Environmental Report 2001
Campina

Foreword

Caring for the environment? It's in our nature! At each decision we also take on board the impact on the environment. Where necessary we take appropriate measures, where feasible we try to go one step further than legislation and regulations prescribe.

The environment is not an isolated issue, but it is part and parcel of Campina's policy. That is why each decision the company takes must be able to pass the test on three aspects: economic feasibility, social feasibility and, as said before, environmental impact. This approach has proved successful in recent years. And again in this environmental reporting year 2001: the efficiency with respect to the consumption of energy and auxiliary resources improved, the emission of environmentally harmful substances decreased and the production of waste fell.

Campina spares no efforts to reduce the environmental load when processing milk and at other points in the dairy chain. In this context special attention is given to issues of dairy farming. Campina, as an international dairy co-operative, is at the forefront of this discussion.

In 2001, again progress was made in pursuing our environmental approach at the plants outside the Netherlands. The Dutch approach, based on the pillars of process control and impact measurement, is adopted by our enterprises in Belgium and Germany, to mention some in particular.

Apart from Campina's duties towards society, a sustainable development of the dairy industry is a contributing factor towards the image of our products in the marketplace. It is not just the physical quality of a product that the consumer takes into account, the way in which a certain food product is manufactured weighs heavily in the decision to buy, too.

Campina will, therefore, also in the future vigorously pursue its successful environmental policy of recent years.

At Zaltbommel, this september 2002

Drs J.J.G.M. Sanders,
Chairman of the Executive Board

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1 Campina

Campina has published environmental annual reports since 1998. The environmental report allows Campina to render account of the environmental aspects of the operations at its various plants. This year, an effort has been made to carry the environmental annual report to an even higher degree of completeness. Enjoy the read.

1.1 Campina's Profile

Campina is an international cooperative enterprise which specialises in the development, production, marketing and distribution of dairy products. Its workforce in 2001 numbered on average 7,100 employees, 50% of which being employed outside the Netherlands. Campina mainly targets the European markets with consumer products such as desserts, yoghurts and yoghurt drinks, milk, cheese and butter. Its activities are centred around the Campina and Mona brands in the Netherlands and the Landliebe brand in Germany. Outside Europe consumer products are marketed in the Middle East and the Far East.

In addition, Campina produces ingredients for the food and pharmaceutical industries in the Netherlands, Germany and the United States. These high-grade products, based on lacto-protein and lactose in particular, are sold world wide in over one hundred countries.

In 2001 Campina's turnover amounted to €3.9 billion.

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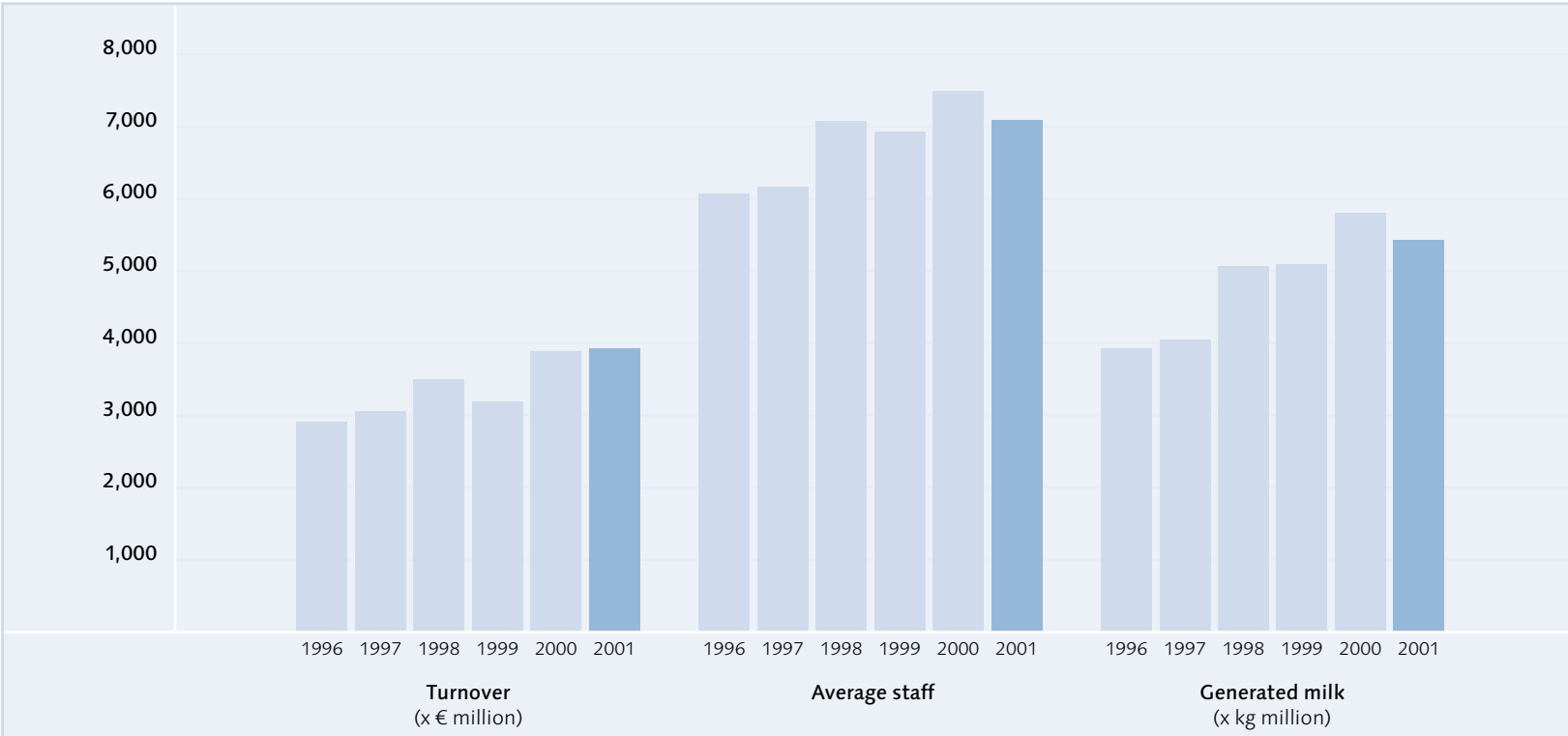


Figure 1.1 **Chart illustrating turnover, processed milk and personnel**

The above diagram shows increasing growth in the quantity of processed milk, the number of employees and the turnover. In 2001 less milk generated the same turnover, and with fewer members of staff at that.

1 *The organigram presented below outlines the position of the various groups within the Campina entity:*

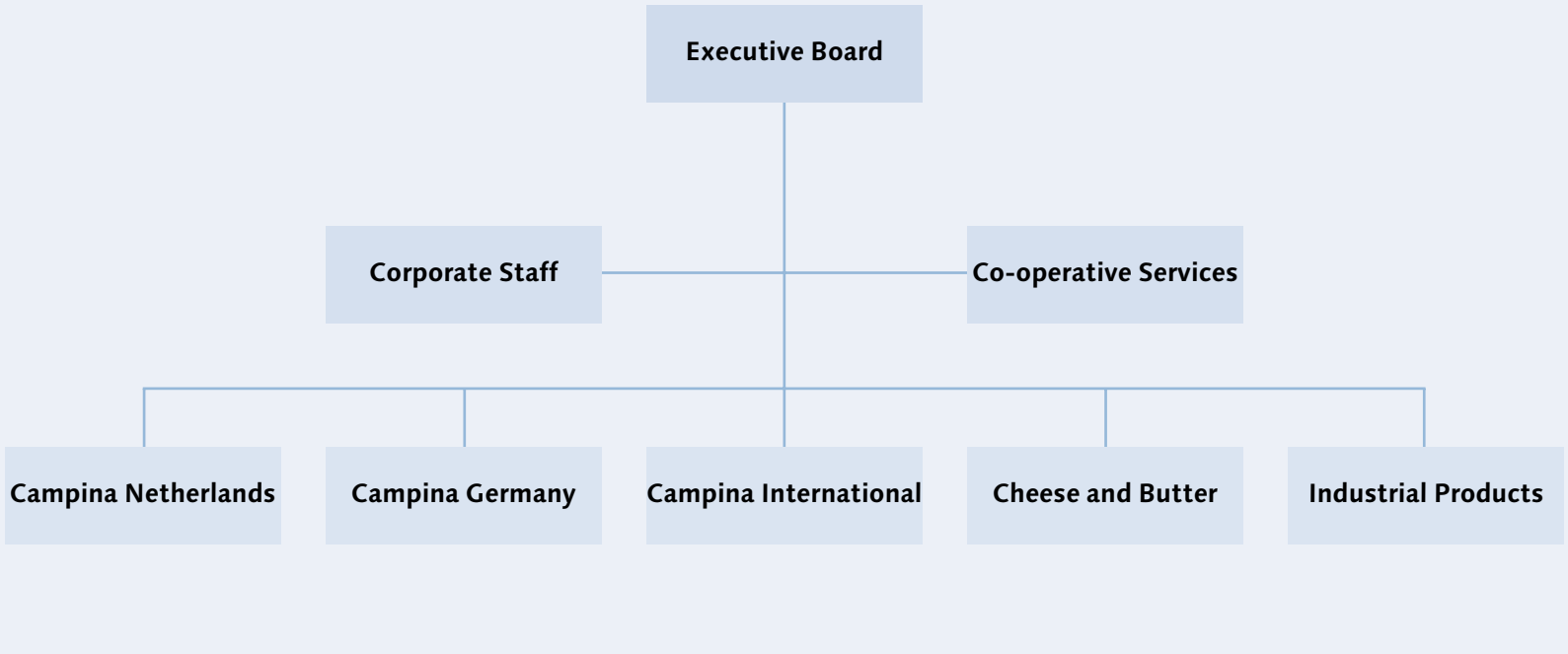


Figure 1.2 **Organigram Campina Organisation**

1 Campina carries out its operations in an organisation consisting of five groups. They are:

Campina Netherlands
Campina Netherlands produces and markets fresh and long-life liquid milk products for the Dutch market which are sold under the brand name Campina. Mona is the brand name for the indulgence dairy products (production locations: Eindhoven, Heiloo, Hilversum, Limmen, Maasdam, Rotterdam, Oud-Gastel, Woerden).

