



# GUIDELINES ON TARIFF SETTING

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## 1. INTRODUCTION

WSS service provision tends to be a monopoly due to the nature of sector. This is especially true for Zambia where within the Water Sector Reform WSS service provision has been commercialised. Without regulation utilities would be inclined to charge exploitative prices and have no incentive to become more efficient. Further, utilities would shun from providing services to low income consumers who are economically less attractive.

The National Water Policy emphasises the importance of cost recovery through user charges while providing for safe and reliable service delivery especially to low income areas. This guideline therefore presents fundamentals of tariff setting process and related practises. The utilities are obliged to use this guideline to establish the basis for calculating and validating their tariffs.

The Water Supply and Sanitation Act No. 28 of 1997 explicitly confers the right to NWASCO to “develop guidelines for the setting of tariffs for water and sanitation services” (Section 4 (2) (d) (iv)).

Therefore the guideline outlines principles in tariff setting, application process to be followed by all providers and the assessment of tariff proposals.

## 2. OBJECTIVE OF THE TARIFF SETTING GUIDELINES

The regulation of the tariff setting process aims at

1. **Financial sustainability of utilities** - Providing sufficient revenues to cover the justified costs obligations for sustainable WSS service provision
2. **Distributive justice and affordability of WSS service**- Ensuring a minimum quantity of water is affordable particularly to low income consumers
3. **Consumer protection, economic efficiency and fair pricing**- Protecting the consumers from paying for inefficiencies of service providers and unfair charges.
4. Ensuring that the process is transparent, simple to understand and predictable

### 3. CORE PRINCIPLES OF TARIFF SETTING

Several competing factors have to be taken into account in setting the tariff for WSS. In trying to balance these interests, the following five principles guide the tariff setting process:

- i) Foster Economic viability of WSS utility*  
Full Cost Recovery in the long run is one of the 7 Sector Principles as outlined in the “National Water Policy” of November 1994 which aims at ensuring that the WSS service providers are able to cover at least the cost of Operation & Maintenance (O&M) and in the long run, cover the cost of infrastructure investments.
- ii) Distribute water in an equitable and fair manner*  
Each person has the right to receive a minimum amount of drinking water at an affordable price. WHO standards define this minimum as being at least 40 litres per person per day. Hence, in Zambia, 6 m<sup>3</sup> of water should be provided to an average family of 6 persons per month at an affordable price, which is below the cost of service provision. Above which, an economic tariff must be charged.
- iii) Provide efficiency incentives*  
Effective regulation provides incentives to WSS service providers for becoming more efficient. Efficiency gains are realized through cost containment (i.e. personnel, energy, chemicals) and waste reduction.
- iv) Conservation of treated water*  
In order to ensure safe and reliable water service provision raw water is treated with often costly chemicals and pumped to end users using electricity. On the one hand, utilities should ensure that water losses are minimised and on the other hand consumers must be encouraged to use the resource prudently by avoiding excessive consumption and pay for what they consume.
- v) Protection of the environment*  
The environment has to be protected for use by future generations. There are mainly two ways in which WSS service provision can contribute to the protection and preservation of the environment. Firstly, the excessive use of ground water has to be avoided in order to prevent a permanent decline of the groundwater level. Secondly, sewage has to be adequately handled and treated before being released into the environment which is a costly.

## 4. TARIFF SETTING: POLICY AND PROCESS

The policy on Tariff setting is that it should:

- contribute to an equitable distribution of water
- allow for total cost recovery under the premise of efficient management by the provider and sufficient investment by government
- ensure price discrimination among consumer groups
- ensure consumers benefit from efficiency gains
- ensure consumers do not pay for inefficiencies on the part of providers

The set tariff should initially cover the justified O&M costs and eventually other costs such as finance costs, depreciation, provision for employees' benefits as well as capital investments.

### **“Cost plus Regulation” approach to tariff setting**

NWASCO uses a cost plus method of tariff setting, which is a pricing method where the customer pays the cost of service provision plus a fixed percentage to the provider.

