

Meeting AT&T's Global Environmental Goals

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AT&T has successfully applied the methodologies and tools of total quality management (TQM) to resolve environmental issues and, with the use of policy deployment, has exceeded its environmental goals. The original goals were oriented toward preventing pollution and specifically focused on wastes and emissions. As the company continues efforts in these areas, new goals are emerging that are more system focused—to fully integrate environmental concerns into our business and management processes. The new processes will help identify root causes of environmental quality failures and help address them in the up-front design of products and services.

Introduction

AT&T, as a worldwide manufacturer and service provider, must address a variety of regional, national, and international environmental concerns to reduce their impact globally as well as locally. As a responsible global citizen and leader in environmental activities, AT&T must continue to minimize wastes and emissions, develop clean technologies to the point of their being benign, and provide customers with more environmentally preferable products and services.

Total Quality Environmental Management

Today's environmental problems are many and complex. Ozone depletion, global warming, acid rain, groundwater contamination, and solid waste disposal—all have a significant effect on the air, land, and water we all need to survive. Through the use of *total quality management (TQM)* tools and methodologies, AT&T is reducing wastes and emissions through a multidisciplinary approach that begins with the initial product and process design. This approach is called *total quality environmental management (TQEM)*.

Like most companies, AT&T began by looking at the wastes and emissions it was generating as part of a cost-reduction program that was designed to increase efficien-

cies and maintain the competitiveness of its manufacturing products. With the onset of more restrictive waste management regulations and skyrocketing costs for waste management, treatment, and disposal, waste reduction and prevention were, and still are, seen as playing an even greater role in remaining competitive worldwide.

AT&T's customers worldwide also began to demand that products be built with a minimum impact on the environment. They sought to influence manufacturers by buying products they perceived to be better for the environment, and through their backing of "green," or environmentally proactive legislative representatives and programs.

A variety of legislation—at all political levels worldwide—was written to mandate:

- Reducing toxic wastes,
- Minimizing process emissions and wastes,
- Minimizing product wastes through recycling, and
- Taking back product packaging for reuse by the vendors who sold the products.

We also have seen the coming of age of "eco-labels," certifications offered by organizations such as Green Seal in the United States verifying that a product meets a specific set of environmental criteria. These criteria are typically established by the register-

ing organization and usually vary among organizations, based on the environmental issues in the country where the label is developed.

The proliferation of these eco-labels—with their varying requirements and credibility—is a serious concern for a global company. In addition to the altruistic motive in getting certification, there is a compelling business reason as well. There have been a few instances where the environmental programs and requirements of various countries have acted as barriers to market entry and trade for products. AT&T has already been affected—both positively and negatively—by these eco-labels. Such situations highlight a very real business need to have quality-based processes established to respond to these varying criteria as they arise.

The key to maintaining and enhancing a leadership position in environmental activities, as recognized by our customers, local citizens, industry, regulatory bodies, and private environmental groups, is the use and deployment of quality principles.¹ AT&T's management has made a commitment to quality to guarantee our continued short- and long-term business success. It was, for example, through the deployment of quality principles that the company successfully reduced and then prevented wastes and emissions from manufacturing operations.

TQM tells us that "What gets measured, gets managed," and that the way to get dramatic improvements is to establish and move toward stretch goals. AT&T built on its previous pollution control work by establishing in 1990 corporate-wide environmental goals—with dramatic results because of the hard work, ingenuity, and personal dedication of employees worldwide.

Continuous process improvement activities involving everyone in an organization, from production line workers to top managers, is the essence of TQM. This is a totally integrated effort toward improving performance at *every* level, which is directed toward satisfying such cross-functional goals as quality, cost schedules, mission, need, and suitability.

TQM integrated management techniques, existing improvement efforts, and technical tools under a disciplined approach focus on *continuous improvement*. The activities are ultimately focused on increased customer and user satisfaction and apply equally to all business functions, including the environment.

Panel 1. Abbreviations, Acronyms, and Terms

TQEM — total quality environmental management

TQM — total quality management

DFE — design for environment

CFC — chlorofluorocarbons

ISO 9000 — International Organization for Standardization, quality management certification

ISO 14000 — International Organization for Standardization, quality environmental management certification

Policy Deployment

The management process that is being used to engage all employees in the achievement of the corporate goals is *policy deployment*. This is the executive deployment of selected policy-driven priorities and the necessary resources to achieve performance breakthroughs. It is a management framework based on the careful evaluation of corporate goals, corporate performance, and customer satisfaction that creates a powerful structure for communicating corporate goals and then implementing them through specific projects and plans.