Campina Germany
Campina GmbH produces and markets a wide range of dairy products for the German and Austrian markets (production locations: Heilbronn, Cologne, Wuppertal, Prenzlau, Schefflenz, Elsterwerda).

Campina International
Campina International produces and markets consumer dairy products outside the Netherlands and Germany (production locations: Belgium: Aalter, Sleidinge; Poland: Torun, Winnica; Russia: Stupino; and there are sales offices in various countries).

Cheese & Butter
The Cheese & Butter Group focuses on the production and marketing of cheese, butter and butter oil (production locations: the Netherlands: Born, Bleskensgraaf, 's Hertogenbosch, Lutjewinkel, Rijkevoort, Tilburg; Germany: Niedermörmter, Prenzlau; Belgium: Aalter, Passendale).

Industrial Products
The Industrial Products Group comprises DMV International (DMV), Creamy Creation (cream liqueurs) and Nutrifeed (young animal foodstuffs). DMV is a leading supplier of specialised ingredients for the food and pharmaceutical industries. (production locations: the Netherlands: Veghel, Uitgeest, Rijkevoort, Tilburg; Belgium: Aalter; Germany: Nörten-Hardenberg; United States: Fraser).

1.2 Developments 2001

The most significant trends Campina witnessed in 2001 were:

- the range of products is shifting from bulk production to specialty products,
- an increase in scale of the productive capacity at the cost of the number of plants is taking place.

These factors have led to the following developments in 2001:

- the Campina Foodservice Bergeijk plant was shut down in November 2001;
- the Campina Ursem plant saw the end of its days in March 2001, the production at the Lutjewinkel location meanwhile being increased to meet the effects of the Campina Ursem closure;
- the organisation of the Mona Division is merged with the organisation of the group Campina Netherlands.
- the umbrella licence with respect to the maximum quantity of groundwater to be abstracted at the Noord-Brabant locations has been given permanent status.

2 Environmental Protection, it is in our nature

2.1 Campina's Mission

Campina adds value to milk through:

1. being an entrepreneurial co-operative
2. providing expertise in the total dairy chain
3. focusing on the consumer
4. caring for people.

which results in:

- A continuous increase of the controllable part of the milk price for our farmer-members. A financial involvement of our members to achieve the long-term objective of profitable growth. A culture which balances professionalism with a down-to-earth mentality. A sense of permanent responsibility for our nature embedded in the care society attaches to sustainability.

- Ongoing innovation of dairy-related concepts, products, technologies and processes. A drive for continual improvement of our performance, based on expertise in all disciplines.

- An increase in our market share by making brands, products and communication the link between consumer needs for dairy products and dairy nature. A unique relationship with our customers by satisfying consumer needs in the joint interests of all.

- An atmosphere of integrity and involvement in which people as individuals are offered full scope to develop their talents to the full extent of their skills and ambitions. A relationship with our farmer-members and milk suppliers which allows them to play their specific parts in the total chain of responsible dairy production.

2.2 Environmental Policy

Campina has made environmental policy a core issue of its corporate policy. It comes natural to us, for corporate activities not only have economic and social consequences but also ecological ones. Campina's environmental policy is aimed first and foremost at its own business activities, but other links in the chain also have an effect on policy making. Here are some examples: the production of milk at the dairy farms, its transportation, the production of auxiliary resources and ingredients and finally, the consumption of the products.

Knowledge of ecological issues has clearly increased in the course of time. In spite of all this it is difficult to indicate what burden on the environment within the chain is acceptable. That is why Campina has made sustainability based on permanent control and the restriction of the environmental load its preferred course. It includes a constant awareness of economic and social potentials and restrictions.

In 1992 Campina laid down the core issues of its environmental policy in an environmental policy statement. Upon close examination this environmental policy statement has still not lost any of its power of expression. It is a fact, though, that the configuration of sustainable enterprising, these last years, has been outlined more clearly.

2.3 Campina's Environmental Policy Statement

1) Environmental policy is an integral part of the policy at corporate level as well as group level.

2) Environmental protection is an issue involving the company as a whole as well as the groups. Besides, each individual employee must take their responsibility.

3) Within the framework of a healthy economic development the policy focuses on an ongoing decrease of the environmental load.

4) The standards for the environmental load have been stipulated by the government in acts, regulations and licences. They are always the minimum requirements which must be met.

5) Campina's environmental policy is grafted on a complete analysis of the business operations and their impact on the environment. The basis for the implementation of the policy is the range of activities defined by 'knowledge, control, assurance and improvement'.

6) Environmental policy and environmental protection regularly make topics for consultation between management and employees within Campina.

7) Campina seeks to attune its environmental policy with external stakeholders, such as suppliers, buyers, the authorities, employer's organisations and public interest organisations.

8) Competencies and responsibilities on environmental issues have been established clearly. This not only applies to the enterprise as a whole but also to the groups and to individual production locations. This arrangement has been made with a view to a structuralised implementation of environmental protection.

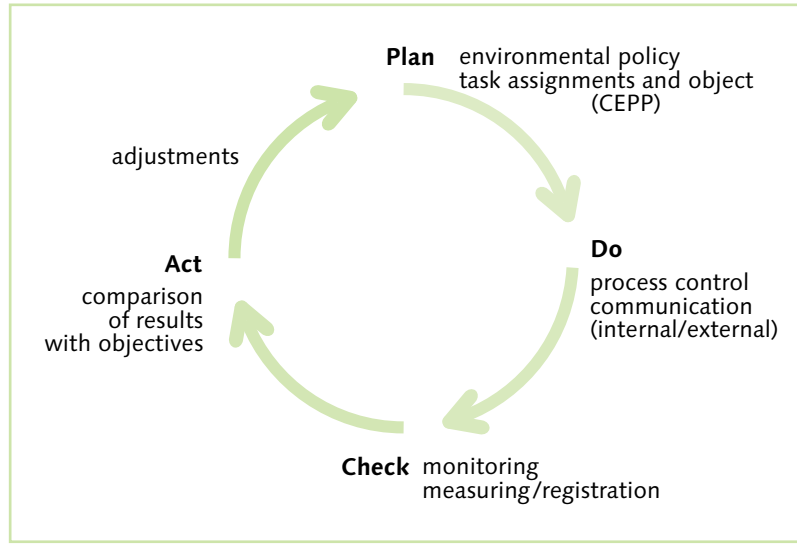
9) In relevant situations Campina observes openness towards its employees, farmer-members, buyers, committed citizens and the authorities. This openness refers to, among other things, the environmental load attributable to Campina and the actions, if any, to be taken.

10) Organisational, legal/administrative and technical/technological aspects of environmental policy and environmental protection are specifically included in the strategic investigations and annual plans. This applies to the enterprise as a whole and to its groups.

2.4 Environmental Protection

Environmental protection, should, as far as possible, constitute an integral part of the day-to-day management. In accordance with Campina policy provisions all its Dutch plants apply environmental protection programmes. These environmental protection programmes have been structured in conformity with the internationally accepted ISO 14001 standard. This standard is based on two basic principles:

- Compliance with legislation and regulations
- Ongoing improvement



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The ISO 14001 standard is structured according to the plan-do-check-act principle. Comment chapter wise:

Plan
The 'Plan' chapter lays down the issues to be focused on within the environmental protection programme. Significant resources for its implementation are the register of acts and regulations and the register of relevant environmental aspects. They form the basis on which the organisation defines its task settings, its objectives and the corresponding implementation programmes. They are linked up to the CEAP-approach (Corporate Environmental Action Plan), as laid down in the environmental protection covenant with the government.

Do
The 'Do' chapter covers the actual execution of the plan, the observance of acts and regulations and the completion of task settings and objectives. The responsibility for it rests primarily with the branches (line accountability). Campina provides the following assurance:

- Allocation of competencies, tasks and responsibilities.
- Registration of data and management of documents.
- Description of relevant processes in procedures and working instructions (process control).
- Calamity awareness and the adequate response to emergencies.

Check
The 'check' chapter refers to checking and assuring the procedure:

- Measuring the environmental load (measuring programs) and checking whether the standards set in legislation and regulation (inspections) are met
- The performance of internal and external audits
- Taking preventive and corrective measures in the case of breaches (including incidents and complaints).

Act
Annually the operation of the environmental protection programme is assessed by means of a management review. This involves matters such as:

- Compliance with legislation and regulations
- Environmental performance (environmental performance indicators)
- Progress of objectives and task settings and implementation of CEAP measures
- Complaints and incidents
- Matters for improvement resulting from audits

On the basis of the above Campina makes adjustments to the objectives and task settings, if necessary, and the proposed actions established for the year ahead.
Thus in the environmental protection programme each production location independently describes the relevant environmental aspects. In addition, local management for-

mulates the objectives aimed at reducing the environmental load (CEAP) and takes appropriate measures. Annually the implementation of the measures and the remaining environmental load are reported on, both internally and externally. This includes, among other things, the environmental annual report to be submitted to the licensing authorities.

2.4.1. Not uniform, yet observing one standard

Clear objectives in themselves do not suffice; without proper agreements as to who is responsible for the implementation of environmental policy actual results will fail to materialize. Local management is in the front line when it comes to the realisation of the policy. It stands to reason that the actual portfolio allocation with respect to the environmental approach should sit comfortably with the management structure and culture of the production location concerned. It is of great importance that the mutually so divergent Campina plants are not subject to an environmental protection programme imposed on them from above. It has, therefore, been agreed that all these plants set up their own domestic environmental protection programmes. This is subject to the condition that each plant complies with the guidelines of the ISO 14001 standard for environmental management. In short: think global, act local!
All Campina plants apply the ISO 9002 quality smanagement standard. Campina does not lay down the obligation to apply for ISO 14001 certification. The consideration whether or not to apply for certification of their environmental protection programme falls under the responsibility of a group or location's management. At the end of 2001 a total of 9 out of 14 plants in operation in the Netherlands had an ISO 14001 certified environmental protection programme. These environmental protection programmes are annually submitted to an internal and an external audit. In conformity with the 'plan-do-check-act' cycle (2.4) the strategy is to improve the programmes regularly.

