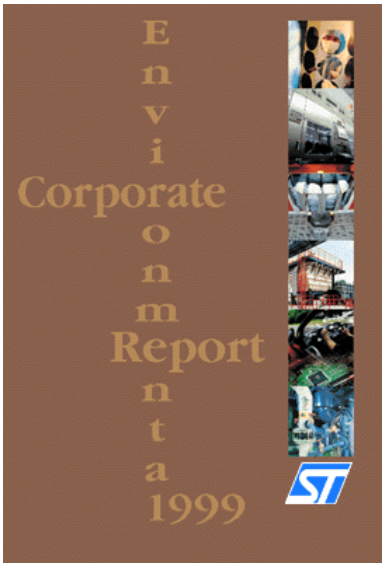
Corporate Environmental Report



Corporate Environmental Report

Message from the President

In the history of ST's journey towards sustainable development and environmental protection, 1993 was a major milestone. This was the year of a true paradigm shift when we challenged our attitude from compliance with international and local regulations, to a proactive mode which, over the years, brought the Company to make a very strong commitment to take a leading role in the protection of our planet's environment.

Three main reasons were at the origin of that new attitude, and today remain behind our increasing commitment:

- the first and most important is an ethical one that stems from our responsibilities as a corporation towards the society around us as a whole, and not just towards our shareholders;
- secondly, we know that a vital element in our ability to compete and grow will increasingly depend on our ability to attract young, committed talents and the best human resources. They will, no doubt, want to know they are working for a reliable and responsible company;
- thirdly, we are strongly convinced that environmental responsibility is not only compatible with the ability for a company to compete on the marketplace, but it actually significantly enhances the competitiveness of a corporation. We do believe that "ecology is free", because prevention is much cheaper than correction, and because corporations which apply environmentally-friendly processes - which consume less in terms of energy and materials - are, as a consequence, more profitable.

Based on these three pillars, in 1993 we launched a very aggressive, long range, company-wide initiative, with the declared goal of establishing STMicroelectronics as the world leader in environmental protection for the industry by the year 2000.

Two years later, in 1995, we summarized our main environmental policies and objectives in one document, which we called our Environmental Decalogue which we distributed to all our employees, as well as to customers, suppliers and partners around the world. This concise document, unlike most corporate environmental statements, defines a very precise set of quantified targets, which the Company is striving to achieve within a given time frame.

Today, our third Corporate Environmental Report, based on our 1999 results, gives us an opportunity to look back and make a status of our achievements. We have had excellent results in several areas, as shown in the pages that follow. For instance, our electricity and water consumption have been reduced by 27% and 40% respectively from 1994 to 1999, at constant production value.

All our sites were both ISO 14001 certified and EMAS validated by 1997 and recertification and revalidation is an ongoing process. We have also received some important recognition : the Climate Protection Award was awarded to ST in 1999 by the US Environmental Protection Agency, and Dow Jones selected ST as one of the 200 corporations in the Dow Jones Sustainability Group Indexes which include the leading sustainability companies and industries worldwide. Actually in this context ST was defined as the world leading performer in the semiconductor industry in terms of integration of sustainability. Most of all, environmental care is now a well embedded culture at ST and we are building the momentum to improve our performance.

We strongly believe that the world is confronted with dramatic environmental challenges, which could threaten future economic development and even social life on the planet. With this in mind, we are renewing our corporate engagement for sustainable growth with even stronger determination than ever before.

In 1999 we published a new edition of our Environmental Decalogue which sets even more ambitious targets, particularly in the area of minimizing the impact of our activities on the earth's atmosphere.

Actually, we believe that the major threats to the life of the human community is represented by climate change, and there is now a growing and generalized consensus on the decisive role of human activity played by the emission of greenhouse effect pollutants.

This is why we have set for ourselves the very aggressive goal of making ST a zero CO2 equivalent emission company by the year 2010.

And, of course, we aim to achieve this in spite of the extremely ambitious economic growth that we foresee for our future. Our past track record in combining growth with environmental achievements encourages us to believe in this goal, which, although difficult, can be achieved. We are engaging to do so by three means:

- by continuing to aggressively reduce energy consumption per unit of added value, through traditional methodologies as well as by increasing the efficiency of energy conversion through the adoption of new processes, such as cogeneration (combined heat and power);
- by progressively implementing renewable sources, such as wind turbines;
- by launching an important carbon sequestration program which, through extensive reforestation, aims at totally compensating the residual greenhouse gas emission through carbon sinks.

While the zero CO2 emission goal is, no doubt, the most ambitious one in the new Environmental Decalogue, we are actively working also on other major issues, such as water recycling, air pollution and waste treatment, aiming at excellence in environmental care.

We, at STMicroelectronics, are firm believers that shareholders' value is not threatened by corporate social and environmental responsibility. On the contrary, we believe that by being good citizens we can amplify shareholders' value and return to investors. This we will do, with our people and at all our plants, as we have done over the years, in all countries throughout the world where we operate.

Pasquale Pistorio
President and Chief Executive Officer

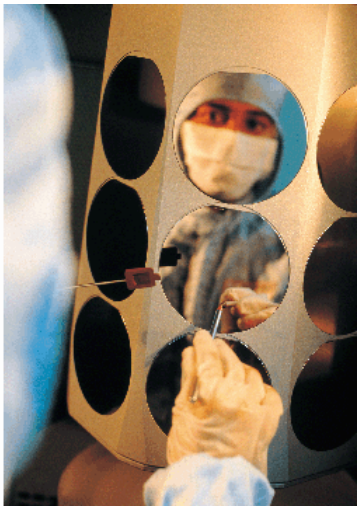
Corporate Environmental Report

STMicroelectronics at a glance

- STMicroelectronics is a global independent semiconductor company that designs, develops, manufactures and markets a broad range of semiconductor integrated circuits and discrete devices.
  These are used in a wide variety of microelectronic applications, including telecommunications and computer systems, automotive and consumer products, and industrial automation and control systems.
- The group today has 17 primary manufacturing sites around the world and over 35,000 employees.
- Corporate headquarters as well as the headquarters for Europe and for Region 5 (the recently created sales organization for emerging geographic markets) are in the vicinity of Geneva Cointrin Airport, part in Saint Genis, France and part in Geneva, Switzerland.
- STMicroelectronics has 62 direct sales offices in 24 countries and offers some 3,000 main types of products to more than 1,500 customers.
- With 9 advanced research and development units, 35 design and application centers, ST possesses an extensive portfolio of intellectual property which includes in excess of 15,000 patents, both issued and pending, covering over 5,000 original inventions.
- The Company is active in numerous collaborative research projects worldwide as well as playing a key role in Europe's advanced technology research programs such as MEDEA.
- ST champions quality and environmental initiatives and in 1999, several prestigious awards were accorded to ST, underscoring the Company's long-standing commitment to business excellence: the Malcolm Baldrige National Quality Award to ST's United States subsidiary, STMicroelectronics, Inc., the Singapore Quality Award, and the EPA Climate Protection Award in the United States.
- STMicroelectronics is quoted on the New York Stock Exchange, on the Bourse de Paris and on the Borsa di Milano.

Corporate Environmental Report

Sustainability at STMicroelectronics



In the epitaxy process a thin film of silicon is grown on the wafer's surface. This involves the use of electrical energy, hydrogen and special gases. The operation generates emission of waste hydrochloric acids and gases which are then abated with dedicated scrubbers.

Care for the environment is a core element in the business policy of STMicroelectronics and is embodied in the Company's Environmental Vision, Mission and Policy.

OUR VISION
To be recognized by all our stakeholders as a leader in environmental care by following our Environmental Decalogue and by exceeding regulatory requirements in both degree and timing wherever possible.

OUR MISSION
To strive for sustainable development in minimizing the impact of our processes and products on the environment by maximizing the use of recyclable or reusable materials and, where possible, adopting renewable sources of energy

OUR POLICY
To aim for ambitious continuous improvement of our environmental performance with a view to reducing our impact on the environment to levels which do not exceed those corresponding to the Economically Viable Application of the Best Available Technology (EVABAT).

To take a proactive approach in environmental activities, built on the principles of Total Quality Management (TQM) and guided by the 16 principles of the International Chamber of Commerce (ICC) Business Charter for Sustainable Development. *See Appendix 1*.

To be a world leader on the basis of:

- Moral obligation towards the environment.
- Economic importance: investing in environmental protection gives a significant strategic advantage over those companies who wait; the financial efforts will, to a large extent, be repaid if we are capable of designing and implementing processes that are pollution free and which also reduce the use of valuable material resources and energy.
- Human resources: to attract the best young people, and to motivate the Company's employees in the challenge for a better quality of life.

GENERAL PRINCIPLES

The Total Quality Management (TQM) approach is a practical way of working and managing all aspects of a business to achieve the best results for all stakeholders. In the environmental context, this policy is termed Total Quality Environmental Management (TQEM).

