# Fichtner Management Consulting

## Development of the Cost-plus Methodology in Water Supply

International Best Practice

Tbilisi, October 17, 2015 I Dr Maria Belova

FICHTNER
MANAGEMENT CONSULTING

# Table of Contents

**Scope of Work**

Critical Issues Identified

Guiding principles

WACC

Regulatory Asset Base

Inflation Indexing

Cost Subsidies

Losses (technical and commercial) and Metering

Pressure Zones (Tariff)

Forward Looking Regulation

EU Norms

# The project has been implemented under two steps including a thorough review of the status quo and the analysis of best practice on identified gaps

## Project Approach and Scope of Work

| | Main steps | Activities |
|---|---|---|
| 1 | Review of the existing tariff methodology in water supply | 1.1 Review of the cost structure<br>1.2 Review of the calculation of allowed profit<br>1.3 Analysis of the methods for the tariff calculation<br>1.4 Analysis of other tariff related matters as required |

| | Main steps | Activities |
|---|---|---|
| 2 | Analysis of the best practice tariff regulation and gap analyis | 2.1 Compilation of the best practice for tariff setting in water supply<br>2.2 Identification of the main options relevant for Georgia<br>2.3 Outlining of the key gaps in the current practice<br>2.4 International experience regarding gaps |

- **Sources for best practice analysis:** European regulators, articles & handbooks, regulatory associations (Energy Regulators Regional Association – ERRA), The International Water Association (IWA), articles and data compiled by International Financial Institutions (IFIs) such as the World Bank and EBRD, utilities' data, Fichtner experience

# Table of Contents

Scope of Work

**Critical Issues Identified**

Guiding principles

WACC

Regulatory Asset Base

Inflation Indexing

Cost Subsidies

Losses (technical and commercial) and Metering

Pressure Zones (Tariff)

Forward Looking Regulation

EU Norms

# Critical issues have been identified as a result of the existing practice. Best practice has been then analyzed for each of the key critical issue

## Critical Issues

**(1) WACC: The WACC calculations should be transparent and updated periodically. Also, the WACC should mirror market risks. Therefore, the WACC level should be reconsidered**

**(2) RAB: Many assets in Georgia are old. In order to take this situation into account and to incentivize appropriate investment, assets should be accounted for at their replacement value**

**(3) Inflation: Currently, inflation is not considered, however, inflation is beyond the control of the operator**

**(4) Subsidies: Excessive use of subsidies such as excessive cross subsidization distorts the market. Subsidies should be targeted at vulnerable groups**

**(5) Losses/Metering: The feasibility of metering depends on the increase of the payback period as well as the level of tariffs. Under the current situation, the utilities are not incentivized to install meters**

**(6) Other: Pressure zones, forward looking regulation, EU requirements**

# Table of Contents

Scope of Work

Critical Issues Identified

**Guiding principles**

WACC

Regulatory Asset Base

Inflation Indexing

Cost Subsidies

Losses (technical and commercial) and Metering

Pressure Zones (Tariff)

Forward Looking Regulation

EU Norms

# Regulation should be based on a number of principles to ensure the high quality provision of services based on a fair and transparent approach

## Regulation Principes

| | |
|---|---|
| **Transparency** | Cost calculation, tariff setting and decision making must be transparent |
| **Equality** | Service provision should strive to treat all customers on an equal basis |
| **Participation** | Stakeholders should be involved in the decision making process |
| **Adaptability** | Tariff shall adapt with respect to economic, technological and social conditions |
| **Other** | Accessibility, effective conflict resolution, universality, etc. |

# Table of Contents

Scope of Work

Critical Issues Identified

Guiding principles

**WACC**

Regulatory Asset Base

Inflation Indexing

Cost Subsidies

Losses (technical and commercial) and Metering

Pressure Zones (Tariff)

Forward Looking Regulation

EU Norms

# The WACC is determined by means of return on equity, cost of debt and the shares of equity and debt

## WACC: International Approach

**WACC Formula**

$$WACC = R_e\left(\frac{E}{D+E}\right) + R_d\left(\frac{D}{D+E}\right)$$

- Re and Rd are the return on equity and cost of debt, respectively
- $\frac{E}{D+E}$ and $\frac{D}{D+E}$ are the shares of equity and debt, respectively. This is also called gearing.

