METHODOLOGY

For the Regulation of Landfill Tariffs for Household Solid Waste

(2nd version)

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1.   General provisions

1.1   This methodology sets out the method of determining landfill tariffs for household waste disposal services for natural monopoly entities carrying out business activity in the area of household waste disposal.

1.2   Requirements contained in this methodology will be applied by natural monopoly entities in the calculation of landfill tariffs for household waste disposal services and in their submission for consideration and approval by the bodies authorized to exercise state regulation of tariffs as established by law.

1.3   The determination of landfill tariffs takes into account only costs related to landfill services. Appropriate methods of cost allocation must be used if the license holder is engaged in activities other than landfill services, as set out in Clause 4.

1.4   The following terms, abbreviations, and symbols have the following meanings in this methodology:

"annual statement" means the document submitted by a license holder to the Commission each year (except for the year in which the business plan is submitted) that provides information needed to set the actual tariff for the next year.

"base year", in respect of a specific control period, means the year immediately preceding the first year (year 1) of the control period.

"business plan" means the document, including an investment plan, that the license holder submits to the Commission in preparation for the price review, and which contains information about past performance and justified forecasts and estimates for the forthcoming control period of five years concerning demand, capital costs, operating costs, financing, and all other factors needed for tariff determination.

"capex" means capital expenditures that are part of an investment plan.

"control period" means the period of five years for which tariffs are set at a price review.

"CPI" means the official consumer price index.

"depreciation" means depreciation as calculated by the method established by the Commission for the purposes of setting landfill tariffs.

"fee for closure and post-closure care" ("CPC") means the element of the landfill tariff that provides for the future costs of landfill closure and post-closure care.

"Fisher equation" is defined in Clause 2.8.2.

"landfill" means a waste disposal site for the deposit of the waste onto or into land (i.e. underground), including internal waste disposal sites (i.e. landfill where a producer of waste is carrying out its own waste disposal at the place of production), and a permanent site (i.e. more than one year) which is used for temporary storage of waste, but excluding facilities where waste is unloaded in order to permit its preparation for further transport for recovery, treatment or disposal elsewhere, and storage of waste prior to recovery or treatment for a period less than three years as a general rule, or storage of waste prior to disposal for a period less than one year.

"license holder" means a business entity which has obtained a license to provide landfill services.

"landfill tariff" means the price paid by the legal or physical person delivering waste to a license holder for every tonne of waste delivered to the landfill.

"opex" means operating and maintenance costs.

"price review" means a comprehensive review and resetting of landfill tariffs occurring once every five years.

"provisional landfill tariff" means the tariff as set at the price review for each year of the forthcoming control period and before any adjustments are made year by year to arrive at the actual tariff that the license holder will be permitted to charge.

"real" or "real terms" refers to a value expressed in prices of the base year, unless indicated otherwise.

"regulatory asset base" ("RAB") means the asset value on which the license holder is permitted to earn a specified rate of return.

"unindexed" refers to a price or value before the application of the relevant price index.

"weighted average cost of capital" ("WACC") means the cost of capital as determined by the weighted average of the cost of equity and debt in the license holder's capital structure.

"year" means the twelve-month period designated as the regulatory year applying to a specific license holder.

1.5   Other notation and conventions used in this methodology are as follows:

The subscript "(t)" refers to a year of a control period, where t can be 1, 2, 3, 4, or 5. Where $t = 0$, this refers to a value expressed in terms of the end of the base year for the relevant control period.

An asterisk (*) after a variable is used to indicate the value as set at the price review. A double dagger superscript ($\ddagger$) after a variable is used to indicate the value as set at the end of a year for purposes of calculating the actual tariff to be applied during the next year.

Unless otherwise indicated, prices are expressed in terms of values at the end of the relevant year.

When values or prices are said to be "base year prices", "real", or "in real terms" (or similar) this means that, if they are not prices actually occurring at the end of the base year, they have been inflated or deflated by the CPI to bring them to the price level at the end of the base year.