The objectives are :

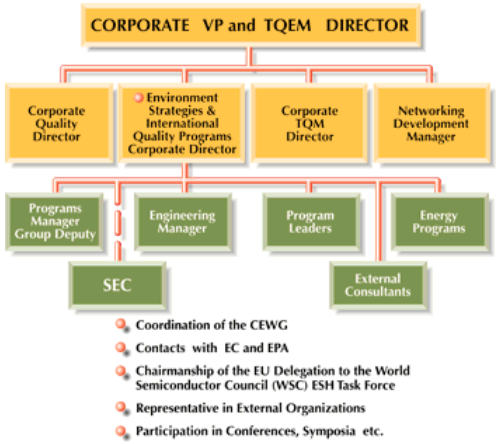
- To ensure Management commitment to a culture of environmental protection throughout the Company.
- To design products and processes to minimize their environmental impact from "cradle to grave". To strive for continuous reduction of waste and pollution and in the consumption of water and energy, in a quest for sustainable development, as proof that ecology saving methods are both responsible and profitable.
- To benchmark ST against leading companies the world over, so as to equal or exceed the best performing companies.
- To apply the most advanced statistical tools (Statistical Process Control, Design of Experiment, Failure Mode Effects Analysis) to processes and products. Apply environmental tools such as Environmental Impact Analysis, Life Cycle Analysis to the environment parameters, assessing the potential impact on the environment and allowing the Company to develop and implement environmentally responsible manufacturing processes.
- To ensure that training in environmental awareness is an integral part of each individual's Training and Development Plan.

- To inform customers on recycling and safe disposal of ST products at the end of their useful life.
- To promote partnerships with suppliers in order to achieve ST's environmental goals, and to involve contractors working on ST sites.
- To promote an open dialogue with workers and the communities in which ST operates; cooperate in a positive spirit with industrial and scientific communities, governments and non-governmental organizations to develop laws, regulations and guidelines for the continuous improvement within these communities.
- The ST Environmental Policy goes beyond the TQM principle of Customer Satisfaction and aims for Stakeholder Satisfaction through initiatives and programs based on the Company's Decalogue for the Environment.

Appendix 2. Environmental Decalogue issued in September 1995
Appendix 3. Environmental Decalogue issued in August 1999 with objectives up until the year 2010.

ORGANIZATION
At the highest level, environmental concern is the responsibility of our Total Quality Environmental Management (TQEM) organization, headed by a Corporate Vice-President. The Environment Strategies and International Quality Programs (ES-IQP) organization within this group spearheads the achievement of our Vision, Mission and Policy.

Periodical audits are conducted by the ES-IQP and environmental Standard Operating Procedures and Corporate Specifications are set. Internal training on environmental issues is promoted and plans to meet corporate goals are implemented.



Through leadership and example, the ES-IQP group promotes a Company-wide culture of environmental protection.
Appendix 1. shows how ST manages its environmental activities according to the principles of TQM and the ICC Business Charter for Sustainable Development.

The Corporate Environmental Steering Committee (ESC), chaired by our CEO supports all aspects of the Decalogue, including review and resource allocation. At the local level, an Environmental Steering Committee and a Site Environmental Champion (SEC) are active in every environmental initiative. In strengthening the Company image as an environmentally conscious corporation, they interface between the Corporate Environment Strategies Group, Site Management (Purchasing, General Services, for instance), as well as with other functions such as R&D and Operations. Regular contact with all regulatory agencies is maintained by these groups.

OWNERSHIP OF THE DECALOGUE OBJECTIVES
A leadership structure of Corporate Environmental Working Groups (CEWG) guides and directs environmental programs for ST on a worldwide basis, highlighting the priorities and the main objectives to be tackled, coordinating and supporting the sites in the implementation of agreed decisions and solutions.

ENVIRONMENTAL AWARENESS AND TRAINING
To increase awareness of the environment, both with employees and outside contractors, training is given at each site. This includes:

- an in-depth commentary on the Company's Environmental Decalogue and the site Environmental Statement;
- a general overview of the Corporate and Site Environment Manual;
- an explanation of the role and responsibility of each new employee within the site environmental management system;
- a tour of the site's main environmental facilities.

With the support of the Site Environment Champion, local training organizations offer specific courses both for internal and external contractor personnel: for design, manufacturing, facilities, maintenance, purchasing, clean room staff, for example. In addition, courses on emergency preparedness and response, including evacuation exercises are also offered. The training is geared towards the control of the specific and significant environmental effects listed in the relevant Site Register.

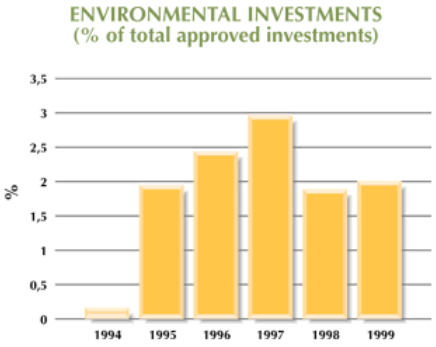
All personnel operating, supervising, monitoring or maintaining environmental equipment such as waste water treatment equipment, scrubbers, chemical and waste stores are trained to maximize performance. They prevent potential non-compliance with environmental legislation and corporate standards and control the items listed in the Site Register of Significant Environmental Effects. This training is part of the Job Certification Program. ST personnel are given a refresher course every year and at each major change in environmental conditions.

In addition, a more advanced Environmental Awareness seminar was designed and developed at STMicroelectronics University. This seminar, also available on a CD-ROM, is offered to ST's suppliers and customers.

INVESTMENT IN THE ENVIRONMENT

We believe that companies investing in environmental protection have a significant advantage over those who wait. Any investment will largely be repaid if we are capable of designing and implementing pollution-free processes which can reduce the use of natural resources and energy. We have proven that business can be both responsible and profitable.

At ST, no investment made in energy conservation has taken longer than three years to recover. The average payback time has been less than two years.



PAYBACK FROM ENVIRONMENTAL INITIATIVES
Protection of the environment is thus a key mission at STMicroelectronics and the ultimate goal is to achieve environmental neutrality. One of the steps to reach this goal is the conservation of natural resources, reduction in energy and water consumption.

Increasingly, companies rated as eco-leaders obtain higher scores in vendor rankings, bringing a positive effect on sales. Also, important investment groups (especially banks), are today establishing special 'green' investment portfolios. A careful analysis of performance with regard to the environment will identify companies with a superior growth potential thanks to their efficiency in ecology. More and more, investments are now being made in companies where both financial and eco-efficient performance go hand in hand.

In this field, ST has been recently ranked as the world's leading semiconductor company for sustainability. The Company was also rated one of the top two sustainability-driven companies in the world for integration of sustainability into a comprehensive Total Quality Management System by the Dow Jones Sustainability Group Indexes (DJSGI).

Starting from the Dow Jones Global Index (DJGI) of nearly 3,000 companies in 33 countries, the DJSGI initially selected 2,000 companies with the largest worldwide market capitalizations and then across 68 countries, selected the top 10% with regard to sustainability. At the end of this exhaustive evaluation process, ST was ranked in the top two companies in the world, based on the sustainability performance in its industry.

The DJSGI is a family of global equities indexes that tracks the performance of 225 leading sustainability-driven companies in 68 industry groups in 22 countries. The DJSGI defines sustainability-driven companies as those that achieve their business goals by integrating economic, environmental and social growth opportunities into their business strategies through pro-active, cost-effective and responsible management.

SUPPLY MANAGEMENT
ST's ecological concerns have been well understood by its key suppliers and an ambitious program has been undertaken: 87% of the Company's suppliers have obtained, or are in the process of obtaining environmental certification.

EMAS validation or ISO 14001 certification has become a key point of our Supplier Performance Evaluation system, where the weight given to supplier performance regarding environment is more than 10%.

We strongly encourage our suppliers and subcontractors to become EMAS validated or ISO 14001 certified and assist them through training, support and auditing. At least 80% of our key suppliers should be certified by end 2001.

PROBLEM
Of the problems identified from 1993 and listed in our 1998 Environmental Report, only one remains to be solved. ST acquired a new property in Phoenix, Arizona where CFCs were present in the air conditioning system. Replacement of the system is to be completed by Q2 in 2000.

Corporate Environmental Report

Results versus Environmental Decalogue Goals

As evidenced in our two previous Corporate Environmental Reports, we focus our efforts on continuous improvement. This report highlights the most critical environmental issues for our industry segment and shows both corporate results and specific achievements from several of our manufacturing sites. Challenging and tough objectives can be met, and even exceeded. Within the Company, these benchmark achievements are a means of cross-pollination of best practices.

Corporate Environmental Report

Energy

Scale deposit on condenser tubes reduces the heat transfer efficiency of chillers and increases energy consumption. By means of the Ball Technic System (BTS)TM a fully automated condenser cleaning system circulates slightly oversized sponge balls to scour off all scales and fouling. At ST's Toa Payoh site in Singapore, in 1999 this resulted in chiller energy consumption reduction by an average of 20% or 170MWh per month, with savings of K$ 120 per year.

Meet the most stringent environmental regulations of any country in which we operate, at all of our locations worldwide.

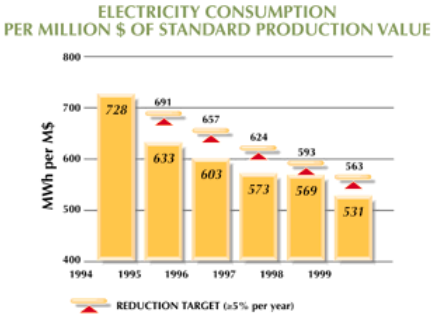
REGULATIONS
The corporate specifications for waste water and air emissions, the substitution of all ODS Class 1 in manufacturing and facilities, and the choice of EMAS, for instance, are examples of adopting and measuring against the most stringent regulations.