**This is standard internationally and is applied by most water and electricity utilities around the world. International differences lie in the following:**

**Return on debt and equity**

- **Return on equity:** This is the tricky part and can be estimated through the Capital Asset Pricing Model (CAPM), Risk Premium Model or the Discounted Cash Flow Model**.** CAPM is common internationally
- **Return on debt:** Internationally common is the determination of the risk free rate as cost of debt or to use bond interest of a comparable company if no own bonds are issued

**Real vs. nominal**

- **Real WACC:** Excludes inflation i.e. (1+ nominal WACC) / (1 + rate of inflation) – 1
- **Nominal WACC:** Includes inflation as shown under WACC formula

# WACC shall be calculated in a transparent manner and must reflect market risks as well as the country specifics

## WACC: International Options and Applicability

**Options**

- Mostly, WACC is calculated as real WACC where the cost of debt is determined as the risk free rate (Government Bonds) and the return on equity is determined by means of the CAPM
- This is applied by most European regulators such as Ofwat and Ofgem (UK) but also in Netherlands, Belgium, Serbia, Kosovo, Greece, Albania, etc.

**Decisions on cost of debt**

- How long should be the averaging period? Bonds with what term to maturity?
- **Averaging period of risk free rate:** Short averaging periods of quotes of the risk free rate reflect the current market conditions, while long averaging periods reflect the normal conditions of the market
- **Term to maturity (bonds):** Short term, i.e. 5 years, better reflects regulatory periods, while long term better reflects asset lives

**Estimating return on equity**

- The CAPM is calculated by solving the following equation: **$Re = rf + (rm - rf) * \beta$**
  Where: Re is expected rate of return on equity, rf, the risk free rate, rm – rf , the market risk premium, β, the beta coefficient (movement with market)
- The beta can be estimated through regression analysis

**Applicability**

- The calculation of the WACC must be done in a transparent manner and must reflect market risks as well as the **country specifics**
- Also, the WACC should be updated regularly

# WACC calculations must be done in a transparent manner as well as should be updated regularly and should reflect the risks of the market

## Critical Issues Concerning WACC

**(1) The WACC calculations need to be done in a transparent fashion in order to make them understandable and allow for updates**

**(2) The WACC must be updated periodically in order to reflect the new market situation, i.e. the same WACC is not applicable over a long period of time as the market conditions change**

**(3) Currently, in Georgia, the WACC appears to be too low and may not reflect the market risks**

**(4) Although it is common to derive the real WACC, inflation must be considered when determining the regulatory asset base**

