

GSI RESOURCE SUPPLEMENT

GETTING THE PRICES RIGHT: AN INTERACTIVE EXERCISE ON FUEL PRICING MECHANISMS



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THROUGH
100%



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About GSI

GSI is an initiative of the International Institute for Sustainable Development (IISD). GSI is headquartered in Geneva, Switzerland and works with partners located around the world. Its principal funders have included the governments of Denmark, the Netherlands, New Zealand, Norway, Sweden and the United Kingdom. The William and Flora Hewlett Foundation have also contributed to funding GSI research and communications activities.

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AN INTERACTIVE EXERCISE ON FUEL PRICING MECHANISMS

The path to fossil-fuel subsidy reform depends on which pricing policies are being used to subsidize individual fuels. As explained in *A Guidebook to Fossil-Fuel Subsidy Reform*, the Global Subsidies Initiative (GSI) breaks down pricing into four dimensions by which a country's policy can vary, adapted from a framework originally put forward by the German Agency for International Cooperation (GIZ, 2012) in the context of motor fuel prices. The four dimensions of fossil-fuel pricing are:

1. **Subsidies** The degree to which subsidies reduce the end-price of fuel by shifting costs onto the government, state-owned energy companies, private energy companies or other actors.
2. **Pass-through** The degree to which domestic pricing fluctuations match international price changes—literally, the degree to which an international price change is “passed through” into prices domestically.
3. **Transparency** The degree to which the composition and regulation of energy prices is open and transparent.
4. **Enforcement** The degree to which fuel pricing in real life actually follows officially adopted energy pricing arrangements.

In addition to this, many countries have a mechanism in place that determines **how prices change**—such as ad hoc price changes by government, automatic pricing mechanisms, price stabilization funds and market-based pricing.

By splitting up pricing policies into these different dimensions and thinking about the mechanisms that determine how prices change, it is possible to have a much clearer and focused discussion on what parts of a pricing policy require reform and how each part may require different efforts and timescales to achieve change. A discussion about pricing policies can, however, quickly become dry and academic, with participants not sharing a common understanding of terms, and getting confused as they move from one dimension of pricing policy to another. This supplement sets out an interactive exercise that can be used to explain the different elements of pricing policy and help policy-makers and stakeholders engage on the issue. It can also be used to help illustrate how the pricing policies of different countries operate in different ways.



The supplement begins by, first, explaining pricing dimensions via the use of Chernoff faces: a technique to represent multidimensional data using human faces (Chernoff, 1973). These are focused specifically on the pricing of petroleum products, though could be adapted to discuss the pricing of other fossil fuels. Next, it sets out instructions for an interactive exercise on how a pricing policy might need to change following an external price shock. Finally, it includes large copies of all of the images that need to be printed and cut out as part of an interactive exercise.

Explaining Pricing Dimensions with Chernoff Faces

Paraphrasing the famous opening sentence from Leo Tolstoy's "Anna Karenina," it is possible to say that "happy energy markets are all alike, but every unhappy energy market is unhappy in its own way."¹ A "happy energy market" can be represented in the following way:



This represents a country with no subsidies, full pass-through of international prices, full transparency and good enforcement. Prices change according to the market.

Every unhappy market is indeed "unhappy in its own way," with one or several elements of "happiness" missing across four dimensions. In addition, prices may be changed with a variety of mechanisms.

DIMENSION 1: SUBSIDIES

The first and perhaps most important dimension of fossil-fuel pricing is the degree to which subsidies shift costs away from consumers. And as explained in Chapter 1 of *A Guidebook to Fossil-Fuel Subsidy Reform*, subsidies can be conferred in a broad variety of ways. Assuming that subsidies do exist, these are represented according to what is being held to the left of the Chernoff face.



A face holding a *lock* represents a country that confers subsidies through fixed, below-market prices. The policy might hold prices at a certain level, cap prices or require other actors, such as state-owned or private energy companies, to fix or cap prices. Such subsidies are often paid for through government revenues, foregone spending or losses on the accounts of energy companies.

.....

¹ Tolstoy's original sentence was about happy and unhappy families.

A face holding a *sign with the word "taxes" crossed out* represents a country where subsidies are conferred through tax exemptions or reductions. For governments, such provisions are a deviation from the tax rate that has been deemed nationally appropriate and they incur a cost through foregone revenue.

A face holding a *gift* represents a country where subsidies are conferred through monetary transfers or credits bundled with fuel purchases or in the form of in-kind rations. The latter option is more common for electricity.

DIMENSION 2: PASS-THROUGH

The second dimension of pricing is the degree to which governments control the pass-through of international price fluctuations onto domestic markets. This can be represented according to the sign held on the right hand side of the Chernoff face.

All countries that fail to pass-through prices 100 per cent must, by definition, be subsidizing. However, not all countries that subsidize must be reducing pass-through. For example, a government might allow domestic prices to go up or down in ways that exactly match international prices, but still hold domestic prices a fixed amount below their international equivalents.



