

FINDING ENERGY SUBSIDY SAVINGS FOR MALAYSIAN CITIES

by Carlos de la Torre
*Malaysia Sustainable Cities Program,
Massachusetts Institute of Technology*

Abstract

Authorities around the world have adopted fossil fuel energy subsidies for price stability, developmental, and equity considerations—but those subsidies have come at a considerable fiscal and environmental cost. As a result, several dozen top-down initiatives have been implemented to reform these subsidies. Many of those initiatives, however, proved difficult to implement, as sponsors backtracked and key stakeholders refused to accept them. The result was continued economic inefficiencies, social inequities, and political instability. This paper reviews past subsidy-reform episodes to identify barriers to successful reform; develops a series of simple steps that a hypothetical country could take to incorporate a bottom-up or consensus building approach that would complement the prevailing top-down approach; and uses the steps outlined herein to propose an energy subsidy reform package for Malaysia, the savings from which are estimated at 1.1 percent of the nation's gross domestic product (GDP).

Introduction: energy subsidies and their unintended consequences

Energy subsidies are government or societal transfers to consumers or producers [1]. A consumer subsidy arises when the price for a good or service paid by consumers is below a specific “reference price.” For example, for petroleum and similar products, the reference price used to calculate subsidies is the international price adjusted for distribution and transportation costs. A second consumer subsidy arises in the form of untaxed purchases of goods that—based on efficiency and fiscal grounds—should have an environmental charge, a consumption tax, or both levied upon them. Finally, on the producer side, a subsidy exists when fossil fuel enterprises receive tax incentives, government loan guarantees, inputs below market values, or direct transfers from the budget.

Energy subsidies offer several advantages to consumers and producers. For consumers, they provide buffers against changes in international oil prices, and at the same time support energy companies as a component of industrial policy. They also support export-oriented firms

through the underpricing of energy inputs; and in cases where a government lacks the capacity to administer targeted social programs, provide low-income groups access to energy services[2].

In recent years, several unintended consequences of these subsidies have become evident. Energy subsidies have been associated with fiscal imbalances, displaced expenditure in education and health services, overinvestment in road infrastructure, overconsumption of energy and transportation services, underinvestment in existing utilities with a below-cost of-provision tariff policy; underinvestment in renewable energy; global warming, local air pollution and traffic congestion; and inequity as subsidies are captured by higher-income households [1, 3, 4].

Recent studies place the cost of subsidies at 6.5 percent of 2015 world GDP [1], approximately twice the average world GDP growth rate between 2012 and 2015 [13]. Of this amount, below-market prices (or pre-tax consumer subsidies) for electricity and petroleum products are estimated at 0.4 percent of world GDP, while untaxed negative indirect impacts (i.e., post-tax consumer subsidies such as global warming, air pollution, traffic congestion and foregone revenue) are estimated at 6.1 percent of world GDP [1]. These estimates are conservative, given that they exclude tax incentives, government loan guarantees and other producer subsidies enjoyed by fossil fuel companies [5].

Recognizing the deficiencies associated with energy subsidies, many governments have attempted to reform them. The primary motivation for such reforms has been to improve the government's fiscal position [3]. In the surveyed initiatives, a majority of the processes used to introduce reforms appear to be either (1) executive orders, or (2) executive orders followed by budget measures that are approved by the relevant legislative body, and which involve, in several cases, a limited number of key stakeholders such as the Ministry of Finance and high ranking executive branch officials [1, 3, 4, 6]. Regarding both categories, many governments in the surveyed sample appear to have implemented a top-down approach, due to that approach's perceived expediency, and reflecting the belief that the information at hand was reliable enough.

In many cases, however, that approach failed. For example, Clements et al. [3] found that 16 of 28 reforms (58 percent) in 19 countries were unsuccessful or were reversed within a year due to (1) a lack of confidence on the part of the population in the ability of governments to reallocate the resulting budgetary savings to the next best alternative, for the overall benefit of society; (2) concerns that vulnerable groups would be left unprotected; and (3) an understanding that, in the absence of a capacity to administer targeted social programs, subsidies were a mechanism to distribute the benefits of natural resource endowments to the population of the country.

