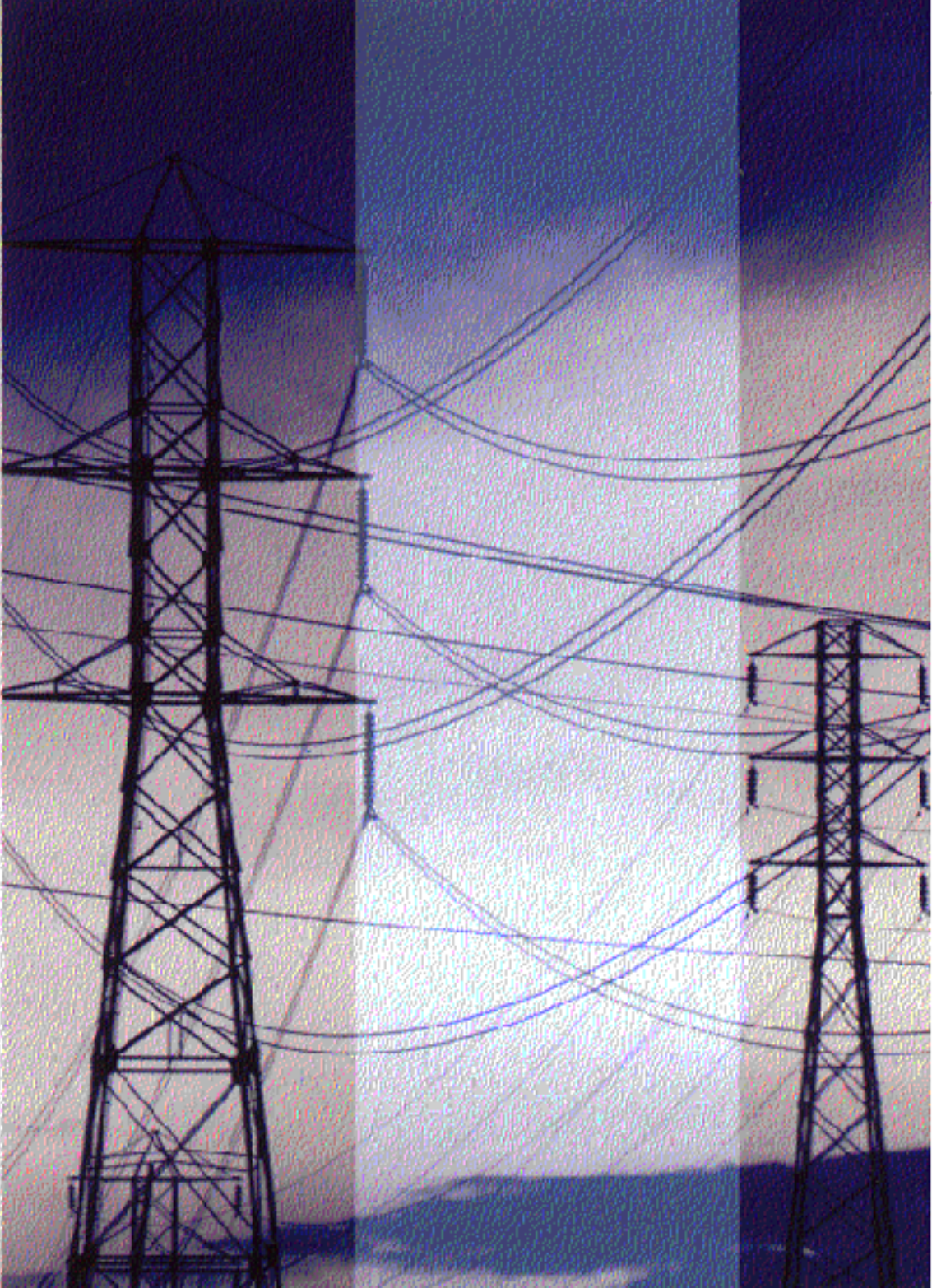
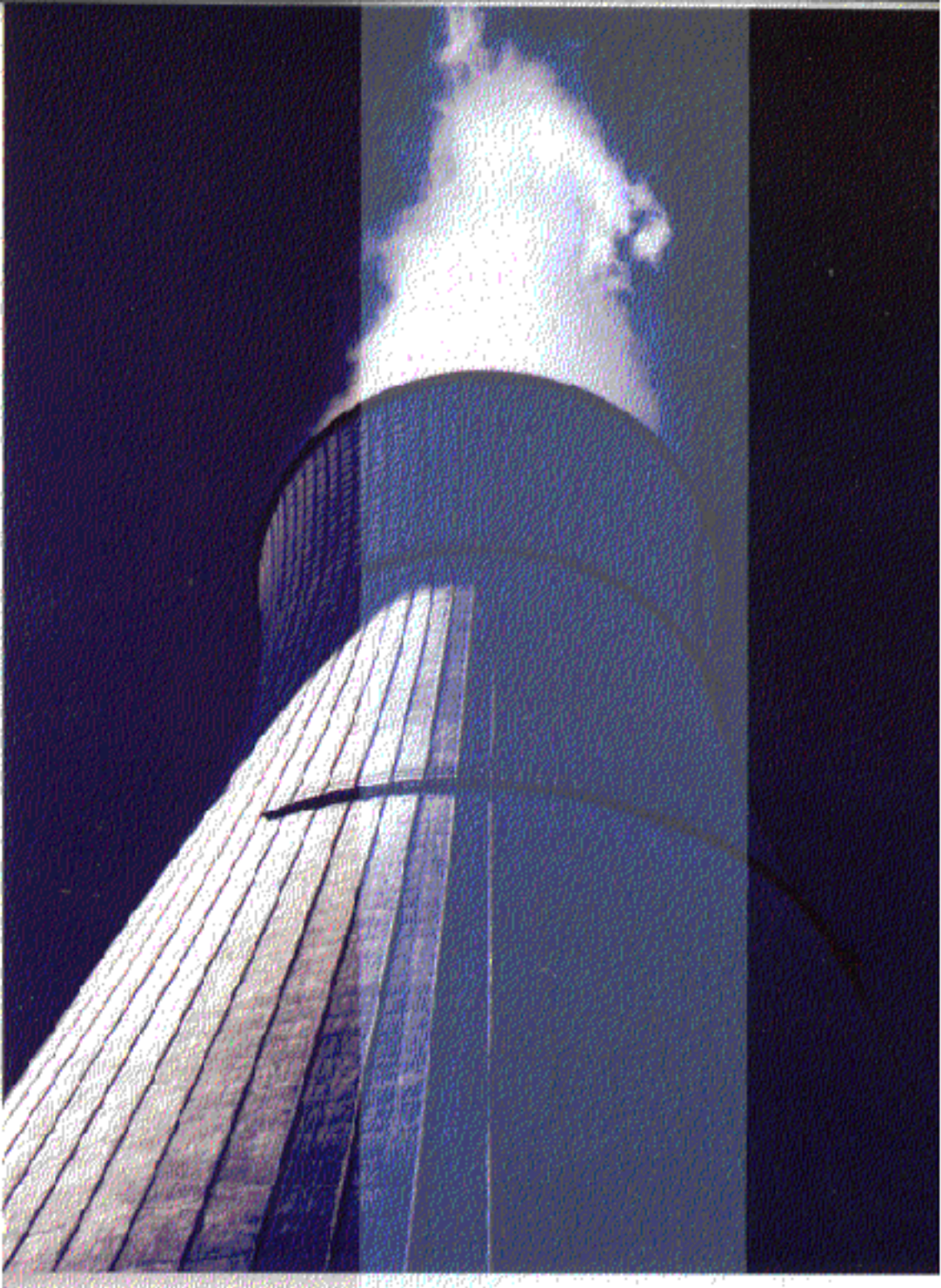
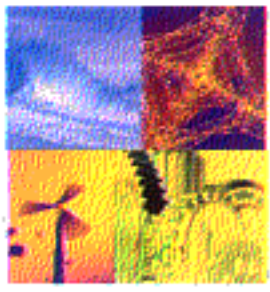