A face holding a sign that reads "100% pass-through" represents a country that fully passes through all international price fluctuations.

A face holding a sign that reads "no pass-through" represents a country that allows no pass-through of international price fluctuations.

Countries that allow some but not full pass-through can be represented by a face holding a sign that shows the appropriate percentage of pass-through.

DIMENSION 3: TRANSPARENCY

The third dimension of pricing is the degree to which the composition and regulation of energy prices is transparent. Dark glasses are used to indicate the level of a country's transparency:



A face wearing *no sunglasses* represents a country with a policy that has fully transparent composition and regulation of energy prices.



A face wearing *sunglasses* represents a country with a policy that has wholly non-transparent composition and regulation of energy prices.



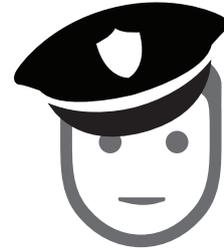
Countries that have between full and no transparency with respect to price composition and regulation can be represented by a face wearing *sunglasses that partially cover the eyes*.

DIMENSION 4: ENFORCEMENT

The fourth dimension of pricing is the degree to which fuel pricing in real life actually follows officially adopted energy pricing arrangements. For instance, most countries that implement dual pricing of fuels have failed to prevent the emergence of black energy markets. Even countries with no subsidies need to enforce anti-trust regulation and ensure fair competition in energy markets in order to prevent collusion of suppliers and monopolistically high energy prices.



A face wearing a hat firmly on its head fully enforces its energy price regulations.



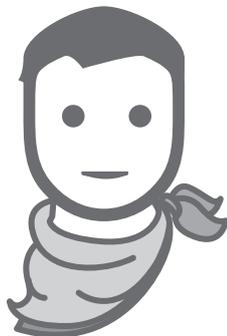
A face wearing a hat that is cocked to one side fails to fully enforce its price regulations.

HOW DO PRICES CHANGE? PRICING MECHANISMS

Finally, a discussion of fossil-fuel pricing will often want to focus on the mechanism by which prices are *changed*. Who decides *when* prices should rise or fall? Who decides *how* they should rise or fall? Pricing mechanisms are represented by various items of clothing worn around the neck.



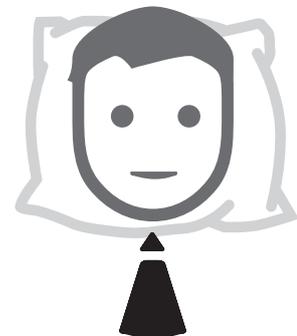
A face wearing no item of clothing around its neck represents a country that has market-based pricing: prices are determined according to the interplay of supply and demand, and governments have no opportunity to intervene in this process.



A face wearing a bandana around its neck represents a country that has ad hoc pricing: governments exercise “manual control” of price changes on an arbitrary basis.



A face wearing a tie around its neck represents a country that has a formal, automatic pricing mechanism: prices change automatically, according to a predetermined formula, with no or little intervention from government.



A face wearing a tie around its neck and a cushion beneath its head represents a country with an automatic pricing mechanism and a price stabilization fund: collecting taxes when international prices are low, and disbursing funds to dampen domestic prices when international prices are high.

ILLUSTRATING PRICING POLICIES WITH CHERNOFF FACES

The examples below show how the different symbols can be used together to illustrate a country's pricing dimensions and pricing mechanism.



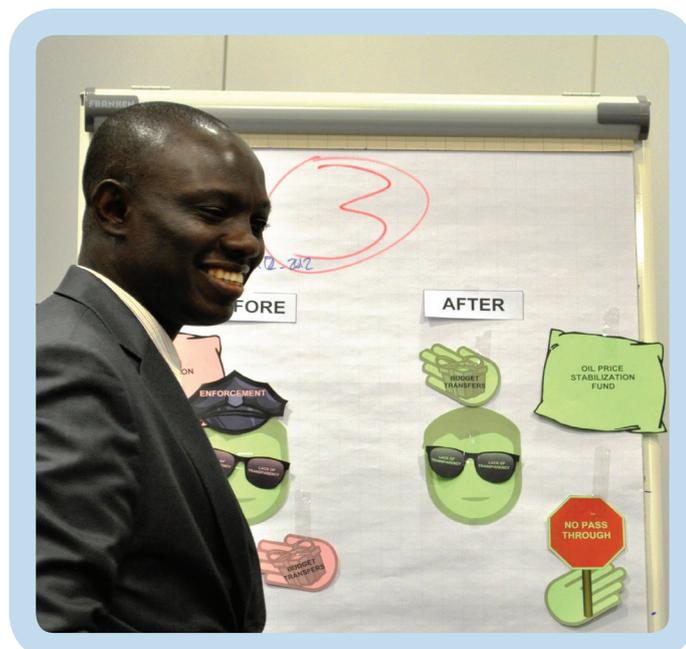
China has a non-transparent, formula-based pricing system. It only passes through international price changes if prices vary more than 4 per cent since each monthly review, and reserves the right not to pass-through changes at all. Subsidies exist when domestic prices have not caught up with international prices. If international prices are over US\$130, tax breaks are used to help keep prices low. Subsidies have led to huge losses for state-owned refiners. See pp.33 of *A Guidebook to Fossil-Fuel Subsidy Reform* for details.

