

## case seventeen

# AES Corporation: Rewriting the Rules of Management

**Robert M. Grant**

*God made us all a certain way. We're all creative, capable of making decisions, trustworthy, able to learn, and perhaps most important, fallible. We all want to be part of a community and to use our skills to make a difference in the world.*

**Dennis Bakke, CEO, AES**

*We broke all the rules. No overtime. No bosses. No time records. No shift schedules. No assigned responsibilities. No administration. And guess what? It worked!*

**Oscar Prieto, AES manager and director of Light Servicos de Electricidade, Brazil, October 1998**

Spring 2002 presented AES Corporation, the world's largest independent power generator, with the most difficult business circumstances in its 21-year history. After almost uninterrupted growth and a steeply rising market valuation that had taken AES into the S&P 500 in 1998, AES's world had been shaken to its foundations by three major shocks. The first was the Californian power crisis of 2001. Although AES was only a minor player in electricity trading, as an independent power producer with plants in California it was caught up in the recriminations, lawsuits, and regulatory investigations that had followed California's electricity debacle. More generally, the California power crisis threatened continuing deregulation of the US electricity sector – it was this deregulation that had provided the rationale for AES's founding and the business opportunities for its continued growth. Second, AES had been caught up in the wake of Enron's collapse at the end of December 2001. Although AES's direct losses resulting from Enron's bankruptcy amounted to a mere \$15 million, the sudden demise of this giant of the energy sector had a profound impact on investors' risk perception and upon the legitimacy of a range of previously accepted business practices, including off-balance-sheet financing. The third crisis impacting AES was Argentina. Argentina represented one of AES's largest overseas interests with over \$1 billion invested. The meltdown of the Argentine economy had rendered these investments all but worthless and had had knock-on effects on AES's power interests in Brazil. The gloom affecting AES's Latin American operations was further increased by the mounting crisis in Venezuela. Finally, the aftermath of the September 11, 2001 terrorist attacks on the US had created further uncertainties for AES's global interests. With investments in several Muslim countries – in particular Pakistan and Kazakhstan – AES was again subject to greatly increased financial, political, and physical risk.

These factors had combined to ensure AES's entry into the infamous "90 percent club" – those companies (mainly technology, media, and telecommunication companies) that had lost more than 90 percent of their stock market value. After touching \$70 a share in September 2000, AES's share price had fallen below \$4 in February 2002, driven lower by sales by CEO and

founder Dennis Bakke who was forced to liquidate a quarter of his 5.8 percent equity stake in order to meet margin calls. The sharp decline in AES's market value had placed considerable strain on AES's finances, making it increasingly difficult for AES to access the capital markets. In February, ratings on AES's unsecured debt were cut to below investment grade.

These combined pressures had forced an abrupt reversal of strategy at AES. After two decades of continuous and rapid expansion, the company was forced to retrench. In a series of measures announced in February 2002, AES began the desperate task of shoring up its finances and protecting itself against an increasingly hostile external environment. Capital expenditure was cut from \$1,280 million to \$790 million, over \$1 billion in asset sales was announced, and AES was to begin withdrawing from some of its most risky areas of business – including Latin America and spot market sales.

For founder and CEO Dennis Bakke the most troubling aspect of the sudden strategic shift was not the abandonment of AES's ambitious growth targets. He believed that AES possessed the financial and management strengths needed to survive the current financial pressures. His concerns related much more to his personal mission to build AES as a different kind of company. Under the leadership of its two co-founders, Roger Sant and Dennis Bakke, AES had rejected profit and shareholder wealth as its *raison d'être* and committed itself to the pursuit of integrity, fairness, fun, and social responsibility. These principles were embedded in a management system which the *Wall Street Journal* referred to as "empowerment gone mad."<sup>1</sup> Its unique organization was referred to by board member Robert Waterman (of *In Search of Excellence* fame) as an "adhocracy." There were no staff functions or corporate departments; almost all traditional management functions were devolved to workers at the plant level.

So long as AES was a darling of Wall Street, investors and analysts were happy to accept AES's lofty values and its founders' disdain for profit. But the events of 2001 and early 2002 had changed all that. AES's values and unique management system which had been so effective in encouraging employees' loyalty and commitment, generating initiative and entrepreneurial drive, and promoting unmatched levels of operational efficiency was now having to come to terms with a very different environment.

But circumstances in 2002 were much changed. The independent power sector which had boomed with privatization and deregulation was no longer flush with opportunity and optimism. The California power crisis, the collapse of Enron, and the problems of power producers in several emerging market countries had cast a pall over the entire sector. Meanwhile, competition had greatly intensified within the sector. While AES had been a pioneer of independent power production, it was now a crowded sector. Competitors for electricity supply contracts included independent power producers (IPPs) such as AEP, Calpine, and Reliant Resources; traditional utilities such as Duke Power, Dominion Resources, Consolidated Edison, Electricité de France, and British Energy; gas companies such as Vectren, Centrica, and Gaz de France; and oil majors such as BP Amoco, ExxonMobil, and Shell.

Moreover, AES was no longer a small, entrepreneurial start-up. By the end of 2001, AES had 179 plants in operation or under construction in 31 countries of the world, with a total employment of about 38,000. Growth had increased the complexity and diversity of the company: from a single plant in Texas, its operations now extended from the Ukraine to South Africa; it had gone from coal-fired plants to gas-fired and hydroelectric plants; from supplying power on long-term contracts to utilities, AES had expanded into power distribution and producing electricity for competitive markets on spot and short-term contracts. Growing scale and scope was placing increasing strains on AES's informal, ad hoc style of management, while AES's principles, with their basis in traditional American values of equality of opportunity, openness, and individualism, had to adapt to the diverse cultures where AES did business – traditional Islamic societies such as Pakistan, socialist systems such as China, and the oligarchic societies of Latin America.

## ■ AES'S ORIGINS AND DEVELOPMENT ■

In January 1982, Roger Sant and Dennis Bakke founded Applied Energy Systems based in Arlington, Virginia. Their purpose was to take advantage of a 1978 Public Utility Regulatory Policy Act (PURPA) that required utilities to purchase power from independent energy producers. Sant and Bakke believed they could build a business in a niche segment of the enormous power-generation industry.

At first glance, Sant and Bakke seemed a rather unlikely pair to start what has become a large international energy company. Although both held Harvard MBAs, their experience was primarily public sector. Sant headed the Ford Administration's energy conservation efforts and Bakke served as a chief aide. Following government service, they moved on to the Mellon Institute's Energy Productivity Center, where they spent several years researching various techniques for energy conservation. It was during this time that the pair came up with the idea of starting their own company.

