KEY ISSUES OF TARIFF REFORM IN THE WATER SECTOR IN THE EECCA

TABLE OF CONTENTS

PREFACE 5
Guiding principles 6
Target audience 6
Expected changes 6
1. WHY REGULATE 8
2. GENERAL PRINCIPLES OF TARIFF REGULATION 11
3. WHY REFORM THE MUNICIPAL WATER SECTOR IN NIS? 13
4. HOW TO REFORM? 21
ANNEX 1 39

PREFACE

Water tariff reform is a necessary step in the transition to a market economy[1]. The result of this reform is long-term sustainable development of the utility based on demand for services and proper financing of all utility costs. It is a very complex process and cannot be resolved in a 'one-shot' intervention. Tariff reform implies substantial changes not only in tariff formulas and levels, but also in water regulation, business environment, financial management approaches, subsidies and public relations. At the same time, it requires taking into account commercial orientation, transparent accounting, long-term investment programmes, and social and equity aspects. Water tariff reform also requires political will, long-term vision of sector development, and a lot of patience.

The proposed water reform manual will discuss steps and set priorities for reforms of municipal water and wastewater services in the NIS.

Alexander Danilenko, EAP Task Force/OECD, provided the overall management for the project and the development of the report.The following experts participated in preparation of this document: Aliona Babak (Ukraine), Alexander Bajenov (Russia), Carlos Chavez (Chile), Sergei Drozdov (Moldova), Merab Kandelaki (Georgia), Dina Kzylkhodjaeva (Kazakhstan), Vyacheslav Loktionov (Russia), Orest Lototsky (Ukraine), Dmitry Myasoedov (Belarus), Yuri Nistor (Moldova), Miguel Quiroga (Chile), Sergei Shneider (Russia), Sergei Sivaev (Russia), Yuri Yanovitski (Turkmenistan), Dzhurabek Yuldashbekov (Uzbekistan). It was developed with the support of the governments of Norway and Switzerland. The report is prepared at the EAP Task Force Secretariat (OECD), managed by Brendan Gillespie, under the Programme of Urban Water Sector Reform managed by Peter Börkey.

---

[1]. A *tariff* is the system of procedures and elements, which determines a customer's total water bill (any part of that bill can be called a *charge*, measured in money/time units or money units alone; and any unit price can be called a *rate*, usually measured in money/volume units). OECD, 1999

Guiding principles

The Ministerial Conference in Almaty (October 2000) adopted the Guiding Principles for Reform of the Urban Water Supply and Sanitation Sector in the New Independent States of the former USSR (NIS). These principles state the critical situation in the sector, blaming the poor financial and economic status of utilities. The Guiding Principles pronounced the main and necessary steps to achieve the objectives and obligations of municipal water and wastewater services. Two of those principles, which directly call for water reform, are:

- Establishing the sector on a financially sustainable basis so that funds are available to cover operation and maintenance (O&M) costs and make necessary investments, while addressing the needs of the poor and vulnerable households;
- Creating incentives to substantially increase efficiency in consumer use of water and in the operation of water and wastewater utilities (vodokanals).

Target audience

The aim of the proposed guide to tariff reform in the municipal water sector is to help accomplish the objectives of the Guiding Principles. It targets:

- Policy and decision-makers who need to develop a strategy for the water sector at the national and municipal levels, develop tariff systems for water services, optimise water investment programmes, attract funding for infrastructure development, and consider social objectives and specifics of the water sector; and
- Professional staff employed in utilities, local governments, and non-governmental organisations (NGOs) involved in water projects to improve water services and transparency of the decision process and service financing.

Expected changes

It is expected that the proposed manual will help in the preparation and development of the reform approach based on the Guiding Principles and take into consideration the specifics of each NIS. It will help to change:

- Approaches and policies of tariff reform based on an integrated reform strategy and demand- and opportunity-driven methods. This includes a

fair tariff system based on proper economic incentives, cost reduction and proper placement of the sector's unfunded mandates;

- Water regulation to allow quick adaptation of vodokanals[2] to the real situation of the economy; and
- To foster institutional changes, including private-public partnerships and public participation in sector development.

Process

The presented guide is a joint product of the EAP Task force and group of the leading water experts from the NIS. Water professionals from Chile and the USA contributed to the project development. The process included two workshops (Paris, 24-25 February 2002 and Moscow, 2-3 May 2002) where main concepts and their application to the NIS were discussed and analyzed. Team members reviewed the final document in November 2002 and presented the Guide at the Second meeting of the NIS Water Senior Officials that was held in Paris on 2-3 December 2002.

Document structure

The first chapter describes the general principles of water services regulation, including the monopolistic structure of the service, incentives behind consumers and providers, and also interests of the government in provision of water services. The second chapter establishes general principles of tariff reform that follow the Almaty Guiding Principles bearing in mind the reality of the water sector in the NIS. Extensive analysis of the current situation with the municipal water services in NIS follows. It creates the foundation for the last chapter that has a form of the checklist of the options that have to be considered during the implementation of the water tariff reform considering historical background and conditions of the NIS.

---

[2]. Vodokanal is a Russian term for the combined water and wastewater utility widely used in the NIS region.

1. WHY REGULATE

Tariff regulation includes regulation of costs, the tariff setting process, and final tariffs. Traditionally the municipal water utility is a local natural monopoly. This system minimises costs, since competition in this capital-intensive sector is costly. Society benefits by allowing operations of a sole provider.

However, unregulated monopoly is considered a potential threat to customers. It can exert market power through high tariffs and supply of poor quality goods and services. Thus, without proper regulation society faces welfare deterioration due to reduction in the quality/quantity of the service. The economic cost of this reduction for the consumers is much higher than the cost saved by producing a lower quality product under constant demand. Environmental concerns make a strong case for water sector regulation. Water and wastewater services are *socially* important and are always publicly scrutinised. It is in the interest of society for its members to consume necessary amounts of safe water and have access to proper sanitation.

Regulation for natural monopoly is intended to reduce the price of the good for the final consumer, while controlling quality through administrative and financial incentives. By regulation of the cost structure and revenue rate the municipality or regulator protects social interests from the opportunistic behaviour of the monopolist. Revenue from customers is usually the only source of funding for the water utility operation. A fair, efficient and simple system of tariff regulation for consumers is a necessary part of reform.

The regulator expects three guarantees from the water utility:

- Sustainable supply of water services of a defined quality at least cost;
- Access to water services for all;
- Water conservation and environmentally friendly operations of the water utility.

Those three principles are difficult to implement simultaneously. Demand for least cost may result in deterioration of quality. Access to water for all may be costly and require tariff increase or additional funding from the municipality. Economic and administrative tools for water conservation and environmentally friendly operations can be expensive and unpopular (at least in the short-run).

The arguments against municipal water reform are that it would inevitably increase tariffs and damage the welfare of the population and specifically, the poor. The already existing fear of a jump in tariff due to municipal water reform may delay not only cost recovery, but also the whole sector reform process. A careful and well-balanced programme for the changes needs to be developed before hand both to address the needs of disadvantaged and poor layers of the society, and create incentives for additional funds and investment in the sector. Water services would not become a luxury for the population; on the contrary, the reform will assure the least cost for water services in the long run.

As water is a unique product without a substitute, it will continue to receive special attention from society. The main objective of social policy in the sector is to make services accessible for all consumers at least cost. This task may be very difficult or even impossible considering not only willingness-to-pay (and its reflection on affordability), but also technical difficulties and associated costs related to water services provision and wastewater utilisation. Tariff levels and structure, connection charges, subsidies and water-metering programmes will be at the centre of the discussion for the future of municipal water reform. However, proper regulatory mechanisms and honest dialog with customers is preferable to unexpected interruption of services or cancelling without notice.

