

# Toward a Sustainable Energy Future for All:

## Directions for the World Bank Group's Energy Sector



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## **ABBREVIATIONS AND ACRONYMS**

|                 |                                                           |
|-----------------|-----------------------------------------------------------|
| ASTAE           | Asia Sustainable and Alternative Energy (Program)         |
| CCS             | carbon capture and storage                                |
| CO <sub>2</sub> | carbon dioxide                                            |
| CRESP           | China Renewable Energy Scale-up Program                   |
| CSP             | concentrating solar power                                 |
| CTF             | Clean Technology Fund                                     |
| EECI            | Energy Efficient Cities Initiative                        |
| EITI            | Extractive Industries Transparency Initiative             |
| ESMAP           | Energy Sector Management and Assistance Program           |
| GDP             | gross domestic product                                    |
| GEF             | Global Environment Facility                               |
| GGFR            | Global Gas Flaring Reduction (Partnership)                |
| GHG             | greenhouse gas                                            |
| IBRD            | International Bank for Reconstruction and Development     |
| IDA             | International Development Association                     |
| IFC             | International Finance Corporation                         |
| MIGA            | Multilateral Investment Guarantee Agency                  |
| SUEEP           | Sustainable Urban Energy and Emissions Planning (Program) |
| WBG             | World Bank Group                                          |



# **Toward a Sustainable Energy Future for All: Directions for the World Bank Group's Energy Sector**

## **EXECUTIVE SUMMARY**

1. World Bank Group engagement in the energy sector is designed to help client countries secure the affordable, reliable, and sustainable energy supply needed to end extreme poverty and promote shared prosperity.
2. The approach mirrors the objectives of the Sustainable Energy for All Initiative—achieving universal access, accelerating improvements in energy efficiency, and doubling the global share of renewable energy by 2030. The World Bank Group recognizes that each country determines its own path for achieving its energy aspirations, and that each country's transition to a sustainable energy sector involves a unique mix of resource opportunities and challenges, prompting a different emphasis on access, efficiency, and renewable energy. Every effort will be made to minimize the financial and environmental costs of expanding reliable energy supply.
3. **Focus on the Poor – Universal Access**
  - Supporting universal access to reliable modern energy is a priority. Economic growth, which is essential for poverty reduction, is not possible without adequate energy. And economic growth cannot be said to be building shared prosperity as long as 1.2 billion people are without access to electricity and 2.8 billion are without modern cooking facilities. Lack of energy limits opportunity, job creation, business development, and access to health and education.
  - In countries with low energy access, the priority will be affordable and reliable energy. Grid, mini-grid, and off-grid solutions will all be pursued for electricity. In rural, remote or isolated areas, off-grid solutions based on renewable energy combined with energy-efficient technologies could be the most rapid means of providing cost-effective energy services. Engagement in cleaner cooking and heating solutions will grow.
  - As part of a drive for universal access, financial solutions or guarantees will be made available for the most feasible energy options for the poor and for people living in fragile and conflict-affected states. If short-term options include those with moderate or high greenhouse gas emissions, complementary support will also be provided in the medium term to harness lower-emission options.
  - The WBG acknowledges the global challenge of balancing energy for development with its impact on climate change and will help client countries realize affordable alternatives to coal power. The WBG will provide financial support for greenfield coal power generation projects only in rare circumstances. Considerations such as meeting basic energy needs in countries with no feasible alternatives to coal and a lack of financing for coal power would define such rare cases. The “Criteria for Screening Coal Projects under

the Strategic Framework for Development and Climate Change” will apply to all greenfield coal power projects undertaken in such exceptional circumstances.

#### **4. Accelerate Efficiency Gains**

- Efforts to improve energy efficiency—one of the most cost-effective ways to expand supply and reduce environmental impact—will be scaled up according to countries’ needs and opportunities. Opportunities vary widely but include increasing the efficiency of the existing energy infrastructure through rehabilitation, moderating demand for energy, adopting more efficient technologies, and making cities more energy efficient.

#### **5. Expand Renewable Energy**

- The World Bank Group will continue to support and finance all forms of renewable energy, based on the country’s resource endowment, institutional and technical capacity, policy environment, availability of financing for cost differences, and trade-offs. Rapidly declining costs are making wind and solar power competitive in some settings, while geothermal energy is a relatively low-cost source of renewable energy providing a dependable supply. Biogas and biomass-based energy also play useful roles.
- Sustainable development of run-of-river, pumped storage, and reservoir hydropower projects that meet environmental and social safeguard standards will continue. Despite its potential, hydropower remains largely untapped in Sub-Saharan Africa, South Asia, and other parts of the developing world, and for some may be the largest available source of affordable renewable energy.
- To help countries manage trade-offs between financial and environmental costs, the World Bank Group will support more expensive energy options with smaller global environmental footprints if there is strong client ownership, or if concessional climate finance can be found to cover incremental costs.

#### **6. Create an Enabling Environment**

- The World Bank Group will support a long-term approach with sector-wide planning—nationally and, where appropriate, regionally—to achieve optimal and cost-effective results. This involves looking beyond individual projects to consider the full range of energy supply options in any particular country. While the World Bank Group will support consideration of all options at the planning stage, given limited availability of its resources, the eventual World Bank Group financing will be applied selectively to areas where it has comparative advantage.
- Regional energy road maps that integrate main demand centers with the largest and most cost-effective sources of energy offer the potential to meet the three sustainable energy goals faster and at lower costs. The World Bank Group will promote regional integration as an important area of transformational engagement.

- The World Bank Group will promote market solutions and increased leverage of its financial resources. Contributions will include helping governments create the right policy, regulatory, and contractual frameworks; strengthening institutions that oversee and regulate the sector; helping to ensure that public utilities are creditworthy; and offering tailored guarantees where appropriate.
- The World Bank Group will help tackle regulatory and financial barriers to the adoption of climate-smart energy solutions. Steps include promoting deployment of energy solutions at scale to bring down costs, sending the right price signals, providing investors and the public with up-to-date information, and establishing and enforcing the right regulatory framework to accelerate the transition to a climate-smart future.
- The World Bank Group will continue to be a partner in innovation and technology transfer, particularly through demonstration projects to promote new clean energy technologies, innovative policy tools and market mechanisms, and capacity building.
- Opportunities will be identified to encourage local community involvement, and empower women to achieve sustainable solutions.
- Resource opportunities for countries to make transitions to sustainable energy vary greatly. In some cases, natural gas is likely to make an important contribution. Natural gas, which has half the carbon footprint of coal at the point of combustion, can be the least-cost means of providing flexible electricity supply where demand and supply fluctuate. This flexibility becomes increasingly important as more solar and wind power is integrated into electricity grids.

## **7. Intensify Global Advocacy**

- In order to reduce the costs of cleaner energy and efficiency to levels affordable for poorer countries, the World Bank Group will encourage developed countries to provide incentives for more efficient and environmentally sound energy production and consumption and support research and development for new energy technologies.
- The World Bank Group recognizes that leadership from developed countries and large emerging economies in pricing carbon, moving new technologies and other innovations to markets, and deploying them at scale is critical to address greenhouse gas emissions. By contrast, achieving universal access would have a negligible environmental impact—increasing greenhouse gas emissions by less than 1 percent. While World Bank Group engagement will continue to favor renewable energy and increased efficiency, the approach will not punish the poor for the actions of others.
- Support will be offered to governments keen to address underpricing of energy and minimize market distortions while providing social safety nets for the poor and vulnerable. This will ensure a level playing field for all actors and enable savings to be channeled to more productive, pro-poor spending.



# **Toward a Sustainable Energy Future for All: Directions for the World Bank Group's Energy Sector**

## **CONTEXT**

1. **Energy is an important engine of economic growth, on which both poverty reduction and shared prosperity depend.** Inclusive economic growth is the single most effective means of reducing poverty and boosting prosperity. Most economic activity would be impossible without energy. Adequate, reliable, and competitively priced modern energy is essential for business development, job creation, income generation, and international competitiveness. Yet the availability of energy is highly inequitable across and within countries. Low-income countries, which account for 12 percent of the world's population, consume a mere 1 percent of total global energy, and have an average electrification rate of about 30 percent. Many in the bottom 40 percent in developing countries lack access to modern energy. The difference between the rich and the poor is particularly pronounced for cooking and heating energy. Energy consumption per capita varies one hundred-fold between the lowest- and highest-consuming countries (IEA 2012d). In recent surveys of tens of thousands of firms, more firms cited electricity as a major constraint to doing business than any other factor in nearly four out of every ten client countries for the World Bank Group (WBG) (Enterprise Surveys).

2. **Energy access is increasingly seen as a vital catalyst for wider social development, including better health and education.** Energy is a critical input for the achievement of many of the Millennium Development Goals, including goal 1 (eradicating extreme poverty and hunger), goal 2 (achieving universal primary education), goal 3 (promoting gender equality and empowering women), goals 4–6 (reducing child mortality, improving maternal health, combating diseases), and goal 7 (ensuring environmental sustainability). For adults and children, gaining access to reliable electricity enhances their quality of life and enables income-generation. Modern cooking and heating solutions can transform the lives of billions—many of whom spend hours collecting and transporting firewood and other forms of biomass, and all of whom are exposed to household air pollution from solid fuels, which killed an estimated 3.5 million and caused many more cases of respiratory, cardiovascular, and other illnesses in 2010 (Lim et al. 2012). Beyond household access, electricity is a critical input to the effective delivery of social services, which help lift populations out of poverty and enable economic growth. Lighting, refrigeration, and effective sterilization procedures enabled by electricity supply make healthcare far more effective, and electricity similarly improves education by enabling superior lighting and powering of computers and other equipment.

3. **There is tremendous variation in energy supply conditions around the world.** Energy resource endowments differ substantially across countries, as do relative costs of supply alternatives. The scale of the domestic market, prospects for regional trade and collaboration, and the level of infrastructure development influence possible options and costs. The larger the market, the higher the level of infrastructure development, and the more open to trade, the lower

the potential costs of energy supply to consumers. Equally important, the varying capacity of the key institutional players in the sector—regulatory authorities, public utilities and companies, private actors, and consumers—also influences the range of possible outcomes.

