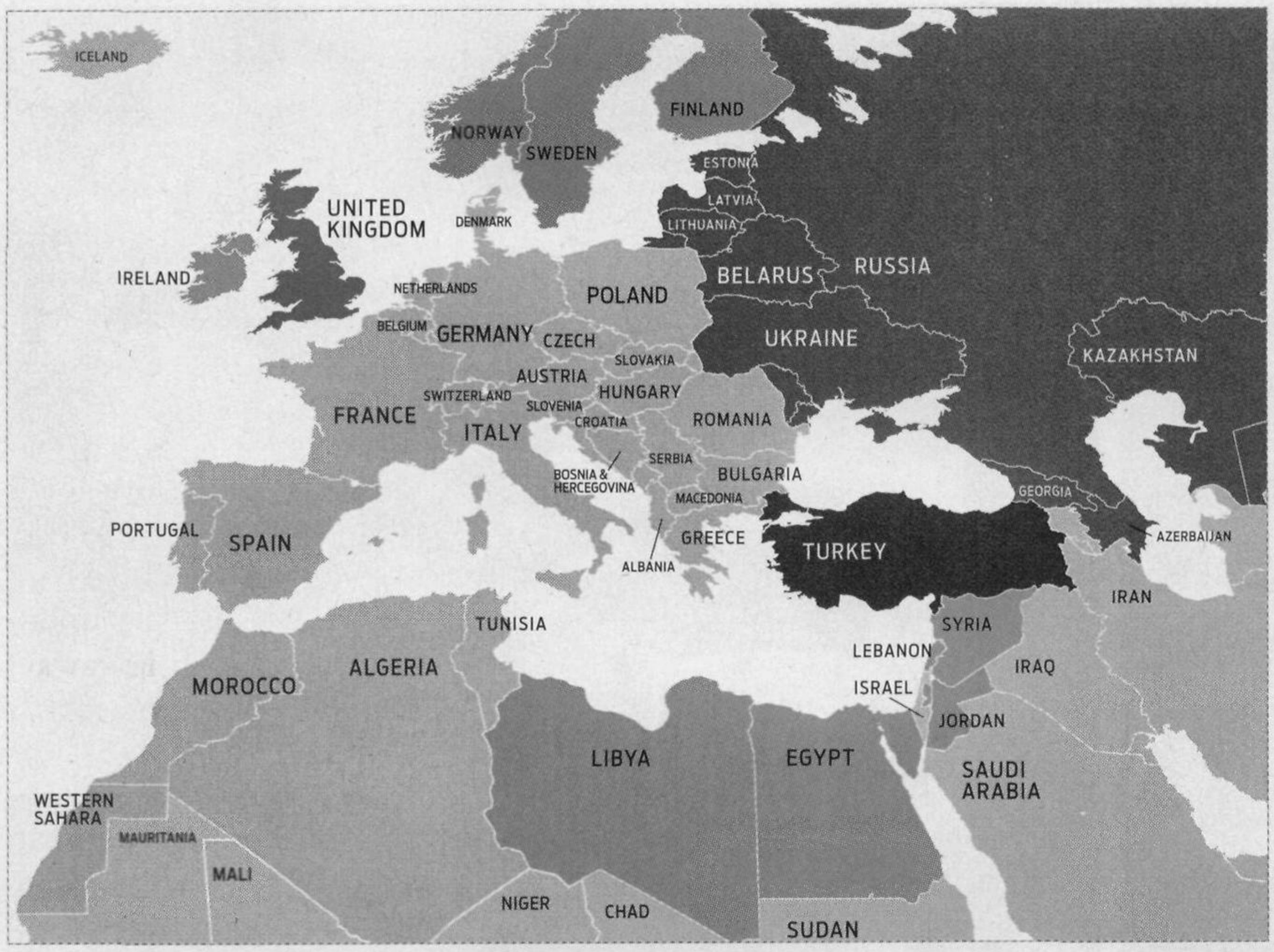
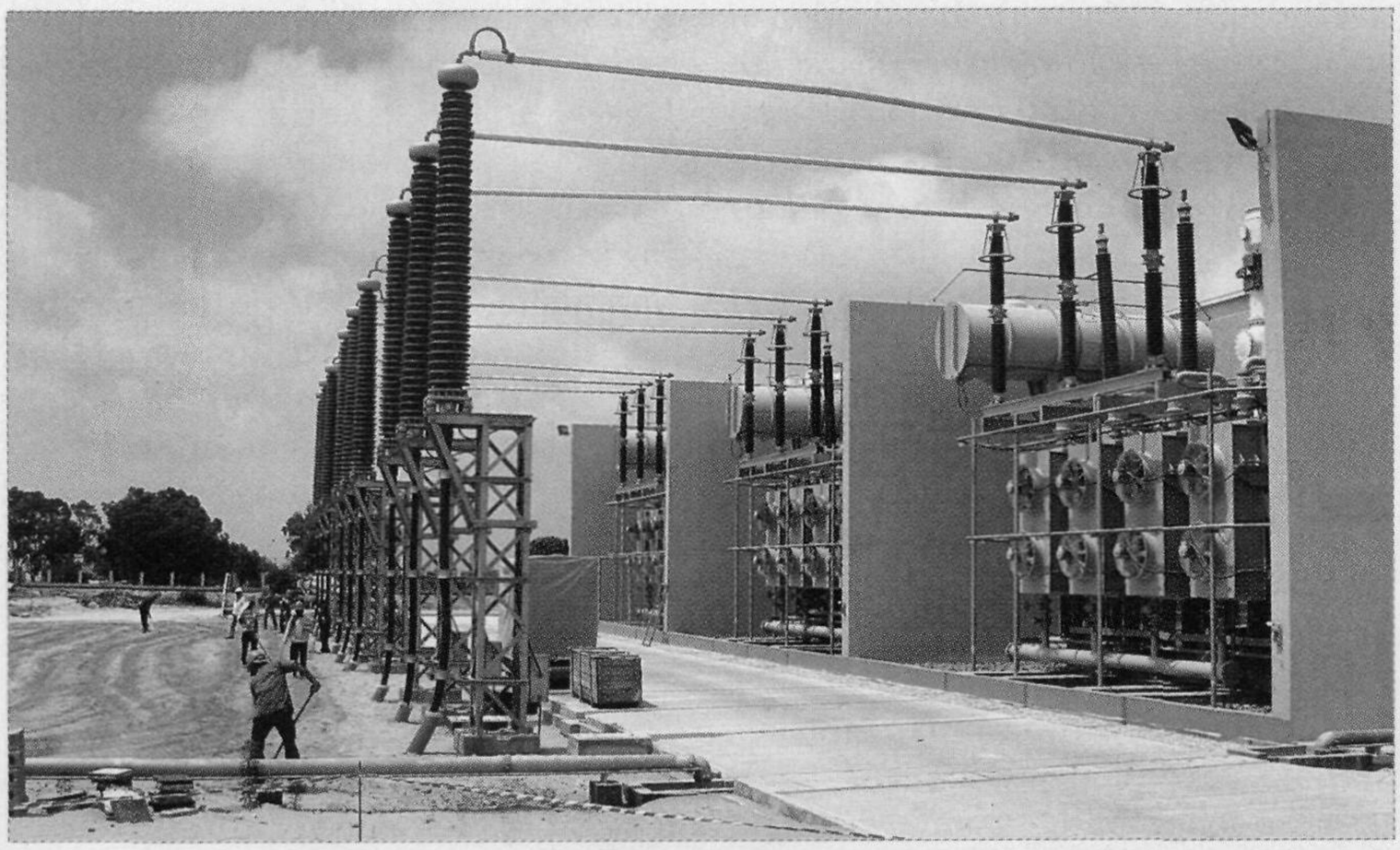


