market transformations the liquidation of the state monopoly is one of the priorities of the sector reforms. In turn, the introduction of progressive forms of housing management, promotion of competition between organizations, engaged in house maintenance, will not only increase the quality of provided services, but is also the factor contributing to the development of the homeowners initiative.
Block 2. Communal services (resources supplying industries)	
2.1. Share of public utilities, not needing changing, as a percentage of total length	The indicator characterizes the technological condition of the municipal communal infrastructure. The presence of overage systems results in high breakdown rate, decreasing quality of provided services.
2.2. Main resource losses, %	Large resource waste is the consequence of the wear-out of engineering infrastructure, technological backwardness, unauthorized main connections. In turn, the losses do not exceed 3-4% in developed countries that apply modern technologies for the production and transportation of communal resources [4; 7].
2.3. Amount of communal resources distributed on the basis of the values of metering devices, as a percentage of total consumption	Requirements of the current legislation imply complete transition to the calculations for the consumed communal resources in accordance with the metering values, installation of which allows, on the one hand, reducing the customer's utility fees, and, on the other hand, is an incentive for companies to improve their production efficiency.
Block 3. Improvement of the territory	
3.1. Share of lighted streets, roads, embankments, as a percentage of their total length	This indicator allows assessing the level of the provision of the consumers of the municipality with street lighting services.
3.2. Share of dumps of solid domestic waste (SDW), where recoverable waste is kept in record, as a percentage of the total	Allows estimating the quality of works, related to waste management. The presence of unauthorized dumps, absence of the record keeping system does not make it possible to dispose of solid domestic waste in accordance with the approved public health regulations.
Block 4. Financial processes in the housing and communal sector	
4.1. Rate of payment for housing and communal services, %	Full collection of payments for services is a necessary condition for the stable functioning of housing and utilities enterprises, successful implementation of production and investment programmes, which is especially important in connection with the liquidation of the budget allocations and cross-subsidization.
4.2. Share of profitable housing and utilities enterprises, as a percentage of their total number	Summative indicator, characterizing the production efficiency of housing and utilities organizations of the municipality.
4.3. Ratio of the enterprises' receivables to the cost of rendered housing and communal services, %	High amount of receivables of housing and utilities enterprises limits their abilities to attract loans and other debt financing, generates high risks associated with the investment. In this case the optimal recognized level of receivables does not exceed 5% of the accrued fees*.
* Natural rate of receivables, which, as a rule, is classified as hopeless. See, for example: Kovalev V.V. Introduction to financial management. Moscow: Finances and statistics, 2004.	

Figure 1. Interpretation of the threshold values of the integral index (I) of the state of the municipality housing and communal sector

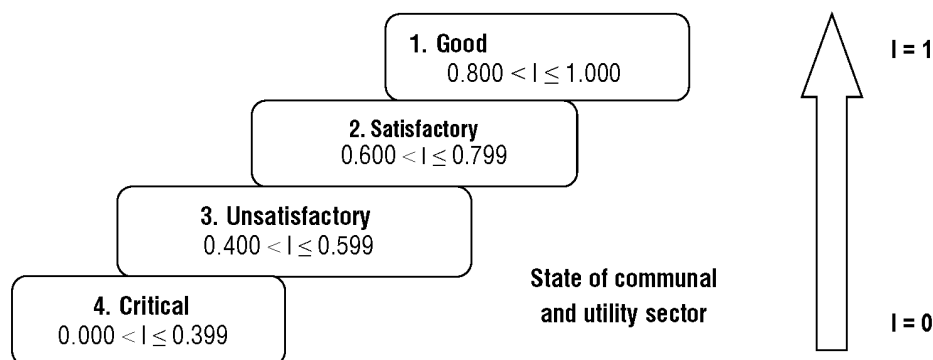


Table 3. Typologisation of the Vologda Oblast municipalities according to the condition of the housing and communal sector in 2012