4. **In many parts of the developing world, achieving reliable power supply remains a pressing concern.** Of the 125 developing countries that reported on power outages in the Enterprise Surveys, one in three experienced at least 20 hours of outages a month, suggesting that reliable power is not widely available. Base-load electricity demand exceeded supply in all Indian states in 2010. The power deficit reached 8 percent of demand in 2012, provoking some dramatic instances of total grid failure in the northern half of the country. As a result, self-supply of power, often through inefficient and polluting diesel generators, is estimated to account for almost 17 percent of installed capacity (Banerjee et al. 2012). Across Sub-Saharan Africa, some 30 countries suffer from regular blackouts and brownouts, with associated economic losses estimated in excess of five percentage points of gross domestic product (GDP) in some cases (Foster and Briceño-Garmendia 2010). Satellite photographs of the earth taken at night offer a stark illustration of the disparity in the distribution of electricity supply (figure 1).

5. **Yet high costs of energy compromise the affordability of basic energy needs for households and the competitiveness of industry.** Many countries in Sub-Saharan Africa face electricity costs as high as US\$0.20–0.50 per kilowatt-hour, against a global average closer to US\$0.10. Such high electricity costs become a barrier to further electrification. Similarly, a number of developing countries face high supply costs of petroleum products due to various bottlenecks and inefficiencies along the supply chain. These high energy costs, in turn, raise prices of goods and services for everyone and render businesses in tradable sectors uncompetitive. Stories abound of households struggling to pay for heating or reverting back to traditional biomass amidst rising fuel prices. To eliminate energy poverty, energy service delivery and consumption must be made more efficient. The service delivery must be supported by a sound pricing and tariff policy, backed by strengthened social protection. Where they are retained, subsidies need to be sharply targeted to the poor.

**Figure 1: Nighttime satellite image of the world**



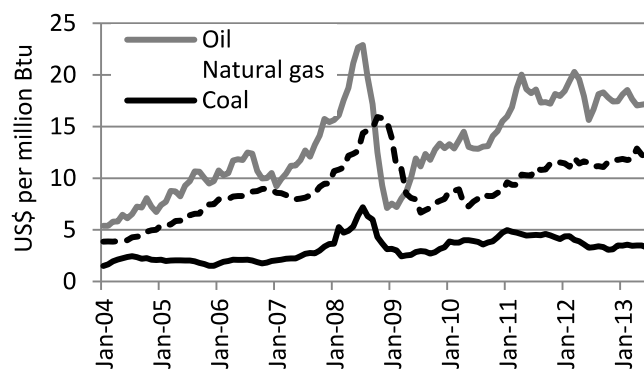
*Source: NOAA 2010.*

## RECENT TRENDS

6. **Global energy markets are evolving rapidly.** Technological progress is bringing down the costs of renewable energy, particularly solar and wind energy, and unlocking the potential for unconventional hydrocarbons. There have been large oil and gas finds in Sub-Saharan Africa and other regions with no previous known reserves. Yet many developing countries, including those with ample energy resources, continue to struggle to supply energy to meet basic needs and to fuel their growing economies. Energy-poor countries with abundant resources include those with large-scale hydropower and some with geothermal energy, which are relatively low-cost renewable energy sources. While on-shore wind and solar energy costs have declined significantly, both are still costlier than other technologies for similar supply characteristics. Financing remains difficult, especially in low-income countries as well as fragile and conflict-affected states. High oil prices have pushed up the prices of other fuels and spurred an enormous expansion of oil and gas exploration. The on-going global financial crisis has tightened fiscal and financing constraints, prompting developed countries to scale back support for renewable energy and reduce the availability of commercial and concessional funds for developing countries. Although reaching a record investment level for renewable energy in 2011, 2012 saw an 11-percent fall in investment from the previous year (REN21 2012; BNEF 2013). Following the nuclear accident in Fukushima in March 2011, some countries are reassessing the role of nuclear power. Growing water stresses affect the energy sector, which was responsible for an estimated 15 percent of global water withdrawals in 2010 (IEA 2012c). By one estimate, nearly half of the world's population will be living in areas of high water stress affecting energy and food security by 2030 (WWAP 2012).

7. **High and volatile oil prices in recent years have further hampered efforts in many countries to make energy affordable and heightened the importance of a diversified energy mix.** A number of governments responded to the price increases in 2010 and 2011 (see figure 2) by freezing prices for months or even years at a time, only to be caught by rapidly expanding subsidy bills that became unsustainable. Subsidies, trade restrictions, and rationing, coupled with diversion to black markets and smuggling, have led to acute fuel shortages in some developing countries. The oil price movements since 2004 have highlighted the importance of diversifying energy sources to mitigate risks due to price volatility and supply disruptions. Relatively high fossil fuel prices make alternative energy sources more

**Figure 2: Evolution of oil, gas, and coal prices**



Source: World Bank Development Prospects Group.

Note: Average of Brent, West Texas Intermediate, and Dubai Fatah for crude oil; European natural gas; and Australian coal. Btu = British thermal units.

competitive, and eliminating untargeted price subsidies delivers economic benefits. An immediate result of both, however, is that consumers face higher prices. Energy can be made more affordable by reducing supply costs, such as through supply-side efficiency improvements and loss reductions, and through targeted social safety nets to offset the impact of price increases on genuinely vulnerable groups. Above all, affordability is attained through increasing the incomes of energy-poor consumers, which hinges on robust economic growth with shared prosperity.

8. **Recognizing that access to modern affordable energy services in developing countries is essential for the achievement of the internationally agreed development goals, the UN General Assembly in December 2012 unanimously declared 2014–2024 the “Decade of Sustainable Energy for All.”** A year earlier, the UN Secretary-General had launched a global initiative on Sustainable Energy for All to mobilize action in support of three interlinked objectives to be achieved by 2030: providing universal access to modern energy services, doubling the global rate of improvement in energy efficiency, and doubling the share of renewable energy in the global energy mix. The WBG President is co-chairing the Advisory Board for this initiative, and the World Bank and the International Energy Agency are co-leading a steering committee that is tracking global progress. In parallel, there is a process underway to consider a post-2015 Sustainable Development Goal for Energy.

9. **The scale of the financing needed to achieve the aspirational goals of the UN Sustainable Energy for All initiative call for concerted global efforts.** The actual global investment in 2010 in the three areas covered by the UN goals has been estimated at about US\$400 billion. Against this figure, the annual investments required to achieve the three goals are calculated to be at least US\$600–800 billion *over and above* the current investments, entailing a doubling or tripling of the current financial flows. The bulk of those investments are associated with energy efficiency and renewable energy, with access-related expenditures representing a relatively small percentage of the incremental costs. Such an unprecedented increase in financing would require transformation of the energy market conditions, especially in developing countries, to enable massive infusion of capital from the private sector and leveraging of scarce public funds through public-private partnerships.

10. **The regional trade dimension of energy is emerging as a key factor in driving change.** Globally, whether it is natural gas or electricity, the political economy of regional energy trade as a means of securing reliable and cost-effective supplies is gaining recognition as a critical factor. Although the benefits of unimpeded energy trade are considerable, there are significant challenges to achieving effective harmonization and cross-border cooperation, as well as to sharing the resulting benefits across participating countries.

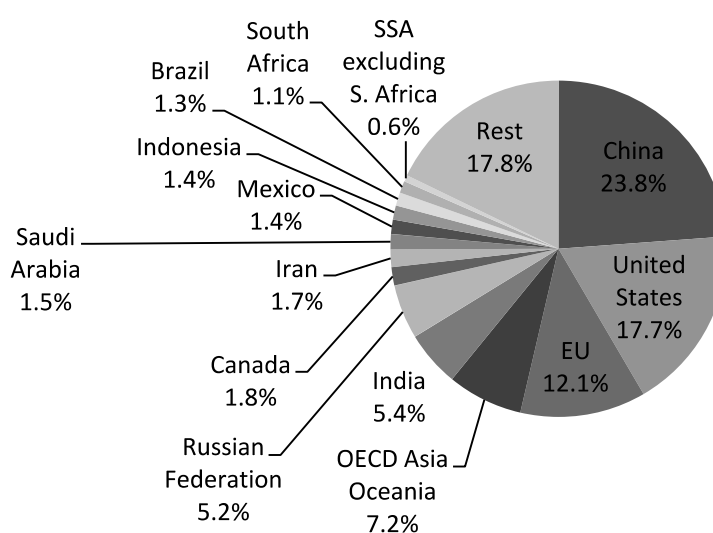
11. **Rapid urbanization across the developing world will affect energy use and efforts to increase energy access.** The urban population in developing countries will exceed the rural population before 2020. Globally, the urban population will increase to 5 billion by 2030, while the rural population will remain at 3.3 billion (UN 2011). Given the steadily rising contribution



of cities to global energy demand and emissions, making cities greener would help moderate the growth of demand for energy and significantly enhance environmental sustainability. One challenge is delivering modern energy services to rapidly growing low-income and informal urban settlement areas. One billion people are estimated to live in slums and shantytowns in developing countries (World Bank 2009b). In some regions, urbanization has increased concentrated biomass consumption, potentially leading to deforestation and rising prices. This is true particularly of charcoal, which requires large quantities of wood to manufacture, and underscores the importance of sustainable production of biomass fuel as well as fuel switching to modern energy sources.