# Table of Contents


Scope of Work

Critical Issues Identified

Guiding principles

WACC

**Regulatory Asset Base**

Inflation Indexing

Cost Subsidies

Losses (technical and commercial) and Metering

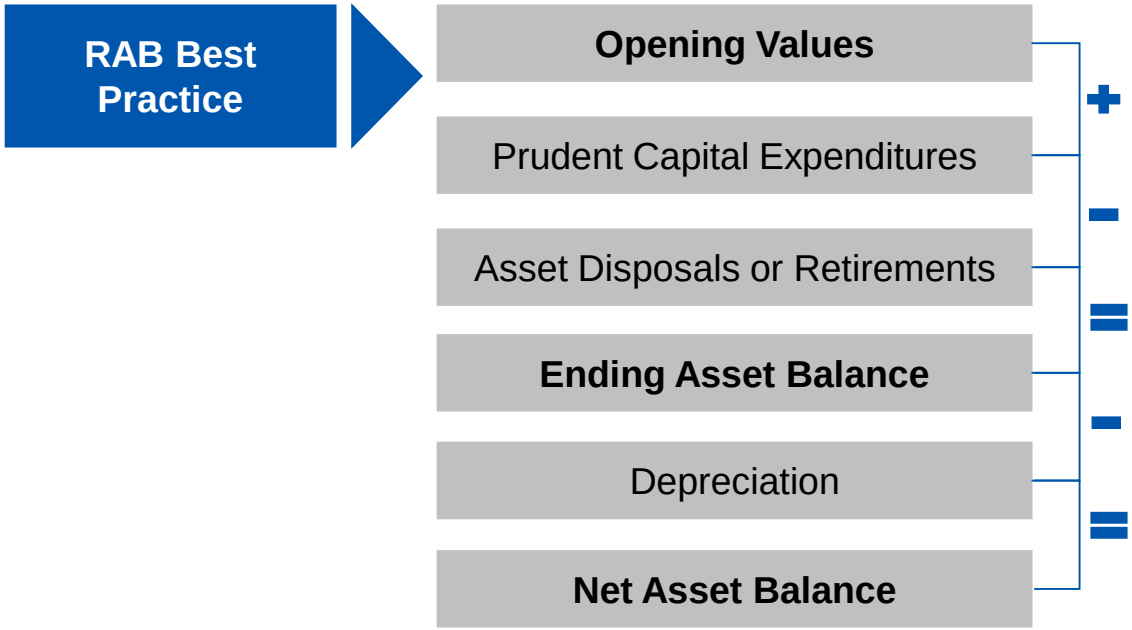
Pressure Zones (Tariff)

Forward Looking Regulation

EU Norms

# RAB is a dynamic concept and is adjusted in order to take into account CAPEX, asset disposal and depreciation periodically

## Regulatory Asset Base: International Approach




- The figure depicts the roll-forward methodology for the regulatory asset base
- This is internationally common and used by Ofwat, Czech Republic, Slovakia, Hungary, Poland, Rumania, Bulgaria, etc.
- The regulatory asset base may be adjusted to inflation by adjusting the value of assets each year through CPI adjustment.
- The tricky part regarding RAB approaches is *how are assets valued, and how are opening values established?*

**There are several methodologies to assess the assets such as historical value, replacement value or deprival value. Each of these methodologies have particular advantages and disadvantages. No single method is dominantly applied throughout the world.**

# There are several methodologies applied around the world, while each has its merits and disadvantages. There is no single dominant methodology

## Regulatory Asset Base: International Options

**Historic Value**

Values assets at their original purchase price

- **Advantages:** Administratively efficient, easily audited, relatively inexpensive
- **Disadvantages:** Asset undervaluation during high inflation and overvaluation in times of technological change

**Replacement Value**

Calculates the fair value of the assets

- **Advantages:** Assets are valued in current prices, more stable RAB
- **Disadvantages:** Entails estimation/judgment, may require expert advice

**Deprival Value**

Minimum of the replacement cost plus the economic value of assets

- **Advantages:** Discourages inefficient investment
- **Disadvantages:** Asset's value depends on the future cash flow but the latter depends on initial asset values. Very complex and therefore hardly used

# The applicability to GWP should be subject to further discussion, given the pros and cons of each of the outlined methodologies

## Regulatory Asset Base: Applicability to GWP

| | |
|---|---|
| **Applicability** | Any of the asset valuation methodologies is applicable to GWP. Discussions should be surrounding the trade-offs regarding complexity of methodology and value added |
| **Valuation of Assets** | The question surrounding asset valuation methodology is only relevant for “old” assets. New assets should just be valued at their investment cost/CAPEX |
| **International Experience** | Often the historic cost approach is applied due to its simplicity. However, around the world regulators and utilities do not use dominantly a single methodology |
| **Options** | Given the increased tariff stability and lack of over- / under-valuation, the replacement cost method may be advantageous. However, additional costs for expert advice may occur |

# Different valuation methods lead to different incentives. If assets are very old, replacement valuation may be better than market valuation

## Critical Issues Concerning RAB

**(1) The critical point with respect to tariffs under a RAB methodology is how assets are valued. Depending on how the assets are valued, different goals can be achieved**

**(2) In Georgia, many of the assets are very old. Therefore, replacement value will most likely reflect the investments needed to replace these assets more realistically**

**(3) Similarly to WACC, the RAB derivations must be transparent and updated regularly to reflect the current state of the business environment**

# Table of Contents

Scope of Work

Critical Issues Identified

Guiding principles

WACC

Regulatory Asset Base

**Inflation Indexing**

Cost Subsidies

Losses (technical and commercial) and Metering

Pressure Zones (Tariff)

Forward Looking Regulation

EU Norms

# Inflation adjustment is common practice as well as needed since inflation is beyond the control of the service provider.