BUILDING BLOCS: The electrical grids of Europe, North Africa, and the Middle East form different synchronous blocs. Western North Africa is already tied to Europe's Union for the Co-ordination of Transmission of Electricity [yellow]. In 2009, Libya, Egypt, Jordan, Syria, and Lebanon [green] may join that bloc. Energizing existing linkages to Turkey [brown] would then close the Mediterranean Electricity Ring.



SCUDS TO PLOWSHARES: A new 400-kilovolt substation, located in the sparsely populated Bir Osta Milad district on the outskirts of Tripoli, Libya, was built on the site of a former Scud missile factory. *PHOTO: PETER FAIRLEY*

eration capacity within a decade to meet projected demand. But generating capacity isn't enough, as Libyan leaders were reminded last April when a blackout knocked out power in the eastern half of the country, including its second-largest city, Benghazi, for more than four hours. Subsequent analysis zeroed in on the aging 220-kV lines connecting Libya's population centers, which are dispersed along the Mediterranean coast.

Libya clearly needs a more robust and stable grid. It also wants to move up the value chain, by exporting electricity instead of gas. And above all, it yearns to end decades of isolation from the international community.

The impact of that history lingers. Libya's social infrastructure, including hospitals, educational institutions, and transit systems, remains outdated and inadequate. The problems are obvious even to the casual traveler. The roads between Tripoli and its 1970s-era airport, for example, are run-down and lined with unfinished housing blocks—along with larger-than-life portraits of Qaddafi, the "Great Leader."

Although he as much as anyone is responsible for the country's sorry state, Qaddafi now perceives Libyans' powerful yearning to make up for lost time. In March, he criticized his government for moving too slowly to translate Libya's recent oil and gas windfalls into improvements in the average person's quality of life, saying that the nation was "paralyzed by bureaucracy and corruption." Unfortunately, his proposed solution—to privatize the ministries by the end of this year and redistribute oil wealth directly to the citizenry—threw government planning into disarray.

The ferment is evident in Faraj al-Ammari's office at the electric-power ministry, the General Electric Company of Libya, where the phone seems to ring constantly. "For the past two years, I've been working from, maybe, 8:30 until 12 at night," laments the mild-mannered engineer. Ammari is preparing his ministry for privatization while simultaneously overseeing a massive expansion of the Libyan power system. Peak demand has been increasing by about 7 percent a year, but that rate could soon double because of the electricity needed to run the massive pumps of Libya's ambitious Great Man-Made River, a megaproject of wells and aqueducts designed to transport water from deep aquifers in the Sahara Desert to coastal population centers.

To meet this challenge, Ammari's ministry commissioned a national center to control the country's transmission grid; the ministry claims to have more than 5000 km of 400-kV lines, 25 new 400-kV substations, and 6000 MW of natural gas–fired generation under contract or construction. When that work is finished, power transfer across the grid's weakest link—a key east-west connector that failed during the April blackout—will jump from a few hundred to 2000 MW. "We will be the strongest network south of the Mediterranean," boasts Ammari.

A KEY TEST of North Africa's upgraded power infrastructure will come in early 2009, when Libya is scheduled to try once again to connect with Tunisia. A first attempt in 2005 was cut short after just 7 minutes, when slight mismatches in North Africa's ac frequency, compensated for by the might of the UCTE, caused larger-than-expected power flows in and out of the UCTE that overtaxed the North African lines. This time around