Sant and Bakke had a very difficult time raising money at first, because nobody took them very seriously. According to Bakke, "[we] had the worst possible background for raising money...first government and then academic experience. It looked to investors like a combination of inefficiency and ivory tower."<sup>2</sup> However, Sant and Bakke had one key advantage: as a result of their involvement in drafting PURPA, they were among the first to recognize the opportunity for independent generators to produce power at much lower costs than the established utilities.

Sant and Bakke raised \$1.3 million from private investors and began looking for deep-pocketed partners. From 1981 to 1985 Sant and Bakke sought alliances with Arco, IBM, and Bechtel to name but a few. In 1985, the founders decided to go it alone and built their first power plant adjacent to an oil refinery in Houston, Texas, using petroleum coke (essentially a waste product) for fuel. Because AES agreed to link the price of the electricity generated to the price of natural gas (which subsequently fell sharply), the plant was not profitable. However, the second and third plants that AES built "weren't disastrous, and four, five and six turned out to be superb. By 1989 it was clear that we had reached viability."<sup>3</sup>

In 1991, AES went public. With a stronger equity base it was ready to look at opportunities overseas. Because of the rapid growth in electricity demand in many emerging markets, inadequate generating capacity, and the trend towards privatization, Sant estimated that over 70 percent of AES's opportunities lay outside the US. The fast-growing Asian markets for electricity, especially the huge potential markets of India and China, were especially attractive. In the early 1990s AES inaugurated its international strategy by acquiring two plants in Northern Ireland and one in Argentina. International expansion involved participating in the auctioning of state-owned electricity companies by governments, and bidding for long-term power supply contracts from governments which were opening the generating end of their electricity industries to competition. During the mid-1990s, AES's biggest new investments in power generation were in Kazakhstan and China. The 1996 acquisition of Light Servicos de Electricidade, Brazil, was a major strategic departure for AES: this was its first entry into the distribution end of the power business. Overseas expansion was primarily through the acquisition of existing power-generating facilities rather than building new plants. A similar transition was occurring in the US. Changes in utility regulations at the state level resulted in some utilities selling off their generating facilities – AES was among the most prominent bidders for these facilities.

Between 1998 and 2001, AES continued to expand rapidly both at home and overseas.

- In 1998, AES acquired or built 34 plants, including major facilities in Bangladesh, India, Mexico, California, and New York, and bought electricity distribution companies in Buenos Aires, Georgia, and Sao Paulo.
- In 1999, AES acquired its first US utility, Cilcorp, hydroelectric generating facilities in Brazil, and DRAX, one of the world's largest coal-fired power plants located in England.

- In 2000, AES acquired a major Venezuelan utility and well as plants in Chile and Colombia.
- In 2001, AES continued its expansion into large utilities with the acquisition of PALCO. In addition, AES expanded into the Ukraine and Cameroon.

Tables 17.1 and 17.2 show AES's plants and distribution facilities at the end of 2001.

The result of this expansion was not only a substantial expansion in the size of AES between 1998 and 2001, but also increasing complexity of the business as AES diversified its activities within the power sector. During 2001, AES recognized four lines of business activity:

- *Contract generation.* AES's traditional business was producing electricity supplied on long-term contracts (5 to 30 years) to distribution companies. By matching the electricity supply contracts with long-term fuel purchase contracts, AES fixes its gross margin.
- *Competitive supply.* As electricity markets have become increasingly deregulated, so AES has expanded its involvement in such markets. AES's competitive supply line of business comprises generating facilities and retail supply businesses that sell electricity directly to wholesale and retail customers in competitive markets. These generating facilities sell a major part of their output into power pools, into daily spot markets, or on short-term contracts. The prices paid for these competitive supplies can be unpredictable and volatile.
- *Large utilities.* During the late 1990s, AES began acquiring large electrical utilities – regulated monopolies supplying electricity within specific geographical areas. At the end of 2001, AES owned five integrated utilities: two in the US, two in Brazil, and one in Venezuela. These utilities combine generation, transmission and distribution capabilities.
- *Growth distribution.* AES separates into a separate line of business distribution facilities that offer significant potential for growth because they are located in developing countries or regions where the demand for electricity is expected to grow at a higher rate than in more developed areas. As well as offering considerable opportunity, these businesses also present special challenges with regard to political risk, outdated equipment, non-technical losses (e.g., theft), safety, and non-payment. "Growth distribution" businesses include those in Argentina, Brazil, Cameroon, Dominican Republic, El Salvador, Georgia, Kazakhstan and Ukraine.

Table 17.3 shows revenues and gross profit earned by AES's four lines of business.

## ■ PERFORMANCE ■

AES's financial and operating performance during the 1990s placed the company among the top-performing firms of the decade, not only in its sector, but across the stock market as a whole. As a result, AES has been prominent among *Fortune* and *Washington Post* lists of companies with fastest growing and best returns to shareholders. In the three years to April 1998, returns to shareholders averaged 80 percent a year.

This performance amazed many observers, since, not only is electricity generation far from being a glamor industry, but profitability and shareholder returns are not the primary yardsticks through which AES monitors and assesses its own performance. AES's assessment of its progress over time focuses upon four measures:

- Shared values – How did we do in having an organization that is fun, that is fair, that acts with integrity, and that is socially responsible?
- Plant operations – How safe, clean, reliable, and cost-effective were our facilities?

- Assets – What changes occurred in our assets, including AES people, during the year?  
This intends to measure the company's project development and construction progress as an indicator of future earnings potential.
- Sales backlog – What happened to our backlog of contract revenues during the year?

In terms of setting performance targets for the future, these tend to be a mixture of efficiency, employee satisfaction, community development, project development, and growth objectives. For example, AES's goals for 1998 were stated in "Our Wish List" published in the 1997 Annual Report. These included:

- Continuing progress in adapting to and living the AES principles and values
- Creating the most fun workplace since the beginning of the industrial revolution, and eliminating hourly payment systems
- Adding 10 to 15 new businesses to the AES portfolio
- Engineering a breakthrough in slow development businesses such as Ib Valley (India), Puerto Rico, and Nile Power (Uganda)
- Maintaining 100 new business ideas in the development pipeline
- Making our 1998 budgeted net income and cash flow

Operationally, AES plants have performed among the best in their industry. AES's US plants typically operate at around 95 percent capacity, compared to an industry average of 83 percent. Nor is operational excellence restricted to new plants. AES's West Belfast power station has achieved 95 percent availability in some years, remarkable for a 43-year-old facility.

Despite a history of growth, profitability, and operational excellence, AES is no stranger to crisis and its efforts have been successful. As already noted, its first power station was unprofitable from the start. In 1992, AES flirted with disaster when its Shady Point generating facility in Oklahoma was discovered to have been discharging polluted water and to have falsified the samples it provided to the Environmental Protection Agency. In the same year, AES was forced to abandon its rebuilding of a power plant at Cedar Bay, Florida following a dispute with state officials and the local community. These events caused AES's share price to fall by half.<sup>4</sup> Several of AES's acquisitions have proven disappointing: the 1997 acquisition of Destec's international generation resulted in poor returns, while AES acknowledged that its venture in Ukraine had been an expensive error.

