

TERMS OF REFERENCE

Position:	International Senior Expert on modeling of waste sector
Project name and project number:	PAGE Programme “Partnership for action on green economy”, 106637
Duty Station:	Home-based
Contract type:	Individual Contract (IC)
Required Languages:	English
Contract duration:	September – November 2020

PROJECT DESCRIPTION:

In 2012, the Rio+20 Declaration – The Future We Want – recognized a green economy as a vehicle for achieving sustainable development and poverty eradication. It called on the United Nations to support interested countries in their transition to greener and more inclusive economies.

The Partnership for Action on Green Economy (PAGE) is a response to the Rio+20 Declaration. It is an initiative by five United Nations Organizations: The United Nations Environment Program (UNEP), the International Labor Organization (ILO), the United Nations Industrial Development Organization (UNIDO), the United Nations Development Program (UNDP) and the United Nations Institute for Training and Research (UNITAR), to support countries in pursuing an inclusive, resource-efficient, low-carbon economy. The overall vision of PAGE is to contribute to the equitable and sustainable transformation of national economic structures in 30 countries, with the ultimate intention to achieve environmental sustainability, decent job creation, reduced poverty and improved human well-being.

Priorities for PAGE work in Kazakhstan have been identified along following three dimensions:

- Integration of IGE goals and targets into SDG aligned national development planning
- Evidence-based sectoral and thematic reforms
- Individual, institutional and planning capacities strengthened

Having ratified the Paris Agreement, Kazakhstan accepted a voluntary contribution to reduce greenhouse gas emissions by 15% by 2030 from the 1990 level. In pursuance of paragraph 19 of Article 4 of the Paris Agreement, the development of the Low-carbon Development Strategy of the Republic of Kazakhstan until 2050 (hereinafter referred to as the LCDS) was initiated. The PAGE program supports the development of the Waste Management Section for LCDS.

The main waste sources of greenhouse gas emissions in Kazakhstan are: municipal solid waste (MSW), agricultural waste (manure), wastewater. The main greenhouse gas is methane, which is formed during the decomposition of organic waste. The contribution of the waste sector to total greenhouse gas emissions in the Republic of Kazakhstan is 2.5% (8.5 million tons in CO₂ equivalent). The total annual volume of such emissions in 2017 amounted to about 4 million tons. At the same time, there is a considerable technical potential to reduce emissions in the field of improving the efficiency of managing agricultural waste and MSW.

In Kazakhstan in agricultural sector, GHG emissions (methane and nitrous oxide) are formed as a result of harvesting, storage and use of manure at livestock facilities. The volume of emissions from the livestock sector is 2.9 million tons of CO₂ equiv. (2017), which is 0.9% of the total emissions. GHG emissions from the livestock production directly depend on the number of livestock. So, taking into account the program documents adopted in the country on the development of beef cattle breeding, an increase in livestock numbers by 1.5 times is forecasted by 2030. Accordingly, with the

development of livestock production in Kazakhstan, greenhouse gas emissions will increase. The main measure to reduce GHG emissions is the use of manure as a raw material for the production of biogas and its further use as fuel in cogeneration plants. However, the potential for processing agricultural waste is practically not realized; only a few biogas plants operate in the Republic of Kazakhstan.

In the thickness of solid household waste stored at landfills, under the influence of microflora occurs a biothermal anaerobic process of decomposition of the organic components of the waste. As a result of this process, landfill gas is formed, the bulk of which is methane and carbon dioxide. In Kazakhstan, the contribution of MSW to the total emissions is 1%. In 2018, about 5.5 million tons of MSW was generated in Kazakhstan. The main method for MSW management is landfilling. However, only 16% of the total number of landfills comply with environmental requirements and sanitary standards. Most landfills have exhausted their capacity and require reclamation.

Such measures as the introduction of concepts and requirements for “separate collection of municipal waste”, “secondary raw materials”, a ban on the placement of certain types of waste at landfills, and the extended producer/importer responsibility, allowed to increase the share of MSW processing. Sustainable waste management is defined as one of the seven priorities of the new Environmental Code (project of the Code). This important achievement, however, does not provide a common vision for the development of the industry and systemic actions to achieve national indicators, including reduction of emissions in the waste sector.