Typically, NIS water utilities provide two types of services: water supply and wastewater collection. From an economic standpoint, these two services are also very different. Water is a *private good* with all its associated characteristics. However, water-supply service has both private and public good characteristics. On one hand, it is always possible to disconnect (or not connect) the consumer (as for a private good), although cost and technical difficulties of such disconnection can be high or even prohibitive, making exclusion from the service hard to implement (as for a public good). On the other, wastewater collection, utilisation and sludge disposal are purely *public goods* as no one can be excluded from pollution, although it is technically possible to measure wastewater volumes and refuse collection of waste. So the water tariff consists of charges for two different types of good. Combining costs of these two products into one charge to the consumer and considering all proper incentives are a very hard for the regulator.

That is why water tariff reform would require comprehensive restructuring of socio-economic relations. It would require transparency for the whole spectrum of operations. For example, by only increasing tariffs to a cost-recovery level without placing adequate incentives on the utility, the natural monopoly power of the water services provider may dissolve this additional profit by the hiring of unnecessary personnel or by unjustifiable investment projects. Public (state) attempts to control spending under such conditions would require enormous

growth of the municipal bureaucracy. An inappropriate water pricing system already creates problems for the economy of the utility, pollution and social losses. Disregard of waste of water resources produces water shortages and thus affects public health and the profitability of industries, which pay higher prices for water. Low profitability results in loss of competitiveness and in turn affects the economy. Public participation becomes crucial for the success of tariff reform. The public must have access and participate in the utility decision process. All these problems need to be addressed during the tariff development process.

At the same time the process of tariff reform has to be treated separately from social objectives. It is imperative to set a rule clearly stating that a water utility is not a social agency and cannot provide a social support to the detriment of its efficiency or technical capacity. Tariffs have an obvious social impact, but this impact needs to be addressed using social economic instruments (e.g. subsidies), that are beyond the water utility operations and competence.

2. GENERAL PRINCIPLES OF TARIFF REGULATION

The Almaty ministerial conference (October 2000) adopted 'Guiding Principles for Reform of the Urban Water Supply and Sanitation Sector in the NIS'. In terms of the tariff reform, these principles call for:

1. **Economic efficiency**: water resources are used in the most efficient way at the lowest possible social cost, from financial, resource, and environmental perspectives;
2. **Cost-recovery**: tariffs produce revenue sufficient to meet the financial needs of the utility, including operations, maintenance, and administration of the water utility;
3. **Fairness**: tariffs should treat all consumers equally. The system of subsidies should not interfere with economic incentives. Cross-subsidy needs to be limited to a last-resource tool;
4. **Financial stability**: tariffs should minimise risks of unexpected revenue fluctuations;
5. **Resource conservation**: tariffs should encourage resource conservation by the utility itself and consumers;
6. **Social orientation of water services**: guaranteed provision of **water rights to all consumers** regardless of income; however,
7. **Water utility is not a social agency.** A social programme that covers water services might be a tool for the national/local social policy, but has to be fully covered by a governmental body that sponsors such policy. If the second best decisions are taken (for example, cross-subsidy, or free water for any group at the expense of other consumers funded from the utility revenue), their effect on utility incentives needs to be minimised.

We think that the following two principles can be added concerning development trends in the NIS:

8. **Economic incentives cannot be diluted by unfunded mandates**: tariffs and the tariff system have to help water utilities become free from non-financed social, environmental and public obligations; and
9. **Simplicity and understandability**: tariffs have to avoid unnecessary complexity and be clear to utilities, water users and decision-makers.

In most NIS water sector reform is considered an integral part of the municipal housing and communal services reform. The objectives of the latter may be substantially different and in some cases unhelpful, to municipal water sector development. This includes financing, subsidies to consumers, and the entire regulatory process of municipal water.

Water tariff reform cannot be sustained without support from the national government and without a regulatory framework. Tariff reform cannot be done overnight, nor can it be free of concerns of the general economic context. It requires a lot of patience.

Our document mainly focuses on the population related aspects of tariff reform. The industrial/budget consumers will be discussed in relation to cross subsidies and some other topics of tariff reform where participation of non-domestic water consumers is essential.

3. WHY REFORM THE MUNICIPAL WATER SECTOR IN NIS?

3.1 Slow reform process puts the sector in a very difficult situation

Water tariff reform is already taking place in most NIS. NIS governments understand the problem of the sector and are in the process of its reform and integration into a market environment. The hardships faced during transition when financial support from the state and municipality disappeared changed their attitude toward economic and sustainability goals of the water sector. However, the process is slow. The past decade of unhurried action has resulted in considerable degradation of water supply and sanitation systems and in a rise in both production costs and accident rates at water and wastewater networks and facilities. Increased tariffs still do not reflect the real cost of the provided services and fail to cover not only sector investment, but in many cases operational costs. This delay in reforms becomes costly for the sector and for society when accounts receivable and payable to the sector reached the level that may destroy the financial balance of the state. The accumulated municipal sector debt reached US$10 billion in the Russian Federation and close to US$2 billion in Ukraine. Simple write-off of such debt is becoming impossible without a jump in inflation and damage to the energy sector (the main creditor of the water sector).

Tariff reform delay results in social losses: in many NIS municipalities uninterrupted water supply is impossible as is centralised wastewater collection. Water rationing (when water is supplied according to a schedule) became a standard practice as the water utility adjusted its services to the collected revenue. In many places hot water service disappeared. This also is happening with district heating, an indirect result of very high water and energy prices for district heating companies. Water utilities are also cancelling many services that do not bring them direct revenue such as standpipes and fire hydrants (if the municipality does not fund it).

Another problem is that most water and wastewater systems were built between 1950 and 1980. The operation time of water infrastructure is 30 to 50 years. As proper maintenance and operation was not possible during the last 10 to

15 years, a substantial portion of the facilities and network is in poor condition. The accident rate in the NIS is already 10 to 100 times higher than in developed countries, and this gap is progressively widening. Without quick reform actions, NIS governments may soon need enormous investment funds to replace existing facilities, and most of that demand will occur at once.

3.2 Historical reasons for slow reforms in the water sector

The traditional Soviet system disregarded water tariffs as an economic tool for efficient management and a source for cost recovery. Effective demand for water or water quantity of a given quality at a specified price was not a development paradigm for water services in the former USSR. Forecasting future demand was based mainly on sanitary and construction norms, while the economic side of water services was sorely neglected. Symbolic water tariffs, especially for the population, were not intended to maintain either a revenue base for the utility or its capital investment base**.** State policy of subsidising water prices blocked incentives to proper financial management. Investment planning and implementation of investment projects were the prerogative of the state. As a result, after direct subsidies to the sector had almost disappeared and state investment programmes ended, water utilities were unable to maintain the existing capacity and network properly, and payment collection for deteriorating quality of supplied water is decreasing.

The municipal water industry transformed through decentralisation in most NIS in the early 1990s.This sudden disintegration of the Ministries of Communal Services resulted in significant over-fragmentation of the sector, creating thousands of independent utilities (e.g., more than 4,000 municipal water utilities in Russia, about 250 in Ukraine, nearly 100 in Kazakhstan, and 52 in Moldova). Monitoring of these utilities has become impossible. Decentralisation was not in response to a sector problem, but, more accurately, a by-product of wide-ranging reforms in the NIS. Uncoordinated development of institutional and economic reforms as a result of decentralisation was very costly for utilities and the sector as a whole, and still poses many problems.

Further, disintegration of the Ministries of Communal Services left no single agency in charge of municipal water sector development, and water sector regulation is substantially lacking in leadership. There is neither a standard reporting format (except to the tax authorities) nor an obligation to report for vodokanals to the sector decision-makers. Technical and financial information are not being collected and analysed at the national level in any NIS.