On a regular basis, the Corporate Environmental Working Groups (CEWG) who manage the environmental priorities of the Company, strictly control this subject and issue the environmental standards to be adopted by the entire corporation.

Reduce total energy consumed per million dollars of standard production value by at least 5% per year.

ENERGY
Energy saving and reduction of greenhouse gases emission are amongst the highest environmental priorities of the Company. ST acknowledges the importance of the Kyoto Protocol commitment and began its project to reduce greenhouse gas emissions in 1996, shortly after the signing of the EPA Memorandum of Understanding. Since 1996, ST has focused on defining corporate-wide emission reduction goals and on developing a clear technical roadmap for achieving these targets at all ST sites around the world. In particular, the Company focuses on the improvement of energy efficiency and reduction of PFC emissions to meet its rigorous goals.

NEW
Continue to reduce total energy consumption for million dollars of added value by at least 5% per year.



The Company strongly believes that energy efficiency offers an important source of competitive advantage over inattentive competitors. Energy efficiency not only protects the environment, but can also increase profits, improve yield, reduce construction cost and enhance human performance while attracting the attention of the public.

Today, at ST, it is calculated that energy efficiency actions will enable the Company to save some 50% of the electricity that ST would need in the year 2010 at the current efficiency level.

- In our Singapore (Toa Payoh) plant, chiller pump motors are operated at minimum speed to pump chilled water based on demand flow rate. The reduced operating speed cuts the energy consumed by 50%. This represents 530MWh per year or 1% of the total plant energy consumption. In the same plant, the final rinse de-ionized water is heated to 50 degrees by the air conditioning hot refrigerant instead of the use of electrical heaters representing a saving of 25MWh per month.
- At the Company's Malta plant, heat recovery units have been installed on the air compressors. Following an investigation of the operation of the heat recovery unit, the temperature and flow of heated water was set so that the amount of diesel consumed by the site was reduced from a yearly consumption of 446,950 liters to 216,140 liters in 1999, bringing a savings of $95,000.

Utilize alternative or renewable energy sources to a meaningful degree (at least 3 pilot plants by end 1999).

ENERGY AND CO2 EMISSION REDUCTION

ST has set a series of very precise goals regarding energy saving and greenhouse gases emission reduction. Four main factors have been determined: improvement of the energy consumption of factories through widespread action in everything which uses electricity; adopting alternative energy sources such as cogeneration which generates energy in an efficient way; using renewable energies; and through reforestation.

In 1999, the Company used 1300GWh of energy, equivalent to the consumption of a city the size of Venice in Italy.

Through this consumption, ST was indirectly responsible for emitting about 660,000 tons of CO2. If the Company continues to grow at an average rate of 15% per year, without taking corrective measures, it is estimated that by the year 2010 energy consumption will rise 6200 GWh. The resulting CO2 emissions would equal the total of all fossil fuels burned in the Republic of Malta.

NEW
Alternative energies: adopt, wherever possible, alternative energy sources such as cogeneration and fuel cells

The goal at ST is to keep consumption down to 3,500GWh, nearly enough to supply a city the size of Lyon in France. If the Company can reach the goal set by the new Decalogue for the period 1994-2010, savings of 18 GWh, and almost $900 million will result.

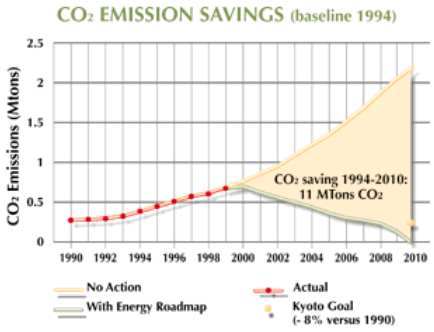
NEW
Renewable energies: increase their utilization (wind, photovoltaics and thermal solar) so that they represent at least 5% of our total energy supplies by end 2010.

Not only will this have an immediate effect on the Company's profits, but will allow ST to reduce the energy consumption per million dollars of production value by a factor of three versus the 1990 Kyoto Protocol baseline. If the improvement in energy mix foreseen for 2010 is achieved (65% cogeneration, 30% conventional, 5% renewable), the Company's CO2 emissions per million dollars of production value will drop from nearly 500 emitted in 1999 to only 80 tons in 2010.

NEW
CO2 : reduce total emissions due to our energy consumption by a least a factor 10 in 2010 versus 1990.

Finally, the Company will carry out plans for reforestation to reach the environmental neutrality goal by 2010 by planting sufficient trees to sequester an amount of CO2 equivalent to remaining emissions (about one million tons). Reforestation will mainly take place in tropical countries where the sequestration capacity of trees is greater and land costs are lower. However we aim to carry out some 10% of the work, if economically possible, in countries where we have a presence: Italy, France, Morocco, Malta and the United States, for instance. The size of the area planted with trees will be about 350 Km2, an area equivalent to half the size of Singapore.

The overall effect on the environment will be savings of 11 million tons of CO2 during the period from 1994 - 2010.



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Water

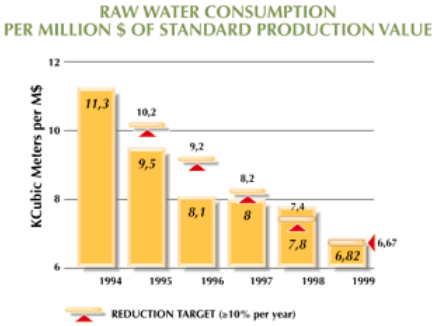
Water plays a critical role in the manufacture of semiconductor products. Only ultra-pure water can be used and this is created by reverse osmosis and de-ionization. Waste water treatment plants at ST's sites ensure that water from manufacturing processes is neutralized and leaves the plant at the same level of purity as when it entered. Due to significant production increases, ST has redesigned and enlarged waste water facilities at several of its manufacturing sites.

Reduce water draw-down (per million dollars of standard production value) from local sources (conduits, streams, and aquifers) by more than 10% per year through conservation.

Water conservation is a general ST corporate goal, but it is an imperative at several STMicroelectronics manufacturing sites where water supplies are scarce or diminishing - Malta, Rancho Bernardo, Phoenix, Catania and Singapore, for example. At a corporate level, ST has substantially cut its use of water, reducing the cubic meters used per million dollars of standard production value from 11,300 m 3 in 1994 to 6,800 m3 in 1999. Overall, 98% of the Decalogue goal was met, with the trend improving towards the end of the year.

Especially for those sites with shortage of fresh water, ST is increasingly concentrating its efforts in developing methods to reuse waste water during several of the manufacturing process steps.

NEW
Continue to reduce water draw-down (for million dollars of added value) by at least 5% per year, through conservation, optimization, recycling.



For all manufacturing operations, reach a level of 50% recycled water by end 1997 and 90% by end 1999.

- Several sites have already installed a backgrinding water recovery system. This consists of an ultra filtration system for silicon wafer saw water. The water containing silicon particles is collected and stored in a common tank and is transferred by pump to the filters. The cleaned water is then sent back to the DI plant for re-use.
- In our Singapore (Ang Mo Kio) plant, for example, nearly 100% of backgrinding water is recovered with a savings of 10m3 per hour : a total capital savings of $284,000 and overall savings of $263,000 annually with a payback in 15 months.
- In Malta, large volumes of water are used during silicon wafer cutting. In the slicing process, silicon dust is too fine to be captured by traditional filters. The site installed a microfiltration unit to remove the fine particles and the water was then further purified by passage through ion-exchange resin columns. Water is then sufficiently clean to be recycled for operations requiring extremely high purity water. As a result, the use of city water was reduced by some 13,000m3 per year.

- The Malta site also recycles waste brine which is discharged by the plant's Electrodialysis Reverse (EDR) water purification system. EDR is a system in which a potential difference is applied to remove 80% of salts from the mains water. The concentrate waste is filtered and chlorinated and is suitable for non-potable use in toilet flushing, for instance. Through this means, city water consumption dropped by a further 6,500m3.
- In 1998, the Malta site made a major effort to recycle waste water from its electroplating operations. A new design using ion exchange resins recovers metals from electroplating water. This is followed by a reverse osmosis system to further purify the water.
- Other water conservation strategies set up by Malta include the installation of a rainwater capture and recycling system. In 1999, the facility reduced its consumption from city mains from 183,000m3 for the year down to 48,000m3 - a remarkable reduction of 73%.
- ST's manufacturing plant in Carrollton participated in a third-party water consumption evaluation of its manufacturing process with International SEMATECH and will begin to implement process changes in the year 2000.

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Paper

Trees : reduce total paper and paper products consumption by 10% per year.
Reach a usage level of 90% recycled paper where paper is necessary by end 1995 and maintain that level.

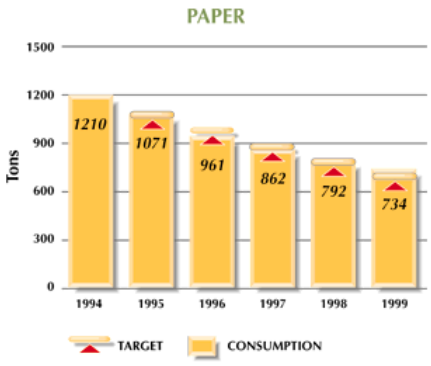
Starting from a low percentage (about 50% in 1994) of recycled paper used, in 1997 ST's consumption of recycled paper was 92% and in mid 1999 the figure improved to more than 98%.