**12. Energy choices have significant local and global environmental impacts, making sustainability a critical concern.** Outdoor and indoor household air pollution from fuel combustion is responsible for millions of premature deaths and many more episodes of illnesses (Lim et al. 2012), as well as damage to crops and buildings. Much progress has been made in developed and many developing countries in tackling local environmental damage. Energy production can cause water pollution, soil contamination, deforestation, and a loss of biodiversity. Energy, water, and food markets are increasingly interlinked: energy production affects, and is affected by, a more water-constrained world, and some crops are used for both food and fuel. Concerns about climate change mount, as the atmospheric concentrations of carbon dioxide (CO<sub>2</sub>) reach record levels. Fuel combustion is a major contributor to global greenhouse (GHG) emissions. Similar to total energy supply, the distribution of GHG emissions across the world is uneven. For example, excluding South Africa, Sub-Saharan Africa has 12 percent of the world's population but an electrification rate of less than 30 percent and accounted for a mere 0.6 percent of global CO<sub>2</sub> emissions from fuel combustion in 2010, against 81 percent in G20 countries (figure 3). Despite rising CO<sub>2</sub> concentrations, coal's share of power generation is near a historic high (IEA 2012d), and the amount of electricity from coal is rising even in Europe (*Economist* 2013). Some technologies that minimize GHG emissions can be highly water-intensive, including power plants with carbon capture and storage (CCS), nuclear power plants, and certain types of concentrating solar power (CSP). To the extent they exist, carbon

**Figure 3: Global CO<sub>2</sub> emissions from fuel combustion in 2010**



Source: IEA 2012a.

Note: OECD = Organization for Economic Cooperation and Development, SSA = Sub-Saharan Africa, S. Africa = South Africa.

prices to date have been too unpredictable and too low (figure 4) for long-term, low-carbon investment decisions on a large scale.

13. **The pace of technological change in the energy sector is dynamic.** Costs of solar and onshore wind power have seen

dramatic reductions in recent years, driven by technological advances, scale of deployment, and other factors. Global module prices of solar photovoltaic systems in 2011 U.S. dollars fell from \$3.4 per watt in 2008 to \$1.3 in 2011 (Barbose, Darghouth, and Wiser 2012). While levelized costs of electricity may suggest that these renewable

resources, particularly wind, are

becoming cost-competitive in specific market segments, these sources have variation patterns that can still make them more expensive to meet demand at all times, depending on national power system characteristics. Ensuring supply adequacy with solar and wind power would require significant regional diversification and large-scale transmission network expansion to connect these sources, a challenge even in developed countries. There have been impressive gains in the performance of cooking stoves that burn solid fuels, some of which can virtually eliminate the emissions of harmful pollutants, although these advanced-combustion stoves are not yet affordable by the poor or accessible to women in remote rural areas who most need them. Technological advances also affect conventional energy. New sources of natural gas are transforming the U.S. energy market, prompting other countries with as-yet unknown quantities of shale gas to pursue this option. Shale oil and gas extraction is currently water-intensive and has raised environmental concerns. At the same time, market analysts have pointed to a worrisome lack of technological progress in several critical areas, including CCS and, to a lesser extent, CSP and offshore wind (IEA 2012b).

**Figure 4: European carbon futures**



Source: ICE 2013.

## ENERGY AND SUSTAINABILITY

14. **The financial sustainability of power utilities and other energy suppliers continues to pose a serious challenge.** Operational inefficiencies of power utilities in Sub-Saharan Africa cost an estimated US\$3.2 billion annually, equivalent to 0.5 percent of regional GDP (Foster and Briceño-Garmendia 2010). Underpricing of energy and chronic inefficiencies are among the chief reasons for poor financial performance of many energy companies, especially those that are state-owned. Prices below cost-recovery can start a vicious cycle, whereby a state-owned utility saddled with debts stops paying for fuel to a state-owned refinery, which in turn is suffering from decades of price subsidies and runs out of cash to buy crude oil. Ensuing fuel shortages lead to power shortages, worsening the financial health of the already struggling utility. Efficient,

financially sound sectoral performance is a prerequisite for affordable and reliable energy. The ability to recover costs is essential to financial health and to restoring the viability of affected suppliers. Such cost recovery depends on phasing out price controls that cause underpricing; introducing efficient payment systems through better metering, billing, collection, and service standards; and reducing and eventually eliminating theft across the supply chain, short selling, fuel adulteration, and mislabeling. Improving management of power and natural gas utilities will often result in more efficient operation, including reduction of losses. Operational efficiency will, in turn, restore utilities' ability to finance new investments and make a positive contribution to the economy under all circumstances, but particularly in countries with serious energy shortages. Improving the finances of a utility by reducing commercial losses and increasing potential energy supplies by reducing technical losses are effective complements to new investment.

**15. Energy efficiency is often the lowest-cost means of increasing the reliability, affordability, and sustainability of energy supply, but remains grossly under-exploited.**

Efficiency improvement can slash demand for energy, which is in short supply in many countries, reducing energy imports and curbing environmental damage. And yet energy efficiency investments face non-economic barriers—with institutional barriers being among the most significant in many developing countries—and fall far short of their potential. The scope for energy efficiency improvement is particularly large in the Commonwealth of Independent States and the Middle East and North Africa. Underpricing of energy prices further diminishes incentives for investments in efficiency improvements. The International Energy Agency estimates that implementation of all existing legislation and recently announced commitments will reduce the energy intensity of the global economy by 1.8 percent annually in 2010–2035, compared to 1.0 percent in 1980–2010. The largest share of the reduction in energy consumption in 2035 from implementing recently announced commitments stems from end-use energy efficiency improvement, requiring an annual investment of US\$158 billion (IEA 2012c).

**16. Underpricing of energy is prevalent and impedes the shift to a more sustainable energy path, both financially and environmentally.** Underpricing can threaten fiscal sustainability and lead to energy shortages. Replacing universal price subsidies with targeted assistance increases incentives for energy conservation and energy efficiency improvement, reduces subsidy bills for governments, and attracts more investment to the sector by enhancing the prospect of cost recovery. Even when direct subsidies are not provided, the full costs of local and global externalities are seldom, if ever, accounted for in energy prices, leading to misallocation of resources. Underpricing of fossil fuels stifles market solutions for efficiency improvement and innovation in technology, and invites additional subsidies to be offered for renewable energy, which are also facing fiscal sustainability challenges. The end result is market distortions, uneconomic choices, and uneconomic investment decisions across the sector.

**17. Energy and climate are inextricably linked.** About two-thirds of global GHG emissions are associated with the production and consumption of energy, making energy sector interventions critical to mitigating global warming. Numerous global energy modeling exercises

have consistently identified actions needed to make any significant headway in curbing the growth of the atmospheric GHG concentrations. These include doing much more to realize energy efficiency potential, significantly scaling up renewable energy, making technological breakthroughs in critical areas such as CCS and energy storage, phasing out untargeted energy subsidies, and introducing policies and instruments that capture global externalities. The leadership role of developed countries is essential to transform the global energy sector. They are best positioned to provide stronger incentives to launch, sustain, and encourage more efficient patterns of energy production and consumption, as well as research and development and the movement of innovations and business models to the market. In so doing, they can reduce the costs of cleaner energy options and energy efficiency interventions to a level poorer countries can afford.

**18. Countries often face difficult trade-offs between financial and environmental costs of energy options,** particularly between meeting their own energy needs and reducing global environmental footprints. In weighing the costs and benefits of reducing environmental harm, it is important to focus on actions that will make a material difference. For minimizing global environmental externalities, it makes sense to focus on identifying measures that offer the lowest-cost option for reducing GHG emissions and that have the potential to be implemented on a large scale.

**19. Universal access will have little global impact on emissions, and should be prioritized based on affordability.** Achieving universal access for those currently without electricity or clean cooking and heating solutions—among whom the poor are disproportionately represented—will have a negligible effect on global energy demand and GHG emissions, less than one percent according to estimates by the International Energy Agency (IEA 2012c). As such, for universal access, the top priority is to make modern energy solutions affordable.

## **WORLD BANK GROUP MISSION AND ENERGY**

**20. There are important recent developments within the WBG in refining its mission focus.** The WBG is intensifying its focus on the objective of *ending poverty and promoting shared prosperity*. To revitalize the WBG's engagement, an Infrastructure Action Plan was launched in 2003 after steadily declining commitments, followed by the Sustainable Infrastructure Action Plan in 2008. In 2010, the WBG positioned support for infrastructure as a strategic priority in creating growth opportunities and targeting the poor and vulnerable. *Transformation Through Infrastructure* (World Bank 2012c) outlines three pillars for infrastructure: supporting the access and growth agenda through sector-based projects; responding to client demand for addressing more complex, second-generation infrastructure issues; and leveraging the WBG's capital by mobilizing more private sector financing. *Inclusive Green Growth: The Path to Sustainable Development* (World Bank 2012a) underscores the importance of growth to be inclusive and environmentally sound, and suggests a framework for assessing trade-offs and synergies. *Inclusive Green Growth* reaffirms the institutional view on the topic articulated a decade earlier (Feinstein 2002), and highlights opportunities in the energy

sector to contribute to inclusive green growth. The WBG's Environment Strategy 2012–2022 (World Bank 2012b) suggests phasing in GHG emissions analysis for investment lending operations in energy, transport, and forestry over two years, subject to methodology development and availability of tools.

21. **The WBG is developing an institution-wide strategy.** “A Common Vision for the World Bank Group,” a paper discussed by the Development Committee during the WBG's Spring Meetings in 2013, proposes a global target of reducing extreme poverty to 3 percent and promoting the income growth of the bottom 40 percent of the population in every country (World Bank 2013). To define a framework for achieving these goals, the paper proposes five building blocks: (i) serve poor and vulnerable people in a sustainable manner everywhere; (ii) recognize the diversity of clients; (iii) work as one World Bank Group; (iv) focus on development solutions; and (v) exercise dynamic selectivity.

22. **The WBG's operations in the energy sector have witnessed significant changes in the volume of commitments as well as areas of focus.** After declining to an annual average of US\$2.4 billion in fiscal years (FY) 2000–04, lending in the energy sector rebounded strongly, reaching US\$13 billion in FY2010—driven by the global financial crisis—before falling to US\$8 billion in FY2011 and FY2012. The WBG far exceeded the five-year Bonn commitment made in 2004 to increase energy efficiency and renewable energy financing. *Directions in Hydropower* (World Bank 2009a) committed the WBG to scaling up engagement in hydropower after largely withdrawing from it for a time. The World Bank's approach to energy sector reforms has evolved over the past two decades, and there is now greater recognition of the complexity and time required for lasting reforms as well as the highly contextual nature of appropriate institutional and business models.