Sector regulation is usually established in the following way. The state committee on construction usually is in charge of the water sector from the standpoint of infrastructure development. Water aspects as an essential health product are in the hands of the Ministry of Health. The Ministry of Environment controls the issuing of water abstraction permits, discharge limits and monitors environmental performance. At the same time, most water sector development responsibilities are delegated to authorities at the local level. Such delegation has resulted in two contradictory outcomes. On one hand it has moved water sector decisions to the lowest possible level. The majority of NIS water utilities are now municipal enterprises. They are not owners of the network and facilities, but operators of the system. On the other hand, overly rapid decentralisation made the water reform process very complicated because of the total lack of guidance and support from the remaining authority at the central level.

Under the current institutional setting and as a municipal operator, a water utility has little incentive for efficient operation. An arbitrary set of bonuses and penalties provides weak motivation for efficient work. This makes the regulation process artificial or overloaded by the popular agenda of the owner, especially when the tariff and investment decision process is linked to the election cycle or macroeconomic performance of the municipality. Utilities are often treated as a part of the political apparatus of the municipality instead of as efficient service providers. The owner experiences control functions through appointment/attrition of water utility directors, subsidies, provision of investment funds and other tools. In return vodokanals have to maintain artificially low tariffs, and provide free labour for the municipality. Potential for corruption in the decision process for new investment projects is high. This circle of ‘friendly exchange’ results in poor services, compressed finances, and under-funded social programmes. This affects the consumer, who in turn blames the water utility for the current state of services.

3.3 Current tariff setting systems do not fulfil their functions

Regulation of costs. Currently all NIS employ the cost-plus scheme to regulate water utilities inherited from the old economic system. This “plus”, or ceiling in profits as a percentage of total costs, usually is set on an arbitrary principle and depends on numerous subjective factors. In Ukraine, the government approved the price-cap methodology, and produced some regulatory documents. However, this methodology is far removed from actual implementation: municipalities may choose between cost-plus and price-cap, depending on local conditions and needs. Only in Ukraine, and to some extent in Moldova, has the

government begun to develop a utility regulatory framework by introducing incentives for efficient management and resource conservation.

Regulation of tariffs. Flat tariffs based on consumption norms are the primary tariff formula for consumers in the NIS. Tariffs for the population are set for an undetermined period (except for in Moldova and Ukraine) and can be changed at any time. This creates economic uncertainty for both companies and consumers. At the same time, for political reasons, tariffs may remain unchanged for the next three years, despite inflation or rising prices for electricity. All of these factors cause a systematic liquidity crisis. This negatively affects operation and maintenance (O&M), and results in the complete collapse of the utility's renovation and investment programmes.

3.4 Cost-recovery problems

The official cost-recovery rate for water services from the population varies from 15% in Georgia and Armenia to 100% in Uzbekistan and Kazakhstan. The official cost-recovery rate, however, differs substantially from the real one, as the former may exclude many elements of the water utility cost structure, such as the investment component, abstraction and discharge fees. In Turkmenistan all communal services are free for the population, and the government covers costs.

As a reaction to the stringent economic situation, lack of funds and low ability of consumers to pay, the water utilities in almost all NIS reduced their operational costs by *lower-than-necessary* maintenance, e.g., reduced level of operation and service and insufficient treatment of discharges. The result of such a practice is rapid depreciation of the network and equipment and increased leakage and waste of water resources.

In the face of financial problems, vodokanals have started to eliminate connections that do not bring revenue, such as standpipes and connections to houses difficult to supply. In many cases (reported in Moldova, Ukraine, Kazakhstan, Armenia and Georgia) the water supply system works only several hours a day. This allows vodokanals to adjust operation costs (and operation hours) according to the revenue that they are able to collect. The technical consequences and difficulties for the population from such frequent disconnection are obvious. Also, hot water service becomes a luxury for many municipalities and their consumers. Only large cities in the NIS can maintain such service, which is becoming increasingly expensive due to increased electricity and fuel costs. Many small cities (generally with populations below 200,000) have stopped hot water service and reduced district heating service

either by lowering the standard for the temperature of hot water in the system or the period of supply. In extreme case municipality cancels sanitation services and starts water provision through the standpipes. Potable water vendoring becomes a profitable business, especially in cities, where the piped water quality is substandard (reported in Ukraine, Russia and Armenia).

3.5 Existing systems of social tools for water to the population need evaluation and modification

Water was a traditional object of social services in the NIS, similar to health and education. Historically, it was state policy for the population to have access to water and consume appropriate amounts according to needs. Health norms were established and translated into the Construction Standards and Rules (SNiP). These norms are often used as a benchmark for the level and quality of water service provided for all without regard to cost of service and volumes consumed.

During economic transition, it is taken as given in all NIS that water subsidy is necessary. Despite low water payments and a high poverty rate (which perhaps requires an income subsidy rather than a housing or water subsidy), it is considered that water needs to be subsidised for the entire population (through higher tariffs to unsubsidised consumers) or at least for some population groups. At the same time, subsidies are often poorly planned in the NIS. Even in cases where subsidy expenditure is included in budgets, actual funds can occur years later. The subsidy fails to target those most in need. The combination of these problems makes current subsidy schemes unfocused and inefficient. Only Moldova's national budget has a specific water subsidy for the poor. In all other NIS the water subsidy is combined into a social safety package. Such packages are extremely controversial and do not provide the correct economic signal for the utility.

Water tariff subsidy addressed directly to the utility. Turkmenistan completely covers the costs for water services to the population. In all other NIS direct tariff subsidy for water is almost extinct, as its funding comes from scarce municipal budgets. However, many other indirect subsidies are still in place: subsidised electricity prices, forgiveness for non-payment of taxes, environmental and abstraction fees. All of these may be interpreted as a form of direct subsidy for the utility. Subsidies gives the wrong signals and obstruct private sector participation and institutional restructuring, as these financial relations are rarely formalised and may become a financial burden if the ownership of the utility changes.

Direct cross-subsidies. Cross-subsidies of the population by other groups of consumers are widely used in most NIS. They are formally prohibited only in Kazakhstan. However, Russia, Ukraine and Moldova are trying to reduce the cross-subsidy level with little success[3]. All NIS, except for the Kyrgyz Republic, established a deadline for 100% cost recovery from the population by 2005-2007. Overuse of the cross-subsidy mechanism (in some extreme cases the tariff for the population was 40-50 times lower than for industries), even to resolve short-term social problems of water supply, resulted in substantial reduction of water sales to industrial consumers. Many of them started to build independent water intake facilities and refused vodokanal services. These actions reduced the revenue base for the utility, increased over-capacity problems of vodokanal equipment and resulted in a more drastic tariff rise for the population (e.g., in Moldova, Ukraine and some regions of Russia).

Indirect cross-subsidies. Non-payment for water services, which is in fact a form of cross-subsidy (when one group of consumers pays for the other) is still in place. It applies not only to the population, but also to budget entities, which are the worst payers in some NIS. The water utility rarely has the right to write-off bad debt accumulated due to non-payment, and at the same time cannot disconnect. The municipalities tend to maintain this system, as it gives them additional power over the utility and population. However, negative aspects of such policy are clear. It destroys payment discipline, creates "indirect" financial relations between the utility and municipal budget, increases the financial burden of the utility, and has a great potential for long-term political difficulties for the municipality as such a habit of non-payment is very difficult to overcome.