The successful implementation of policy deployment depends on paying constant attention to the ways in which each employee's daily work is clearly connected to achieving corporate goals and exceeding customer expectations. This connection, the "Golden Thread," helps everyone in the company focus on how they can add to the success of the business, and it also encourages team participation. Individual project teams, many cross-functional, use standard quality improvement processes to reduce gaps between corporate goals and corporate performance.

AT&T Policy for Environmental Protection

In 1973, AT&T's manufacturing subsidiary, Western Electric, first issued a corporate environmental policy, laying the foundation for a "waste minimization program." With divestiture and a restructuring of the company, an "AT&T Policy For Environmental Protection" was issued in 1990, recommitting the entire company to the concepts of the original policy. As the focus of environ-

mental protection has changed from the “end of the pipe” to its beginning—at the design stage—so has AT&T’s policy evolved. In 1994, it was reissued, stating:

“AT&T is committed to protection of human health and the environment in all operations, services, and products. AT&T will integrate life cycle environmental quality into design, development, manufacturing, marketing, and sales activities worldwide. Implementation of this policy is a primary management objective and the responsibility of every AT&T employee.”

That policy also stated that AT&T’s vision is to be “recognized by customers, employees, shareholders, and communities worldwide as a responsible company which fully integrates life cycle environmental consequences into each of our business decisions and activities. Designing for the environment is a key in distinguishing our processes, products, and services.” (See the complete statement of the policy reissued in 1994 in the introductory paper to this issue.²)

AT&T’s policy for environmental protection goes beyond just meeting regulatory compliance. It commits us to develop and use non-polluting technologies, minimize wastes, increase recycling, design products and processes with their environmental impact in mind, and to instill in all employees an awareness of environmental responsibilities and practices. AT&T will deploy this policy as part of its overall quality policy and it will be an integrated part of the company’s business plans.

Corporate Environmental Goals

AT&T’s environmental policy initiated in 1990 several corporate environmental goals that apply to operations worldwide. These goals, intentionally set as “stretch” goals, were endorsed by AT&T’s chief executive officer and its board of directors. They include:

1. Phasing out chlorofluorocarbon (CFC) emissions from manufacturing by 50 percent by 1991 and by 100 percent by 1994;
2. Eliminating toxic air emissions by 50 percent by 1993 and by 95 percent by 1995, while striving for 100 percent by 2000;
3. Decreasing the disposal of total manufacturing process wastes by 25 percent by 1994;
4. Increasing the recycling of paper to 65 percent by 1994; and

5. Decreasing paper use by 15 percent by 1994.

Striving to achieve far-reaching goals forces an organization to look for breakthrough technologies, which are needed to attain the highest levels of quality. These goals were, and continue to be, benchmarked against other best-in-class companies. AT&T’s results by the end of 1994, as shown in Figures 1-5, are:

- CFC air emissions from manufacturing operations eliminated in June 1994;
- 96 percent reduction in reportable toxic air emissions over 1987;
- 66 percent reduction in manufacturing waste disposal over 1987;
- 65 percent paper recycling rate; and
- 29 percent reduction in paper use over 1990.

This much progress in such a relatively short time would not have been achieved were it not for the use of TQM principles and policy deployment.

Goal Deployment Process

The quality policy deployment process, by definition, has overcome many of the perceived impediments to waste prevention and reduction. A company-wide awareness program was implemented so all employees would recognize that top-level management is committed to environmental protection.

Wastes and emissions are regarded as quality defects and, from a competitive business standpoint, these must be minimized. This requires us, for example, to:

- Review all processes on an ongoing basis;
- Develop data on the quantities of waste generated and the management and disposition costs; and
- Invest in research for alternate processes and materials that will help supply quality products while minimizing wastes.

Through policy deployment, the environmental goals are elevated to a level comparable to other key customer requirements such as product performance, reliability, and price. AT&T’s business units and divisions have included the programs needed to attain the environmental goals in their short- and long-term plans and budgets. As many of the easy or “housekeeping” actions have already been accomplished in AT&T’s worldwide facilities, resources for capital equipment and new technologies must be identified and appropriated early in the existing budget process to attain further improvements.