The key property of cost-plus regulation is that it permits NWASCO to balance the competing objectives of affordability of the service and financial viability of service provision while allowing the utility a degree of flexibility in conducting business.

The process has the following main steps:

1. The WSS service providers' costs are analysed and all unjustifiable costs eliminated.
2. A rate of return considered to be fair for the utility is determined.
3. Both the average tariff and the cost of service provision are computed based on consumption quantities of the different customer categories.
4. Tariffs for different customer classes are set to generate sufficient revenues to cover costs and provide a reasonable rate of return.
5. As a social consideration, the tariff for the first consumption block is always set below the cost of service provision.

The immediate objective is to cover O&M costs with progression towards full cost recovery (i.e. depreciation, finance costs and any provisions). Hence, providers are divided into two types based on the level of cost coverage:

#### ***TYPE 1: Below 100% O&M cost coverage***

In this category, the economic viability is of primary concern. As long as the utilities operate with negative cash flows, debts will continue to accumulate and pose a continuous threat to the existence of the companies.

Therefore the aim is to ensure that 100% O&M cost coverage is achieved.

***TYPE 2: Above 100% O&M cost coverage***

A utility will be classified as Type 2 if it is able to cover at least 100% of O&M costs. Full cost recovery becomes the next goal. At this stage, the primary objective is the realization of efficiency gains to be passed on to the consumers while continually improving service delivery.

The ability to cover costs for both types of providers is based on an acceptable production loss and collection efficiency

## 5. TARIFF STRUCTURE

The tariff structure takes into consideration different types of consumer (i.e. Domestic, industrial and commercial customers as well as government institutions). Price discrimination is exercised on the different consumer to allow for cross subsidisation. A rising block tariff system is used to discriminate among customers, promote prudent water usage as well as sustainability of service provision.

### 5.1 Rising Block Tariff System

#### **Domestic consumers**

In order to be effective, the Rising block tariff system requires detailed and accurate information on the customer base, consumption volumes for different consumer categories. Research is therefore vital to both the regulator and the utilities.

The 1st block comprises the minimum amount of water needed for an average family of 6, that is, 6 m<sup>3</sup> per month. This lifeline consumption is to be billed at a social tariff which is below the cost of service provision. The higher blocks are pegged at an economic tariff and are meant to subsidise the first block.

***Example: Computation of price using a rising block tariff system of two blocks***

1 <sup>st</sup> Block	0-6m <sup>3</sup> at K1,200
2 <sup>st</sup> Block	7-15m <sup>3</sup> at K1,400
Total monthly bill for consumption of 7m <sup>3</sup>	
	6 m <sup>3</sup> x ZMK 1,200 = ZMK 7,200
	+ 1 m <sup>3</sup> x 1,400 =ZMK 1,400
	<b>= ZMK 8,600</b>

For kiosks and stand pipes a simple block tariff is used which equivalent is to or less than the first block tariff for domestic customers.

### **Non- domestic Customers**

The concept of life line consumption does not apply to non domestic customers. Therefore, the water tariffs applied are cost. Like for domestic consumers, higher tariffs are also charged for higher consumption bands in order to induce a sense of water conservation.

## **5.2 Tariffs for Unmetered Consumers**

The tariff for unmetered consumers is a fixed charge arrived at by estimating the cost for a level of consumption per month, per category of consumer in a particular area.

## **5.3 Tariffs for Sewerage**

The tariff for sewerage services is calculated as a percentage of the water consumption and should at least reflect the O&M cost of handling and treating sewage. Providers must justify the percentage used for sewerage.

