

2007 2012 2011
 2005 2009 2004
 2008 2006 2010 2013

Getting electricity

- Getting an electricity connection is easiest in Iceland, where it takes 4 procedures and 22 days.
- From June 2011 to June 2012 *Doing Business* recorded 13 reforms making it easier to get electricity.
- Armenia made the biggest improvement in the ease of getting electricity in the past year.
- Vanuatu and The Gambia have advanced the furthest in narrowing the gap with the most efficient regulations governing electricity connections since 2010.
- Sub-Saharan Africa, the region where improvements are most needed, leads in the number of reforms making electricity regulations more business-friendly.

For more information on good practices and research related to getting electricity, visit <http://www.doingbusiness.org/data/exploretopics/getting-electricity>. For more on the methodology, see the section on getting electricity in the data notes.

Infrastructure services, particularly electricity, are a concern for businesses around the world. World Bank Enterprise Surveys show that managers in 109 economies, 71 of them low or lower middle income, consider electricity to be among the biggest constraints to their business. In addition, managers estimate losses due to power outages at an average 5.1% of annual sales.¹

Doing Business measures the procedures, time and cost for a small to medium-size business to get a new electricity connection for a warehouse. To make the data comparable across 185 economies, *Doing Business* uses a standardized case study of a newly established warehouse requiring a connection 150 meters long and with a power need of 140 kilovolt-amperes (kVA). The warehouse is assumed to be located in the largest business city, in an area where warehouses usually locate and electricity is most easily available.

WHO REFORMED IN GETTING ELECTRICITY IN 2011/12?

Economies where getting an electricity connection is easy have several good practices in common (table 11.1). Other economies are adopting some of these practices. From June 2011 to June 2012 *Doing Business* recorded 13 reforms that made getting electricity easier (table 11.2). Two economies introduced changes that made connections costlier.

Improving process efficiency within the utility and streamlining approvals with other public agencies are the most common features of reforms making it easier to get electricity. These are also among the most effective ways to reduce

TABLE 11.1 Where is getting electricity easiest—and where most difficult?

| Easiest | RANK | Most difficult | RANK |
|----------------------|------|--------------------|------|
| Iceland | 1 | Sierra Leone | 176 |
| Germany | 2 | Kyrgyz Republic | 177 |
| Korea, Rep. | 3 | Nigeria | 178 |
| Hong Kong SAR, China | 4 | Malawi | 179 |
| Singapore | 5 | Senegal | 180 |
| Taiwan, China | 6 | Tajikistan | 181 |
| United Arab Emirates | 7 | Guinea-Bissau | 182 |
| Switzerland | 8 | Madagascar | 183 |
| Sweden | 9 | Russian Federation | 184 |
| Thailand | 10 | Bangladesh | 185 |

Note: Rankings are the average of the economy's rankings on the procedures, time and cost to get an electricity connection. See the data notes for details.

Source: *Doing Business* database.

connection delays and the duplication of formalities. In Canada a more efficient process for obtaining the excavation permit and materials needed for the connection reduced the time to get a new electricity connection by 26 days. In Indonesia in 2011 the utility PT PLN set up a call center enabling customers to request a new electricity connection by phone. It further simplified the application process by eliminating the requirement to bring in a copy of a neighbor's bill to help determine the exact address of the new customer's business.

As these examples show, small adjustments can lead to big gains in time and efficiency. Other economies have adopted broader approaches. Armenia and Georgia streamlined procedures and revised connection costs through several amendments to the regulations

| Feature | Economies | Some highlights |
|---|--|---|
| Improved process efficiency | Canada; Indonesia; Italy; Liberia; Mexico; Namibia; United Arab Emirates | In Italy the utility Acea Distribuzione reorganized its departmental workflow, increasing efficiency and reducing the time to complete external connection works. In Liberia the materials needed for an electricity connection are now readily available in the utility's stock, reducing the time to obtain a connection. The purchase of materials was facilitated by increased donor funding. |
| Streamlined approval process | Angola; Armenia; Georgia; Guinea | In Armenia the Public Services Regulatory Commission adopted resolutions giving customers more technical options for connecting to electricity. As a result, customers no longer have to wait for a permit from the State Energy Inspectorate. The commission also revised its fee structure, reducing the costs customers pay for a new connection. |
| Improved regulation of connection costs and processes | Republic of Korea; Rwanda | In Rwanda the installation cost that a customer must pay the Energy, Water and Sanitation Authority for the external connection works was reduced from 30% of the materials cost to 15% when the customer provides the materials. |

Source: Doing Business database.

