

Lindebjerg, Eirik S.; Peng, Wei; Yeboah, Stephen

Working Paper

Do policies for phasing out fossil fuel subsidies deliver what they promise? Social gains and repercussions in Iran, Indonesia and Ghana

UNRISD Working Paper, No. 2015-1

Provided in Cooperation with:

United Nations Research Institute for Social Development (UNRISD), Geneva

Suggested Citation: Lindebjerg, Eirik S.; Peng, Wei; Yeboah, Stephen (2015) : Do policies for phasing out fossil fuel subsidies deliver what they promise? Social gains and repercussions in Iran, Indonesia and Ghana, UNRISD Working Paper, No. 2015-1, United Nations Research Institute for Social Development (UNRISD), Geneva

This Version is available at:

<https://hdl.handle.net/10419/148759>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



UNRISD

United Nations Research Institute for Social Development

Working Paper 2015-1

Do Policies for Phasing Out Fossil Fuel Subsidies Deliver What They Promise?

Social Gains and Repercussions in Iran, Indonesia and Ghana

Eirik S. Lindebjerg, Wei Peng and Stephen Yeboah

January 2015

UNRISD Working Papers are posted online to stimulate discussion and critical comment.



The United Nations Research Institute for Social Development (UNRISD) is an autonomous research institute within the UN system that undertakes multidisciplinary research and policy analysis on the social dimensions of contemporary development issues. Through our work we aim to ensure that social equity, inclusion and justice are central to development thinking, policy and practice.

UNRISD, Palais des Nations
1211 Geneva 10, Switzerland

Tel: +41 (0)22 9173020
Fax: +41 (0)22 9170650
info@unrisd.org
www.unrisd.org

Copyright © United Nations Research Institute for Social Development

This is not a formal UNRISD publication. The responsibility for opinions expressed in signed studies rests solely with their author(s), and availability on the UNRISD Web site (www.unrisd.org) does not constitute an endorsement by UNRISD of the opinions expressed in them. No publication or distribution of these papers is permitted without the prior authorization of the author(s), except for personal use.

Contents

Acronyms	ii
Acknowledgements	ii
Abstract.....	iii
1. Introduction	1
2. Country Case Study: Iran	2
2.1 Country background	3
2.2 The reform measures implemented	4
2.3 Distributional consequences of the increase in energy price.....	4
2.4 The social programme implemented	7
2.5 Political economy of the reform process	8
2.6 Summary.....	9
3. Country Case Study: Indonesia	10
3.1 Country background	10
3.2 Energy subsidies reform measures in 2005	11
3.3 Distributional consequences of the increase in energy price.....	11
3.4 The social programme implemented	12
3.5 Political economy of the reform process	13
3.6 Summary.....	14
4. Country Case Study: Ghana	14
4.1 Country background	15
4.2 The reform measures implemented	15
4.3 Distributional consequences of increase in energy prices.....	17
4.4 The social programme implemented	17
4.5 The political economy of the reform process	18
4.6 Summary.....	18
5. Comparative Analysis	19
5.1 Contextual factors.....	19
5.1.1 International factors.....	19
5.1.2 National factors.....	20
5.2 Process factors	21
5.2.1 Relationship between contexts, objectives and policy	21
5.2.2 Temporality and timing modalities.....	22
5.2.3 Compensation modalities	22
6. Conclusions	23
Bibliography	25

Acronyms

BLT	Bantuan Langsung Tunai cash transfer programme, Indonesia
CHCS	Community Health Compound Scheme
DML	Deregulation Mitigating Levy
FOB	Free On Board Prices
GDP	Gross domestic production
GHG	Greenhouse gases
GNPC	Ghana National Petroleum Company
GPRS II	Growth and Poverty Reduction Strategy, Ghana
IHEID	The Graduate Institute of International and Development Studies in Geneva
ILO	International Labour Organization
IMF	International Monetary Fund
IRNA	Islamic Republic News Agency, Iran
LEAP	Livelihood Empowerment against Poverty
LPG	Liquid Petroleum Gas
MEMR	Ministry of Energy and Mineral Resources, Indonesia
NHIS	National Health Insurance Scheme, Ghana
NIOC	National Iranian Oil Company
NIOPDC	National Iranian Oil Products Distribution Company
NPA	National Petroleum Authority, Ghana
PSIA	Poverty and Social Impact Assessment
TOR	Tema Oil Refinery
UNP	Unified Petroleum Fund
UNRISD	United Nations Research Institute for Social Development
USD	United States dollar

Acknowledgements

This research was conducted for UNRISD as part of an Applied Research Seminar at The Graduate Institute for International and Development Studies (IHEID). The authors would like to thank all commentators for their constructive suggestions. A special thanks to Pascal van Griethuysen, Peter Utting and Dunja Krause at UNRISD for their important support and inputs.

Abstract

Fossil fuel subsidies reform has been intensively debated and promoted as a concrete step towards sustainable development, with anticipated benefits of reduced carbon emissions, saved public spending, and improved social distribution. But does this “triple-win” policy deliver what it promises? This working paper focuses on the social “win”—the narrative of social and distributional gains of the energy subsidies reform.

The research follows a comparative analysis approach. Three countries were selected as target for in-depth case studies based on their diverse political, economic and social contexts: Ghana, Indonesia and Iran. We examine in each case the distributional effects of subsidy removal, the design and implementation of social programmes and their impact on welfare, as well as the political economy around sustainability of the reform. Based on comparative studies across the three cases, a set of political, economic and social factors are identified to have key impact on the social outcome of reforms. The key conclusions are as follows.

There is no quick fix for social “win”. Instead, the social outcome is influenced by a set of political, economic and social factors at different levels. Governments need to put the energy subsidies reform in the bigger context and manage the complex mix of influencing factors, to anchor the policy on a broad coalition of interests.

Long-term political commitment to subsidies reform is key. A clearly communicated commitment would help win trust from the public in energy subsidies reforms and support for the government to implement relevant policies. A long-term and gradual reform strategy which takes into account both immediate cushion and long-term distributional effects is essential to achieving social gains.

Social gain needs to have a prominent role in energy subsidy reforms. The three case studies indicate a clear dynamic between social gains and subsidy reform processes. Thorough analysis using a social lens approach can identify important factors to be taken into account for reform policies to be sustained and more importantly, deliver a social win. Rather than to be taken as a given, a social win from fossil fuel subsidy reforms requires the social dimension to be a central part of the reform policy.

Eirik S. Lindebjerg is consultant at the United Nations Environment Programme. Wei Peng is an independent consultant. Stephen Yeboah is research fellow at the Africa Progress Panel in Geneva, Switzerland.

1. Introduction

Environmental benefits, greater economic efficiency and increased funds for public spending—fossil fuel subsidy reform has been put forward as a first vital step towards a green economy. A large body of literature argues for a “triple win” scenario in phasing out these subsidies through reducing carbon emissions, reducing public debt, and leveraging funds for the government to invest in social protection.¹

However, there exist substantial obstacles to achieving this “triple win” outcome. So far, very few countries have successfully implemented energy subsidy reforms. Although subsidy reforms have been estimated to potentially reduce global CO₂ emission by 13 per cent by 2050 (Burniaux et al. 2009), few actual figures for emission reduction exist, partly due to the recent nature of most reforms. It has also been recognized that phasing out energy subsidies has a potential negative impact on the poor, and that measures have to be taken to offset this impact.² Certain reports have also looked into specific country-level social protection programmes for energy subsidy reform (Beaton and Lontoh 2010; Hassanzadeh 2012), yet there is a lack of comparative studies on the determining factors for the success or failure of these programmes.

This study examines the third of the three wins, that is, the narrative of the social and distributional gains of a fossil fuel subsidy reform. The overarching research question is: How important is the social dimension to fossil fuel subsidy reforms, and what economic and political factors influence the social outcomes of such reforms? Before looking into this question, the following sub-questions must be answered: (i) What are the distributional effects of a subsidy removal, and who are the vulnerable populations? (ii) Are the leveraged funds spent on social programmes, and to what extent do they benefit the most affected social groups? (iii) How do political structures affect the implementation and sustainability of such reforms? To address the questions above, we will look at three cases of recent energy subsidy reforms in selected countries and engage in comparative country-by-country analysis. With this, the report attempts to identify the key factors important for the social and distributional outcome of such reforms. It seeks to closely examine the social dimension of this proposed first step towards a green economy, and highlight its vital role in the pursuit of sustainable development.

The countries studied are Iran, Indonesia and Ghana, all countries with recent experience in cutting fossil fuel subsidies. Although the topic has been heavily debated, only a few countries have implemented large-scale subsidy reforms. The countries were also chosen to represent different geographical, economic, political, energy security and international contexts, to better understand the variety of factors that potentially can influence a reform process. The three countries have all been branded as success stories in the triple win debate. We will take a closer look at this proposition.

The study identifies the main linkages between subsidy reform and distributional impacts. We follow the “social lens” approach outlined by Cook et al. (2012) and examine how subsidy policy impacts different social groups and how the policies have been designed to minimize these impacts. By social impacts we mean consequences affecting the relations between social groups, income distribution and poverty. This is our main outcome variable. Together with other development indicators such as wage, education and health among low-income households, they form our criteria for policy

¹ Bacon and Masami 2006; World Bank 2008; Ellis 2010; Beaton and Lontoh 2010; Jackson 2011; IMF 2008, 2012, 2013a.

² IMF 2013a; Ellis 2010; World Bank 2008.

success on the social dimension. Social unrest and the source behind it is also a central factor in this aspect. Poverty is not only defined by the countries' respective poverty lines, but also in terms of vulnerability to changes. Vulnerability is here understood as the risk towards households' ability to provide basic needs, a probability of real income fall (Barrientos 2010; Mkandawire 2005). Some groups of low-income households will have a greater risk of real income reduction from energy price increases than others, and looking at standard policy indicators alone would not be sufficient for understanding the process of change resulting from subsidy reforms.

To facilitate comparative analysis, all three cases are analysed through the same analytical framework and have a common structure. This framework is grounded in the process of subsidy cuts, and examines (i) the energy price increases and its distributional effects, (ii) the social programmes established to mitigate these effects and (iii) the political process surrounding the implementation and durability of the reform. In the first step of this process, we look at the price effects of the reform programme. The effects of a fossil fuel price increase have been modelled in many general equilibrium analyses, and we use these results together with practical experiences to identify the impacts for different parts of the population. Second, we examine how the additional public funds generated from the subsidy removal are spent. We aim to identify social groups that benefit from these funds, and whether these leveraged funds address the distributional impacts of subsidy reforms, even more, whether they go one step further to exploit the distributional win outlined in the literature. Finally, we explore the political process surrounding the implementation of subsidy reform, whether it reflects the social effects of the reform, and how power relations influence the durability of the reform.

The comparative analysis was done by looking at the three aspects of subsidy reform outlined above across all three countries. Similarities between key processes were found, and variations examined. The comparative analysis tries to identify a set of factors influencing the social impact of subsidy reform. The different contexts of the three countries make this exercise challenging, but also provide variation and an opportunity to observe different factors at play. The main outcomes of our country studies were compared, and to avoid excessive simplification, sets of factors important in all three cases were identified. Rather than providing a shortlist of a few globally generalizable factors, we present conceptual categories of factors shown to have a substantial impact on the policy outcome in our cases.