## **5.4 Other Charges**

Utilities are allowed to include costs of other services required in WSS service provision. These should be at cost and where applicable spread over a period of time. The following are some of the services that could be included in the tariff structure:

- **Meter charge-** is charged per water bill and is meant for maintenance of the meter. It should not be higher than the cost of the first six cubic metres of water.
- **Connection fee** -levied only once when a customer is applying for a new connection. For domestic customers, it may be spread over a period of time to enhance affordability.
- **Reconnection fee-** levied whenever a disconnected customer due to non-payment of bill is seeking reconnection. It should reflect only the average cost of carrying out a disconnection and reconnection.
- **Meter testing fee-**charged when a customer requests for meter testing outside the routine testing schedule for the utility and is only effected if the meter is not faulty.
- **Meter replacement fee** -is levied when an installed meter has to be replaced due to loss or damage by fault the customer. This does not apply for the first meter installation.
- **Security deposit** –is a refundable deposit that a new customer makes which is equivalent to a sum of three monthly bills. This deposit is refundable as soon as the customer leaves the property.

- **Sanitation surcharge**--In order to accumulate funds for investments in rehabilitation or new installation of sewage infrastructure the utility may apply for a sanitation surcharge to be levied separately.

### 5.5 Discounts, Rebates and Promotions

Granting rebates and discounts on the approved tariffs infringes on the principle of fairness. Nevertheless, small discounts on bills that are paid upfront as well as rebates and promotions to huge debtors may be allowed with justification. A cost benefits analysis must be conducted and approval sought from the regulator prior to its implementation.

## 6. TARIFF APPLICATION PROCESS

### 6.1 General

In normal circumstances providers are allowed to adjust their tariffs only once a year. There is a window for adjusting water tariffs that must be strictly followed.

#### *Time for submission of adjustment proposal*

The tariff adjustment proposals have to be submitted to NWASCO by 30<sup>th</sup> September. Any proposals received after the deadline will not be accepted.

#### *Period of application*

Due to the administrative efforts involved in analysing tariff proposals, service providers are advised to apply for a multi-year tariff covering a period of three years. The tariff application proposal (in Annex) can provide for a stepwise adjustment of the tariffs for the period. Providers are required to forecast inflation over the required period, when projecting costs.

### 6.2 Stakeholder Participation

The tariff adjustment process is designed to allow for increased stakeholder participation. All providers are therefore, required to undertake stakeholder consultative meetings on their intention to adjust the tariff. The different stakeholder views should be taken into account in the decision making process. Both the stakeholders and the service provider have an important role to play.



**6.3 Steps for Tariff Adjustment**

The following steps shall constitute the tariff adjustment process for a new tariff:

	<b>Step</b>	<b>Timeframe</b>
1)	<p>Before submitting a tariff adjustment proposal to NWASCO each CU should undertake a consumer consultative meeting to explain the reasons for the planned tariff adjustments and get feedback from the consumers. Minutes of Meeting (MoM) shall be recorded and be attached to the tariff applications. The consumer consultation meeting shall consist of:</p> <p>The Water Watch Groups (WWGs) in the area where present, not less than ten domestic consumers with adequate representation from a cross section of consumers. The CU will therefore inform NWASCO at least four weeks ahead of the scheduled consumer meetings of their intention to initiate a tariff adjustment process, commence and publicise the same in appropriate media that will reach at least 75% of the customers.</p>	<p>May – July</p> <p>Notify NWASCO of intention to submit a tariff adjustment proposal.</p>
2)	The CU shall negotiate with non domestic customers (contribution to revenues >5% ) and reach a compromise before the submission	May – July
3)	Depending on the outcome of Steps 1) and 2), the CUs shall adjust their tariff proposals.	August
4)	Submission of the tariff proposal to NWASCO.	Deadline: 30 <sup>th</sup> September
5)	First screening of submitted tariff proposal by NWASCO	October
6)	Presentation of the proposal by the CU to NWASCO management in the presence of all other CUs. NWASCO provides feedback to the CUs	
7)	Adjustments to be made or additional documents to be submitted by the CU if necessary.	
8)	Analysis by inspectorate according to the procedure laid out in section 8.1 including feedback if necessary.	
9)	Presentation of the analysis of the proposal to the Administration and Finance Committee (AFC) by the NWASCO management at the latest, two weeks after receiving	November