1.6   For simplicity of exposition, tariff determinations and adjustments under Clauses 2 and 3 are described as if they occurred at the end of a year based on information available up to the end of that year. In fact, timing adjustments may be necessary as a practical matter because it is impossible to carry out all determinations and adjustments at the end of the relevant year since data about the year that has just ended will not be available then. For this reason, the following timing adjustments will be made, where appropriate:

   1.6.1   Determinations and adjustments to be made (according to Clauses 2 or 3) at the end of year t–1 will actually be made based on data up to the end of the ninth month of year t–1.

   1.6.2   If a determination or adjustment is to be made (according to Clauses 2 or 3) based on data relating to year t–1, this will actually be made based on data relating to the beginning of the tenth month of year t–2 to the end of the ninth month of year t–1.

   1.6.3   When prices or monetary values are expressed as of the end of the ninth month of year t–1, to express them in terms of the price level at the end of year t–1, they must be multiplied by the factor $(1 + \Delta INF)^{0.25}$, where "ΔINF" is the change in the relevant inflation index over the period from the beginning of the tenth month of year t–2 to the end of the ninth month of year t–1.

2.   Landfill tariff as determined provisionally at the price review

2.1   At each price review, the Commission will set, for each year of the control period, the values for following elements as they are to be used for purposes of determining the landfill tariff: opex (both fixed and variable); quantity-based depreciation; time-based depreciation; RAB; WACC; profit tax; CPC; and the forecast quantity of waste for each year of the control period.

2.2   The value of each element indicated in Clause 2.1 will be based on, among other things, information presented in the license holder's business plan and will be determined by the Commission at the price review in the manner set out in Clauses 2.5 through 2.11. The values will be the best estimates, all things considered, taking into account, among other things, past performance as adjusted by relevant changes in circumstances.

2.3   The provisional landfill tariff for each year of the control period, expressed as a price per tonne of waste received by the license holder, will be set by the following formula:

$$\frac{Fopex^*_{(t)} + CC^*}{Forecast\ tonnes\ of\ waste^*_{(t)}} + Vopex^*_{(t)} + QBD^*_{(t)} + CPC^*_{(t)},$$

where

"Fopex" means fixed opex

"Vopex" means variable opex

3

"QBD" means quantity-based depreciation, as the term is used in Clause 2.6.1

"CC" means the pre-tax capital charge, as calculated under Clause 2.4

"CPC" means the fee for closure and post-closure care

2.4   The pre-tax capital charge (CC*), which will be the same value (in real terms) for every year of the control period, will be calculated in the following manner:

$$CC* = PV\left(TBD*_{(t)} + [RAB*_{(t)} \times WACC*] + Profit\ tax*_{(t)}\right) \times Annuity\ payment\ factor$$

$$Annuity\ payment\ factor = \frac{WACC*}{1 - \dfrac{1}{\left(1 + WACC*\right)^5}}$$

where

"TBD" means time-based depreciation, as the term is used in Clause 2.6.1

"PV" here means the present value at the end of the base year of the indicated values over the five-year control period (hence t equals 1 through 5), using WACC* as the discount rate.

2.5   **Operating and maintenance costs (opex)**

2.5.1   The value of each component of opex will be set in unindexed terms for each year of the control period.

2.5.2   The components of opex are […] [*To be added for Ukrainian version.*]

2.5.3   Each component of opex will be identified as being either fixed or variable. Variable opex ("vopex") varies with the quantity of waste whereas fixed opex ("fopex") does not.

2.6   **Depreciation**

2.6.1   There will be two broad classes of assets for purposes of determining regulatory depreciation: assets subject to quantity-based depreciation and assets subject to time-based depreciation. These are described in Clauses 2.6.3 and 2.6.4.

2.6.2   The values of depreciation to be used in the price review are to be adjusted by the CPI, as necessary, to bring them to base year prices.

2.6.3   Assets subject to quantity-based depreciation

(1)   There are two sub-classes:

(a)   Basic landfill infrastructure, which consists of assets that are expected to last as long as the landfill (with normal maintenance) and that will not have a significant value after the landfill is closed. Such assets include initial works to prepare the site (for the entire landfill), access roads (to the extent that the capital expenditures will not be repeated), buildings, workshops, and similar assets.

(b)   Landfill development works required for just one cell or section, which include all the works and equipment needed to prepare a new cell or section to receive waste.