OBJECTIVE:

The main objective of this work is to elaborate scenarios for the development of the waste sector and on the basis of quantitative assessment identify the best sector development scenario. Quantitative assessment (System Dynamics modeling) will focus on the following types of waste that has a high CO₂ reduction potential: MSW, agricultural waste, sewage sludge (silt sludge), medical waste. This will allow to analyze and model the development of the situation with waste management in the Republic of Kazakhstan, taking into account alternative scenarios, with obtaining quantitative indicators that affect GHG emissions to inform development of the Waste Management Section for the LCDS.

SCOPE OF THE WORK:

Under the overall supervision of the National coordinator (NC) the Senior Expert on modeling of waste sector will have the following specific duties:

- analyze and identify all factors and processes, including technological solutions that affect and have a potentially positive impact on the development of the waste management sector in Kazakhstan (MSW, agricultural waste, sewage sludge, medical waste), based on data provided by the UNDP national consultant (statistical data, reviews, analyzes and other materials);
- analyze the chain of cause-and-effect relations of these factors with description of the chain of cause-and-effect relations between factors displayed in the model using variable states, taking into account the impact on the system of external factors;
- develop a methodology report based on the analysis implemented;
- prepare a Scenario Analysis;
- develop an information model- a System dynamics Model of waste sector as well as user manual;
- prepare narrative description of a model, considering alternative scenarios:
 - scenario without measures (current situation, taking into account the historical dynamics of changes);
 - scenario with measures focusing on achieving indicators of the Green Economy concept;
 - an optimistic realistic scenario, focusing on the real capabilities of the country, taking into account maximum stakeholders' involvement;

EXPECTED OUTCOMES AND RESULTS:

N	Deliverables	Indicators	Reporting timeline (deadlines)	Review and approvals required
1.	Drafting of a Methodology Report; Validation of Draft Methodology Report	Final Methodology Report provided	September 30, 2020	NC
2.	Creating a System dynamics Model of waste sector as well as user manual validation and updated of a model	Functional and technical reports on the SD model as well as user manual provided	October 12, 2020	NC
3.	Preparation of Scenario Analysis	Report on scenario analysis provided	October 19, 2020	NC
4.	Scenario development Validation of the developing of scenarios (the underlined assumptions and the baseline)	Report on developed scenarios provided	October 30, 2020	NC
5.	Support drafting of waste section of LEDS and presentation for summarizing the main aspects of the waste section of LEDS	Report on the LEDS process and the model creation process	November 10 2020	NC
6.	Presentation of the LEDS waste sector System Dynamics Model during a public events, presenting intermediate/final results to high level ministerial officials	Report on participation in stakeholder consultations, awareness raising events on the LCDS provided		

Note: by performance of each above points, the materials/reports should be submitted to Project Coordinator (PC) for commenting. In case of comments, the expert has to finalize the materials in compliance with the comments and/or to discuss these comments via e-mail and forward the final ones to the PC.

INSTITUTIONAL ARRANGEMENT:

- International Senior Expert on modeling of waste sector (ISE) agrees the actions and reports to the National Coordinator;
- ISE ensures the timely and rational planning, performance of works scope and achievement of deliverables according to the ToR;
- ISE ensures unconditional performance of requirements of the Individual Contract;
- ISE is responsible for quality of documents prepared as scheduled above;
- Draft and final documents to be submitted in English language in MS Word (2007 or later). Used font: Calibri, size: 12. The presentations to be made in Power Point (2007 or later).

DURATION OF THE WORKS:

The Individual Contract (IC) is awarded over a period of September– November 2020 to perform all expected deliverables as specified in the «Expected Outcomes and Results». Performance under IC begins as IC awarded and completes not later than 10 November 2020.

Once received the reporting documents from the Consultant, National Coordinator provides the comments\recommendations and confirmation of works acceptance within 3 days.