	comments from the CUs.	
10)	Consideration and endorsement of the AFC recommendations by the Council.	
11)	Communication of the Council’s decision to the CU indicating the following information: -Standard format showing proposed and approved tariff conditionalities -explanations for deviations from proposals effective date	
12)	The CU shall: if decision is accepted: advertise new tariffs along with the conditionalities and service level guarantee in electronic and print media 30 days before implementation if decision is not accepted: may appeal to NWASCO within 14 calendar days NWASCO shall in parallel publicly announce the CUs for which tariff adjustments have been granted along with the applicable conditionalities and service level guarantees	December
13)	The appeal will be considered by the NWASCO Council within 30 days. In case the grounds for appeal are not accepted, the CU is advised to appeal to the Minister of Energy and Water Development for arbitration.	

**6.4 Application for a No Objection within a Multi-year Tariff Period**

Providers are normally granted a multi-year tariff spanning a maximum of 3 years. CUs are therefore required to apply for a **No Objection** to implement each subsequent year of the approved multi-year tariff. The application for a No Objection shall be submitted by 30<sup>th</sup> September and will be accompanied by the following:

- i. Report on attainment of tariff conditions given
- ii. Actual O&M Costs and Revenues for the current year as per Tariff application schedule
- iii. Service improvement commitments being made for subsequent tariff year

## 7. APPLICATION FOR TARIFF ADJUSTMENT

A standard format for tariff application is provided as attached in Annex 1-7. Providers must hand in both hard and soft copies of the tariff adjustment application. Applications made in the wrong format will be rejected.

The figures refer a period of 12 months i.e. one financial year (previous, current and following years).

**A tariff adjustment proposal** should include the following documents:

1. Justification of the Proposal
2. Proposal in standard format indicating:-
  - Annex 1: General Information
  - Annex 2: Performance Indicators
  - Annex 3: Cost structure
  - Annex 4: Production figures
  - Annex 5: Average Tariff
  - Annex 6: Revenue Projections
  - Annex 7: Tariff Schedule

### ***Required Attachments***

The following documents must be enclosed as part of the application:

#### *1. Business Plans*

Service providers are required to submit approved Business plans (if revised or not submitted) that will go with the multi-year tariff including a report on the implementation of the preceding plan.

2. Tariff study *including ability to pay report* Providers may submit the results of an ability to pay study (if any) to support their proposal.
3. Minutes of consultative meeting with stakeholders
4. Comment on Minutes of consultative meeting with stakeholders by CUs
5. Agreements with the large consumers

Any existing agreements between the provider and large commercial customers must be enclosed in the application.

6. Approved budget for the 1<sup>st</sup> year
7. Last audited financial statements (if not already submitted)
8. Management accounts for the last six months.

## 7.1 Contents of the Tariff Adjustment Proposal

### 7.1.1 General Information of the Provider

The service provider shall submit all the relevant general information according to **Annex 1 “General Information”**.

**Performance Indicators** The performance indicators shall be filled in according to **Annex 2 “Performance Indicators”**. The benchmarks shall be used from the individual licence or Minimum Service Level Agreement (MSLA) respectively unless agreed otherwise.

### 7.1.2 Projecting the required average tariff

*Step 1:*

Projection of O&M Costs for the current as well as the entire period covered in the tariff proposal must be entered in **Annex 3 “O&M Costs”**. The CUs are required to stick to the cost categories listed in the table in order to enable comparability even if different cost categories are used for internal accounting purposes. Only Type-II providers (CUs that are already in a position to cover 100% O&M costs with their actual revenues) have to fill in the section indicated. The forecasted inflation rate should be stated and embedded in the adjustment of costs. Any assumptions underlying projections should be stated.

Accuracy of arriving at the proposed costs will be verified with accounting information and other documents.

The proposed cost structure for which the tariff has been approved must not be altered without NWASCO’s consent.