Group	HCS state	Territories
II	Satisfactory 0.600 < I ≤ 0.799	Vologda (0.781), Cherepovets (0.758), Kaduysky (0.664), Sheksninsky (0.623)
III	Unsatisfactory 0.400 < I ≤ 0.599	Cherepovetsky (0.570), Sokolsky (0.556), Chagodoshchensky (0.542), Verkhovazhsky (0.540), Tarnogsky (0.536), Vologodsky (0.535), Ust-Kubinsky (0.506), Nyuksensky (0.491), Babushkinsky (0.490), Velikoustyugsky (0.470), Ustyuzhensky (0.470), Vozhegodsky (0.469), Mezhdurechensky (0.468), Gryazovetsky (0.445), Kirillovsky (0.437), Totemsky (0.418), Nikolsky (0.418), Belozersky (0.416), Syamzhensky (0.409)
IV	Critical 0.000 < I ≤ 0.399	Vytegorsky (0.391), Vashkinsky (0.385), Kharovsky (0.383), Babayevsky (0.367), Kichmengsko-Gorodetsky (0.367)

General characteristics of housing and communal services in various types of the region’s municipal entities are presented in table 4.

The condition of housing and communal services in the territories of the II group is satisfactory. Share of failing housing stock (group average amounted to 2.3% of the total area of the housing stock) is lower than the average oblast value (6.0%). In addition, the level of improvement is rather high. On group average almost 92% of housing is provided with all kinds of public utilities (hot and cold water supply, sewerage, heating, gas or electric cookers).

In recent years, market reforms have been actively implemented in the housing sector. Thus, in 2012, about 90% of apartment build-

ings were serviced by private management companies and homeowners associations (HOA)³. Moreover, the share of municipal organizations has been decreasing.

Public utility companies have large production capacity, however, their activity is characterized by significant resource losses (water – 19.7% of the total volume of water, supplied to the mains), due to the high level of wear and tear of fixed assets in the housing and municipal sector. In particular, on group average in 2012 almost 55% of heating systems and 28% of water supply systems were overage and needed changing [3, p. 7; 33].

³ See information on structural transformations and organizational activities in the Vologda Oblast housing and communal sector – form No.22-ZHKH (reform) for 2012.

Table 4. Characteristics of the state of housing and communal services in different types of the Vologda Oblast municipalities

Indicator	Group average value*			Oblast average
	II	III	IV	
1. Share of failing housing stock, as a percentage of the total municipal housing area	2.3	9.2	11.9	6.0
2. Amount of housing, provided with all amenities (water supply, sewerage, heating, gas or electric cookers), %	91.7	25.6	16.7	57.6
3. Apartment buildings managed by private management companies, homeowners associations (HOA), housing cooperatives (HC), as a percentage of the total	89.2	47.3	48.6	54.8
4. Share of public utilities, not needing changing, as a percentage of total length: – water supply; – heat supply.	72.4 45.2	64.7 74.7	73.4 70.7	67.9 59.2
5. Main resource losses, %: – water supply; – heat supply.	19.7 6.2	29.2 11.2	22.1 12.8	21.7 8.5
6. Amount of communal resources distributed on the basis of metering values, as a percentage of total consumption: – heat energy; – hot water; – cold water.	67.8 80.5 95.4	23.9 41.6 52.9	25.9 25.6 23.2	55.4 75.9 87.5
7. Share of lighted streets, roads, embankments, %	86.0	65.4	69.4	76.4
8. Share of dumps (landfills) of solid domestic waste (SDW), where recoverable waste is kept in record, as a percentage of the total number of SDW dumps	87.5	27.2	8.9	54.3
9. Ratio of the enterprises' receivables to the cost of rendered housing and communal services, %	50.6	49.6	38.2	49.9

* Average values were calculated by the formula of weighted arithmetic mean.

In turn, the financial situation of public utility organizations is unstable (in 2012 their receivables exceeded 50% of the cost of rendered services), which limits the possibilities for independent resolution of these problems and procurement of capital.

A significant part of the Vologda Oblast municipalities (19 of 28 municipalities), housing and communal services of which continue to be in a severe and systemic crisis, is included in the III group. The main issues include the following:

- high rate of housing stock depreciation (in 2012 failing housing stock amounted to over 9% of housing area, which exceeds the oblast average);
- low level of improvement (only ¼ of housing is provided with all kinds of public utilities);
- high deterioration level of engineering infrastructure (over 35% of water mains and 25% of heating systems need changing);

- significant non-productive losses of utilities in the mains (water – 29.2%, heat – 11.2%), due to the wear of fixed assets, technological backwardness of the majority of public utility enterprises;

- ineffective system of consumption records (only 24% of the total volume of heat energy was supplied on the basis of the values of metering devices, hot water – 42%, cold water – 53%);

- low development level of the improvement sector (in 2012 only about 65% of the total length of streets, parks, embankments was provided with street lighting services).