However, these problems had a limited impact on AES's financial performance; the problems that AES encountered during 2001 had a bigger impact. During 2001, revenues grew by a healthy 24 percent, mostly from acquiring new businesses and adding new plants. Revenue from existing operations grew by a more modest 5 percent. Net income fell sharply from \$795 million in 2000 to \$273 million in 2001 as a result of lower market prices in the UK, decline in the Brazilian Real resulting in currency transaction losses of \$210 million, losses from closed telecom activities of \$194 million, and higher sales, general and administrative expenses.

Table 17.4 summarizes some key indicators of AES's performance during 1991–2001.

## ■ STRATEGY ■

AES described itself as: "a global power company committed to serving the world's needs for electricity in a socially responsible way."<sup>5</sup> It describes its strategy as:

- Supplying energy to customers at the lowest cost possible, taking into account factors such as reliability and environmental performance;
- Constructing, acquiring, and operating projects of a relatively large size in geographically dispersed markets;
- To the extent available, maximizing the amount of non-recourse financing;

- When available, entering into longer-term power sales contracts or other arrangements with electric utilities or other customers with significant credit strength;
- Where possible, participating in distribution markets that grant concessions with long-term pricing arrangements; and
- When available, entering into hedging, indexing, or other arrangements to protect against fluctuations in currency, fuel costs and electricity prices.

The Company also strives for operating excellence as a key element of its strategy, which it believes it accomplishes by minimizing organizational layers and maximizing company-wide participation in decision making. AES has attempted to create an operating environment that results in safe, clean and reliable electricity generation, distribution and supply. Because of this emphasis, the Company prefers to operate all facilities and businesses which it develops or acquires; however, there can be no assurance that the Company will have operating control of all of its facilities.

The Company attempts to finance each domestic and foreign project primarily under loan agreements and related documents which, except as noted below, require the loans to be repaid solely from the project's revenues and provide that the repayment of the loans (and interest thereon) is secured solely by the capital stock, physical assets, contracts and cash flow of that project subsidiary or affiliate. This type of financing is usually referred to as non-recourse debt or project financing...<sup>6</sup>

## ■ VALUES AND PRINCIPLES ■

AES's unique organization and management systems are the direct result of the values upon which the company was established and continue to define every aspect of its management. These values reflect the personal beliefs of the two founders, Sant and Bakke. Both men were brought up in strongly religious families: Bakke as a Baptist, Sant a Mormon. Bakke was raised on a farm in Washington State. From the age of five he had worked in the fields and by the time he was 18 he had built up a herd of 29 beef cattle. Bakke's attitude to enterprise and material possessions was strongly influenced by ideas of Christian stewardship, which emphasized responsibility, building for the future, and sharing good fortune with others. Sant attended Brigham Young University and spent two years as a missionary with Native Americans in Wisconsin. Over time, Sant became less committed to the church and increasingly active in the environmental movement.

From the outset, both men viewed AES as an opportunity for them to pursue their values and effect a fundamental change in business practices. In a section of its 10K report entitled "Principles, Values and Practices," AES states:

A core part of AES's corporate culture is a commitment to "shared principles or values." These principles describe how AES people endeavor to commit themselves to the Company's mission of serving the world by providing safe, clean, reliable and low-cost electricity. The principles are:

- Integrity – AES strives to act with integrity, or "wholeness." AES people seek to keep the same moral code at work as at home.
- Fairness – AES wants to treat fairly its people, its customers, its suppliers, its stockholders, governments and the communities in which it operates.
- Fun – AES desires that people employed by the Company and those people with whom the Company interacts have fun in their work. The Company believes that making decisions and being accountable is fun and has structured its organization to maximize the opportunity for fun for as many people as possible.
- Social Responsibility – Primarily, the Company believes that doing a good job at fulfilling its mission is socially responsible. But the Company also believes that it has a responsibility to be involved in projects that provide other social benefits, and consequently has instituted programs such as corporate matching of individual charitable gifts in addition to various local programs conducted by AES businesses.

AES recognizes that most companies have standards and ethics by which they operate and that business decisions are based, at least in part, on such principles. The Company believes that an explicit commitment to a particular set of standards is a useful way to encourage ownership of those values among its people. While the people at AES acknowledge that they won't always live up to these standards, they believe that being held accountable to these shared values will help them behave more consistently with such principles.

AES makes an effort to support these principles in ways that acknowledge a strong corporate commitment and encourage people to act accordingly. For example, AES conducts annual surveys, both company-wide and at each business location, designed to measure how well its people are doing in supporting these principles through interactions within the Company and with people outside the Company. These surveys are perhaps most useful in revealing failures, and helping to deal with those failures. AES's principles are relevant because they help explain how AES people approach the Company's business. The Company seeks to adhere to these principles, not as a means to achieve economic success but because adherence is a worthwhile goal in and of itself.<sup>7</sup>

Sant and Bakke recognize that these values cannot easily be reconciled with the concept of a shareholder-focused, profit-maximizing corporation, and both leaders have made it very clear where their priorities lie:

Where do profits fit? Profits...are not any corporation's main goal. Profits are to a corporation much like breathing is to life. Breathing is not the goal, but without breath, life ends. Similarly, without turning a profit, a corporation too, will cease to exist...At AES we strive not to make profits the ultimate driver of the corporation. My desire is that the principles to which we strive would take preeminence.<sup>8</sup>

AES's commitment to its values, at the expense of shareholder gain where necessary, is indicated by the proviso which AES inserts in all of its prospectuses for new security offers which identifies AES's values as a source of investor risk:

The Company seeks to adhere to these principles, not as a means to achieve economic success, but because adherence is a worthwhile goal in and of itself. However, if the Company perceives a conflict between these principles and profits, the Company will try to adhere to its principles – even though doing so might result in dominated or forgone opportunities or financial benefits.<sup>9</sup>

The AES principles and the way they are implemented reflect a set of assumptions about human nature. Sant and Bakke believe in the ultimate goodness of people – “Man is made in the image of God,” declared Bakke.<sup>10</sup> Hence, within organizations, people can and should be trusted to exercise responsibility, and at the same time should be held accountable. Critical to the ability to motivate people is the innate desire of people to make a contribution to society. This implies that, for an organization to be effective and to harness human effort and ingenuity, the organization must be committed to a wider social purpose. These views are at variance with many of the assumptions upon which many traditional management systems and techniques are based and imply a different approach: “[t]he people in AES are not principally economic resources. We are not tools of the corporation. Rather we hope the corporation is structured to help individuals make a difference in the world that they could not otherwise make.”<sup>11</sup> AES's annual employee surveys are an indicator of the importance which is accorded to the company's principles and values. Dennis Bakke has commented that he devotes more attention to studying the annual employee surveys than the annual financial statements.