## Inflation Indexing: International Approach

**Inflation Adjustment**

There are in principle two ways to incorporate inflation into allowed revenues. (i) Calculate costs in nominal terms and not index allowed revenues to inflation, and (ii) calculate costs in real terms and index allowed revenues to inflation.

| Nominal term calculation without inflation indexing | Real term calculation and inflation indexing |
|---|---|
| ▪ Service provider is exposed to differences between projected and actual inflation<br>▪ Significant inflation risk<br>▪ This is less critical if there is no multi-year regulatory period | ▪ Avoidance of difference between projected and actual inflation.<br>▪ Easy to comprehend<br>▪ Is suitable for a multi-year regulatory period. |

**But generally, inflation is allowed to be fully passed-through to allowed revenues, as this is outside of the service provider's control!**

**Indexing**

In addition, the choice of index must be considered, i.e. economy wide or just industry wide

This must be in accordance with asset valuation methodology. When using historic costs, economy wide inflation is appropriate (also view of Ofwat). If replacement costs are applied, industry specific inflation adjustment is appropriate.

# Real term calculation and indexation of the RAB is preferable. Choice of index depends of asset valuation methodology applied

## Inflation Indexing: Options and Applicability

| | |
|---|---|
| **Applicability** | Inflation indexing is international practice and is recommendable for GWP since inflation is beyond the control of GWP and should therefore be passed through |
| **Approach** | Mostly, costs are valued in real terms, and revenue requirements are adjusted based on an index |
| **International Experience** | This is common practice by regulators such as Ofwat (UK) and in other parts of Europe such as in Greece, Germany, Romania, Serbia, etc. |
| **Options** | Real term calculation and later indexation is the preferable option. The choice of index (economy wide vs. industry specific) depends on asset valuation methodology |

# Though inflation is a factor which is beyond the control of the utilities, currently the tariffs are not taking it into account

## Critical Issues Concerning Inflation

**(1) Current methodology foresees the correction of the tariffs due to inflation, however de-facto this is not applied**

**(2) The 10% inflation foreseen as a pre-requisite for the correction of the tariff is rather unrealistic**

**(3) When set up for the future periods, the tariffs do not account for the inflation during these periods**

# Table of Contents

Scope of Work

Critical Issues Identified

Guiding principles

WACC

Regulatory Asset Base

Inflation Indexing

**Cost Subsidies**

Losses (technical and commercial) and Metering

Pressure Zones (Tariff)

Forward Looking Regulation

EU Norms

# Subsidies are designed to support vulnerable groups and effective subsidy design entails different delivery, timing and funding mechanisms

## Cost Subsidies: International Approach

**Rationale for Subsidization**

- Subsidies are needed to support vulnerable customers, mostly poor households
- Subsidies are mostly applied in emerging economies, while developed economies exhibit a standard of living which mostly does not justify subsidization

**Subsidy Design**

| Identification of vulnerable groups | Delivery mechanism and timing | Funding |
|---|---|---|
| ▪ Based on water consumption<br>▪ Based on their income levels (budget, normative assumptions, income statements)<br>▪ Demand for subsidies | ▪ Cash transfers (direct)<br>▪ Voucher schemes (direct)<br>▪ Subsidizing utilities (indirect)<br>▪ Life-line tariffs (targeted)<br>▪ Timing depends on delivery mechanism (yearly or monthly) | ▪ Government funding<br>▪ Cross subsidies (inter-class subsidies)<br>▪ Within the same customer class (intra-class) |

Internationally cross subsidies are often applied: financially stronger consumer groups subsidize vulnerable groups. Delivery mechanisms depend on the institutional capacity of a country to handle administrative effort while cash transfers are preferable