*Step 2:*

**Annex 4 “Production”** requires entry of projected quantity of water produced, Non-Revenue Water and quantity of water billed in the different consumer categories.

When projecting production volumes, the service provider has to start with the actual quantities produced in the previous period then estimates for the current period. It is important that the estimated quantities are based on the latest available actual figures. Any major deviations have to be explained plausibly.

*Step 3:*

The resulting average cost per cubic meter billed as well as the average tariff required to cover the entire O&M costs are calculated automatically in **Annex 5 “Average Tariff”** once the agreed benchmark for collection efficiency is entered into the provided data entry fields.

*Step 4:*

The unit cost of production per cubic meter is calculated taking into account the allowable loss for the industry which is the benchmark NRW of 25%. The formula used is total production/ total cost. **Annex 5**

**7.1.3 Proposing the Tariff Structure**

The required average tariff which results from Annex 5 is sufficient to cover the O&M costs and parts of the full costs respectively if a CU is Type II.

This average tariff has to be translated into a suitable tariff structure based on the rising block tariff model as described in section 5.1.

- The tariff for the first block 0-6m<sup>3</sup> must be set below the cost of service provision.
- The tariff for the subsequent blocks may be greater than the average tariff.

In order to verify whether the proposed tariff structure is in line with the required average tariff and will deliver the projected revenues, the quantities billed per tariff block have to be estimated (Q1 – Q6 in the table below).

The following table shall be used to predict the average revenue per m<sup>3</sup> of water using the proposed tariff structure (T1 – T6):

<b>Type of customer</b>	<b>Tariff</b>	<b>Quantity billed per year</b>	<b>Annual Revenues</b>
Metered household connections :			
-lower consumption bracket (0-6 m <sup>3</sup> )	T1	Q1	T1 x Q1
-middle consumption bracket (6-15m <sup>3</sup> )	T2	Q2	T2 x Q2
-higher consumption bracket (over 15)	T3	Q3	T3 x Q3
Un-metered connections	T4	Q4 (estimate)	T4 x Q4
Water at standpipes, kiosks	T5	Q5	T5 x Q5
Industrial, commercial connections	T6	Q6	T6 x Q6
Totals or Sums (Σ)	--	Σ of Quantity	Σ of Revenues
Average revenue (total revenues divided by total billed quantity)			Σ of R./ Σ of Q.

These projections shall be entered into **Annex 6 “Revenue Projections”**. Again, it is essential that the projected quantities billed for the different tariff blocks are based on the most recent figures. Any major deviations require detailed explanations.

Once all the data entry fields of Annex 6 are filled in, the resulting average tariff is calculated automatically. The proposed tariff structure has to be modified accordingly if the average tariff resulting from the revenue projections differs from the required average tariff as calculated in Annex 5.

The proposed tariff structure shall be entered into the table in **Annex 7 “Tariff Schedule”** together with the tariffs currently applied. In case the tariff adjustment proposal contains several steps of adjustment, the necessary columns have to be added to the table.

## **8. ANALYSIS OF A TARIFF ADJUSTMENT PROPOSAL**

### **8.1 Tariff Analysis**

The analysis of the tariff proposal will follow the structure as outlined in Figure 1 below. The starting point is the “Projected O&M Costs” submitted by the CU. Adjustments are made for O&M costs removing all non-allowable costs. O&M costs are also adjusted based on performance of the CU. The outcome is the “Performance Adjusted O&M Costs”, which NWASCO allows the CU to cover through revenues and which determines the average tariff. The different tariff categories are derived from the average tariff, taking into account the consumption pattern. While Figure1 provides only a rough overview, the details are explained in the section 8.2.

