In 2001, the GEF broadened its mandate from a source of primarily grant funds through the United Nations and the World Bank Group, to the possibility of providing a broader array of investments, loans, guarantees, and other forms of financial support through a more diverse network of intermediaries.

24.7 FINANCING THE PV INDUSTRY

The PV industry will need to assemble a substantial amount of capital to support its growth. Capital is needed to expand manufacturing capacity and to fund working capital for inventories and receivables, all of which must be financed ahead of sales and profits in a growing industry. There are several sources of financing for the PV industry:

Major corporations: This is a dynamic time in the PV industry. Approximately 75% of worldwide PV market share is held by the operations and subsidiaries of major corporations – Sharp, Kyocera, BP Solar, Siemens, Sanyo, ASE, Shell, and Mitsubishi. It is typical for such large corporations to require a 20% or greater rate of return on internally invested capital, and this has not been achieved in the past. Many PV businesses have lost money, causing companies to quit the business. Companies that have left the PV business include Westinghouse, IBM, Motorola, Xerox, Texas Instruments, Exxon, Shell (US), Arco, Mobil, and others. More recently, with the global movement towards green energy, several major corporations have increased their commitments, including BP in 1996 and Shell International in 1997. The most recent casualty was Siemens, selling its solar division to Shell. Lacking improved profitability, the industry may see a continuation of entries, exits, and reorganizations by major corporations.

Electric utility companies: There has always been an affinity between photovoltaics and the utility companies. For example, Alabama Power was a major investor in Chronar, which closed. Idaho Power acquired a number of PV-systems integration firms between the years 1997 and 1999, only to exit the business and sell the group to Schott in the year 2001. Siemens Solar was half-owned by a German utility, EoN. The former Mobil Solar was acquired by RWE in 1994, a German utility, creating ASE Americas. General Public Utilities established GPU Solar, a joint venture with Astropower, focusing on grid-connected IPP power projects, commercial systems, and residential rooftop systems. The PV industry can expect to receive additional capital investment from the utility industry.

Capital Markets: The public stock markets in Europe and the US began to show interest in clean energy and distributed power generation in the period between 1998 and 2000. The areas of popular stocks in the United States include fuel cells, microturbines, and photovoltaics. In Europe, where the markets reacted earlier, the favorites have included wind power (in which Denmark and Germany lead the world industry), solar photovoltaics, hydropower, and other renewables. There are three publicly traded PV stocks in the United States: Astropower, Evergreen Solar, and Spire Corporation; and several in Europe. The outlook is positive in the near future, as the supply of money for green energy stocks is increasing, including the formation of mutual funds specializing in clean/green energy, such as Winslow's Green Growth Fund.

Venture Capital: The Venture Capital (VC) industry has invested in PV deals over the past 25 years, generally losing their investments, and never achieving their traditionally accepted financial goal of a 40% rate of return. This may be changing in recent years