## ■ ORGANIZATIONAL STRUCTURE AND MANAGEMENT SYSTEMS ■

AES's organizational structure and management systems manifest the company's values and principles. AES describes the key features of its organization in its statement of values:

In order to create a fun working environment for its people and implement its strategy of operational excellence, AES has adopted decentralized organizational principles and practices. For example, AES works to minimize the number of supervisory layers in its organization. Most of the Company's plants operate without shift supervisors.

The project subsidiaries are responsible for all major facility-specific business functions, including financing and capital expenditures. Criteria for hiring new AES people include a person's willingness to accept responsibility and AES's principles as well as a person's experience and expertise. Every AES person has been encouraged to participate in strategic planning and new plant design for the Company. The Company has generally organized itself into multi-skilled teams to develop projects, rather than forming "staff" groups (such as a human resources department or an engineering staff) to carry out specialized functions.

Many people have asked us about our team structure and how it works. To begin with, there is no one person in charge of teams and there is no Human Resources department. Teams are the basis of our structure, and they encompass the four values of our company. They are fluid; many people are members of more than one team at one time. A team is somewhat autonomous; all decisions about a project are made within that team, with final say granted to that team. Decisions are made not from the top-down, but from the bottom-up. Furthermore, responsibility is pushed to the lowest level possible, encouraging everyone to be part of a decision. As a result, each team member views the project in terms of a whole. Colleagues and team members must trust each other to follow through to the best of their ability.

Because people are what make up AES, we have decided not to resort to an organizational model. Instead, we give you the following comments from AES people regarding teamwork. In general, AES teams work extremely well in both achieving a common goal and having fun while doing so. The following ideas provide insight on what makes teams work well and what can stimulate true and productive teamwork.

"Teams imply friendship; not only the ability but the desire to work together. Starting with the wonderful example set by the original AES team, Roger and Dennis, working together in small groups has been a natural way to get big things done while preserving the dignity of each person."  
Tom Tribone

"There are two reasons why teams are successful at AES: the type of people we have here and the environment in which they work. People at AES tend to be independent and thrive in a loose environment where roles and responsibilities are not always clearly defined. The environment at AES is one where responsibility is pushed down to the lowest level possible, encouraging everyone to take ownership for not only their piece of the project, but for the project in its entirety." Michael Cranna<sup>12</sup>

This is not to say that AES lacks formal structure altogether. The most striking feature of its organization is the few layers of hierarchy: until recently there were only three organizational layers between the front-line employees and the CEO. AES is divided into regional organizations or "groups." These groups comprise the different plants, each of which is headed by a plant manager. Within each plant there are typically seven areas or "families," each of which is headed by a superintendent.

Figure 17.1 shows AES's formal structure at the beginning of 2002.

## **No Functional Departments**

The company does not have a legal, human resources, or any other department. Decisions in such matters are made by teams at the plant level, which oftentimes have little or no experience in those decision areas. A few years ago, CFO Barry Sharp estimated that the company had raised \$3.5 billion to finance ten new power plants. But, he added, he was personally responsible for raising only \$300 million of that sum. The rest was secured by decentralized, empowered teams. When AES raised 200 million pounds sterling (about \$350 million) to finance a joint venture in Northern Ireland, two control room operators led the team that raised

the funds.<sup>13</sup> The same goes for other areas of financial management. Treasury operations are decentralized to the individual plant level, where they are performed by teams of non-specialists:

His hands still blackened from coal he has just unloaded from a barge, Jeff Hatch picks up the phone and calls his favorite broker. "What kind of rate can you give me for \$10 million at 30 days?" he asks the agent, who handles Treasury bills. "Only 6.09? But I just got a 6.13 quote from Chase."

In another room, Joe Oddo is working on J.P. Morgan & Co. "6.15 at 30 days?" confirms Oddo, a maintenance technician at AES Corp.'s power plant here. "I'll get right back to you."

Members of an ad hoc team that manage a \$33 million plant investment fund, Messrs. Oddo and Hatch quickly confer with their associates, then close the deal. "It's like playing Monopoly," Mr. Oddo says as he heads off to fix a leaky valve in the boiler room, "Only the money's real."<sup>14</sup>

Similarly, there is no human resources department. At the corporate level there are no staff specialists dealing with salary ranges, or annual review procedures, or personnel policies, or contract negotiations with unions. There is a person whose responsibility is to track 401k retirement plan benefits and send out the necessary reports, but that's about it at the corporate level. Everything else is devolved to the individual divisions, and within these it is the teams within each plant that handle almost all the human resource functions.

The company operates without any written policies or procedures. Issues such as hiring practices, leave periods, and promotion criteria, which in more conventional companies would be spelled out in a "Policies and Procedures" handbook, are left at the employees' discretion. When trying to find out how much time she could take off after the birth of her daughter, a Project Director for AES Puerto Rico discovered that the company did not have a policy about maternity leave. After investigating what other "AES people" had done, she decided to do what made sense for both herself and the business requirements of the project. In the end she decided to take three months, but she made herself available at critical points in the project's execution.<sup>15</sup>

Virtually all human resource decisions are made at plant level, and within the plant, decisional-making authority is among the different teams. For example:

- *Recruiting.* The recruiting process is done at the plant level, without any support or guidelines from corporate headquarters. AES people at all levels are committed to the hiring process, and everyone can participate in it. The process generally involves an initial résumé review, and a phone interview followed by a group interview. Interviews usually do not include technical questions. Instead, they focus on characteristics that help determine how the candidate will fit with the company's culture and values. There is little importance given to the candidates' educational background or experience, as greater emphasis is placed on the candidates' desire to learn, contribute, and grow, as well as their personal values and self-motivation.
- *Training and development.* In line with corporate values, AES employees are empowered to make decisions about their own development. Training is mostly done on-the-job, through open communication channels and embedded advice-seeking practices. However, AES people are free to take outside classes and they are reimbursed for them, as long as the courses are work-related.
- *Career paths.* Regarding development, there are no established career paths. Rather, the company encourages flexibility, which is a necessary requirement in such a dynamic industry. Because one of the company's shared values is to "have fun," employees are encouraged to move within the company if they feel their current assignment is "boring." Job vacancies are always posted and promotion decisions are made at an area superintendent's meeting.
- *Compensation and benefits.* AES does not have a set salary schedule for any given job, and salaries are determined based on what others are being paid inside and outside the company. Raises are given every year and superintendents usually determine them in

an annual meeting. Most AES people put their retirement savings in company stock, and the company matches up to 5 percent of the person's salary in the retirement plan.

