



# Environmental Sustainability



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## Products

We apply a product life cycle approach in order to improve the environmental impact of our products.



## Climate change

We are committed to reducing GHG emissions by improving energy efficiency, switching to cleaner fuels and investing in renewable sources.



## Air emissions

We aim to control and reduce greenhouse gases by using efficient technologies and best practices.



## Energy savings

We are pursuing energy efficiency in our factories and increasing the amount of renewable energy we use.



## Distribution

We aim to optimise the transport and warehousing of our products to minimise greenhouse gas emissions.



## Packaging

We strive to reduce the weight and volume of the materials we use for packaging, support initiatives to recycle and use recycled materials.



## Overview

### Environmental sustainability and Creating Shared Value

**Value for Nestlé:** continuously improving environmental performance; efficient operations; reduced impacts; natural resource and cost savings; long-term availability of raw materials and water; sustainable, profitable growth.

**Value for society:** raising environmental standards; higher incomes; better standards of living; improved food security; waste reduction.

### Context and challenges

Businesses, including Nestlé, together with governments and civil society, must act to safeguard the natural resources on which we all depend.

### Goals

To achieve our ambition of producing delicious food and beverages that also have better environmental performance, we strive to continuously improve our operational efficiency and environmental impact.



Topic		Key short-term goal
<b>Water</b>	Improve our water management further and continue to use water sustainably.	To reduce water consumption and water discharges on a comparable basis by a further 10% by 2015.
<b>Climate change mitigation</b>	Target the reduction of greenhouse gas (GHG) emissions from our direct operations, with an emphasis on energy efficiency, cleaner fuel and renewable energy. Expand the roll-out of natural refrigerants.	To reduce GHG emissions on a comparable basis by 5% by 2015.
<b>Energy efficiency</b>	Pursue our energy efficiency programmes across our operations.	To achieve energy efficiency improvements of at least 5% by 2015.
<b>Biodiversity</b>	Develop and extend our systematic methodology, launched in 2011, for the assessment of biodiversity sensitivity around our operations.	To source palm oil only from sustainable sources by 2015 and to help achieve zero net deforestation by 2020.
<b>Waste and recovery</b>	Achieve zero waste and the full recovery of unavoidable by-products.	To reduce waste for disposal on a comparable basis by 5% by 2015.
<b>Compliance</b>	Extend the environmental certification programme to include our distribution facilities and R&D centres.	To achieve and maintain certification to ISO 14001 of all 461 Nestlé factories.

**Actions**

- Invested CHF 143 million in environmental improvements.
- Identified and implemented projects to improve our environmental impact by reducing water use, non-renewable energy consumption, GHG emissions, avoiding waste and improving the environmental performance of our products including packaging.
- Worked alongside suppliers to promote best practice in our supply chain.

**Performance summary**

- GHG emissions reduced by 17% since 2001.
- Water withdrawals reduced by 58% per tonne of product since 2001.
- Energy consumption reduced by 42% per tonne of product since 2001.
- Renewable energy consumption is 12% of total energy consumption.
- Water discharges reduced by 64% per tonne of product since 2001.



## Awards and recognition

- 2011 Stockholm Industry Water Award.
- 27th World Environment Center Gold Medal award for our commitment to environmental sustainability.
- Special commendation in 2010 for the “Best site management initiative in biodiversity” by the French Ministry for Sustainable Development and the French Environment and Energy National Agency (ADEME).
- Inclusion in the Dow Jones Sustainability Index; highest score in the environment section of the 2011 SAM–DJSI Indexes among food producers.
- Inclusion in the Global 500 Carbon Disclosure Leadership Index; highest score among food producers.
- Nestlé Mexico received the United Nations Development Programme award for Best Practices in the Application of Solar Water Heating installed in the Chiapa de Corzo factory.
- Nestlé UK received the Food and Drink Federation Gold Award for Community Partnership.

## Systems

- The Nestlé Policy on Environmental Sustainability sets out our principles, approach, commitments and priorities.
- The Nestlé Environmental Management System (NEMS), which has been implemented throughout the Company since 1996, sets out how the policy is implemented across Nestlé sites and markets.



## Context and challenges

Human life, sustainable development and economic activity rely on the continuing availability of natural resources including water, agricultural crops, and ecological diversity of plant and animal species.

We believe that environmental performance is a shared responsibility and requires the cooperation of all parts of society. We are determined to continue providing leadership within our sphere of influence. The following are key issues for environmental sustainability and Creating Shared Value at Nestlé:

### Water

Water is a key global issue for Nestlé, and in order to maintain our ability to meet our consumers' needs we depend on reliable access to clean water. We therefore care deeply about water and remain committed to act. This topic is covered extensively in the dedicated water section of this report.