The relative lack of support for top-down initiatives and the low level of stability of reform outcomes could have many causes. For example, it could be the result of (1) little or no attention being paid to a dissatisfied

stakeholders, resulting in instability of subsidy reform programs, because decisions can be reversed or modified over time, (2) a focus on complex, onerous executive and parliamentary procedures that can deter most stakeholders from pursuing practical and more direct solutions, (3) a lack of interest in promoting debate and discussion that can identify and reflect stakeholders' interests, which would lend legitimacy to an eventual subsidy reform decision, and (4) a heavy reliance on the power and influence of the most skilled parliamentarians and executive branch members, given that dense rules can enable and encourage manipulation of a political/legislative process by the few who do understand it, and thus can control the process and outcomes. In sum, this view suggests that the farther stakeholders are from the decision-making process, the less efficient, less equitable, and less stable the reform outcomes are likely to be [7, 8].

An alternative approach

This section describes a series of simple steps that a hypothetical country could take in order to incorporate a bottom-up approach to complement the prevailing top-down approach, and thereby to increase the likelihood of an energy subsidy reform succeeding. The steps described reference the enterprise architecture framework in Nightingale and Rhodes [9] and the consensus building approach (CBA) in Susskind and Cruikshank [8].

Step 1. Ensure that the appropriate stakeholders' interests are identified and adequately represented, so that the full range of perspectives and all available local knowledge can be tapped. For example, in the case of an electricity tariff reform in a hypothetical country, the stakeholders represented could be: (1) the state-owned electricity utility; (2) the Ministry of Finance; (3) the Prime Minister's Office; (4) the consumers of electricity services; and (5) the Ministry of the Environment and environmental groups. We then identify how these stakeholders interact with each other. For example, consumers derive a net benefit if their willingness to pay—in economic terms—is higher than what they actually pay for electricity to the utility. Likewise, the Ministry of Finance gains revenues if the expenses of the utility are taxed, while the utility gains if the Ministry provides a tax incentive or a loan guarantee.

Step 2. Engage in joint fact-finding to generate a shared understanding of the current state of the “subsidy” system and how the key variables of that system interact. Once it is clear who will participate in collecting the data, what will the scope of the study be, and what role will external experts play? As for the variables, stakeholders may realize—for example—that under the current system, energy subsidies lead to more energy consumption, less government revenues, and a net loss for society's welfare (e.g., as societal benefits are reduced by local air pollution, traffic congestion, and other indirect costs), compared to a context in which no energy subsidies exist.

Step 3. Develop alternatives, or packages of alternatives, and ask the stakeholders to prioritize them. In this step, the stakeholders first define the key issues for discussion and the clarifying decision rules. Then the group generates alternatives. Each alternative could include, for instance, a change in (1) tariff levels, (2) tax incentives that will affect the cost of capital, or (3) both. Then, two or three alternative packages could be developed for a final evaluation.

Step 4. Select the agreement that meets the criteria of stakeholders and that includes provisions for addressing future changes that may impact their agreement, such as new data, future disputes, or implementation failures. Here, stakeholders select the package—via majority voting, consensus, or a combination—that meets the selection criteria. The selected package would then be incorporated in a governmental budget proposal, which can be future-proofed by including contingent clauses (e.g., the package could be delayed under certain contingent clauses and/or expanded under other contingencies) so as to improve the expected savings [10, 11, 12].

There are a number of conditions that need to be met for the suggested approach to be effective and operational [8]. For example: (1) there are several potential agreements among stakeholders, and obvious opportunities to trade across issues that are valued differently, (2) all key stakeholders participate or and are open to negotiate, (3) a realistic deadline for reaching consensus has been imposed on the parties, (4) there is no better option available to the parties (i.e., stakeholders cannot count on meeting their interests through other channels), (5) the convener can confer on the neutral facilitator the autonomy he or she requires (or does not want to control the process and the outcome solely for personal gain), (6) no large power imbalances exist among the stakeholders, (7) there is a viable way to fund the consensus building effort, and (8) there is pressure to form a consensus building process (i.e., there is a deadline, a political mandate, and interest on the part of key stakeholders).

