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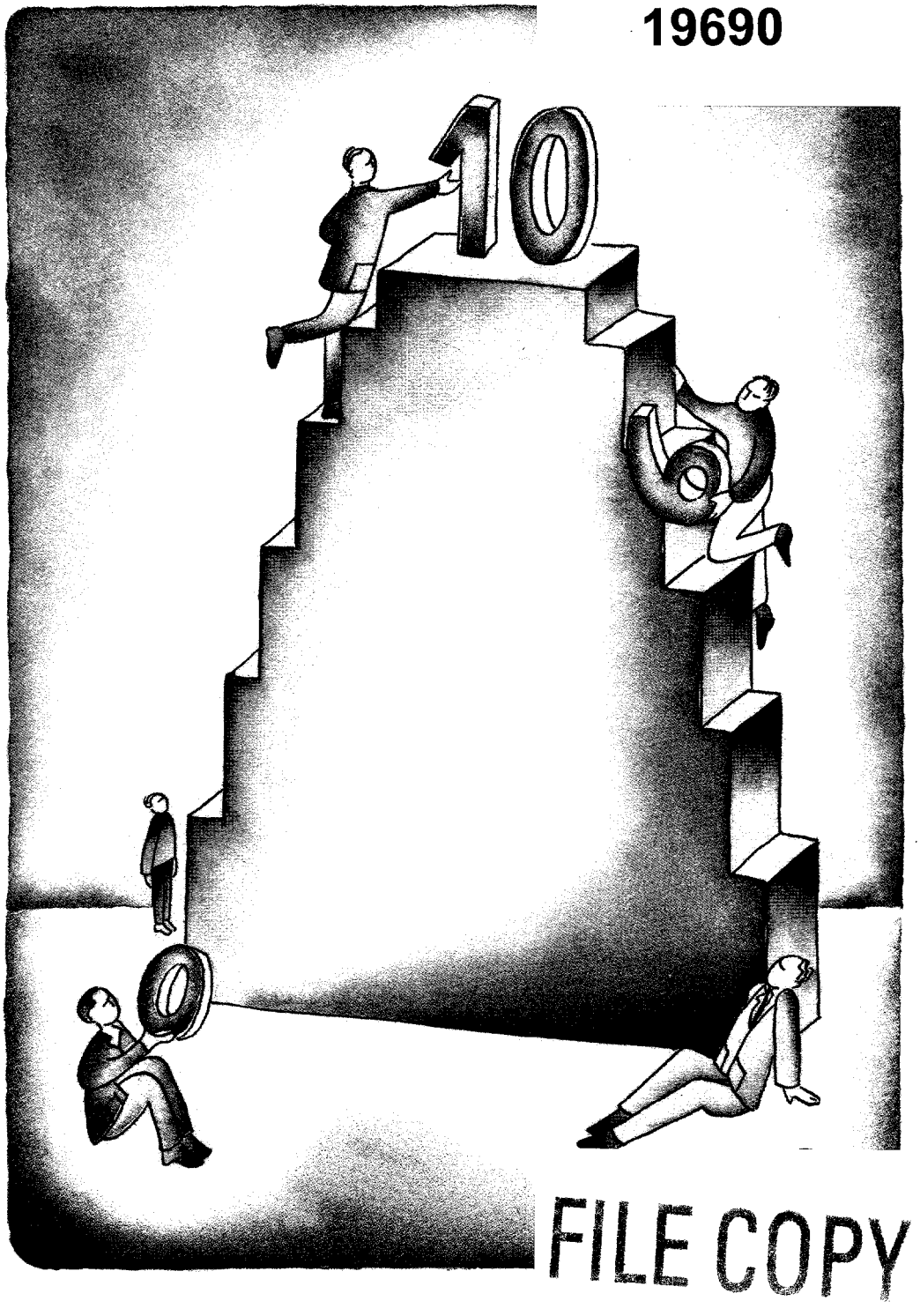

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Dear Readers,

The first Note in this volume shows that despite the hype about the private power industry, privatization, competition, and the implementation of sustainable regulation are barely under way in the majority of developing and transition economies. Power reform is most advanced in Latin America and the Caribbean.