# Each subsidy design has its advantage and disadvantage while applicability depends on the particular context of a country

## Cost Subsidies: Options and Applicability

**Options**

- Any of the previously described options is in principle feasible and all of the options have their particular advantages and disadvantages
- There is no international dominant option since subsidization programs are tailored to the particular situation and context of a country
- As a funding option ,cross-subsidization appears to be frequently applied which has the advantage that it avoids using governmental funds. On the other hand, cross-subsidization distorts prices

**Applicability**

- Any of the options, as applied internationally, can be adjusted to the situation in Georgia
- Implementation of a mechanism and its applicability depend on the context of the country as well as its current situation
- The issues surrounding subsidies are also highly political and is usually discussed at a policy level

# Subsidies such as direct cash transfers are sometimes employed to help through a transit period of price increase, life-line tariff is a more sustainable concept

## Subsidy Examples

**Latvia**

- Several cities including Riga supported low income families by means of direct subsidization
- To do so, families applying for the subsidy received a cash transfer in support of their utility bills

**Macedonia**

- A number of countries in Central and Eastern Europe and the former Soviet Union have introduced general cash benefits targeting poor households
- These can be provided based on “poverty” status or on eligibility only
- Macedonia for example employed the transfer of subsidies based on “poverty” status

**Hungary**

- Hungary employed for some of its utility services such as electricity life-line tariffs, where the initial block of consumption was designated as basic needs consumption block
- The prices for the first block were significantly below than the prices for consumption beyond this “basic needs” or “minimum” consumption

# Subsidies should be targeted at vulnerable groups only. When subsidizing too many individuals, market conditions are distorted

## Critical Issues Concerning Subsides

**(1) Subsidies should always be designed to support certain members of a consumer group**

**(2) If a whole consumer group is subsidized by another consumer group, the market is essentially distorted**

**(3) If cross subsidies are implemented, tariffs should not be fixed as then the market gets even more distorted**

**(4) Therefore, when implementing subsidies an identification of vulnerable groups is needed**

# Table of Contents

Scope of Work

Critical Issues Identified

Guiding principles

WACC

Regulatory Asset Base

Inflation Indexing

Cost Subsidies

**Losses (technical and commercial) and Metering**

Pressure Zones (Tariff)

Forward Looking Regulation

EU Norms

# Internationally, losses are tracked through the water balance and are reduced through loss control programs which also require metering

## Losses (technical and commercial) and Metering: International Approach (1/2)

**Water Balance**

| | | |
|---|---|---|
| **System Input Volume** | Authorized Consumption | **Billed authorized consumption:** Billed metered and un-metered consumption<br>**Unbilled authorized consumption:** Unbilled metered and un-metered consumption |
| | Water Losses | **Commercial Losses:** Unauthorized consumption, meter inaccuracies, data errors |
| | | **Technical losses:** Leakage in T&D and storage, service connection leaks and storage overflows |

- The water balance captures commercial and technical losses
- Losses are defined as % *(water produced-metered water)/water produced*
- Metering is essential to determine losses
- The IWA has guidelines in place to reduce losses

**Loss Control**

**Losses are reduced through Loss Control Programs**

**Water Audits**
- Flow determination
- KPIs
- Options

→ **Intervention**
- Meter assessment
- Locating leaks
- Repair

→ **Evaluation**
- Goals met?
- Other KPIs?
- More information?

# Water metering is international standard and is needed for loss reduction, accurate billing and water conservation

## Losses (technical and commercial) and Metering: International Approach (2/2)

**Metering**

- Metering is international practice and is needed to determine losses
- This includes not only customer meters but also bulk meters
- Also, meters enable more accurate charging and can encourage water conservation
- Meter installation becomes economically feasible if cost of installation is smaller than costs incurred due to losses and undercharging due to misjudgment of consumption
- Metering provides essential data for KPI calculation
- Metering is still rare in CIS countries

**International Practice**

Comparing 30 utilities in Europe, only 4 have a water meter penetration rate of less than 100%. 3 out of these 4 utilities have a penetration rate of 99.9%