STMicroelectronics has thousands of different products in its portfolio, each with complex specifications. These need to be documented in detailed technical manuals, datasheets and user notes. Consequently, significant amounts of paper go into publications. Printouts, photocopies, office forms, clean room paper (lint free) and a significant amount of cardboard for product packing and shipping also account for large volumes of paper.

NEW
Trees: reduce office and manufacturing paper consumption (kg per employee) by least 10% per year.

By publishing technical documents on CD-ROMs the number of publications printed decreased from 240 to 60 tons in just two years, reaching 55 tons in 1999. The Company is confident that a further decrease is possible. During 1998 the Company distributed 111,000

Throughout the world, however, ST has cut the use of paper by some 40% in the 1994-1999 timeframe.



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Chemicals

Chemicals are used in large quantities to clean the surface of wafers and are a source of pollution to the environment. ST has made extensive investments in pre-diffusion cleaning systems which, by the use of diluted chemicals allow a significant reduction in the use of Ammonia, Hydrochloric Acid and Hydrogen Peroxide.

Recycle the most used chemicals: e.g. for sulfuric acid recycle > 30% by end 1997 and 80% by end 1999.

Semiconductor manufacturing processes require significant amounts of chemicals. ST is working in all directions to save these hazardous substances: by substitution, process optimization, hardware modifications, on-site generation, recycling for reuse, and the installation of Total Chemical Management (TCM) in partnership with key suppliers, to name a few. This will improve the management of chemicals in terms of safety, tracking and cost.

NEW
Reduce the consumption of the six most relevant chemicals by at least 5% per year (tons per million dollars of added value) through process optimization and recycling.

CHEMICAL SAVING PRIORITIES

Engineers working on wet processes (cleaning processes using chemicals) are at the forefront of our efforts in chemical saving programs. In addition to the undeniable benefits to environmental health and safety, these initiatives bring significant savings in cost, as well as better process performance.

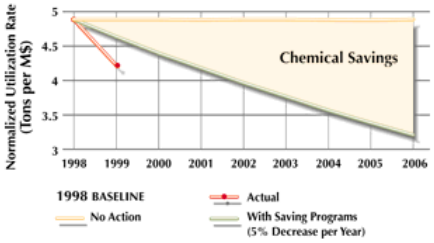
In 1999 ST formalized a Corporate Chemical Saving Roadmap based on the best practices of all sites. Particular emphasis is given to the following programs:

- use of diluted chemicals in spray tools through hardware modifications (low flow pick-up in spray tools). A saving of 90% has already been demonstrated and the program is being cascaded to all front-end operations;
- total sulphuric acid substitution by de-ionized (DI) H2O and O3 for the resist removal processes. Two programs were developed in 1999 with two different suppliers. Both processes were qualified by ST's wet process engineers in Fab 3 and Fab 8 in Agrate, Italy and the program will be deployed to all ST operations.
- 650 tons of sulphuric acid and hydrogen peroxide were saved in Tours, France, through upgrading of equipment and process modifications.
- A reduction of 99% in isopropyl alcohol (IPA) was demonstrated using a new dryer at the Company's M5 fab in Catania, Italy. This program will likewise be extended to other operations.

- In Agrate, Italy, significant reduction in chemical use is being achieved through twin clean process. This process allows a substitution of sulphuric acid, hydrogen peroxide, hydrogen fluoride and ammonia and a reduction of hydrogen chloride.
- In 1999, a new ultra pure chemical free system was constructed at ST's Rousset site, where the association of new water treatment techniques permits the production of high grade water quality based on continuous de-ionization processes without the need of chemical regenerations. Double pass reverse osmosis units followed by an electro-de-ionization system and non-regenerable mixed beds resins now produce up to 150 m3 per hour without any contaminated effluents to be treated.

At a Corporate-wide level, the cumulated consumption of the most relevant chemicals selected by the Company (photoresists, developers, sulphuric acid, fluorhydric acid, hydrogen peroxide, solvents), have decreased from 4.9 tons per million dollars of production value in 1998 to 4.2 tons in 1999.

CHEMICALS SAVING EXPECTATIONS



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Pollution

If not properly controlled, acid droplets, dust and fumes from manufacturing processes are harmful to man and to the environment. Scrubbers are installed at ST sites and treat the acid droplets and fumes by means of industrial filtration to ensure that air exhausts meet the very highest standards of purity before discharging to the atmosphere.

Air emissions: phase out all Class 1 ODS by the end of 1996. Contribute where we can to the reduction of greenhouse and acid rain generating gases.

All Class 1 Ozone Depleting Substances were eliminated by 1993 from production processes; by 1997 in all large refrigeration units (chillers) and since February of 1998 from fire-fighting systems.

These actions required an investment of some $20 million. The final step, now in progress, is to phase out all the remaining Class 1 ODS still present in some small equipment as well as in the air conditioning system in a newly acquired building in Phoenix, Arizona.

NEW
ODS: phase out all remaining Class 1 ODS included also in closed loops of small equipment before end 2001.

Manufacturing sites emit pollutants such as acids, alkalis and solvents to the air. At most ST manufacturing facilities, site scrubbers have been installed to abate these emissions. All scrubbers are equipped with variable frequency drives to conserve energy and to maintain a standard exhaust pressure for the fab equipment.

- In 1999, for the first time, a model for the calculation of the dispersion of pollutant gaseous emissions at ground level was applied at ST's Agrate, Italy site. In cooperation with Milan University, ST evaluated the gaseous emissions' impact on the surrounding environment using the US Environmental Protection Agency's computerized air dispersion model. This methodology goes beyond a simple measurement at the emission point and through modern and sophisticated evaluation criteria, provides a basis for optimizing investments as well as anticipating possible new laws from the regulatory authorities.
- The new 8-inch fab now starting up in Rousset, France, will have very advanced methods for treatment of air emissions. Some 80 dedicated abatement systems will be installed at points of emission. In case of accidental toxic gas problems, sudden release systems can store leakage (chlorine, ammonia, hydrides) of complete containers. The general exhaust network in place has four different ducts - acid, ammonia, solvent and heat, and allows for the treatment of different emission types.

The main parameters to be controlled will place the site among the most advanced in this field and are shown below.

- SO2 : less than 0.5 mg/Nm3
- NF : less than 0.2
- NH3 : less than 0.5
- VOC : less than 35

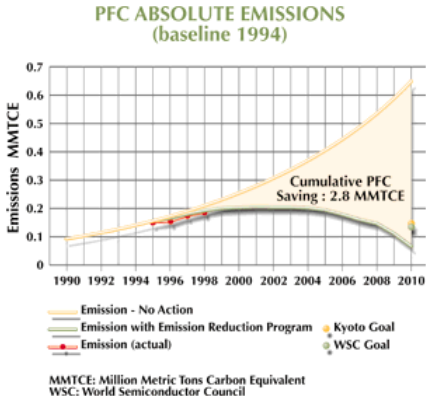
NEW
PFC: reduce emissions of PFC (tons of carbon equivalent per millions dollars of added value) by at least a factor of 10 in 2008 versus 1995.

The semiconductor industry currently emits fluorocarbons (CF4, C2F6, CHF3, C3F8), nitrogen trifluoride (NF3), and sulphur hexafluoride (SF6) from its manufacturing process. These gases, collectively referred to as perfluorinated compounds (PFC) are used in two important steps of semiconductor manufacture: plasma etching of thin films and cleaning Chemical Vapor Deposition (CVD).

Due to their high global warming potential and long atmospheric lifetimes, PFCs are now included in the Kyoto Protocol framework.

- In 1999 the Company established an Emission Reduction Roadmap which includes : various technical

solutions such as the process optimization of recipes consuming PFCs; an upgrade of the main Chemical Vapor Deposition (CVD) and etching tolls; retrofitting to bring reduction of PFC emissions; and the installation of abatement systems with high destruction removal efficiency. The global objective for ST is to reduce emissions in tons of carbon equivalent per million dollar of added value by at least a factor of 10 by the year 2008 versus 1995. If this objective is reached, in absolute terms, it will be a reduction of more than 10% in 2008 compared to the 1995 baseline.



With the common goal of reducing PFC emissions, ST is working with many different international organizations:

- EECA (European Electronic Components Manufacturers Association) Semiconductor Environmental Taskforce (Leadership of the Technical Working Group);
- WSC (World Semiconductor Council) Taskforce;
- PFC leadership Working Group (United States);
- Close contact with national authorities in countries where ST operates.