### Population growth

The United Nations (UN) is projecting a global population, according to the high scenario, of up to 9.3 billion people in 2050. A key challenge for Nestlé is to continue providing this growing population with tasty and nutritious food and beverages while maintaining our focus on sustainability.

### Climate change

The Intergovernmental Panel on Climate Change (IPPC) has attributed rising atmospheric temperatures to an increase in the concentration of greenhouse gases (GHGs) emitted into the atmosphere through human activities (primarily burning fossil fuels and land use change).

We are committed to reducing GHG from our operations by improving energy efficiency, switching to cleaner fuels and investing in renewable sources.

### Biodiversity and natural capital

The UN Millennium Ecosystem Assessment stated that "human actions are depleting the earth's natural capital [the total of nature's resources and services] and putting such strain on the environment that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted." The UN Convention on Biological Diversity predicts a continuing decline in global biodiversity in the future, particularly in tropical regions, freshwater wetlands and oceans.

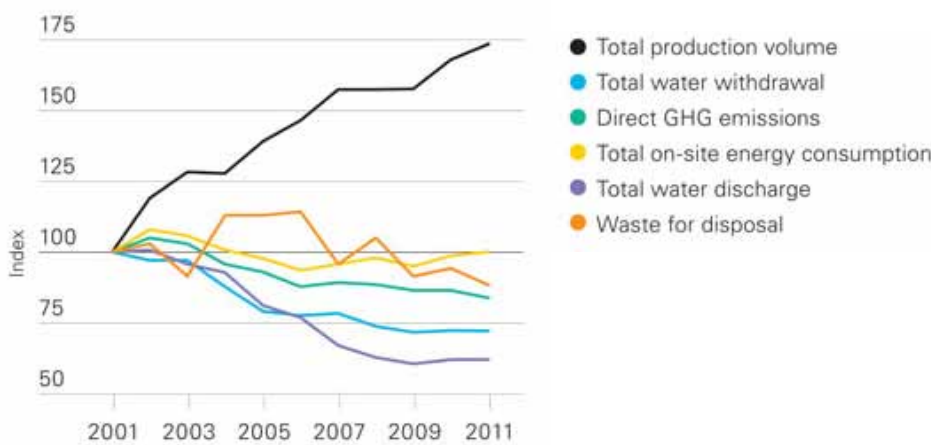
Our Company depends on biodiversity and natural capital in various ways. We employ business practices that safeguard natural capital (the goods and services from nature which are essential for human life) and we work to protect and promote biodiversity by focusing on areas such as raw material procurement, factory operations and policy interventions.

## Performance

### Our environmental performance

As part of the Nestlé Environmental Management System, we continue to implement projects that help us reduce our use of water, non-renewable energy and greenhouse gas (GHG) emissions, and improve the environmental performance of our products.

#### Resource consumption and waste generation versus production volume, 2001-2011



In addition to our long-standing focus on water and energy efficiency, we have now defined specific objectives to reduce absolute GHG emissions and waste, while demand for our products continues to rise.

Approximately 12% of the energy we use in our factories is from renewable sources in 2011, and an increasing number of factories achieved zero waste to landfill. When it is not possible to reduce waste, we reuse, recycle or at least recover energy. At 20 of our 32 *Nescafé* factories, for example, coffee grounds from the manufacturing process are used as a source of renewable energy.

We continue to optimise the weight and volume of our packaging. In 2011, our source optimisation programme saved 39 000 tonnes of packaging material by weight [KPI], worth CHF 65 million. We use materials from sustainably managed renewable resources in some of our packaging – for example, the *Ninho* cap in Brazil and Purina ONE® *beyOnd*™ bags are now made with renewable materials, and the *Vittel* bottle in France is partly made with renewable materials.

Some 413 Nestlé factories are certified to ISO 14001, the internationally recognised standard for environmental management, and we have extended the environmental certification programme to include our distribution facilities and R&D centres. We also work with our suppliers to promote and help implement more sustainable practices in our supply chains.



## Areas of progress

Our key areas of progress within environmental sustainability include:

- **Developing the scientific knowledge needed to accurately understand environmental evolution and phenomena in order to inform decision making.** We are building greater knowledge internally and externally. Our R&D work includes packaging design, and we are collaborating in pilot projects with the European Commission.
- **Helping consumers better understand and improve the environmental impacts of products.** We continuously enhance the environmental information we provide to consumers about our products, based on scientific evidence.
- **Ensuring the provision of raw materials satisfies our demanding environmental requirements.** We give preference to suppliers who continuously strive to improve efficiency and sustainability of their operations. Read about *Nespresso's* commitment to source 80% of its coffee from its AAA Sustainable Quality™ programme and Rainforest Alliance Certified™ farms by 2013; the Nestlé Cocoa Plan and the *Nescafé* plan.