The report has six main parts. The following three parts are case studies of Iran, Indonesia and Ghana. A detailed description of the reform process is presented for all three cases, as they represent the empirical base of our arguments. In the fifth part, we engage in a comparative analysis to identify the main common linkages between subsidy reform and distribution, as well as key economic and political characteristics influencing the social impacts of the reform. The final concluding part delivers the policy implications of this study.

2. Country Case Study: Iran

Few countries in the world have implemented an energy subsidy reform programme as substantial as Iran (Vagliasindi 2013). The centrally planned fossil fuel subsidy reform implemented from 2010 led to a drastic price increase and had vast economic consequences. According to official figures, it also resulted in substantial reductions in fossil fuel consumption (Hassanzadeh 2012:6). A lot of effort was made to make the

reform politically feasible, and it has not yet experienced backtrack as has been the case in many countries, illustrated here by the cases of Indonesia and Ghana. The reform programme was designed to follow the logic of increased efficiency, leveraged funds and social gains described above. The Iranian reform programme therefore provides an excellent opportunity to study the practical implementation of this logic. Iran is of special interest as one of the very few major oil exporting countries to have carried out such subsidy reforms (Karbassi et al. 2007:5178).

The Islamic Republic of Iran

Population (2013)	77.4 million
GDP (PPP) per capita, current international \$ (2013)	15,586
Gini coefficient (2005)	0.383
Poverty headcount ratio, < USD 2 per day (2005)	8%
Total fossil fuel subsidies (2013)	USD 83.9 billion

Sources: World Bank 2014; OECD/IEA 2014.

2.1 Country background

As a net oil exporter, fossil fuel subsidies have traditionally been more of an indirect subsidy through price controls on public petroleum companies. The government controls the fossil fuel production through the state-owned National Iranian Oil Company (NIOC) and oil and gas distribution through the National Iranian Oil Products Distribution Company (NIOPDC). The major domestic supplier of electricity, the Tavanir Company, is also publicly owned, and 87 percent of electricity was generated on plants affiliated with the Ministry of Energy in 2012 (Araghi and Barkhordari 2012:400; Central Bank of the Islamic Republic of Iran 2012:4). Energy prices for both fuels and electricity has therefore been set by law and not been subject to a free market mechanism (Guillaume et al. 2011; Hassanzadeh 2012). The nationally set prices have diverged considerably from international prices. The difference constituted the highest fossil fuel subsidy in the world in absolute terms, calculated to be 83.9 billion in 2013 (OECD/EIA 2014). However, as the subsidies are indirect, this amount does not represent the financial cost directly paid by the government, especially as the prices were set to at least cover the production costs (Guillaume et al. 2011:5). A combination of rising oil prices from 2002 and inflation in Iran resulted in an increasing gap between domestic and international prices. The low prices also limited the NIOC's funds for needed investments in production capacity. In addition, Iran had to pay for an increasing import of fuels. Iran has a limited refinery capacity and with the rapidly growing fuel consumption in Iran, the NIOC has to buy refined fuels from abroad and then sell them at the low domestic price (Brumberg and Ahram 2007:49). The subsidy had become a very expensive practice.

Energy consumption in Iran has experienced a tremendous increase since the Iranian revolution, illustrated for example by more than a doubling of gasoline consumption between 1997 and 2006 (Jafari and Baratimalayeri 2008). The average annual growth rate of all fossil fuels was 2 per cent in the same period, and carbon emissions followed the same pattern (Karbassi et al. 2007). This growth in fossil fuel consumption led Iran to become one of the most energy-intense countries in the world, in terms of energy consumed per economic output (Guillaume et al. 2011:5). This enormous increase in energy consumption has been largely attributed to the low prices resulting from the energy subsidies (Jafari and Baratimalayeri 2008; Davoudpour and Ahadi 2006). Population growth and the rapid urbanization experienced by the country have resulted in a steadily increasing energy demand, while the subsidy programme has kept the price

inefficiently low (Karbassi et al. 2007). Fuel smuggling to the neighbouring countries grew to constitute 5 per cent of the subsidized gasoline (Brumberg and Ahran 2007:49).

With this background of foregone export revenues and inefficient domestic energy markets, the Iranian government started to plan a subsidy reform and proposed its first plan to the parliament in 2008, although the process was postponed until after the elections in 2009. It provoked debate as the energy subsidies were seen by many as a pro-poor policy, and sudden price increases were thought to lead to uncontrollable inflation (Guillaume et al. 2011; Hassanzadeh 2012). The reform was implemented in 2010, accompanied by an unprecedented cash transfer programme to counter the social consequences of the reform. In the following subsection, we will analyse the implementation and consequences of the reform, trying to understand the social repercussions.

2.2 The reform measures implemented

The price reform was established through the Reform Act adopted by the Parliament in January 2010 (see Guillaume et al. 2011). The Reform Act envisages an increase in domestic fossil fuel prices to at least 90 per cent of Persian Gulf Free On Board (FOB) prices by 2015, envisaged to be implemented in multiple stages. Inflation concerns by parliamentarians later changed this from “at least” to “no more than” (Hassanzadeh 2012). The Iranian gasoline price was only at 5 per cent at the FOB price in 2008. For natural gas, the reform envisages an increase to 75 per cent of export prices, while electricity and water prices were set to increase to full cost prices. The Iranian government went for a rapid solution, and implemented a first set of price increases in December 2010. This first stage of the reform led to an overnight 4- and 18-fold increase in petrol and diesel prices, respectively, and removed USD 60 billion in annual subsidies. To dampen the consequences, maximum limits were set for food and public transport prices, and companies were pushed to not pass their increased energy costs on to the consumers. For electricity, natural gas and water, a multi-tier pricing system was introduced (Guillaume et al. 2011). It accounted for regional variation in needs and availability, and the price escalated with consumption levels, resulting in small-scale users bearing the lowest cost. Rationing for gasoline had already been introduced in 2007 and created different price levels for the appointed quotas and free market price for additional consumption. The rationing was administered through an electronic card and vehicle registration system. These policies were meant to smoothen the transition, and the government announced that the rationed and tiered prices would also increase significantly in later stages of the reform.

To compensate for the potential welfare losses induced by energy price increases, the government launched a substantial compensation scheme. Fifty per cent of the expected gains from the reform were to be used as compensation to households, according to the Reform Act. Because of difficulties of defining target groups, it was decided to give all Iranians a monthly USD 45 cash transfer delivered to bank accounts created for all households applying for compensation. Out of a population of 75 million at that time, 73 million received cash transfers the first year of the reform (Hassanzadeh 2012).

2.3 Distributional consequences of the increase in energy price

The reform measures resulted in huge increases in energy prices, which not only promotes a more efficient use of energy, but also has a significant effect on the population’s welfare. In general, energy constitutes a large part of household expenses, and sudden changes in the price could create a potentially large number of people

becoming vulnerable. Here we will analyse how the price increases affect household budgets, income distribution and poverty.

Energy price elasticity

How would households adjust to higher energy prices? Would they be able to reduce their consumption and thus avoid paying the entire bill of the reform? The increase in energy prices was based on an assumption of a highly inefficient energy market in Iran. Marginal consumption was thought to be wasteful (Guillaume et al. 2011), thus assuming a high ability to adjust energy consumption to the higher prices. Davoudpour and Ahadi (2006) back this assumption and find a high short-term price elasticity of fuel demand in Iran—that is, Iranian households will be able to adjust to the higher prices by reducing their consumption. They find that a 100 per cent increase in diesel prices led to a 20 per cent reduction in energy demand. A similarly high price elasticity was found for electricity. Together with high energy intensity, this high short-term elasticity suggests that the marginal value of energy consumption is relatively low. It would mean that households on average seem able to pass some of the increased energy cost on to producers in the form of lower demand. In the long run, we can expect the elasticity to be even higher, as households then will have time to invest in new energy systems and more efficient appliances. Shahdani et al. (2012) find a long-run price elasticity of electricity at -0.417, meaning a 42 per cent decrease in electricity demand for a 100 per cent price increase. The first year after the reform, the domestic consumption of oil products decreased by 2.8 per cent, and stabilized in 2012 (Central Bank of the Republic of Iran 2012:53). Economic and population growth offset some of the price elasticity effect. Consumption of natural gas increased as it was used to substitute oil products. Consumption of electricity by households also rose when fossil fuel prices increased, but later levelled off and decreased because of the increasing electricity prices. It seems like the reform had achieved its target of change in energy consumption. However, even if the households adjusted their energy consumption considerably due to the price increase, it would still represent a significant cost. All Iranian households were expected to endure considerable welfare losses due to the price increases (Araghi and Barkhordari 2012). The share of household expenditures spent on energy did rise significantly after the reform was implemented (Central Bank of the Republic of Iran 2012:39). How this cost varied between income groups depend on income elasticity of energy and the respective budget shares.

Budget shares and vulnerability

Do rich or poor consumers benefit the most from fossil fuel subsidies? In absolute terms, it is clear that high-income households consume more energy than households at lower income levels. A larger share of the total subsidy therefore went to higher income households (Jensen and Tarr 2003:545). This is also illustrated by positive income elasticity for both electricity and fossil fuels (Shahdani et al. 2002; Davoudpour and Ahadi 2006). The estimated long-term income elasticity of 1.116 estimated by Shahdani et al. (2012) suggests a large increase in energy spending with income. A 10 per cent income increase leads to a 11.16 per cent increase in electricity consumption. But who suffers the most from a price increase cannot be established using arguments only in absolute terms. What matters for the welfare effects of a price increase is the share of the household budget spent on energy. Data on household expenditure on utilities (energy, water, sewage) suggest that the budget share of utilities decreases with income, with the bottom decile spending 7 per cent and 15 per cent of their income on energy in urban and rural areas respectively (Vagliasindi 2013:243). The top decile spend only

between 2 per cent and 3 per cent of their budget on utilities. This finding suggests that a price increase in energy will hit lower income groups harder.

Vulnerability, as risk to livelihood from change, is central to understanding the impacts of price increases. Low-income households might be more vulnerable even if their monetary losses are smaller than those of higher income households. Differences in budget shares explain some of this vulnerability, but not all. Low-income households' energy use is concentrated on more basic services, which are more difficult to reduce, such as cooking, heating or transport that is crucial for business. A substantial increase in energy prices makes energy unaffordable for the lowest income households, increasing the rate of energy poverty. Lack of basic energy access deprives these households from development opportunities (Chevalier and Ouédraogo 2009). Even if poverty rates in Iran have been quite low and have been decreasing, energy price increases of the magnitude witnessed in December 2010 can push the most vulnerable populations below the poverty line. This problem was targeted through the compensation scheme described below. The multi-tier pricing system for gas, electricity and water was also targeted to avoid detrimental effects for the most vulnerable (Guillaume et al. 2011). The basic consumption, a small amount equal for all households, continued to be sold at pre-reform prices. At this level, prices increase with consumption and vary with sector and use. Rationing of gasoline had similar effects; all individuals were allowed to buy a small amount of gasoline at low prices. Although these measures implied a lot of administrative work, they helped counter the adverse effects for the most vulnerable populations.