Power Industry Development

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The European power market is being transformed into a highly competitive one where producers, consumers and traders must carefully analyse trading risks.

Risk management in the evolving European power market

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THE EUROPEAN ENERGY market is becoming increasingly complex. While wholesale prices reflect the short-run marginal costs of production, prices only influence electricity consumption to a limited extent. At the same time, while the production system is based on low-cost, base-load production, the production costs to meet peak demand can be several times higher than base load costs. Increased demand and reduced supply will therefore sharply increase the price over time. In such a market, the analysis of risk is now a vital tool for producers, consumers and traders.

Market volatility

Markets where both the supply and the demand curves are steep will often result in high price volatility. Experience from both the USA and Scandinavia shows that the price level in periods of tight supply and demand can increase by several hundred per cent over a short period of time. Other factors leading to high volatility include the influence of changes in petrol prices, changes in the weather and transportation bottlenecks. Compared to other markets, the electricity market is regarded as extremely volatile.

One of the main challenges for traders in such a market is to get an accurate picture of the price risk involved in trading. To get this picture, historical observations on the volatility of power are of great value. But in the newly deregulated market, such information is scarce and it is based on a very short observation period. To meet this challenge, the simulation of market price development, based on certain assumptions about supply and demand, provides valuable additional information.

Market model

Experience from both the Scandinavian market and the emerging markets in Europe and the USA

clearly demonstrates the risks involved in power trading. One of the main challenges is to develop a risk management system that takes account of the complex nature of electricity supply and demand. Several systems have been introduced, including value-at-risk and Monte Carlo simulations, and stress tests. A common feature of most of these systems is that they tend to be far too complicated and they are not able to present the relevant risk to the user. SKM's experience is that the key to successful risk management in the power market is to develop an easily accessible and understandable reporting system that makes it simple for management to evaluate the risk position.

The main obstacles for risk management are:

- Understanding the causes of risk
- Measuring risk
- Introducing risk limits to traders
- Implementing and organising risk management

The future of the European market

The production and consumption of electricity in the European power market is 2000 to 3000TWh, or six to eight times the Scandinavian market. Of course, it is difficult to estimate how the market will grow in the future. But, based on experiences from the Scandinavian power market and from other commodity markets, the volume of financial derivatives is likely to grow to two to three times the underlying production and consumption in three to four years time. This means that there will be a European market with a volume of futures and forward contracts and options of 5000 to 10,000TWh per year. The value of such a market will be €200–300bn annually.