## Governance and systems

### The Nestlé Policy on Environmental Sustainability and the Nestlé Environmental Management System

The Nestlé Policy on Environmental Sustainability incorporates the United Nations Global Compact's three guiding principles on environment (principles 7, 8 and 9). It defines our global environmental strategy in response to the environmental commitments made in the Nestlé Corporate Business Principles.

We implement our Policy through the Nestlé Environmental Management System (NEMS), which is fully aligned with the international standard ISO 14001:2004. The objectives of NEMS are to ensure compliance with environmental legislation and Nestlé environmental requirements, continuously improve the Company's environmental performance, enable certification of our factories to the ISO 14001 international standard, and contribute to sustainable development.

### Driving operational excellence

Our commitment to environmental sustainability is integrated into Nestlé Continuous Excellence (NCE), the key element of our strategy to drive operational efficiency and strip out waste throughout the value chain. The overriding goal of NCE is to engage employees' hearts and minds using three main principles:

- **excelling in compliance:** this includes complying with legal and strict Nestlé internal requirements at all times;
- **delighting our consumers:** Creating Shared Value and sustainability are increasingly becoming a driver for product development, and we aim to share our aims and achievements with consumers through brand and product communications; and
- **driving competitive advantage:** this includes making progress towards our ambitions for zero waste and improving water efficiency and energy efficiency.

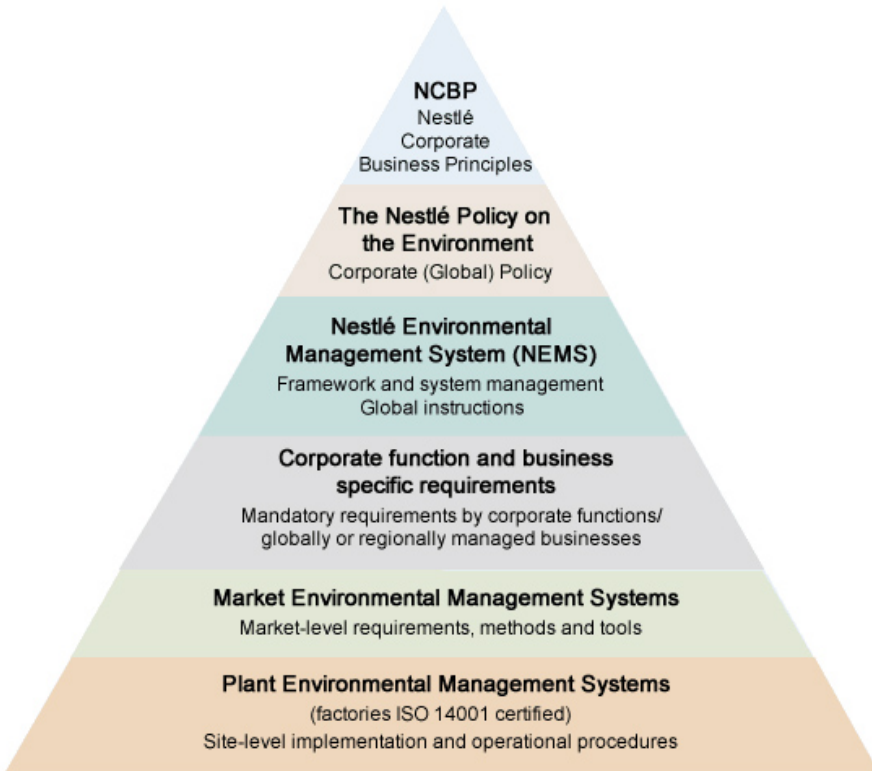
More detail on NCE and operational efficiency can be found in Our people.

### Organisational responsibility and implementation

The highest level of direct responsibility sits with José Lopez, Executive Vice President of Operations and GLOBE (Global Business Excellence). He is an Executive Board member and reports directly to Nestlé CEO, Paul Bulcke. Ultimate organisational responsibility rests with the Nestlé CEO.

Our heads of markets are accountable for implementation of the NEMS across the business, and a range of people are responsible for implementation at market and plant level; this includes management team members, market environmental officers reporting to the technical manager, and plant managers supported by plant environmental officers.

### Diagram: Implementation by Nestlé Markets and Businesses: Relationship Between Functional Levels for Environmental Management:



### Training and awareness

Nestlé provides detailed guidelines and instructions to employees on the global intranet to complement our Policy on Environmental Sustainability and the NEMS. We also regularly communicate progress, performance and good practice through the intranet and other channels, including face-to-face meetings, and employees are trained to follow procedures as part of their induction and on-the-job coaching.

