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*Arab Forum for Environment and Development (AFED)* is a not-for-profit organization, which brings the business community together with experts, civil society and media, to promote prudent environmental policies and programs across the Arab region.

One of the main goals of AFED is propagating environmental awareness by means of supporting the role of environmental education and information and of non-governmental organizations active in environmental protection.

The main product of AFED is a periodic expert report on the state of the Arab environment, tracking developments and proposing policy measures. Other initiatives include a regional corporate environmental responsibility (CER) program, capacity building for Arab civil society organizations, public awareness, and environmental education.

This handbook is intended for use as a housekeeping guide for energy efficiency best practices in commercial office buildings across the Arab region.

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## FOREWORD

Arab economies are not energy efficient. Recent data about annual CO<sub>2</sub> emissions per capita and per unit of gross domestic product (GDP) for some Arab countries bear that out. The demand for energy is rising across all Arab countries fueled by economic and population growth, as well as by increased industrialization and urbanization and changing life styles. For oil-importing countries, the high price of oil is having a significant impact on their balance-of-payments. For oil-producing countries, rapidly rising electricity demand has caused power black-outs in recent years.

As a result, governments are allocating tens of billions of dollars over the next decade for the construction of additional power plants and for upgrading the grid. Moreover, many Arab countries are interested in nuclear power to complement the primary sources of electricity generation, oil and natural gas. However, these significant investments yield little economic returns because of low end-use efficiency and high subsidies. It will not be economically sustainable to subsidize energy use for millions of institutional and household end-users. Energy planners in Arab countries face daunting challenges.

Energy policy in Arab countries should not be concerned solely with the expansion of energy supply to meet the increased demand for electricity. The management of the supply side must be coupled with demand-side management. Energy policy makers should treat energy efficiency as a strategic policy objective, worthy of strong commitment. In fact, managing the demand for energy through energy efficiency should become a priority *now* before significant investments are locked in new power plant facilities. Capitalizing on energy efficiency would in effect reduce the demand for power and hence the immediate need to build new power generation plants. Studies have indicated that scalable energy efficiency opportunities can reduce energy consumption by 30%.

Because it is subsidized, energy consumption may not be of concern to end-users in many Arab countries. In fact, the monthly electricity bill for most organizations makes up a negligible portion of total monthly operating costs. However, there is more to this story. While thousands of end-users may not be burdened by electricity costs, it is the national economy that becomes saddled with significant subsidy costs and more critically with the high costs associated with building new power plants. Subsidies lead to overconsumption, impose a burden on public finances, misallocate resources, and constrain the ability of regulatory agencies to rein in demand. The indirect effects include lower economic productivity, increased air pollution, and higher rates of greenhouse gas emissions. These dynamics create a reinforcing cycle. High subsidies promote overconsumption, which drives the demand up, thus prompting more power plant construction, and leading to even higher subsidies.

One of the barriers to improving energy efficiency is the lack of awareness of practical, cost-effective methods for reducing energy consumption. This handbook helps to fill a large and unoccupied gap on energy efficiency strategies in commercial buildings in Arab countries. The handbook was developed to assist organizations identify and prioritize cost-effective energy efficiency opportunities in commercial buildings.

Energy supply and end use systems, such as buildings, require large capital investments and have long turn-over times: 30-40 years for energy systems and 100 years for buildings. Because investments have been sunk into these facilities, the only practical means to reduce energy use lie in systemically capturing energy efficiency opportunities. Minute reductions in lighting energy consumption in buildings will translate into considerable savings when aggregated. When other energy uses—HVAC, equipment, and data centers—in buildings are targeted, and when thousands of commercial buildings are included, the individual minute reductions will aggregate to significant energy savings in kilowatt-hours and in considerable cost reductions. The consumer will benefit, and so will the whole economy and the environment. A list of energy efficiency benefits is presented in the box below.

**Energy efficiency programs yield the following benefits:**

1. Lowering energy bills for end-use consumers over the lifetime of the building's occupancy.
2. Reducing the size of government energy subsidies and improving countries' balance-of-payments.
3. Lowering peak electric demand levels, which reduces strain on the electric grid and the need to build costly new power plants, yielding billions of dollars in cost savings.
4. The reduction in energy consumption will also put downward pressure on overall energy prices, thus generating additional energy cost savings for all consumers and for the government.
5. Improving the long-term reliability and stability of the electric grid and other sub-systems of the energy infrastructure system.
6. Improved efficiency standards are critical for avoiding significant emissions of greenhouse gases (GHG) and for meeting national climate change goals (if any) at the lowest possible overall cost.
7. Reduced water consumption (used in generating steam) in power plants.
8. Enhancing economic resource productivity and economic competitiveness.
9. Investments in energy efficiency will create value-adding economic activities and new jobs.
10. Energy efficiency contributes to reduced emissions and formation of toxic air pollutants—NO<sub>x</sub>, SO<sub>x</sub>, ground-level ozone (smog), particulate matter, volatile organic compounds, and others.

The Arab Forum for Environment and Development (AFED) hopes that the Environmental Housekeeping Handbook will inform stakeholders and stimulate action for enabling a cost-effective energy efficiency strategy at the national and regional level.