Applying a complementary bottom-up approach to energy subsidy reform in Malaysia

Energy subsidies in Malaysia are large and prevalent. For example, the fiscal and environmental costs of these subsidies were estimated at \$29.4 billion, or 9 percent of GDP [4], and they have been concentrated—on the consumption side—on petroleum, natural gas, and coal products that were either below market prices or excluded an environmental charge and/or a consumption tax. In December 2014, Malaysian authorities reduced fuel subsidies on regular unleaded gasoline and diesel, taking advantage of the sharp decline in international oil prices. This measure reduced the fiscal and environmental costs of these subsidies, which declined to \$24.2 billion or 6 percent of GDP in 2015 [4].

Despite these advances, existing energy subsidies remain significant and may continue unreformed under less favorable economic conditions. In light of this challenge, we use the steps outlined previously to develop a hypothetical reform package using a consensus building approach. It aims to capture 50 percent of the total potential savings in one or two fiscal years (e.g. annual government budgets).

Step 1. Ensure that the appropriate stakeholders interests are identified and adequately represented, so that the full range of perspectives and all available local knowledge can be tapped. Table 1 captures the positions of several stakeholders represented, such as (1) Petronas, (2) the Ministry of Finance (MoF), (3) the Prime Minister's office and Energy Commission (focusing on society's point of view), (4) the consumers of electricity and non-electricity services, and (5) the Ministry of the Environment and environmental groups.ⁱ We model how stakeholders interact with each other, as illustrated in Table 1. For example, we assume that consumers derive a benefit from the subsidy provided by the company, while the Ministry of Finance gains revenue if the expenses of the company are taxed. The company, in turn, gains if the Ministry provides a tax incentive or a loan guarantee.

Step 2. Engage in joint fact-finding to generate a shared understanding of the current state of the "subsidy" system and how the key variables of that state interact. The current state can be approximated by developing a simple cash flow model of Petronas's operations, and then extending it to a benefit-cost and impact analysis of those same operations. These analyses can be prepared with input from a technical team with staff from Petronas, the Ministry of Finance, the Ministry of the Environment, and external experts.

Table 1 (column I) presents the simple cash-flow model, which includes as its components (1) cash inflows, including consumer subsidies, if any; (2a) investment cash outflows, including taxes, tax incentives, and government loan guarantees, if any, and (2b) recurrent cash outflows, including taxes and tax incentives. The values are also shown as percentages of GDP.

We then estimate the economic benefits and costs of operations in column (II). We arrive at these economic benefits and costs by assuming (1) the demand price for a given unit equals the value of that unit to the buyer; (2) the supply price for a given unit equals the value of that unit to the seller; and (3) cost and benefits are compared to evaluate the current state and/or alternative future states from the point of view of society [14, 15]. Therefore, this benefit-cost statement includes (1) an estimation of the willingness to pay (cost of provision plus a consumer surplus assumption), (2) economic costs (cash outflows, net taxes), and (3) environmental costs.

Finally, in columns (III) to (V) of Table 1, we use the cash flow and benefit-cost profiles to arrive at the net impacts of Petronas's operations on other stakeholders, such as consumers of electricity and non-electricity

services, the Ministry of Finance, and the environment. Columns (I), (II) and (VI) of Table 1 summarize the positions for the company, society, and other stakeholders at 6.8, 11.6, and 4.9 percent of GDP, respectively.