Nestlé has a Creating Shared Value (CSV) Alignment Board that is chaired by the CEO, Paul Bulcke. Three sustainability groups feed into the board: the Operations Sustainability Council, chaired by Executive Vice President of Operations José Lopez; the Brands and CSV Advisory Team, chaired by Head of Marketing and Consumer Communication, Tom Buday; and the Research & Development (R&D) Sustainability Council, chaired by Chief Technology Officer, Werner Bauer. The Operations Sustainability Council, which meets monthly, aims to ensure the integration of sustainability throughout the Company, while the Brands and CSV Advisory Team guides best practice in communicating our initiatives to consumers.



### Monitoring and follow up

All Nestlé factories monitor the corporate key performance indicators (KPIs) through the Nestlé Environment and Safety Performance Tracking tool (NEST). Environmental incidents at plants are also reported through NEST, as required by the NEMS. Any major incidents are immediately reported to the Safety, Health & Environmental Sustainability Group and the appropriate senior management using the process outlined in the NEMS. Nestlé's requirements for compliance with the NEMS, and our management of non-conformities and corrective or preventative action, are aligned with ISO 14001.

The NEMS must be formally reviewed at all Nestlé business premises at least once a year.

### Performance

By the end of 2011, a total of 413 factories had achieved ISO 14001 certification. This mainly represents sites that have been part of the Nestlé Group for more than three years. Sites that are not certified are mainly recent acquisitions which are currently working towards certification. In 2011, 93 distribution facilities and five R&D centres were certified ISO14001 and we continue to extend the environmental certification programme.



## Life cycle approach

To better understand and to optimise the environmental performance of our products, we apply a life cycle approach, systematically assessing our product categories along the whole value chain through the use of Life Cycle Assessments (LCAs). In order to identify possible trade-offs between different impact categories, for instance, reducing greenhouse gas (GHG) emissions at the expense of water consumption or land occupation, we systematically assess the most significant impacts in line with the recognised ISO 14040/44 standards on LCA. We have developed an online LCA Communication tool to increase consumer awareness and help them improve their environmental performance when using our products.

### LCAs of major product categories

We have been conducting LCAs to identify the environmental impacts of our major product categories, including their packaging. This process, which considers the production of agricultural raw materials, product manufacturing, packaging, distribution, consumption and end-of-life, enables us to work with our business partners to continuously improve the environmental performance of our products.

An LCA of *Nescafé* Classic, for example – including a comparison with drip-filter coffee, as published in the *Journal of Cleaner Production* – found that approximately 50% of total energy use occurs during consumption. The study also showed that overall, *Nescafé* Classic uses about half the energy, emits approximately half the GHG and consumes around two-thirds of the water of drip-filter coffee.

The study contributed to the *Nescafé* Plan, which focuses on three areas: responsible farming, responsible production and responsible consumption.

Nestlé has also used LCAs to develop its Creating Shared Value (CSV) and environmental sustainability strategy for the Prepared Dishes and Cooking Aids Strategic Business Unit. According to the LCAs of six representative products, sourcing (farming and transport to factories) has the most significant environmental impact, followed by distribution in the Frozen Food category and consumer use in the Ambient category, which covers grocery products stored at room temperature. Waste has been identified as a key focus area.



## Key objectives

Based on the LCA findings, our objectives include:

- promote the roll-out of impact assessments to identify key contributors at a local level, with the aim of improving our total performance;
- reduce waste and water usage across the whole value chain;
- promote sourcing based on the selection of the best suppliers, helping them to develop the best agricultural practices, making the right ingredient selections, providing the best quality and promoting locally grown products as part of our social responsibility, provided it also brings an environmental advantage;
- optimise our packaging and use the Packaging Impact Quick Evaluation Tool (PIQET) to help select better alternatives; and
- improve the environmental impacts of distribution through transport optimisation and the promotion of best supply chain networks.

Our ambition is to further assess the environmental performance of our products and identify ways by which we, our broader supply chain and our consumers, can contribute to a better environment.

### Improvement in *Nescafé Dolce Gusto*

An LCA helped us to identify areas of improvement in *Nescafé Dolce Gusto*. By implementing the new eco-mode (auto standby after 20 minutes), our new machine range, Melody, has improved its environmental performance (per 120 ml cup and compared to the first model launched in 2006) as follows:

- GHG emissions – CO<sub>2</sub> equivalent emissions reduced by 32%;
- non renewable primary energy – use of fossil fuels reduced by 41%; and
- water use – reduced by 25%.



## Building scientific knowledge

Nestlé continues to develop in-house scientific expertise in environmental assessment at our Nestlé Research Centre. This builds capacity throughout the Nestlé R&D network and supports the provision of reliable information to our business decision makers.

We also actively collaborate with stakeholders, including civil society and governments, to embed sustainable consumption and production into the food chain.

Nestlé was selected by the European Commission (EC) to participate in the testing of the EC product environmental footprint methodology, and in 2011 took part in the pilot scheme with *Nespresso*, *Nescafé*, *Vittel*, *Kitkat* and *Purina Gourmet*.