23. **Steps to streamline WBG procedures for efficiency gains are underway.** There are moves to review and update environmental, safeguards, procurement policies, and strengthen project economic analysis. In particular, the WBG is working to reduce the non-financial costs of developing projects. The new Performance Standards for the International Finance Corporation (IFC) came into effect in January 2012, and the Board of Executive Directors several months later approved the adoption of the IFC standards by the World Bank for private sector projects financed by the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). The latter move eliminated the dual system of safeguard policies and removed a significant constraint to WBG support of private sector contributions to development. The Multilateral Investment Guarantee Agency (MIGA) is also moving to align its performance standards with IFC's. Efforts are underway to harmonize safeguards policies and procurement procedures with other multilateral development banks to facilitate co-financing of larger projects, including energy.

24. **The WBG brings together a full suite of direct and market-based financing instruments combined with deep sector knowledge and the ability to prepare projects with balanced outcomes for all.** Available financing terms range from highly concessional World

Bank loans (such as IDA) for government-run projects, to public sector equity purchase in private projects and commercial terms for IFC loans to private sector firms. IFC can provide support through equity and quasi-equity investments as well as additional equity funds mobilized by the Asset Management Company, and a variety of loans and loan syndications. To mitigate risk for the private sector to invest, the World Bank can reduce critical government performance risks by offering Partial Credit Guarantees and Partial Risk Guarantees. MIGA can offer credit enhancement and capital mobilization for energy investments through political risk insurance to protect private investments against non-commercial risks. Working together, this breadth of options can be structured so as to leverage scarce resources and backstop government payment and contractual obligations to help maximize the contribution of the international and domestic financial markets in support of energy investments. The WBG also helps countries access concessional climate finance, such as Climate Investment Funds. Equally important is the suite of analytical, regulatory, and technical assistance provided to improve the investment climate, operational efficiency, and financial performance of the energy companies, and optimize the sector structure and performance over the long run.

## **OBJECTIVE AND SCOPE OF THE PAPER**

25. **This paper seeks to position the WBG and guide its engagement with its client countries in the energy sector.**<sup>1</sup> At about US\$8 billion a year of new commitments in recent years, the WBG's financing amounts to less than 1 percent of what is needed to meet the three goals of the UN Sustainable Energy for All initiative, and even a smaller fraction of the global energy investments. The question for the WBG, then, is where it can best add value with its limited resources in the context of each country defining and pursuing its own energy sector development path. The WBG's selectivity is thus driven largely by individual countries' aspirations, the WBG's own comparative advantage, and how it can complement the work of other international financial institutions. In selecting areas of engagement, the directions outlined in this paper are anchored in the WBG's overarching goals of reducing the global rate of extreme poverty to 3 percent by 2030 and fostering the income growth of the bottom 40 percent in every country.

26. ***The central objective of the WBG's engagement in the energy sector is to support its client countries in securing the affordable, reliable, and sustainable energy supply needed to end poverty and promote shared prosperity. In so doing, the WBG will assist countries to pursue environmentally, financially, fiscally, and socially sustainable energy sector development.*** Energy shortages, high energy costs from inefficiency, or both, are slowing down

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<sup>1</sup> While energy is used economy-wide and some sectors, such as transport and industry, are large users of energy, this paper is confined to the WBG's engagement in the energy sector. The WBG's activities in the sector concern power and heat generation; power, heat, and natural gas transmission and distribution; energy efficiency in the energy sector and end-use energy efficiency; household energy; oil, gas, and coal development and production; and the downstream petroleum sector.

economic development in many WBG client countries. Some have not been able to attract financing to maintain the existing infrastructure, let alone rehabilitate and expand it. Meeting the WBG's twin goals of ending poverty and building shared prosperity in a sustainable manner is not possible without reliable modern energy services. At the same time, the critical importance of shifting the global energy sector to a more environmentally sustainable development path has never been greater. To achieve the central objective, this paper takes equity as one of its core values—both within generations (poverty) and across generations (sustainability)—and proposes several guiding principles.

## **GUIDING PRINCIPLES**

**27. The WBG engages holistically with clients to catalyze the transformation of the energy sector in the context of long-term system-wide planning.** Long-term sector planning is essential for securing adequate, reliable, and sustainable energy supply and efficient consumption cost-effectively. An important element is integrated resource planning, which evaluates the full range of alternatives for supply and end-use to deliver adequate and reliable services to customers while minimizing long-term costs. While the WBG will support consideration of all options at the planning stage, given limited availability of its resources, the eventual WBG financing will be applied selectively to areas where it has comparative advantage and can achieve the most development impact. Long-term planning may go beyond the energy sector to include other sectors, such as urban planning and transport system optimization to make cities more energy efficient, or water and agriculture to address the water-food-energy nexus. The WBG recognizes that a road map based on system-wide optimization would be different from that derived from optimizing one project at a time. The development and sustainability challenges also introduce the question of sequencing and resource balancing. Diagnosing and addressing the most critical bottlenecks will require a judicious mix of policy dialogue and analytical work as well as investment, guarantees, and policy lending. Partnerships are important both for the effectiveness of assistance and for leveraging scarce resources. The evaluation of the WBG's energy sector engagement in any given country should consider the aggregate impact of the portfolio of activities—policy dialogue, assistance provided to long-term energy sector planning, knowledge creation and sharing, and financing and guarantees provided—as opposed to more narrowly focused assessments of individual projects.

**28. The WBG will continue to emphasize improvements in the financial, operational, and institutional environment of the sector.** A sound institutional and financial environment is a prerequisite for effective investments. Weak institutional capacity has been a significant contributor to the slow development of the energy sector in developing countries. Securing affordable, reliable, and sustainable energy supply depends critically on addressing the fundamental issues of governance in the operational, financial, and institutional spheres. To help create an enabling environment for increased investment, the WBG provides support to improve the sector's financial and operational performance and strengthen governance across the supply chain. Without financial sustainability and efficient operation, energy shortages will continue,

driving up costs to consumers. Strengthening governance—including addressing transparency, accountability, and public participation—is vital to ensuring that the sector function efficiently and that energy contribute to equitable economic, social, and environmental development. Pricing reform is important for sound financial performance in this regard.

29. **The WBG will seek market solutions and help governments foster private sector participation and investment.** The investments needed to meet the future energy needs call for considerable private resources. Provided market failures are addressed and the appropriate policy and regulatory frameworks are in place, market solutions can offer effective means of providing affordable, reliable, and sustainable energy. Competitive and transparent energy markets, along with an environment that encourages responsible private sector behavior, investments, risk-taking, and financing, are crucial. A clear, predictable regulatory framework that provides assurances to investors of a level playing field and equitable treatment over a long-term planning horizon is needed to facilitate private sector participation and promote healthy competition. The WBG is committed to a continuing partnership role to help governments design and implement tailored approaches—including regulatory frameworks and, equally important, building the capacity of government agencies to implement the laws and regulations effectively—and to provide financing selectively for private-sector energy and public-private partnership projects. Consistent with the third pillar of *Transformation Through Infrastructure* (World Bank 2012c), the WBG will leverage its capital by bringing more private sector financing into the energy sector.

30. **The WBG embraces a multi-stakeholder, inclusive approach to energy development.** The WBG recognizes that all stakeholders—in civil society, the public sector, and the private sector—need to act together more effectively. Consultation with civil society organizations, industry, and local communities affected by energy projects and policy decisions is an integral part of how energy projects are developed. WBG energy projects are increasingly informed by steps to promote local community development and gender equality.

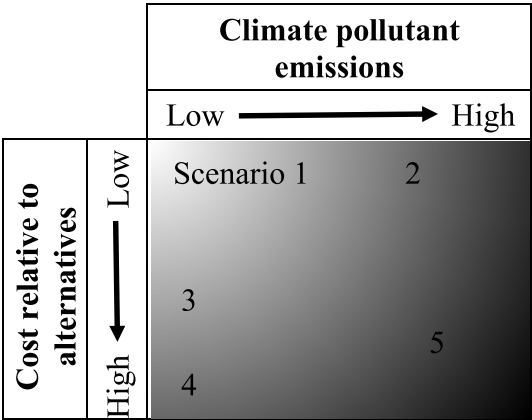
31. **The diversity of energy challenges around the world calls for an approach that is tailored to individual country and regional circumstances.** Different countries and regions have different needs and present diverse energy challenges and related solutions.

32. **Within the context of long-term system-wide optimization, the WBG will address the global need to slow the growth of climate pollutant emissions by using a conceptual framework that can guide how to approach alternatives.** Figure 5, which plots costs against emission levels, illustrates the framework. The framework is intended to assist the WBG in exercising selectivity in financing projects. The costs are relative to those of alternatives. In comparing alternatives for the purpose of carrying out long-term optimization, it is important to compare alternatives providing the same level of service. That same level of service should be available within the timeframe required; for example, an emergency power project after a natural disaster may need to turn to diesel power generation, which the same market may not consider under normal circumstances. Not all forms of generation are suited to meeting the specific



demand profile by providing base load or peak load. As a result, power generation that cannot follow demand fluctuations needs to be balanced against other sources of energy in the system’s portfolio if connected to the grid, or else require back-up generation to meet the demand profile in small isolated systems. Countries with small or under-developed power systems may not have the necessary generation and transmission infrastructure needed to manage the variability associated with some forms of renewable energy, and as a result the cost of developing them may become prohibitive.

**Figure 5: Framework for assessing climate impacts**



Source: World Bank Group staff.