| Company's Point of View Cash Flow Analysis | | Society's Point of View Benefit-Cost Analysis | | Other stakeholders' Point of View Impact Analysis | | | |
|---|---------------|--|-----------|--|--------------------|--------------------|---------------|
| | (I) | | (II) | (III) Users | (IV) Government | (V) Environment | (VI) Total |
| Cash Inflows | | Gross Benefits | | | | | |
| Revenues | 30.0 (1) CS | Benefit estimate | 35.3 (3) | 5.3 | | | 5.3 |
| Cash Outflows | | Gross Costs | | | | | |
| Investment costs | -5.5 (2a) PS | Investment costs | -5.9 (4) | | (0.4) | | (0.4) |
| Recurrent costs | -15.0 (2b) PS | Recurrent costs | -14.8 (4) | | 0.2 | | 0.2 |
| CIT | -2.7 | Environmental cost | -3.0 (5) | | | (3.0) | (3.0) |
| Net Cash Inflow | 6.8 | Net Benefits | 11.6 | 5.3 | 2.5 | (3.0) | 4.9 |

Source: Petronas Annual Reports, IMF Country Reports, Parry et al (2014).

Notes

(1) Revenues are cash inflows net of consumer subsidies, if any

(2a) Investment costs are cash outflows gross of taxes and net of tax incentives and loan guarantees, if any

(2b) Recurrent costs are cash outflows gross of taxes and net of tax incentives

(3) The willingness to pay estimate is the cost of provision plus a consumer surplus estimate

(4) Economic costs are cash outflows net of taxes

(5) An environmental cost is inputted related to gas and petroleum products, See Parry et al (2014)

Table 1. Current state—cash flow, benefit-cost and impact analyses of Petronas's operations (as a percentage of GDP)

Using columns (III) and (IV) in Table 1, we estimate the total potential size of energy subsidy savings at 2.8 percent of GDP. Thus, the energy subsidies that Petronas extends and obtains in the current state are:

- a subsidy provided to consumers estimated at 2.3 percent of GDP.ⁱⁱ
- a subsidy obtained from the government in tax incentives estimated at 0.25 percent of GDP.ⁱⁱⁱ
- a subsidy obtained from the government in loan guarantees estimated at 0.25 percent of GDP.^{iv}

Step 3. Develop options or packages asking stakeholders to prioritize them.

Alternatives 1 and 2 represent the initial hypothetical positions of the stakeholders.

1. *An alternative that would discontinue all subsidies*
 - a. The company provides to consumers several times the subsidies it receives from the government, and therefore the company would favor a reduction of existing consumer subsidies.
 - b. Consumers of electricity and non-electricity services would resist this alternative, since the increase in the price reduces their income. However, most of the change in price would fall on higher-income households. For example, in 2009, information from household expenditure surveys on electricity services indicated that the top 20 percent of income earners receive 3 times more than the bottom 20 percent, while the top 40 and 60 percent capture 54 and 73 percent of the subsidy, respectively [16].

c. Ministry of Finance officials and environmental representatives support this alternative, as it is perceived as fiscally and environmentally sustainable. In addition, MoF officials are concerned that the tax and credit incentives stay with the company and are not passed fully as dividends to its sole shareholder, the government of Malaysia (GoM).

d. The Prime Minister's office would favor this alternative, because the overall state of the larger society is improved compared to the status quo.

2. *An alternative that would maintain all subsidies*

a. The company would prefer to maintain all or part of the tax and credit subsidies it receives from the government, at a level commensurate with the consumer subsidies the company provides.

b. This is the alternative preferred by consumers of electricity and non-electricity services, especially in the top 20 and 40 percent of the population who derive most of the benefits of the consumer subsidies.

c. Ministry of Finance officials and environmental representatives do not support this alternative, as it is perceived as fiscally and environmentally unsustainable. Also, they may feel that this alternative disproportionately benefits higher-income groups based on household expenditure data; therefore, they would like to see the resources reallocated elsewhere in the budget.

d. The Prime Minister's office does not favor this alternative as the position of society is reduced compared to what otherwise would be in the absence of subsidies.

Alternatives 3, 4, and 5 could emerge in subsequent rounds of discussions.