2.4.2. Lasting improvement

A weighty aspect of ISO 14001-conform environmental protection is the obligation to seek continual improvement. This principle fits perfectly with Campina's environmental policy statement. The application of this principle not only bears on controlling and improving the environmental load during production, but also extends to purchasing raw materials (one of which is milk) and selling products. These past years the interest in this chain approach of environmental protection has grown strongly. In line with this, Campina has been involved in the organisation and execution of voluntary packaging agreements or covenants (1991, 1997). Another benefit of the chain approach is the opportunity to contribute to controlling the environmental load at dairy farms, an example of which is the KKM or MQC-programme (Milk Quality Chain).

2.4.3. Environmental protection at the plants abroad

Campina intends to apply the same approach to environmental protection to its plants outside Netherlands, for instance by means of uniform reporting on the environmental load at its plants. Although progress has been made this objective has as yet not been fully realised.

2.5 Development of Environmental Policy

2.5.1 Organisation of Environmental Policy

Throughout the Campina enterprise environmental protection comes under the responsibility of a plant's line manager (in most cases the plant manager, who reports to the operations managing-director of the group). In support of line management each location has appointed an officer who is in charge of the coordination of environmental matters. These environmental coordinators are controlled by the group coordinator, who, in his turn reports to the staff managing-director environmental matters at corporate level. Within the various groups there is regular consultation between the group coordinator and the location environmental coordinators. At corporate level the 'Environmental Coordinators Meeting', as it has been designated, made up of group environmental coordinators plus the staff managing-director environmental matters, convenes about six times per year.

2.5.2. Stakeholder Management

Stakeholder management takes place predominantly at location level. At each location the environmental coordinator translates his responsibility for environmental matters into actions. Problems with and complaints from neighbours, the competent authorities or other interested parties, arising from the operations at the location, are dealt with at the location itself. For this purpose there are handling procedures in place at each location.
Although there are frequent consultations with public interest organisations, there is no formal consultation platform with the various stakeholders at corporate level yet.

2.5.3 Sustainable Enterprising

2.5.3.1 General aspects

There are three points of departure on which modern, sustainable enterprising is founded. They are: People, Planet and Profit. These points of departure are inextricably bound up with one another.
Together they stand for a balance between a responsible social policy, environmental protection and a healthy financial status of the enterprise and the environment in which it operates. In this management approach the company must exercise control on four measuring points. In addition to the financial situation of his own business, these points can be defined as: the quality of the ecological structure of the

environment in which he works, the quality of the social structure of the environment in which he works and the quality of the financial structure of the environment in which he works. In this respect the term 'environment' covers more than the physical environment; the entire network within which the business operates is included.
'People' to Campina means focusing on the well-being of a company's own employees. But, indirectly, the consequences for third parties which are affected by the business operations, are taken into consideration as well. 'Planet' focuses on the consequences for the environment in general. Emissions, discharges and reclamations spring to mind here. Profit governs the important aspect of aiming at a good price for Campina's farmer-members to realise, thus creating a basis for a financially sound rural community in the territories where Campina operates.
For a number of years Campina has been seeking to develop sustainable enterprising in the food industry. The environment is one of its spearheads. In this respect it is worth mentioning that Campina is co-initiator and member of the DuVo Foundation, DuVo standing for sustainable food chain. Campina so far has not yet published an integrated report. This environmental report addresses the 'Planet' aspects and is therefore restricted to the environment.

2.5.3.2 Integral chain management

Campina is an all-out advocate of adequate control and reduction of the environmental load within the entire chain. On the basis of this investigation and the stands stakeholders (interested and affected third parties) take, the chain tries to mitigate the environmental load. This approach can be recognised in Campina's transport and packaging policy for one.
In 2001 Campina Netherlands (liquid milk) completed the pilot project Product-oriented Environmental Management. Its evaluation will show if the concept of product-oriented environmental management in the dairy industry is helpful to the further integration of environmental protection in the day-to-day management.
In 2001 Campina initiated a discussion among its farmer-members about the drive for sustainable and lasting socially acceptable dairy farming. At the heart of the discussion is the public cry for a large number of measures. It is not a foregone conclusion for all these measures, though, that they enable dairy farmers to contribute demonstrably to a reduction of the environmental load.

2.5.3.3 Food safety

As a producer of foodstuffs Campina sets increasingly rigorous requirements in the field of food safety. For the assurance of quality and safety in all links of the chain the enterprise develops advanced systems for chain management. For this

purpose HACCP-procedures have been introduced up and down the enterprise, on the basis of which the requirements for certification can be met. Within the chain there are frequent consultations with all the parties involved in order to minimise the risks. Monitoring potential calamities ('early-warning' systems) and adequate 'tracking & tracing' are the most important tools to diminish the risks of calamities.

2.5.4 Agreements and covenants

At NZO-level, NZO standing for Dutch Dairy Organisation, the Dutch dairy businesses have been cooperating for many years on environmental policy matters. Between 1992 and 1994 the NZO investigated the actual environmental load of all Dutch production locations. The findings of this investigation (Co-ordinated Emission Registration for the Dairy Industry) in 1994 laid the basis for the Integrated Environmental Task Setting (IET), which constitutes an agreement between the dairy industry and four governmental levels (Ministry of Housing, Spatial Planning and the Environment, provinces, municipalities and water boards). The NZO report also laid the foundation for the Medium-Term Energy-Saving Contract (MTC) with the Ministry for Economic Affairs.
In both the IET and the MTC long-term objectives have been agreed upon; the dairy industry, for instance, in its MTC-1 in those days accepted an objective aimed at the improvement of the energy efficiency by 20%.

Definite plans

The dairy businesses concerned translate IET and MTC objectives into specific plans for all their plants. All this has been laid down in CEAP's (corporate environmental action plans) and ESP's (energy-saving plans). The first CEAP's covered the 1994–1998 period. A second CEAP was adopted for the 1998–2002 period. All these plans under CEAP 1 and CEAP 2 were given the green light by the licensing authorities. In the evaluation of the results so far, it has appeared that the Dutch dairy industry has achieved nearly all its objectives. Only the NOx-emission reduction aimed at has not been achieved yet. As a result the authorities and the dairy industry, in 2002, have embarked on talks aimed at concluding a new IET (Integrated Environmental Task Setting) and the CEAP's (Corporate Environmental Action Plans) along with it. The first generation of ESP's (Energy-Saving Plans) has in the mean time been realised. At the end of 2001 the second MTC for the dairy industry was signed and all the Campina plants had new ESP's drawn up.

3 Environmental Aspects of Campina Activities

The production, processing and distribution of milk and milk products inevitably bring about a certain burden on the environment. This environmental load may be in the form of emissions into the atmosphere, into the water and into the soil. The environmental impact depends on the nature of the substances discharged. Examples of this impact are: intensification of the green house effect, acidification, and/or depletion of the ozon layer. The consumption of scarce auxiliary resources poses a kind of burden on the environment as well, resulting in depletion of fossil fuels and dehydration as a result of the abstraction of groundwater.

3 *Figure 3.1 presents the main milk and product flows within Campina in diagram form.*