Geographical distribution of consequences

The impact of the reform programme also varies between regions, depending on the energy consumption pattern and energy infrastructure in the region. The government response to this issue has been to set lower electricity rates in regions with special needs, such as where it tends to be very hot (Guillaume et al. 2011). Considerable differences in energy infrastructure and access exist between rural and urban areas. Iran has undergone rapid urbanization resulting in increasing energy demands for transportation in the cities (Jafari and Baratimalayeri 2008:2543). The urban poor have generally better access to energy, but this may also make them more dependent on it. In rural areas the energy access and consumption is lower. (Ardehali 2006). Poverty rates are also higher in rural than in urban areas: 8 per cent versus 1 per cent below USD 2 /day purchasing power parity (PPP) (Salehi-Isfahani 2006:19). Utilities budget shares in Iran seem to be considerably higher in rural areas, indicating that rural populations would be more vulnerable to a price increase (Vagliasindi 2013:243).

General equilibrium and inflation

A relative price increase in energy should move consumption away from energy and towards other commodities and services. This potential substitution effect could then create growth in other sectors. This effect was also part of the government motivation for the subsidy reform (Guillaume et al. 2011:8). However, energy subsidy reform does not lead to an isolated price increase in the energy markets. Nearly all production and transportation have energy expenses, and the higher energy prices will translate into price increases in a variety of markets including food and transport. The government acknowledged this in its reform programme, and set maximum prices on some central commodities and transport. However, because firms need to be profitable, such a policy has a clear limit, making a general price increase hard to avoid. This general price increase together with the increased government spending due to the compensation scheme described below may have contributed to the recent high inflation in Iran. The

exact rate of inflation varies according to different sources (Hassanzedah 2012; Central Bank of the Republic of Iran 2012), but the general trend shows a substantial increase in inflation. However, without a corresponding wage increase, workers and civil servants experienced a decline in purchasing power—not taking into account the compensation payment (Central Bank of the Republic of Iran 2012:39). A high rate of inflation and the devaluation of the local currency also undermine the real value of the proposed energy price increases.

2.4 The social programme implemented

As a means of countering the potentially adverse social effects described above, the Reform Act indicates that 50 per cent of the gains from the reform should be attributed to compensating households for the losses (Guillaume et al. 2011). Thirty per cent were set to go to investment support for energy efficiency improvements in businesses, while the remaining 20 per cent were set to cover the government's increased energy costs. The compensation was said to be targeted according to needs, but difficulty in finding and agreeing on criteria for targeting led the government to make the subsidy accessible to all Iranians. This broad compensation scheme is unprecedented in recent history. Some authors termed Iran the world's first country to provide basic income for all, based on this cash transfer scheme (Tabatabai 2011). The transfer of funds directly from an inefficient subsidy benefiting high-income households to an equal payment to all citizens, not only compensated for the negative effect of the price increase, but also had the potential to be a huge net gain for lower income groups (Jensen and Tarr 2003:545). The monthly payment of USD 45 constituted a large increase for low-income households, as it represented an approximate 15 per cent wage increase for a minimum wage worker at the time (Iran Labor Report 2010). But as with gasoline rationing and multi-tier prices, this could not have been possible without a high administrative capacity. Information about the compensation scheme was spread already a year before the reforms, and special bank accounts were created for all citizens. Information was also spread to remote households, as an application was necessary for receiving the payment. ATMs were built in rural areas to accommodate a rush to withdraw the compensation money on reform day. Although impressive on paper, the implementation of the social programme has been criticized, as corruption claims surrounded the process (Khajehpour 2014). A new redistribution programme of this size requires a professional bureaucracy, and claims of compensation money ending up in the pockets of politicians and bureaucrats might point to the fact that Iran was only partly ready for the task.

In the first round of the reform, 73 million Iranians received compensatory payments. Although the price increase and general inflation reduced the purchasing power of households, the net effect was an increased purchasing power, especially for poor households, according to official sources (Central Bank of the Republic of Iran 2012:40). The compensation scheme also contributed to an improved income equality, and the Gini coefficient increased by 1.6 per cent. The income share of the lowest income groups increased at the expense of the middle-income groups, while the highest income groups also increased their share (Central Bank of the Republic of Iran 2012). Salehi-Isfahani et al. (2014) estimate a decrease in the poverty rate by 5 percentage points during the first phase of the compensation scheme. The reform programme thus seems to have had positive distributional effects despite the negative welfare effects of the price increase.

However, the injection of USD 4.5 billion into the economy in terms of cash transfers added pressure to an already high inflation rate, reducing the welfare effects of the compensation (Hassanzedah 2012). The compensation policy might be a more pro-poor policy than the subsidy scheme (Jensen and Tarr 2003:), but the combined impact on inflation with the energy price increase limits the real value economic effect. In an attempt to reduce the costs of the compensation scheme, the government tried to encourage higher income households to withdraw from further compensation, and when the price increases continued into a second phase, only low-income households would be eligible for compensation. This has created some political uncertainty with regards to the future structure of the programme (Hassanzedah 2012).

2.5 Political economy of the reform process

A reform programme like the one implemented in Iran represents a big societal shift, creating winners and losers. It is only feasible under favourable political conditions, and we will see below how these conditions shaped the process in Iran.

The price control itself was facilitated by a public production (NIOC) and distribution company (NIOPDC). The NIOC plays a major role in Iranian politics, being the major revenue creator (Brumberg and Ahram 2007). Through this company, the government controls fuel prices and petroleum revenues. The NIOC's capacity to invest and maintain their oil fields has been limited, partly due to government restrictions on its revenue (Campbell 2007). The subsidy reform would both reduce domestic consumption, thus freeing more oil for exports, and generate more income for NIOC domestically as a result of the higher prices. Although most of this revenue would go to the government, it is likely that the NIOC strongly supported the subsidy reform, as it would reduce the price controls limiting NIOC revenues Ahmadinejad had already ensured political support from the NIOC by removing the former leadership and replacing it with political supporters soon after his election. A central actor in the Iranian energy sector was thus supporting the reform measures.

But it was also important to build understanding in the population. As our two other case studies will show, popular resistance is often the cause of reform reversal. Public support was built through an extensive information campaign. This started several years before the reform was implemented, and the compensation scheme received a central focus. On reform day President Ahmadinejad gave a speech to inform the population and called the reform the largest economic “surgery” in Iran’s history (Guillaume et al. 2011). The bank accounts with the compensatory payments were already created well in advance, but the amounts were frozen until reform day. This extensive campaign and immediate compensation built support in the population, and the resistance was minimal compared to the scope of the reform (Guillaume et al. 2011; Hassanzedah 2012). The large compensation served to “buy” support from the vast majority. But the lack of resistance could also be connected to Iran’s repressive political environment. Due to this, we would expect less expression of discontent than in Ghana and Indonesia. There was indeed some resistance and concerns expressed in the parliament debate before the reform, which can be interpreted as a sign of a broader concern in the population. The large compensation can be seen as a way to address potential resistance and build support for the regime during a turbulent time. The large compensation turned out to be an expensive exercise for the government, as the expenses were larger than the increased export revenue. It thus had to take loans from the central bank to cover all the costs. The government is now looking for ways to reduce these expenses by increasingly targeting the compensation.

Important for the partial success of the reform was that the social aspect was already an integrated part of the reform plan. Although poverty has been declining, it remains a central issue in the public debate in Iran, and the urban poor were an important support base for President Ahmadinejad (Salehi-Isfahani 2006). The social aspect of the reform was heavily debated in the Parliament, which criticized the government for going too fast with the price increases, and with reference to the social consequences changed the target of the reform from “at least” to “no more than” 90 per cent of Persian Gulf FOB prices.

The international context was also important for the consequences of the reform. The economic sanctions leveraged by the UN Security Council against Iran regarding its nuclear programme put a heavy pressure on the economy. The US sanctions in 2012 targeted at the Iranian Central Bank and made it difficult for Iran to receive payment for oil exports (Farzanegan 2013). The sanctions also restricted imports to Iran. Increasing demand restricted to a limited supply of domestic commodities put an upward pressure on inflation. Together with the energy price increase and the increased liquidity from the compensation payments, the sanctions created a very high inflation in Iran (Hassanzedah 2012), which risked undermining reform efforts.

2.6 Summary

The government of Iran started the second stage of the reform process in 2014, and measures have been taken to limit the inflationary impact of the reform (Khajehpour 2014). In the second phase, cash payments will only be handed to low-income households, and the price increases will be more moderate than in the first phase. Free health insurance for persons registered for cash compensation, covered by income from subsidy removal, is also thought to have positive social impacts (Khajehpour 2014; IRNA 2014). However, time will show whether further reform will be possible without a further increase of an already large inflation rate, and whether the new governments adjustments to the reform plan will successfully improve the process.

The Iranian case shows the demanding nature of a subsidy reform. Without an impressive administrative effort, the reform would have jeopardized the livelihoods of many low-income households. A high-capacity, centrally controlled state apparatus was important in the reform process, as was the control of the National Iranian Oil Company. Rationing, multi-tiered prices and compensation were essential to the implementation of the reform, together with the well-prepared information campaign. These policies were the results of an important concern about poverty in the political debate in Iran. The social aspect of the reform had to account for a central part of the reform in order to be approved in the parliament, but also to prevent uprising against the regime, a legitimate political fear in Iran. The government was thus forced to include a strong social aspect. So far, the reform measure has not lead to fiscal gains for the government, as more has been spent on compensation than has been gained from additional revenues. However, the reform lays out a structure for increased revenues and investments for the future. It also leads to more efficient energy consumption, which is important for the long term national security and regional power of Iran.

The Iranian case demonstrates that fossil fuel subsidy reform is not an isolated issue related only to the efficiency of energy markets. It is a major macroeconomic policy with potentially detrimental consequences for the poor. For fossil fuel subsidies to become an important policy for sustainable development, as suggested by the World Bank and the International Monetary Fund (IMF), the social aspect should not be

forgotten. Rather, it must be the central concern for reform design. This was central to the Iranian success, and will be central in the continuation of the reform.

3. Country Case Study: Indonesia

Indonesia has had over a decade of fossil fuel energy subsidies reform history, starting from 1999. This journey of reform is filled with ups and downs. The country has been regarded as highly successful in implementing policies that reduce price subsidies and encourage energy conservation (Bacon and Kojima 2006). At the same time, several incidents of backtrack have marked the reform history. Examining the social dimension of the reforms might help us understand these repeated backtracks. The key objective of the subsidies reform in Indonesia is believed to be easing the financial burden of energy subsidies on public budget, as well as improving social distribution.

The Republic of Indonesia

Population (2013)	249.8 million
GDP (PPP) per capita, current international \$ (2013)	9,558
Gini coefficient (2010)	0.356
Poverty headcount ratio, < USD 2 per day (2011)	43%
Total fossil fuel subsidies (2013)	USD 29.2 billion

Sources: World Bank 2014; OECD/IEA 2014.