Privileged groups. A discount in water tariffs (usually by 25%, 50% and 100%) is accorded to certain consumer groups (war veterans, retired population, disabled, etc.) without regard for level of poverty. In some NIS the ratio of population eligible for tariff discount reaches 30% (World Bank, 2000). This category of subsidy, which has almost nothing to do with the social assistance net, is a legacy from the previous administrative system. However, it is the most difficult to replace with contemporary social assistance actions. In some countries (Kazakhstan, Kyrgyz Republic) such privileges were transformed into direct cash subsidies, but again not for all privileged groups. All NIS governments understand the negative aspects of this system, but tradition and lack of political will prevent radical reforms in this area. One reason is that most

[3]. For example, in Odessa (Ukraine), when the government reduced the ratio of the water tariff for industry to the water tariff for the population, or the cross-subsidy, from 5 to 1.5, collection from the population dropped from 90% to 45% (Odessa vodokanal information).

such privileged groups are established at the national level and cannot be modified at the local level. The utility (in addition to un-recovered costs) needs to maintain a database for privileged consumers and control costs related to the subsidy, and to force consumers to renew credentials for benefits almost yearly. When the government covers benefits, the utility has an incentive to inflate the burden related to the benefited consumers. It is clear that it is impossible to eliminate the privileged groups system in the near future.

Housing subsidy. This kind of assistance is well developed in Russia and Ukraine, and with some modification has been in use in all other NIS. The system establishes a proportion of income that can be spent on all communal services, and the municipality or national budget covers the rest. The operation of the system has proved successful in Russia. However, it has some built-in problems for the water sector. First, it is not focused specifically on water. As water is relatively inexpensive compared to electricity, district heating and other communal services, and the water share in the communal is around 5-10%, water economy and water conservation are not priorities for the consumer. Second, consumption level is determined by sanitary consumption norms and depends on the living conditions of the consumer. The consumption norm varies from 40 litres per capita a day (lpcd) for a consumer without connection to 300 lpcd for a consumer that lives in an apartment complex and has hot, cold and wastewater connections. The latter consumer profile reveals the subsidy's questionable focus on poverty, as the poor rarely live in good housing conditions. Third, the subsidy level is proportional not only to income, but also to payment for all communal services, including electricity, district heating, apartment maintenance, and solid waste removal. Thus it subsidises greater consumption of such services (as a consumption norm is very high) and thus discourages resource conservation. These problems need to be taken into account along with improvement of the housing subsidy mechanism.

Earmarked cash transfers for the poor. As Moldova has done, Russia plans to pilot an earmarked cash transfer for communal services for specific population groups. The theory behind this is that people will increase consumption of the more necessary service and will reduce consumption of the less necessary service. This approach fails to account for personal preferences. It may result, for example, in water consumption below the health needs of an individual and his or her family, by simply substituting water needs with other essential goods or services (for the specific family). For example, Moldova already introduced and then replaced cash distributions to the privileged consumers with direct transactions to the utility that cannot be spent on any other payment but water, heat and power. Also the absence of a disconnection policy and systematic debt forgiveness for the poor make this approach unlikely to succeed.

3.6 Unfunded mandates of the water sector in the NIS

The critical water sector problem is the inheritance of many unfunded mandates related to water quality and level of service. As mentioned before, the water/wastewater service provider is usually poorly compensated for services to the poor, privileged groups, budget entities, and others covered by water-related social programmes. The service provider has very limited enforcement rights and cannot legally reduce the level of service or take other actions to adjust the level of service to what the population can afford. The water utility usually duplicates the functions of social services without means to bear the costs of provision of such services. Sometimes vodokanals even maintain databases to collect information on the incomes of their consumers. Such a practice is costly and also shifts the water utility's attention from its main activities.

Unfunded mandates in environmental protection also obstruct utility development. The existing Construction Norms and Rules in the NIS (so-called SNiPs) were developed in the USSR in the mid-1980s and are mandatory for any new construction and rehabilitation work. Additional limitations are produced by water quality standards (GOST 2478-82 Potable Water: hygienic conditions and quality control; and SN 245-71: sanitary norms on wastewater discharges that determine wastewater effluent quality). All these documents, with very little modifications, are still in force in the NIS. Even at their best water utilities could not cope with such excessively strong standards, however they do need to pay penalties and fines for the violation of such standards that increase the cost of providing services.

4. HOW TO REFORM?

The following chapter describes the main elements of tariff reform in the form of a checklist. The flow diagram at the end of the document summarises steps and sequencing during the tariff development process.

4.1 Regulation of costs and associated tariffs

- **Information on utility performance and associated costs are collected and analysed**

It is impossible to conduct the reform without appropriate information. The proper system of information would benefit all stake-holders in the water sector and specifically: (i) utility managers and employees with means of identifying areas for improvement, adopting realistic targets and convincing authorities of the need for change; indicators would also assist in the development of realistic investments plans and in project design and preparation; (ii) central authorities with means to identify national trends, and investment needs; (iii) local planners with tools for tariff setting (iv) consumers with means of assessing the financial and quality performance of their water/wastewater company; (v) potential investors and stakeholders with an indication of performance and potential viability; and (vi) international donors with an identification of priority and feasible areas for intervention, investment support and technical assistance. The standardised system for collection of financial and technical information would be a good resource for the tariff reform.

- **All costs of the utility are identified; cost recovery target is established**

Cost–recovery becomes a key question for the financial stability of the water provider. The utility costs consist of operational, depreciation, and capital management costs. The objective of regulation is to reach full cost recovery during the operation period and establish a clear forecast for future costs, as a utility provides its services prior to payment collection. Specific attention need to be given to depreciation costs that should reflect the replacement costs of the

equipment instead of traditional book value of the asset. New system of cost accounting may be necessary to be instituted reflecting such change in depreciation accounting.

- **Costs are split between fixed (connection costs) and variable (consumption costs)**

The different elements of tariff structure support different economic components of the service mechanism and can be backed up by different economic tools. Water can and should be measured. However, its price per unit covers two types of costs associated with water production and distribution: fixed and variable costs. Fixed costs cover administration of the utility, maintenance of the network and service and expansion of water connections. Variable costs cover all costs associated with water production, treatment, transportation and distribution to the final consumer. The wastewater tariff system for the population may follow the same structure as for water supply. Water professionals and water economists generally agree that tariff structure needs to reflect cost structure.

Economic incentive tools for these two different activities are different and have to be treated as such:

- For fixed costs the objective is to reduce them to a reasonable level, create incentives for their further reduction, and at the same time, prevent drop in coverage of water services and limit the right of access to clean water and proper wastewater collection. These costs correspond to water and wastewater services as public goods.
- Variable costs primarily address the interest of the consumer: cost of water services is proportional to production. Reasonable pricing and tariff policy may result in consumption adequate to consumer needs, and protect from over-consumption. This component addresses water and wastewater as private goods.

- **Cost categories are approved by the regulator**

For regulatory purposes it is important that cost and production items be easy to monitor. Costs are generally easy to observe, as most of them are salaries or payment to a third party (e.g., to an electricity company or other suppliers of goods and services). Production performance, on the other hand, is very hard to observe under current NIS conditions (e.g., absence of production, distribution and consumption metering, etc.). Thus, cost justification and links between costs and production become very difficult for the owner or regulator and give

good reason for micro-management and unnecessary "damage control" actions. Proper regulation may resolve this conflict of interest.

At the same time the regulator may not recognise some costs of the utility as unjustified. This is common for bad debt or penalties due to payment delays. Also all costs are associated with risks. Those risks need to be evaluated and correctly presented by the utility/operator to the regulator. An operating cost overrun, changes in costs of supplies (primarily electricity), changes in tariffs, reduction of demand (and associated revenue), *force majeure*, environmental pollution, associated penalties and remedy costs, need to be overseen and the risk bearer determined jointly between the regulator and the utility.