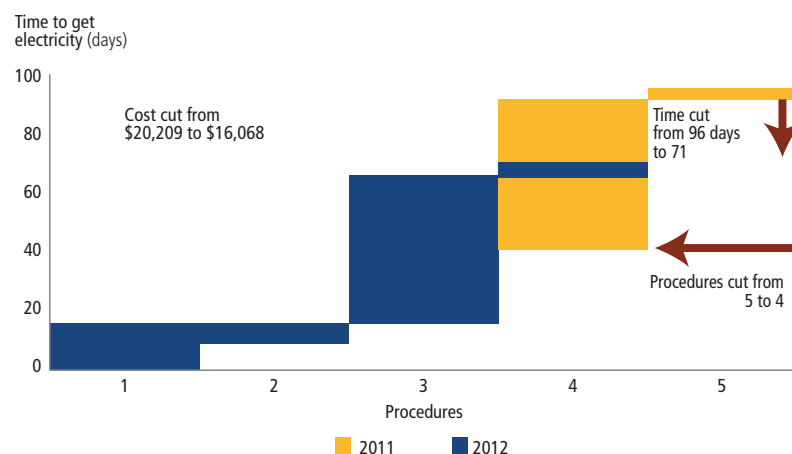
governing the process of connecting new customers. In Armenia the new connection process eliminated 1 procedure while a revised fee structure reduced the cost of new connections. In Georgia the National Commission on Energy and Water Regulation, through a resolution adopted in November 2011, also introduced a new process and a revised fee structure. The changes reduced the number of procedures by 1, the time by a quarter and the cost by a fifth (figure 11.1).

In the United Arab Emirates the Dubai Electricity and Water Authority introduced a “one window, one step” application for getting electricity as the latest

enhancement to its SAP system. The new system allows customers to both submit and track their application online. It also streamlines their interactions with the utility and with their electrical contractor by offering a single interface. Implementation of the new system reduced the time to get a new connection by 15 days.

Other utilities have reduced connection costs and wait times by improving procurement practices. The Liberia Electricity Corporation reduced the time to get a new connection by 120 days by ensuring that the materials needed for the connection are readily available in its stock. The utility of the Namibian city of Windhoek

FIGURE 11.1 Georgia made obtaining an electricity connection faster and cheaper



Source: Doing Business database.

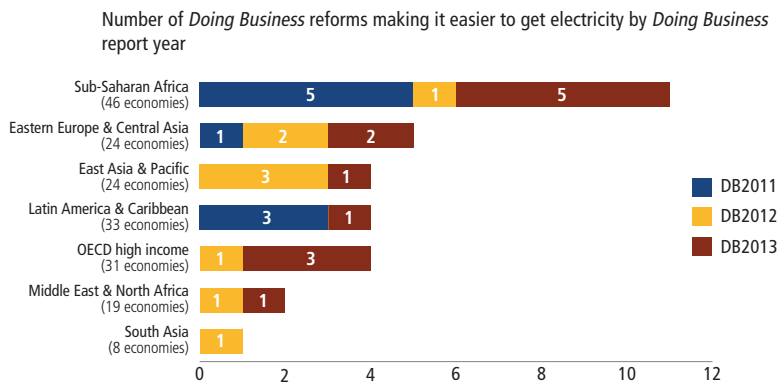
| Procedures (number) | | | |
|--------------------------------|---|--------------------|----|
| Fewest | | Most | |
| Comoros | 3 | Nigeria | 8 |
| Germany | 3 | Senegal | 8 |
| Japan | 3 | Sierra Leone | 8 |
| Micronesia, Fed. Sts. | 3 | Azerbaijan | 9 |
| St. Vincent and the Grenadines | 3 | Bangladesh | 9 |
| Sweden | 3 | Mozambique | 9 |
| Switzerland | 3 | Tajikistan | 9 |
| Timor-Leste | 3 | Uzbekistan | 9 |
| Afghanistan | 4 | Russian Federation | 10 |
| Iceland | 4 | Ukraine | 11 |