33. Balancing competing priorities is important in evaluating the merits of WBG financing for a project relative to another. Figure 5 captures five possible illustrative scenarios:

- Low cost, low emissions (scenario 1): This scenario represents a strong case for WBG support, which captures synergies between development and climate change mitigation. The WBG will give priority to those activities that secure affordable and reliable energy supply in a way that results in low emissions. Possible examples include improvements in supply-side and demand-side energy efficiency; building robust transmission and distribution networks; cross-border energy trade; locally produced renewable energy, including distributed energy systems in high-cost environments (such as sparsely populated remote areas); and natural gas. The support should first seek private sector participation, rather than providing financing directly.
- Low cost, moderate to high emissions (scenario 2): If critical energy demands need to be met in the short term, the WBG may need to finance or provide guarantees for least-cost energy supply options that can be rapidly deployed but may have moderate or high emissions, if adequate private sector financing cannot be secured (without IFC or MIGA participation) and concessional climate finance for alternatives with lower-emissions, higher-cost alternatives is not available, or lower-emissions options are feasible only in the medium to long term (such as a large hydropower project or a gas pipeline involving high capital costs and complex negotiations over cross-border trade). The argument for supporting the lowest-cost—and hence the most affordable—option to meet critical needs in the near term is particularly strong when extending access to those without modern energy. In such cases, the WBG will at the same time support the country over the medium term to harness lower-emissions options.
- Higher cost, low emissions (scenario 3): The WBG is open to providing support for higher-cost projects with smaller environmental footprints, contingent on *either* the availability of concessional finance—such as the Climate Investment Funds and the Global Environment Facility (GEF)—to cover the incremental costs of cleaner energy

options *or* strong client demand and ownership based on close alignment with national development objectives. Without external support in the form of concessional finance, many client countries do not have the financial means to pay for the incremental costs of lower-emissions alternatives if they are more expensive. However, some client countries may be willing to pay the incremental costs of cleaner energy if other significant developmental co-benefits exist, such as enhancing the security of supply, job creation, and seizing first-mover advantages.

- Very high cost, low emissions (scenario 4): The long-term shift to a sustainable energy future depends on deep technological innovation and rapid diffusion of new energy technologies. Where a project has a high cost and carries high risks but offers strategic potential for the future, there may be a case for WBG support in such upstream efforts to pilot and scale up technologies that are relatively new in their markets, and where there may be global externalities in demonstration and replication effects. Support to such projects will be selective and based on a clear strategic case as well as strong country ownership, and may also be through technical assistance.
- High cost, high emissions (scenario 5): There is no case for WBG support in a scenario where costs are higher than feasible alternatives and emissions are also high.

## OPERATIONAL IMPLICATIONS

34. **Tailoring solutions to each country's circumstances necessarily implies a broad menu of options institution-wide.** Given the wide range of energy circumstances across client countries, the overall menu of options for potential WBG support is necessarily broad. Selectivity is applied at the country level, driven by each country's energy aspirations, through a process of policy dialogue that identifies the highest impact areas of WBG support based on a diagnostic of critical bottlenecks as well as an assessment of the WBG's comparative advantage.

### *Long-term system-wide planning*

35. **The focus on long-term system-wide optimization moves the attention away from a narrow focus on technology choice to delivering results cost-effectively.** Wherever there is an opportunity and client interest, the WBG will help with system-wide optimization and integrated resource management. This strategic approach to planning over the long run considers all options<sup>2</sup> and minimizes the cost of supplying energy over varying timeframes of strategic interest to the country. The WBG will support the move toward a more sustainable energy mix through regulatory and policy analysis, capacity building, technical and advisory services, financing and guarantees, and partnerships. Climate-risk management will be an important

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<sup>2</sup> Although all options will be considered for sector assessment and longer-term planning purposes, the WBG will not finance nuclear power generation or provide specific technical assistance for its assessment and development because safety of nuclear facilities and non-proliferation are not in the WBG's areas of expertise, nor will the WBG build internal capacity in matters related to nuclear power generation.

aspect of long-term planning. Analysis using a portfolio approach—taking both *delivery costs* and *price risks* into account—for long-term energy planning, assessment of institutional needs, identification of gaps in policy making, and rationalization of support for different subsectors in energy can all contribute to lowering lifetime costs, expanding the share of renewable energy, and minimizing the amount of underutilized assets, an issue especially with large installations having a technical life of several decades. An asset may become stranded if the price of the fuel it uses rises relative to those of competing alternatives, such as between coal and natural gas in North America today and potential effects of carbon pricing in the future. This could also occur if government support is reduced or eliminated, such as with solar power in some markets in Europe, or if new environmental regulations are promulgated that would be too costly to meet. While this system-wide approach promises enhanced development impact, it will also require adjustments to the WBG’s financing instruments and human resources, as well as to the WBG’s approach to policy dialogue.

**36. The WBG will enhance efforts aimed at regional integration to accelerate the pursuit of a more secure, affordable, and sustainable energy future.** The WBG, with its track record of implementing challenging cross-border energy projects, will support the development of regional road maps for long-term energy market development and for a more reliable, cost-effective, and sustainable energy future. For maximum impact, lowest-cost options that can be deployed on a very large scale should be identified and pursued aggressively. Regional collaboration can also have significant environmental co-benefits by optimizing energy systems and enabling greater use of energy sources with lower emissions and assisting in adaptation to climate change through supply diversification. Examples of WBG involvement include facilitation of power pool developments in Sub-Saharan Africa; facilitation of hydropower exports from Bhutan and eventually Nepal to India; preparation of cross-regional projects under the Central Asia South Asia Regional Electricity Market aiming to export excess electricity in the summer from Tajikistan and the Kyrgyz Republic to Afghanistan and Pakistan; supply of hydropower from Felou, Senegal to the national utilities of Mali, Mauritania, and Senegal; IFC’s investments in the Central American Regional Interconnected System; and connection of the Mashreq electricity systems with those of Turkey and the European Network of Transmission System Operators for Electricity to develop the region’s vast solar and wind power potential. An example of an innovative approach is the Adaptable Program Loan series to the Energy Community of South East Europe, which has supported the efforts of seven countries through 12 loans and credits to develop a regional energy market and integrate it into the energy market of the European Union.

**37. The WBG will scale up energy efficiency improvement and demand management efforts, which are among the most cost-effective means of expanding supply while also enhancing environmental sustainability.** Efficiency improvement and demand management are integral to energy sector development in every country. These measures can increase supply relative to demand, reduce the associated negative environmental externalities, enhance reliability, potentially make energy more affordable, and reduce the vulnerability of the energy

sector to external shocks and supply constraints. It is imperative to couple efficiency improvement with demand management to realize full benefits, because lowering the cost of energy use through higher efficiency often creates new demand, calling for changes in behavior as well as technical solutions. The considerable potential for efficiency improvement continues to remain seriously under-exploited across the world. There are many reasons why efficiency improvement is not implemented, such as a lack of familiarity, including by financial institutions providing loans; skepticism about the actual, as opposed to claimed, energy savings that can be achieved; and the existence of other project options with markedly higher *risk-adjusted* rates of return. Some are self-perpetuating, such as lack of familiarity arising from lack of implementation. The WBG will work to help overcome these barriers to efficiency improvement. A Community of Practice for energy efficiency has been established with internal and external partners to promote an exchange of information and lessons learned and to provide guidance to staff. There are cross-sectoral opportunities, including in urban (see paragraph 54), industry, and transport, with increasing knowledge sharing and collaboration across the WBG. Increasing energy efficiency entails not only technical solutions but also appropriate pricing policies and significant incentives for utilities and governments to promote substantial demand-side management; innovative financing schemes; efficiency standards that are monitored and enforced; and widespread dissemination of information so that consumers, investors, and financiers can take informed decisions. The WBG will deploy a range of instruments—financing, policy advice, analytical work, technical assistance, and establishment of voluntary standards such as the Green Leaf logo under the Efficient Lighting Initiative supported by IFC.

**38. The WBG will strive to increase the efficiency of the existing energy infrastructure through rehabilitation, modernization, and adaptive management as a cost-effective means of delivering more energy while reducing fuel consumption and GHG emissions.** Examples include reducing transmission and distribution losses in power lines, insulation to minimize heat losses, eliminating leaks from pipelines, replacing existing boilers and motors with more efficient ones, and rehabilitating existing power stations of all types. In the case of increasing the efficiency of existing thermal generation plants, the net impact on GHG emissions depends on whether the life of the infrastructure is extended as a result of rehabilitation beyond what it would have been otherwise, and whether there is a financially viable option of replacing the system with lower-carbon fuels and technologies should life extension not take place. The WBG will conduct such analysis in assessing rehabilitation options.

### ***Improving the financial, operational, and institutional environment***

**39. Assistance to ensure efficient, financially sound sectoral performance and its contribution to equitable economic development will continue.** Without achieving sound performance, sustainability on every front—operational, financial, environmental, and social—is likely to falter, greatly reducing the effectiveness of investment projects. The WBG will help address underpricing, revenue under-collections, protection offered to inefficient parastatal energy monopolies, large technical and commercial losses, and weak regulatory frameworks and capacity. An example is the on-going World Bank support for power sector reforms and

restructuring in Vietnam, where a series of Development Policy Operations have prompted a shift to a market-based power tariff adjustment mechanism that increased average tariffs by 39 percent between March 2010 and December 2012. To ensure the energy sector's efficient functioning, the WBG will enhance work on transparency, accountability, and public participation. In upstream oil and gas, the World Bank has been active in the Extractive Industries Transparency Initiative (EITI), helping the 3.5 billion who live in resource-rich countries experience the benefits from the extraction of oil, gas, and minerals by ensuring that companies publish what they pay and governments publish what they receive. Through its requirements for revenue payment and contract disclosure, IFC and MIGA have helped reinforce EITI and set an example for other international financial institutions and the private sector.

**40. The World Bank will provide assistance to countries for pricing and tariff reform.**

Where there is willingness, the World Bank will provide this assistance to address underpricing, minimize market distortions and disincentives for energy conservation, enable cost recovery by energy companies, create a level playing field for all actors, and channel the fiscal savings to more productive uses of the government's budget. Subsidy reform will help improve the financial performance of energy suppliers, strengthen governance, and send the right price signals to consumers. Reformed subsidies should be fiscally sustainable and be efficient in achieving their objectives. For electricity and natural gas, for which consumption by individual users can be precisely metered, subsidies can be effectively targeted to the poor through cross-subsidization. Eliminating universal price subsidies could free up funds for the national treasury, energy suppliers, or both, and improve the creditworthiness of utilities, enabling them to raise critically needed financing. Although captured disproportionately by the rich, elimination of universal subsidies does harm the poor and needs to be accompanied by safety nets to protect the poor and the vulnerable. The World Bank can help analyze the channels through which energy subsidies affect the economy, examine the incidence of consumer subsidies, and assess policies to ameliorate the adverse consequences of subsidy removal for the vulnerable, including short- and long-term measures for social protection. The findings can inform the development of strategies for subsidy reform, consultation, and communication. Understanding the political economy of pricing reform—and of all other forms of reform for that matter—is critical for enduring success.