- **Regulatory model for tariffs chosen (cost-plus, price-cap)**

The tariff regulatory scheme is characterised by the presence of the regulatory agency[4], which has to design regulatory schemes for a natural monopoly and to enforce compliance with such a regulatory regime. The most common are:

Rate of return (Cost-plus)

This type of regulation is intended to allow the operator to cover its costs. Although relatively simple for every party involved (regulator, provider, and general public), the main problem with this scheme is asymmetric information between the regulator and the operator. An operator under cost of service regulation has incentives to overstate costs, over/under invest in supplying capacity, and cross-subsidise consumers from different categories (if reduction of the level of service is not permitted). The utility also lacks built-in incentives for cost reduction, as its profit is generally set as a percentage of costs.

Regulation of the rate of return is compatible with short-term regulatory procedures traditionally used in the NIS. A cost-plus formula usually works for one year or even shorter periods. Thus, this excludes the option for tariff adjustment due to, for example, a rise in electricity supply cost, as it will be taken into account during the next tariff calculation cycle. This approach creates a tariff adjustment lag and a rise in the accounts payable for the utility. The formula allows the regulator to determine and change not only the rate of return, but also the cost of items eligible for reimbursement and inclusion in the tariff.

---

[4]. For purposes of discussion the term "regulator" is being used here as a general definition of the organisation that controls costs and sets tariffs for the water utility. The "regulator" usually also defines norms, ensures compliance and enforcement, etc. It can be a separate agency or even the owner.

The performance contract may reduce the negative sides of the cost-plus scheme, however, the operator will always work under the short-term agenda.

Because of its security for investors and its simplicity and transparency (for regulation of the rate of return) this scheme is widely used in Canada, Japan, USA, Hong Kong, and many other countries, including all NIS.

Price-Cap

This type of regulation consists of establishing an upper limit on the price to be charged to consumers. It is a more progressive formula than "cost-plus" as it puts incentives on the utility to control costs and at the same time provides tools for efficiency improvement. As the regulated operator knows the maximum price it can charge, the saving on costs during the term of the price-cap becomes part of the rate or return to the operator.[5]

This regulatory approach (although stimulating a cost control desirable from a social perspective) might produce some negative effects. In principle, if regulation focuses exclusively on the upper limit of the price, the operator might respond by cutting costs on items that affect the quality of the service, or simply reduce the level of maintenance. This approach does not avoid the asymmetric information problem. Moreover, the regulator would need to know the actual operation practices of the provider, costs, and investment needs. Thus, the regulated utility might respond strategically by providing information intended to mislead the regulator. Also the incentives affecting the operational efficiency of the company are substantially different at the beginning and at the end of the tariff-cycle.

Establishment of the "cap" on the appropriate level is very difficult for a regulator. If the cap is set at a very low level it may pose a problem for investment and necessary savings. The utility cost control actions may result in the disappearance of many low-revenue services such as standpipes or in "cream skimming" when high-quality services are provided to a specific group of consumers only. The regulator may be trapped by performance indicators and monitoring crises if it establishes too many benchmarks to prevent negative sides of the price-cap formula.

---

[5]. Because tariff formulas are modified according to given tariff terms, each provider has incentives to obtain efficiency gains that might be funded through cost savings obtained within that period.

Price-cap regulation is applied for a longer period than cost plus. Usually it is set at three to five years. The following countries implemented such technology: the United Kingdom, Argentina, Chile, Malaysia, New Zealand, and Peru.

- **Appropriate regulatory settings are established**

The institutional objective of water sector reform lies in separating the regulator, policy decision-maker and utility operator functions of the owner. The current mixture of functions, where the proprietor makes political decisions, provides regulatory functions, sets tariffs, and plans and funds investment programmes with little concern for the operational and financial status of the utility, creates conflicts of interest. Total control needs to be replaced with incentives and a transparent regulatory framework that allows such incentives to work. Politicians and elected bodies should provide a strategy and strategic guidance, but keep intact the economic and operational functions of the sector. There are two possible solutions for resolution of such a conflict of interest: a performance contract and a regulatory agency.

Performance contract

The Performance Contract is a formal, multi-year contract between a utility and a municipal government committing the utility to achieving monitorable targets for level and quality of service, management and operational efficiency, finances, and investments. The municipality supports the utility in reaching these goals, for example, by allowing timely tariff increases or helping to finance investments. Performance contracts are negotiated several years in advance, e.g., five. They should be “living” documents. While the strategy conveyed in these contracts should not be subject to change, periodic revisions may be necessary to reflect unforeseen developments. The contract should include targets, dated quarterly, semi-annually or annually regarding:

- Institutional efficiency gains and staff training;
- Introduction of improved management and control systems;
- Arrangements for better customer service and commercial operations;
- Improvements in operational efficiency; metering, lowering of water consumption through demand management; decreasing losses through leak management, reduction of unaccounted-for-water; cost targets for administration, maintenance and operation;
- Revenue estimates including tariff levels, preferably defined through an indexed formula; and

- Annual investment levels, an outline of investment strategy and specific investments. (World Bank, 2000)

A performance contract defines the utility as an economic entity and specifies the responsibility borders and delineation of functions between all players. Performance targets with associated penalties and bonuses (in addition to the economic mechanisms built into the tariff structure) will add discipline and point out areas requiring special attention (quality of service, quality of discharges, minimal services provision). Performance targets need to be both achievable and challenging for the operator.

Decentralised regulation faces the problem of low regulatory capacity at the local level, resulting in increased corruption and other information asymmetry outcomes. On the other hand, the establishment of the regulatory agency (see below) may be unattractive for municipalities, as they would be afraid to relinquish their independence in the decision process. In addition, performance contracts may become costly if developed on a case-by-case basis. Without experience it is hard to consider all the details, and too many details may overshadow the contract objectives. Central government may support some actions to provide more information about utility performance and help in tariff development, including performance benchmarking, a legal status review, and a standard performance contract that will bring the utility closer to a performance contracting system.

Regulatory agency

Another way to resolve conflicts of interest is to establish a regulatory agency at the national level as an intermediary between the utility and political decisions, and between the utility and consumer. Establishment of a regulatory agency does not exclude performance contracts. The regulatory agency may be sector-specific (like energy commissions that control electricity, gas and district heating in most of the NIS), industry specific (just for water, as in England or Chile), or multi-sectoral, when a single agency works for all types of utilities (as in the United States, Australia and some other countries).

There are several good reasons for a national regulatory agency. First, it separates short-term political decisions from economic considerations. The investment regime must be stable due to the water sector's slow returns and long investment implementation periods. The independent agency can ensure stability and uphold constant rules for competition. Another strong reasons for a regulatory agency, preferably at a national level, is that it provides a mechanism for developing performance information (cost and service) it will enable setting realistic targets and price limits which reflect those targets.

The following may help to guarantee the autonomy of the regulatory agency:

- A clear mandate from the government
- Transparency in the appointment process
- Security of operation of the regulatory agency during the appointment term (no removal from the office except in specifically determined offences), and
- Security in funding.

The government, in deciding on establishing a regulatory agency, needs to assure the balance between autonomy and accountability of the regulator through annual reporting on operations and budget, a transparent decision process and other arrangements.

The main functions of the regulatory agency may include awarding operation rights, setting tariffs, settling disputes, monitoring operation, communicating with consumers, advising ministries and municipalities concerned, and establishing penalties and bonuses. The operation of the regulatory agency does not exclude the need for a performance contract between the municipality and utility.

Each NIS needs to make a strategic choice between establishing a regulatory agency (with powers over vodokanals) or leaving the management and regulation of vodokanals to municipal authorities.