3.1 Country background

The Indonesian government has been spending large amounts of public funding on energy subsidies in the past few decades, focusing on consumer subsidies in the form of underpricing of energy, though producer subsidies in the form of tax expenditure also exist (Morgan 2007). This policy has been defended as an important way to provide assistance to the nation's large population of low-income households (Beaton and Lontoh 2010). Yet with the increase in international oil prices and the slowdown in domestic production, fuel subsidies increasingly became a huge burden on limited public resources. From 1997 to 2001, the percentage of energy subsidies in Indonesian GDP went up from 1.5 per cent to over 4 per cent (Mourougane 2010). The budgetary pressure became a driving factor for the reforms to energy subsidy policy (Dillon et al. 2008; World Bank 2007). In addition, as admitted in the government's explanation of its *Policy on Fuel-Subsidy Cuts and Other Accompanying Policies*, the wealthiest 40 per cent of households in the nation end up capturing 70 per cent of the subsidies, while the bottom 40 per cent benefit from only 15 per cent of the subsidies, so that the targeted objective of social welfare transfer did not materialize (Coordinating Ministry for Economic Affairs 2008). Based on the above, the Indonesian government started taking steps to cut the energy subsidies.

The first energy subsidy reform took place in 1998 right after the Asian financial crisis, as a condition for an IMF emergency loan (Beaton and Lontoh 2010). President Suharto signed a 50-point economic adjustment programme with the IMF in order to qualify for this loan. The radical price increases for fuel and electricity in May 1998, combined with other factors, eventually triggered a general riot that forced the president to step down. Since then, a series of price reforms have been carried out, presenting a mixed picture of successes and failures. The reform effort in 2005 stands out for its sharp increase in energy subsidies, yet relatively peaceful execution, positive acceptance by the market, and long duration of reform results. Our study will thus focus on the 2005 reform, and analyse their implementation and social consequences.

3.2 Energy subsidies reform measures in 2005

Previous reforms in 2002 and 2003 have helped Indonesia reduce its energy subsidies from above 4 per cent of national GDP in 2000 to below 2 per cent in 2003 (Mourougane 2010), yet given large-scale public protests, the government had to reverse its policies and roll back much of the energy price increase. Since then, the domestic energy consumption kept increasing rapidly while the capacity of domestic refineries continued to shrink due to technology backwardness and lack of new investment in fuel exploration and refining utilities (Cheung 2013). As a result, Indonesia became a net oil importer in 2004, and the energy subsidies became a huge burden on the fiscal performance of the government. In March and October 2005, the government undertook two large fuel price increases, which resulted in overall price increases of 149 per cent, 161 per cent, and 186 per cent for gasoline, diesel and kerosene, respectively (Bacon and Kojima 2006). This brought fuel prices within range of international levels. These reform measures have led to a reduction of the Indonesian state budget deficit by USD 4.5 billion in 2005 and USD 10 billion in 2006 (Beaton and Lontoh 2010).

Contrary to previous large, violent demonstrations against energy price increases, these fairly radical reforms in 2005 did not generate large-scale oppositions among the general public. In order to maximize the public's understanding of the reform rationale and procedures, the government organized an active information campaign throughout the country. The government also compensated poor households for the increase of their living costs through a number of welfare programmes, notably the *Bantuan Langsung Tunai* (BLT), which was a series of unconditional monthly cash transfer payments targeted at poor households. In addition, the government implemented the Fuel Subsidy Reduction Compensation Program that aims to provide targeted support for affected groups by increasing social spending in education, health and rural infrastructure (Beaton and Lontoh 2010).

It is worth emphasizing that on top of these short-term measures to mitigate the immediate effect of subsidies reduction, the Indonesian government also took steps to address the energy demand mix in the long run, by gradually phasing out the use of kerosene, in favour of liquefied petroleum gas (LPG). LPG resources are abundant, much cheaper to produce, and have contributed greatly to the country's export (SIGTTO 2010). Compared to kerosene, LPG is very efficient in generating heat, without producing smoke and with much lower pollutant and CO₂ emissions. The government planned to distribute 48 million sets of free LPG stoves and LPG cylinders by 2012 to households using kerosene stoves (IISD 2012). This programme has been a success—the consumption of kerosene has declined to 1.70 million cubic meters in 2011 from 9.89 million cubic meters in 2007, saving a total of USD 5.2 billion in energy subsidies till April 2011 (MEMR 2012). The active switching to Indonesia's abundant and affordable alternative energy source has contributed positively to the sustainability of energy subsidies reforms, and brought environmental, health and social benefits, especially to the poor who used to be the main consumers of kerosene.

3.3 Distributional consequences of the increase in energy price

The reforms led to huge cuts in public spending in energy subsidies and drastic increases in energy prices. What consequences did this have on social distribution and welfare? Who benefits and suffers the most from such policies?

Budget shares and vulnerability

As the subsidy per unit of energy is constant despite varied household income, it is the high-income groups who, due to their higher fuel consumption, benefit the most from the subsidy in absolute terms. As a result, more than 90 per cent of fuel subsidies benefit the 50 per cent of the richer households in Indonesia (Agustina et al. 2008). The poorest decile accounted for less than 1 per cent of subsidized gasoline use. The World Bank survey in 2011 (World Bank 2011) suggested that about two thirds of the poor and near-poor households (defined as the bottom 5 deciles) do not consume gasoline at all. However, as described in the Iranian case above, it is the vulnerability of the poor to price changes, rather than the absolute distribution of the subsidy that account for the greatest social challenges in the short run.

Urban poor as a particularly affected group

The ongoing urbanization in Indonesia has created a growing number of urban poor and “near poor” population (World Bank 2012). This group is especially vulnerable to fuel price increases. First, as compared with the rural poor, the urban poor are more likely to rely on utilities (such as electricity) and their employment is capital-intensive (reliant on energy-intensive machinery), thus more sensitive to changes in fuel price (Beaton and Lontoh 2010). Second, given the increase in overall price level as a result of rising energy price and reduction of consumption, the urban poor would suffer from both higher living costs and lower family income. Third, the majority of the urban poor are employed in the informal sector thus very mobile and difficult to keep track of. As the social compensation programme mainly targeted rural areas where poor people were most concentrated, a lot of urban poor were left out in the social compensation coverage. Given the above, it is even argued in a report that the uniform transfer package implemented by the Indonesia government in October 2005 tends to overcompensate rural households at the cost of undercompensating the urban poor (Yusuf 2008).

3.4 The social programme implemented

The 2005 energy subsidies reform in Indonesia was accompanied by large-scale governmental efforts to compensate poor households for the increase in their living costs. In order to prepare for the major price increase in October, the government decided in August 2005 to put together a national cash transfer scheme that would cover 15.5 million households (Widjaja 2009). It is worth mentioning this number does not only cover households below the national poverty line (16 per cent of total household number), but also an additional 12 per cent of households right above the poverty line. The size of the transfer was about USD 30 per household every three months, from October 2005 to March 2006 (Widjaja 2009). To put it into context, the minimum wage of workers in Jakarta was about USD 110 per month in 2005 (ILO 2012). The scheme was operated by the Central Bureau of Statistics, the public postal service PT Pos Indonesia, and the BRI Bank. The central government held a census in 2005 to map out the poor households in rural and urban areas (Central Bureau of Statistics 2010). Criteria for being classified as poor were related to earnings and assets. Given the time constraint, commune leaders were appointed to nominate households that are eligible for such compensations. As many Indonesians are not properly registered and do not have a bank account, the BLT was distributed directly from officers at local post offices (Presidential Instruction 2005). Originally 15.5 million cards were issued. Additional eligible applications augmented the total number of beneficiary households to 19.2 million, 35 per cent of households in the country (Bacon and Kojima 2006). It is estimated that in the absence of the social compensation mechanism, the welfare of the poor and near-poor population would have decreased by about 5 per cent (Bacon and

Kojima 2006). The cash transfer offset the negative impact of these price increases for the parts of the poor population receiving compensation.

The government spent USD 2.3 billion in cash transfer (excluding the organizational and administrative cost), around 25 per cent of the amount saved from subsidy reduction (Beaton and Lontoh 2010). A portion of the savings was also spent on education, health and rural infrastructure programmes, amounting to a total of USD 1.87 billion (IISD 2012). In education, a new programme aimed at waiving school fees for participating elementary and junior schools while also offering scholarships to poor students. In rural development, the government gave direct grants to some 13,000 poor villages to generate labour-intensive jobs and improve infrastructure. In health care, free health care services were made available at local public health clinics to over 16 million low-income households (Beaton and Lontoh 2010).

The government also undertook public information campaigns to publicize the cash transfer scheme. Information was disseminated by local civil servants and policemen, electronic media and television, BPS officers, societal and religious leaders (Widjaja 2009). Based on initial feedback of identified problems and complaints, the government commissioned an early assessment of problems with the first tranche disbursement. It has organized reviews through public hearings of programme beneficiaries, and worked to improve logistics of distribution at the post office and dissemination and complaint resolution mechanisms.

3.5 Political economy of the reform process

The public buy-in, social welfare and subsidies reforms are closely inter-related. The failure of previous subsidies reforms in late 1990s and early 2000s was to a certain extent due to the public dissatisfaction with the government (IMF 2013a). In comparison, the 2005 reforms have benefited from a high level of perceived credibility and legitimacy of the then newly-elected Yudhoyono government. In addition, in order to get further public buy-in and acceptance of the reform policies, President Yudhoyono's government ran a very active public information campaign to publicize the rationale of energy price increases. The fast roll-out of the unconditional cash transfer scheme and other social programmes also showed the government's care for the poor and ability to deliver social services/welfare. A survey in mid-December 2005 showed that President Yudhoyono maintained his high popularity throughout the first year of the reform (*Jakarta Post*, 30 December 2005).

However, the 2005 reforms did not represent the end of Indonesian fossil fuel subsidies. With the spiking international fuel prices in 2008, the government ended up being burdened with an energy subsidy of USD 17.6 billion, while estimated spending was only 5 billion (Dillon et al. 2008). The government responded by adjusting fuel prices with an average of 28.7 per cent increase, which was again followed by another cash transfer scheme targeting poor households. Yet the reform policies were backtracked as the government gradually lowered fuel prices just before Yudhoyono's re-election in 2009. This was widely seen as a politicization of the energy subsidies policies to win electorate support. The credibility of government commitment to subsidies reforms was questioned, with public support for further reform policies partly undermined. Despite the government's announcement to gradually remove fossil fuel subsidies completely (Indonesian Ministry of Finance 2009), the effects of recent attempts to further reduce energy subsidies have proved trivial. Due to higher global oil prices and currency

depreciation, actual support for the production and consumption of fossil fuels remains significant, and was at 2.2 per cent of national GDP in 2012 (Société Générale 2014).

3.6 Summary

Energy subsidies have been a long-time government policy instrument in Indonesia to support the basic needs of the country's large population of low-income households. With the climbing price of international fuel prices and shrinking national oil production, the large amounts of energy subsidies have been posing a big burden on government budget, and incur a high opportunity cost on other important public spending. In addition, it is realized that energy subsidies do not meet the initial objective of compensating the poor, as the rich population captures most of the benefits. Thus, the need for energy subsidies reform was recognized by the government.

