

**COBENEFITS assessment of improvements in air quality related to
an increase in the share of renewable energy in Turkey's electricity
mix
(ID: 18-96)**

1. Letter of Invitation

Potsdam, August 10, 2018

Dear Madam or Sir,

The COBENEFITS project analyses the social and economic opportunities presented by renewable electricity production and supply for Turkey and connects identified opportunities to political deliberations on ambitious climate policy and action. The international project is led by the Institute for Advanced Sustainability Studies (IASS), Potsdam, Germany, and is conducted in close cooperation with the Sabancı University İstanbul Policy Center (IPC) as COBENEFITS focal point for Turkey.

The IASS hereby invites potential service providers to submit a proposal for the following research:

COBENEFITS assessment of improvements in air quality related to an increase in the share of renewable energy in Turkey's electricity mix

1. This Request for Proposal (RFP) includes the following documents:

Section 1 – This Letter of Invitation

Section 2 – Instructions to Proposers

Section 3 – Terms of Reference (TOR)

Section 4 – Technical Proposal Form

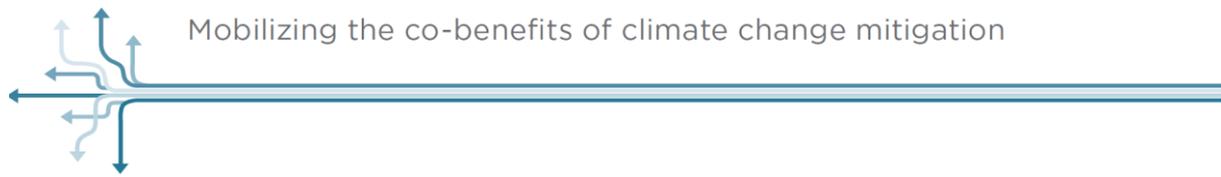
Section 5 – Financial Proposal Form (as separate attachment)

2. Your offer comprising of a Technical and Financial Proposal (see templates in sections 4 and 5) should be submitted in accordance with the instructions to proposers.

Proposed methodology and approach should meet all the requirements of the Terms of Reference including project costing. The project plan should be linked to the implementation phase requirements. A detailed methodology approach is developed in line with implementation phase requirements and expected outcomes and deliverables.

3. You are kindly requested to submit an acknowledgement letter and the proposal to IASS via the following email to cobenefits@iass-potsdam.de with reference to the title and ID of this RFP in the subject line of your email.





Deadline for submission: 17.09.2018

4. Should you need further clarification, kindly communicate with cobenefits@iass-potsdam.de duly assigned to handle all queries for this RFP.

We look forward to your Proposal and thank you in advance for your interest in IASS and the COBENEFITS project opportunities.

Yours sincerely,

Sebastian Helgenberger
COBENEFITS Project Director



2. Instructions to Bidders

2.1 Contents of proposal

Bidders are required to complete, sign and submit the following documents (one or several pdfs + excel sheet):

1. Proposal submission covering letter
2. Documents establishing the eligibility and qualifications of the project team assigned to this project
3. Technical proposal
4. Financial proposal
5. Any attachments and/or appendices to the proposal

2.2 Clarifications and amendments to proposal

Bidders may request a clarification of any of the RFP documents no later than 3 working days before the proposal submission date. Any request for clarification must be sent in writing or by electronic means to the IASS address.

At any time prior to the deadline for submission of proposals, IASS may for any reason, such as in response to a clarification requested by a proposer, modify the RFP in the form of supplemental information to the RFP. All proposers who have provided confirmation of their intention to submit a proposal will be notified in writing of all amendments to the RFP with reasonable time to consider the amendments to the RFP.

2.3 Language of proposal

The proposal, as well as all related correspondence submitted by the bidder and IASS, shall be written in English language. Any printed literature furnished by the proposer written in a language other than English, must be accompanied by a translation in English.

2.4 Technical and financial proposal

The bidder shall submit the proposal submission forms furnished in section 4 and 5 of the RFP.