- **The cost approval process is established in transparent manner**

Transparency and simplicity of the cost approval process assure successful implementation of new tariffs. The regulator needs to collect and review substantial information to set tariffs. The decision process is long: it takes up to one year in Chile and about three years in the United Kingdom. The box below describes the process in Chile.

The tariff-setting process in Chile

(i) Tariff studies conducted by the regulator and the water utility. The regulator and utility conduct tariff studies independently, while using the same rules. Twelve months before the expiration of the current tariff, the regulator makes available the terms of reference for the tariff study to the public and to the utility involved. Terms of reference identify the systems to be studied (water production, water distribution, collection of wastewater, and disposal) and criteria for operation and expansion, demand assessment, water quality, quality of customers' service, assessment of raw water cost, and calculation of capital needs. The utility and general public have to make comments on the terms of references for tariff studies within 60 days. The regulator must respond to the comments within a period of 45 days before the deadline of the request. The regulator establishes a "model" company to be compared with the actual utility.

(ii) Agreement on new tariffs between a utility and the regulator. The regulator and utility company exchange tariff studies five months prior to the expiration of the current tariffs in the presence of a public notary. The studies contain a brief summary, assessment and results. The utility has 30 days to inform the regulator of disagreements. Then negotiation on disputed matters takes place. If in 15 days there is no agreement, the regulator appoints a committee of experts of three members. The opinion of the Committee of Experts is final and mandatory for both parties.

(iii) Approval of new tariffs by the ministry of economy. Thirty days before expiration of the current tariffs, the ministry of economy approves new tariffs. The process is completed with publication of the tariff formulas in the official newspaper. Law establishes tariffs for five years. The regulation considers a mechanism of automatic adjustment of tariffs for inflation or other unexpected changes.

Source: Carlos Chavez and Miguel Quiroga, 2002

- **A cost adjustment process is formally set**

The tariff is the key to the efficient functioning of the utility. If the tariff system and cost adjustment process are not in place then it is necessary to renegotiate the contract or request additional resources from investors or owners. To date there is no experience with automatic tariff adjustment in the NIS.

There are three types of tariff adjustment schemes:

- Cost indexing, when one or several components of the tariff are being adjusted for cost
- Periodic revision of cost, when tariffs are reviewed and adjusted according to the predefined schedule
- Cost adjustment in case of unexpected events (natural disasters, financial defaults, unexpected legal changes, etc.)

During development of such adjustment mechanisms, the regulator needs to preserve incentives for efficient operation and not distort performance objectives. The box below describes the tariff adjustment process in the standard contract in France.

Tariff adjustment process in France

The tariff in France is established and modified automatically throughout the term of the contract. The municipality establishes the first tariff according to the study, and the agreed tariff formula is used for automatic adjustment of the tariff due to unexpected changes beyond the responsibility of the utility, such as inflation, other regulated tariff changes (electricity, fuel), taxation rate, and other mutually agreed items that are part of the cost schedule of the utility.

Tariff indexation is handled according to the formula:

$$P_n = P_o\,[a + b\,(E.T_n / E.T_o) + c(S_n / S_o) + \ldots]$$

Where P_n is a tariff at the time n, and P_o is the tariff at the time 0. The sum of the coefficients equals one (a + b + c +…=1). The fixed component of the tariff (a) cannot exceed 0.1. All other coefficients correspond to salaries (S), energy (E) and other costs without taxes and social charges.

Source: Cahier des charges type, 1980

Cost adjustment has nothing to do with the risk reallocation. Performance risk (shortfalls in quality or quantity of products), the risk of cost overrun related to poor management of the facility (excessive leakage, production losses, energy overuse, etc.) cannot influence adjustment.

4.2 Regulation of tariff structure

- **An appropriate residential customer tariff structure is determined**

Most tariffs combine some or all of the following elements:

- A **fixed charge** (sometimes known as a standing charge, flat fee, or consumption norm) is normally either equalised for each customer (e.g., within a given customer class or at a particular geographical location), or linked to some other customer characteristic (e.g., size of supply pipe or meter flow capacity, property value, number of water-using appliances, lot size, etc.

- A **connection charge** is a "one-time" and (normally) "up-front" charge for connecting a customer to the public water supply and/or sewage systems. Most OECD countries distinguish between connection charges (non-recurring) and fixed charges (recurring). The economic efficiency criterion suggests that this charge should not be used to recover general system development costs. In the NIS, this type of charge is in practice for new buildings and newly connected customers. It is also in use for reconnection of disconnected customers in many developing countries.

If a metering (measuring) system is in place, the following elements also occur:

- A **volumetric charge**, which when multiplied by the volume(s) of water consumed in a charging period, gives rise to the volumetric charge for that period. Economic efficiency and environmental criteria both suggest that this element should ideally recover all costs, varying with average or peak demands on the system (in both the short- and long-run). A **block charge** is defined by lower and (except for the highest block) upper volumes of consumption per charging level. Different volumetric rates are frequently attached to different blocks. If rates rise or fall consistently as more water is consumed, the schedules are referred to as increasing- or decreasing-block tariffs, respectively.

- A **minimum charge**, usually imposed to protect the utility's finances, which specifies that a certain minimum volume of the

service will be paid for in each period regardless of whether that amount has been consumed.

(Source OECD, The Price of Water, 1998)

- **Balance between norms and metering is established**

The replacement of the "consumption norm" system based on estimated per capita consumption that is widely used in the NIS with the "only consumption charge", when the water bill depends only on meter reading, has several negative aspects. First, if the water price is high it may produce incentive to reduce consumption below health requirements. Second, if all fixed charges are proportionally transformed into volumetric charges, the significant reduction of water consumption (that usually follows metering installation) will not recover the permanent costs of the utility. The utility will be forced to increase rates to recover losses and the rate increase will then reduce consumption. Third, water network maintenance is necessary regardless of consumption. Some consumers use the water system on a seasonal basis, and as such will pay for water only at the time of consumption. A utility will need to recover costs from these seasonal consumers by redistribution of such costs to all others.

The tariff system for consumers living in high-rise buildings requires special attention as most municipal consumers live in such buildings. The utility cannot be responsible for the internal distribution network within the apartment building (because of its technical capacity and ownership status). Those works are to be done by a condominium or similar public or private agency (ZhEK, DEU, etc.). The utility will need to conclude a contract with this organisation (where all aspects of co-operation are spelled out) and install a block-meter. In small towns with only few high-rise buildings, the utility may take care of the internal distribution network. However, it may require additional human and financial resources.

- **A consumer database is established. A new database for connections has been established and tested; a water meter reading unit has been established within the water utility.**

A water utility must have a reliable database of its consumers. A comprehensive database with all necessary information will help to improve transparency of accounts, to determine non-payers, and in establishing and conducting social programmes for the poor. International experience suggests consumer management systems based on household connections to the water (and wastewater) will require a database of at least billing information: name of the customer, address, ID number, ID of metering device if installed or

characteristic of residence otherwise, meter readings, and payment history. Currently, utilities in most NIS use the police registration system for consumer management systems[6]. Due to actual abolishment of police registration in many NIS, such practice may become obsolete. Updating of the residential status of consumers is impossible under such conditions. At the same time it is unnecessary for the utility to go beyond the network information. The connection-based consumer system will be much easier to update as all elements are controlled by the utility and do not require information from other agencies. It will be connected to the technical operation and will allow combining of information on water consumption and payment collection to this service.

In some NIS countries, the police registration system is still in use and databases are well managed. In those cases, it is probably unnecessary to discard the existing operating schemes, and their use should be continued. However, it is better for the utility to be more independent in customer management and to consider creating its own database without relying on outside sources.