Before 2005, the energy subsidies reforms in Indonesia had been characterized by violent protests and policy backtracks. Yet the two drastic increases in fuel prices in 2005 have been quite well accepted, with lasting effects for a relatively sustained period until 2009. The success of the 2005 reforms is not only reflected in fiscal terms, but more importantly, in improving better social distributions and equity, thus ensuring relative sustainability of reform results. The government's timely and well-implemented programmes to address potential adverse effects of higher energy prices on the welfare of the poor proved crucial for the reform success. While the well-targeted unconditional cash transfer programme provides immediate cushion for low-income households to offset the loss of purchasing power, the government has also taken other complementary measures to address the mid to long-term challenge of social distribution. The redirection of saved public funds to social programmes has further benefited the poor population by providing them better infrastructure, education and healthcare. The policy of encouraging utilization of alternative LPG resources has led to a sharp decrease in heavily subsidized kerosene consumption, also reducing the country's energy dependency on foreign imports.

The Indonesia case also demonstrates the importance of public support to the success of energy subsidies reform. Lessons for winning public buy-in include good public communication of reform rationale and effects, and demonstration of government credibility and commitment to long-term subsidies reform. The reforms in Indonesia are however not an unconditional success story. Challenges regarding the targeting of compensation put excluded groups at risk, especially among the urban poor. Also the policy backtrack in 2009 in exchange of political popularity has undermined the public support for further subsidies reforms.

4. Country Case Study: Ghana

Energy subsidy reforms in Ghana started in 2001 as one of many measures to restore fiscal balance. The reforms in Ghana were undertaken with direct influence from the IMF. The trajectory of these reforms has been volatile. The period from 2001 to 2008 saw the reforms implemented in a back-and-forth manner. The reforms were implemented and withdrawn three times between 2001 and 2008. Social protection programmes were simultaneously implemented to mitigate impacts of subsidy removal on low income households. Despite the reform volatility, some authors have argued that the country has had a relative success in implementing energy subsidy reforms (see for example, Coady et al. 2006; Laan et al. 2010).

The Republic of Ghana

Population (2013)	25.9 million
GDP (PPP) per capita, current international \$ (2013)	3,975
Gini-coefficient (2006)	0.428
Poverty Headcount ratio, < USD 2 per day (2006)	51%
Total Fossil Fuel Subsidies (2013)	USD 0.4 billion

Sources: World Bank 2014; OECD/IEA 2014.

4.1 Country background

Despite being an oil producer, Ghana is a net importer of energy. The subsidies in Ghana thus represented a direct fiscal burden for the government. The total consumption of subsidies during the period 2000 to 2008 was estimated to be USD 3 billion, averaging about USD 428 million per year (Amewu 2013). In 2008, there was a total subsidy of more than USD 600 million which was equivalent to 1.8 per cent of GDP.

The first attempt to reform happened in early 2001 with the effort to liberalize fuel prices in line with a wider IMF Poverty Reduction and Growth Facility Programme (IMF 2004). To facilitate deregulation, a process for publishing and applying an automatic adjustment formula for pricing petroleum products was completed in 2001 and came into effect in 2003 (Vagliasindi 2013:39; Cooke et al. 2014). This led to a 91 percent increase in prices for refined petroleum (Laan et al. 2010; IMF 2013a:74). Kerosene and Liquid Petroleum Gas (LPG), which remain the extensively used source of energy by low-income households were cross-subsidized with the aim of reducing the impacts of reform upon low-income groups. However, rising global oil prices towards the end of 2002 compelled the government to discard the price setting mechanism (Crawford 2012; IMF 2013a:74).

The second attempt at implementing the subsidy reform took place in January 2003. There was an increase in fuel prices by 90 per cent (Bacon and Kojima 2006; Vagliasindi 2013:40). This affected average income of the low-income households which fell by 8.5 per cent, and hit the bottom quintile the hardest (IMF 2006). Following a widespread strong public opposition and discontent with the repeated price rises, the government suspended the reform in June 2003. An impending election further influenced the government to abandon the reform measures (Laan et al. 2010). The IMF (2006) indicates that fuel subsidies accounted for roughly 2.2 per cent of the country's GDP throughout 2004. This exceeded the budget allocated to the Ministry of Health of the country that same year (Amoatey 2006). These huge costs led to new reform efforts in 2005.

4.2 The reform measures implemented

The third attempt to restore subsidy reforms was in February 2005. The automatic adjustment formula was re-introduced, leading to a 50 per cent price increase for petroleum products. The National Petroleum Authority (NPA) was formed to conduct price setting, as the government gave away its direct control over prices. The government made increased commitment to continue sector reforms that would further increase private sector participation in the import and distribution of petroleum products, a measure that would contribute to sustain the new price policy (Coady et al. 2006).

The government also launched an independent Poverty and Social Impact Assessment (PSIA) for the petroleum sector (IMF 2013b:75) led by the Poverty and Social Impact Analysis Group at the IMF. The main objective of the PSIA was to evaluate the impact of higher petroleum prices on real incomes of households and to identify potential winners and losers of the reforms. The assessment was done by a steering committee of stakeholders from ministries, academia and the national oil company Ghana National Petroleum Corporation (GNPC). PSIA findings were used in designing the compensation programmes and in communication campaigns to explain the reason behind the reforms (Coady et al. 2006).

Findings of Poverty and Social Impact Assessment (PSIA) for the petroleum sector in Ghana

On average, households experienced 1.9 percent decline in real income. The incidence of this decline in real income was regressive with the poorest households being the worst hit. They experienced a 2.9 percent decrease in real income, compared with a 1.4 percent decrease for households in the top consumption quintile.

Indirect price increases lower household real income by 6.7 percent. These losses were moderately progressive, with the bottom quintile experiencing a 6.2 percent decrease in consumption compared with 6.8 percent for the top quintile.

It was found that the distribution of the benefits implicit in energy subsidies across households caused substantial leakages of these to higher income households and that poorest households experienced greater real income decreases from subsidy removal.

Source: Coady and Newhouse (2006).

The reform was followed by a large-scale information programme. The President, through the State of the Nation address to Parliament, launched a broadcast campaign explaining the need for the price increases and announcing measures to mitigate their impact. The government also succeeded in making a strong case by comparing Ghanaian prices of petroleum with its West African neighbours (IMF 2013a).

The government took several steps to financially assist the poor to compensate for higher energy prices resulting from de-subsidization (Laan et al. 2010). This included the elimination of tuition fees for state-run primary and junior secondary schools, and extra funds into a health-care scheme for poor areas. There was also greater support to expanding an existing rural electrification scheme, and the minimum wage increased from USD 1.24 to USD 1.50 (Coady et al. 2006; Laan et al. 2010).

In addition, the social policy context changed, as the government introduced the Livelihood Empowerment against Poverty (LEAP), which is a direct cash transfer programme targeting the bottom 20 per cent through a bi-monthly payment.

The reform policies remained in place for several years. However, when international oil prices increased in 2007 and 2008, Ghana abandoned the reform and froze the price ceilings for petroleum products between May and November 2008 (Kojima 2009). The reintroduced subsidies resulted in the net debts of the domestic oil refinery, Tema Oil Refinery, mounting to around \$600 million in 2009.

After the National Democratic Congress took office in 2009, several price increases followed (Vagliasindi 2013: 42). In January 2011, petroleum pump prices were raised by 30 percent after a rise in global prices in late 2010. But hedging operations conducted since October 2010 have provided protection from global price increases and pump prices were kept stable through 2011 (IMF 2011).

4.3 Distributional consequences of increase in energy prices

As in Iran and Indonesia, fuel subsidies in Ghana tend to be regressive, with the richest quintile benefiting from 77.8 per cent of the fuel subsidies in absolute terms (Cooke et al. 2014). Vagliasindi (2013:44) estimates that only 2.9 per cent of the volume of subsidies for diesel and gasoline reach the poor. Kerosene subsidies are more progressive because they account for over 67 per cent of all household energy expenditures, and 20.7 per cent of these subsidies reach the poor and protect them against the fluctuation of oil prices (Vagliasindi 2013:44). A study by Cooke et al. (2014) shows that about 85.5 per cent, 92.8 per cent and 96.5 per cent of LPG, petrol and diesel subsidies, respectively, accrue to the richest quintile. They argue that the poorest quintile gets less than 1 per cent of these subsidies.

On the other hand, subsidy reforms have greater effects on real income of poor households. Analysis by Del Granado et al. (2010) shows the direct and indirect impacts of a US\$0.25 per litre increase in fuel prices. The direct impact of phasing out subsidies is seen in consumption of fuels for cooking, heating, lighting and private transport, which is a loss of 5.6 per cent of real income. The indirect impact—through higher prices for other goods and services—is twice as high as the direct impact, accounting for almost 12 per cent of real income (Vagliasindi 2013:44). Subsidy reforms affect household consumption of the poor. The largest negative impact on household consumption is experienced by the bottom income quintile. They experience a 9.1 per cent decline in their welfare (Coady et al. 2006).

In their analytical study, Cooke et al. (2014) find that fuel subsidy removal leads to an increase in national poverty of 1.5 per cent points, meaning that 395,180 people would be pushed into poverty by the reform. The effects of subsidy removal on poor households have called for the need to implement social programmes to mitigate the associated cost.

4.4 The social programme implemented

Coady et al. (2006) argue that type of compensation after a subsidy reform will depend on whether an effective social safety net already exists. Ghana did not have a dedicated social safety net, and thus large parts of the population were put at risk by the reform process. These groups would have to be targeted by new social programmes.

In the first place, fees for state-run junior secondary and primary schools were phased out (Coady et al. 2006; Laan et al. 2010). This was part of a scheme introduced in 2005, called the capitation grant. The capitation grant formed part of the larger process of educational decentralization under the government's Education Strategic Plan 2003–2015. Its purpose was to support primary schools and reduce their need to charge any type of fee (Osei et al. 2009). Under this system, every public kindergarten, primary school and junior secondary school receives a grant of about USD 3.30 per pupil per year. This expenditure to enhance education among the poor was effective. According to Osei et al. (2009), after a year of implementation, total enrolment in the 40 selected piloted districts increased by about 15 percent. Funding for primary education had a share of outlays that benefited about 32.2 per cent of the poor (see Vagliasindi 2013).

Also, the government increased spending on health care services in rural areas. This comprised the Community Health Compound Scheme (CHCS). The CHCS was broadly under the 2002–2006 health strategy of the government, which placed human resources as a priority. CHCS increased the number of health workers, primarily nurses, in

deprived rural communities to extend access to health care, accompanied by growing establishment of health posts in these communities. Another health-related programme undertaken by the government to relieve the poor was under the National Health Insurance Scheme (NHIS). The share of NHIS outlays benefiting the poor is estimated to be above 50 per cent (Vagliasindi 2013:43).

The most extensive and classic social protection programme was the LEAP. LEAP was part of the broad policy agenda called the Growth and Poverty Reduction Strategy (GPRS II) implemented in March 2008. The prime aim was to use cash transfers to “cushion” the poor and “encourage them to seek capacity development and other empowering objectives” thus helping them leap out of poverty (Gbedemah et al. 2010). The programme targets the bottom 20 percent of the poor (Vagliasindi 2013). Under LEAP, an average of USD 36 is provided every two months to extremely poor households that include those who can’t work, for example, an elderly person, an orphan or vulnerable child, or a person with extreme disability to work (PWD).