(2)   When each asset comes into use, the cost of the asset will be divided by an estimate of the remaining tonnage of waste that is expected to be deposited during the life of the asset. The result, expressed on a per-tonne basis, is the relevant depreciation amount for that asset.

(3)   At each price review, the depreciation amount per tonne will be updated, as appropriate, by dividing each of the remaining asset values (i.e. after subtracting accumulated depreciation) by an estimate of the remaining tonnage of waste that is expected to be deposited during the life of the asset.

2.6.4   Assets subject to time-based depreciation comprise all other assets. Depreciation of these assets for purposes of this methodology will be by the conventional straight-line method.

2.7   Regulatory asset base (RAB)

2.7.1   The value of the RAB for each year of the control period, as set during the price review, is determined using the following formula:

$$RAB^*_{(t)} = RAB^*_{(t-1)} + Capex^*_{(t)} - Depreciation^*_{(t)}$$

The method for obtaining $RAB^*_{(0)}$ (to be used in the equation above if t = 1) is described in Clause 2.7.3.

"$Capex^*_{(t)}$" means capital expenditures expected to be incurred in year t. It also includes, as a negative value, the value expected to be received for any asset disposals.

"$Depreciation^*_{(t)}$" means the total depreciation amount expected for year t. With respect to quantity-based depreciation, the per-tonne values will be multiplied by the forecast quantities of waste.

2.7.2   Capital contributions

(1)   Capital contributions (that is, grants and capital subsidies) made to the company are not to be included in the element Capex in the formula in Clause 2.7.1 for purposes of determining the RAB. When a municipality provides funding from its budget to a company, it will be assumed that such funding is to be treated as a municipal equity investment unless the municipality specifies the amount of such funding that is to be treated as a capital contribution instead.

(2)   Nevertheless, assets funded by capital contributions are to be depreciated in the normal way, except for basic landfill infrastructure assets (as defined in Clause 2.6.3(1)(a)). Depreciation is not permitted for basic landfill infrastructure assets that are funded by capital contributions.

2.7.3   At each price review, the value of $RAB^*_{(0)}$ (the starting RAB value) is determined by adjusting the value of $RAB^*_{(5)}$ of the previous control period (as determined at the previous price review), as follows:

(1)   The recalculated depreciation amounts for quantity-based depreciation (QBD), based on actual tonnage of waste received instead of forecast tonnage, are used for each year of the formula given in Clause 2.7.1 to update the RAB for each year of the previous control period.

(2)   A correction is made if the total forecast capex for the previous control period (summing over all five years) exceeds the total actual capex (in real terms) during that control period. If it does, the difference is subtracted from the closing RAB of the previous control period ($RAB_{(5)}$ of that period).

(3)   Finally, the RAB is adjusted using the actual change in CPI over the five years of the previous control period to arrive at the real value, $RAB_{(0)}$, to be used for the start of the new control period.

2.7.4   The starting RAB for each control period (i.e. $RAB^*_{(0)}$) will include an amount for working capital, as determined by the following formula:

(1)   the average annual forecast tariff revenue for the forthcoming control period multiplied by 30/365;

(2)   plus the value of inventories of materials, supplies, tools, and spare parts according to norms specified by the Commission;

(3)   less the average annual forecast opex for the forthcoming control period multiplied by 30/365.

The value of working capital will be calculated in base year prices. The value (in real terms) will not change during the control period. It will be updated based on the provisions in this Clause at every price review.

2.7.5   The value of the starting RAB (i.e. $RAB^*_{(0)}$) for the first price review carried out under the present methodology with respect to a specific landfill will be the book value of the assets of the license holder that are related to landfill services, excluding all assets that were funded by the municipality, by customer contributions, or by any other grants or subsidies, but adding working capital as calculated under Clause 2.7.4.

2.8   Weighted average cost of capital (WACC)

2.8.1   The WACC will be determined as a single value for the entire control period by the following formula:

$$WACC^* = \left(\text{Leverage}^* \times \text{Debt rate}^*\right) + \left([1 - \text{Leverage}^*] \times \text{Equity rate}^*\right),$$

where:

"leverage" is defined in Clause 2.8.3.