- unstable financial situation of housing and utilities organizations (unprofitability of production activities, high level of receivables and payables);

- low rates of implementing market mechanisms of economic management [8].

At that the level of budget financing provided to the sector (except for Sokolsky

District – Sokol) is not high. The main source of funding is the payments of the population for housing and communal services.

The state of housing and communal services of the Vologda Oblast municipalities of the IV group can be recognized as critical. Housing is in a poor technical state, the share of failing housing stock in the total area of housing amounts to 12%, i.e. is 2 times above the average Oblast value. Moreover, the level of improvement remains very low (only 17% of housing is provided with basic kinds of public utilities). Therefore, individual systems of public utilities (water supply and heat supply facilities) are becoming more and more widespread.

Public utility companies of the given municipalities are small and have small production capacity. Moreover, their activities are characterized by significant non-productive losses of resources, many times exceeding standard values (heat – 12.8%, water – 22.1%) not only due to technological backwardness of public utility companies, but also due to extremely low provision of housing with metering devices (26% of heat energy, 23% of hot water was supplied in accordance with metering values). The provision of most housing and utilities services is unprofitable, that is one of the main reasons for unstable financial condition of public utility enterprises and for their impossibility to fully implement production and investment programmes.

The sector of municipal communal services is developed rather poorly in these areas. Thus, recoverable waste is kept in record only at 9% of SDW dumps, 69% of streets is provided with street lighting services.

In the context of the revealed differences in the housing and communal sector of the Vologda Oblast municipalities, the priority goal of the state policy is to create conditions for stable and steady functioning of this sphere in the whole territory of the region. The policy is to be differentiated from the point of view

of territorial specificity, and to focus on the concentration and the efficient use of limited financial resources.

Thus, high deterioration level of engineering infrastructure (systems of heat and water supply) in the municipalities of the II group requires the implementation of large-scale investment programmes in the municipal sector, aimed primarily on the sector's technological upgrading. However, it is reasonable to finance them not only from tariff sources, but with private investment attraction.

Thus, the main priorities of state policy in the housing and communal sector of the given municipal entities are the following:

- audit over the activities of public utility enterprises (determination of the real prime cost of rendering services, in order to switch to economically reasonable tariffs and profitable principles of tariff formation (RAB method), which will create objective incentives for reducing dead expenses and increasing investment attractiveness of housing and communal sector);
- development of long-term production and investment programmes, approval of tariffs (for the term of over 5 years) in accordance with objective financial requirements for their implementation;
- debt restructuring of public utility enterprises;
- development of the debt financing tools of state support (guarantees, interest rate subsidies, etc.); in addition, limited budgetary funds should be focused on ensuring the access of the public utility organizations to the resources of the state development institutions (in particular, Support fund for the reform of the housing and utilities sector) and credit sources;
- implementation of measures, aimed at increasing the provision of housing with metering devices, that will allow improving the efficiency of resource use. It is advisable for the local authorities along with educating

the population to develop consumer support package, which will include concessional lending and payment by installments when installing metering devices.

In turn, OJSC "Corporation of Development for the Vologda Region" could be more proactive in attracting extra-budgetary funding to the housing and municipal sector and provide consulting, organizational, etc. support to the projects of state-private partnership at all stages of their life cycle.

Severe and systemic crisis of the housing and communal sector in the municipalities of the *III and IV groups* requires the development of integrated support measures of this economic sector. It is obvious that such territories are not attractive for private business, and the huge scale of the accumulated problems, limited budgetary resources prevent the local authorities from solving the set tasks independently. Therefore, the state policy should be aimed at the maximum organizational, financial involvement in the development of this sphere of municipal economy in close cooperation with business structures and the population.

At that, the main efforts of the authorities should be concentrated on the liquidation of failing housing stock. Along with the new system of complete overhaul (NCO Fund for complete overhaul of apartment houses in the Vologda Oblast), the participation in the regional targeted programmes, providing for co-financing by means of the Support fund for the reform of the housing and utilities sector. However, in order to get financial support of the Development Institute, the local authorities should intensify the activities on the implementation of the market reforms in the housing sector, cadastral registration of land plots under apartment buildings, registration of titles to the facilities of the communal infrastructure.

