CHAPTER 1

Introduction

ENVIRONMENTAL HOUSEKEEPING HANDBOOK OBJECTIVE

The Environmental Housekeeping Handbook assists occupants of commercial buildings in Arab countries capture unrealized financial and environmental gains. The handbook presents methodologies for systemically identifying and prioritizing cost-effective investments that result in energy savings for building owners or leaseholders.

ENERGY EFFICIENCY MATTERS

Increasingly, companies and government agencies in Arab countries see improving energy efficiency as a critical tactic for cutting costs and greenhouse gas (GHG) emissions. The costs of heating and cooling in inefficiently designed and constructed buildings are putting an increasing financial burden on occupants, particularly in those countries—Jordan and Morocco—where fuel and electricity subsidies are gradually being removed. Even in high-income Arab countries with significant energy subsidies for end-users, supply is unable to meet soaring demand for electricity. End-use energy efficiency in buildings offers a cost effective strategy to reduce electricity consumption compared with, for instance, expansion of supply capacity. In fact, end-use energy efficiency improvements are the surest, cleanest, and least expensive option to meet increased demand.

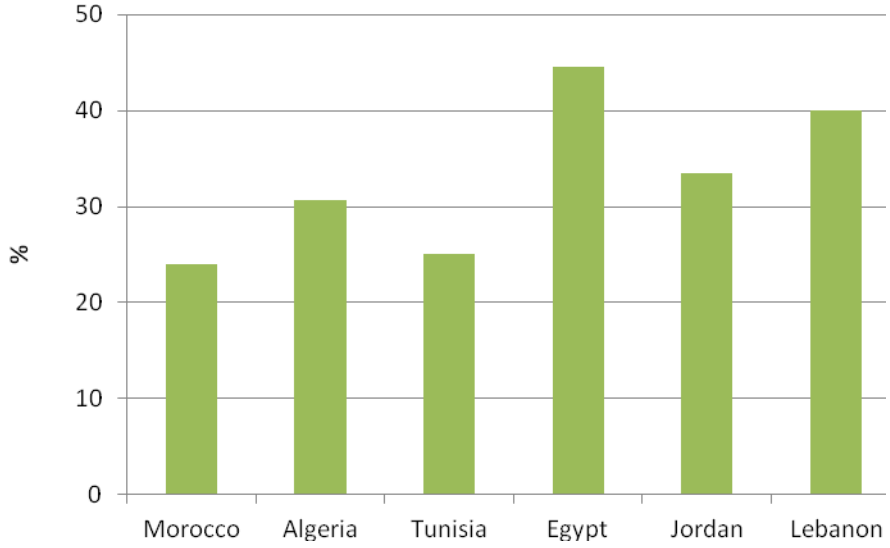
In Arab countries, buildings account for an average of 35% of all final energy consumption, and contribute 35-45% of all CO_2 emissions. Most of these impacts occur in the occupancy phase of the building lifetime. Figure 1.1 indicates the share of the buildings sector of the final energy consumption in selected Arab countries. Moreover, the building sector is one of the fastest growing sectors in the Arab region. It is projected that a total of $4.3 trillion will be spent on construction in the Middle East and North Africa (MENA) region over the next decade. The bulk of this construction will be directed towards new residential, commercial, and public buildings such as hospitals and schools. Therefore, a common challenge will be the sector's significant use of resources and emissions of CO_2. These projections give proof that prudently managing energy consumption in buildings matters significantly.

Global studies have demonstrated that most commercial buildings could cut energy use by 30% or more through investments in improved efficiency. Despite the opportunities, few companies in Arab countries

have fully invested in cost-effective energy efficiency improvements. A number of barriers prevent these companies from identifying or approving smart efficiency investments. One of the most often cited barrier is the lack of knowledge by companies and end-users about the opportunities that exist and how to take advantage of them.

This handbook offers a roadmap that can be used by office or facilities managers in Arab countries to identify, assess, and prioritize energy investment opportunities that will lower their energy use and hence reduce their carbon footprint. The handbook's primary focus is on the largest consumers of electricity in an office building including heating, ventilation, and air conditioning (HVAC), lighting, water heating, and office equipment such as computers, copiers, and printers. The handbook takes a generalized approach to improving energy efficiency in office buildings, and therefore, users may have to tailor some contents to the specific conditions of their location. In addition to addressing efficiency in electric power use, the handbook contains a chapter to address reducing fuel use by company-owned or company-leased vehicles.

FIGURE 1.1: SHARE OF BUILDING SECTOR IN THE FINAL ENERGY CONSUMPTION IN SELECTED ARAB COUNTRIES



Source: MED-ENEC, 2006

Office buildings are those used for general office space, professional office, or administrative offices. This category includes: administrative or professional office, company's head office, government office, mixed-use office, bank or other financial institution, medical office without diagnostic equipment, sales office, contractor's office, non-profit or social services, research and development, city hall, or city center.

An office building is one category among others that make up commercial buildings. While this handbook targets *office* buildings,

many of the energy efficiency investments described apply just as well to other types of commercial or institutional buildings such as retail buildings, shopping centers, hospitals, hotels, schools, and universities. Again, office and facilities managers would be prudent to tailor the content to the specific requirements, functions, and conditions of the building category in question.

It must be acknowledged that the work presented in this document relies primarily on the 2009 Environment Defense Fund (EDF) report "Climate Corps Handbook: Energy Efficiency Investment Opportunities in Office Buildings."