In 1999, the Company's main efforts were concentrated on the conversion from C2F6 to C3F8. Substantial benefits resulted:

- The Singapore Fab 3 at Ang Mo Kio converted five of nine P5000 oxide tools, reducing the consumption of wet cleaning gas by 42% and PFC emissions by 67%. Significant cost reduction through increased tool uptime and reduction of wet clean frequency were also achieved. At the Ang Mo Kio Fab 4, Low Pressure Chemical Vapor Deposition tools were converted to C3F8, bringing a reduction in PFC emissions of 77%.
- At Phoenix, Arizona, the full C3F8 implementation on the P5000 process was completed resulting in significant benefits both in cost savings of $100,000 and PFC emission reduction of 30%.
- Another high priority program dealing with PFC emission is the implementation of the remote plasma clean using NF3 on tools. Some 95% reduction was achieved using this technology.
- In the field of abatement, numerous point-of-use abatement systems with high removal destruction efficiency have demonstrated 99% reduction at fabs such as Crolles in France, Catania and Agrate in Italy and at Rancho Bernardo in the US.
- In partnership with the Univerity of Bari, the search for alternative compounds for Si02 etching is also being investigated by means of a home made reactor. HFCs with low global warming potential (CHF2, HFC134a and HFC 135) have been tested in a mixture with CF4 and 02. The results are promising, for CH2F2 in particular, as an alternative for replacing CHF3 in the conventional mix used for Si02 dry etching.

Corporate Environmental Report

Water emissions

Water emissions : meet the standards of the most restrictive community in which we operate, at all sites, for waste water discharge.

Several waste water treatment plans were upgraded during 1999 and a new one was installed at Rousset in France in order to face significant increase in production and to maintain the waste water parameters within the stringent corporate limits.

In addition, buffer tanks were installed at several sites to cater both for: storage of untreated water in case of plant shutdown or parameters out of compliance; storage of water in case of emergencies such as chemical warehouse fires or other spills.

- At Rousset, in cooperation with the French authorities and local associations, ST participated in the construction of an advanced waste water treatment within the industrial park where the plant is situated to minimize emissions to the nearby river Arc.

ST's new 8-inch plant started operation in 1999 but even with the increase of productivity from both the 6-inch and 8-inch fabs, significant achievements in water emissions were accomplished:

Fluoride	decreased from 13 mg per liter to less than 2
Phosphates	decreased from 6 mg per liter to less than 1
Suspended solids	decreased from 30 mg per liter to less than 4

Because of the introduction of new processes in the fabs, the waste water treatment plant was extended during the second half of 1999 in order to treat new effluents such as ammonia and nitrates. When the biological treatment is complete, the ammonia content of water will be less than 0.5 mg per liter, compared to the present 15 mg per litre.

- For further protection of the river, the site installed an oil separator designed for the treatment of 460 litres per second which is the equivalent of the emissions from a car park capacity of 25,000m2.
- A storm water storage tank of 7,000m3 was also dug for use during heavy rainfall. Part of this storage can also collect potentially contaminated water from major fires.

Corporate Environmental Report

Contamination

Handle, store and dispose of all potential contaminants and hazardous substances at all sites, in a manner to meet or exceed the strictest environmental safety standards of any community in which we operate.

Semiconductor manufacturing requires the use of potentially contaminating chemicals and gases. Spills or leaks of acids, solvents, fuel or other chemicals are a potential hazard to the soil and groundwater.
For this reason, liquid chemicals are surrounded by containment structures to prevent contamination during accidents or emergencies. In manufacturing areas, chemicals and toxic substances are stored in separate and clearly marked containers. In the chemical stations the connecting loading points of the different chemicals are mechanically differentiated so as to avoid any possible human error by loading the wrong chemical into the wrong container.

All sites have an emergency response team composed as follows:

- an emergency coordinator with overall responsibility for organizing and coordinating the site's response to an emergency;
- specialized emergency response teams;
- persons in charge of contacting the key people, and public authorities organizations;
- adequate availability of proper emergency response equipment;
- one or more emergency on-site control center(s).

The site emergency plan includes:

- description of the environment surrounding the site;
- summary of major accident scenarios and relevant response;
- emergency response organization staffing plan; emergency contact lists;
- location of on-site control center(s); evacuation paths and location of assembly points;
- location of emergency response equipment and resources;
- clean up procedures;
- maintenance of incident log book;
- mutual aid resources, where applicable; in such a program, the companies in an industrial zone agree on mutual aid should an Emergency occur - fire teams, for example.

At some sites, "just-in-time" chemical delivery is used to minimize chemical inventory. Ground wells at the up-gradient and down-gradient of every site have also been installed to track the quality of the groundwater flowing under the location. Analyses are made at least once a year and more often if there is a potential concern.

Corporate Environmental Report

Waste

There are major investments to significantly reduce the impact of manufacturing processes on the environment - and there are improvements to small,seemingly insignificant items. Protective gloves, for instance, are used by all operators in the manufacturing process. By switching from Vinyl to Nitrilite, giving better mechanical resistance, gloves can now be recycled three times. At one site, For instance, only 9 pairs of nitrilite gloves are used per day and per person as opposed to 13 pairs of vinyl gloves - resulting in annual savings to the plant of $25,000 per year.

Achieve 100% treatment of waste at level 1 to level 4 of Ladder Concept preferability, with a half life improvement goal of less than one year.

LANDFILL
Landfill is considered to be an extreme solution, especially in the light of legislation that will limit landfill only to "ultimate waste" that cannot be recycled. More and more, at ST's sites around the world there are separate collections in homogeneous categories of waste. To date, some 30 categories have been identified. At present, this is the main means for minimizing disposal to landfill and to improve its reuse and recycling. There are several aspects to this point: waste may pose a threat to the environment, it is subject to legislation, and can also be turned into a source of revenue.

NEW
Landfill: reduce the amount of landfilled waste below 5% of our total waste by 2005.

The best approach, however, is the elimination of waste during the design phase and not at the process end - thus emphasizing prevention (see Ladder Concept in Appendix 4). ST's efforts have met with great success. The landfill waste has decreased by a factor of almost three from 1994 to 1999.

Recycle 80% of manufacturing by-product waste (metal, plastic, quartz, glassware etc.) with a half-life improvement target of less than 1 year.

MANUFACTURING
Experience has shown that recycling waste is less expensive than discarding it. The graph opposite shows the achievement obtained in manufacturing waste reuse/recycling at Corporate level.

NEW
Reuse or recycle at least 80% of our manufacturing and packing waste by end 1999, and 95% by end 2005.

Sludges
The sludges produced by the physical-chemical treatment of the waste water, a by-product of our activities, are,

in effect, raw materials for other industries: the cement and brick industry, for example.

Sending sludges, typically containing calcium fluoride and calcium sulphate to such industries is the best approach to waste management. It revalorizes, recycles and minimizes landfill.

- At Toa Payoh, waste water treatment sludge which contains toxic heavy metals is generated at an average rate of 150 kg per month. With effect from January 1999, the plant sludge is recycled off site into civil work material for road construction and the recovered metals are recycled in foundries. Recycling the sludge prevented landfilling which poses environmental issues such as soil and groundwater contamination. This project required no capital funding. Similar initiatives are running in several other ST sites.

Moulding Resin waste
At the moment, this waste is landfilled at ST's back-end sites. It has become evident, however, that it would be a serious problem to reach the Decalogue target of reusing and recycling 80% of manufacturing waste.

- A research program between the ST site at Ain Sebaa and the University of Casablanca aimed at finding a recycling solution for this type of waste. Two possible applications were identified: resin-based paving slabs; and film-based insulation. Another possibility currently under investigation is the use of this waste to replace peat-coke, a heating source in cement factory kilns.

Deflashing waste
Two deflashing media exist in our product assembly sites: brass powder and glass beads. Brass powder is used in Ain Sebaa, Morocco, in Muar, Malaysia and in Shenzhen in China. In all cases the powders are sent out and any precious metals are recuperated.

- The ST Singapore and Malta sites use glass media and although the material itself is recyclable, for the moment there is little interest from recycling companies.
- Wherever possible, the Company favors a laser deflashing that offers greater integration and facilitates automation, does not use any deflashing media such as brass powder or glass beads and no waste is generated since the resin flash is burned by laser.

WAFER RECYCLING
Today, all gold plated wafers are sent for precious metal recovery.
Non-gold plated wafers are either sent to metal foundries or landfilled at the Company's expense.

- Discussions have started with two wafer recycling companies to establish a worldwide collection and recycling program. The end users of this program are photovoltaic solar panel manufacturers who could buy this waste.

PACKING WASTE

- In some regions, ST and other semiconductor manufacturers in the area have contacted recycling companies where the customers can send used packing tubes as long as this packing material is not mixed and is clean. As long as these companies can resell the by-product of their recycling, no cost will arise - either for ST or for the customer. In wafer packing, our approach relies on reuse and recycling. Single wafer containers are designed to be reusable after cleaning. At present, the total of reused and recycled packing waste is stable at about 85% - exceeding the Decalogue goal by about 10%.
- ST is also experimenting with a new approach for its inter-company wafer shipments by reusing the suppliers' new wafer packing.
  The adoption of this practice by our Catania facility, involving a production volume of 250,000 silicon wafers per year has reduced the weight of the total goods shipped by 29% and the packing waste produced from 10,7 tons to 1.2 tons. In addition, this has avoided the purchasing of 10 tons of new packing.

Consistent with the increasing sentiment regarding the responsibility of the manufacturer and product take-back, some customers request whether the Company has a collection program for the dessicant bags used in shipment boxes. The volume of these bags is quite significant (6 million bags per year at a unit cost of $0.10). Trials were made to evaluate the possible reuse of these bags and the results demonstrated that the bag can withstand 10

cycles of reuse without any degradation of its moisture absorption capacity. To embark on a reuse program with any success would require the setting up of a collection program involving our external customers. This item is under evaluation.