***Market solutions***

**41. The WBG will seek market solutions and leverage financial resources.** The World Bank contributes by helping to create the right policy, regulatory, fiscal, and contractual frameworks; helping to ensure that public utilities be creditworthy; and offering tailored guarantees where appropriate. Pricing and regulatory reforms, reform implementation, and properly structuring power and gas purchase agreements are examples of engagement. IBRD enclave loans and guarantees provide flexibility and can act as a catalyst for facilitating public-private solutions to financing investments. The WBG will do more to better sequence upstream interventions and project-specific support. The World Bank, IFC, and MIGA continue to

increase collaboration based on their respective strengths and institutional mandates to leverage increasingly scarce donor resources. Examples include the Kenya Private Sector Power Generation Project, which uses IFC's long-term debt, IDA Partial Risk Guarantees, and complementary MIGA Guarantees for commercial financiers to mobilize private sector financing; IFC-MIGA support for the expansion of the Azito natural gas power plant in Côte d'Ivoire through efficiency improvement, thereby avoiding an increase in gas consumption; planned IFC-World Bank collaboration in the power sector in Nigeria; and planned IDA-IFC-MIGA engagement to increase access to electricity in Myanmar where the access rate is less than 50 percent today. Another example is Lighting Africa, a joint IFC and World Bank initiative that has provided off-grid lighting to 3.8 million people in six countries in Sub-Saharan Africa through market-based solutions and is on track to meet the 2030 beneficiary target of 250 million. Lighting Africa has been replicated in two pilots in India and a similar approach is being adopted in the World Bank's initiatives for clean cooking and heating solutions. Market solutions also play a critical role in climate action. The Partnership for Market Readiness is an example of how the World Bank is helping with collective innovation and piloting of market-based instruments for GHG emissions reduction. The partnership brings together developed and developing countries and provides a platform for technical discussions on market instruments and harnessing financial flows for implementation.

**42. Promotion of new clean energy technologies, innovative policy tools, and enabling market designs will be important in the WBG's activities.** The WBG will be a partner in innovation and technology transfer, particularly through demonstration projects. New clean technologies—such as smart meters, smart grids, and CSP (as in the regional program in the Middle East and North Africa financed by the CTF)—may be proven elsewhere but new to a given market. An example is IFC's two recent commitments for CSP in South Africa, assisted by the CTF, which will be the first investments in CSP in Sub-Saharan Africa. Other technologies may be technically proven but require a significant cost reduction before they can be made commercially viable. An example is long-term storage of energy (aside from pumped storage, which is a mature and cost-effective energy storage technology at scale) for small-scale solar and wind power. In some cases, new clean technologies being considered may not yet be fully proven even in principle, such as the long-term storage of CO<sub>2</sub> in CCS. Support may be through technical assistance, as with the CCS Capacity Building Trust Fund, launched in December 2009. Future WBG activities will directly finance projects for specific sustainable energy technologies and facilitate new technology development through policy support, capacity building, the launch of clean energy market mechanisms, early-stage equity investments by IFC in clean technology companies, and knowledge generation and sharing. An important aspect is South-South knowledge and technology cooperation and transfer. The WBG will adapt its approach to new technology promotion in accordance with the levels of funding available from the international community and from innovative new market strategies in the client countries.

### *A multi-stakeholder, inclusive approach*

43. **The WBG will actively look for opportunities to encourage local community involvement as part of sustainable solutions.** Experience with rural electrification efforts suggests that local community participation brings many benefits in terms of improving design, mobilizing contributions in cash or in kind, and increasing local ownership and operational sustainability. Early community involvement can also help identify those particularly in need of assistance and ensure that community voice and participation are embedded in the design. Developing local capacity to operate and maintain installations and equipment is critical to success and for spurring local economic development. Helping to grow local energy markets that support entrepreneurship is another way of empowering local communities.

44. **The WBG will work to empower women in the energy sector** through partnerships focused on means to bring benefits to women as users of energy, as well as enabling women to become providers of energy services or make productive use of energy for income generation. Energy affects women and men differently, and gender disparities exist on both the demand side and supply side. Consulting women and educating the affected communities about gender-specific issues in projects can strengthen project effectiveness. There is a growing share of gender-informed investment projects, in which mid-term assessments, consultations with women, and analysis have refined the project design to account for women's needs as well as what women can deliver. Examples include dedicated consultations with women in the Energy Infrastructure and Access project in Haiti, indicators measuring outcomes for women and girls in the Rural Electrification and Renewable Energy Development project in Bangladesh, and targeted activities and investments for women in the Second Sustainable and Participatory Energy Management project in Senegal. Cross-sectoral dialogue and collaboration is an integral aspect of work on gender equality. Issues related to woodfuels require working together with the forestry sector. ESMAP has developed online resources for gender and energy. ESMAP is also planning to launch a program that will investigate gender aspects of large energy infrastructure projects, energy pricing and reform, and energy efficiency or small-scale energy infrastructure, closely aligned with energy sector project preparation and policy dialogue with client countries. The major focus of the program will be a detailed gender assessment, which would yield an exhaustive analysis of impact pathways, opportunities to avoid negative gender impacts, and full scoping of opportunities for increasing gender equality.

### *A tailored approach*

45. **The WBG will help decision makers adopt approaches and models tailored to their specific realities.** No institutional or business model, technology choice, or standards are universally applicable, and appropriate solutions and appropriate areas of focus for the WBG are highly context-specific. Countries and regions differ in their available energy supply options, the state of development of their energy infrastructure, and the level of access. Projects and policy advice will be tailored, subject to foregoing guiding principles. Within the overall framework provided by the guiding principles, regions will have the freedom to determine the most

appropriate response to their particular client countries. The WBG at the corporate level will harmonize and aggregate different regional strategies and action plans for the energy sector.

46. **In countries or areas within countries with low access, the WBG will give priority to securing access to reliable energy entailing investments along the energy supply chain.** The goal is to achieve universal access to both electricity and clean cooking and heating facilities. Under Sustainable Energy for All, the World Bank is funding the development of road maps for universal access in a number of opt-in countries. Providing electricity may be especially important in fragile and conflict-affected states, where resumption of electricity supply can be important in restoring confidence in the government, strengthening security, and reviving the economy. In each country, the access rate is lower among the poor, and this difference between the rich and the poor is particularly pronounced for cooking and heating. Countries with low access to electricity tend to be concentrated in Sub-Saharan Africa and South Asia, and those with low access to clean cooking and heating energy in Sub-Saharan Africa and Asia. In addition, areas within countries with low access exist even in regions with relatively high overall access rates. For these countries and areas, it is important to reduce the cost of supply to ensure affordability and sustainable access. Access is meaningful only if supply is reliable. Poor reliability is a problem especially with electricity. Increasing reliability will entail systematic investments along the supply chain to ensure adequate and diversified generation capacity as well as a robust transmission and distribution system.

47. **The WBG recognizes that obtaining reliable energy at the lowest price is critical for the poor.** Lack of access is largely a problem of poverty. In Sub-Saharan Africa, the region as a whole has an access rate of about one-third for electricity, but the bottom 40 percent has an access rate of less than 10 percent. Meaningful access that increases the welfare of the poor requires energy prices that are affordable to end users. Over the long run, the most important element of affordability is raising the income of the poor, to which the WBG's twin objective of reducing poverty and promoting shared prosperity will contribute. At the same time, making prices charged to end-users as low as financially viable and sustainable, and exploiting supply-side and demand-side energy efficiency are both crucial. Where the least-financial-cost option is not the lowest in emissions, affordability will be the first priority, given the incremental GHG emissions from extending access to the poor will not make a material difference (figure 3 and IEA 2012c). With many more people without access in rural areas, rural electrification is an important element of promoting shared prosperity. The WBG supports rural electrification programs in Bangladesh, Djibouti, India, Indonesia, the Lao People's Democratic Republic, Mali, Nepal, Pacific island countries, Rwanda, Senegal, and the Republic of Yemen, among others. In some cases, the WBG has targeted the poor and excluded communities, such as in The "Power to the Poor" program in the Lao People's Democratic Republic, specifically targeted female-headed households. This followed preliminary field work by the World Bank that suggested a much higher poverty rate among such households than the national average, and led to a program providing them with interest-free credit and making the cost of electricity connection and use budget neutral.



48. **For electricity, grid, mini-grid, and off-grid solutions are all needed.** They are not mutually exclusive and can be implemented in parallel or, under specific conditions, in sequence. Densely populated areas strongly favor grid electricity, which is usually the cheapest means of extending access. Off-grid technology options—mini-grids or individual systems—are appropriate to supply populations living in areas far from the existing grid or with demand too small to justify the fixed cost of extending the grid. Prioritizing electrification investments among competing regions and projects depends on how the country wishes to balance economic efficiency and equity. Countries engaged in the last stage of electrification often give priority to the poorest regions. Conversely, in the early stages, governments are inclined to value the cost-effectiveness of the investment and prioritize access in urban and peri-urban areas. From an institutional standpoint, there is no evidence for the superiority of any specific model for electrification; a key element seems to be defining and enforcing an institutional framework consistent with the country's strengths and the nature of the problems faced, combined with efficient use of the limited resources (World Bank 2010a). Often there are unrealized opportunities to create enabling conditions for stand-alone mini-grid solutions and off-grid and decentralized household-level electricity services provision by the local private sector. For meeting the challenge of increasing demand in rapidly growing low-income and informal urban settlements, output-based aid and prepaid metering are two possible responses.

49. **The WBG will expand engagement in clean cooking and heating solutions.** For cooking and heating fuels, in addition to Sub-Saharan Africa and South Asia, East Asia also has more than one billion people who rely on traditional use of solid fuels. The Africa Clean Cooking Energy Solutions Initiative in Sub-Saharan Africa and the Clean Stove Initiative in East Asia represent two regional efforts in this area. The WBG is a partner in the Global Alliance for Clean Cookstoves, a public-private partnership that seeks to create a thriving global market for clean and efficient household fuels and cookstoves. These initiatives are capturing lessons from Lighting Africa. Through its work with the Global Alliance for Clean Stoves as well as industry associations, the WBG will also promote the use of liquefied petroleum gas in urban and peri-urban areas, thereby reducing the use of firewood and charcoal and producing health benefits.

