



Institut international du Sustainable développement

Call for Proposals: analysis of the energy system impacts of fossil-fuel subsidy reform in Indonesia

11 June 2013

Background and Project Overview

The Global Subsidies Initiative (www.iisd.org/gsi), a programme of the International Institute for Sustainable Development (IISD-GSI) is undertaking a project with the Asian Development Bank to identify and analyse fossil-fuel subsidies in three ADB-member countries: India, Indonesia and Thailand. IISD-GSI is working with local research partners in each country to develop the following:

- 1. Inventory of fossil-fuel subsidies, including:
 - a. Subsidies for the consumption of fossil fuels and electricity
 - b. Subsidies for the production of one fossil fuel: oil, natural gas or coal
- 2. Analysis of the impacts of fossil-fuel subsidy reform, including modeling:
 - a. Social and economic impacts
 - b. Energy system impacts
 - c. Macro-economic impacts
- 3. Assessment of social safety nets that can be used in each country to minimize the negative impacts of reform.

This call for proposals is focused on work package 2b – analysis of impacts on the energy system of reforming fossil-fuel subsidies, in Indonesia. Proposals which also include modeling of macro-economic impacts – work package 2c – will be favourably evaluated.

The work will have a quantitative nature and will require the use of a suitable model of Indonesia's energy system. The deadline for the completion of the work package is 1 November 2013, therefore the consultant is expected to be an experienced user of the model they propose and to have the relevant data for modeling the Indonesian energy system. The assignment is most likely to suit a team working within an institute.

Similar work is being undertaken for the project in India and in Thailand, in these cases using the MARKAL model. There is the opportunity for the exchange of ideas and findings between the research

www.iisd.org/gsi

©2012 The International Institute for Sustainable Development





teams in the three countries, across all work packages. The chosen consultant is expected to be available for a mid-project workshop in the second half of August, likely to be held in Jakarta.

Objectives and Scope

The objective of the work is to use an energy system model—to be selected by the consultant—to analyze the impact of various scenarios relating to fossil-fuel subsidy reform in Indonesia. Impacts will be confined to the domestic energy market. The scenarios will include:

- the **reform of consumer subsidies**, such as an increase prices paid for one or more fossil fuels or electricity, for one or more consumer groups; and
- the **reform of producer subsidies**, such as increased production or transmission costs for electricity.

Input data will be supplied from Work Package 1 of the project (the identification and estimation of consumer and producer subsidies). Scenarios will be determined in consultation with GSI as appropriate.

Methodology

The IISD-GSI has a well-established definition of 'subsidy' and methodology for undertaking the research. The definition and methodology are described in detail in the Analytical Framework for the study, submitted to the Asian Development Bank.

Model choice

The model should be suitable for the investigation of energy system impacts. It must have sufficient resolution of the energy system to assess the impact of changes in energy supply on energy prices, demand, intensity and emissions. It should provide an integrated framework allowing the calculation of impacts across the entire energy system.

Scenarios of Subsidy Reform

Any subsidy reform can be described using four characteristics:

- 1. The fuel(s) and consumer group(s) it applies to;
- 2. Scale of subsidy reform (absolute financial cost or change to price);
- 3. Phasing of reform;
- 4. Re-allocation of savings (to general budgets, specific activities, etc.)





international du

Modeling Consumer Subsidy Reform

Consumer subsidy reform will lead to an increase in the prices paid for one or more fossil fuels or electricity, for one or more consumer groups. Price increases can be expected to lead to:

- 1. Switching between fuels;
- 2. A reduction in fuel demand.

Responding to these two expected impacts of price changes:

- 1. We can expect to see fuel switching, but how much, and how realistic the results are considered to be, depends on both model structure and operation. An investigation of the impacts is indicated;
- 2. Some models are driven by exogenous projections of useful energy demand, and may therefore have no internal way to reduce this demand in response to price changes of one or more fuels.

Modeling Producer Subsidy Reform

The impacts of producer subsidy reform should be assessed. The following generic cases can be considered, with producer subsidy reform leading to:

	Case
1	Decreased levels of exploration for one or more fossil fuels
2	Increased production costs for one or more fossil fuels
3	Increased prices of fossil fuels used for electricity generation
4	Increased cost of building electricity generation plant
5	Increased cost of building refineries
6	Increased costs of transmission, distribution or storage, for electricity or one or more fossil
	fuels

For each country considered within the study, case '3' – an increase in prices of fossil fuels to electricity generators - will be considered.

Other cases may or may not be required - this will be a function of the Work Package 1b, which will analyse and estimate a specific element of producer subsidies. For Indonesia, the work will focus on a detailed assessment of the electricity system. The modellers will be provided with details of the specialised element, and later the specific data needed to model it, from WP1b during the project.

Results format

Results reported to include, disaggregated appropriately:

- System costs (undiscounted and net present value)
- Prices of energy products





- Energy demand
- **Energy intensity**
- Emissions (GHGs or CO₂, NOx, SOx, others if available) ٠

For base year (2010), and then for every 5 years over the 20 year projection period.