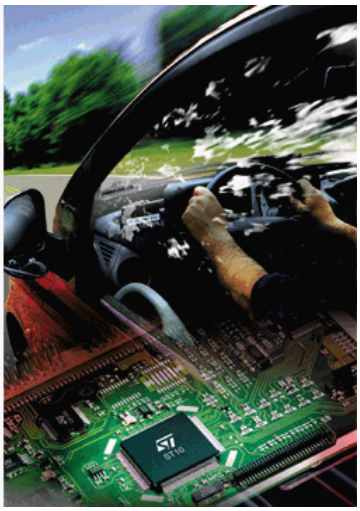
CUSTOMERS / SUPPLIERS INITIATIVES

The growing Producers' Responsibility concept means that more and more customers are demanding detailed product content data. This places the burden on the manufacturer for the potential environmental impact of the product, starting from the materials supplied through the lifetime of the product. A manufacturing company must therefore stay in close contact with suppliers and strictly monitor these points with suppliers.

In helping its customers to obtain the best Design for Environment (DFE) for their electronic equipment, detailed information on all ST products is given to customers and a technical report entitled Chemical Content of Semiconductor Packaging describing the chemical and physical characteristics of ST packages has been available since 1998.

Corporate Environmental Report

Products and technologies



ST microchips are to be found in one of every three new cars made in the world today - chips for engine control, braking, security, navigation, entertainment and information. Mechanical functionality is rapidly being replaced by electronics and within five years cars will probably have a greater electronics content than PCs. ST is developing whole electronics systems for engine management - significantly contributing to pollution reduction.

Accelerate efforts to design products for decreased energy consumption, and for enablement of more efficient applications, to reduce energy consumed during operations by a factor of more than ten by the year 2,000.

As a broad range semiconductor manufacturer, ST recognizes its responsibility towards Design for Environment. The constant aim is to manufacture products that are inherently less power-hungry and/or which enhance energy efficiency during their application.

The Company's products already contribute directly to a cleaner environment - from the transformation of energy in the automotive sector to the optimization of lighting systems and other consumer applications.

- In the automotive sector, for instance, ST produces ICs essential for such applications as engine control, electronic fuel injection, ignition, airbags, electronic power steering, ABS, to name a few.

NEW
Design products for decreased energy consumption and for enablement of more energy efficient applications.

Electronically driven valves, powered by ST devices will soon replace mechanical functionality. And thanks to the Company's smart power and embedded Flash technologies, ST is developing whole electronic systems for engine optimization - significantly contributing to pollution reduction.

Primarily with its Japanese partners, ST is taking an active role in the concept of a hybrid car with an electrical and thermal engine. The new hybrid car from a leading automobile manufacturer, currently available in Japan, and available elsewhere this year, has many ST components specifically designed for this model.

- In the lighting sector, the use of dedicated ICs has brought energy savings of 20% compared to traditional lamps. It has been estimated that over the last five years the use of latest generation lamps has saved 37 TWh (an average family uses 2500 KWh per year).
- ST's power and power switching ICs for supply control have resulted in savings of more than 70% and as high as 95% in consumer applications such as television and audio, among others. In the field of audio applications, amplification through pulse modulation (Class D) is fast becoming the norm and during the year 2000 will bring savings of some 77 GWh.

NEW
Contribute to global environmental control by establishing a database of Life Cycle Assessment of our products.

LIFE CYCLE ASSESSMENT (LCA)

- The LCA is a process which evaluates the environmental burdens associated with a product. This is done by identifying the energy and materials used and the wastes released to the environment so that improvement can be made.

The assessment covers the entire life cycle of the product.

At ST, major efforts were dedicated to an important step of this process, termed Life Cycle Inventory (LCI). This is an objective data-based process of quantifying all relevant mass and energy input and output flows in the manufacturing of our products - including air emissions, water effluents, solid wastes and other releases to the environment.

In 1999 this exercise was performed both for ST's front-end wafer fabs and back-end test and assembly operations. The final report was supplied to six of our key customers who are performing a complete LCA study for their products.

We will continue to perform Life Cycle Inventories to enable us to establish a database for the evaluation of the Life Cycle Assessment of our products (two representative studies have already been performed). We will continue to provide this information when customers so demand to allow the Life Cycle Assessment of the final product to be made.

Corporate Environmental Report

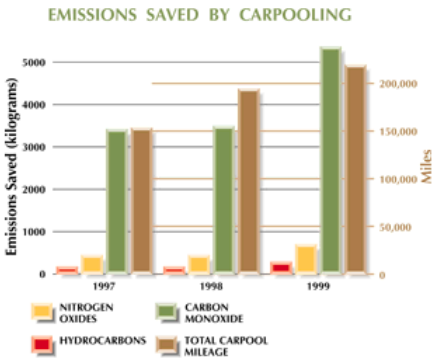
Proactivity

ST's plant at Rousset, near Aix-en-Provence, is an official partner in the Association for the Protection of the Sainte Victoire Mountain and of the Association for the Protection of the Arc River. In November 1999, employees at Rousset purchased 430 trees and ST donated a further 430 which were planted by employees on the Sainte Victoire Mountain on the occasion of the site's annual Environmental Day.

Proactively support local initiatives such as "Clean-up the World","Adopt a Highway" etc. at each site in which we operate, and encourage our employees to participate. Undertake the lead in establishing such initiatives with local authorities, where none exist. Sponsor an annual "Environmental Day" at each site where we operate, involving the local community.

ST has close relationships with the communities in which it operates and is engaged in many programs to help raise environmental awareness. The aim is to foster progress which is sustainable and which does not require an unacceptable cost to society. We have already established a dialogue with suppliers, customers and with a larger audience, and ST partners local and national authorities in a vast spectrum of activities to promote environmental awareness.

Witness to the success of these pro-active initiatives are the many awards and accolades awarded to ST. *See Appendix 7*.



ST's site in Phoenix, Arizona participated in the State's Ozone Alert Program by sponsoring a car pooling project for employees at the plant. Taking 1997 as the baseline, carpool mileage increased from 144,000 miles in 1997 to 220,000 miles in 1999. Carbon Monoxide emissions saved increased from 3,485 kilograms in 1997 to 5,400 kilograms in 1999. The site received a special citation from the Governor of Arizona for its success in this project.

Encourage our people to lead/participate in environmental committee, symposia, "watch-dog" groups etc.

Environmental Committees
STMicroelectronics works with national and international associations as well as with local groups. Since 1994 ST has coordinated the European participation in the International Semiconductor Conference on Environment, Safety and Health (ISESH) sponsored by the Semiconductor Industry Association (SIA), the European Electronic Components Manufacturers Association (EECA), the Electronic Industry Association of Japan (EIAJ), and the Korean Semiconductor Industry Association (KSIA).

On a global level, ST is also a member of the World Business Council for Sustainable Development (WBCSD), of the Sustainable Business Forum and of the World Semiconductor Council (WSC) ESH Task Force where priority projects include PFC emissions, energy and chemicals.

ST's involvement in national and international trade associations appears in *Appendix 5*.

Include an environmental awareness training course in the st University curriculum and offer it to suppliers and customers.

Environmental Awareness Training
Since 1995, ST University offers courses and seminars on Environmental Awareness on a regular basis. "Train the Trainer" modules are designed to ensure that environmental awareness is cascaded throughout the Company.

A dedicated session on Environment is also included in training addressed to newcomers. The Environmental Awareness Seminar was published as a CD-ROM in 1998 and has greatly amplified awareness both internally and with suppliers; an updated version will be available in 2000.

Corporate Environmental Report

Measurement

Measure progress/achievement using 1994 as the baseline where applicable, and publish results annually in the CER. Continue the existing Environmental Audit and Improvement program at all sites.

Measurements drive behavior. Without measurement, we cannot achieve excellence. All our environmental operations worldwide are held at the same high standards and all levels of management are the leverage to our constant improvements. Periodical self-audits review Environmental Management System activities and monitor progress against objectives.

Each site enters its results into the Environmental Database, which allows a comparison of environmental indicators, site by site. Internal benchmarking and cross-fertilization are carried out through the exchange of best practices. Corporate Environmental Audits are conducted every 18 months at every site to ensure the correct application of corporate environmental procedures and to monitor action plans/status vis-a-vis the Company's environmental goals. Each Corporate Environmental Audit ends with an action plan and revelant scoring of the audited site.

Both site and corporate audits are verified by external, accredited verifiers during EMAS revalidation, ISO 14001 recertification and ISO 14001 yearly surveillance.

The major environmental projects are monitored and reported to the Corporate Environmental Steering Committee which meets every quarter, chaired by the CEO.

The more ambitious and challenging goals of the new Decalogue, published in the second half of 1999 are the reference for the 2000-2010 environmental objectives.

NEW
Cooperate with international organizations to define and to implement eco-efficiency indicators.

Among these goals, the new Environmental Decalogue calls for cooperation with international organizations to define and implement eco-efficiency indicators. This activity has already started and ST is working with World Business Council for Sustainable Development for the definition of these indicators and implementation inside ST.

Corporate Environmental Report

Validation

Validate to EMAS standard, or equivalent, 50% of sites by the end of 1996, and 100% by the end of 1997.