| Fastest | | Slowest | |
|---------------------|----|--------------------|-----|
| Germany | 17 | Cyprus | 247 |
| St. Kitts and Nevis | 18 | Hungary | 252 |
| Iceland | 22 | Nigeria | 260 |
| Austria | 23 | Czech Republic | 279 |
| Taiwan, China | 24 | Russian Federation | 281 |
| St. Lucia | 25 | Ukraine | 285 |
| Korea, Rep. | 28 | Bangladesh | 404 |
| Rwanda | 30 | Madagascar | 450 |
| Chile | 31 | Guinea-Bissau | 455 |
| Puerto Rico (U.S.) | 32 | Liberia | 465 |

| Least | | Most | |
|----------------------|------|--------------------------|----------|
| Japan | 0.0 | Djibouti | 7,776.4 |
| Hong Kong SAR, China | 1.6 | Guinea | 8,377.7 |
| Qatar | 3.9 | Malawi | 8,854.9 |
| Norway | 6.5 | Madagascar | 9,056.7 |
| Trinidad and Tobago | 6.6 | Chad | 11,017.6 |
| Australia | 8.7 | Central African Republic | 12,603.6 |
| Panama | 13.6 | Burkina Faso | 12,662.0 |
| Israel | 13.8 | Benin | 14,343.1 |
| Uruguay | 14.3 | Burundi | 21,481.7 |
| Iceland | 14.9 | Congo, Dem. Rep. | 27,211.6 |

Source: Doing Business database.

FIGURE 11.2 Sub-Saharan Africa had the most reforms in getting electricity in the past 3 years



Note: An economy can be considered to have only 1 *Doing Business* reform per topic and year. The data sample for DB2011 (2010) includes 176 economies. The sample for DB2013 (2012) includes a total of 185 economies.

Source: *Doing Business* database.

took several steps aimed at reducing connection times and costs. First, the utility created a new template for calculating commodity prices, enabling it to provide customers with a cost estimate for a new connection more easily and thus more quickly. Second, the utility selected a more effective, efficient and experienced civil contractor through an open tender process. Together, these 2 measures reduced the connection time by 17 days. Finally, the utility began acquiring materials and equipment through an open tender process held every 2 years. This led to more competition and lower prices, reducing the connection cost by 77.8% of income per capita.

Many economies put an emphasis on making it easier to get a connection to the distribution network as a way to increase the electrification rate and stimulate business growth. Rwanda is an example. Its process for obtaining a connection is among the fastest in the world (table 11.3). The government improved it further by reducing installation costs. Customers still provide the materials for the connection, but rather than paying an additional 30% of that cost to the utility for installation, they now pay only half that.

WHAT WERE THE TRENDS IN THE PAST 3 YEARS?

In the past 3 years 30 economies around the world implemented 31

regulatory reforms making it easier to get a new electricity connection. Sub-Saharan Africa accounts for the largest number of such reforms, with 11. Eastern Europe and Central Asia follows (figure 11.2). Among the most common and effective features of regulatory reforms in this area have been improving process efficiency within the utility, streamlining procedures and approvals with other public agencies, making information on connection fees and costs more readily available to customers, regulating the electrical profession to ensure the quality

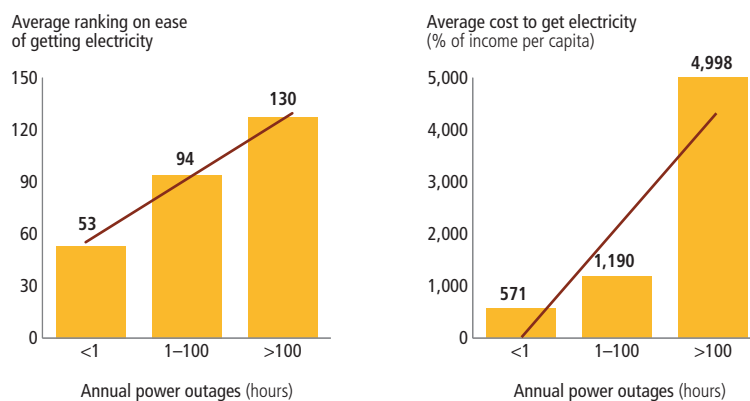
TABLE 11.4 Who has narrowed the distance to frontier in getting electricity the most since 2010?