The results of the pilots will be used by the EC with the aim of achieving a harmonised methodology at EU level and beyond for the environmental assessment of products. This work reinforces our current efforts in the European Round Table on Food Sustainable Consumption and Production, which we co-chair.

## Applying eco-design

### Assessing our products

To systematically optimise the environmental performance of our products, we use a worldwide Packaging Impact Quick Evaluation Tool (PIQET) and the Global Environmental Footprint (GEF) tool for bottled water, which is ISO 14064-1 and ISO 14040/44 certified.

Nestlé has also started developing Eco-D, a multi-criteria eco-design tool that covers both packaging and ingredients in all product categories, partnering with recognised Life Cycle Assessment (LCA) scientists and experts, as an extension of PIQET. Eco-D takes into account the entire life cycle of our products, using environmental indicators such as climate change, land use, ecosystem quality, mineral and non-renewable resources and water consumption.

Both Eco-D and the GEF tool are certified to ISO standards on LCA.

### Optimising packaging at design stage

PIQET was used to improve the environmental performance of the packaging for our *Crunch* and *Galak* chocolate in Italy. The new packaging, which is more easy to recycle, has resulted in an annual saving of €160 000.

The diagram below illustrates the environmental performance improvements achieved with the new packaging compared to the old packaging:



### Key challenges

The quality of LCAs is constrained by the availability of environmental data on food ingredients. We intend to finance the development of an environmental food ingredients database, to enable us to obtain more accurate information. We also encourage the development of public databases by governments, such as the database currently provided by the French Agency for Environment and Energy Management, ADEME.



Creating Shared Value at Nestlé	Nutrition	Rural development	Water	<b>Environmental sustainability</b>	Compliance	Our people
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## Communicating environmental information

### Enhancing consumer understanding

We continuously enhance the environmental information we provide to consumers about our products, based on scientific evidence. This increased transparency not only helps consumers decide what to purchase, but also enables them to reduce their environmental impact when preparing and using our products, including minimising energy and water use.

The interactive *Nescafé* Life Cycle Assessment (LCA) communication tool in France, for example, invites consumers to click on the different stages of the *Nescafé* life cycle to learn about the level and nature of impacts at each product phase. Users can also look at GHG emissions, water use or biodiversity impacts across the full product life cycle.

**The 123 Recycle** application for iPhone (above) and Android devices is the first of its kind to help people recycle waste packaging correctly.

We launched the world's first free mobile application for iPhone and Android devices to help consumers correctly dispose of, recover or recycle their packaging.

We also participate in voluntary initiatives in Europe and Thailand to provide consumers with environmental information about our products.

### Multi-stakeholder initiatives

Nestlé France and Nestlé Waters are currently participating in a national initiative, led by the French Ministry of Ecology and Sustainable Development, to communicate with French consumers about GHG emissions, water and biodiversity, particularly in relation to products such as *Vittel*, *Nescafé* and *Nespresso*.

Launched in July 2011, the results are available through the ProxiProduit mobile phone application. Nestlé France is actively promoting the pilot results of this initiative through internal communication, such as the Company intranet and employee emails, and consumer-facing channels, including websites and magazines.

The year-long project will test and evaluate different methodologies for the environmental assessment of consumer goods along their life cycles, as well as various approaches to consumer communication.

A similar test on consumer goods has been launched by the European Commission, in which Nestlé participates with *Nespresso*, *Nescafé*, *Vittel*, *KitKat* and *Purina Gourmet*.



The 123 Recycle application for iPhone (above) and Android devices is the first of its kind to help people recycle waste packaging correctly

## Together We Can

Following the success of the 2010 Together We Can campaign in the US, the *Purina* brands *Winalot* and *Felix* launched a UK version of the initiative to help educate consumers about the benefits of recycling. Supported by in-store messaging and social media, consumers were able to register their pet food can recycling rates, and we have now exceeded our target of 50 000 cans. Online resources also encouraged customers to learn more about recycling and to adopt it as a positive lifelong habit.







## Water

We report our response to the global water challenge – a key focus area of Creating Shared Value (CSV) – in a section of our CSV website dedicated to the topic.

Please go to our Water section to read about our efforts in support of the UN Global Compact CEO Water Mandate:

- Public policy
- Collective action
- Direct operations
- Supply chain
- Community engagement



**Edward Dawutey, Waste Water Treatment Plant Technician, tests treated water at our Tema factory in Ghana.**



## Climate change

We are committed to reducing greenhouse gas (GHG) emissions from our operations by improving energy efficiency, switching to cleaner fuels (from coal to gas, for example) and investing in renewable sources, such as spent coffee grounds and wood from sustainably managed forests as well as solar and wind energy.

### Risk and opportunity

Climate change is integrated into our multi-disciplinary, company-wide risk management processes. An in-depth discussion on climate change risk and opportunity is included in our 2011 Carbon Disclosure Project (CDP) submission, pages 17 to 29.