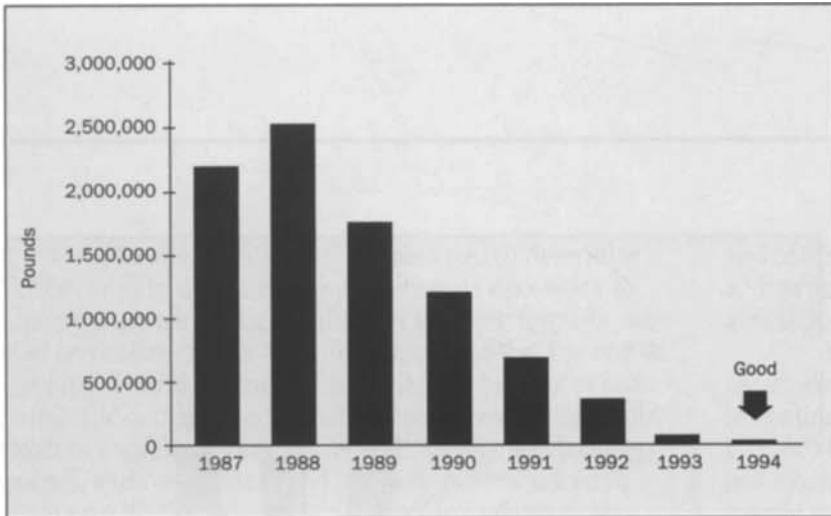


Figure 1. Chlorofluorocarbon (CFC) air emissions were eliminated from AT&T manufacturing operations in June 1994.

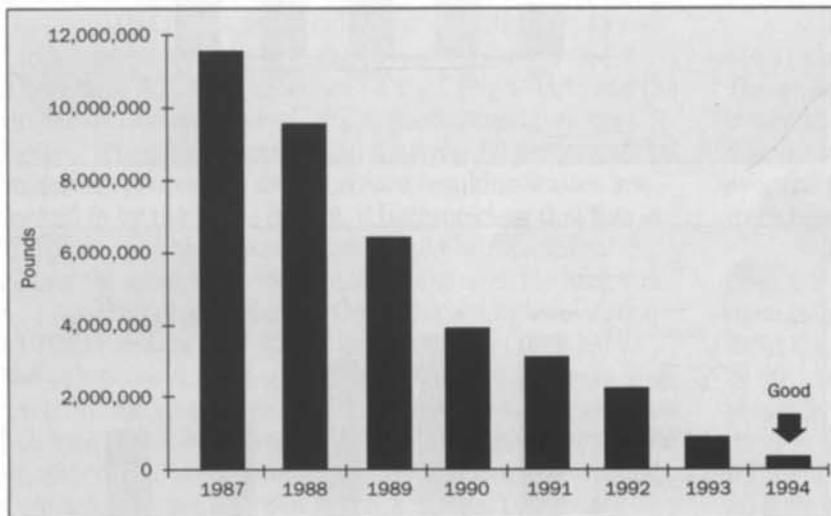


Figure 2. AT&T manufacturing reported a 96 percent reduction in reportable toxic air emissions from 1987 levels.

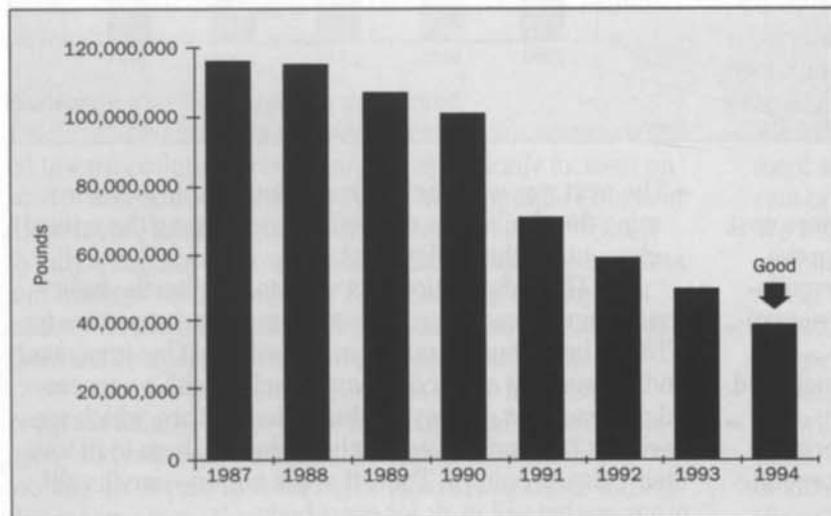


Figure 3. AT&T's manufacturing waste disposal was reduced by 66 percent from 1987 levels.

Figure 4. More than 65 percent of all waste paper generated by AT&T was recycled by 1994.