Two Notes provide data and analysis from the Bank's Private Participation in Infrastructure Project Database. The first reviews natural gas transmission and distribution projects. Among other things, it shows that divestitures and greenfield projects are more common than operations and management projects and that export-oriented projects are starting to emerge. Investments in private natural gas transport projects totaled nearly **US$19 billion** in 1990–97. Reviewing the rail sector, the second Note shows that here operations and management contracts are more common than greenfield projects or divestitures. Investments in private railway projects for the same period totaled **US$14 billion.** Compare these totals with US$131 billion in power (see December 1998 issue) and US$24 billion in water (September 1998 issue).

The volume also includes:

- Three case studies illustrating actual or potential problems with the design of contracts for private participation—a management contract for water in the Gaza Strip, a water concession for the neighboring cities of La Paz and El Alto in Bolivia, and subway and suburban rail concessions in Rio de Janeiro.
- Two case studies examining measures to mitigate risk in natural gas projects.
- Two case studies showing approaches used to deal with some of the complexities of regulating private monopolies: methods applied in the United Kingdom to ensure that regulators do not abuse their power, and the process for periodic price reviews in the gas transport industry in Argentina. One of the first in developing countries, the Argentine review could be a trend setter.

Suzanne Smith

Managing Editor

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(formerly the Monopolies and Mergers Commission), parliamentary select committees, and the courts. This Note reviews the roles of these institutions.

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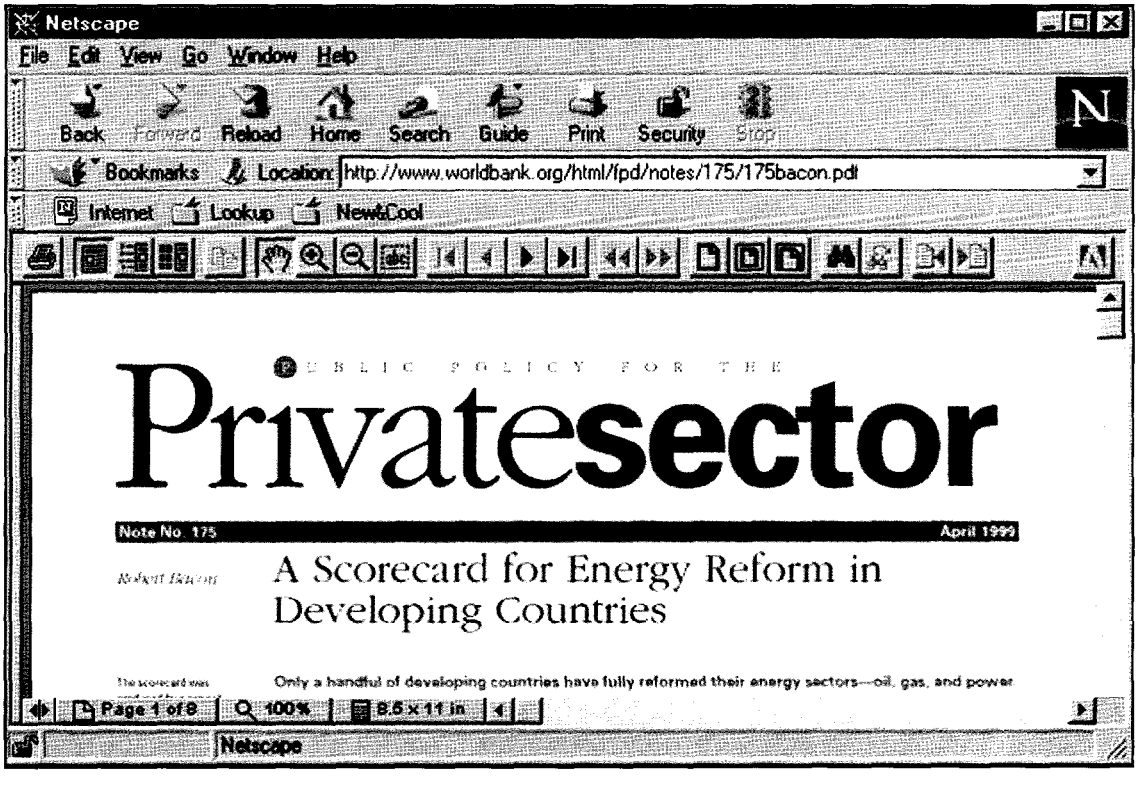