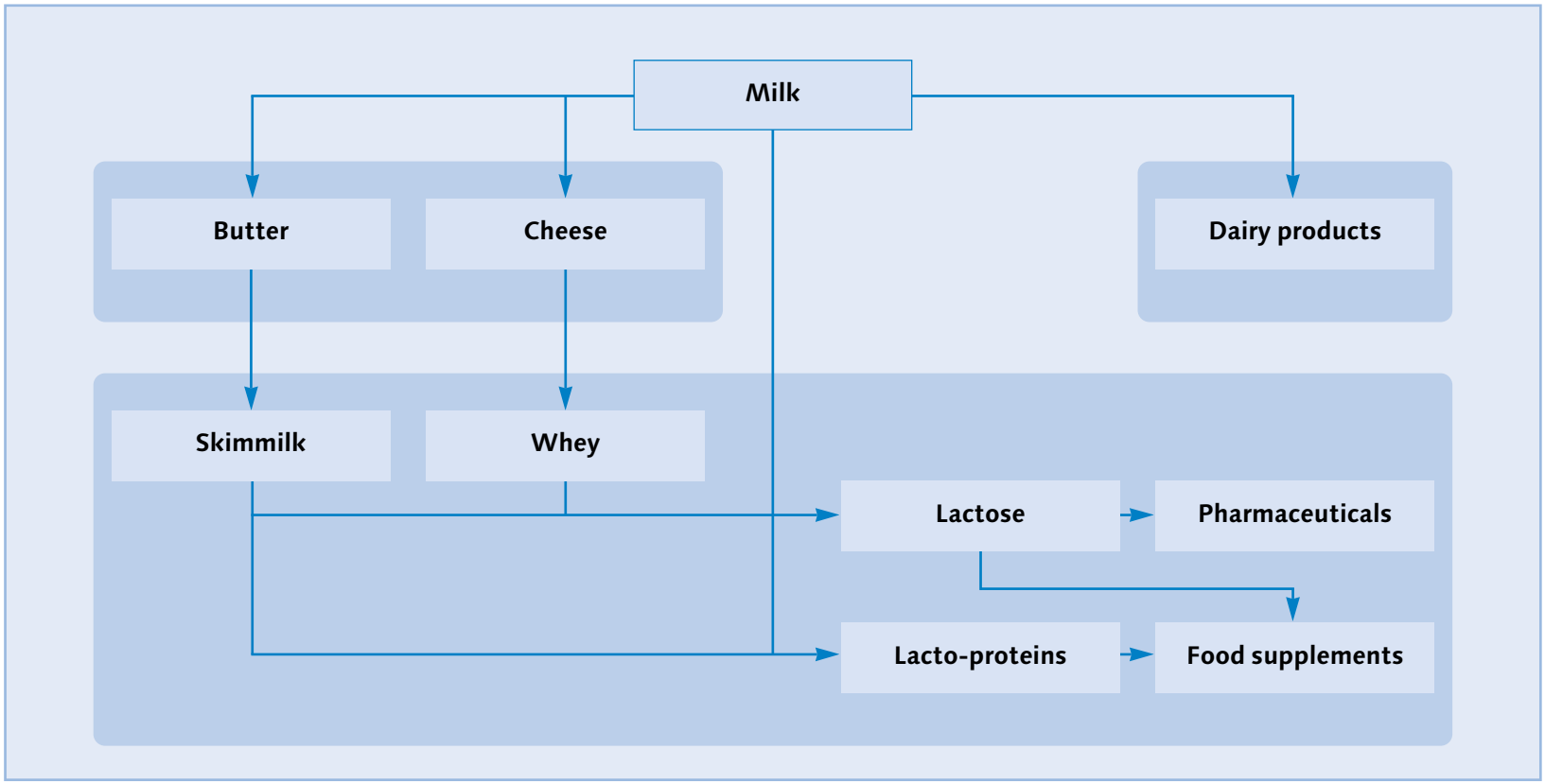


Figure 3.1 **Diagrammatic presentation of steps in the process**

3

The environmental aspects depend on the processes applied at each individual location. One of the most prominent environmental aspects applying to almost all of the plants is the consumption of energy in various ways. Apart from cleaning, the process of pasteurisation is one requiring energy that occurs at nearly all locations. Other manufacturing processes such as mixing and homogenising require considerable quantities of energy as well. At most of the milk processing plants (such as liquid milk plants) cooling, too, is a major process. A prominent share of Campina's energy consumption is chargeable to DMV International at Veghel. This plant is specialised in the processing of whey and skimmilk. Large-scale evaporation and drying processes for these base materials take place. They are very energy-intensive processes. As ever more cheese plants resort to (partly) evaporating whey the consumption of energy at these plants increases. An advantage, though, is that water is extracted from the whey and the quantity of whey offered for transportation decreases.

A second point for attention is the intake of water and the production of waste water. At all the plants the consumption of water for cleaning purposes is substantial. It is connected with the stringent quality and hygiene requirements that are maintained within the dairy industry. Cooling, too, demands a lot of water. In particular the purification process often pollutes the discharge water.

A third issue requiring attention concerns emissions into the atmosphere. The main substances emitted into the air are CO_2 and NOx. They occur in the combustion of fuels (in particular gas), necessary for heating, generating steam or for the evaporation of whey and milk. At plants where milk or whey is evaporated into powder the emission of dust can occur. In addition a slight emission of cooling agents may occur.when the cooling installations are in operation.

To a greater extent at local level there may be nuisance aspects that matter. Noise and unpleasant odours are well-known examples of such nuisance occurrences. The occurrence of noise pollution strongly depends on the location and it is caused in particular by raw materials and products being shipped in and out. Unpleasant odours occur infrequently in the dairy industry. Of late there has also been an increased focus on safety risks. The most prominent safety aspects concern the use of ammonia in cooling installations and the risk of dust explosions at the plants where whey or milk is dried into powder.

The environmental load at the Campina plants hangs together with the other links in the milk production chain. The environmental aspects of these other links within the chain are significant. Some examples are: the primary milk production at the dairy farms and the transport of milk, semifinished products and milk products. A subject such as

packaging, too, remains a matter for attention, although studies show that the contribution of packaging to the total environmental load is smaller than might have been thought at first instance. Although Campina is basically responsible for the environmental aspects which are connected with processing milk, it seeks to achieve a sustainable development in which the environmental load of the entire dairy sector is as small as possible. The above chain issues will receive the necessary attention.

The following sections further elaborate the most important environmental aspects relating to Campina. The figures presented for some of the parameters differ slightly from the figures used in previous years. As a result of advancing insight into the processes and the improvements with respect to monitoring, the figures used in previous years have been adjusted slightly.

3.1 Energy

Almost all production processes involve the consumption of energy. For Campina the processes relating to evaporation, drying, cooling, purification and pasteurisation are the most energy-intensive ones. The total energy usage at Campina in the year 2001 was 5,084,475 Gigajoule (GJ). This about equals the energy consumption in 2000 (increased by 0.2 %). Seventy-one percent of the quantity of energy used consisted of natural gas (114,774,827 m^3) and 28 % of electricity (154.627 MWh). Other energy sources, such as fuel oil and LPG, are only very sporadically used.

The efficiency in energy consumption is monitored closely. By closely monitoring the energy consumption the understanding of the processes increases, bringing along a growing ability to manage and control the energy consumption. As a result of this, at more than one production location, it became possible to improve on the energy efficiency.

On the other hand some trends have come to be noticed which give rise to higher energy consumption. Thus the hygiene standards have become more stringent, resulting in an increase in the energy consumption for purification and cooling. Also, as a result of market demand the product range has been expanded (more specialty products), leading to smaller product volumes and more frequent changeovers and cleaning operations of the facilities. This results in a less energy-efficient production.

The dairy industry has since 1994 been participating in the MTC-approach aimed at energy-efficiency improvement. During the life of the MTC-1 (1994–2000) the energy-efficiency improved up to 83.7 % (reference year 1986). In December 2001 the dairy industry joined the MTC-2. The

Ministry for Economic Affairs, in its letter of 19 April 2000, indicated that businesses in the dairy industry were not obliged to join the Covenant Benchmarking Energy-Efficiency. As part of the newly agreed MTC-2 between the Ministry of Agriculture and the dairy industry Campina has already drawn up a new (concept) energy-saving plan (ESP). In the years ahead the measures contained herein will be carried out. Energy conservation will in future years receive greater attention. The MTC-2 was signed by Campina in 2002.

In the new MTC-2 the reference year for the determination of the EEI (Energy Efficiency Index) will in principle be altered from 1989 to 1998. For the years ahead the EEI will be related to the energy consumption of 1998 (=100%). Upon the determination of the EEI the conversion efficieny for the conversion of electrical energy in power stations will be altered from 0.385 to 0.40. All this means that the EEI as from 1998 will no longer be straightforwardly comparable to the EEI of previous years. The EEI (Energy Efficiency Index, see definition on page 25) for Campina is 98.1 (reference year 1998 = 100%). This signifies an improvement relative to 2000 by 2.8%.

Figure 3.2 presents chart representing the trend since 1992. In this figure the developments under MTC-1 (1992–2000) and under MTC-2 (1998–2001) are presented side by side. It is clear that specifically in the second half of the nineties a considerable improvement took place. In 2001 the EEI stabilised (for the time being). This was, to a substantial extent, the result of a decrease of the savings potential. In addition to the measures implemented so far and to the current measures efforts will have to be made to make lasting improvements to the energy efficiency.

The trend differences between MTC-1 and MTC-2 may be traced back to the revised calculation methodology. In MTC-1 calculations were based on characteristic values for the entire Campina enterprise, which subsequently were related to the production volume per plant. In MTC-2 these specific characteristic values are determined per plant. This presents a more accurate image of the reality. Lacking accurate data for the transition period between MTC-1 and MTC-2 it is impossible to calculate a reliable value for the year 1999 in line with MTC-2. This figure is, therefore, absent in figure 3.2.

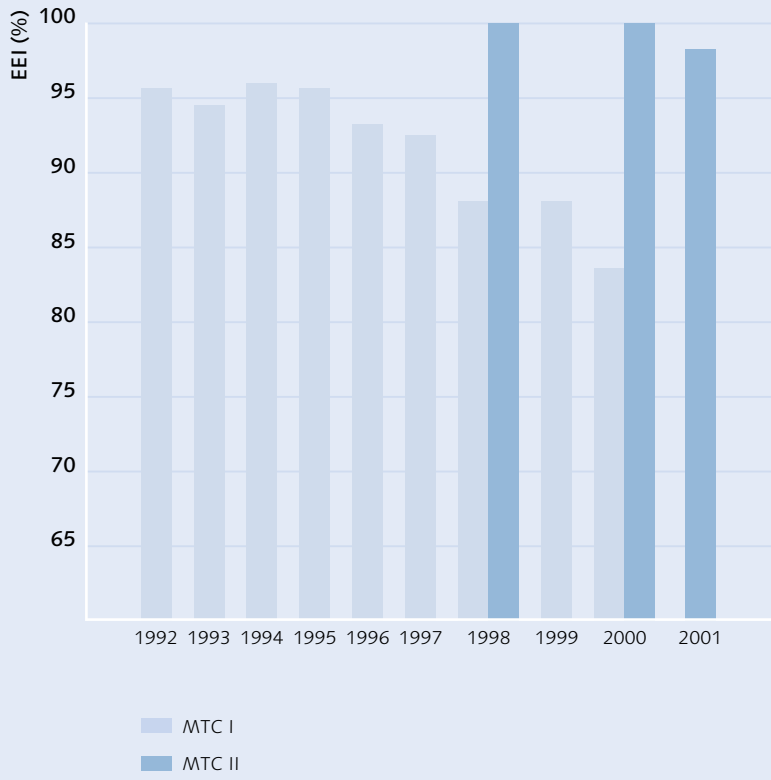


Figure 3.2 **EEI according to MTC 1 and MTC 2**

In the past decade many energy-saving measures were realised at the Campina plants. For example the combined generation of electricity and steam (total energy) and the improvement of facilities with a high energy consumption such as evaporators, cooling facilities and purification facilities. Milk processing includes various heating and cooling treatments. By craftily deploying the hot and cold streams a lot of energy was saved. Thus, by the introduction of heat exchangers, the heat from the pasteurisation of milk is used to pre-heat cold milk. In particular at new production locations energy is managed very efficiently. Campina and other dairy concerns are inclined to concentrate the production at modern, large production plants. This substantially contributes to the improvement of energy efficiency. In concentrating the production at a lower number of locations, means of production, resources, energy and water are handled more efficiently.