DUTY STATION: home-based

QUALIFICATIONS OF THE SUCCESSFUL INDIVIDUAL CONTRACTOR:

Education:

- Advanced degree in System Dynamics, PhD would be an asset.

Experience:

- Proven experience of at minimum 15 years in systems modeling, working with several modeling platforms across sectors;
- Portfolio of implemented customized modelling approaches in at least 20 countries, experience in Kazakhstan would be an asset;
- At least 10 years of experience of integrated impact analysis of waste and environment-related policies, including national level strategic documents;
- At least 5 years of experience working with international institutions/organizations. Working experience within UN system would be an asset;
- Thematical integrated and sectoral studies, publications, reports by international organizations, leading editorials;
- Fluency in spoken and written English.

SCOPE OF PRICE PROPOSAL AND SCHEDULE OF PAYMENTS

Payment modality

Payment to the individual contractor will be made based on the deliverables described in the Article „Expected Outcomes and Results“ of the TOR, accepted and upon certification of satisfactory completion by the UNDP National Coordinator.

%	Stages of Work
20	Deliverable 1
30	Deliverable 2, 3 and 4
50	Deliverable 5 and 6

Financial proposal

The financial proposal in USD shall specify a total lump sum amount consisting of professional fees and payment terms around specific and measurable (qualitative and quantitative) deliverables (i.e. whether payments fall in instalments or upon completion of the entire contract). Payments are based upon output, i.e. upon delivery of the services specified in the TOR. In order to assist the requesting unit in the comparison of financial proposals, the financial proposal will include a

breakdown of this lump sum amount (including all-inclusive daily fee and number of anticipated working days).

Recommended Presentation of Offer

The following documents **in PDF** to be attached to the Offer (maximum size 19Mb per one e-mail transmission) and should be sent to procurement.kz@undp.org with indication of **Ref.2020-116** in the e-mail subject not later **2 PM (Nur-Sultan time) of 16 September 2020**:

- a) A duly drafted Offeror's letter confirming interest and readiness for the assignment; Financial proposal, including the fixed total contract value, with a breakdown of costs in accordance with the UNDP template;
- b) Detailed personal CV, where previous work experience in similar projects should be included, as well as contact details (email and phone number) of the Offeror;
- c) Other documents certifying the work experience, expertise and skills (qualification improvement certificates\diplomas, awards, etc.)
- d) Brief description of why the individual considers him/herself as the most suitable for the assignment (Maximum 1000 Characters).

Criteria for Selection of the Best Offer

Individual contractor will be evaluated based on a Combined Scoring Method taking into consideration the combination of the applicant's qualifications and financial proposal.

The award of the contract should be made to the individual contractor whose offer has been evaluated and determined as:

- Responsive/ compliant/ acceptable; and
 - Having received the highest score out of a pre-determined set of weighted technical and financial criteria specific to the solicitation;
 - Technical criteria weight (70%);
 - Financial Criteria weight (30%).
- 1) Top 5 candidates who meet the following minimum requirements will be shortlisted for technical evaluation:

Advanced degree in System Dynamics, PhD would be an asset	5 points
Proven experience of at minimum 15 years in systems modeling, working with several modeling platforms across sectors	10 points
Fluency in spoken and written English	5 points

2) Top 5 shortlisted applicants will be evaluated based on a Combined Scoring Method taking into consideration the combination of the applicants' qualifications and financial proposal.

Technical evaluation – total 70% (500 points)

Criteria	Weight %	Min pass points	Max. points
Academic background and skills			
At least 10 years of experience of integrated impact analysis of waste and environment-related policies, including national level strategic documents;	30%	105	150
Portfolio of implemented customized modelling approaches in at least 20 countries, experience in Kazakhstan would be an asset;	30%	105	150
As minimum 5 years of experience working with international institutions/organizations. Working experience within UN system would be an asset;	10%	35	50
Thematical integrated and sectoral studies, publications, reports by international organizations, leading editorials	10%	35	50
On-line interview	20%	70	100
Total:	100%	350	500

Date: 07-Sep-2020