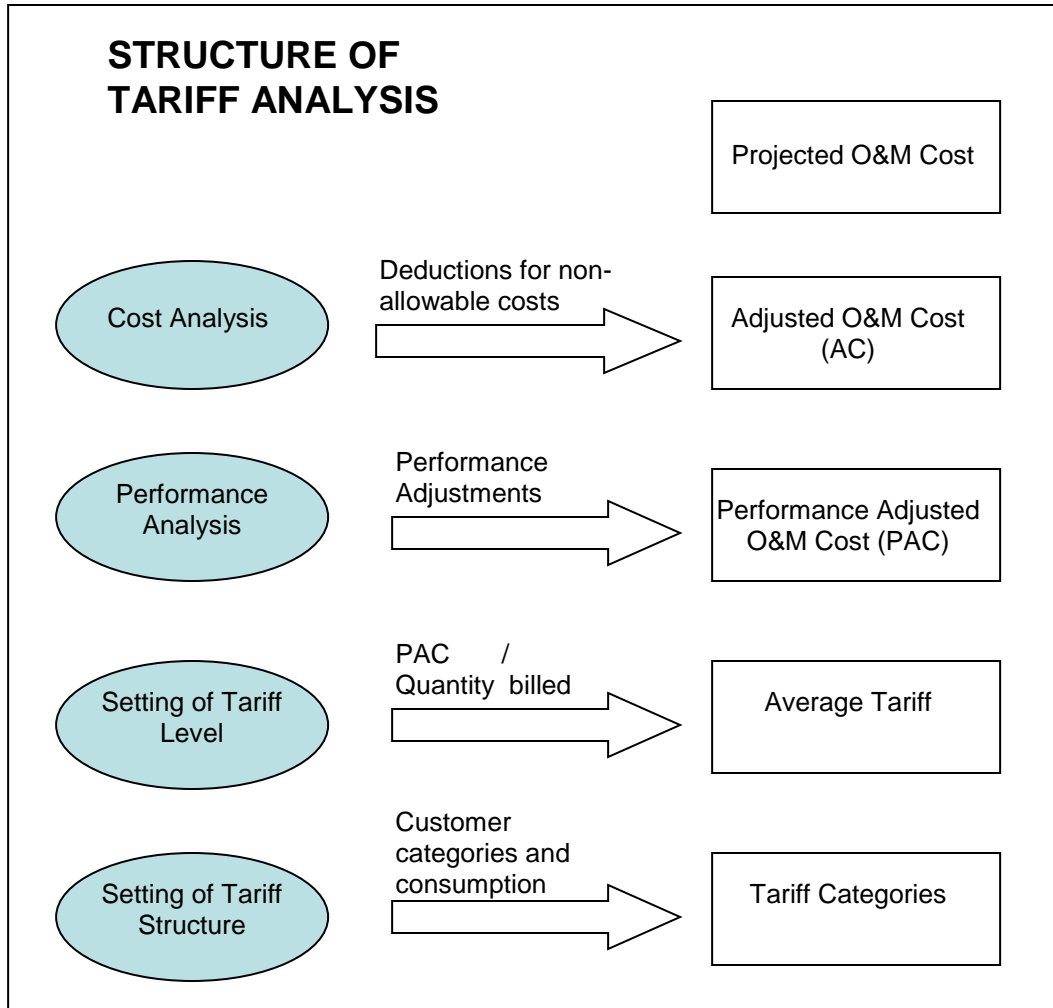


Figure 1: Structure of Cost Analysis

For detailed analysis, the service providers are classified according to their ability to cover their O&M Costs with their collected revenues. The following two categories are used:

**TYPE 1: Coverage of O&M Cost's  $\leq 100\%$**

**TYPE 2: Coverage of O&M Costs  $>100\%$**

*For CUs which have gone beyond 150% O& M cost coverage, emphasis will be on efficiency gains and the Council will consider tariff adjustments for CUs in this category on a case by case basis.*

## 8.2 Cost Analysis

The Projected O&M Costs for the following year become the basis for the analysis of the O&M costs. The service providers shall submit information on O&M cost and cost structure (actual for previous and current year as well as projections for coming year) according to Annex 1.