### Performance [[Link to performance section](#)]

Since 2001, we have halved the GHG emissions from our factories per tonne of product. As well as continuing our efforts in climate change mitigation by exploiting GHG emission reduction potential in our direct operations and supply chain, we acknowledge that we have an increasing role to play in society's adaptation to a changing climate.

### Our commitments

Climate change mitigation remains a key priority for us and in this respect we are committed to:

- Continuing to target the reduction of GHG emissions from direct operations. The emphasis at our factories will be on energy efficiency; renewable energy through increasing use of cleaner fuels (from coal to gas, for example); and investing in renewable sources such as spent coffee grounds, and wood from sustainably managed forests as well as solar and wind energy.
- Extending the scope of GHG reduction efforts beyond manufacturing along the value chain, including procurement, logistics, consumer product use and end-of-life.
- Identifying the reduction potential and implementing programmes for the different GHGs, particularly CO<sub>2</sub>, methane, NO<sub>x</sub> and F-Gases.
- Further reducing waste along the product life cycle.
- Implementing our strategy to tackle deforestation associated with our procurement of agricultural commodities, including protection for high carbon soils and forests.



## Partnering on climate change

In addition to schemes such as the Sustainable Agriculture Initiative, through which members engage with suppliers to help them improve their environmental performance, we also share our strategy and results via a number of leading networks.

### Carbon Disclosure Project

We have participated in the Carbon Disclosure Project (CDP) since it was founded. This year we were again included in the Global 500 Carbon Disclosure Leadership (CDL) Index for our proactive approach to climate change. In recognition of our improved performance, we received the highest score among food producers in the CDL Index 2011.

### Optimising the supply chain

Our award-winning 'Greening the Supply Chain' (GSC) programme in the Philippines, which has helped 182 business partners develop their own environmental management systems (EMS), reflects our policy of sharing knowledge and best practice.

Through the GSC, we educate business partners on using the EMS to improve environmental performance. This includes visiting them on-site to assess environmental aspects of their operations, making recommendations to improve their impacts, and keeping them updated on environmental issues, regulations, technologies and best practice through a quarterly forum.

### Prince of Wales' Corporate Leaders Group on Climate Change

Ahead of global negotiations about climate change held in Durban in December 2011, The Prince of Wales' Corporate Leaders Group on Climate Change – of which, José Lopez, our Executive Vice President, Operations and Global Business, is a member – published a statement that called for an ambitious, robust and equitable global deal on climate change, which responds credibly to the scale and urgency of the crises facing the world today.

José Lopez is a member of the advisory board of the University of Cambridge Programme for Sustainability Leadership. Nestlé continues to be a strategic partner of this programme, which, through seminars, working groups and other initiatives, helps business, government and civil society to understand and address critical global issues such as climate change, biodiversity loss and resource depletion.



### United Nations initiatives

Nestlé has contributed to the United Nations (UN) Framework Convention on Climate Change (UNFCCC) Adaptation Private Sector Initiative by providing a business case study to help raise awareness about the engagement of the private sector in this field. A database of case studies, featuring Nestlé and other companies, was launched at UNFCCC in South Africa in November 2011. It contains information about corporate adaptation activities and actions pledged under the UN Nairobi Work Plan (NWP), which helps stakeholders improve their understanding and assessment of impacts, vulnerability and adaptation to climate change.

Since 2001, Nestlé has halved the greenhouse gas emissions from its factories per tonne of product. In addition to these mitigation efforts, we are increasingly helping farmers to adapt to climate change through the *Nescafé* Plan and the Nestlé Cocoa Plan. Together these will help farmers become more resilient to increasing variability in the climate and changes in weather patterns.



## Mitigating GHG emissions

Through our energy efficiency efforts and the expansion of renewable energy use, our greenhouse gas (GHG) emissions decreased at 3.8 million tonnes of CO<sub>2</sub> equivalent (eq) [KPI] in 2011, although our production volume increased by 3.4%.