Within the boundaries of the existing production processes the potential for saving is diminishing. The focus increasingly shifts to organisational control of the energy consumption. By accurately measuring the energy flows, greater understanding is achieved and a sharper focus on the further improvement of the energy efficiency. Energy management is increasingly adopted at the Campina plants, often supported by an energy-monitoring program. Almost all Campina plants have, to a smaller or larger extent, introduced an energy

management system. The development of such systems is a major point for attention in the years ahead, and one to feature in the MTC-2.

An issue of importance under the MTC-2 is the so-called theme expansion. This refers to issues such as integrated chain management, sustainably managed sites, sustainable energy generation and energy-saving by means of improvements in transport and logistics. Some of these themes have already been taken up by Campina (e.g. transport); for other subjects research will be initiated.

3.2 Water

In the dairy industry the availability of clean water is of major importance. As a result of rigorous hygiene requirements cleaning operations must be carried out with great regularity. These requirements are continually being tightened up. This contributes to cleaning being one of the most prominent applications of water in the dairy industry. Another thing is that in dairy plants milk and milk products need cooling and heating. In this process water plays a role in the transfer of heat and cold (steam, hot water and ice water).

The water sources used are groundwater, tap water and surface water. Apart from that in the milk and whey production water is extracted from milk and whey by means of evaporation. This water or condensate is used to the largest possible extent for state-of-the-art applications. Surface water is practically only used for cooling purposes. The use of tap water and groundwater for cooling purposes has almost entirely come to an end. In these processes mostly groundwater is used. In some situations the amount of groundwater that may be abstracted, is insufficient for the process to be performed. In such cases tap water is let in.

Water is used very efficiently at the Campina plants. Despite tighter hygiene requirements and the market driven product diversification the amount of water used per liter of processed milk has sharply fallen. The larger liquid milk plants now use 0.9 liters of water per liter of processed milk.

A significant aspect of the successful reduction of water intake is reusing water as much as possible. This may be effected by circulating or reusing cooling water or using the condensate released in drying whey and milk. The purification process,too, has been significantly improved. At each purification cycle a large amount of residual milk product is removed from tanks, pipes, installations etc. and drained away with the waste water.

The total water consumption in 2001 amounted to approximately 15,850,000 m^3. This is nearly 3 % more than in 2000.

The quantity of groundwater abstracted was to 3,293,394 m³. This is a decrease relative to 2000 of 2 %. The objective in the Integrated Environmental Task Setting for the reduction of the use of groundwater (40 %) was realised already a number of years ago. This is visible in the following figure in which the groundwater consumption since 1995 is presented.

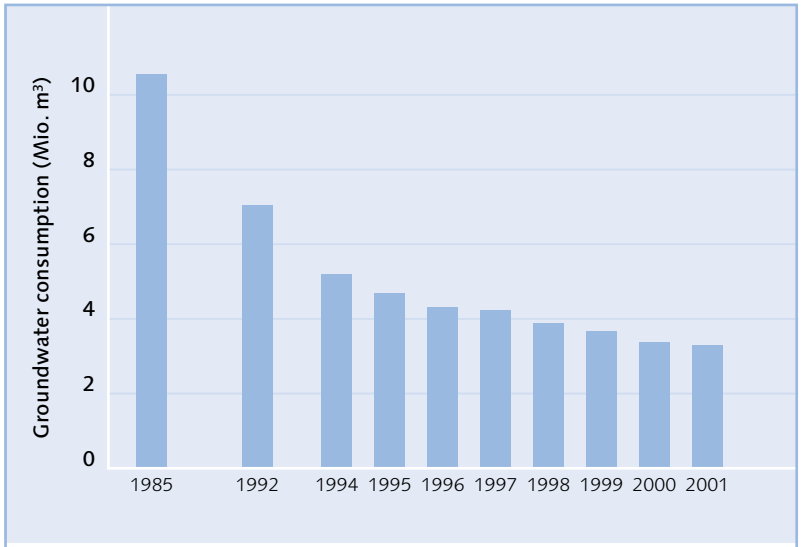


Figure 3.3 **Groundwater consumption**

The quantity of tap water used in 2001 was 1,824,395 m³. That is nearly 10 % in excess of the consumption in 2000. This increase is mainly attributable to the intake of tap water by DMV International at Veghel (+160,000 m³), something that had not happened in previous years. It is caused on the one hand by a steep increase in production and on the other hand by the intake of condensed milk and whey, as a result of which relatively less condensate from the evaporation process becomes available. The quantity of condensate produced in 2001 amounted to 2,261,171 m³. This signifies an increase of nearly 18 % relative to 2000, an increase that is largely attributable to improved reclamation and reuse of water at DMV International at Veghel (+300,000 m³). The cheese factories with whey evaporation showed an increase, too. The quantity of surface water used was 8,470,680 m³. This is almost the same as in 2000.

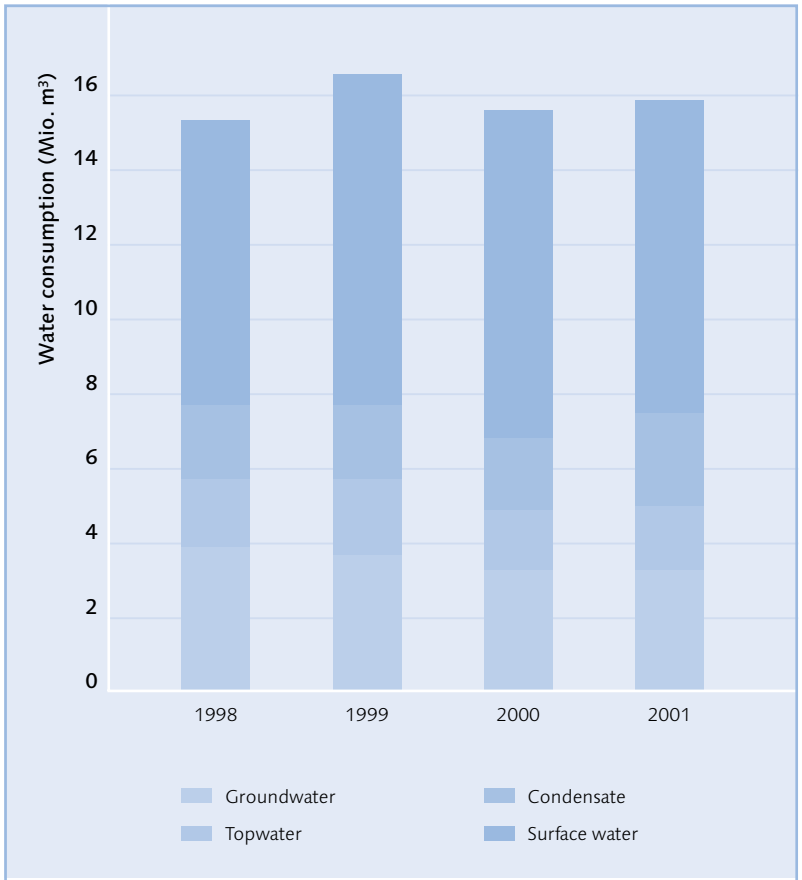


Figure 3.4 **Total water consumption**

In 2001 the so-called umbrella licence for the Noord-Brabant Campina plants was granted on a permanent basis. In this umbrella licence the total volume of groundwater which the plants concerned are allowed to abstract, is established. The joint effort to reduce the total amount was established as well.

3.3 Waste water

Processing milk in the dairy industry always generates waste water. This waste water is generated in particular in purification processes and contains milk residues (proteins, fats and sugars) and detergents.

Reducing the loss of milk has for a long time been a major issue. Through process measures this loss was brought down to less than 1 % of the milk stream. Twenty years ago this was still two or three times higher. This is quite remarkable because the hygiene and cleanliness requirements in the same period became much more rigorous. And on top of that the number of products increased sharply. These aspects necessitate very frequent cleaning operations.

It is important to optimise the cleaning procedures in order to retain as much milk as possible in the manufacturing process. Cleaning pipes, tanks and installations generally

takes place through Cleaning in Place (CIP). At the start of a cleaning operation the waste water discharged need not immediately be considered a final waste product. By introducing automatic controls measuring the composition of the water used on the basis of conductivity, the quantity of water used as well as the polluting load of the waste water was reduced. Water containing milk residues is collected separately as much as possible and used in the production of animal foodstuffs. At the design stage, too, this aspect is taken into consideration by designing simple and easy to clean installations.

Most Campina plants in the Netherlands discharge waste water on to the sewage system whether or not pre-treated, One plant has its own waste water treatment system, discharging the waste water treated on to the surface water. In 2001, at one location the water treatment system was replaced by a pre-treatment installation connected to the pressure pipeline of the wastewater treatment plant of the water board.

The overall Campina Netherlands wastewater polluting load in 2001 came up to 158,741 Inhabitant Equivalents (IE). This is about 12 % more than in the year 2000, despite the improvements in the cleaning methods implemented. This is partly due to process adjustments and product diversification, partly the result of inadequate process control at one location. To rectify this situation corrective measures were taken in 2001 and 2002.

The reduction of the polluting load in the waste water remains a prominent point for attention. For some of the plants it gave ground to establish working groups for waste water this past year. These working groups aim to keep the attention focused on the reduction of waste water and develop new measures. Especially in the field of 'good housekeeping' there is still potential for developing new measures.

The liquid milk plants in the Campina group are participating in a long-term project aimed at the reduction of the polluting load in the waste water. In this context, target values for the polluting load and the fat and protein losses are set every year. At regular intervals the values obtained are compared with the target value. In recent years the plants managed to bring the polluting load down to values far below the target values. In the year 2000 the target values were readjusted in connection with the changes in process management at some of the plants. This facilitates a more accurate comparison between the plants in future years.

3.4 Emissions into the atmosphere

The main fields in which emissions into the atmosphere occur at the Campina plants are:

- emission of carbon dioxide (intensifies the greenhouse effect)
- emission of nitrogen oxide (acidification)
- emission of fine dust
- emission of (H-)CFC's (depletion of the ozone layer).