EMAS
The Eco-Management and Audit Scheme (EMAS) is the voluntary European Community scheme for companies performing industrial activities for the evaluation and improvement of environmental performance. Site validation by an accredited third party within the EMAS scheme is achieved through:

- the establishment and implementation of an appropriate company policy, program and environmental management system;
- the systematic, objective and periodic evaluation of environmental performance and publication of the results to the public.

NEW
Maintain the ISO 14001 certification and EMAS validation of all our sites worldwide.
Certify new Sites within 18 months of their operational start-up.

ISO 14001
This International Standard specifies requirements for Environmental Management System (EMS) to enable an organization to formulate its policy and objectives on the environment. This Standard is applicable to any organization that wishes to:

- implement, maintain and improve an environmental management system;
- assure itself of conformance with its stated environmental policy;
- seek certification of its EMS by an external organization;
- make a self-determination and self-declaration of conformance to this international standard.

By the end of 1997, all 17 of ST's manufacturing sites were EMAS validated and ISO 14001 certified. As a pre-requisite to obtaining EMAS validation, every site prepared and published a detailed Environmental Statement outlining its consumption of natural resources and release of substances to the environment. As required by EMAS, all sites update this Statement annually.

To maintain ISO 14001 certification, all sites receive a yearly surveillance visit by third parties. By May 2000, eleven manufacturing sites have been successfully EMAS re-validated and ISO 14001 recertified after the three year cycle. Revalidation/recertification of the six remaining is scheduled to be completed by October 2000.

Highlights regarding EMAS and ISO are listed in Appendix 6.

Awards and Accolades received by STMicroelectronics are listed in Appendix 7.

Corporate Environmental Report

STMicroelectronics Total Quality Environment Management Application versus ICC 16 Principles
Appendix 1

THE GENERAL PRINCIPLES		
TQEM at STMicroelectronics	ICC 16 principles	
MANAGEMENT COMMITMENT		
Corporate function for environment strategies	Corporate policy	
Environmental management system		
Environmental policy and Decalogue		
Standard operating procedures		
Environmental champions, corporate and site environmental steering committees	Integrated management	
EMPLOYEE EMPOWERMENT		
Environmental seminar for audit teams	Employee education	
STMicroelectronics University environmental awareness seminars		
Benchmarking program (internal and external)		
Environmental suggestion program/awards		
Corporate and site environmental days		
TQEM web site		
FACT-BASED DECISION MAKING		
Corporate Eco-audit based on EMAS/ISO 14001	Compliance and reporting	
Environmental "Dashboard" and Data Bank		
Site environmental assessment	Prior assessment	
Internal/external working groups	Research	
Benchmarking program (internal and external)		
SPC (critical parameters)	Precautionary approach	
CONTINUOUS IMPROVEMENT		
Adoption of the most severe environmental standards	Process of improvement	
Proactive approach and cooperation with local authorities	Transfer of technology	
Annual improvement plans	Facilities and operations	
Investments for environmental protection		
Emergency response planning	Emergency preparedness	
Environmental certification of suppliers and audit of contractors	Contractors and suppliers	
Seminars for suppliers		
CUSTOMER FOCUS (INTERNAL/EXTERNAL)		
Support and information to customers	Customer advice	
National/international working groups	Openness to concerns	
Environmental statement		
End of life products disposal	Products and service	
Monitoring of company image perception by customers and authorities	Contributing to the common effort	
Annual Corporate Environmental Report		
Internal Customers Perception Survey		

Corporate Environmental Report

First Environmental Decalogue (September 1995)
Appendix 2

At STMicroelectronics we believe firmly that it is mandatory for a TQM driven corporation to be at the forefront of ecological commitment, not only for ethical and social reasons, but also for financial return, and the ability to attract the most responsible and performing people.

Our "ecological vision" is to become a corporation that closely approaches environmental neutrality. To that end we will meet all local ecological/environmental requirements of those communities in which we operate, but in addition will strive to:

1.0 REGULATIONS

1.1 Meet the most stringent environmental regulations of any country in which we operate, at all of our locations worldwide.

1.2 Comply with all ecological improvement targets at least one year ahead of official deadlines at all of our locations, worldwide.

2.0 CONSERVATION

2.1 Reduce total energy consumed (by our manufacturing, buildings, etc.) per million dollars sold by at least 5% per year, with a 25% reduction by end 1999.

2.2 Reduce water draw-down (per million dollars sold) from local sources (conduits, streams, aquifers) by ³ 10% per year, through conservation.

2.3 Reduce total paper and paper products consumption by 10% per year.

3.0 RECYCLING

3.1 Energy : Utilize alternative energy sources (renewable/co-generation) to a meaningful degree (at least three pilot plants by end 1999).

3.2 Water : For all manufacturing operations, reach a level of 50% recycled water by end 1997 and 90% by end 1999.

3.3 Trees : Reach a usage level of 90% recycled paper, where we must use paper, by end 1995, and maintain that level.

3.4 Chemicals : Recycle the most used chemicals, for example for sulphuric acid recycle ³ 30% by end 1997 and 80% by end 1999.

4.0 POLLUTION

4.1 Air Emissions : Phase out all Class 1 ODS by end 1996. Contribute where we can to reduction of greenhouse and acid rain generating gases.

4.2 Water Emissions : Meet the standards of the most restrictive community in which we operate, at all sites, for waste water discharge.

4.3 Landfill : Achieve 100% treatment of waste at Level 1 to Level 4 of the "Ladder"concept preferably with a half life improvement goal of ² one year. The ladder concept is explained in Appendix 4.

4.4 Noise : Meet a "noise to neighbors" at any point on our property perimeter ² 60dB(A) for all sites, from end 1995.

5.0 CONTAMINATION

Handle, store and dispose of all potential contaminants and hazardous substances at all sites, in a manner to meet or exceed the strictest environmental safety standards of any community in which we operate.

6.0 WASTE

6.1 Manufacturing : Recycle 80% of manufacturing by product waste (metal, plastics, quartz, glassware etc.) with a half life for reduction goal of ² one year.

6.2 Packing : Move to ³ 80% (by weight) recyclable, reused, or biodegradable packing materials (cartons, tubes, reels, bags, trays, padding) with a half life improvement goal of ² one year.

7.0 PRODUCTS AND TECHNOLOGIES

Accelerate efforts to design products for decreased energy consumption, and for enablement of more energy efficient applications, to reduce energy consumed during operation by a factor of ³ 10 by the year 2,000.

8.0 PROACTIVITY

8.1 Proactively support local initiatives such as "Clean up the World", "Adopt a Highway", etc, at each site at which we operate and encourage our employees to participate.
Undertake a lead in establishing such initiatives with local authorites where none exist.

8.2 Sponsor an annual "Environmental Day" at each site in which we operate, involving the local community.

8.3 Encourage our people to lead/participate in environmental committees, symposia, "watch-dog" groups, etc.

8.4 Include an "Environmental Awareness" training course in the ST University curriculum and offer it to suppliers and customers.

9.0 MEASUREMENT

9.1 Develop measurements for and means of measuring progress/achievement on points 1.0 through 7.0 above during 1995, using 1994 as the baseline where applicable, and publish results in the Environmental Report annually.

9.2 Develop detailed means and goals to realize these policies and include them in Policy Deployment by the end of 1995.

9.3 Continue the existing Environmental Audit and Improvement Program at all sites.

10.0 VALIDATION

Validate the EMAS standard, or equivalent, 50% of sites by end 1996 and 100% by end 1997. In the event the validating authority is not available, this schedule can be delayed, but only for this reason.

Corporate Environmental Report

Second Environmental Decalogue (August 1999)
Appendix 3

At STMicroelectronics we believe firmly that it is mandatory for a TQM driven corporation to be at the forefront of ecological commitment, not only for ethical and social reasons, but also for financial return, and the ability to attract the most responsible and performing people. Our "ecological vision" is to become a corporation that closely approaches environmental neutrality. To that end we will not only meet all environmental requirements of those communities in which we operate but, in addition, we will strive to comply with the following ten commandments:

1.0 REGULATIONS

1.1 Meet the most stringent environmental regulations of any country in which we operate, at all of our locations.

1.2 Comply with all international protocols at least one year ahead of official deadlines at all our locations.

2.0 CONSERVATION

2.1 Energy : Reduce total energy consumption (KWh per K$ of added value) by at least 5% per year, through process and facilities optimization, conservation and building design.

2.2 Water consumption : continue to reduce water draw-down (cubic meters per K$ of added value) by at least 5% per year, through conservation, process optimization and recycling.

2.3 Water recycling : reach a minimum of 90% recycling ratio in 2 pilot sites by end 2005.

2.4 Trees : reduce office and manufacturing paper consumption (kg per employee) by at least 10% per year, and use at least 95% recycled paper, or paper produced from environmentally certified forests.

3.0 GREENHOUSE GAS EMISSIONS

3.1 CO2 : reduce total emissions due to our energy consumption (tons of carbon equivalent per M$ of added value) by at least a factor of 10 in 2010 versus 1990, which is a goal 5 times better than the average of the industries meeting the Kyoto Protocol goal.

3.2 Renewable energies : increase their utilization (wind, photovoltaics and thermal solar) so that they represent at least 5% of our total energy supplies by end 2010

3.3 Alternative energies : adopt, wherever possible, alternative energy sources such as cogeneration and fuel cells.

3.4 Carbon sequestration : compensate the remaining CO2 emissions due to our energy consumption through reforestation or other means, aiming at total neutrality towards the environment by 2010.