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A Scorecard for Energy Reform in Developing Countries

Robert Bacon

Only a handful of developing countries have fully reformed their energy sectors—oil, gas, and power. A World Bank survey of 115 developing countries shows that on average in mid-1998 just 39 percent of key reform steps had been carried out. Only the upstream oil and gas sector shows a substantially higher degree of reform, largely because of the need to facilitate concession agreements for high-cost exploration and production. Private participation in energy is also fairly limited, as is privatization of existing assets—especially in Sub-Saharan Africa and the Middle East and North Africa. There are large variations among countries in the number of reform steps taken, with most reforms concentrated in a small number of countries. Reform is most advanced in Latin America and the Caribbean. In the great majority of countries little or no reform has been done.

The scorecard was produced by a project funded by the World Bank and United Nations Development Programme's Energy Sector Management Assistance Programme. The longer paper on which this Note is based is forthcoming and will be available from the World Bank at 202 458 2321 (telephone) or esmap@worldbank.org. The paper includes scorecards for each country.

TABLE 1 ENERGY REFORM INDICATORS BY REGION, 1998
Percentage of maximum

Region	Power	Upstream oil and gas	Downstream gas	Downstream oil (refining)	Downstream oil (wholesale and retail)	Average
East Asia and the Pacific	41	47	38	58	21	41
Europe and Central Asia	45	44	36	45	45	43
Latin America and the Caribbean	71	50	63	24	33	53
Middle East and North Africa	17	43	11	17	27	23
South Asia	50	50	50	44	27	46
Sub-Saharan Africa	15	59	31	24	20	32
All regions	34	49	38	35	32	39

Sector reform scores

The survey of energy reform covered the power, upstream oil and gas, and downstream oil and gas sectors (box 1). Oil and gas pipelines and power transmission were omitted from the survey if they had already been separated from the rest of the sector. For each sector the survey covered only countries that have the sector and where it has not been entirely under private ownership for the past ten years; sectors that have been under private ownership for ten years are not considered part of the current reform movement. The results are given separately for each sector because the coverage differs among them.

Energy sector reform requires a number of facilitating steps, but the final goal is to introduce private ownership where possible and competition in the parts of energy industries that are not natural monopolies, with monopolistic elements being regulated.

The average reform indicator for all sectors is around 35 percent, except for upstream oil and gas, where it is nearly 49 percent (table 2). These figures indicate that, at the global level, many

BOX 1 SURVEY QUESTIONS AND METHODS

The World Bank surveyed energy reform in 115 countries to see what steps had been taken and what milestones achieved in this process. The first four survey questions asked about reform steps that enable private capital investment in a sector that was previously owned by the state. The last two questions asked whether private capital had entered the sector. The six questions are:

1. **Has the utility been commercialized and corporatized?**
2. **Has parliament completely passed a law that allows the energy sector to be unbundled or privatized in part or in whole?**
3. **Has a regulatory body that is separate from the utility and from the energy ministry started work?**
4. **Has the core state-owned utility been restructured?**
5. **Is there any private investment in greenfield sites, either in operation or under construction?**
6. **Has any of the public utility been privatized?**

The questions about downstream oil activities differed slightly from those for power and upstream oil because refining was separate from wholesale and retail functions. For refining the survey asked about private greenfield investment, but for retail and wholesale functions it asked whether prices are freely set, since almost all countries have some private retail gasoline outlets.

All the survey questions could be answered yes or no, making it possible to give precise values to the number of steps taken. Each yes scored one and each no scored zero, giving a maximum of six for a sector when all the questions were answered positively. The number of steps actually taken, expressed as a percentage of this maximum, is termed the *reform indicator*.

For several reasons the data presented in this Note understate what remains to be done:

- **The survey asked whether there was any private participation, so even a small asset or share sale would be counted as a yes and given the same weight as complete divestiture.**
- **All countries were treated as equally important in the questionnaire, so different countries with some privatization received the same weight regardless of the size of the sector.**
- **Some countries have many regions, so success in one region (for example, in one state in India) counts as success for the entire country. In reality, the other states may be far from reform.**

The reform indicator was calculated for each sector, for each country, for the aggregate of the countries in the sample, and for each region.