Furthermore, market-based financing schemes are to be used more actively. As the experience of Russian regions shows, it is

possible to use payments for housing services as collateral for debt financing during complete overhaul of apartment buildings.

The issues concerning the modernization of public utility sector are of paramount importance in the given municipalities. The implementation of large investment programmes should provide the optimum combination of the instruments of the budget financing (at the expense of local and regional budgets, Support fund for the reform of the housing and utilities sector), bank financing, distribution of the financial burden between the current and the new consumers of utility services.

In order to prevent the dissipation of funds, it is necessary to create conditions for the efficient investment in municipal infrastructure, the key of which are the programmes of complex development of the communal infrastructure systems (PCD CIS). For the municipality PCD CIS is the tool of managing and optimizing the municipal infrastructure development that allows identifying "hotspots" in the development of the housing and communal sector and focusing the limited financial resources on their solution. The given programme will enable private investors to determine the guidelines for business development, and the projects that are the most promising in terms of payback.

However, such programmes have been approved not by all municipalities of the region (204 municipalities as of January 1, 2013, that is 67.5% of the total number), and frequently are not strategic and integrated [6]. In this context, the main problem is that their development is carried out by the municipal authorities, which, as a rule, do not have essential human and financial resources. According to the author, the solution to the problem is to provide targeted co-financing by means of the regional budget for the development of such programmes, or to include the expenditures incurred in the cost of the package of entitling documents submitted for the competition for the private investor.

The crisis situation in the housing and communal sector of these municipalities is aggravated by the fact that in rural areas many settlements become desolated. It is obvious that the construction of new communal facilities in this situation is unreasonable and extremely disadvantageous neither in commercial, nor in economic terms. On that basis it can be highlighted that the state policy should be aimed at the modernization of the existing systems of public utilities and the

promotion of the installation of individual systems of public utilities (for example, heat supply stations as an alternative to municipal boiler houses) [2].

The implementation of this action plan will allow using scarce financial resources more efficiently, optimizing the territorial production structure of the housing and communal sector and enhancing the overall operating efficiency of the housing and communal sector in different types of the region's municipalities.

References

1. Vologda Oblast housing stock: background note. Vologda, 2013.
2. Kozhevnikov S.A. Problems of housing and utilities sector of rural territories. Territorial development issues. 2013. No. 8(8). Available at: <http://vtr.isert-ran.ru/file.php?module=Articles&action=view&file=article&aid=3165>
3. Vologda Oblast communal services in 2012: statistical bulletin. Vologda:Vologdastat, 2013.
4. On measures to improve the quality of housing and communal services: report of the State Council of the Russian Federation. Saint Petersburg, 2013.
5. Russia Public Opinion Research Center (VCIOM) official site. Available at: <http://wciom.ru/index.php?id=459&uid=113767>
6. Official site of the Vologda Oblast Department of Construction, Housing and Communal Services. Available at: <http://www.depreion.ru/>
7. Primin O. Ways to reduce water losses. Russian communal complex. 2013. No. 4(106). Available at: <http://www.gkhprofi.ru/news.php?id=748>
8. Consolidated report of the Vologda Oblast on the monitoring results of the operating efficiency of the local authorities of city districts and municipal areas at the end of 2012. Available at: <http://vologda-oblast.ru/dokumenty/all/4252/>
9. Skripnik O.B. The reform of the regional housing complex: methodology and practice. Moscow: Finansy i statistika, 2013.
10. Sorgutov I.V. Methodical approach to estimating the safety level of the territorial life support system: Ph.D. in Economics abstract of the thesis: 08.00.05. Yekaterinburg, 2013.
11. Uskova T.V., Barabanov A.S. Housing and communal services of the municipality: state, problems, tariff regulation: preprint. Vologda: ISED T RAS, 2013.
12. Uskova T.V., Gordina, O.N., Barabanov A.S. Reforming housing and communal services: regional aspect. Problems of development of territory. 2010. No. 5. P. 14-19.
13. Chernyshov A.N. Management of the region's housing and communal sector on the basis of programme-oriented and goal-oriented approach: Ph.D. in Economics abstract of the thesis: 08.00.05. Chelyabinsk, 2011.
14. Marin P. Public-private partnerships for urban water utilities: a review of experiences in developing countries. Washington DC: The World Bank, 2009. Available at: <http://elibrary.worldbank.org/doi/pdf/10.1596/978-0-8213-7956-1>