| Most improved | Improvement in distance to frontier (percentage points) |
|--------------------------|---|
| Vanuatu | 19 (48→67) |
| Gambia, The | 17 (46→63) |
| Central African Republic | 15 (13→28) |
| Zimbabwe | 13 (40→53) |
| Afghanistan | 12 (55→67) |
| Latvia | 12 (61→73) |
| Georgia | 12 (72→84) |
| Kyrgyz Republic | 11 (33→44) |
| Congo, Rep. | 11 (35→46) |
| Angola | 10 (55→65) |

Note: The distance to frontier measure shows how far on average an economy is from the best performance achieved by any economy on each *Doing Business* indicator—in this case for the getting electricity indicators since 2010. The measure is normalized to range between 0 and 100, with 100 representing the best performance (the frontier). The data refer to the 176 economies included in the getting electricity sample in 2010. Nine economies were added in subsequent years. The first column lists the top 10 most improved economies in order; the second shows the absolute improvement in the distance to frontier between 2010 and 2012.

Source: *Doing Business* database.

FIGURE 11.3 In economies where utilities make the connection process cheap and efficient, supply is likely to be more reliable



Note: Data refer to outages per low- or medium-voltage customer in the largest business city. The sample includes 86 economies. South Asia is excluded because of lack of data. Relationships in the first graph are significant at the 5% level after controlling for income per capita. Relationships in the second graph are significant at the 1% level after controlling for income per capita.

Source: *Doing Business* database.

of internal wiring and lessening the burden of security deposits.

Making it easier to get an electricity connection pays off. Since 2010 Vanuatu and The Gambia have advanced the furthest in narrowing the gap with the regulatory systems of economies with the most efficient practices in connecting new customers (table 11.4).

WHAT DO THE INDICATORS SUGGEST ABOUT QUALITY OF SUPPLY?

Studies have shown that poor electricity supply adversely affects the productivity of firms and the investments they make in their productive capacity.² It is therefore essential for businesses to have reliable, good-quality electricity supply. But whether electricity supply is reliable or not, the first step for customers is to get a new connection, the process measured by the getting electricity indicators. This process represents only a small part of electricity services. Yet the indicators offer information on a number of issues for which data were previously unavailable, complementing indicators measuring such outcomes as outages.

Analysis of data for 140 economies suggests that the getting electricity indicators can serve as a useful proxy for the broader performance of the electricity sector.³ Greater time and cost to get an electricity connection are associated with lower electrification rates. Additional connection procedures are more likely to occur in economies where the electricity supply is weak as a result of high losses in the transmission and distribution systems. New analysis of data for 86 economies suggests that where utilities make the connection process cheap and efficient as measured by the getting electricity indicators, supply is likely to be more reliable as measured by the total hours of power outages per customer per year (figure 11.3).⁴

NOTES

This topic note was written by Maya Choueiri, Caroline Frontigny, Anastasia Shegay, Jayashree Srinivasan and Susanne Szymanski.

1. The surveys are for various years in 2002-10. The data sample includes 113 economies.
2. Calderon and Servén 2003; Dollar, Hallward-Driemeier and Mengistae 2006; Reinikka and Svensson 1999; Eifert 2007; Iimi 2011.

3. This analysis, by Geginat and Ramalho (2010), was done in 2009, when the data sample for the getting electricity indicators included only 140 economies. For 2012 the indicators cover 185 economies.
4. The price paid by a customer to get a new connection is not necessarily a measure of the operational performance of the electricity utility but of the existing regulatory framework and the policy to expand electricity access (partial or total subsidization of the costs incurred to build the connection). Besides efficient distribution companies, generation capacity and proper transmission infrastructure also play a critical part in reducing power outages.

The analysis was based on data collected from distribution utilities and regulators on the total hours of outages per customer in the largest business city. The analysis distinguished connection type by low or medium voltage (based on the getting electricity case study) and outages for the respective voltage level. The data analysis included the System Average Interruption Duration Index (SAIDI), the System Average Interruption Frequency Index (SAIFI) and the Customer Average Interruption Duration Index (CAIDI). Many utilities do not use these measures but provided other indices and statistics on power outages.