**Installation practice**

Bulk meters should be installed to meter at interfaces of the water supply value chain. When installing household meters, it is international practice to install **only one meter per building**

# IWA has defined a number of best practice KPIs to monitor and prevent leakage and losses

## Losses (technical and commercial): Example KPIs

**Current Annual Volume of Real Losses (CARL)**

- Volume of water that is lost from the system due to leaks in the transmission and distribution systems
- CARL (liters/year) = Transmission Losses + Distribution Losses + Storage Losses + Service Line losses

**Operational Performance Indicator for Real Losses**

- Annual volume of real losses from the water audit divided by the number of customer service connections

**Unavoidable Annual Real Losses (UARL)**

- Reference value that represents the theoretical low level of leakage that would exist in a distribution system if all of the best leakage management techniques were successfully employed
- UARL (liters/day) = (18 x Lm + Ns x (0.8 + 25 x Lp/1000)) x P
- Where Lm = mains length (km), Ns = number of service connections, Lp = average length, property line to meter, P = average pressure

**Infrastructure Leak Index (ILI)**

- Ratio between the Current Volume of Real Losses and the volume of Unavoidable Annual Real Losses
- ILI = CARL/UARL

# In order to reduce losses, water meters must be installed. Once this has been completed, loss reduction programs can be initiated

## Losses (technical and commercial) and Metering: Options and Applicability

| | |
|---|---|
| **Applicability** | In principle, water meter installation also in light of loss reduction is possible for GWP. Yet, incentives for meter installation need to be in place |
| **Loss reduction** | Once meter installation has been completed, water balancing and loss reduction programs can be introduced, based on the precise tracking of water inputs and outputs |
| **International Experience** | Metering is international practice and loss reduction programs are very common around the world. Water Balance tracking is more or less standard. However, metering is still scarce in CIS countries. |
| **Options** | In essence, there is only one option. In order to reduce losses, metering is required in order to track losses. This is the international common approach |

# Incentives to install meters must be present to implement loss prevention. Incentives would be present if the price for water was higher



**(1) In order to initiate loss prevention and to install meters to do so, the right incentives have to be in place**

**(2) In Georgia, currently the tariffs are so low that these incentives are not given. If the price for water was higher, meter installation and loss prevention would become feasible**

**(3) Also, the current payback period for works is too long, therefore, metering becomes too costly**

**(4) Given the current situation, unmetered customers pay more than metered customers! Therefore, incentives to install meters are not present**

# Table of Contents

Scope of Work

Critical Issues Identified

Guiding principles

WACC

Regulatory Asset Base

Inflation Indexing

Cost Subsidies

Losses (technical and commercial) and Metering

**Pressure Zones (Tariff)**

Forward Looking Regulation

EU Norms

# Depending on the particular situation of a country, end-user tariffs should be designed to best fit that situation.

## Pressure Zones (Tariff): Tariff design principles

### Volumetric

**Advantages**

- Pay according to usage
- No detailed cost allocation
- Encourages conservation
- Easy to implement

**Disadvantages**

- Revenue varies due to seasons
- If demand forecasts are to far off, revenue requirements will be wrong
- High consumption customers can free ride

### Inclining block volumetric

**Advantages**

- Charge is set close to marginal cost of service
- Customers with higher capacity costs are charged more
- The more customers consume the higher the rate

**Disadvantages**

- May be difficult to justify
- May not accurately reflect higher costs of serving small customers
- Can penalize some households

### Two-part (fixed+volumetric)

**Advantages**

- Steady stream of income
- Customer costs are assigned how they are incurred
- Easy to implement

**Disadvantages**

- Could be unfair to low-use customers
- Might penalize low income households

# Elevation charges are used to compensate the increased costs for serving pressure zones with an increased elevation.

## Pressure Zones (Tariff): International Approach

**Elevation Charges**

- Elevation charges are in principle additional charges for pumping up water to a higher elevation.
- These charges should recover the cost of pumping water to higher-elevation customers.
- Charges can be explicitly billed to higher elevation customers or can be woven into overall tariff design, whereas the charges are then averaged across all customers
- Explicit elevation charges are mostly applied in the US, while in Europe these charges are implicitly integrated in the tariff system and therefore averaged across customers.