3. *An alternative that would (1) reduce all subsidies by one half within a month, and (2) provide cash transfers to the bottom 20 percent*

4. *An alternative that would (1) reduce all subsidies by one half within a year, and (2) provide cash transfers to the bottom 20 percent*

5. *An alternative that would (1) reduce all subsidies by one half within a year, (2) provide cash transfers to the bottom 20 percent, and (3) use one fifth of the resources saved annually to fund a subsidy program for stakeholders negatively affected by the tariff change (for example, a universal tertiary education subsidy program that is typically captured by higher and middle income consumers)*

Finally, as it becomes clear that the reduction of subsidies within a year would delay other potential benefits to the consumers of electricity and non-electricity services (in all income categories), the stakeholders may agree on Alternative 6 in a final round of negotiations.

6. *An alternative that would (1) reduce all subsidies by one half within a month, (2) provide cash transfers to the bottom 20 percent, and (3) use one fifth of the resources saved annually to fund a subsidy program for stakeholders negatively affected by the tariff change.*

Step 4. Select the agreement that meets the criteria of stakeholders. Under the selected alternative, the net positions for company, society, and other stakeholders would be now 6.9, 11.7, and 4.8 percent of GDP, respectively (and presented in Columns (I), (II) and (VI) of Table 2).

| Company's Point of View <i>Cash Flow Analysis</i> | | Society's Point of View <i>Benefit-Cost Analysis</i> | | Other stakeholders' Point of View <i>Impact Analysis</i> | | | |
|---|---------------|--|-------------|--|-------------------|--------------------|--------------|
| | (I) | | (II) | (III) | (IV) | (V) | (VI) |
| | | | | <i>Users</i> | <i>Government</i> | <i>Environment</i> | <i>Total</i> |
| Cash Inflows | | Gross Benefits | | | | | |
| Revenues | 31.1 (1) CS | Benefit estimate | 35.3 (3) | 4.3 | | | 4.3 |
| Cash Outflows | | Gross Costs | | | | | |
| Investment costs | -5.8 (2a) PS | Investment costs | -5.9 (4) | | (0.2) | | (0.2) |
| Recurrent costs | -15.0 (2b) PS | Recurrent costs | -14.8 (4) | | 0.2 | | 0.2 |
| CIT | -3.1 | Environmental cost | -2.9 (5) | | | (2.9) | (2.9) |
| New Subsidy | -0.3 | | | 0.3 | 3.1 | | 3.1 |
| Net Cash Inflow | 6.9 | Net Benefits | 11.7 | 4.5 | 3.2 | (2.9) | 4.8 |

Source: Petronas Annual Reports, IMF Country Reports, Parry et al (2014).

Notes

(1) Revenues are cash inflows net of consumer subsidies, if any

(2a) Investment costs are cash outflows gross of taxes and net of tax incentives and loan guarantees, if any

(2b) Recurrent costs are cash outflows gross of taxes and net of tax incentives

(3) The willingness to pay estimate is the cost of provision plus a consumer surplus estimate

(4) Economic costs are cash outflows net of taxes

(5) An environmental cost is imputed related to gas and petroleum products, See Parry et al (2014)

Table 2. Future State - Cash Flow, Benefit-Cost and Impact analyses of Petronas's operations (as a percentage of GDP)

Under the selected alternative, we estimate the total size of energy subsidy savings at 1.1% of GDP, presented in columns (III) and (IV) in Table 2, which can be disaggregated as

- a saving obtained from consumers subsidy reductions estimated at 1.1 percent of GDP (The results assume price elasticities of -0.25 to -0.5 for different types of fuel and electricity demand [17, 18, 19].)
- a saving from government tax incentive reductions estimated at 0.13 percent of GDP,
- a saving obtained from the government in loan guarantees reductions estimated at 0.13% of GDP, and
- an additional non-fossil fuel subsidy for stakeholders negatively affected by price increases, estimated at 0.3 percent of GDP.