The financial proposal shall be prepared using the attached standard form. It shall list all major cost components associated with the activities (including all taxes). All outputs and activities described in the Technical Proposal must be priced separately on a one-to-one correspondence. Any output and activities described in the technical proposal but not priced in the financial proposal shall be assumed to be included in the prices of other activities or items, as well as in the final total price.

The costs must be stated in Euro net prices (no local VAT applicable if bidder resides outside Germany). However, where proposals are quoted in different currencies, for the purposes of comparison of all proposals IASS will convert the currency quoted in the proposal to EUROS, in accordance with the spot rate of exchange on the last day of submission of the proposal.

The bidder indicates in the covering letter that he will abide by the proposal for five weeks.

2.5 Joint venture, consortium or association

If the bidder is a joint venture, consortium, or association, all of the parties shall be jointly and severally liable to IASS for the fulfilment of the provisions of the contract and shall designate one party to act as a leader with authority to legally bind the joint venture, consortium or association. The leader or lead entity, composition or the constitution of the joint venture, consortium or association shall not be altered without the prior consent of IASS.

The description of the organization of the joint venture, consortium or association must be clearly defined in the course of establishing the eligibility of the proposer, by defining the expected role of each of its component/member firm in the course of performing the research defined in the ToR.

2.6 Capacity building as follow-up activity on the co-benefits assessments

The outputs from the co-benefits assessment studies (methodologies and results) will be transferred into training material (slides, presentations, online training modules, exercises). A separate RFP will be prepared by RENAC (Renewables Academy, Berlin) for these follow-up activities in 2018. It will be proposed to develop a training module that will be deployed with the governmental departments and agencies in charge of climate and energy. IASS already invites bidders to this benefit assessment RFP to consider also submitting a proposal to the capacity building RFP in 2018.

The training module is specialized for policy and decision-makers. It should, therefore, focus on the strategic aspects of planning methods rather than on technical aspects. RENAC will provide guidance and instructions on how to prepare and conduct the training activities. This includes instructions on didactic methods and a variety of teaching methods to create a supportive learning environment.

Three capacity building sessions are planned until the end of 2019 in coordination with RENAC. For further information please contact cobenefits@iass-potsdam.de.

3. Terms of References

The Terms of References (ToR) describe the tasks and contributions as contractor in the project “Mobilizing the Co-benefits of Climate Change Mitigation” (COBENEFITS). These Terms of Reference form the basis for a service contract to be concluded with the Institute for Advanced Sustainability Studies e.V. (IASS) as project leader.

3.1 Introduction to topic and background

The global transition to renewable sources of energy, as a key action area for climate change mitigation, is in full swing. The renewable energy sector is now attracting substantially greater investment flows than its fossil-based counterpart, with half of all related investments flowing to the global South. The social and economic opportunities presented by renewable energies, such as public health, job creation, accelerating access to electricity, improved investment opportunities resulting from plummeting costs for renewable electricity, and local value creation, are becoming important co-benefits of this climate-friendly transition.

There is currently significant international interest and various ongoing initiatives related to assessing the socio-economic impacts of climate mitigation measures, in particular, of renewable energies. Only some of these co-benefits have been quantified, often based on different methods, making it difficult to synthesize findings for a country level research. As a result, many opportunities for highlighting the benefits of climate change mitigation activities to policy makers and private investors have been lost. Therefore, a research consortium led by IASS is conducting a research and advisory project on “Mobilizing the co-benefits of climate change mitigation action” financed by the German International Climate Initiative of the German Federal Ministry of the Environment, Nature Conservation and Nuclear Safety. In order to adequately enumerate the co-benefits of climate change mitigation with a focus on renewable energies in the partner countries, co-benefits studies shall be conducted by national research institutions to assess country specific co-benefits in collaboration with further national knowledge partners.

The scope of this request for proposals is for assessing the air quality and health-related effects of renewable energies in order to enhance ambitious climate mitigation action. The objective is to (further) develop methodologies and generate results on health care saving potentials, in order to stimulate public awareness, to initiate discussion and transition processes in relevant institutions, and to design ambitious policies. The detailed scope of work is presented hereafter.