**Elevation Charges Examples**

| Elevation surcharges of a Californian (US) Utility | | |
|---|---|---|
| Elevation Band 1 | Pressure zones serving elevation 0 to 61 meters. No pumping required, i.e. gravity flow. | USD 0.00 per 2.8m³ |
| Elevation Band 2 | Pressure zones serving elevation 61 to 183 meters. Pumping required. | USD 0.60 per 2.8m³ |
| Elevation Band 3 | Pressure zones serving more than 183 meters. Substantial pumping required. | USD 1.24 per 2.8m³ |

# Increased costs due to higher elevations can be woven into general tariff design or can be explicitly charged per customer.

## Pressure Zones (Tariff): Options and Applicability

**Options**

- There are in principle two options how increased costs due to pressure zones can be recovered by the utility: (i) Through explicit elevation charges or (ii) by implicitly incorporating the charges into the tariff structure and averaging it across all customers.
- If an explicit option is chosen, the charges should be calculated on a similar basis as general water tariffs are calculated.
- If the implicit option is chosen, the pumping stations will be part of RAB and electricity consumption of the pumps as well as O&M will be part of the allowable O&M expenses.

**Applicability**

- In principle, this rather concerns general tariff design and should be subject to discussion.
- Both options are in general applicable and have their particular advantages and disadvantages.
- However, in order to implement elevation charges, the tariff charges must be part volumetric.

# WACC calculations must be done in a transparent manner as well as should be updated regularly and should reflect the risks of the market

## Critical Issues Concerning Pressure Zones

**(1) Tbilisi has 5 elevation zones with up to 1000 m of difference which results in significant pumping costs**

**(2) The consumption by the households in the higher elevated zones is estimated to be higher as those are single family houses which use the water also for gardening purposes**

**(3) Using same tariffs for higher elevated zones does not foster responsible use of water and does not reflect the real costs of the service**

**(4) The number of connections within the higher elevated zones are those which grow the fastest which causes increase of the total costs for water supply by GWP**

# Table of Contents

Scope of Work

Critical Issues Identified

Guiding principles

WACC

Regulatory Asset Base

Inflation Indexing

Cost Subsidies

Losses (technical and commercial) and Metering

Pressure Zones (Tariff)

**Forward Looking Regulation**

EU Norms

# Regulations must be based on certain principles to be effective and should be, in addition, long-term in order to justify efficient investment, price stability, etc.

## Forward Looking Regulation: International Approach

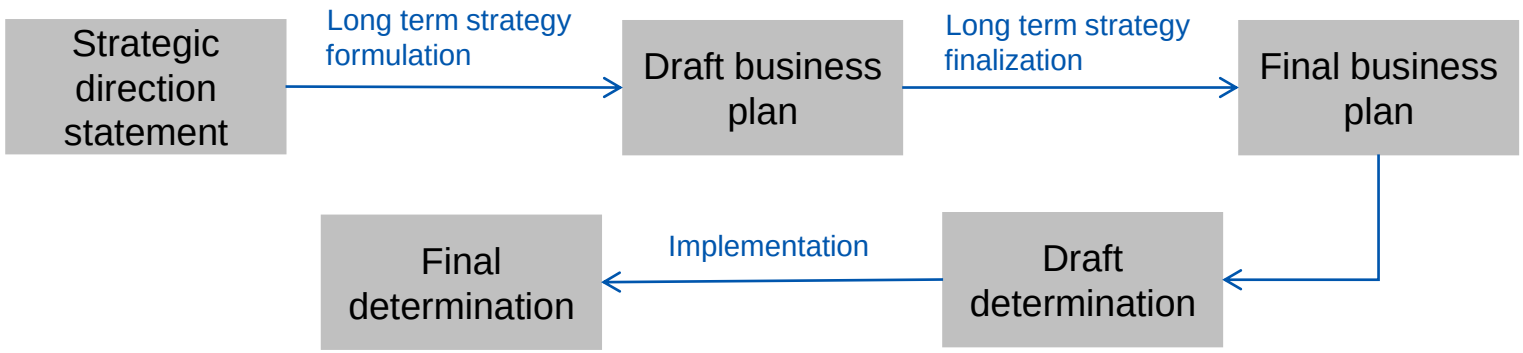
**Regulatory Principles**

Regulation should be designed on regulatory principles such as: **transparency, consistency, accountability, targeting and proportionality.**