Conclusion

The scenario described in the previous section is one of many possible negotiation outcomes that could occur. The simulated negotiation shifted subsidies across sectors (from energy to education, for example) and across groups over time (in our case above, from pro-subsidy groups to a pro-fiscal, pro-environmental ones), while generating subsidy savings for additional poverty alleviation expenditure, additional reduction in debt, or both, to the benefit of the government authorities. However, the negotiation agreement did not incorporate contingent clauses, despite the important additional savings they may provide [10, 11, 12].

The negotiation outcome was able to move beyond the two initial alternatives because (1) the convener was one key stakeholder (either the Prime Minister's office, Ministry of Finance, and/or the company), (2) three key stakeholders (Prime Minister's office, Ministry of Finance, and the company) perceived gains from this process and were actively involved, and (3) the reform effort allowed enough time to go through the suggested steps.

There are at least two references of top-down/bottom up interactions in public sector reform in Malaysia that parallel features of the steps described above. The first reference is in the area of budget management reform, and involves Malaysia's Ministry of Finance, government ministries, and spending units [21]. In this case, this group of stakeholders is trying to improve the interaction between the top-down strategic guidance and the bottom-up detailed process of costing existing and new policies, and allocating resources within the overall expenditure ceilings.

The second reference is in the area of service delivery reform and involves the GoM's Performance Management and Delivery Unit (PEMANDU), service delivery units, and consultations with the public [22]. In this case, this group of stakeholders is trying to design and implement service delivery reforms by better aligning strategic government priorities in finance, education, and safety with existing services delivered by government agencies to the public. Therefore, as these two examples suggest, the suggested approach in this paper is not entirely new to Malaysia..

As Costantino and Merchant [20] write,

“(in) expert-imposed systems, consultants (usually from outside the organization) diagnose the disputes, design a new system based on what they think is best for the organization, and recommend that their design be adopted. Design is thus a product, not a process ... In stakeholders-derived systems, stakeholders actively participate in the design, which is the process, not a product. Stakeholders may be guided by an expert or specialist, but the design is done by the stakeholders and with the stakeholders, not for them.”

Can the stakeholders be engaged directly in this reform process to the improve equity, efficiency, and stability of reform outcomes? This is a question government authorities and other key stakeholders around the world will need to consider, as they move forward their energy subsidy reform agendas.

Acknowledgments

Lawrence Susskind and Kelly Hebbler-Dunning of MIT Dept. of Urban Studies and Planning (DUSP), and Amanda Giang of MIT Engineering Systems Division/Institute for Data, Systems, and Society (ESD/IDSS) provided valuable guidance and reviews. This paper also benefited greatly from consultations and discussions with many professionals, including Christopher Knittel, Jason Jay, Petro Lisowsky, Deborah Lucas, and Athanasios Orphanides (all of MIT Sloan School of Management); Richard de Neufville, John Deutch, Deborah Nightingale, Ignacio Perez, Donna Rhodes, and Noelle Selin, (all of MIT ESD/IDSS), Gabriella Carolini, Dayna Cunningham, David Geltner, Karen Polenske (all of MIT DUSP); David Coady, Kangni Roland Kpoda, and Manuel Coronel (International Monetary Fund); Federico Gil and Robert Taliercio (World Bank), and several Malaysian experts who provided valuable insights and data for this paper. Any errors or omissions are those of the author.