The current level as well as potential increases will be analysed in detail, in particular as far as personnel costs are concerned. If the explanations given by the service providers are not satisfactory to convince NWASCO that the current level of increases is justified, they may propose deductions from the Projected O&M Costs. The reasons for deductions shall be clearly explained. **An example of a non-allowable cost could be huge increases in salaries especially for Management e.g. 30% increase.** The results are the Adjusted O&M Costs (AC) (see table below).

Projected O&M Costs
- Deductions for non-allowable costs
= Adjusted O&M Costs (AC) I

It is the aim of NWASCO to allow tariffs to be set to above O&M cost recovery within four years. The preconditions to achieve this are that the ability to pay, as well as, that the O&M costs are within reasonable limits and the performance acceptable.

***Other costs shall be clearly specified in the respective annex and justification for such costs shall be given in the application.***

Therefore, the following table applies for service providers of Type II:

Projected O&M Costs
- Deductions for non-allowable costs
= Adjusted O&M Costs I (ACI)
+ Depreciation and finance costs
Adjusted O&M Costs II (ACII)

For the purpose of simplicity, it is assumed that full cost recovery is reached when the revenue covers O&M plus depreciation and finance costs.



**8.3 Performance Analysis**

The performance analysis will concentrate on certain indicators to determine whether there are deviations from the agreed performance.

The following indicators will be taken into account in the performance analysis:

1. Metering Ratio
2. Water Quality
3. Service Hours
4. Specific efforts and initiatives to improve efficiency, service or access
5. Non-Revenue Water (NRW)
6. Collection Efficiency

The criteria (1) – (4) are considered in the calculation of the Performance Adjusted O&M Costs (PAC), while criteria (5) and (6) are treated separately as outlined in Section 8.4.

For indicators (2) and (3), the service providers have committed themselves to different benchmarks in the Minimum Service Level Agreement (MSLA). The benchmarks for (1) and (5) are individually negotiated and set for each service provider while the benchmark for indicator (6) is determined as specified under Section 8.4. The performance of the service provider will be measured against these benchmarks during the tariff negotiations in the following year. Indicator (4) is a qualitative indicator where service providers are given the opportunity to be rewarded for special initiatives that demonstrate their commitment to good performance.

*Determination of Performance Adjusted O&M Costs (PAC)*

The failure of a service provider to achieve agreed benchmarks and set standards (indicators (1)-(3)) has a negative impact on the adjusted cost, while a positive impact can be evoked by specific efforts of the service provider (indicator (4)). The positive or negative impact is measured by attributing scores for the selected indicators. Annex 2 shows the sample form for the performance analysis. The distribution of scores is as follows:

*Metering Ratio*

Points should be awarded on the basis of percentage achievement in metering ratio based on agreed target. A total of 3 points are attached to the indicator as follows:

<b>% Achievement</b>	<b>Score</b>
50%-<75%	1
75%- <100%	2
100% achievement	3
0-<50%	0
-5%-<0%	-1
-10%-<-5%	-2
Below -10%	-3

*The negative scores are based on the number of metered connections at the time of the proposal.*

*Water quality*

Performance on water quality should be on the basis of the number of tests conducted and those that meet the standard. A total score of 3 should be attached to this indicator as follows:

*Number of tests conducted in relation to the prescribed (30%)*

95%-100%	3
85%-94%	2
80%-84%	1
75%-84%	0
65%-74%	-1
55%-64%	-2
54% and below	-3

*Number of tests meeting the standard (70%)*

95%-100%	3
90%-94%	2
85%-89%	1
80%-84%	<b>0</b>
60%-79%	<b>-1</b>
50%-59%	<b>-2</b>
50% and below	<b>-3</b>

*Average hours of supply*

The scores for average daily service hours will be awarded on the basis of improvements in average hours of supply for the year and will depend on the size of the provider:-

% Improvements	Score
Over 50%	3
35%-49%	2
20%-34%	1
1%-19%	0
% Reductions	Score
Over 50%	-3
35%-49%	-2
1%-34%	-1