3.4.1. Emission of carbon dioxide

The reduction of the emission of carbon dioxide (CO_2) is one of the spearheads in the strategy of the Dutch government. Such a reduction is related to the reduction of the consumption of energy. In the area of energy efficiency Campina has already been quite successful (see § 3.1). The emission of CO_2 as a result of the combustion of natural gas in 2001 came up to 202,888 tons. Relative to 2000 this signified an increase by approximately 1 %. This is attributable to an increase of the company's operations. The emission of carbon monoxide is minimal, provided the burners are accurately set and checked every year. This is an issue that receives constant attention.
The indirect CO_2 emission related to the consumption of electricity is 77,614 tons (78,454 tons in 2000) based on a conversion efficiency factor of 40 %.

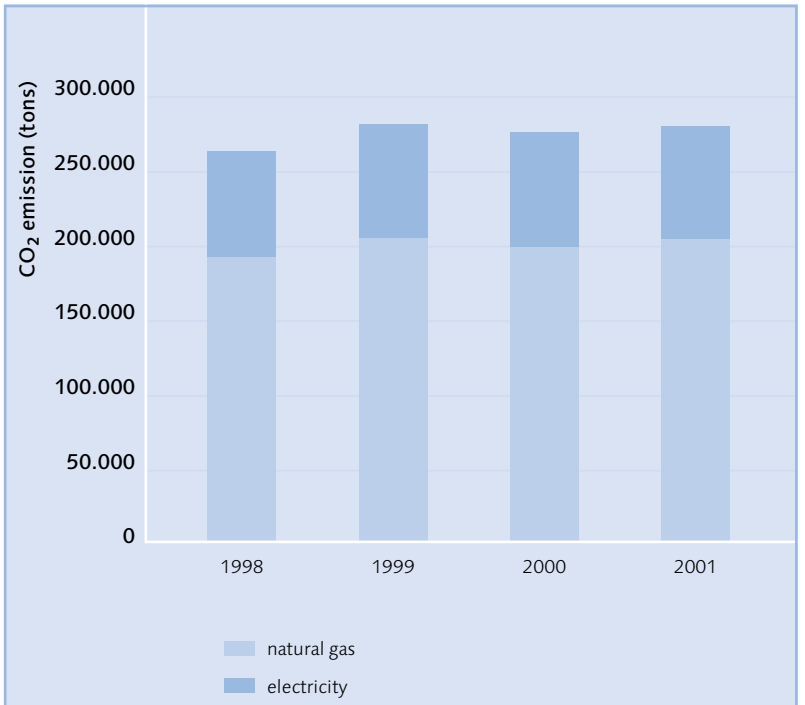


Figure 3.5 **CO_2 emission load**

3.4.2. Emission of nitrogen oxides and sulphur oxides

In the combustion of fossil fuels emissions of – among other things -carbon oxides (NOx) and (depending on the fuel) also sulphur dioxides (SO_2) occur. These substances are among those that cause acidification of the environment. The Campina plants almost exclusively use natural gas for fuel. In the past there were some oil-driven burners in use which produced considerable emissions of SO_2. The emission of SO_2 at company level,, meanwhile, is practically nil: only 1,7 tons. This is comparable with 2000.

The development of the emission of NOx at Campina since 1985 is presented in figure 3.6. Relative to 1985 a reduction of nearly 67% has been realised, the reduction compared to 1995 being 27%. The NOx emission in 2001 ran up to 191 tons, an increase of over 16% compared to 2000. This increase chiefly took place at DMV International at Veghel (+20 tons). Although the consumptive use by the gas turbines at the DMV plant does not noticeably differ from previous years, the application of different assumptions resulted in a higher annual load of NOx of approximately 20 tons. At several plants, in 2001, tightening up the legal requirements (BEES requirements) necessitated the adjustment or replacement of gas burners. This partly evened out the increase referred to herebefore.

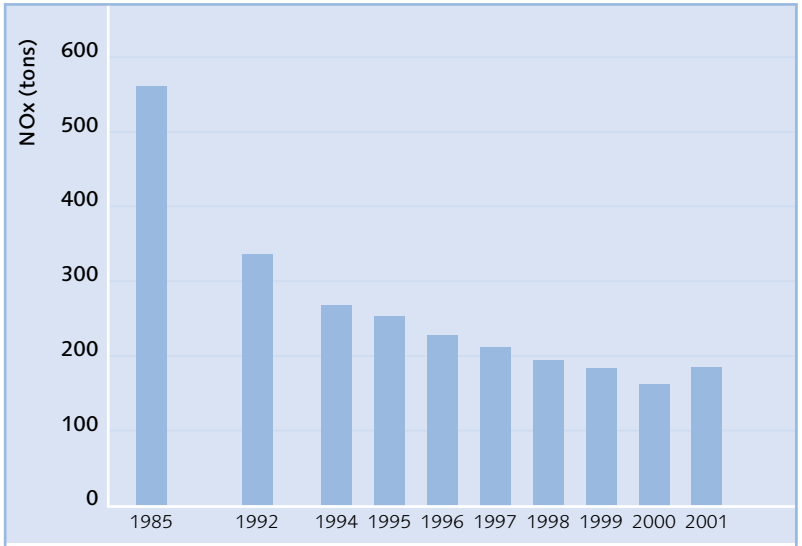


Figure 3.6 **NOx-emission (N.B.: in 2001 relative increase by alteration of calculation methodology)**

3.4.3. Emission of dust

Several of the Campina plants possess so-called powder turrets for the production of whey and milk powders. When milk and whey pulverised into powder, dust is generated which is partly emitted into the atmosphere. As a result of technical provisions such as filters and cyclones the emission

of dust has, over the past fifteen years, been brought down sharply. The pulverisation process is concentrated at a small number of plants. The emission is mainly determined by DMV International at Veghel. The emission total of dust in 2001 amounted to 2.3 tons (a decrease of 4% relative to 2000). Developments since 1992 are presented in figure 3.7.

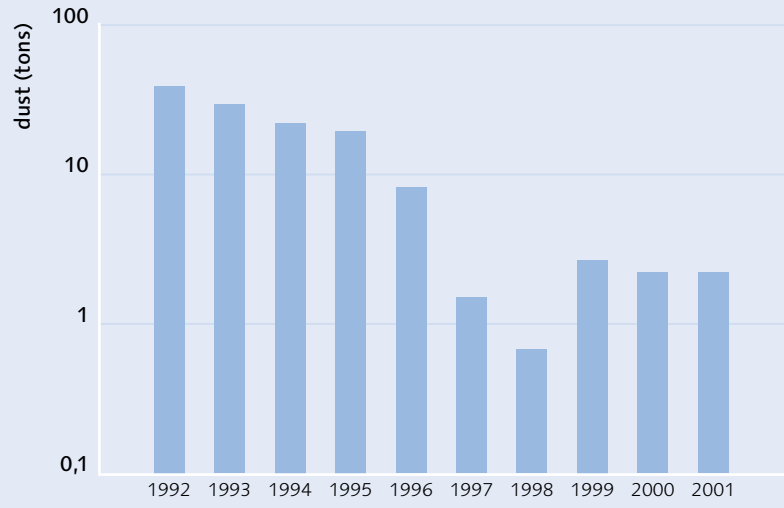


Figure 3.7 **Dust emissions (N.B.: logarithmic scale)**

The emission of dust has been brought down to such a low level that technically and economically the potential for further reduction is small. Regular dust emission has become so low as a result of the very small amounts of continuous emission, that the annual emission is can be traced back to – mainly disruptions in the process (for instance tears in filters). For this reason the inspection and maintenance programme of the dust filters has been intensified in order to signal and put right any irregularities as soon as possible.

3.4.4. Emission of (H-)CFC's

Most Campina plants have ammonia cooling facilities. At some of the sites, however, (H-)CFC is still applied in the cooling systems. The application of (H-)CFC's takes place in closed systems, but as a result of leakage loss a tiny emission may occur. This is obviously undesirable because of the ozone-layer depletive effect of these substances. The consumption of CFC's was already strongly reduced in recent years in connection with legal requirements, but over time the use of (H-)CFC's will be prohibited altogether. In 2001 the consumption of CFC's was 13 kilos (+8% relative to 2000). The consumption of (H-)CFC's ran up to 910 kilos. This was substantially less than in 2000 (-70%). The emissions in 2001 were caused by a few once-only emissions following insignificant incidents. The reduction of leakage losses from cooling facilities requires on-going attention.

3.5 Waste

Waste mainly consists of residual auxiliary substances and agents and discarded packaging material. Separation at source of harmless waste in ferrous and non-ferrous metals, wood, glass, synthetics, paper and cardboard by now takes place at all locations and is pursued with increasing effort. Apart from these there are occasional waste streams such as building and demolition rubble. Finally there are some specific waste streams such as gypsum cake and filter press cake, which are produced at some of the locations. As is generally customary, waste streams constisting of substances such as glass, metals, paper and cardboard are entirely recycled. In addition to far-reaching waste separation Campina seeks to implement environmentally friendly processing methods for all residual streams. As an example may serve the marketing of cattle feed from liquid residual streams with a high milk content.

The residual streams produced in processing milk are relatively small in quantity. Milk as a raw material is almost completely used in the final product. The share of milk products in the permanent residual stream is therefore small. The trend of increasing product diversification, however, causes waste from products to increase, particularly as a result of product changeovers. Product diversification may also lead to increased returns from the market when sell-by dates have expired.

All residual streams are registered. This facilitates a proper understanding of the size of the residual streams and the costs thus incurred. The quantity of mixed industrial waste in 2001 amounted to circa 2,700 tons. The reduction of this stream by 67 % since 1985 is the result of waste prevention and waste separation. In 2001 85 % of the waste products was collected separately. Almost all waste collected separately was recycled after disposal and reutilised. Figure 3.8 illustrates a number of separately collected waste streams.