The Philippines has a transparent, market-based pricing system, although some elements of price enforcement can still be improved. It continues to provide some subsidies through tax exemptions but these are not so costly that they will cause a crisis. See pp.29 of *A Guidebook to Fossil-Fuel Subsidy Reform* for more details.

CONDUCTING AN INTERACTIVE EXERCISE WITH CHERNOFF FACES

Chernoff faces can be used in interactive exercises to facilitate discussion about pricing mechanisms. Such exercises can be useful for the following reasons:

- **Rigour:** using visual markers for separate elements of a pricing system can help participants keep focused on using common terms and distinguishing between them rigorously.
- **Dynamism:** combining discussion, movement and visual markers helps to foster interest and concentration on what can otherwise be a dry and academic set of ideas.
- **Contrast:** the use of visual markers is an effective way to compare and contrast pricing regimes in different countries or at different times.



GIZ-GSI Workshop on Smart Fuel Price Regulation, November 2012.
Photo by Patricia Lauko, GIZ.

FACILITATING THE EXERCISE

The exercise described in this supplement takes place in the following steps:

1. Facilitators give a short presentation on the different dimensions of fossil-fuel pricing and how Chernoff faces can be used to describe them.
2. The exercise is introduced (see box outs below and opposite) and participants are split up into small groups, each dealing with the pricing regime of a specific country. At least one person in each group should be highly familiar with the pricing system of the country in question.
3. The groups discuss the challenge set out by the exercise, constructing an appropriate Chernoff face (or faces), to reflect their thoughts on pricing, annotated with notes as necessary.
4. A plenary session is held. Each group is invited to report back and general discussion takes place.

An exercise ideally requires the following:

- Three to five groups, each containing three to six people
- Handouts including a written copy of exercise instructions
- Flip-charts, post-its, pens and sellotape or pins
- Cut-outs of the symbols that can be used to represent different aspects of a country's pricing system (see final pages of this supplement)
- Flip-charts, post-its, pens and supplies for attaching cut-outs to the charts (scotch tape, pins, etc.)



GIZ-GSI Workshop on Smart Fuel Price Regulation, November 2012. Photo by Patricia Lauko, GIZ.

INSTRUCTIONS FOR INTERACTIVE EXERCISE: THE \$50 OIL PRICE SHOCK

In order to better understand the nature and role of various fuel pricing schemes, as well as political, regulatory and public reactions, this exercise takes the volatility of price changes to an extreme case: a sudden price increase of \$50 per barrel. It explores: how will different pricing systems react to such a situation? What difficulties and opportunities may appear?

*In breaking news....OPEC has officially confirmed the WikiLeaks announcement that Saudi Arabia's recoverable oil reserves have been overstated by 40%:
<http://www.youtube.com/watch?v=UL61zYKvWq0>*

Assume that it is unclear how long the higher price level will prevail, and regulators must act within a given time frame (doing nothing is not considered an option). Discuss in groups the following question:

How will the pricing scheme in your country respond to this price increase?

Use the provided cut-outs to show the pricing mechanism in your country "before" and "after" the shock.

1. Start by choosing the pricing mechanism:

- Market-based pricing (nothing)
- Ad hoc price (bandana)
- Price formula (tie)
- Oil stabilization fund (cushion)

2. Then add four dimensions of pricing:

- How subsidies are conferred (hands holding a lock, a no taxation sign or a gift)
- Degree to which governments allow full price pass-through (signs showing pass-through)
- Degree of transparency (fully, partially or not at all covering the eyes with dark glasses)
- Degree of enforcement (straight or lop-sided hat)

Notes or extra details can be appended using pens and post-its.

Example



A pricing policy with:

- Ad hoc pricing (bandana)
- Subsidies conferred by monetary transfers or hand-outs (gift on left side)
- No pass-through (stop sign)
- No transparency (dark glasses)
- Only partial enforcement (lop-sided cap)



A pricing policy with:

- Market-based pricing (no bandana or tie)
- No subsidies (nothing on left side)
- Full pass-through (100% pass-through sign)
- Transparent prices (no dark glasses)
- Fully enforced (cap on straight)

Each group has **30 minutes to complete the exercise** and will have up to **15 minutes to report back**. Each group should nominate one person to present their results.

RESOURCES FOR RUNNING AN INTERACTIVE SESSION WITH CHERNOFF FACES

The following images can be printed and cut out in order to run the interactive exercise on fuel pricing mechanisms.