LEAP is currently operational in 100 of 170 districts (Cooke et al. 2014). Data analysed by Vagliasindi (2013: 43) indicates that three-fourths of the transfers provided by LEAP reach the bottom two income quintiles of the population. A simulation by Cooke et al. (2014) reveals that doubling LEAP beneficiaries to reach 150,000 households in 2014 could decrease poverty headcount by 1.6 percentage points.

4.5 The political economy of the reform process

Fossil fuel price setting has been important in the public debate in Ghana, and used politically by parties. The decisions of the government to backtrack on three occasions have been influenced by elections. For example, a widespread opposition in 2003 to the decision of the government led to the withdrawal of the reforms. This strong link between oil prices and electoral politics in Ghana has made reform measures particularly difficult to implement. The public fear of reform might also indicate insufficient compensation schemes or low credibility of promises for such compensation.

The reform measures in 2005 were preceded by extensive media and information campaigns about the goals of the reform as well as the planned benefits designed to lessen the impact (Vagliasindi 2013:41). Transparent processes contributed to sustaining the reform for a longer period, compared to what was seen previously. The establishment of the National Petroleum Authority (NPA) in June 2005 to take charge of the implementation of the pricing mechanism could be seen as a very important move. Though the NPA is not fully independent—since the president appoints the head of NPA—a more dedicated and effective automatic pricing was undertaken by the NPA. The relative withdrawal of the government engagement from petroleum pricing brought some credibility to the process. At the same time spending on social programmes increasingly compensated the lowest income groups. However, middle and higher income groups that are experiencing losses and are not compensated through social programmes might still represent a significant resistance to reform efforts.

4.6 Summary

Ghana has experienced, although involuntarily, a very gradual reform process. The gradual approach might have left consumers with more chances to adapt to the increasing prices, and thus gradually also reducing resistance to reforms. The back and forth implementation has provided the government with significant lessons, while the backlashes have decreased credibility. In the third reform stages the credibility problem

was targeted through an independent pricing mechanism and information campaigns. This seemed to be a relative success. The case demonstrates that significant price increases are only accepted where a credible social programme is simultaneously implemented. The possibility that government savings from the reform are spent to pay off debts instead of being paid back to the public, might have increased the resistance in Ghana.

Fossil fuel subsidies were used as a tool in electoral politics in Ghana, leading to sudden changes in policy. Before election in 2004, the government withdrew the reforms with the reason that the reforms might stoke political tensions. The government in 2003 and in 2007 also backtracked on these reforms.

From the analysis of the case of Ghana, it can thus be argued that it is difficult to separate the political and economic perspective of energy subsidy reforms. The contemporary concern is that Ghana now a major oil-producing country might be compelled to reinstate subsidies when the fiscal condition of the economy improves.

5. Comparative Analysis

The three country case studies on Iran, Indonesia and Ghana present energy subsidies reforms undertaken in different political, economic and social contexts. In this section, we compare the different country experiences to identify some key factors that influence the social and distributional outcome of energy subsidies reforms. The list is, of course, non-exhaustive and other factors might prove important, but based on our three case studies, the following factors stand out. The factors vary in importance, but by comparing our three cases we see that these all played a role in shaping the reform outcome. We distinguish between contextual factors (5.1) at the national and international levels and factors internal to the very process of subsidy reform (5.2).

5.1 Contextual factors

5.1.1 International factors

From the case studies above, we saw how external pressure and exogenous effects at the international level influenced the subsidy reform process. Geopolitical context, pressure from international organizations and price effects from the international fuel market were decisive in this regard. The international political context put Iran in a very special situation, as sanctions led to inflation with the risk of undermining the macroeconomic stability in the country. It created an environment in which efficient redistribution became very challenging, and inflation had a negative impact on the effect of the compensation scheme. The case of Iran is particular, however the international aspect is important also in our other two cases.

A main driver for the reform in Ghana was the IMF and its stress on the need for fiscal balance. This situation represented both a challenge and opportunity for the government. On the one hand, the government was squeezed between the external pressure and the risk of internal resistance to the reform. On the other hand, it could put the blame on the external actor and thus relieve some of the responsibility for the price increases. The first effect seems to be the most important, demonstrated by the correlation between electoral cycles. An improvement of Ghana's financial situation has also led to a steady increase in sovereignty in relations with the IMF.

Price change in the international energy market is a major contextual factor influencing reform measures. The reform process is in many respects a process of opening up the national fuel market to the global market. National price controls of fossil fuel do indeed act as a cushion for the volatility in the global fuel market. For Indonesia, the global price increase in 2008 led to a reintroduction of fuel subsidies. The government found this price rise to be too large for the population to handle, and reintroduced the subsidy. Ghana chose a different strategy by establishing the National Petroleum Authority to make price stabilization a non-political process. This was an attempt to still allow for price stabilization, but avoid the political pressure for subsidy removal.

5.1.2 National factors

The energy sector

A major contextual factor at the national level, and a difference between our cases, is whether a country is a producer of fossil fuels or an importer of this energy source from abroad. Importing countries need to purchase fuel at a higher price internationally and sell it at a lower price domestically. Fossil fuel subsidies become direct fiscal expenses. For an oil-producing country the context is different. Fossil fuel subsidies in this situation means putting price controls on fossil fuels in the domestic market, often dominated by a state-owned oil company. The subsidies then represent foregone revenue rather than direct expenses and become easier to implement. We see this effect through the fact that most of the highest subsidizing economies are large oil producers (Victor 2009). Even though the limited refinery capacity did indeed create some direct expenses in Iran, it was largely the prospect of reduced national consumption, increased exports and increased revenue from the state-owned petroleum sector that provided the financial motivation. Prospects of increased future gains facilitated the establishment of compensation schemes. In both Indonesia and Ghana the subsidy reforms were largely motivated by removing the large direct expenses typical for importing countries, even if they are both emerging fossil energy-producing countries. The situation is more difficult where fossil fuel subsidy reform leads to a cut in expenses, especially if the fiscal situation is already difficult. Even if the amount gained is the same, it does matter whether it represents new income or avoided expenses.

Fossil fuel subsidies are interventions in the energy market, and their removal is thought to lead to an efficiency gain in these markets. As the social risks outlined above are linked to the price increase in the energy markets, simultaneous energy policies can lower the impacts and secure an efficiency increase. Transitional price schemes can provide an immediate cushion, while investments in alternative energy sources and policies decreasing the dependency of fossil fuels will lower the long-term impact and vulnerability to international price changes. Such policies were indeed implemented in all three countries, although to a varying and limited degree. In Iran the government introduced rationed and tiered price structure for electricity, natural gas and water, so smaller users of these resources could bear lower costs, and opt for heating fuels that were more available in their regions (Guillaume et al. 2011). The Iranian government also tried to prevent businesses from passing higher energy costs on to consumers by setting maximum prices on some central commodities and transport. Indonesia invested in infrastructure for the distribution of natural gas, while Ghana invested in enhancing access to electricity in rural communities.

Common distributional effects of energy subsidies and their removal

The three countries' experiences show common distributional effects of energy subsidies. Most energy subsidies are captured by the biggest consumer group of energy,

which is the high-income population, while the share of low-income groups in the benefits of energy subsidies is very low. Thus, the removal or reduction of energy subsidies itself should indicate an improvement in real income distribution. The overall outcome would also depend on how the saved public spending is spent and allocated. Indeed the rich population would bear more burden of subsidies removal, yet the rise in energy prices and its indirect effects would have an impact on the real income and purchasing power of the poor. The question of vulnerability to change is crucial: sudden price changes pose a threat to already vulnerable populations and push more people below the poverty line. As a result, short-term targeted mitigation measures are needed to support the low-income households. This was shown in all three countries.

The political context, power asymmetries and interest groups

Fossil fuel subsidy reforms are huge economic shifts that create both losers and winners. The strength of these losers and winners in influencing the authorities then become crucial to the feasibility of subsidy reform. Short-term effects can create resistance even among the ones who are thought to be long-term beneficiaries. The relationship between affected interest groups and between these interest groups and the state is central to determine the political consequences of reform efforts. Strong concerns about redistribution voiced in the parliament in Iran, together with a powerful middle class, led the government to implement a universal compensation scheme. The economic interest of the petroleum sector dominated concerns from other sectors. As the reform resulted in more capital and export opportunities for the oil sector, the national oil company favoured subsidy removal. In Indonesia and Ghana, the resistance took the form of public protest and uprisings from the middle class and low-income groups. The popular concern about fuel prices became central also in electoral politics, and subsidies were implemented to win elections. Governments' responsiveness to public demands is thus a central national contextual political factor. However, its outcome on the reform process varies depending on other factors, as it can result in the reforms being followed by strong redistribution schemes or backtrack of the entire process. Even if the reform may have long-term financial, social and environmental benefits, these are less visible than an increase in fuel prices, and make the political process hard to manage.

From the three country cases, we see that the support from the general public for subsidies reform policies is central to their success and sustenance. The three countries have taken different measures in their attempts to win public trust. Effective measures include: transparency about the effects of subsidies reforms, visible compensation programmes, large-scale information campaigns, and de-linking energy pricing mechanism from political interference to ensure policy consistency.

5.2 Process factors

5.2.1 Relationship between contexts, objectives and policy

The different subsidies reform measures undertaken by the three countries reflect their different reform objectives and motivations, which might be multifaceted and changing over time. In Indonesia, the main objectives of subsidies reform are to ease the financial burden on the public budget and improve social distribution. In Ghana, the initial subsidies reform was motivated by the IMF's Poverty Reduction and Growth Facility Programme (IMF 2004), coupled with a need to ease financial burdens generated by huge subsidies. In both Indonesia and Ghana, given the intended objective to ease the fiscal burden of energy subsidies, part of saved public budget was reinvested and redistributed in favour of the poor, while the rest served to reduce the state budget

deficit. The 2005 subsidies reforms in Indonesia led to a reduction of the state budget deficit of USD 4.5 billion in 2005 and USD 10 billion in 2006 (Beaton and Lontoh 2010); in Ghana, cuts in energy subsidies also contributed to narrowing the fiscal gap as well as redistribution to the poor (Bloomberg News 2013). In these cases, the distributional effects of this saved funding remains unknown. In Iran, the main objectives are believed to be reducing domestic oil and gas consumption to increase export capacity, improving energy efficiency and reducing income disparities (Guillaume et al. 2011), towards which the government devised a universal compensation scheme to give each Iranian citizen an equal share of the benefits.

5.2.2 Temporality and timing modalities

The time frame set for the policy proved crucial in all three cases, which is important in both the price adjustments themselves and in the compensation programmes implemented, as we will see below. Sudden large price increases bear the risk of making some of the population more vulnerable. Constrained liquidity and limited short-term adaptation capacity, especially in low-income groups, call for a more gradual approach to price adjustment. The symbolic power of sudden price increases was crucial in the resistance movement in Ghana, and Iran needed a large and well-timed information campaign to avoid the same situation even in a more repressive political environment.

Both Indonesia and Ghana have had a relatively long history of subsidy reforms. In Indonesia, subsidy removals have tended to take place when international oil prices spiked, which dramatically increased the financial burden on the public budget. This ad hoc price adjustment approach costs a great deal of political capital every time the government raises energy prices (IISD 2012). The higher prices were not popular with the public, leading to public protests and riots that often forced the government to backtrack its policies, as seen in Ghana and Indonesia.