3.2 Objectives

The purpose of this study is to assess the extent to which increased deployment of RES could help Turkey meet air quality standards of the European Union (EU) and World Health Organization (WHO).

The assessments will be built upon different scenarios regarding the deployment of renewable energy technologies in Turkey’s power system. The foremost objective is to quantify the impacts of increased deployment of renewable energy on air quality, and assess these impacts vis-à-vis the air quality standards employed by the EU and WHO.

The results of the co-benefits studies will serve as inputs for policy makers on areas to focus on the air quality benefits of scaling renewable energy (especially wind and solar) investments. This, in turn, will inform policy makers about the optimal share of renewable energy technologies when designing energy policies and/or drafting the national INDCs.

3.3 Scope of study and methodology

Air quality in Turkey is impacted by a multitude of economic activities, including industrial processes, power generation, vehicle emissions, waste burning and fossil fuel use for heating and. Power generation from coal and natural gas, which contributes to roughly 65% of Turkey’s power mix, contributes immensely to air pollution with such emissions having severe impacts on reduced air quality and human health in the country. Amongst others, cardiovascular and respiratory diseases occur more frequently and with increasing levels of mortality, thus impacting significantly the costs for the Turkish health system. In turn, the shift to renewable energy technologies could improve health performance and livelihood for Turkish citizens.

By limiting / reducing the emissions from the power sector and moving towards higher shares of renewable energy sources in Turkey’s power mix, air quality could be improved. Renewable energy is widely accepted as a means of improving air quality. This perspective is also reflected in the recently published presidential decree that lays out the institutional structure, jurisdiction, duties and responsibilities of Ministry of Environment and Urbanization. Despite this recognition, there is an apparent gap in scientific analyses that measure the prospective impacts of an increase in clean renewable energy technologies in Turkey’s electricity mix on air quality at local, regional and national scales.

The objective of the proposed study is to fill this gap. It is expected to focus on air pollutant emissions from the power sector, primarily concentrating on coal and natural gas fired power plants. These include -but are not confined to- nitrogen oxides (NOx), primarily nitrogen dioxide (NO₂), sulfur dioxide (SO₂), Sulphur Oxides (SOx) and particulate matter (PM - PM_{2.5} & PM₁₀).

The main research question is “to what extent renewable energy could assist Turkey in approaching EU and WHO standards in air quality?”.

Table: EU standards and WHO guideline values on pollutants

EU Air Quality Directive				WHO Guidelines	
Pollutant	Averaging period	Objective and legal nature and concentration	Comments	Concentration	Comments
PM _{2.5}	Daily			25 µg/m ³	99 th percentile (3 days/year)
PM _{2.5}	Annual	Limit value, 25 µg/m ³		10 µg/m ³	
PM ₁₀	Daily	Limit value, 50 µg/m ³	Not to be exceeded on more than 35 days per year	50 µg/m ³	99 th percentile (3 days/year)
PM ₁₀	Annual	Limit value, 40 µg/m ³		20 µg/m ³	
O ₃	Maximum daily 8-hour mean	Target value, 120 µg/m ³	Not to be exceeded on more than 25 days per year, averaged over three years	100 µg/m ³	
NO ₂	Daily	Limit value, 200 µg/m ³	Not to be exceeded more than 18 times a calendar year	200 µg/m ³	
NO ₂	Annual	Limit value, 40 µg/m ³		40 µg/m ³	

Source: <https://www.eea.europa.eu/themes/air/air-quality-standards>

The future contractor should outline in the proposal what type of emission will be (primarily) analyzed and why.

Geographic scope of analysis

The potential contractor should also outline in the proposal whether a regional focus –especially related to regions that are heavily impacted by air pollution caused by electricity generation assets- is warranted and if it is, which regions need to be focused on.