"debt rate" means the expected prevailing market debt interest rate (including typical fees and charges of lenders) for the forthcoming control period applicable to a typical license holder and is expressed as a real interest rate using the Fisher equation.

"equity rate" is defined in Clause 2.8.4.

2.8.2   The Fisher equation is as follows:

$$\text{Real interest rate} = \frac{1 + \text{Nominal interest rate}}{1 + \text{Expected inflation rate}} - 1$$

2.8.3   The leverage of the license holder is to be based on expected and reasonable values given this sector of industry and current market conditions and equals the ratio of net debt to the RAB, where net debt is the sum of net short-term and long-term borrowing, finance leases, and net payables.

2.8.4   The equity rate will be determined as the average yield-to-maturity of long-term government bonds during the base year, expressed as a real interest rate using the Fisher equation, plus an equity risk premium, where:

(1)   The bonds used in the calculation should have a remaining maturity of approximately ten years.

(2)   The equity risk premium will be determined and updated by the Commission periodically to apply to all license holders beginning at the next price review.

(3)   The equity risk premium will be determined by taking into account the rates of return expected by investors on comparable investments and by building up the rate by estimating its components considering factors such as the risk premium related to industry sector and project characteristics, any relevant additional country risk premium, and the leverage of the license holder's capital structure.

2.9   Adjustment for concessional debt

2.9.1   The following adjustment will be made at a price review if the interest rate on an existing loan of the license holder is concessional in nature, i.e. significantly below the prevailing market interest rate used to determine the debt rate in the WACC*.

2.9.2   An estimate will be made of the principal payments and interest payments (and related fees) on the existing concessional debt that will be due over the forthcoming control period, year by year. These values will then be converted to real values.

2.9.3   The Commission will determine what the interest payments (and related fees) would be assuming the debt rate as determined under Clause 2.8 and assuming the same principal repayments year by year as in Clause 2.9.2. These values will then be converted to real values.

2.9.4   The annual cash flows under Clause 2.9.2 are subtracted from the annual cash flows under Clause 2.9.3. The resulting values are subtracted, year by year, from the values of $\{TBD^*_{(t)} + (RAB^*_{(t)} \times WACC^*) + \text{Profit tax}^*_{(t)}\}$ before the present value is calculated for purposes of determining CC* under Clause 2.4.

2.9.5   This adjustment will be carried out at every price review until the concessional debt has been entirely repaid.

2.10 Profit tax

2.10.1 The value of profit tax to be used is the best estimate based on financial projections for the business enterprise. The value must not include any penalties.

2.11 Fee for closure and post-closure care (CPC)

2.11.1 The fee for closure and post-closure care (per tonne of waste) is based on the costs that will need to be incurred to close the entire landfill and to carry out post-closure care. These costs include, among other things, final landfill cover (capping), leachate control, groundwater monitoring, biogas control, water quality monitoring, cap maintenance.

2.11.2 The value of CPC (constant in real terms over all five years of the control period) will be determined by the following equation:

$$CPC* = \frac{COST - BAL}{\frac{n}{5} \times \sum_{t=1}^{5} \text{Forecast tonnes of waste*}_{(t)}}$$

where

"BAL" is the balance of funds accumulated in the dedicated bank account (to be used only for this purpose) at the end of the base year of the forthcoming control period. [*Note: The requirement to set up this bank account would be part of the license conditions.*]

"COST" is the best estimate of the total costs of closure and post-closure care, as described in Clause 2.11.1. The value of COST is to be expressed in prices of the base year.

"n" is the number of years from the end of the base year to the expected date of final landfill closure.

2.11.3 All the values needed to calculate CPC* will be updated at each price review to reflect actual values or updated best estimates, as relevant.