5.2.3 Compensation modalities

In the case of Iran, due to difficulties of finding and agreeing on criteria for targeting, the government went for universal compensation to all Iranians, with a monthly payment of USD 45 to 73 million out of its then 75 million population. Everyone who applied for it was granted compensation. Both Indonesia and Ghana went for a more targeted approach than Iran. Indonesia's cash transfer programme targeted poor households and those right above the poverty line, totalling around 30 per cent of its total population. The government also provided targeted support for affected groups by increasing social spending in education, health and rural infrastructure, which benefited the poor the most. Ghana's LEAP scheme was also on an income-tested basis, in the form of direct cash transfer, accompanied by increased spending on health, education and electricity access.

While Iran's universal compensation does imply an improvement of welfare distribution compared to energy subsidies that mainly benefit high-income households, the targeted compensation approach indicates an even greater distributional adjustment in favour of the poor. However, targeted approaches might have detrimental social consequences and foster resistance with those who are not receiving it (Mkandawire 2005). Resistance leading to disagreement on a definition of vulnerable populations was the reason for a universal approach in Iran. A broader base of beneficiaries could lead to a broader support base for the project. Universal programmes maximize the impact and ensure that no vulnerable group is left outside (Mkandawire 2005). However, by doing this through direct cash transfers creates a huge expense and injection into the economy.

Iran injected a USD 4.5 billion into the economy overnight and added further pressure on the already very high inflation rate caused by energy price increase.

All the cases studied had direct cash transfer as the central measure to protect the poor against sudden price shocks of subsidies removal. This might be a useful approach in addressing an emergency situation where immediate cushion for a vulnerable population is needed (Saad-Filho 2007). By having such a large share of cash transfers in their compensation schemes, the three countries have had this immediate cushion as their central objective. The political visibility of the cash transfer might also have been important. However, direct cash transfer programmes can also be seen as more costly to manage, more likely to produce social tensions and less effective in producing vital public goods (Saad-Filho 2007:531). Investment in public goods provision by the state is an alternative way to obtain the long-term social gain put forward by the triple win literature, illustrated here by Ghana and Indonesia's health and education investments.

The three countries featuring in this study represent fossil fuel reform carried out in largely different contexts. The context in itself shapes the outcome, partly through the contextual factors described above and partly through other specificities affecting the process at different stages. Although some general trends emerge, an exhaustive list cannot be developed based on our three cases. Rather, the cases illustrate the complexity of the interplay between a wide range of factors. The categorization of these factors undertaken above can, however, provide a clearer understanding of this interplay. This methodology can be a useful framework for similar studies in countries considering fossil fuel reform. As shown above, a comprehensive analysis of all of these factors is important for understanding the policy implications.

6. Conclusions

Energy subsidies reform is often presented as a first concrete step towards sustainable development. A large body of literature has argued for the benefits it will bring to the environment, economic development and society. This working paper looked at the energy subsidies reform through the social “lens” and aimed to test the anticipated social and distributional gains of the reform. A comparative analysis was performed based on three subsidies reform country studies in Ghana, Indonesia and Iran—countries that have been promoted as success stories—to identify the economic and political factors with significant influence on the social outcome of the reform.

In each of the country case studies, we have examined the distributional effects of a subsidy removal among different population groups, the implementation of social programmes and their immediate/long-term impact on the welfare of the population, as well as the political economy around the implementation and sustainability of the reform. The comparative study shows that a social and distributional gain is not the natural outcome of an energy subsidies reform. Rather, the social outcome is a product of complex interaction of specific political, economic and social factors at different levels. International political and economic contextual factors, such as mandate from international organizations, volatility of international oil prices, external political pressure and shift towards “social inclusiveness” in the global discourse all contribute to shaping the construct and outcome of energy subsidies reforms. On the national level, the social relations between different population groups, national energy supply structure and government's responsiveness to public demands determine who get hit the most as a result of subsidies removal and whether their concerns would be heard and

taken into considerations in the government's formulation of relevant policies. Lastly, factors related to the subsidies reform process, such as long-term political commitment to subsidy removal and social redistribution, government's capacity and credibility in carrying out this commitment and structure of social compensation programmes would have an impact on the social outcome. The level of complexity implies that there is no quick fix to energy subsidies reforms. Instead, governments need to carefully construct and implement their energy subsidies reform policies taking into consideration the above-mentioned factors. This requires strong state capacity to factor in all these aspects, manage a complex group of interests and maintain long-term political commitment.

From this analysis we can draw the following policy recommendation. First, making long-term political commitment to subsidy reforms and linked distributional policies is fundamental for a positive social outcome. A long-term and gradual reform strategy may significantly reduce the short term vulnerability of poor households. Second, the reform should be well anchored among a variety of social groups. A parallel communication of intent might be necessary to avoid public resistance, while credibility in the design and implementation of social compensation programmes would increase the chance to success. Lastly, short-term cushions have to be followed by long-term investments that promote equality to obtain the theoretical social gains from the subsidy reform.

At the general level, our study has two main implications. First, a positive social outcome of subsidy reform cannot be taken as a given. The social implications are substantial and must be well managed to avoid negative repercussions. If the distributional win is to be achieved, the social dimension must be central in the planning and designing of the reform. Energy subsidy reforms do not only represent a potential social gain. In many ways they are social policy in themselves and must be regarded as such to avoid adverse consequences. As social projects energy subsidy reforms can provide a triple win, solely as an economic adjustment they might fail.

Second, careful analysis of a variety of different factors is needed to understand the social outcome of a fossil fuel subsidy reform process. Our research reveals the complex and demanding nature of energy subsidies reforms. It shows that to achieve the social "win" of subsidies reform requires much more than a standardized approach. Instead, the social outcome is shaped by a range of macroeconomic, political and social factors at international and national levels. Careful analysis must both proceed and follow through the reform process. The methods used in this paper provides an initial framework for such analysis, and illustrates the use of the social lens approach to policies for sustainable development. Further exploration of this framework and examination of more cases of fossil fuel reform can improve both the methodology used here and our understanding of the social implications of reform policies.

Bibliography

- Agustina, Cut Dian R.D., Javier Arze del Granado, Tim Bulman, Wolfgang Fengler and Mohamad Ikhsan. 2008. *Black Hole or Black Gold? The Impact of Oil and Gas Prices on Indonesia's Public Finances*. World Bank Policy Research Working Paper, No. 4718. Washington, DC: World Bank.
- Amewu, John-Peter. 2013. *What are the Effects of Oil Subsidies in Ghana, and How Price Reforms Could Improve That*.
<http://www.ghanabusinessnews.com/2013/02/19/what-are-the-effects-of-oil-subsidies-in-ghana-and-how-price-reforms-could-improve-that/> (accessed 20 November 2013).
- Amoatey, Charles. 2006. *Fuel Pricing in Ghana*. Accra: GTZ.
- Araghi, Mansor Khalili and Sajjad Barkhordari. 2012. An evaluation of the welfare effects of reducing energy subsidies in Iran. *Energy Policy* 47: 398–404.
- Ardehali, Morteza M. 2006. Rural energy development in Iran: Non-renewable and renewable resources. *Renewable Energy* 31 (5): 655–662.
- Bacon, Robert and Masami Kojima. 2006. *Coping with Higher Oil Prices*. Energy Sector Management Assistance Programme. Washington, DC: World Bank.
- Barrientos, Armando 2010. *Social Protection and Poverty*. Social Policy and Development Programme Paper Number 42. Geneva: UNRISD.
- Beaton, Christopher and Lucky Lontoh. 2010. *Lessons Learned from Indonesia's Attempts to Reform Fossil-Fuel Subsidies*. Winnipeg, IISD.
- Bloomberg News. 2013. *Ghana to Narrow 12.1% Deficit With Tax, Fuel-Subsidy Cuts*. 15 February. <http://www.bloomberg.com/news/2013-02-15/ghana-to-narrow-12-1-deficit-with-tax-fuel-subsidy-cuts.html> (accessed 27 November 2014).
- Brumberg, Daniel and Ariel I. Ahram. 2007. *The National Iranian Oil Company in Iranian Politics*. Houston, TX: The James A. Baker III Institute for Public Policy.
- Burniaux, Jean-Marc, Jean Chateau, Rob M. Dellink, Romain Duval and Stéphanie Jamet. 2009. *The Economics of Climate Change Mitigation: How to Build the Necessary Global Action in a Cost-Effective Manner*. OECD Economics Department Working Papers No. 701. Paris: OECD.
- Campbell, Kelly. 2007. *Is Iran Facing an Economic Crisis?* USI Peace Briefing. <http://www.usip.org/publications/iran-facing-economic-crisis> (accessed 30 June 2014).
- Central Bank of the Islamic Republic of Iran. 2012. *Annual Review 1390 2011/2012*. Teheran: Central Bank of the Islamic Republic of Iran.
- Central Bureau of Statistics: Census 2010. *Hasil Sensus Penduduk 2010*. http://www.bps.go.id/65tahun/SP2010_agregat_data_perProvinsi.pdf (accessed 1 March 2014).

- Cheung, Chee Yew. 2013. *Indonesia Faces Bumpy Road as It Seeks Upstream Investments*.
http://www.rigzone.com/news/oil_gas/a/129462/Indonesia_Faces_Bumpy_Road_a_s_It_Seeks_Upstream_Investments (accessed 1 March 2014).
- Chevalier, Jean-Marie and Nadia S. Ouédraogo. 2009. Energy Poverty and Economic Development. In: Jean-Marie Chevalier (ed), *The New Energy Crisis*. Basingstoke: Palgrave Macmillan.
- Coady, David, Moataz El-Said, Robert Gillingham, Kangni Kpodar, Paulo Medas and David Newhouse. 2006. *The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali, and Sri Lanka*. Working Paper WP/06/247. Washington, DC: International Monetary Fund.
- Coady, David and David Newhouse. 2006. Ghana: Evaluating the Fiscal and Social Costs of Increases in Domestic Fuel Prices, in A. Coudouel, A. Dani and S. Paternostro (eds.), *Poverty and Social Analysis of Reforms: Lessons and Examples from Implementation*, Washington, DC: World Bank.
- Coordinating Ministry for Economic Affairs. 2008. *The Government's Explanation on its Policy in Fuel-Subsidy Cuts and Accompanying Policies*. From Ministry of Energy and Mineral Resources Republic of Indonesia: www.esdm.go.id/siaran-pers (accessed 2 July 2010).
- Cook, Sarah, Kiah Smith and Peter Utting. 2012. *Green Economy or Green Society? Contestation and Policies for a Fair Transition*. Social Dimensions of Green Economy and Sustainable Development Occasional Paper 10. Geneva: UNRISD.
- Cooke, Edgar F.A., Sarah Hague, John Cockburn, Abdel-Rahmen El Lahga and Luca Tiberti. 2014. *Estimating the Impact on Poverty of Ghana's Fuel Subsidy Reform and a Mitigating Response*. Working Paper 2014-02. Accra: UNICEF Ghana and Partnership for Economic Policy (PEP).
- Crawford, Guy. 2012. *Ghana's Fossil-Fuel Subsidy Reform*. Case Study 09. Brighton: Institute of Development Studies (IDS).
- Davoudpour, Hamid and Mohammad Sadegh Ahadi. 2006. The potential for greenhouse gas mitigation in household sector of Iran: Cases of price reform/efficiency improvement and scenario for 2000–2010. *Energy Policy* 34 (2006) 40–49.
- Del Granado, Javier Arze, Coady David and Robert Gillingham. 2010. *The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries*. IMF Working Paper, WP/10/202. Washington, DC: IMF.
- Dillon Singh; Laan, Tara and Harya Setyaka Dillon. 2008. *Biofuels—At What Cost? Government Support Ethanol and Biodiesel in Indonesia*. Geneva: The International Institute for Sustainable Development (IISD).
- Ellis, Jennifer. 2010. Untold billions: *Fossil fuel Subsidies, their Impacts and the Path to Reform. The Effects of Fossil-Fuel Subsidy Reform: A Review of Modeling and Empirical Studies*. Global Subsidies Initiative.
www.globalsubsidies.org/files/assets/effects_ffs.pdf (accessed 20 May 2013).