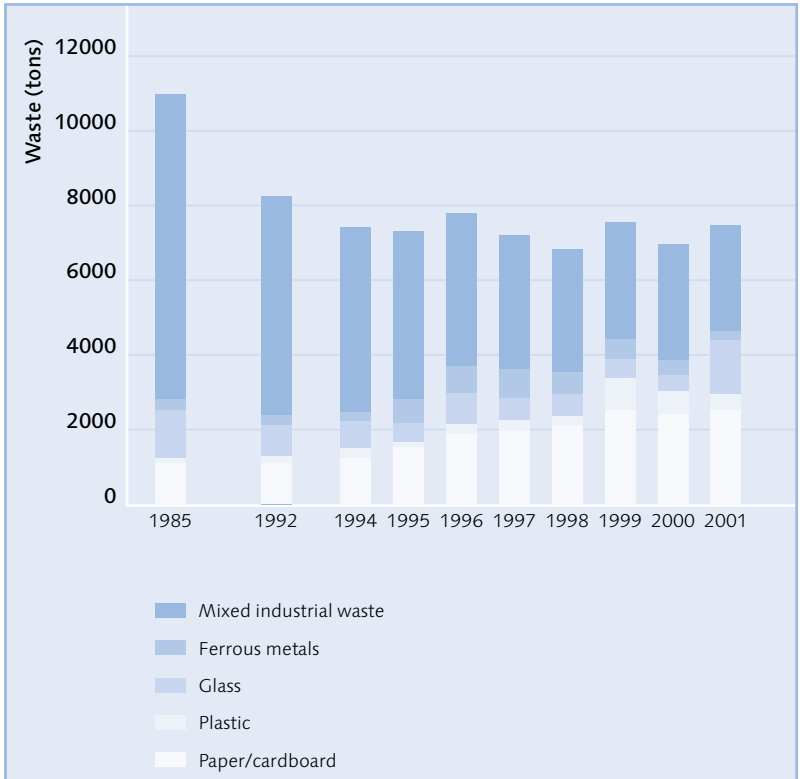


Figure 3.8 **Collected and recycled waste streams (N.B.: glass waste in 2001 higher through extra discarded glass from closure Bergeijk plant)**

The falling trend in the quantity of waste is visualised in this figure, despite the fact that it does not present all the individual waste streams. It also shows clearly that the quantity of mixed industrial waste over recent years has decreased.

The table below lists the quantities of waste substances disposed of in 2001 and their destination.

Tabel **Waste streams and destinations**

Waste stream	Quantity (tons)	Trend rel. to 2000	Designation
Ferrous metals	401	+ 11 %	Recycled
Non-ferrous metals	100	- 3 %	Recycled
Wood	328	+ 5 %	Recycled
Glass	1,399	+ 290 %	Recycled
Plastic	418	- 21 %	Recycled
Paper/cardboard (incl. label pulp)	2,656	+ 4 %	Recycled
Filter Press Cake	2,660	+ 1 %	Recycled
Gipsum Cake	1,237	- 5 %	Recycled
Mixed industrial waste	2,686	- 10 %	Incinerated/land fill
Building and demolition rubble	119	- 22 %	Recycled

The increase in the quantity of glass disposed of is specifically attributable to the removal of glass left overs found after the closure of the Bergeijk plant.
The quantity of hazardous waste is limited and over past years has remained reasonably constant. A fairly large share of this consists of oil sludge. In addition there are residues of detergents, laboratory chemicals and small chemical waste such as batteries etc. In 2001 the quantity of hazardous waste ran up to 85,6 tons, which meant an increase of 80% relative to 2000. (This increase is the result a non-annual presentation of a large quantity of other hazardous waste at one specific location.)

3.6 Soil

In recent years the state of the soil at the Campina plants was assessed by means of soil examinations. In some cases a stocktaking survey made a further investigation unnecessary. Often further investigations proved to be necessary to more closely analyse the contamination, if any, of the soil, and decide whether a clean-up would be necessary. In nine cases a decontamination operation actually proved to be needed. In the year 2000 decontamination at six locations was completed. For the remaining three cases the clean-up operations continued throughout 2001 and are being continued into 2002. In the case of groundwater decontamination, the operation is anticipated to be even a long-term one.

Summarising we may say that the soil conditions at the plants are presented in conformity with the prevailing standards. The decontamination measures are being carried out and, in addition, any measures necessary to prevent contamination in the future have been taken. All Campina plants had drawn up a soil risk document. In order to achieve this, a checklist, specifically drawn up for the dairy industry, was used to map out potential soil contamination for each plant, the methodology being based on the Dutch Directive Soil Protection (DDSP). For situations where there is a risk of emissions into the soil, specific measures were developed. In many cases, though, this did not prove to be necessary. Measures considered necessary were included in the corporate environmental action plan and they will be carried out in phases.

3.7 Nuisance

Nuisance is an environmental aspect that plays a role chiefly at local level. Especially noise pollution predominates. Most plants have taken sufficient measures to combat it. Nevertheless, at a number of plants noise pollution complaints are still being received. Noise pollution is mainly caused when raw and auxiliary materials and products are being shipped in and out. In order to prevent noise pollution, for some sites the transport routes had to be redesignated. Despite the licence requirements being met, it sometimes occurs that the neighbours experience the noise as pollution.

Nuisance as a result of unpleasant odours affects only a few Campina plants. At DMV International a limited number of complaints for unpleasant odours were received. Partly, the nuisance from unpleasant odours arose when raw materials that had been in storage for – too – long were processed and a sourish odour was released.

In addition there were some process breakdowns in the buffering of the waste water. In order to prevent such unpleasant odours, the quality requirements with respect to the storage of raw materials were tightened up. To avoid the recurrence of the waste water problem, extra measures were included in the water management plan.

In the department of external safety the ammonia cooling facilities are worth mentioning. All of the eighteen plants that own such a facility and were operational at the end of 2001, comply with the prevailing CPR-13-2 standard, CPR being the Calamities Prevention Committee. The storage facilities of hazardous substances generally comply with the CPR 15-1 and CPR 15-2 directives (if applicable). Adequate arrangements have been made with the authorities concerned with respect to situations where differences occur. At the plants where whey and milk are dried, dust-explosion risks occurs. For these plants a danger-zone classification is drawn up and it is determined which parameters are relevant with respect to explosion risks. Subsequently, an evaluation

as to which additional control measures are necessary, is made. The implementation of such measures, if any, will take place in the years ahead.

3.8 Pollution at Campina production locations abroad

Over the past decade Campina has taken over or founded several production locations in Belgium, Germany, Poland, Russia and the United States. These factories, like the Dutch Campina plants, process milk into various products such as liquid milk, desserts, cheese and ingredients for the food industry. Prior to the take-over of a plant, Campina always checks whether the required licences and licence conditions are complete and complied with. In a number of situations the discharge of waste water appeared to be a problem. At five different locations purification facilities for waste water had to be built. Thus Campina Germany built a large plant which purifies the waste water in two stages (anaerobic and aerobic). After such treatment the water is sufficiently clean for discharge on to the surface water. In Poland, in conjunction with the local authorities, a small plant was developed for processing waste water from both the factory and the local community. Thanks to this public-private co-operation the water quality of the local river is back at an acceptable level.

The responsibility for tackling the environmental matters at these plants abroad rests with the local management, just as in the Netherlands. In the medium term the approach of environmental matters at these factories will have to be similar to the approach at the Dutch locations. As a result of the participation of the groups concerned (i.e. Campina Germany and Campina International) in the Environmental Co-ordinators Meeting (the regular consultation platform of the group environmental co-ordinators) the required knowledge and the experience gained in the Netherlands is disseminated. Campina's foreign businesses, too, are developing an environmental protection programme with a view to control and mitigation of the environmental load. It is anticipated that in the 2002–2004 period at all Campina businesses abroad this management system will be brought up to ISO 14001 level. A major feature is that uniform measurement and registration systems are used for determining the top environmental load or the top pollutive activities respectively. The benchmarking to be realised in this way will help formulate the goals for the improvement programmes at the various locations. The uniform measurement and registration systems will contribute to the environmental load of the foreign plants to be integrated into the reportage on the environmental load in the corporate environmental annual report.

The majority of the Campina plants are subject to the same environmental impact aspects as the Dutch plants, as described in § 3.1–3.7. In adition to the focus on and approach of the reduction of the polluting load of waste water, these plants at the moment pay a lot of attention to energy efficiency, the consumption of water and external safety. At one German Campina plant, for instance, a medium-term project was realised, aimed at the recycling of heat and water. So, in the past year again, some sub-projects were carried out, such as the construction of a secondary water circuit. At this location a significant reduction of the environmental load was achieved when, rather than obtaining steam from the in-house steam-generating plant, the decision was made to obtain steam from the electricity plant on the other side of the local river. In the meantime talks are being held with this electricity plant about using purified waste water from the Campina plant and the possibility of incinerating sludge from the Campina waste water purification facility. About 5%, still, of the steam demand is met by steam generated by the combustion of biogas from the anaerobic units of the waste water purification facility. At this location, management, too, was successful in having waste broken down for the larger part into recyclable fractions. In the past year a start was made with the structuralisation of environmental protection, aimed at achieving ISO 14001 certification for this location in 2003.

Similar projects were or will be started at other Campina plants in Germany. In the Belgian plants, too, projects were carried out in these areas. Waste separation here also resulted in a considerable reduction of final waste. A water-saving project was carried out and systematic attention was given to the reduction of the polluting load of the waste water. And for the purpose of reducing fine dust emissions from the powder turrets, work is underway for the installation of filters in each of the turrets.

3.9 Transport

The collection of milk at the farmer-members' farms and the distribution of the various products entail huge transport efforts. In the Netherlands alone around 50 million transport kilometers are being travelled each year at Campina's orders. It goes without saying that these transport activities have an adverse impact on the environment.

As part of the 'Transaction/modal shift' Campina developed a medium-term programme with respect to transportation efficiency. Although it was not feasible to carry out all the plans involved in the medium-term programmes, quite remarkable results were obtained. In years past 4.9 million transportation kilometers were saved. That adds up to 10% of the total. These savings were realised in conjunction with

the Ministry of Transport, Public Works and Water Management and the EVO organisation (logistics advisory organisation). Campina achieves the savings on the kilometers travelled both in the collection of milk at the farms and in the delivery of 'fresh daily' dairy products. In addition, a considerable reduction was realised through transport in sea containers over water instead of over the road.