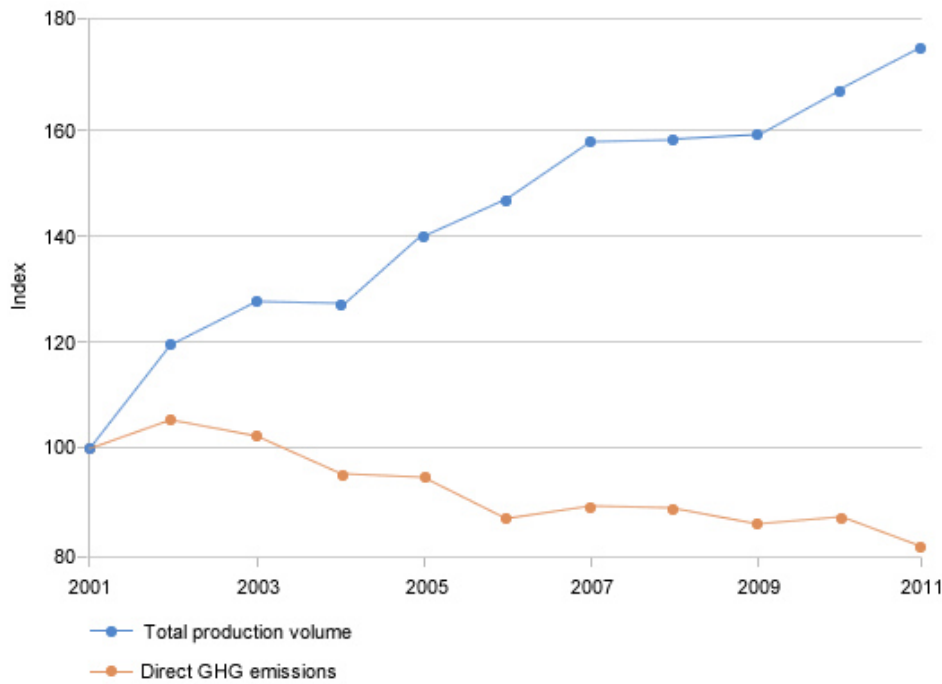
Per tonne of product, we reduced our direct GHG emissions from 91 kg of CO<sub>2</sub> eq in 2010 to 84 kg of CO<sub>2</sub> eq per tonne of product [KPI] in 2011.

This equates to a 0.8 million tonne (17.4%) reduction, or a 52% reduction per tonne of production, since 2001, during which period our production volume increased by 73%.

Thus, our indirect GHG emissions from purchased energy increased by only 2.8% to 3.2 million tonnes [KPI], which equals a 0.5% reduction per tonne of product compared to 2010.

In 2010, our third-party transportation emitted approximately 2.4 million tonnes of CO<sub>2</sub> including the transportation of products from our factories to our customers, including warehousing and distribution.

### Total production volume versus direct GHG emissions 2001–2011





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Nestlé UK has embarked on an ambitious project to use the Fawdon factory, near Newcastle, as a pilot location to test techniques before implementing them elsewhere. In addition to the factory achieving zero waste to landfill, water and energy reduction programmes are being accelerated, and over the next two years the aim is to reduce both water consumption and GHG emissions by 50%. We have already successfully piloted on-site anaerobic digestion, a process by which microorganisms break down biodegradable material in the absence of oxygen, and are now finalising plans for a full size digester. The project also involves establishing a natural garden in the grounds. The project won the Food and Drink Federation Gold Award at 2011 Community Partnership Awards.

**Key challenges**

We will estimate some of our Scope 3 GHG emissions, based on Life Cycle Assessments (LCAs) conducted on different product categories, and continue to work on the requirement of the GHG Protocol Initiative to calculate indirect GHG emissions. We engage with some of our suppliers to obtain detailed information on their emission generating activities in order to promote and help them implement more sustainable practices.



**PILOT PROJECT: Fawdon Shift Manager Kenny Baxter with daughter Caitlin at the butterfly meadow planting event.**



## Moving to natural refrigerants

The widespread use of refrigeration fluids based on fluorinated chemicals (known as 'F-gases') is increasingly problematic due to their contribution to climate change. We are therefore committed to phasing out the use of these substances, such as hydrofluorocarbons (HFCs), and replacing them with safe and more environmentally acceptable alternatives.

By switching to more energy-efficient refrigeration systems in our industrial installations, we have already reduced our electricity consumption and greenhouse gas (GHG) emissions.

### The move to natural refrigerants

We use refrigeration in manufacturing (industrial installations) and commercial applications (point of sale units). We strive for continuous improvement in the technology and management of industrial refrigeration systems. We have already pioneered the replacement of synthetic refrigerants in large-scale industrial installations with natural refrigerants such as carbon dioxide and ammonia, investing over CHF 200 million to date.

As we have now phased out more than 90% of refrigerants with high global warming and ozone depleting potential in our industrial operations, the focus has shifted to smaller refrigeration systems such as ice cream freezers. However, for such commercial applications, a universally satisfactory replacement solution does not yet exist.

The best currently available alternatives to synthetic refrigerants are hydrocarbon (HC) refrigerants such as propane and butane. These are, however, inherently flammable and explosive, and require special precautions and maintenance. We carefully design, build and operate all our refrigeration systems to ensure they are safe, and regularly look at ways to improve performance. We also work with major equipment suppliers and international organisations to continuously test and monitor different refrigerants in various applications, and are currently monitoring over 11 000 hydrocarbon ice cream freezers in seven countries.