TABLE 2 ENERGY REFORM STEPS BY SECTOR
Percent

Sector and sample size	Corporatization	Law permitting divestiture and unbundling	Regulation established	Corporate restructuring	Private concessions or greenfield investment allowed	Privatization of existing assets	Retail prices freed[a]	Reform indicator
Power, 115 countries	44	33	29	35	40	25	n.a.	34
Upstream oil and gas, 49 countries	67	69	31	43	69	14	n.a.	49
Downstream gas, 55 countries	60	40	40	35	27	27	n.a.	38
Downstream oil (refining), 57 countries	54	n.a.	n.a.	n.a.	23	28	n.a.	35
Downstream oil (wholesale and retail), 72 countries	43	n.a.	n.a.	n.a.	n.a.	28	25	32

n.a. Not applicable.

a. Though not among the six main reform steps for the other sectors, freeing retail prices is considered crucial to reform of downstream oil activities.

steps still have to be taken before the fullest gains from private involvement in the energy sector can be realized.

The higher level of reform activity in upstream oil and gas is significant because there is often fierce government opposition to private sector entry in this sector. But a distinguishing feature of upstream oil and gas activities is that the cost of exploration and development, especially of offshore oil, can be very large, and the risks very great. In cases where the state cannot take on the financing burden, private finance is often recognized as essential and is allowed through the use of concessions. Such concessions may require that laws be changed and state enterprises restructured, but in few cases have countries been willing to privatize existing upstream oil and gas assets.

There is a logical sequence to reform steps if a country is working toward full private sector participation and competition, and the survey results were expected to show this pattern. First, the state company must be corporatized and commercialized. Next, a law permitting private entry must be passed. Then regulation must be implemented. After that the state enterprise should be restructured through vertical and horizontal separation. Private greenfield investment could then be allowed. Finally, existing assets should be privatized. Thus the first and most common step is corporatization and commercialization of the state enterprise, and the final and least common step is privatization of existing assets (see table 2). In power and upstream oil and gas a much larger percentage of countries have permitted private investment than have introduced formal regulation or restructured the industry. Such countries appear not to be preparing for privatization and the creation of competitive markets. Rather, they appear to be augmenting the existing system by admitting private investment on new sites, probably selling to the state enterprise through some type of contract. The small portion of countries that have privatized energy assets confirms this interpretation, especially for upstream oil and gas.

Comparing reform across countries

For the most part reform has spread very unevenly across countries, with upstream oil and gas experiencing the most even pattern (table 3). In power more than a third of the 115 countries in the sample had taken none of the six reform steps. The

TABLE 3 NUMBER OF COUNTRIES BY FULL EXTENT OF ENERGY REFORMS

Sector	Number of steps 0	1	2	3	4	5	6
Power	42	15	16	12	8	10	12
Upstream oil and gas	5	4	7	15	12	3	3
Downstream gas	12	12	8	6	7	8	2
Downstream oil (refining)	24	14	11	8	n.a.	n.a.	n.a.
Downstream oil (wholesale and retail)	32	21	9	10	n.a.	n.a.	n.a.

n.a. Not applicable.

Note: This table shows that in power, for example, only twelve countries have taken all six steps, and fifteen have taken only one step.

TABLE 4 COUNTRIES IN EACH REGION TAKING KEY REFORM STEPS IN POWER
Percent

Reform step	East Asia and the Pacific (9)	Europe and Central Asia (27)	Latin America and the Caribbean (18)	Middle East and North Africa (8)	South Asia (5)	Sub-Saharan Africa (48)
Corporatization	44	63	61	25	40	31
Law	33	41	78	13	40	15
Regulator	11	41	83	0	40	8
Independent power producers	78	33	83	13	100	19
Restructuring	44	52	72	38	40	8
Generation assets divested	22	37	39	13	40	4
Distribution assets divested	11	30	44	13	20	4
Reform indicator	41	45	71	17	50	15

Note: Numbers in parentheses are the number of countries in each region's sample.

10 percent most reforming countries accounted for 30 percent of the reform steps that had been taken. This pattern suggests that reform is not a uniform process, but rather that it proceeds rapidly when conditions are favorable—and does not even start when conditions are unfavorable.