- In order to achieve these principles, regulation must take the future into account as water provision is a **long term** business
- In order to achieve this, strategic business plans, short-term business plans and budgets, etc., with reference to problematic areas, risks, objectives, reduced impact of costs
- This should ensure that regulation will become flexible and adaptable.

**Forward Looking**

Regulators such as Ofwat note that to warrant these principles, price review and business planning needs to be performed under a long-term perspective.



# This is mainly a regulatory issue which would be dictated to GWP, yet, certain tools such as business planning are recommendable.

## Forward Looking Regulation: Options and Applicability

| | |
|---|---|
| **Applicability** | Long-term business planning and regulatory principles are needed and applicable, also in light of pricing policies which aim at establishing a price for one year, yet, applying the same price for several years. |
| **Benefits** | Justification of investments beyond the regulatory period (e.g. 5 years), greater certainty of activity and workload, confidence in future price limits for customers, establishment of an environment where innovation can thrive. |
| **International Experience** | Ofwat is a strong supporter of this approach, while more and more regulators follow. This entails also electricity regulators as well as telecommunications. |
| **Options** | As this is a regulatory question, this should be discussed and decreed by the regulator, GNERC. This perhaps could be included in the upcoming GNERC regulatory review project. |

# Table of Contents

Scope of Work

Critical Issues Identified

Guiding principles

WACC

Regulatory Asset Base

Inflation Indexing

Cost Subsidies

Losses (technical and commercial) and Metering

Pressure Zones (Tariff)

Forward Looking Regulation

**EU Norms**

# The EU has a the 98/83/EC Directive in place which regulates drinking water quality standards. It also details other requirements regarding these norms.

## EU Norms: Overview

**Environmental Norms**

- EU has environmental norms in place for water which is intended for human consumption. Those norms are specified in **EU Directive 98/83/EC** of 3 November 1998.
- The Directive specifies essential quality standards at EU level.
- 48 microbiological, chemical and indicator parameters must be monitored and tested regularly,
- The Directive also requires providing regular information to consumers, and dinking water quality has to be reported to the European Commission every three years.

**Further EU Principles**

| Planning | Regulation | Monitoring | Reporting |
|---|---|---|---|
| ▪ Obligation to establish water supply zones | ▪ Ensure population is informed<br>▪ Environmental regulations are in place<br>▪ Monitor and investigate | ▪ Appropriate monitoring programs have to be established<br>▪ Minimum requirements as per 98/83/EC | ▪ Requirement to inform public on quality of water, issues, etc. |

# EU norms can be applied in Georgia, yet, should be subject to discussion on a policy level. Meeting environmental and quality standards require investment

## EU Norms: Options and Applicability

**Options**

- EU norms are designed to be open enough to be implemented by all member states
- They are also only binding with respect to the water quality aspect
- If appropriate infrastructure is in place, environmental norms can be implemented
- This could also be done in conjunction with a penalty mechanism

**Applicability**

- In principle, EU norms could also be introduced in Georgia, if the necessary infrastructure is in place in order to adhere to the norms
- However, this is primarily a policy issue as well as regulatory issue and should be subject to discussion on government level

**Challenges**

- Many new countries to the EU or countries about to join in the EU face the challenge to meet the high EU environmental water standards while having to extend water services to their citizens
- This is connected to significant investments as well as presents institutional challenges
- Croatia, the EU's newest member, faces the challenge to comply with environmental regulations by 2023

# Contact data

Dr Maria Belova

*Senior Consultant*

Tel.: +49 711 8995-722

Fax: +49 711 8995-1491

Mobile: +49 163 8995 722

maria.belova@fmc.fichtner.de

**Stuttgart**
Sarweystrasse 3
70191 Stuttgart
Germany