3.5 PFC : reduce emissions of PFC (tons of carbon equivalent per M$ of added value) by at least a factor of 10 in 2008 versus 1995.

4.0 POLLUTION

4.1 Noise : meet a "noise-to-neighbors" below 60dB(A) at any point and any time outside our property perimeter for all sites, or comply with local regulations (whichever the most restrictive).

4.2 Contaminants : handle, store and dispose of all potential contaminants and hazardous substances at all sites, in a manner to meet or exceed the strictest environmental standards of any community in which we operate.

4.3 ODS : phase out all remaining Class 1 ODS included also in closed loops of small equipment before end 2001.

5.0 CHEMICALS

5.1 Reduce the consumption of the six most relevant chemicals by at least 5% per year (tons per M$ of added value), through process optimization and recycling (baseline 1998).

6.0 WASTE

6.1 Landfill : reduce the amount of landfilled waste below 5% of our total waste by 2005.

6.2 Reuse or recycle at least 80% of our manufacturing and packing waste by end 1999, and 95% by end 2005.

6.1 Use the "Ladder Concept" as a guideline for all actions in waste management.

7.0 PRODUCTS AND PROCESSES

7.1 Design products for decreased energy consumption and for enablement of more energy efficient applications.

7.2 Contribute to global environmental control by establishing a database of Life Cycle Assessment of our products

7.3 Systematically include the environmental impact study in our development process.

7.4 Publish and update information about the chemical content of our products.

8.0 PROACTIVITY

8.1 Support local initiatives for sponsoring environmental projects at each site where we operate.

8.2 Sponsor an annual Corporate Environmental Day, and encourage similar initiatives in each site.

8.3 Encourage our people to lead/participate in environmental committees, symposia, "watch-dog" groups etc.

8.4 Include an "Environmental Awareness" training course in the ST Universtity curriculum and offer it to suppliers and customers.

8.5 Strongly encourage our suppliers and subcontractors to be EMAS validated or ISO 14001 certified, and assist them through training, support and auditing. At least 80% of our key suppliers should be certified by end 2001.

9.0 MEASUREMENT

9.1 Continuously monitor our progress, including periodic audits of all our sites worldwide.

9.2 Cooperate with international organizations to define and to implement eco-efficiency indicators.

9.3 Measure progress and achievements using 1994 as a baseline (where applicable) and publish our results in our annual Corporate Environmental Report.

10.0 VALIDATION

10.1 Maintain the ISO 14001 certification and EMAS validation of all our sites worldwide.

10.2 Certify new sites within 18 months of their operational start-up, including regional warehouses.

Corporate Environmental Report

European Union Strategy for Waste Management
Ladder Concept Synthesis
Appendix 4

Level of Preferability	End of life Treatment	Economic Impact
1	Prevention - avoid waste	++ Saving at source
2	Reuse - use again for original purpose	+ Replacement reduction
3	Recycle - recover for alternative use	+ Material recovery
3a	Recycle - organic conversion (aerobic or anaerobic)	+ Possible compost or methane
4	Combustion - with recovery of energy	+ Energy recovery
5	Incineration - no recovery of energy	&endash; Consumes energy
6	Landfill	&endash; &endash; Land consumption and contamination

Corporate Environmental Report

Company Involvement in Trade Associations
Appendix 5

MEMBERSHIP AT WORLD-WIDE LEVEL:

- Steering Committee for the annual International Semiconductor ESH Conference of the Microelectronics Industry
- World Business Council for Sustainable Development (WBCSD)
- Sustainable Business Forum (board member)
- Chairmanship of the EU Delegation to the World Semiconductor Council

AT THE EUROPEAN LEVEL:

EECA	Chairmanship of the European Task Force on Greenhouse Gases (PFC) Reduction
	Coordination of the European participation in the International Semiconductor ESH Conferences since 1994
	Membership of ETC (Eeca Technical Committee)
	Membership of ETC Environmental Working Group (WG2)
ORGALIME	Italian Representative in the Environmental Committee of Orgalime (Liaison Group of the European Mechanical, Electrical, Electronic and Metalworking Industries)

AT NATIONAL LEVEL:

France

SITELESC	Chairmanship of the Association
	Chairmanship of the Environmental Group
	Chairmanship of the Working Group on Waste (zero landfill in 2002)

Italy

ANIE	Deputy Chairmanship of the Environmental Committee
	Chairmanship of EMAS / ISO 14001 Working Group
	Membership of the Working Group on VOC Emissions
AICQ	Presidency and Secretariat of Environmental Committee
UNI/ANPA	Membership of the Working Group on EMAS Guidelines
milan polytechnic	Membership of the Club of Companies for Eco-Efficiency
bocconi univ.	Membership of IEFE (Istituto di Economia delle Fonti di Energia e Ambiente)
KYOTO CLUB	Membership
INTERSIND	Membership of the Environmental and Safety Working Group

Usa

AIAS	Membership
IEA	Chairmanship of Strategic Environmental Management Committee
AEA	Membership of Air Program Team

Corporate Environmental Report

STMicroelectronics EMAS & ISO Highlights
Appendix 6

MALTA
First for EMAS outside EU (November 1995)

SINGAPORE
First for EMAS (December 1995) and third for ISO 14401

RANCHO BERNARDO (CA, USA)
First in the USA for EMAS (December 1995) and ISO 14001 (February 1996)

CROLLES, RENNES, TOURS, ROUSSET (FRANCE)
Second, third sixth and seventh for EMAS

MUAR (MALAYSIA)
First both for EMAS (October 1996) and ISO 14001
(August 1996)

CATANIA (ITALY)
First for EMAS

CORNAREDO, AGRATE BRIANZA (ITALY)
Second and third for EMAS

AIN SEBAA (MOROCCO)
Probably first in Africa both for EMAS (July 1997) and ISO 14001
(March 1997)

SHENZHEN (CHINA)
First in China for EMAS (October 1997) and third for ISO 14001

Corporate Environmental Report

Awards and Accolades
Appendix 7

Since 1991 the Company's sites have received more than 70 awards, of which 31 were for environmental issues:

1991	Champion: Clean and Beautiful Factory Competition	Muar, Malaysia
1993	Winner: First Landscape Competition	Muar, Malaysia
	Cornucopia Award: Environmental and Health Coalition	Rancho Bernardo, California, USA
1994	Recognition: Malta Ecological Society	Kirkop, Malta
	Trophy: Best Effort, Clean Up the World Campaign	Kirkop, Malta
	Award: Ministry of the Environment	Toa Payoh, Singapore
	Charter Member: Clean Texas 2,000	Carrollton, Texas, USA
	Certificate of Merit: Recycling and Waste Reduction in the Workplace	Carrollton, Texas, USA
1995	Trophée Hélianthe: Prévention, Récuperation, Valorisation des Déchets	Saint Genis, France
	Winner: Environmental Achievement and Restoration That Help (EARTH)	Carrollton, Texas, USA
	Certificate of Merit: Recycling and Waste Reduction in the Workplace	Carrollton, Texas, USA
	Certificate of Environmental Responsibility	Carrollton, Texas, USA
	Certificate of Plastic Reuse	Carrollton, Texas, USA
	Certificate of Appreciation: Texas Lake and River Cleanup Program	Carrollton, Texas, USA
1996	Recognition: City of San Diego Environmental Services Department's Waste Reduction and Recycling Award	Rancho Bernardo, California, USA
	Recognition: Valley Forward Association	Phoenix, Arizona, USA
	Certificate of Appreciation: Texas Lake and River Cleanup Program	Carrollton, Texas, USA
	Prize: Puliamo il mondo - LEGAMBIENTE	Agrate, Italy
1997	Recognition: French Ministry of the Environment-EMAS Certificate of Registration	All ST sites in France
	Award: EPA Ozone Protection	Kirkop, Malta
1998	Prize: French Ministry of the Environment and French Chamber of Commerce prize for Gestion Environnementale	All ST sites in France
	Award and special commendation from the Jury: European Better Environmental Award for Industry in the category of Managing for Sustainable Development	All ST sites in France
	Winner: Waste Reduction Award Program (WRAP) California Environmental Protection Agency Integrated Waste Management Board	Rancho Bernardo, California, USA
	Trophy: Trophée Enterprise Environnemental Catégorie Grandes Enterprises by Enjeux-Les Echos and Price Waterhouse Coopers	All ST sites in France
1999	President Bill Clinton's letter on efforts for Greenhouse gases reduction	Addresses P. Pistorio - ST CEO
	Winner: Waste Reduction Award Program (WRAP) California Environmental Protection Agency Integrated Waste Management Board	Rancho Bernardo, California, USA
	Winner: United States Environmental Protection Agency's (EPA) Climate	All ST, Corporate
	Dow Jones Sustainability Gobal Index (DJSGI) Ranking: ST World's Leading Semiconductor Company for Sustainability	All ST, Corporate
2000	Director's Recycling Award Winner from San Diego City	Rancho Bernardo, California, USA
	Hitachi Certificate of Environmental Achievement	ST, UK
	Italian Environmental Ministry Award for EMAS registered sites	ST, Italian sites