Comparing reform across regions

The country data were grouped by the World Bank's regional classifications to highlight the differences among regions. The results show that power reform is much more advanced in Latin America and the Caribbean than in other regions: 71 percent of the key reform steps have been taken, compared with 15 percent in Sub-Saharan Africa and 17 percent in the Middle East and North Africa (table 4). But even in Latin America and the Caribbean only 40 percent of countries have started to privatize existing generation or distribution assets—while in Sub-Saharan Africa the corresponding figure is just 4 percent.

TABLE 5 COUNTRIES IN EACH REGION TAKING KEY REFORM STEPS IN UPSTREAM OIL AND GAS
Percent

Reform step	East Asia and the Pacific (5)	Europe and Central Asia (17)	Latin America and the Caribbean (8)	Middle East and North Africa (5)	South Asia (3)	Sub-Saharan Africa (11)
Corporatization	80	65	63	80	33	73
Law	60	65	63	60	67	91
Regulator	40	24	50	0	33	36
Restructuring	60	29	25	40	100	55
Concessions	40	65	63	80	67	91
Privatization	0	18	38	0	0	9
Reform indicator	47	44	50	43	50	59

Note: Numbers in parentheses are the number of countries in each region's sample.

TABLE 6 COUNTRIES IN EACH REGION TAKING KEY REFORM STEPS IN DOWNSTREAM GAS
Percent

Reform step	East Asia and the Pacific (4)	Europe and Central Asia (27)	Latin America and the Caribbean (9)	Middle East and North Africa (6)	South Asia (3)	Sub-Saharan Africa (6)
Corporatization	100	59	56	50	100	33
Law	50	33	78	0	67	33
Regulator	25	41	78	0	33	33
Restructuring	25	30	56	17	67	33
Investment	25	22	56	0	33	33
Privatization	0	33	56	0	0	17
Reform indicator	38	36	63	11	50	31

Note: Numbers in parentheses are the number of countries in each region's sample.

The regional picture for upstream oil and gas is very different from that for power. The average indicator for all regions is around 50 percent, and for Sub-Saharan Africa it is nearly 60 percent (table 5). In African countries where there is upstream production there has been an almost universal willingness to allow private concessions, which are associated with the need for state oil companies to be corporatized and commercialized and laws permitting private entry to be passed. Still, only one Sub-Saharan country has been willing to privatize upstream oil and gas assets.

In downstream gas Latin America and the Caribbean has again seen the most activity, with all steps being taken equally often, including privatization (table 6). Other regions have done little

TABLE 7 COUNTRIES IN EACH REGION TAKING KEY REFORM STEPS IN DOWNSTREAM OIL (REFINING)
Percent

Reform step	East Asia and the Pacific (4)	Europe and Central Asia (22)	Latin America and the Caribbean (11)	Middle East and North Africa (6)	South Asia (3)	Sub-Saharan Africa (11)
Corporatization	75	59	45	33	67	55
Investment	50	32	9	0	33	18
Privatization	50	45	18	17	33	0
Reform indicator	58	45	24	17	44	24

Note: Numbers in parentheses are the number of countries in each region's sample.

TABLE 8 COUNTRIES IN EACH REGION TAKING KEY REFORM STEPS IN DOWNSTREAM OIL (WHOLESALE AND RETAIL)
Percent

Reform step	East Asia and the Pacific (8)	Europe and Central Asia (26)	Latin America and the Caribbean (11)	Middle East and North Africa (5)	South Asia (5)	Sub-Saharan Africa (17)
Corporatization	50	50	36	40	60	29
Privatization	0	42	18	40	20	24
Free prices	13	42	45	0	0	6
Reform indicator	21	45	33	27	27	20

Note: Numbers in parentheses are the number of countries in each region's sample.

to allow private investment on greenfield sites and almost nothing to privatize existing assets.

The reform effort in refining is notably low in Sub-Saharan Africa, the Middle East and North Africa, and Latin America and the Caribbean (table 7). Thus in Latin America and the Caribbean there has been less enthusiasm for privatization of refining than for privatization of power, upstream oil and gas, and downstream gas. In Europe and Central Asia, where many countries have domestic refining capacity, a large proportion have privatized these assets.