- Farzanegan, Mohammad Reza. 2013. Effects of international Financial and Energy Sanctions on Iran's Informal Economy. *SAIS Review*, Volume 33, Number 1, Winter-Spring 2013, pp. 13–36.
- Gbedemah, Christiana; Jones, Nicola and Paola Perezniето. 2010. *Gendered Risks, Poverty and Vulnerability in Ghana: Is the LEAP Cash Transfer Programme Making a Difference*. ODI Project Briefing No. 52. London: ODI.
- Guillaume, Dominique; Zytek, Roman and Mohammad Reza Farzin. 2011. *Iran—The Chronicles of the Subsidy Reform*. Working Paper WP/11/167. Washington, DC: IMF.
- Hassanzadeh, Elham. 2012. “Recent Developments in Iran’s Energy Subsidy Reforms”. Global Subsidies Initiative. Geneva: The International Institute for Sustainable Development (IISD).
- IISD (International Institute for Sustainable Development). 2012. *A Citizen’s Guide to Energy Subsidies in Indonesia—2012 Update*. http://www.iisd.org/gsi/sites/default/files/indonesia_czguide_eng_update_2012.pdf (accessed 10 October 2014).
- ILO (International Labour Office). 2012. *Labour and Social Trends in Indonesia 2012*. Working for A Sustainable and Equitable Economy Series/International Labour Office—Jakarta: ILO.
- IMF (International Monetary Fund). 2013a. *Energy Subsidy Reform: Lessons and Implications*. <http://www.imf.org/external/np/pp/eng/2013/012813.pdf> (accessed 10 May 2014).
- . 2013b. *Energy Subsidy Reform in Sub-Saharan Africa: Experiences and Lessons*. Washington DC: IMF.
- . 2012. *The Political Economy of Subsidy Reform*. Available as podcast at: <http://www.imf.org/external/spring/2012/mmedia/view.aspx?vid=1573532140001> (accessed 10 July 2014).
- . 2011. *Ghana: 2011 Article IV Consultation and Third and Fourth Reviews Under the Arrangement Under the Extended Credit Facility*. Country Report 11/128. Washington, DC: IMF.
- . 2008. *Food and Fuel Price Subsidies: Issues and Reform Options*. A paper prepared by fiscal affairs department. September 8. Washington, DC. www.imf.org/external/np/pp/eng/2008/090808a.pdf (accessed 20 May 2014)
- . 2006. *The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali, and Sri Lanka*. Washington, DC: IMF.
- . 2004. *Ghana: Second Review Under the Poverty Reduction and Growth Facility*. IMF Country Report 04/210. <http://www.imf.org/external/pubs/ft/scr/2004/cr04210.pdf> (accessed 20 May 2014).
- Indonesian Ministry of Finance. 2009. *Economic and Fiscal Policy Strategies for Climate Change Mitigation in Indonesia*. Ministry of Finance Green Paper. Australia Indonesia Partnership. Jakarta.

- Iran Labor Report. 2010. *New Minimum Wage Rate Spurs Widespread Indignation*. <http://iranlaborreport.com/?p=327> (downloaded 15 June 2014).
- IRNA (Islamic Republic News Agency) 2014. *Health Insurance for All by March 2016*. http://irna.ir/en/News/2672765/Social/Health_insurance_for_all_by_March_2016 (accessed 10 May 2014).
- Jackson, Tim. 2011. *Prosperity without Growth*. London: Earthscan.
- Jafari, H. Hourri and A. Baratimalayeri. 2008. The crisis of gasoline consumption in the Iran's transportation sector. *Energy Policy* 36 (2008) 2536–2543.
- Jensen, Jesper and David Tarr. 2003. Trade, exchange rate and energy pricing reform in Iran: Potentially large efficiency effects and gains to the poor. *Review of Development Economics*, 7 (4) 543–562.
- Karbassi, A.; Abduli, M.M. and E. Mahin Adbollahzadeh. 2007. Sustainability of energy production and use in Iran. *Energy Policy*, Volume 35, Issue 10, October 2007, 5171–5180.
- Khajehpour, Bijan. 2014. *Can Iran Finally Pass Subsidy Reform?* Al Monitor. <http://www.al-monitor.com/pulse/originals/2014/04/iran-subsidy-reform-efforts-corruption.html#> (downloaded 20 June 2014).
- Kojima, Masami. 2009. *Government Response to Oil Price Volatility: Experience of 49 Developing Countries*. Washington, DC: The World Bank.
- Jakarta Post. 2005. *New Survey Rates SBY's Popularly as High*. 30 December.
- Laan, Tara;, Beaton, Christopher and Bertille Presta. 2010. *Untold Billions: Fossil-Fuel Subsidies, their Impacts and the Path to Reform. Strategies for Reforming Fossil Subsidies: Practical Lessons from Ghana, France and Senegal*. Geneva: Global Subsidies Initiative, IISD.
- MEMR (Ministry of Energy and Mineral Resource). 2012. *The Government Plans the Conversion from Kerosene To LPG 3kg in Five Provinces*. Last accessed on June 27, 2014. <http://www.esdm.go.id/news-archives/oil-and-gas/47-oilandgas/5652-the-government-planned-kerosene-to-lpg-3-kg-conversion-in-five-provinces.html> (accessed 10 October 2014).
- Mkandawire, Thandika. 2005. *Targeting and Universalism in Poverty Reduction*. Social Policy and Development Programme Paper Number 23. Geneva: UNRISD.
- Morgan, Trevor. 2007. *Energy Subsidies: Their Magnitude, How They Affect Energy Investment and Greenhouse Gas Emissions and Prospects for Reforms*. Report for UNFCCC Secretariat Financial and Technical Support Programme, Bonn.
- Mourougane, Annabelle. 2010. *Phasing Out Energy Subsidies in Indonesia*. OECD Economics Department Working Papers, No. 808. Paris: OECD Publishing.
- OECD/IEA (Organisation for Economic Cooperation and Development/International Energy Agency). 2014. Online database on energy subsidies. *World Energy Outlook*. Available at: <http://www.iea.org/subsidy/index.html>.

- Osei, Robert Darko; Adobea Owusu, Gertrude; Asem, Freda E. and Robert Lawrence Afutu-Kotey. 2009. *Effects of Capitation Grant on Educational Outcomes in Ghana*. Accra: Institute of Statistical Social and Economic Research (ISSER).
- Presidential Instruction. 2005. *Instruksi Presiden No.12 Tahun 2005 tentang Pelaksanaan Bantuan Langsung Tunai Kepada Rumah Tangga Miskin* [Presidential Instruction No.12 Year 2005 on the Implementation of Direct Cash Transfer to Poor Households]. Indonesia.
- Saad-Filho, Alfredo. 2007. Life beyond the Washington Consensus: An introduction to Pro-poor Macroeconomic Policies. *Review of Political Economy*, 19:4, 513–537.
- Salehi-Isfahani, Djavad. 2006. *Revolution and Redistribution in Iran: Poverty and Inequality 25 Years Later*. Department of Economics, Virginia Tech. Blacksburg, VA: Virginia Tech.
- Salehi-Isfahani, Djavad; Stucki, Bryce Wilson and Joshua Deutschmann 2014. *The Reform of Energy Subsidies in Iran: The Role of Cash Transfers*. Working paper, Department of Economics, Virginia Tech. Blacksburg, VA: Virginia Tech.
- Shahdani, M.S.; Salimian, Z.; Aghaee, M. and V. Mokarizadeh. 2012. *Projected Residential Electricity Demand after Subsidies Reform Program in Iran*. 3rd IAEE Asian Conference, 20–22 February 2012. Kyoto, Japan.
- SIGTTO (Society of International Gas Tanker & Terminal Operators Ltd.). 2010. *The Changing Face of Indonesian LNG and LPG Markets*. London: Society of International Gas Tanker & Terminal Operators Ltd. http://www.porttechnology.org/images/uploads/technical_papers/78-79.pdf (accessed 10 May 2014).
- Société Générale. 2014. *On Our Minds: Indonesia: The Perils of Oil Subsidies*. Société Générale Cross Asset Research. <https://publication.sgresearch.com/en/1/0/202911/138085.html?sid=c40166bb876322750b8cc079a18bfe03> (accessed 18 September, 2014).
- Tabatabai, Hamid. 2011. The basic income road to reforming Iran's price subsidies. *Basic Income Studies* 6 (1): 1–24.
- Vagliasindi, Maria. 2013. *Implementing Energy Subsidies Reforms: Evidence from Developing Countries*. International Bank for Reconstruction and Development/The World Bank: Washington, DC.
- Victor, David. 2009. *Untold Billions. Fossil Fuel Subsidies, their Impacts and the Path to Reform: The Politics Of Fossil Fuel Subsidies*. Global Subsidies Initiative. Geneva: The International Institute for Sustainable Development (IISD).
- Widjaja, Muliadi. 2009. *An Economic and Social Review on Indonesian Direct Cash Transfer Program to Poor Families, Year 2005*. Department of Economics, University of Indonesia. <https://www.appam.org/conferences/international/singapore2009/sessions/downloads/1101.pdf> (accessed 10 April 2014).

- World Bank. *Spending for Development: Making the Most of Indonesia's New Opportunities*. Indonesia Public Spending Review 2007. Washington, DC: World Bank.
- . 2012. *Policy Note Indonesia: Urban Poverty and Program Review October 2012*. Washington, DC: World Bank.
- . 2011. *Indonesia Economic Quarterly: 2008 Again?* <http://issuu.com/worldbank.indonesia/docs/ieq-mar2011-english> (accessed 10 April 2014).
- . 2008. *Reforming Energy Prices Subsidies and Reinforcing Social Protection. Some Design Issues*. Report 43173-MNA. Washington, DC: World Bank.
- . 2007. *Spending for Development: Making the Most of Indonesia's New Opportunities*. Indonesia Public Spending Review 2007. Washington, DC: World Bank.
- Yusuf, Arief Anshory. 2008. *The Distributional Impact of Environmental Policy: The Case of Carbon Tax and Energy Pricing Reform in Indonesia*. Research Report No. 2008-RR1. Singapore: Economy and Environment Program for Southeast Asia (EEPSEA).