The total score is then transformed into monetary terms as a percentage of the Adjusted O&M Costs. The maximum reward/penalty amounts to +/- 5% of the Adjusted O&M Cost I for Type I-providers and +/- 10% of Adjusted O&M Cost II for Type II-providers respectively, according to the following table:

Total Score	Performance Adjustment Type I	Performance Adjustment Type II
15	5%	10%
14	4,67%	9,33%
13	4,33%	8,67%
12	4,00%	8,00%
11	3,67%	7,33%
10	3,33%	6,67%
9	3,00%	6,00%
8	2,67%	5,33%
7	2,33%	4,67%
6	2,00%	4,00%
5	1,67%	3,33%
4	1,33%	2,67%
3	1,00%	2,00%
2	0,67%	1,33%
1	0,33%	0,67%
0	0,00%	0,00%
-1	-0,33%	-0,67%
-2	-0,67%	-1,33%
-3	-1,00%	-2,00%
-4	-1,33%	-2,67%
-5	-1,67%	-3,33%
-6	-2,00%	-4,00%
-7	-2,33%	-4,67%
-8	-2,67%	-5,33%
-9	-3,00%	-6,00%

-10	-3,33%	-6,67%
-11	-3,67%	-7,33%
-12	-4,00%	-8,00%
-13	-4,33%	-8,67%
-14	-4,67%	-9,33%
-15	-5,00%	-10,00%

Adjusted O&M Costs (AC) I or II		
-/+	Performance Adjustments	
=	Performance Adjusted O&M Costs (PAC)	

The Performance Adjusted O&M Costs (PAC) contains the penalties/rewards for performance as well as adjustments for unjustified costs. Therefore, the PAC are the costs which NWASCO will allow the CU to cover. The approved tariffs will be set to create sufficient revenue to cover the PAC.

#### 8.4 Assessing the Adequate Tariff Level

In the calculations for the average tariff, both efficiency criterions, that is “collection efficiency” and “Non Revenue Water” are taken into account. By applying the agreed benchmarks for each criterion in the calculations as outlined below, the service provider is automatically penalized if it fails to achieve the set benchmarks.

##### ***Non Revenue Water (NRW)***

The following calculations show how the average tariff (excl. collection efficiency) is derived:

Projected Quantity Produced -Non revenue water

= **Projected Quantity Billed**

Performance Adjusted O&M Costs/ Projected Quantity Billed (in m3)

= **Projected Average Cost (per m3)**

**Projected Average Cost (per m3) = Projected Average Tariff (per m3)**

For these calculations, the individually agreed benchmark for NRW is used. If the actual NRW still exceeds the benchmark, it reduces the actual quantity billed, thereby increasing the “Actual Average Cost (per m<sup>3</sup>)”. The average tariff would then be too low to cover the “Actual Average Costs”. Hence, each service provider has a clear incentive to meet the agreed benchmark.

### ***Collection Efficiency***

While the equation

$$\begin{aligned} & \text{Projected Average Cost (per m}^3\text{)} \\ = & \text{Average Tariff (per m}^3\text{)} \end{aligned}$$

is generally binding, it implies a collection efficiency of 100%. However, it is recognised that most service providers will not be able to collect 100% of the billed amount. Incentives shall be set to continuously increase the collection efficiency.

### ***Average Tariff***

The following steps are followed to take into account the benchmark collection efficiency:

$$\begin{aligned} & \text{Projected Average Cost (per m}^3\text{)} \\ \hline = & \text{Projected Average Tariff (per m}^3\text{) (excluding collection} \\ & \text{efficiency)} \\ & \text{Average Tariff (per m}^3\text{) (excl. collection efficiency)} \\ / & \text{Benchmark Collection Efficiency} \\ \hline & \text{Projected Average Tariff (per m}^3\text{)} \end{aligned}$$

Example:

Average Tariff (per m<sup>3</sup>) (excl. collection efficiency) = ZMK 1,000

Benchmark Collection Efficiency = 85%

**Average Tariff (per m<sup>3</sup>) = 1,000 / 0.85 = 1,176**