50. **The WBG will support and finance all forms of renewable energy, depending on the country's resource endowment, institutional and technical capacity, policy environment, availability of financing for cost differences, and trade-offs.** Where renewable energy is the least cost and has low lifecycle GHG emissions, such projects help improve the welfare of both the current and future generations. With declining costs, wind and solar power are beginning to be competitive in some settings, while geothermal energy is a relatively low-cost source of renewable energy providing a dependable supply. Biogas and biomass-based energy also play useful roles. The energy sector will work closely with the agriculture and environment sectors to consider assistance for liquid biofuels. For many in remote or isolated areas, distributed solutions based on renewable energy—such as solar home systems—coupled with greatly expanded use of energy-efficient technologies could well be the least-cost, most-rapid means of providing cost-effective energy services with a smaller environmental footprint. Wind, solar, and hydropower

schemes in remote rural areas financed by the Renewable Energy for Rural Markets project in Argentina are examples of least-cost off-grid supply options. For significantly scaling up wind and solar energy, what is most critically needed across the world is arguably more investment in transmission infrastructure and the means to accommodate the variable output of those technologies. Where renewable energy is not the least-cost option, the WBG will consider financial support if it can mobilize concessional financing to cover the incremental cost or if there is strong client ownership. The WBG will bring down the barriers to adoption of these forms of renewable energy, leveraging investments through the Clean Technology Fund (CTF), Scaling Up Renewable Energy in Low-Income Countries (SREP), and other concessional funds; developing suitable business models; and providing data to inform investors, such as through resource mapping. Besides financing, the World Bank will continue to help governments develop and implement such policies and regulatory incentives as feed-in tariffs or renewable portfolio standards, and strengthen the capacity of the institutions in charge.

**51. The WBG is firmly committed to the responsible development of hydropower projects.** Despite its potential, nearly four-fifths of potential hydropower resources in the developing world are yet to be realized, including more than 90 percent in Sub-Saharan Africa and about 70 percent in South Asia. For many countries, hydropower is now the largest source of affordable renewable energy. The WBG will engage in hydropower projects of all sizes and types—run of the river, pumped storage, and reservoir—including off-grid projects meeting decentralized rural needs. In many cases reservoir projects will be multipurpose, incorporating integrated water resource management. In addition to climate change mitigation, reservoir hydropower projects can often provide climate change adaptation services by reducing risks associated with extreme hydrological events and shocks to the economy. Reservoir hydropower can also pave the way for the later introduction of other forms of renewable energy, due to its unique ability to instantly come on-line to offset variabilities elsewhere in the system, as well as the potential for pumped storage to store, for example, wind power during periods of surplus. Regional hydropower projects can service and expand markets and facilitate the formation of interconnected systems and power pools, bringing down costs for all. Improved water resource management and multiple uses of water for power generation, water supply, irrigation, navigation, fisheries, and environmental flows can have a transformative development impact. The WBG has learned many lessons from past experience that are incorporated in the 2003 World Bank Water Resources Sector Strategy and also supports the development of the Hydropower Sustainability Assessment Protocol. The WBG is committed to scaling up efforts to utilize the maximum strategic value of hydropower resources in an environmentally and socially sustainable manner, including mechanisms to evaluate and share benefits from multipurpose projects where appropriate. The WBG will help countries strengthen their capacity for early incorporation of environmental and social dimensions in hydropower projects, including consultations, benefit sharing, and inclusion of indigenous peoples. Support for countries to develop hydropower is being strengthened, as is enhancing internal capabilities of staff across the Sustainable Development Network practice, by the launch of a Community of Practice.

52. **The WBG will scale up its engagement in natural gas.** Natural gas is the fossil fuel with the lowest carbon intensity. Recent discoveries have increased global reserves, lowering prices and potentially expanding its role as an interim fuel for a low-emissions future. Natural gas is well suited for power generation because it can provide both base load and peak load, and is often the least-cost means of providing flexible supply for following demand fluctuations. Using natural gas rather than coal in power generation offers significant potential for mitigating CO<sub>2</sub> emissions. Because of its flexibility, natural gas is also ideally suited to complement grid-connected solar and wind power to manage what can be large and rapid variations in electricity generation. The WBG will continue to assist countries to address barriers to commercializing natural gas and increasing possibilities for private investment by engaging on the policy and regulatory front, by providing World Bank and MIGA risk-mitigation instruments, and through IFC investments across the entire gas exploration, production, and downstream supply chain. The WBG will help countries develop national and regional gas markets and, where it makes economic sense, use natural gas as an alternative to coal and thus shift away from locking into coal infrastructure. The Global Gas Flaring Reduction (GGFR) Partnership, a World Bank-led initiative, is an integral part of this effort and is being scaled up starting in 2013. Launched in 2002, this partnership facilitates and supports national efforts to use currently flared gas by promoting effective regulatory frameworks and tackling the constraints on gas utilization, such as insufficient infrastructure and poor access to local and international energy markets, particularly in developing countries. Wasteful flaring of gas associated with oil production releases some 400 million tonnes of GHG emissions every year, without extracting the corresponding energy value of the gas. The WBG will enhance its learning around the emerging technical and environmental elements of unconventional gas. As the U.S. experience shows, unconventional gas holds significant economic potential, and this learning would enable the WBG to provide appropriate advice and support increasingly sought by partner country governments.

### ***Balancing development and global environmental sustainability***

53. **The WBG will give priority to activities that contribute to both development and global environmental sustainability.** The WBG fully recognizes that global environmental sustainability demands a global response. Historical contributions to the present stock of greenhouse gases in the atmosphere, per capita GHG emissions, and the ability to finance mitigation and adaptation vary dramatically across countries. Fortunately, there are activities that are cost-effective for energy production or consumption and reduce the environmental footprint. They include low-emissions cities, long-term engagement with several economies for inclusive green growth, and initiatives to help accelerate the adoption of climate-smart actions.

54. **Making cities more energy efficient and lowering their emissions can be transformational.** Almost half of all energy generated across the world is used to cool, light, and ventilate buildings. IFC is working directly with investors and through financial intermediaries to provide financing in this area, including through the Excellence in Design for Greater Efficiencies (Edge) Green Buildings Certification System, which is helping owners

design and retrofit buildings to be more sustainable. The World Bank's Sustainable Urban Energy and Emissions Planning Program (SUEEP), launched in January 2011 with support from AusAID, targets medium-size cities and has pilots in three countries. SUEEP considers all infrastructure sectors—such as transport, buildings, natural gas, electricity, water, and waste management—and identifies opportunities that increase energy efficiency while also reducing GHG emissions. SUEEP helps build capacity, create long-term green growth plans, and attract public and private investments. For larger cities, the World Bank is working in Bangkok, Beijing, and Shanghai. In Shanghai, the World Bank helped develop an abatement cost curve and three abatement scenarios, the first such effort in China at that time, which led to the decision to focus on retrofitting existing inefficient buildings, particularly commercial buildings, in an IBRD/GEF project. In parallel, in partnership with C40 Cities, the World Bank is embarking on an initiative to apply best-practice climate change action plans in East Asia, aimed at facilitating knowledge exchange. The Energy Sector Management Assistance Program's (ESMAP) Energy Efficient Cities Initiative (EECI) has been helping cities improve energy efficiency since 2008 through analytical tools, one of which has been deployed in 16 cities in Sub-Saharan Africa, Asia, Eastern Europe, and Latin America. EECI has provided support to the low-carbon cities operation in China, and its assistance to water utilities has led to a lending operation in Uruguay. ESMAP is also developing and disseminating practical guidance and solutions in such areas as public procurement, building energy efficiency, and urban and transport planning; scaling up energy efficiency improvement in water and wastewater utilities; and providing technical assistance and operational support to test innovative approaches in the World Bank's urban operations.

**55. The WBG will partner with several large emerging economies to forge a long-term path for inclusive green growth in their energy sector and beyond.** Large economies have correspondingly large environmental footprints, but also the financial resources, economies of scale, and technical and institutional capacity to reduce their footprints significantly. Long-term engagement that integrates policy dialogue, assistance for policy reforms, integrated resource planning and other aspects of long-term sector planning, institutional strengthening, and project financing can contribute to market transformation for inclusive green growth. One example is the China Renewable Energy Scale-up Program (CRESP). Started in 2005, the first phase of this project, which closed in December 2011, provided regulatory as well as cost-sharing support, and conducted studies on energy pricing, financial incentives, cost-sharing mechanisms, and renewable energy resource assessment that informed policymaking. The second phase of CRESP is currently under preparation, making this an engagement of more than a decade.

**56. The World Bank is working on initiatives to reduce the barriers to the adoption of climate-smart energy actions in client countries.** ESMAP and the Asia Sustainable and Alternative Energy Program (ASTAE) are particularly active in this area. Both work on upstream analysis and policy issues, and ASTAE also provides direct assistance to identify and develop World Bank projects. The activities include mobilizing concessional finance for development of geothermal resources, support for deployment of CSP at scale, support for system-wide planning

and regulation for renewable energy, advancing low-carbon development planning in national and sub-national settings, promoting analysis and initiatives around climate adaptation in the energy sector, and renewable energy resource mapping. A package of measures is being developed for each area of engagement: development and deployment of analytical work and diagnostic or exploration tools, a program of knowledge generation and capacity building for policy makers and practitioners, operational support to develop and realize investments or financing for specific projects, and dissemination of impact assessment. The World Bank is also providing technical assistance resources to countries that have opted into Sustainable Energy for All to develop policy plans based on sector-wide approaches. Development Policy Loans have been used to promote low-carbon development in a wide range of countries in recent years, including India, Indonesia, Mexico, Morocco, the Philippines, Poland, Rwanda, Turkey, and Vietnam.