Ideally, the analysis should have a national scope. However, due to variations in the local air pollution (and/or pollutants) intensity caused by electricity generation, a geographic focus area could be proposed (e.g. regions that are heavily impacted by air pollution caused by electricity generation)

3.4 Scenarios

For sake of comparison, the benefits need to be calculated for three different power system scenarios. For each scenario, the installed capacity of renewables (in terms of MW) will serve as the main independent variable that needs to be taken into account in order to assess prospective impacts and/or developments on the relevant “cobenefit” area. The scenarios that need to be analyzed will be reassessed by IASS at the start of the project, in accordance with the outcome of discussions with political partners on the ambitious renewables scenario, which are yet to be concluded.

Three prospective scenarios that are planned to be utilized are as follows:

- Current Policies Scenario (CPS): Based on current targets and policies, CPS only includes those policies firmly enacted as of mid-2018 yet does not include any policy intervention and/or target that is not in place right now.
- New Polices Scenarios (NPS): Incorporates existing energy policies, in addition to targets and policy interventions in the pipeline, which are likely to stem from the implementation of announced policy intentions. This could include introduction of new RERAs (Renewable Energy Resource Area) for solar, wind and storage in Turkey, as well as the targets for annual renewable energy capacity additions for the next decade.
- Advanced Renewables Scenario: An ambitious scenario that is based on a renewables energy uptake substantially beyond the currently existing targets and policy tools, as well as those that are in the pipeline.

3.5 Work plan

The contractor is required to develop the structure and outline of the report. The work plan should include but not necessarily be limited to the following activities:

Executive summary

Include a 2-4 page executive summary, highlighting the major findings and quantifications. These findings should be presented in a simple, non-technical language.

Review of relevant literature

Review of relevant literature; describe state of research, existing knowledge and gaps, give an overview on methodologies;

Description of methodology and scenarios

Explain selection of methodology to be used in the analysis and describe it.

- Emissions / pollutants to be analyzed
- WHO and EU standards that will serve as the benchmarks in the analysis
- Geographic scope of analysis
 - o An umbrella assessment of the air pollution caused by power generating assets in Turkey, including an overview of intensely polluted regions / cities / geographical units.
 - o Selection criteria for geographic areas that are proposed to be focused on.
- Scenarios of future electricity mixes (to be determined by IASS at the start of the project)
- Methodology that will be employed in the analysis
- Data sources

Quantification of Impacts of Increased Deployment of Renewable Energy Sources on Air Quality Due

Calculation of prospective changes in air quality and levels of selected pollutants due to increased deployment of renewable energy sources in power generation. This analysis will take into account different scenarios regarding the share of RES in Turkey's power mix and/or installed capacity.

The analysis is expected to provide an assessment on the extent to which increased deployment of RES (as suggested in different scenarios) could help Turkey meet air quality standards of the European Union (EU) and World Health Organization (WHO).

Outlook chapter highlighting policy/regulatory adjustments

In this chapter, the contractor should shortly analyze the current regulatory framework regarding air quality related to power generation in Turkey and propose various policy modification which could help to harness this co-benefit in the future (3-5 pages in total).

Links with SDG implementation

The analysis is expected to include a brief evaluation on the link of air quality with SDGs and how the particular socio-economic benefit area could contribute to Turkey's achievement of sustainable development indicators and goals. (2-3 pages in total)

3.6 Duration of the work and expected outputs

The duration of the co-benefits assessment analyses is from 01 of October 2018 to 31 of March 2019. Expected outcomes:

- 26 October 2018: Methodology and inception report
- 14 January 2019: Preliminary result of study and reporting
- 28 February 2019: Draft version of final report
- 31 March 2019: Submission of final report

The final report should include a 2-4 page executive summary, highlighting the major findings and quantifications. These findings should be presented in a simple, non-technical language. Policy recommendations should be part of an outlook chapter.

The findings of the report and the socio-economic benefits should also be linked to the Turkey's SDG process.