[*Note: The business enterprise would handle this for accounting purposes by applying the principles of IAS 37. Roughly speaking, an asset would be created ("asset retirement cost", ARC) equal to the value in equation (B) above: $COST/(1 + INT)^n$. A matching asset retirement obligation (ARO) would also be created. The ARC would be depreciated by the units-of-production method by the amount of CPC per tonne of waste. As this is done, cash builds up in the earmarked account and interest is earned and compounded. At the same time, the ARO liability is "accreted" (i.e. it increases by the compound interest rate). When the landfill is closed and closure and post-closure expenditures occur, these expenses are booked against the ARO (and any final gain or loss is recognized).*]

3. Determination of actual landfill tariff to be charged for each year of the control period

3.1 This Clause 3 sets out how the provisional landfill tariff as determined under Clause 2 will be adjusted year by year to arrive at the actual landfill tariff that the operator will be permitted to charge in each year of the control period.

3.2   The actual landfill tariff for each year of the control period, expressed as a price per tonne of waste received by the license holder, will be set by the following formula:

$$\frac{Fopex^{\ddagger}_{(t)} + CC^{\ddagger}_{(t)} + COR^{\ddagger}_{(t)}}{Forecast\ tonnes\ of\ waste*_{(t)}} + Vopex^{\ddagger}_{(t)} + QBD^{\ddagger}_{(t)} + CPC^{\ddagger}_{(t)}$$

where the values are obtained as set out in Clauses 3.3 through 3.6.

3.3   Each of $CC^{\ddagger}_{(t)}$, $QBD^{\ddagger}_{(t)}$, and $CPC^{\ddagger}_{(t)}$ will be obtained by multiplying (a) CC^*, $QBD^*_{(t)}$, and $CPC^*_{(t)}$ by (b) $CPI_{(t-1)}$ divided by $CPI_{(0)}$.

3.4 $Fopex^{\ddagger}_{(t)}$ and $Vopex^{\ddagger}_{(t)}$ will be obtained by multiplying each component of $Fopex^*_{(t)}$ and $Vopex^*_{(t)}$ by the relevant price index for year t–1 divided by the price index for year 0.

3.5   The values for tonnes of waste will not be changed from the forecast values as set out in the formula in Clause 2.3.

3.6   Quantity correction

3.6.1   A correction for a difference between the forecast and actual quantity of waste received by the landfill in the previous year will be made at the end of each year of the control period. "$COR^{\ddagger}_{(t)}$" means the correction value to be applied to the tariff in year t based on information about year t–1. The formula for determining $COR^{\ddagger}_{(t)}$ at the end of year t–1 of the control period is as follows:

$$COR^{\ddagger}_{(t)} = \left(Fopex^{\ddagger}_{(t-1)} + CC^{\ddagger}_{(t-1)} + COR^{\ddagger}_{(t-1)}\right)$$

$$\times \left(1 - \frac{Actual\ tonnes\ of\ waste_{(t-1)}}{Forecast\ tonnes\ of\ waste^*_{(t-1)}}\right) \times \frac{CPI_{(t-1)}}{CPI_{(t-2)}},$$

3.6.2   When t is the first year of a control period (i.e. t = 1), "$COR^{\ddagger}_{(t-1)}$" refers to the correction value determined at the end of year 5 of the previous control period based on information about year 5.

4.   Eligible costs for the purpose of determining landfill tariffs

4.1   This Clause 4 sets out the types of costs that are permitted to be included in the landfill tariff calculations as described in Clause 2 and the method of allocation of joint and overhead costs in the case of a license holder that is engaged in more than regulated landfill activities.

4.2   [*Other sections to be added for the Ukrainian version.*]

5.   Interim review

5.1   If during a control period, an event, or set of circumstances, occurs that is substantially beyond the control of the license holder and that has (or is expected to have) a net monetary impact on the business enterprise (calculated as a present value) greater than 10% of the amount of the annual revenue of the business enterprise in the most recent year, then the license holder will be entitled to an interim review.

5.2   In an interim review, the provisional landfill tariff will be re-determined using the formula set out in Clause 2.3 making adjustments to the values as needed to take into account the event, or set of circumstances, that triggered the interim review, but not taking into account any other changes. The landfill tariff, as so adjusted, will then apply to the current and future years of the control period.

5.3   If the license holder begins paying interest on a loan during the control period and this loan has a concessional (below prevailing market) interest rate that was not taken into account under Clause 2.9 at the most recent price review, this will be considered an event triggering an interim review, provided that the monetary-impact threshold in Clause 5.1 is exceeded.