- **An objective criterion for the water consumption norm has been established. Block or house-meters are installed for housing with unmetered consumers.**

In the absence of a water meter, the utility needs to establish consumption norms that objectively determine consumption. Per capita consumption norms cannot be considered a good tool, since the utility does not know the number of residents in every apartment. Instead, using the data from the municipal real estate office will allow it to use square footage, number of rooms or other criteria that can be easily verified[7]. Consumption norms and patterns can substantially differ in the case of the unmetered consumers. The testing programme to establish a fair consumption norm (per apartment, or per square meter of housing) needs to be conducted by the utility and approved by the municipality.

---

[6]. Police registration mandatory for all citizens of the locality in the USSR (the old name – *propiska*) was the primary information source for municipal services before 1992.

[7]. A problem to be aware of is that the provider might exploit the information asymmetries and increase the tariff by re-classifying consumers, which is very difficult to monitor.

House and block meters need to be established for houses where consumption metering is impossible or planned for the future. The tariff structure for un-metered consumption may include both a fixed charge per connection and a quasi-variable charge according to housing condition and square footage. That charge can be periodically adjusted according to the readings of the block or group meter. In certain cases, where no significant amounts of water are used or installation of meters is technically not possible, water consumption will need to be calculated. This also applies when the water meter is removed for calibration or repair.

- **The comprehensive water services metering programme has been discussed with the owner and municipality and an appropriate funding mechanism has been developed and agreed upon.**

Clear and exact water metering benefits the sector and society. Transparent information on water consumption and production enables precise calculation of water tariffs according to marginal costs of service provision. Thus, it guards customers against abuse of power by a utility monopoly, protects the environment with lower use of the natural resource, and thus helps society.

The general belief is that water metering promotes a more responsible attitude toward water use, thus reducing waste. Reducing demand also helps to determine the amount of money needed for new treatment plants, pipes and reservoirs. Also, most contemporary tariff formulas and subsidy schemes for the poor are based on metering.

Water metering is easy to implement and maintain technically with industrial and budget funded consumers. It is relatively easy with individual housing. It is hard with multi-story buildings, as property rights are usually undefined and condominium systems are not in place. Hot water meters require more frequent calibration, and if the hot water circulation system is not in place, then it may alter the whole idea of centralised hot water supply. Also, the coexistence of metered and unmetered consumers in one house may cause a lot of problems for the utility if it collects directly from customers. It is not recommended to maintain two different types of tariff systems for one building or group of consumers.

- **Incentives behind the metering programme are evaluated**

A water utility has very little incentive to introduce metering. First, it generates an additional cost for the utility. Also, without metering the utility may establish any norm and adjust its tariffs to that norm to cover its costs by simply reallocating all its inefficiencies and losses into a consumption norm and the

tariff. In addition, the majority of the systems are built with substantial excess capacity. Low water consumption may result in an increase in energy and maintenance costs (due to over capacity of the facilities) that will diminish the gains from reduction of water consumption. **Consumers** have an interest in water metering and would pay only for the water consumed and not for distribution losses. However, the short-term gains of the metered consumers (vs. unmetered) will disappear after the completion of the comprehensive metering programme[8]. **A municipality** might be interested in a metering programme. It allows savings and reduces the scope of on-going development schemes (as consumption substantially drops under the metering schemes), developing a sound consumer protection policy, and other social measures.

A water meter programme may threaten the financial balance of the utility. Water conservation programmes have to be strongly co-ordinated with the utility. Demand forecasting and investment planning will inevitably affect water tariffs. Considerable water savings and associated costs are achievable by sizing and timing investments closely with demand. Water-saving devices are also important. But rapid reduction of consumption (typical for the NIS) may have negatively affected the financial balance of the utility, which would raise tariffs. The implementation of a meter-based tariff system has to consider some increase of the per unit water price (or some fixed cost component), while keeping the total water bill stable.

- **A water meter standard is established**

A water meter standard and procedure for installation must be established. Uncontrolled installation of water meters may result in poor quality water meters with low precision and potential for manipulation. A national standard must be set for the individual meters and their technical characteristics. The utility, on its side, needs to consider how to handle meter reading. The penalties to prevent manipulation and misuse of connections need to be established in the contract between the utility and the consumer.

- **The problem of handling non-payment is recognised**

Non-payment for infrastructure services is a major problem for utilities in all NIS. Disconnection for non-payment is legal in most NIS, however it is

[8]. At the beginning, all metered consumers will pay less due to reduced consumption and will not bear connection costs and losses. When 100% metering occurs, all consumers will pay for water meter reading, calibration and replacement, and the existing cross-subsidy (when non-metered consumers pay for all losses and water meter tampering) will disappear.

considered impractical for financial and technical reasons[9]. At the same time allowing consumers to accumulate debt may undermine the credibility of the commitment to enforce payment. Debt monitoring is a part of the vodokanal billing work. If debt is small it has greater chances of being paid. Enforcement efforts have better chances of compliance if they focus on "first-time non-payers". If the debt is small it needs to be treated as a consumer problem, and if it is large and generalised with other unpaid dues, then it becomes a provider problem, threatening financial balance. Public awareness campaigns have proven effective in increasing willingness-to-pay, payment collections, and reduction in water waste. Visits by the water utility staff to first time non-payers have been very effective in collecting payments.

Non-enforcement of payment for the poor can be considered a form of cross-subsidy. However, this approach is unproductive in a long-run, as it destroys payment discipline and makes it impossible to collect from people accustomed to not paying. Budget entities tend not to pay for water services as part of the public system. The utility needs to work with its owners and collect debt from the municipality.

In this case the municipality or government may be forced to reduce the level of service or to abolish some services that produce no revenue, or very little. These actions are political as they may produce a negative consumer reaction.

- **Appropriate subsidy policy principles are determined**

If the tariff increase is inevitable (as it is in practically all NIS), the government needs to consider a way to protect the welfare of the most vulnerable members of society. At the same time it must protect all consumers from monopoly abuse through appropriate regulation and monitorable benchmarks of utility performance. In addition to the report to the regulator, the utility needs to communicate with customers, provide information and share development plans that may affect consumers. In summary, there are three main topics for the socially related issues for tariff reform: (i) social protection and specifically protection of the poor; (ii) standard of service; and (iii) communication with the consumer.

As water tariffs are low in many NIS (as in Russia where the water bill is below 1% of consolidated family income), there is the legitimate question of the real need for the subsidy for water. In some NIS where the water bill is high (it was

[9]. For example, the water utility in Rostov-on-Don initiates disconnection procedures only after the two years of non-payment, at which point lost revenue from non-payment equals the cost of disconnection.

10% on average in Moldova in 2001) the government may consider a water subsidy scheme separate from other subsidies.

If the poverty level rises, the public will pressure the regulator to lower tariffs below cost recovery. A targeted subsidy may become unavoidable. There are several key issues related to the subsidy:

- It needs to be affordable for the current municipal or national budget. Sources of subsidy need to be predetermined and evaluated. As the utility is a commercial organisation, it cannot be responsible for the unfunded declarations and imposed services that result in additional cost and poor performance of the utility;
- Subsidies need to target the poorest consumers in a transparent manner;
- A subsidy should be established at the minimum necessary level and must not support excessive consumption (i.e., an increase of consumption cannot result in an increase of subsidy);
- The subsidy scheme cannot distort incentives of the utility.

- **Recognition of the existing subsidy systems and moving toward subsidy targeting**

The municipalities need to be careful during reorganisation of the existing subsidy schemes. It is important to maintain continuity and prevent jumps in tariffs or abolishment of subsidies for a population group. The first and easiest step is to establish transparent mechanisms for operation of existing subsidies. Most such problems can be resolved through establishment of a performance contract between a utility and municipality. This applies to forgiveness of tax debts, provision of water to the poor, non-disconnection policy, untimely transfers for subsidised services and many other unfunded mandates that water utilities continue.