This emphasis on multi-functionalism is central to AES's concept of making work fun. The key is to make people's work fulfilling by continually providing challenge and learning experiences. Moreover, argues Bakke, specialization does not promote efficiency or better decision making: "As soon as you have a specialist who's very good, then everyone else quits thinking," Bakke says. "The better that person is, the worse it is for the organization. The information goes through the specialist, so all the education is to the person who knows the most."<sup>16</sup>

Moreover, AES relies heavily on outside expertise. A key aspect of the system of empowerment is that individuals and teams are encouraged to seek out the best advice available, whether it is within the company or outside. In relation to finance, while AES's financial management and project management teams lack great depth in financial expertise, they draw upon the knowledge of bankers and financiers. In any event, Bakke's view is that most management expertise, whether functionally specialized or general management skill, is not inherently difficult. Motivation, attitude, and a willingness to learn are more important determinants of ultimate performance.

## The "Honeycomb"

AES refers to its organizational structure as a "honeycomb." The idea is that each plant comprises a number of small, flexible, self-managed teams who are able to operate cooperatively and efficiently without any centralized direction. At the basis of this structure is the belief that organizations do not need to be managed. Thinking, motivated people can manage themselves and undertake the communication and mutual adjustment needed to coordinate complex tasks. According to Dennis Bakke, the key to effective decentralization is keeping the basic units of organization small:

I think of AES as a conglomeration of small communities. And I don't think there's any company in the world that's so big that you can't organize this way. Even a plant with 400 people can be broken down into smaller groups. It's a small enough community that there is the ability to have an accountability structure within it, you know, a social structure as opposed to a military structure. We will break down the Kazakhstan plant into four units. How can we stay small and be big? By breaking the organization into groups with chief operating officers.<sup>17</sup>

The principle of self-organization imposes a very different role on managers from the conventional management model. Indeed, the term "manager" is seldom heard within AES; it is at odds with the principle of letting people decide for themselves. The example comes from the top. "The most difficult thing for me as CEO," confided Bakke, "is not to make decisions." If individuals are to develop, they must be given responsibility and allowed to learn:

[T]he modern manager is supposed to ask his people for advice and then make a decision. But at AES, each decision is made by a person and a team. Their job is to get advice from me and from anybody else they think it's necessary to get advice from. And then they make the decision. We do that even with the budget. We make very few decisions here [indicating the headquarters office]. We affirm decisions.<sup>18</sup>

Sant has made similar observations:

If Dennis and I had to lead everything, we couldn't have grown as much as we have. People would bring deals for us to approve, and we would have a huge bottleneck. We've shifted to giving advice rather than giving approval. And we've moved ahead much faster than we would have otherwise.<sup>19</sup>

One consequence of this approach is the small size of AES's corporate headquarters. At any point in time there may be between 40 and 70 AES employees at the Arlington office, but in terms of actual corporate staff, these number only about 35.

In terms of performance, one of the most important advantages of the AES system is that it permits speed in decision making, preparing bids, and completing projects. AES abounds with a folk history of teams and individuals given huge responsibilities or thrust into unique and unexpected situations. Consider the following:

- Oscar Prieto, a chemical engineer with two years' experience with AES, was visiting AES headquarters in May 1996 when he was asked by Thomas Tribone to join a meeting: "I've got 14 people from France and some guys from Houston coming to talk about buying a business in Rio de Janeiro. We've only got two AES people. Could one of you show up?" The meeting with Electricité de France and Houston Light & Power concerned a possible joint bid for one of Brazil's largest utilities, which was being privatized. Within a month, Tribone was on his way to Paris to negotiate an agreement with Electricité de France. The deal was concluded, and by 1997 Tribone had moved to Rio to become one of the utility's four directors and a key player in a succession of deals in which AES acquired a string of power plants and distribution facilities in Brazil and Argentina.
- The development of the \$404 million Warrior Run power plant in Cumberland, Maryland was undertaken by an AES team of ten people who handled all the work necessary leading up to the plant's groundbreaking in October 1995. They secured 36 different permit approvals involving about 24 regulatory agencies and arranged financing that involved tax-exempt bonds and ten lenders. Within the industry, such a project would typically involve well over a hundred employees.
- Scott Gardner joined AES in 1992 right after graduating from Dartmouth College. Gardner joined a team developing a \$200 million cogeneration plant in San Francisco. "It involved a lot of work and few people to do it," he says. "I took on tasks that ranged from designing a water system to negotiating with the community to buying and selling pollution credits." Gardner also helped lead a bid for a \$225 million cogeneration plant in Vancouver, British Columbia. When a comparable deal emerged in Australia, Gardner volunteered for that assignment. Two weeks later, he was on his way to Brisbane. "My task was to understand an unfamiliar regional power system, develop a design for the plant, and prepare a financial and technical bid document – all in six weeks," he says. When Gardner's proposal made the final round of competition, his division manager had him negotiate the terms of the \$75 million deal. "The stress was incredible, but I was having fun," he says. His bid won. "I held a press conference and was interviewed by local TV stations," says Gardner, who has since left AES to attend business school. "I had to pinch myself to be sure this was happening."<sup>20</sup>
- Paul Burdick, a mechanical engineer, had only been at AES briefly when he was asked to purchase \$1 billion in coal. "I'd never negotiated anything before, save for a used car," he said. Burdick spent three weeks asking questions of people both within and outside of the company on how to accomplish the task. At AES, he says, "You're given a lot of leeway and a lot of rope. You can use it to climb or you can hang yourself."<sup>21</sup>
- Ann Murtlow, a chemical engineer with no experience in pollution abatement, was given the job of buying air-pollution credits. She had already purchased the option to buy \$1 million in credits when she discovered that the option she had bought was for the wrong kind of credit and useless to AES.

## **The Relationship with Employees**

The AES principles and its concept of the honeycomb organization imply a different type of relationship between those employed and the corporation than that which characterizes most companies. To begin with, the absence of functional specialists and the ideas about self-organization require a tremendous amount of information-sharing. According to the company, employees are given full access to the company's operating and financial information. Because of the extent of employee access to information that would normally be confidential at other companies, AES lists all its employees as "insiders" in its submissions to the SEC.

One of AES's current crusades is to eliminate the distinction between salaried and hourly paid employees and to put all employees on a salaried basis. The 1997 Annual Report stated the goal of eliminating hourly payment systems. By the end of 1998 considerable progress had been made with more than half of AES's US employees salaried – despite the restrictions imposed by Federal health and safety legislation which perpetuates staff/worker distinctions. The primacy that AES accords its "people," as the company refers to its employees, is emphasized by its practice of listing of every employee's name in the back of the AES Annual Report. However, once AES's total employment passed the 6,000 mark, this was no longer feasible.