The downstream wholesale and retail oil sector is very different from the other sectors. Besides existing in every country, in some 37 percent of countries the sector had involved private participation for at least ten years. In countries where this had not been the case the willingness to privatize was generally low, especially in Latin America and the Caribbean and East Asia and the Pacific (table 8). As with refining, many countries in Europe and Central Asia privatized wholesale and retail functions. In some regions downstream wholesale and retail oil activities appeared to be viewed as a strategic sector that the government was unwilling to sell, while in Europe and Central Asia governments have been willing to divest themselves of this underperforming sector. This contrasts with the pattern in the upstream oil and gas sector, where Latin

TABLE 9 COUNTRIES THAT HAVE ALLOWED PRIVATE INVESTMENT THAT HAVE TAKEN OTHER REFORM STEPS
Percent

Sector	Corporatization	Law	Regulator	Restructuring	Privatization
Power					
Countries with independent power producers	63	57	50	57	50
All countries	44	33	29	35	25
Upstream oil and gas					
Countries with concessions	74	79	38	50	18
All countries	67	69	31	43	14
Downstream gas					
Countries with private investment	80	67	67	67	60
All countries	60	40	40	35	27
Downstream oil (refining)					
Countries with private investment	92	n.a.	n.a.	n.a.	62
All countries	54	n.a.	n.a.	n.a.	28

n.a. Not applicable.

America and the Caribbean has the highest proportion of privatization and all other regions have virtually no privatization.

Does private investment encourage other reforms?

In the early days of reform one strategy advocated for the power sector was to encourage the entry of independent power producers. This approach was considered less problematic for government because it did not involve the sale of national assets or the immediate labor shedding that a private owner might require. It was hoped that independent power producers would set a good example for the rest of the sector and eventually force other players to become more efficient and privatize assets. If that were to happen the sector would ideally need a law permitting private entry and a regulator—even though independent power producers, when governed by long-term take-or-pay contracts, do not require either to operate successfully. The same argument applies to other energy sectors with respect to private entry into greenfield investment.

To test whether governments that were willing to allow private investment in new projects were also willing to undertake other reform steps, the relationship between these steps was calculated. For example, forty-three countries have independent power producers, and of these 57 percent have passed a privatization law (table 9). Among the complete power sample of 115 countries, thirty-eight (33 percent) had passed a privatization law. Thus countries that have admitted independent power producers have been more ready to take other reform steps.

In power, downstream gas, and refining countries that have allowed private investment are more likely to have taken other reform steps, including privatization of existing assets. The difference in the reform indicator between countries with

TABLE 10 REGIONS WITH PRIVATE INVESTMENT AND PRIVATIZATION OF ASSETS BY SECTOR
Percent

Sector	All regions	East Asia and the Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Power							
Independent power producers	40	78	33	83	13	100	19
Privatization	25	33	41	50	13	40	6
Upstream oil and gas							
Concessions	69	40	65	63	80	67	91
Privatization	14	0	18	38	0	0	9
Downstream gas							
Private investment	27	25	22	56	0	33	33
Privatization	27	0	33	56	0	0	17
Downstream oil							
Private refinery investment	23	50	32	9	0	33	18
Refinery privatization	28	50	45	18	17	33	0
Wholesale privatization	28	0	42	18	40	20	24
All sectors as a share of maximum (weighted)							
Private investment	40	48	38	53	23	58	40
Privatization	24	17	36	36	14	19	11

private investment and all countries is about 20 percentage points for power and 30 percentage points for downstream gas and refining. In upstream oil and gas the picture is quite different. The presence of a concession is associated with only a slight increase in the likelihood of having taken most other reform steps, and with almost no increase in the likelihood of having privatized existing assets.

How far has reform gone?

Commercialization and corporatization, legal reform, regulation, and restructuring are all crucial to energy reform. But by themselves these four steps do not bring about the improvements sought. To secure those improvements, countries must also take the next two steps: allowing private investment and privatizing assets. Only 24 percent of countries have privatized existing energy assets, and only 40 percent have allowed new private investment in the sector (table 10). Though there are large regional differences, even in the two regions with the most reform experience—Latin America and the Caribbean and Europe and Central Asia—just 36 percent of countries have allowed existing energy assets to be privatized. In East Asia and the Pacific, the Middle East and North Africa, South Asia, and Sub-Saharan Africa this figure is around 15 percent. In all regions except Europe and Central Asia there is a notable difference between the willingness to permit private participation in greenfield sites and the willingness to privatize existing assets.

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