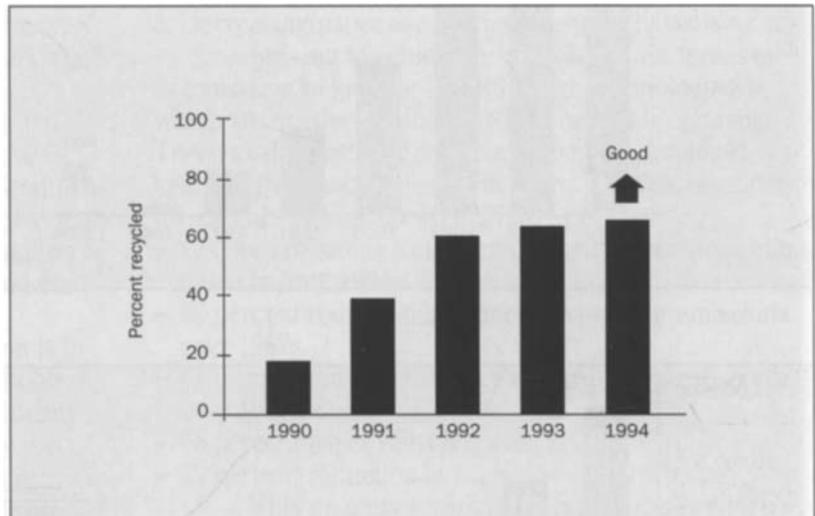
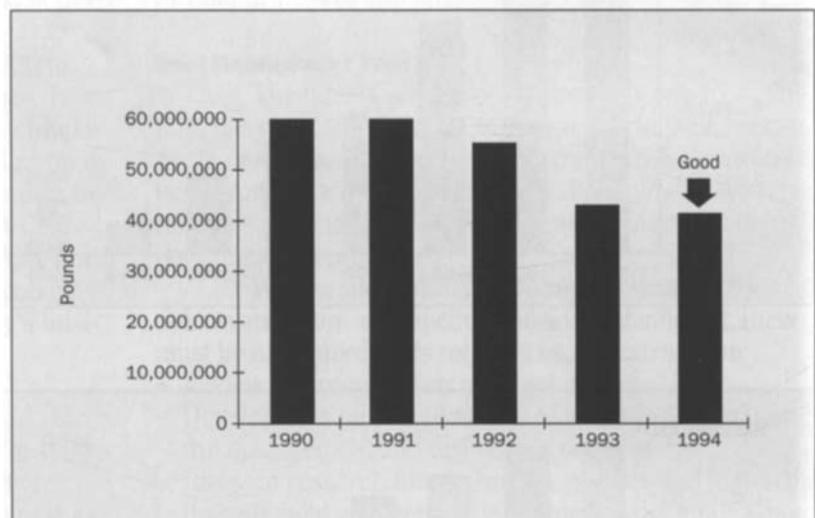


Figure 5. By 1994, AT&T's paper use was reduced by 29 percent over 1990.



Pollution Prevention

TQM tells us that preventing defects is more cost effective and provides more opportunities for improvement than dealing with them after the fact. Hence pollution elimination at the beginning of the pipe, and not pollution containment at its end, became the next environmental challenge. To this end, AT&T participated in two major benchmarking studies:

- The first was with the Intel Corporation to understand the critical elements needed for a successful corporate-level pollution prevention program.

- The next was with the Business Roundtable to determine the similarities and differences among the critical elements at the facility level.

This information was used to develop the basic-level program and to provide some tools and structure for AT&T's individual manufacturing facilities. One important finding was that each company or facility with a successful program was employing the critical factors, which are basically TQM principles, but had adapted them to fit into their existing culture. Thus, there is no "one-size-fits-all" program that will work for everybody.

The program champions also had to determine the best method to make the adjustments necessary to change their particular culture and thinking towards pollution *prevention*, rather than just containing it at the end of the pipe. This also required an expanded team of people within the company to address these issues. Product and process engineers, production staff, facility services personnel, and researchers and developers were asked to team up with the environmental staff to find solutions.

Design for Environment (DFE)

TQM trains an organization to continually focus further up stream to get to the root causes of issues. Therefore, TQEM also focuses on the design stage and the decisions that are made during a product and process design. Once it was recognized that over 80 percent of the materials, processes, and therefore resulting wastes are locked in by the initial design, it became clear that this is the place on which more effort should be focused to obtain the most cost-effective solutions over the long run.

The progress made through the implementation of TQEM and the pollution prevention efforts has led to the cultural and mind-set changes that require one to look even further up stream to the design process. Hence there is a logical link between TQEM and DFE, where DFE is the consideration of environmental concerns, objectives, and constraints in product and process design. DFE also begins by addressing these issues up front, where the life-cycle impact of products and processes is being determined through the selection of raw materials and manufacturing processes to be used.