## **AES and the Environment**

AES's deep commitment to the environment extends well beyond Chairman Sant's personal involvement in environmentalist issues and his active roles in the World Wildlife Fund and as a member of the Environmental Defense Fund. Because building and operating power plants is not one of the world's most environmentally friendly endeavors, AES tries to compensate for the emissions it generates. When the company constructed a coal-fired plant in Montville, Connecticut, it calculated that it would generate 15 million tons of carbon dioxide over its estimated life of 40 years. The company then captured national attention when it announced that it would plant 52 million trees in Guatemala to offset the Connecticut's plant carbon dioxide emissions. According to AES Executive Vice-President Robert F. Hemphill: "Making electric power historically has had a relatively high level of environmental assault. We are not planting trees as part of our strategy to make us a more valuable company, we're doing it because we think it's a responsible thing to do." AES's average company-wide emission levels are 40–60 percent of permitted rates. These actions are of course in line with one of the company's four core values: social responsibility.<sup>22</sup>

Emphasis on responsibility to the environment and to local communities is viewed as integral to the efficient running of power plants. Professor Jeff Pfeffer of Stanford Business School describes a visit to the Thames, Connecticut power plant:

A visitor to the plant is immediately struck by its cleanliness, and the people who work in the plant are proud of its appearance. The walls of the plant exterior are very light colored (off-white), so that any dirt would be immediately visible. The color of the walls was intentionally chosen to encourage respect for the physical environment and cleanliness. The place where the coal is unloaded from the barges that bring it up the Connecticut River is also immaculate. The coal handling system is covered to avoid excess dust or debris getting into the surroundings and the loading dock and surrounding area is swept by a mechanical sweeper after the once a week delivery. There is no smell of sulfur in the air, and in fact, no odor at all. The attitude to cleanliness extends inside the plant as well. For example, there are two lunch rooms, both have stoves, microwave oven, cooktops, refrigerator, and dishwasher which makes them more than a typical plant eating area. Quite elaborate meals are cooked there. Both lunch rooms are clean with no dirty dishes sitting around. The cabinetry is of excellent quality and appearance as are the appliances. The turbine rooms are also immaculate.<sup>23</sup>

## **The Challenge of Multiculturalism**

As more and more of AES's business becomes located outside the US, and non-US citizens far outnumber US citizens among AES's employees, an increasingly important challenge is to retain AES's culture as the company grows. The company acknowledges that even the stated value of having fun is difficult to accomplish with so many people with many different backgrounds. By the end of the 1990s, fewer than 8 percent of AES people were native English speakers. The principles of equality, teamwork, empowerment, and individual initiative are also likely to be more difficult to implement in traditional Islamic societies such as Pakistan, and countries with a socialist heritage such as China, Kazakhstan, Ukraine, and Georgia.

Nevertheless, AES remains committed to its principles not just for its US, but for its worldwide operations. Bakke firmly believes that the AES principles are universal and are not culturally specific either to the US or to the West in general. AES's experience so far is that its own corporate culture can be transplanted in many different national cultures. The challenges presented in running one of the world's biggest (and once one of the most dilapidated) coal-fired power stations in Kazakhstan, and turning around heavily bureaucratized, former state-owned utilities in South America have provided remarkable test-cases in AES's ability to export its company culture. The results have often been amazing. Even though AES has been unable to eliminate the distinction between salaried and hourly paid employees within the US, in England, Argentina, and Pakistan it has moved to an all-salary workforce.

Instilling the AES culture into the 100-year-old Light Servicos de Electricidade involved, first, a generous severance package to cut the workforce by half, second, the careful selection of young, motivated engineers and supervisors to take key positions as facility supervisors, and finally, the devolving of decision-making power to them. At Light's Santa Branca facility, Oscar Prieto chose Carlos Baldi, a 34-year-old engineer, to lead the plant. "I knew he was the right person," says Prieto, "He was young, eager to do more." After agreeing to shared goals and expectations – zero accidents, thrifty construction budgets – Prieto turned Santa Branca and a \$35 million upgrading project over to Baldi. After a short while, Baldi was managing in the same way with his project and team leaders.<sup>24</sup>

## ■ 2002: RETRENCHMENT AND RESTRUCTURING ■

During the first quarter of 2002, CEO Dennis Bakke was forced to shift his attention from the issues that consumed his attention – AES's ability to maintain its values and live its principles – in order to address the fallout from Enron, Argentina, Venezuela, September 11, and the California power crisis that was increasingly dragging down AES. In a press statement released on February 20, AES announced a major shift of strategy. In the expectation that AES would be unable to access the capital markets in 2002 for additional parent capital, it would be forced to rely on its internally generated cash flows to fund operations and capital expenditures. The major retrenchment measures included:

- Reducing capital spending by \$490 million in 2002 through eliminating or curtailing a number of construction projects.
- Selling existing businesses, including Cilcorp, its Illinois-based utility in Illinois, a share of Ipalco, a utility in Indiana, and several overseas plants. Its biggest retrenchments were to be its withdrawal from its merchant generation businesses under which AES sold electricity on to the spot markets in UK, New York and California, and a major pullback from Latin America.

However, several analysts were doubtful as to AES's ability to command a fair value for the assets it was putting up for sale. In a note to clients, Ronald Barone of UBS Warburg wrote: "The markets in which AES operates are depressed and there are a number of other companies that are already looking to dispose of similar assets."

Bakke recognized the extent of the company's strategic reorientation: he opened his conference call to analysts with the simple statement: "Our world has changed." In the

accompanying press release he stated: “We are taking aggressive action to restructure and de-leverage AES. Given today’s market climate we are going to rely on the cash flows of our solid operating businesses. We have taken additional steps to provide a more substantial liquidity cushion. We believe the actions we have announced will provide for a more conservative business model.” His comments were echoed by Chairman Sant: “The Board of Directors has unanimously approved this plan to de-leverage AES and position us for the future. The cutbacks in construction capital expenditures, the accelerated sale of businesses and selective project financings leave us stronger from a cash perspective with expected results in the short term. All of these steps are being taken in parallel with the cost-cutting efforts of AES businesses around the world. We believe these steps will leave us with a better-capitalized and stronger company with less earnings volatility. AES in the future will be less concentrated in Latin America and have greater emphasis on contract generation.”<sup>25</sup>

To permit restructuring and cost reduction, organizational changes were also made. In addition to AES’s regional organization through 17 groups that operated in different parts of the world, an executive office was created comprising Bakke as CEO together with four newly created chief operating officers – each with responsibility for one of AES’s four lines of business. The reorganization was intended to: “enhance operating performance, including further reductions of operating costs and revenue enhancements...Each COO is directly responsible for managing a portion of the Company’s geographically dispersed businesses as well as coordinating Company wide efforts associated with one of the Company’s business segments. In addition, two special offices, the Cost Cutting Office and the Turnaround Office, have been created to bring improved focus and coordination to the management of expenses across the Company and to improve or dispose of businesses that AES believes to be under-performing businesses from a return on capital perspective, respectively. Each of these offices reports to the Executive Office.”<sup>26</sup>

## The Outlook

March 2002 was a hectic month for AES’s senior managers. At home the Enron affair continued to drag in ever more companies from the US energy sector, while abroad troubles in Argentina, Venezuela, India, and Pakistan called for ongoing crisis management. As managers struggled to restore AES’s financial strength and bolster confidence in the company’s viability, some pondered the longer-term implications of recent events for AES’s longer-term vision and identity.