References

- [1] Coady, David, I. Parry, L. Sears, and B. Shang. 2015, "How Large Are Global Energy Subsidies?" IMF Working Paper No 15/105.
- [2] Commander, S. 2012 *A Guide to the Political Economy of Reforming Energy Subsidies*, IZA Policy Paper No. 52, Institute for the Study of Labor (December).
- [3] Clements, Benedict, David Coady, Stefania Fabrizio, Sanjeev Gupta, Trevor Alleyne, and Carlo Sdravovich, 2013, *Energy Subsidy Reform: Lessons and Implications* (Washington: International Monetary Fund).
- [4] Parry, I., D. Heine, E. Lis, and S. Li, 2014, *Getting Energy Prices Right: From Principle to Practice* International Monetary Fund.
- [5] Lucas, D., 2014, Inventory of support for fossil fuels—Estimating the support component of Loan Guarantees and Preferential loans, OECD.
- [6] Sdravovich, C, R. Sab, Y. Zouhar, and G. Albertin, 2014, *Subsidy Reform in the Middle East and North Africa Recent Progress and Challenges Ahead*. (Washington: International Monetary Fund).
- [7] Susskind, L., 2007, *Keynote Address: Consensus Building, Public Dispute Resolution, and Social Justice*, 35 *Fordham Urb. L.J.* 185.
- [8] Susskind, L. and J. Cruikshank, 2006, *Breaking Robert's Rules: The New Way to Run Your Meeting, Build Consensus, and Get Results*. New York.
- [9] Nightingale, D. and D. Rhodes, 2015, *Architecting the Future Enterprise*, MIT Press.
- [10] de Neufville, R. and S. Scholtes, 2011, *Flexibility in Engineering Design*, MIT Press.
- [11] Geltner, D., N. Miller, J. Clayton & P. Eichholz, 2014 "Commercial Real Estate Analysis and Investments" Third Edition, OnCourse Learning.

- [12] Susskind, L. 2015, *Good for You, Great for Me: Finding the Trading Zone and Winning at Win-Win Negotiation* (Public Affairs, New York).
- [13] International Monetary Fund, 2015, *Fiscal Policy and Long Term Growth*.
- [14] Harberger, A. C., 1971, "Three Basic Postulates for Applied Welfare Economics: An Interpretative Essay." *Journal of Economic Literature*. September, 9:3, pp. 785–97.
- [15] Jenkins, G., C. Kuo & A. Harberger, 2011, *Cost-Benefit Analysis for Investment Decisions*, Development Discussion Papers 2011-02, JDI Executive Programs.
- [16] Petronas (2014) annual report.
- [17] International Monetary Fund, 2015, *Malaysia: Selected Issues Paper*, March 03, Country Report No. 15/59.
- [18] Borenstein, Severin, 2009, "To What Electricity Price Do Consumers Respond? Residential Demand Elasticity Under Increasing-Block Pricing." http://faculty.haas.berkeley.edu/borenste/download/NBER_SI_2009.pdf.
- [19] Charap, J., A. Ribeiro da Silva, and P. Rodriguez, 2013, "Energy Subsidies and Energy Consumption—A Cross-Country Analysis" (Washington: International Monetary Fund).
- [20] Costantino, Cathy A. and Christina Sickles Merchant, 1995, *Designing conflict management systems: A guide to creating productive and healthy organizations*. San Francisco: Jossey- Bass. Chapter 4 (pp. 49-66).
- [21] International Monetary Fund, 2015, *Malaysia: Technical Assistance Report-Strengthening Outcome Based Budgeting* September 16, Country Report No. 15/266. May.
- [22] Sabel, C. and L. Jordan, 2015, *Doing, Learning, Being: Some Lessons Learned from Malaysia's National Transformation Program, Competitive Industries and Innovation Program (CIIP)*, World Bank Group.

Notes

ⁱ We note that analysis assumes a process where Petronas sells gas at subsidized price to generators and independent power producers (IPPs); generators/IPPs, in turn, sell power to Tegana Nasional (TNB), the electricity utility, at the controlled price; and finally, TNB supplies power at controlled tariff to consumers. In practice, part of the subsidy may stay with generators and with TNB to pay for the implementation costs of the subsidy program and raises the need to incorporate both actors as stakeholders

ⁱⁱ Difference between actual sales and potential sales as reported by the company in its financial statements

ⁱⁱⁱ Difference in deferred tax liabilities between 2014 and 2013 as reported by the company in its financial statements

^{iv} Taking as reference (1) capital expenditures of 6 percent of GDP; (2) 40 percent of capital expenditures are funded by loans; and (3) one half of loans are guaranteed.