Further details can include:

- Costs of parts of the system, for example energy production (undiscounted and net present • value)
- Investment requirements, by sector (undiscounted and net present value)
- Electricity generation capacity and output, by fuel and technology, and age of plant
- Refining capacity and output
- Prices of products

Tasks and Timing

There is little experience in modeling the impacts of energy subsidy reform, particularly on the producer side. As such the project for the ADB represents ground-breaking work, and an approach will be taken which:

- Investigates the potential of models to assess the various impacts of subsidy reform; •
- Builds up understanding and capabilities step by step, taking account of the findings of each step to inform how to approach the next step.

Task I	Description	Timing & Output
A. Estal	blishing the model's capabilities	
A1	Provide a model description, to include: environmental indicators included: base year:	Due date: 19 July 2013
	projection period; how upstream fuel supply is modelled (imports and any categorisation of domestic production); how electricity generation is modelled; the disaggregation of consumers; whether transport other than land is included; the source of demand projections.	Output: a document from an existing source would be sufficient
A2	Describe how consumer price reforms would be modelled. Conduct some exploratory runs of	Due date: 26 July 2013
	changes to prices for various fuels and consumer groups to establish how responsive the model is.	Output: Short written report and full numerical details of the model runs undertaken and their results
A3	Describe how the 6 generic case studies for producer reform could be modelled, including what changes	Due date: 26 July 2013
	would be needed to the model, what new data	Output: 1/2 page description per issue.
A4	Describe how the model, along with an external tool	Due date: 2 August 2013





International Institut Institute for international du Sustainable développement Development durable

	such as a spreadsheet, could be used to make					
	demand projections responsive to price changes	Output: a short technical note				
B. Model Runs and Reporting						
B1	Develop the data set and model in order to run	Due date: 13 September 2013				
	consumer and producer subsidies scenarios as					
	supplied by WP1a and WP1b (end-June 2013)					
B2	Conduct the initial model runs. Provide results to	Due date: 27 September 2013				
	WP2a (Social Impact Modelling) and to WP2c					
	(Macro-economic indicators), such that revised	Output: presentation to all project				
	demand projections to be made and impacts on	partners at mid-project workshop in				
	economic indicators to be calculated	August				
B3	Take revised projections from WP2a and WP2c,	Due date: 18 October 2013				
	update demand projections and make final model					
	runs					
B4	Produce final report. To include: details of the data	Due date: 1 November 2013				
	and methodology used, and results obtained, for					
	Tasks A1-B3 inclusive**	Output: final report				

**The modeling team should progressively develop written materials for the final report as they proceed through tasks A1-B3.

In addition, the researchers are expected to:

- 1. Participate in the ADB mid-project workshop to be held in August 2013. Location to be confirmed (travel costs will be covered by IISD-GSI).
- 2. Provide regular updates to IISD-GSI and participate in project meetings and calls as required.

All documents will be written in clear English. Proper referencing is an important requirement of all research conducted for IISD-GSI. Researchers must use APA style1 for all references and provide weblinks to information sources where relevant. Plagiarism is strictly prohibited.

Optional Task: Modeling Headline Macro-economic Indicators

The project also requires the modeling of headline macro-economic indicators (this is Work Package 2c).

The indicators required are shown in the table below. It is expected that the indicators will be obtained through the use of an existing Computable General Equilibrium (CGE) model run by the consultant. Results from this work package are also required by 1 November 2013.

Proposals which include the modeling of macro-economic indicators will be rated more highly than those that do not.





International Institut Institute for international du Sustainable développement Development durable

Sector	Macro-economic indicator	
Households	1.	Disposable income
	2.	Energy expenditure
Government	1.	GDP growth rate
	2.	Inflation
	3.	Total budgetary expenditure
	4.	Subsidy expenditure

Resources

The budget for this research is up to USD 20,000, inclusive of any taxes payable. The research assignment must be completed by 1 November 2013.

Proposals

Format and content

The proposals should be no longer than 5 pages and should address the following:

- Which model will be used
- The year to which the model is currently calibrated
- The strengths and weaknesses of this model in modelling the impacts of subsidy reform on the energy system
- The consultant's experience is using the model, giving examples of what it has been used for
- The consultant's experience on looking at issues of subsidy reform, energy pricing and energy planning
- An assessment of what work would be needed to update the model and/or underlying database in order for it to be suitable for subsidy impact analysis
- Comment on where difficulties in applying the methodology could arise
- A commitment to deliver the tasks required by the dates specified in this proposal, or a proposal of alternative dates (noting that there is little room for manoeuvre in the project delivery schedule).

In addition, CVs of the lead researchers should accompany the proposal.

IISD-GSI is very happy to enter into dialogue with any consultants considering submitting a proposal. IISD-GSI's working style is highly collaborative.

Timeline for submission

Please submit proposals by 28 June 2013 to: Ms. Tara Laan, GSI Research Associate, IISD: <u>Tara.laan@gmail.com</u>