**57. The WBG will assist governments in assessing climate vulnerabilities and adaptation options in an increasing number of countries.** Climate-risk management will be an important aspect of long-term planning. Water scarcity threatens not only hydropower but decreases thermal power generation efficiency. Higher temperatures may increase overall energy demand in hot-climate countries. Some regions may enjoy greater solar power potential. Climate-risk management influences the location and type of long-lived, large installations. Since 2008, IFC has been evaluating, including through pilots, how to incorporate climate risks in investment projects. It is finalizing draft guidelines and developing climate risk tools to be used in investments in climate-sensitive sectors. The WBG will help raise awareness of climate change impacts and incorporate climate-risk management in its engagement.

**58. The WBG acknowledges the global challenge of balancing energy for development with its impact on climate change and will help client countries realize affordable alternatives to coal power.** The WBG will provide financial support for greenfield coal power generation projects<sup>3</sup> only in rare circumstances. Considerations such as meeting basic energy needs in countries with no feasible alternatives to coal and a lack of financing for coal power would define such rare cases.<sup>4</sup> The “Criteria for Screening Coal Projects under the Strategic Framework for Development and Climate Change” (World Bank 2010c) will apply to all greenfield coal power projects undertaken in such exceptional circumstances.<sup>5</sup>

**59. The WBG will support interventions that reduce the GHG emissions associated with coal-combustion plants.** Efficiency improvements at existing plants are among the most cost-

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<sup>3</sup> Sometimes coal is used for heat, captive power, and chemical needs and difficult to substitute in industrial operations. Such projects are not included within this paper. The WBG will continue to finance investments in various industrial and commercial processes—such as steel, cement, and other manufacturing operations—while seeking gains in energy efficiency and employment of best practices.

<sup>4</sup> Greenfield coal power projects that have concept notes approved by senior management after January 2013 will be subject to the conditions in this paragraph.

<sup>5</sup> Coal mining is included in the purview of this paragraph.

effective means of reducing local and global environmental impacts of coal, and for this reason, the WBG will consider providing support aimed at increasing the efficiency of the existing infrastructure for heat generation, heat distribution, and coal-fired power generation (subject to the applicable coal screening criteria). The WBG would also consider support for greenfield as well as existing coal-fired plants with operating carbon capture, which offers the possibility of substantially reducing GHG emissions from coal-fired plants.

### ***Global advocacy***

60. **The WBG will be more active in global advocacy.** The WBG's advocacy will target both developed and developing countries. Its role in the UN Sustainable Energy for All initiative positions the WBG well to call upon all countries to help achieve universal access in developing countries, strengthen efforts on energy efficiency improvement in production and consumption, and seek opportunities for adoption of renewable energy. The WBG will bring evidence to bear in the global dialogue in these areas. Addressing global environmental sustainability poses a special challenge to the WBG because it does not engage developed countries directly, when solutions to global sustainability must involve the entire world. As figure 3 shows, a handful of large emitters account disproportionately for GHG emissions. Developed countries and large emerging economies are critical in irreversibly bending the global GHG emissions curve by pricing carbon sufficiently to provide incentives (see paragraph 61), scaling up research and development for technological innovation, deploying low-emissions technologies at scale and bringing down their costs, and ensuring robust climate financing to developing countries.

61. **The World Bank will engage governments, including those in developed countries, in moving to account for global externalities more explicitly.** Without a sufficient price on carbon, bending the GHG emissions curve in a sharp departure from the past becomes much more challenging even in the richest of countries. The most extensive scheme is the EU Emissions Trading Scheme covering about two-fifths of the European Union's GHG emissions, although oversupply of emissions permits has put downward pressure on prices in recent years (figure 4). A handful of developing countries have introduced limited forms of carbon tax, as in South Africa on the sale of new passenger cars. China has already embarked on pilot emissions trading schemes in seven cities and provinces, and intends to expand it to a national emissions trading scheme after 2015. Although not a carbon pricing instrument, India has a trading scheme for energy-saving certificates among large industries and installations. Brazil, Chile, Costa Rica, and Mexico have proposed plans for evaluating the use of market instruments that will begin to price carbon domestically at the meetings of the Partnership for Market Readiness. The energy sector of the WBG can help strengthen these schemes through interventions in energy efficiency improvement and adoption of renewable energy technologies.

### ***Regional approaches***

62. **The WBG's six regions have business plans aimed at achieving the central objective of this directions paper.** The regions share many common challenges but also face distinct issues specific to the individual regions' circumstances. Expanding electrification is a pressing

issue especially in South Asia and Sub-Saharan Africa, while adoption of clean cooking and heating solutions other than electricity is receiving special attention in East Asia and Sub-Saharan Africa. Post-conflict reconstruction of energy infrastructure is a challenge being addressed in Africa and the Middle East. While all regions are supporting renewable energy, varying levels of natural resources call for differentiation in the areas of focus. Rehabilitating and expanding transmission and distribution networks is an important area of focus across the six regions.

63. **There is high selectivity in individual countries.** The WBG provides solutions tailored to the specific circumstances of each country, although when viewed at the regional portfolio level, that selectivity becomes somewhat lost in the process of aggregation. Table 1 gives a simplified illustration of investment areas of focus by region.

**Table 1: Investment areas by region**

| Area of engagement                                                  | EAP | ECA | LAC | MNA | SAR | SSA |
|---------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|
| <b>Energy efficiency improvement</b>                                | ●   | ●   | ●   | ●   | ◐   | ◐   |
| <b>Renewable energy</b>                                             |     |     |     |     |     |     |
| Hydropower                                                          | ●   | ◐   | ◐   |     | ●   | ●   |
| Solar                                                               | ●   |     | ●   | ●   | ◐   | ●   |
| Wind                                                                | ●   | ◐   | ●   | ●   | ◐   | ●   |
| Geothermal                                                          | ◐   |     | ◐   | ◐   |     | ●   |
| <b>Natural gas</b>                                                  | ●   | ◐   | ◐   | ◐   | ◐   | ●   |
| <b>Transmission and distribution</b>                                | ●   | ●   | ●   | ◐   | ●   | ●   |
| <b>Regional trade and market integration</b>                        | ◐   | ●   | ◐   | ◐   | ●   | ●   |
| <b>Improving financial performance, sector planning, and reform</b> | ●   | ●   | ●   | ●   | ◐   | ●   |
| Subsidy reform                                                      | ◐   | ●   | ◐   | ●   |     |     |
| <b>Access</b>                                                       | ●   |     | ●   |     | ●   | ●   |
| <b>Post-conflict reconstruction</b>                                 |     |     |     | ◐   |     | ●   |

Source: World Bank Group staff.

Note: EAP = East Asia and Pacific, ECA = Europe and Central Asia, MNA = Middle East and North Africa, SAR = South Asia Region, SSA = Sub-Saharan Africa, ● = active engagement, ◐ = engagement, no symbol = limited or no engagement.

### **Organizational effectiveness**

64. **The WBG will strengthen economic analysis and results monitoring.** There is a WBG-wide move to tighten economic analysis and to assess the development impact of WBG financing. As a new development, phasing in of GHG emissions analysis starting in July 2013, subject to availability of funds and of acceptable methodologies, provides an opportunity to examine the implications of, and develop and test methodologies for, capturing global externalities. Also, the World Bank has recently launched, together with the International Energy Agency and other partners, a framework to track global progress for the three goals of the UN Sustainable Energy for All initiative.

*In closing,*

**65. These directions, built on engagement and partnership, provide a pathway to greatly expand energy services and access for the poor while ensuring a sustainable energy sector that safeguards the environmental commons of the poor and the developing world.**

As a key partner in the UN Sustainable Energy for All initiative, the WBG is seeking to build momentum and set the initiative on an early path to success by mobilizing a strong set of commitments through knowledge, financing, and partnerships—particularly through high-impact, replicable projects—and contributing to the development of analytical and accountability frameworks for defining and monitoring results and progress toward the initiative’s three targets. The energy sector of the WBG is also seeking to balance local and global needs by working in partnerships inside and outside the WBG. Examples include collaboration with the urban sector in delivering energy services to the poor and making cities greener, with macroeconomists and finance ministries in reforming untargeted energy subsidies, and with the environment sector in facilitating market mechanisms for carbon pricing. In all of this, different WBG institutions bring their unique strengths to enhance the investment climate and make maximum use of the available resources in each country toward the same common goal as one World Bank Group. Engagement through partnerships, analytical work, policy and regulatory support, and facilitation of knowledge sharing is as important as financing and guarantees.

**66. The directions set out in this paper are consistent with the goals and the five building blocks in “A Common Vision for the World Bank Group”:**

- **Serving the poor and vulnerable in a sustainable manner** is the central objective of the WBG’s engagement in the energy sector and is also well aligned with the three goals of the Sustainable Energy for All initiative.
- **Recognizing the diversity of clients** and tailoring solutions accordingly is a guiding principle, with the focus of the WBG’s energy engagement varying significantly across regions according to development goals.
- **Working as one World Bank Group** is supported by the guiding principle on seeking market solutions and helping governments foster private sector participation and investment.
- **Focusing on development solutions** based on each country’s income, poverty, resource endowment, and institutional capacity is supported by the guiding principles on market solutions and tailoring engagement to individual circumstances.
- **Dynamic selectivity** is exercised through a focus on transformational engagement, while being selective in each individual country according to the state of its energy sector, competing priorities, and its needs.

**67. The WBG is committed to long-term engagement to help bring out the transformation of the energy sector in its client countries.** The WBG’s energy practice will focus on supporting the WBG’s overarching objectives of reducing extreme poverty and



promoting shared prosperity, and will be centered on contributing to the achievement of the three global goals under the UN Sustainable Energy for All initiative. To that end, this directions paper proposes regional integration and long-term system-wide sector planning as two transformational areas of engagement, where transformation is defined by the WBG's infrastructure strategy as optimizing co-benefits across infrastructure sectors, between infrastructure and the environment, between infrastructure and social development, and across space. This paper also proposes focusing more on natural gas and reaffirms the commitment made earlier to hydropower development. The development benefits of these areas of focus are measured in decades. The directions in this paper aim to make the WBG a reliable partner in the push to reduce energy poverty and help move countries toward a sustainable energy path.

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