Environmental Goals for the Year 2000

AT&T's original environmental goals were oriented toward pollution prevention and specifically focused on wastes and emissions. While AT&T will continue efforts in these areas, the new goals will be more systems focused to fully integrate environmental concerns into the business and management processes. They can help identify root causes of environmental quality failures and help address them in the up-front design of products and services.

As we have seen, AT&T has made impressive progress using TQM to move from its initial stage of *managing* and *reducing* wastes at the end of the pipeline, to looking up stream to *reducing* or *eliminating* waste during the design stage. Now we must also move from a *point-*

source mentality to a more *systems-based* approach—addressing the overall environmental impact of AT&T's global operations.

TQM challenges us to look for the root causes of issues and then to establish systems-based approaches to continually minimize defects. This is the premise of ISO 9000 quality management systems, and AT&T will use a similar approach to adopt an overarching environmental management system. The success of the original environmental goals confirms the usefulness of such a set of goals.

The systems-based goals outlined below have been established to take AT&T into the next century. The goals have been developed with advice from the business units and divisions, with numerous meetings, discussions, and drafts on the proposed goals being held over the past year to ensure that all issues and concerns were heard and incorporated as appropriate.

The key contacts to the business units have been the environment and safety officers, who will continue to be involved as the details of the goals' deployment are finalized. This is important as they also will act as the champions for most of the goals within their respective businesses.

The new goals have been approved by the environment and safety officers, business unit heads, AT&T's chairman, and its board of directors. They are:

"We will sustain the successes and significant gains we've already made against our goals in CFC elimination, manufacturing waste disposal reduction, and reportable toxic air emission reduction, as we add new operations and as we grow globally. In addition, by the year 2000:

- We will put in place internationally recognized environment and safety management systems for at least 95 percent of our products, services, operations, and facilities;
- We will ensure that at least 95 percent of our services, operations, and facilities meet the rigorous criteria of AT&T's Model Safety Program;
- We will develop and apply DFE criteria that provides competitive, environmentally preferable products and services;
- We will improve the energy efficiency of our operations, avoiding what would otherwise be the emission of at least 500,000 metric tons of 'greenhouse' gasses;
- We will recycle at least 70 percent of our wastepaper.

“We will continue to use quality policy deployment and methodologies to achieve our goals, and we will engage our employees in addressing environmental and safety issues in the workplace, recognizing their achievements at work and in their community environmental efforts through such programs as AT&T Champions of the Environment and telecommuting.”

These goals will position AT&T to meet many of the regulatory, market, and customer requirements that are developing globally. Achieving these goals will help ensure that AT&T's products, services, and facilities remain competitive.

An example of the success of the goals was eliminating the use of CFC from manufacturing operations. This accomplishment meant the company did not have to put the U.S. Environmental Protection Agency's ozone depleting substance label on any of its products. This enhanced our relationship with our customers, with several customers indicating it was a distinguishing sales feature. It also improved AT&T's overall brand image. As we look to the future, these goals will enable AT&T to recognize more opportunities to differentiate the company and its products and services.

As noted, there also is a proliferation of eco-labels that require products to meet certain sets of environmental performance criteria before they are allowed to bear the conformance label. ISO 14000, the environmental analog to ISO 9000, is under development and is expected to have a similar impact on the way companies do business and meet customer expectations, just as ISO 9000 did. Customers are including such criteria in their purchase decisions today, and these certifications will only increase in importance over time.

As AT&T's quality goals are systems based, there is a tremendous amount of synergy among them. The implementation of programs to meet any individual goal will support the progress toward meeting the other goals. In addition, these goals should build upon the quality programs that had been previously established at facilities to meet the previous sets of goals.

As systems-based goals, they will require the efforts of individuals across the functions of each organization and success will depend on the teaming of many people who have not been traditionally linked to environmental issues, such as design, sales, and marketing with the environmental and research communities.

Conclusion

AT&T has made significant progress in the reduction of its toxic wastes and emissions over the last few years and is on target for meeting its environmental goals. The main contributors to this success have been, and will continue to be, the teams of individuals within AT&T, sales and marketing personnel, engineers, scientists, technicians—everyone at AT&T who displays uncommon imagination and a sincere dedication to preserving the environment.

TQM provides AT&T with the tools for identifying areas for improvement and the means to maintain continual improvement. Policy deployment provides a structured and well-defined mechanism for organizations to resolve impasses and obtain the necessary resources to meet the environmental goals now and into the future. The success of our operations in meeting these goals will have a direct link on our abilities to compete globally, protect our brand image, and preserve the environment for future generations.

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