Less transportation generates environmental gain and at the same time helps Campina save on expenses.

3.10 Packaging

After milk and milk products have been consumed the pack is all that is left; practically always it lands in the same container as other waste items. The efforts to reduce the amount of packaging waste have over the years received a lot of attention. Strikingly, the approach of this problem differs from country to country. In the Netherlands there is a covenant in the conclusion of which trade and industry agreed to reduce the amount of packaging and stimulate the recycling of discarded packs. Germany set up a system for the separate collection of used packs (DSD) , recycling the various materials after separation. The financial resources for this Grüne Punkt system are generated by the charge on each pack that is put on the market. In Belgium a cheaper system for separate collection of discarded packs was set up, called Fost-Plus; however, the quantity of packaging material to be collected is smaller than in Germany. Recent research ordered by the European Commission proves that the effectiveness of the two systems is more or less the same, in contrast, though with the accompanying costs. In particular the Dutch approach scores well when the financial side is taken into consideration.

In the Netherlands, in 2001, Campina used more packaging material than in 2000 (42,410 tons in 2001, 40,500 tons in 2000). This is primarily to be blamed on the use of smaller packaging units. With sales being the same (tons/year) this results in an increased use of packaging material. In 2001 a number of relatively small prevention projects were carried through such as:

- stimulating reutilisation of packaging by cutting down on the use of once-only pallets;
- reducing packaging waste by bringing down the quantity of aluminium used in butter wrappers;
- decreasing the quantity of packaging material in the distribution of cheeses by, wherever possible, using multi-use crates or stackable trays instead of boxes.

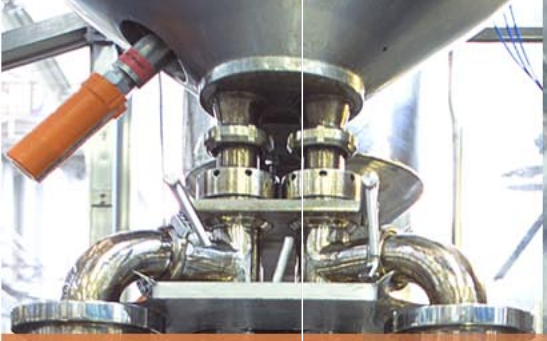
3.11 Production of milk as a raw material

A substantial part of the environmental load attributable to the entire chain of activities necessary to put a glass of milk on the table of the consumer (up to over 60 %) is produced by the dairy farms and their suppliers. This includes such things as the consumption of energy for the production of concentrated feed and chemical fertilizer, nitrate and phosphate losses at the dairy farms, the ammonia emissions in the vicinity of dairy farms, the consumption of water and the emissions of CH4 by ruminating cows.

These past years there have been many initiatives aimed at a better control and reduction of this form of environmental load. Apart from government measures in legislation and regulations, the many initiatives taken by the joint efforts of agricultural industry organisations, the authorities and research institutions to find ways of tackling the problems, deserve mention here. Examples worth mentioning are 'the Marke', the 'Pilot Farms' project and the 'Cows and Opportunities' project. In this connection the research into potential solutions is of equal importance as the implementation of such solutions.

A number of years ago at joint Dutch Dairy Organisation and Confederation of Agriculture and Horticulture level, Campina took the initiative to seek an intergrated approach of the environmental aspects of dairy farming. First and foremost the possibilities to arrive at a covenant between the agricultural industry, the government and the public interest organisations was explored. Although the parties were to a large extent in agreement as to the targets to be pursued and the approach to be taken, it never got as far as signing a covenant.

As the reports in the scope of the so-called Environmental Balance and in the context of the fertilizers policy show, the environmental load of dairy farming has already been reduced considerably. Yet further steps will have to be taken. That is why Campina continued the development of an integrated approach both at corporate level and at DDO-level. With this in mind frequent consultations were held between dairy farmers and researchers involved in policy development. It is anticipated that in 2002 this approach will lead to one concrete project (Tackling ammonia emissions along the feeding trail) at least.



4 Future developments

4.1 The way to a sustainable dairy production chain

Care for sustainability values is prominent in Campina's mission statement. As carrier of the Campina brand with the adage "It's in our nature", Campina aims to work for the assurance of the sustainability of the dairy production chain, in particular paying attention to nature and to the environmental aspects of the production, processing and distribution of milk. Tackling the environmental load in the entire production chain is one of the foundation stones of the dedication to sustainability. Also in the years ahead Campina intends to focus on the environmental aspects of dairy farming, milk processing at the dairy plant, transport and distribution as well as the production, use and disposal of packs. In this context two aspects will be given particular attention. the environmental load in the vicinity of dairy farms and the approach in the plants outside the Netherlands.

4.2 Product-centred environmental protection versus integrated chain approach

Both in the Netherlands (Products Policy) and at EU-level (IPP: Integrated Product Policy) the possibility of taking the product as the focus for environmental policy, is contemplated. Campina thinks that, in a product group such as the dairy industry, this product-centred approach is not the best possible approach. All dairy products originate in one and the same milk flow, the milk produced by cows. An integrated approach aimed at all the products and based on a complete chain approach will make it possible to reduce the total environmental load to a lower level than a product-centred approach. Plans for Campina's future approach have, therefore, been drafted based on the consecutive links in the chain.

4.3 Milk production

Campina continues to work at an integrated approach of tackling the environmental load in dairy farming, even if it has now become clear that there will be no covenant with the government and the public interest organisations on this issue.

In 2002 at DDO-level a "sustainability"agenda for the dairy industry will be drawn up. On the basis of a scientific evaluation of the actual situation and a survey of the ideas and desires from society, Campina will draw up an inventory of the problems to be tackled. Based on this agenda Campina will, in the years ahead, outline various projects aimed at the

treatment of the problems identified. The first project is to tackle the emission of ammonia from dairy farms by means of feed composition control.

In the Netherlands MQC offers the dairy industry and the organisation of dairy farmers the possibility to enforce adjustments to their management approach aimed at strengthening sustainability. In the years to come Campina will make efforts to introduce such systems in the other countries of its territory, too (Belgium, Germany and later also Poland and Russia).

4.4 Milk processing in the Netherlands

The concept of ongoing improvement is, naturally, readily applicable to tackling the environmental load at the milk processing plants. Meanwhile such good results have been booked on this issue that in the future the focus will increasingly be on details. In other words: the "big leap forward" was already made at an earlier stage. This is shown, eg by the corporate environmental action plans (CEAP's) and energy-saving plans (ESP's) for the years ahead. It is expected that the energy-efficiency in the 2000–2004 period will improve by approximately three percent. It is of vital importance for their success that properly functioning management systems are in place.

The initiatives, too, which have been taken in recent years, such as the separation and reuse of waste streams, energy management, safety and communication will be further elaborated and implemented in the years to come. On the one hand this will be realised by an improved understanding of the critical parameters resulting from measuring and monitoring, on the other hand by taking technical and organisational measures. In this context, in 2002, the plants at Bleskensgraaf and Eindhoven will be submitted to Sustainable Energy Scans, in which the opportunities for deploying non-fossil, renewable energy carriers will be studied. There are still some plants which, in the years ahead, will have to seek ISO 14001 certification.
The present discussion on food safety compels Campina to make extra provisions for the processing of residual streams into animal feed. In some instances this may lead to an increase of the energy consumption and the waste water load. A general improvement of the efficiency will have to make up for this loss. Expansion and specialisation at the production plants will play an increasingly prominent role.

4.5 Packaging

Packaging is and remains an essential aspect of management in the dairy chain. Millions of consumers daily want to have access to quality (and often 'fresh daily') products of great

diversity. Campina is, therefore, very pleased that a third covenant on packaging has been agreed upon in the Netherlands between the authorities and the industry. Although the targets have again been tightened up, Campina is confident that the execution of this covenant will be successfully taken in hand. It cannot be expected that Campina will be able to realise a sharp reduction in the consumption of packaging material in the years to come. An increased demand for smaller packs and greater diversity will probably entirely counterbalance the various improvements which are in the pipeline. Thus, Campina expects that the use of PET bottles will increase in future years. Special attention will be given to the reduction of litter. As a partner in the 'Stichting Nederland Schoon' (the Netherlands Clean Foundation) Campina co-operates in various projects aimed at increasing consumer awareness.

4.6 Milk processing in Germany en Belgium

At the German and Belgian milk processing plants the introduction and application of environmental protection systems will be given special attention. In recent years big environmental problems have already been tackled successfully such as waste water, water consumption and energy consumption. Systematic environmental protection programmes here, too, must set the process of ongoing improvement of the environmental load in motion. Spearheads are the decrease of energy and water consumption, the reduction of waste and the polluting load in waste water and, finally, the mitigation of emissions, NOx emissions in particular.

5 List of abbreviations and definitions

CEAP	Corporate Environmental Action Plan
CIP	Cleaning In Place
COD	Chemical Oxygen Consumption
SFC	Sustainable Food Chain
ESP	Energy-Saving Plan
EEI	Energy Efficiency Index
IE	Inhabitant Equivalent (measurement of waste load in waste water)
IET	Integrated Environmental Task Setting
ISO	International Standards Organisation
NESP 3/4	National Environmental Strategy Plan 3/4
MTC (D)	Medium-Term Contract energy-saving (dairy industry)

Definition Energy Efficiency Index (EEI)

EEI_A	=	PEV_A /(product groups x SEV_B x NVP_A)x EEI_B
EEI_A	=	Energy Efficiency Index in year A
PEV_A	=	primary energy consumption in year A
SEV_B	=	specific energy consumption in reference year B per product group
NVP_A	=	volume of nett saleable product per product group in year A
EEI_B	=	Energy Efficiency Index in reference year (100 % in 1989 in accordance with MTC 1, 100% in 1998 in accordance with MTC 2)

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