The declared subsidy programme has to be fully funded. It is important that the government be responsible when it declares specific benefits and not build up already established unfunded mandates. The best approach is to fund subsidies out of general tax revenue. This approach is used in Chile, Argentina, the United States, Australia and other countries. Funds can be accumulated at the national level (Chile) or on a provincial level (Australia, United States). This creates a minimal distortion in utility operations. However, it is the most difficult option for government.

Targeting subsidies to the most in need is both difficult and expensive. NIS governments may need to conduct national surveys and other studies to determine willingness to pay and compare it with actual price of the service. They will need to develop alternatives to current income eligibility criteria, such as employment status, existence of hot water/wastewater connection and level of interruption with supply. The government may need to consider the future tariff increase that may make additional consumers eligible for subsidy. There is also a very important difference between low income and extremely poor customers that needs to be taken into account for the development of a subsidy mechanism.

Alternatively, the government may choose not to subsidise tariffs, but instead to rely on the existing social assistance schemes. Both systems may exist. The only problem for the government is to prevent overlap between them.

The objective of the regulator is to establish equal rights for access to water services. It means that the main focus of social policy is to expand connection to the network and provide off-network access to water where connections are impossible or unfeasible. At the same time it would be necessary to develop a minimum consumption standard. The following box describes it.

Minimal water standard

The Paris 2000 meeting of the Private-Public Infrastructure Advisory Facility (PPIAF) suggested the following for minimum standards, whether set at the policy level or stipulated in the contract:

- Pressure should be a minimum 1.5 bar to avoid contamination
- Availability should be a minimum of 20 lpcd
- Continuity should be 24 hours/day
- Water quality should meet World Health Organisation guidelines

Establishment of a connection fee and minimum standard makes a social policy more transparent and fair to the poor. The government may subsidize this package for the poor either partially or fully, and the rest would be paid on a full-cost basis. The subsidy for consumption can be expanded according to health needs or other reasons.

The water utility has to provide services of standard quality. The definition of standard may differ, however, depending on local conditions. The standard of service has to follow the principle of best available technology and to consider

affordability. The standard contract with a consumer establishes rights and obligations on both sides. The standards need to be reasonable and executable: forgiveness of poor performance cannot be accepted either by the consumer, or by the regulator. Poor compliance may result in relaxation of other performance standards and even collapse of the service if timely and appropriate actions are not taken.

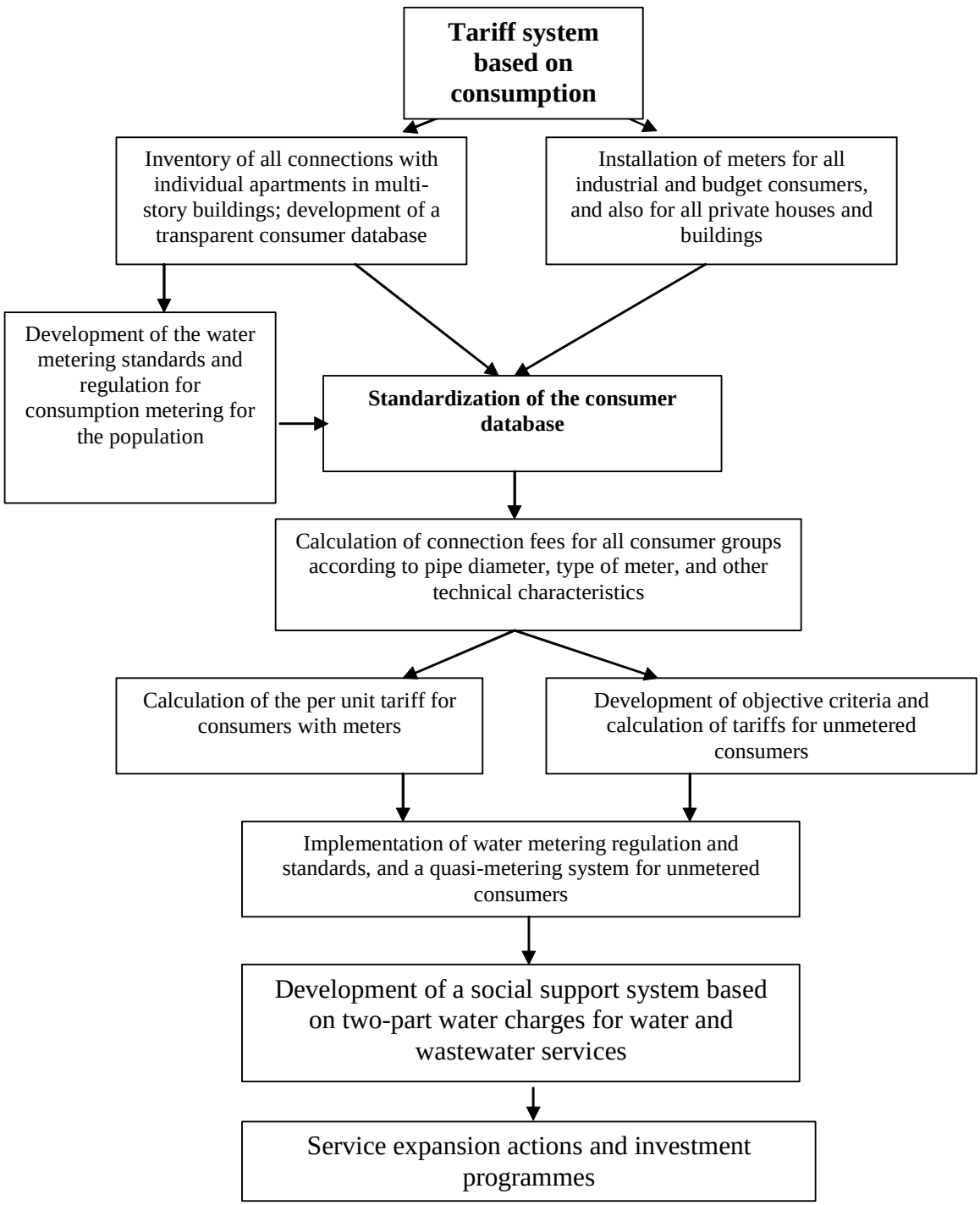
- **Customer service**

As a commercial enterprise, a utility is interested in consumer satisfaction. Utilities in the NIS need to become equal partners with their consumers, because consumers fund all utility operations. Such a partnership can help to reduce complaints and increase collection rates by improving willingness to pay for water services. There are several ways to strengthen relations with customers:

- Provide a right for important information
- Respond to oral/written customer queries
- Provide information on planned service interruptions
- Use the billing process for information dissemination
- Communicate with the consumer and active groups (NGOs, consumer societies, etc.)

A utility has to recognise the customer's right to essential information related to the service and to be informed about expansion, reconstruction and other plans that may affect service costs and reliability. The key information is related to the customer bill.

Public hearings are typically held for all projects related to loans from international organisations and large investment projects, and changes in tariff structure and levels. A call for the hearing is usually required to be published in the local media. The national government needs to establish norms and procedures for such hearings. Such hearings provide two important instruments: public consultations when making all important decisions and transparency in decision-making. The result of such public hearings depends on the interest of consumer protection societies, NGOs, and other consumer groups. These hearings can place a regulator or municipality in a better position to assess the public interest. Considering the complexity of the questions involved and almost opposite interests on different sides, the process may be difficult.

ANNEX 1

Flow-Diagram for the introduction of a new tariff system for consumers