3.7 Expertise required

The proposed COBENEFITS study shall be conducted by a team of at least four experts, who should have the following profiles:

- One expert with at least 5 years' experience in conducting quantitative analyses on co-benefits of climate change mitigation and renewable energies. She/He would be the team leader;
- At least one expert with at least 3 years relevant experience and with a technical background in economics, political sciences, electrical engineering, climate change, science or other relevant energy related disciplines.
- The team is expected to include an expert with expertise in the national climate and energy debates.
- The experts should have excellent skills in methodologies for assessing co-benefits of renewable energies. English will be the working language. The final report must be presented in English.

For each specialist proposed, a curriculum vitae must be provided of no more than two pages setting out their relevant qualifications and experience.

3.8 Reporting and documentation

The study must be presented in the format given by IASS. A draft version of the report in electronic format is to be presented to IASS for comments by 28 of February 2019. Comments from the concerned authorities should be expected by 15 of March 2019. The service provider will take into account all comments received when preparing the final report. The final report in English is to be submitted by 31 of March 2019.

3.9 Copyright and right of use

In the contract to be signed following the acceptance of an offer it is set out that the Contractor will grant IASS the exclusive and unrestricted right of use of his/her own work results (including data, photographs, illustrations and graphs). The right of use particularly includes the types of use mentioned in § 15 of the German Copyright Act (UrhG) and also processing and redesigning.

4 Technical proposal

Evaluation criterion 1: Expertise of Firm/Organization

- i. A brief description of bidder as an Entity: Provide a brief description of the organization/firm submitting the proposal, its legal mandates/authorized business activities, the year and country of incorporation, research fields and/or types of activities, and approximate annual budget.
- ii. Financial Capacity: Provide the latest Audited Financial Statement (Income Statement and Balance Sheet) duly certified by a public accountant, and with authentication of receiving by the Government’s Internal Revenue Authority.
- iii. Track Record and Experiences: Provide the following information regarding research/corporate experience within the last five years which are related or relevant to those required for this Contract.

Name of project	Client	Contract Value	Period of activity/status	Types of activities undertaken	References Contact details

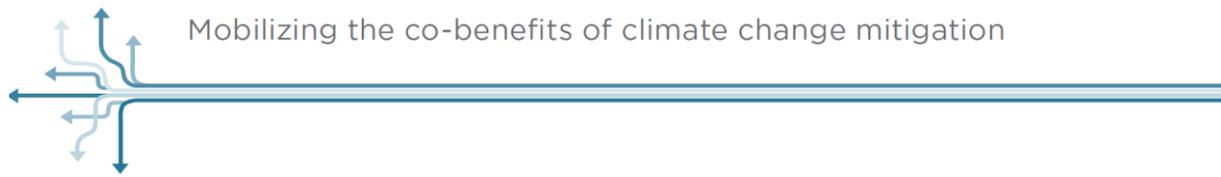
Evaluation criterion 2: Approach and Implementation Plan

This section should show the proposer’s responsiveness to the specification by identifying the specific components proposed, addressing the requirements, as specified, point by point; providing a detailed description of the essential performance characteristics proposed, and demonstrating how the proposed methodology meets or exceeds the specifications.

- i. Approach to the work required: Please provide a detailed description of the methodology for how the organization will achieve the ToR of the study, keeping in mind the appropriateness of local conditions.
- ii. Time schedule: Provide a clear time schedule that reflects the activities according to the work plan and expected outputs.
- iii. Subcontracting: Explain whether any work would be subcontracted, to whom, how much percentage of the work, the rationale for such, and the roles of the proposed sub-contractors. Special attention should be given to providing a clear picture of the role of each entity and how everyone will function as a team.

Evaluation criterion 3: Personnel

- i. Describe the overall management approach toward planning and conducting the study.



- ii. Provide the CVs (each one no more than two pages) for key personnel that will be provided to support the COBENEFITS assessments. CVs should demonstrate qualifications in areas relevant to the scope of the study.
- iii. Staff time allocation: Provide a spreadsheet to show the activities of each staff member and the time allocated for his/her involvement.

Technical evaluation criteria account for 60 %.