Faced with threats to its very existence, AES’s commitment to “integrity, fairness, fun, and social responsibility” had taken a back seat to the pressing needs for liquidity and investor confidence. Was this a temporary shift forced by temporary crisis, or was it part of the inevitable maturity of a young, idealistic company?

For those who, like Bakke and Sant, shared the vision of an alternative type of enterprise, the lessons of history were not encouraging. Many companies, from Kellogg & Company to Apple Computer, had been formed with a vision of redefining relationships between business and society, investors and employees, and workers and managers, yet almost all had evolved towards the dominant model of the shareholder-oriented capitalist corporation. Was it inevitable that growing organizational size and an increasingly competitive environment forced all organizations to renounce individuality and innovation in management ideas in favor of standard management principles?

Certainly, the business environment of 2002 was very different from that which had faced AES during the 1980s and 1990s. AES’s ability to grow at so remarkable a rate was the result of specific circumstances: worldwide electricity generation was undergoing deregulation, privatization, and internationalization. By 2002, this process was largely completed. Indeed, in some countries (including the US) the momentum towards regulatory reform had halted – possibly even reversed. Meanwhile, competition was increasing on all sides and the business was becoming more complex. The simple model of producing electricity and selling it on long-

term contracts to utilities and distributors was being superseded by more open competition involving competitive energy markets and more complex transactions (including spot and futures contracts, swaps, and an array of their energy derivative products). Among AES's competitors in these energy markets were major companies such as Shell, ExxonMobil, Bechtel, and ENI who possessed not only massive financial resources, but an array of other resources and capabilities too, from political influence and hydrocarbon reserves to expertise in complex risk management techniques.

AES's unique organizational structure, management systems, and corporate culture had served it well. Although unorthodox, not only in the power industry, but in the corporate sector generally, the AES approach had shown itself to be highly effective both in the efficient operation of power stations and in supporting the entrepreneurial capabilities required for winning power supply contracts all over the world. Moreover, as an early mover in the international power business (it began operating plants overseas in 1992), AES has acquired a greater depth of experience in bidding for power contracts and operating power plants in more countries of the world than any other company. Moreover, because of its very low rate of employee turnover and open internal communication, it has been very effective in retaining this expertise and sharing it internally.

The long-term question facing Bakke and his senior management team was whether the combination of internal growth and external turbulence meant that the AES management philosophy had reached the limits of its effectiveness and henceforth AES would need to temper its enthusiasm for fun and social responsibility with more conventional management controls and greater responsiveness to Wall Street.

## NOTES

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**Figure 17.1** AES's company structure

Source: AES, 10K report, 2001.

**Table 17.1** AES's generating plants, December 2001

	Fuel	Year of acquisition or start-up	Location	Gross MW	AES equity interest (%)
<b>Contract generation facilities</b>					
<i>North America</i>					
Kingston	Gas	1997	Canada	110	50
Beaver Valley	Coal	1987	USA	125	100
Thames	Coal	1990	USA	181	100
Shady Point	Coal	1991	USA	320	100
Hawaii	Coal	1992	USA	180	100
Southland-Alamitos	Gas	1998	USA	2,083	100
Southland-Huntington Beach	Gas	1998	USA	563	100
Southland-Redondo Beach	Gas	1998	USA	1,310	100
Warrior Run	Coal	2000	USA	180	100
Ironwood	Gas	2001	USA	705	100
Red Oak	Gas	2002	USA	832	100
<i>South America</i>					
Tiete (10 plants)	Hydro	1999	Brazil	2,650	53
Gener-Termoandes	Gas	2000	Argentina	633	99
Uruguaiana	Gas	2000	Brazil	450	100
Uruguaiana	Gas	2000	Brazil	150	100
GENER-Norgener	Oil	2000	Chile	277	99
GENER-Centrogener (9 plants)	Hydro	2000	Chile	756	99
GENER-Elctrica de Santiago	Gas	2000	Chile	379	89
GENER-Guacolda	Coal	2000	Chile	304	49
<i>Europe/Africa</i>					
Kilroot	Coal	1992	UK	520	92
Medway	Gas	1996	UK	688	25
Tisza II	Gas	1996	Hungary	860	100
Elsta	Gas	1998	Netherlands	405	50
Ebute	Gas	2001	Nigeria	290	95
Kelvin	Coal	2001	South Africa	600	100
<i>Asia</i>					
Khrami I	Hydro	2000	Georgia	113	0
Khrami II	Hydro	2000	Georgia	110	0
Mktvari	Gas	2000	Georgia	600	100
Wuhu	Coal	1996	China	250	25
Hefei	Oil	1997	China	115	70
Jiaozuo	Coal	1997	China	250	70
Yangcheng (3 plants)	Coal	2001	China	1,050	25
OPGC	Coal	1998	India	420	49
Lal Pir	Oil	1997	Pakistan	351	90
PakGen	Oil	1998	Pakistan	344	90
Meghnaghat	Gas	2002	Bangladesh	450	100

Barka	Gas	2003	Oman	427	85
Ras Laffan	Gas	2004	Qatar	750	55
Kelanitissa	Gas	2002	Sri Lanka	165	100
Mt. Stuart	Oil	1999	Australia	288	100
Ecogen-Jeeralang	Gas	1999	Australia	449	100
Ecogen-Yarra	Gas	1999	Australia	510	100
Haripur	Gas	2001	Bangladesh	360	100
<i>Caribbean</i>					
Mirada III	Gas	2000	Mexico	484	55
Puerto Rico	Coal	2002	USA	454	100
Itabo	Gas	2000	Dominican Republic	587	24
Los Mina	Oil	1996	Dominican Republic	210	100
Andres	Gas	2003	Dominican Republic	310	100
<b>Competitive supply facilities</b>					
<i>North America</i>					
Deepwater	Coal	1986	USA	143	100
Placerita	Gas	1989	USA	120	100
NY-Cayuga	Coal	1999	USA	306	100
NY-Greenidge	Coal	1999	USA	161	100
NY-Somersset	Coal	1999	USA	675	100
NY-Westover	Coal	1999	USA	126	100
Mountainview Existing	Gas	2001	USA	126	100
Huntington Beach 3&4	Gas	2002	USA	450	100
Granite Ridge	Gas	2002	USA	720	100
Greystone	Gas	2002	USA	500	100
Wolf Hollow	Gas	2002	USA	720	100
Lake Worth	Gas	2003	USA	210	100
Mountainview Development	Gas	2003	USA		
<i>South America</i>					
San Nicolás-CTSN	Coal	1993	Argentina	650	88
Rio Juramento-Cabra Corall	Hydro	1995	Argentina	102	98
Alicura	Hydro	2000	Argentina	1,000	100
Parana	Gas	2001	Argentina	845	100
Caracoles	Hydro	2004	Argentina	123	100
<i>Europe/Africa</i>					
Borsod	Coal	1996	Hungary	171	100
Tiszapalkonya	Coal	1996	Hungary	250	100
Ottana	Oil	2001	Italy	140	100
Belfast West	Coal	1992	UK	120	98
Indian Queens	Gas	1996	UK	140	100
Barry	Gas	1998	UK	230	100
Drax	Coal	1999	UK	4,065	100
Fifoots	Coal	2000	UK	360	100
Songo Songo	Gas	2003	Tanzania	112	49
SONEL	Hydro	2001	Cameroon	800	51
<i>Asia</i>					
Ekibastuz Gres	Coal	1996	Kazakhstan	4,000	100
Altai-Leninogorsk CHP	Coal	1997	Kazakhstan	418	100
Altai-Semipalatinsk CHP	Coal	1997	Kazakhstan	840	100
Altai-Shulbinsk Hydro	Hydro	1997	Kazakhstan	702	100
Altai-Sogrinsk CHP	Coal	1997	Kazakhstan	349	100
Altai-Ust Kamenogorsk Heat Nets	Coal	1997	Kazakhstan	310	0
Altai-Ust-Kamenogorsk CHP	Coal	1997	Kazakhstan	1,464	100

Altai-Ust-Kamenogorsk Hydro	Hydro	1997	Kazakhstan	331	100
<i>Caribbean</i>					
Bayano	Hydro	1999	Panama	150	49
Bayano	Hydro	2003	Panama	110	49
Esti	Hydro	2003	Panama	120	49
Chivor	Hydro	2000	Colombia	1,000	96
Colombia I	Gas	2000	Colombia	90	62
<b>Large utilities</b>					
<i>North America</i>					
CILCORP-Duck Creek	Coal	1999	USA	366	100
CILCORP-Edwards	Coal	1999	USA	772	100
CILCORP-Indian Trails	Gas	1999	USA	19	100
IPALCO-Georgetown	Oil	2001	USA	79	100
IPALCO-Eagle Valley	Coal	2001	USA	341	100
IPALCO-Petersburg	Coal	2001	USA	1,672	100
IPALCO-Stout	Coal	2001	USA	944	100
<i>South America</i>					
Light-Fontes Nova*	Hydro	1996	Brazil	144	24
Light-Ilha dos Pombos*	Hydro	1996	Brazil	169	24
Light-Nilo Pecanha*	Hydro	1996	Brazil	380	24
Light-Pereira Passos*	Hydro	1996	Brazil	100	24
CEMIG (35 plants)	Hydro	1997	Brazil	5,068	21
CEMIG-Miranda	Hydro	1997	Brazil	390	21
CEMIG-Igarapava	Hydro	1998	Brazil	210	21
<i>Caribbean</i>					
EDC-generation (4 plants)	Gas	2000	Venezuela	2,265	87

Source: AES, 10K report, 2001.

**Table 17.2** AES's electricity distribution businesses, December 2001

Distribution facilities	Year acquired	Location	Number of customers served	Gigawatt hours	AES equity interest (%)
<i>Asia</i>					
Eastern Kazakhstan REC	1999	Kazakhstan	291,000	1,455	0
Semipalatensk REC	1999	Kazakhstan	178,513	1,117	0
Telasi	1998	Georgia	370,000	2,200	75
Kievoblenergo	2001	Ukraine	763,000	3,840	75
Rivnooblenergo	2001	Ukraine	383,000	1,700	75
Cesco	1999	India	600,000	2,102	48
<i>North America</i>					
IPALCO	2000	USA	433,010	16,256	100
Cilicorp-Electricity	1999	USA	193,000	6,743	100
<i>South America</i>					
Light*	1996	Brazil	2,800,000	19,981	24
CEMIG	1997	Brazil	4,680,000	32,179	21
Eletropaulo*	1998	Brazil	4,657,306	34,789	50
Sul	1997	Brazil	935,125	7,390	96
Eden	1997	Argentina	278,854	1,886	90
Edes	1997	Argentina	141,281	834	90

Edelap	1998	Argentina	279,568	2,102	90
<i>Caribbean</i>					
EDC-distribution	2000	Venezuela	1,131,552	9,724	87
CLESA	1998	El Salvador	226,000	669	64
EDE Este	1999	Dominican Republic	350,000	2,990	51
CAESS	2000	El Salvador	443,430	1,697	70
DEUSEM	2000	El Salvador	43,362	75	69
EEO	2000	El Salvador	162,496	339	83
<i>Europe/Africa</i>					
SONEL	2001	Cameroon	452,000	3,020	51

Source: AES, 10K report, 2001.

**Table 17.3** Revenues and gross profit by line of business, 2000 and 2001

	Revenue (\$ billion)		Gross profit (\$ billion)	
	2001	2000	2001	2000
Contract generation	2.5	1.7	0.83	0.77
Competitive supply	2.7	2.4	0.44	0.56
Large utilities	2.4	2.1	0.74	0.54
Growth distribution	1.7	1.3	0.30	0.13

Source: AES, 10K report, 2001.

**Table 17.4** AES's performance, 1991–2001

	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991
Revenue (\$ million)	9,327	7,534	4,117	3,257	2,227	835	679	533	519	401	334
Sales backlog (\$ billion)	n.a.	217	138	116	98	51	41	43	27	29	n.a.
Net income (\$ million)	273	795	357	441	299	125	107	98	71	56	43
Earnings per share (\$)	0.52	1.66	0.84	1.11	0.79	0.40	0.35	0.33	0.25	0.20	0.16
Total assets (\$ billion)	36.7	33.0	23.2	12.9	11.1	3.6	2.3	1.9	1.7	1.6	1.4
Long-term debt:											
Non-recourse (\$ billion)	14.7	12.7	9.5	4.5	4.5	1.6	1.1	1.0	1.1	1.1	n.a.
Recourse (\$ billion)	4.9	3.5	2.2	1.6	1.1	0.5	0.1	0.1	0.1	0.1	n.a.
Stockholders' equity (\$ billion)	5.5	5.5	3.3	2.4	2.0	0.7	0.6	0.4	0.3	0.2	n.a.
Equity generating capacity (thousands of MW)	50.8	n.a.	n.a.	n.a.	4.6	3.4	2.1	1.5	1.5	1.2	0.7
Return on	4.9	17.9	12.6	20.2	17.1	19.7	22.6	28.3	29.2	35.1	48.6

average  
equity (%)

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*Sources:* Annual Reports, UBS Securities Equity Research.