In Switzerland, all new ice cream freezers now use HC refrigerants under controlled conditions, and we are testing a further 2 300 HC freezers in Australia, Spain, Malaysia, Chile and the United States.

Our new HC freezers are equipped with high-efficiency fans, improving the energy efficiency by 80%. We estimate that the reduction in GHG emissions from these freezers will be around 10 000 tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) over their expected 10-year lifetime.

### Exploring alternative refrigeration options

We are also intensifying our research into alternatives to hydrocarbons that are both environmentally sound and inherently safe. Currently, the two major alternatives are CO<sub>2</sub> and Stirling technology. Both options are technically proven, but not yet commercially available at the required performance level.

As far back as 2000, we converted our coffee freeze-drying factory in Hayes (UK) to an innovative CO<sub>2</sub>/ammonia cascade system, which received several prestigious awards. All of our coffee freeze-drying factories globally are now using natural refrigerants.



In a further effort to promote CO<sub>2</sub>, we have worked with our suppliers to design a system using CO<sub>2</sub> as a secondary coolant. This system is now installed at several of our cold store distribution centres where the ammonia charge is kept to a minimum and its distribution confined to the machine room.

In terms of commercial applications, CO<sub>2</sub> refrigerants work well for small-scale equipment, such as plug-in cooled vending machines. A detailed evaluation of CO<sub>2</sub> for ice cream freezers concluded that for low temperatures, this technology is not yet as efficient as required. We are therefore in discussions with suppliers, in the hope that we can accelerate their technical development and reduce power consumption.

### Phasing out HFC refrigerants

Nestlé contributed to and fully endorses a resolution by the Consumer Goods Forum, which pledges to “take action to mobilise resources within our respective businesses to begin phasing out HFC refrigerants as of 2015 and replace them with non-HFC refrigerants (natural refrigerant alternatives) where these are legally allowed and available for new purchases of point-of-sale units and large refrigeration installations”.

The Consumer Goods Forum also recognises “that barriers exist to wide-scale adoption of more climate-friendly refrigeration, namely legislative restrictions in some markets, availability, cost, safety, maintenance and servicing”.

We have committed to work to overcome those barriers by strengthening existing collaborative platforms and initiatives. We also support the Consumer Goods Forum in using its collective influence to encourage our supply base to develop natural refrigerant technologies that meet our business demand under commercially viable conditions.





## Climate change adaptation

While climate change mitigation remains our high priority (focused on greenhouse gas (GHG) emissions reduction potential in our direct operations and supply chain), we increasingly recognise we have a role to play in helping our stakeholders to adapt to climate change impacts.

We are committed to helping farmers to adapt and become more resilient, thereby enabling them to continue to grow crops. This will help Nestlé reduce the risk to our long-term supply of materials and also help to ensure food security.

We are developing a range of approaches, including taking part in public dialogue and providing expert advice and technical support at farm level to safeguard yields. We are also participating in public policy dialogue to support adaptation to changing regional patterns of agricultural production.

We see the need to act on climate adaptation as a pre-competitive issue that requires the collaboration of all parties. Therefore, we contribute at an industry level to further develop understanding and collaborative action on coffee and cocoa.

### The Nescafé Plan

The Nescafé Plan provides training to farmers on better farming practices to improve both quality and yield; conserve water, optimise fertiliser use and increase soil fertility. By 2015, Nestlé will ensure all coffee purchased from Farmer Connect (our direct purchasing programme) meets the sustainability standards of the Common Code for the Coffee Community (4C) Association. This is a voluntary code of conduct to improve efficiency, profitability, transparency and sustainability in the production, processing and trading of coffee through training and verification. It includes a module on climate mitigation and, more importantly, on adaptation. In addition, by 2020, we will procure 90 000 tonnes of green coffee compliant with Rainforest Alliance and Sustainable Agriculture Network (SAN) principles.

### Research and development

The Nestlé Research and Development (R&D) Centre in Tours, France, works with its sister R&D Centre in Abidjan, Côte d'Ivoire, as well as other research institutes, to produce drought-resistant clones and large quantities of cocoa plants that, once they reach full productivity, are stronger, less vulnerable to disease and potentially yield more than average trees in cocoa farms today.



**EDUCATION:** Oura Frédéric Kouadio, agronomist at the R&D Centre in Abidjan, left, is explaining the benefits of sustainability and better working practices.



## Improving energy efficiency

We aim to become the most efficient energy user among food manufacturers and are continuing to pursue energy efficiency in our factories, as well as increasing the amount of energy derived from renewable sources.

Based on the life cycle assessments conducted in our different product categories, our manufacturing operations are responsible for a relatively small proportion of the energy used across product value chains. However, it is the area where we can directly manage our performance to continuously improve it.

### Our performance

In 2011, our on-site energy consumption was 90 PJ [KPI], which equates to 2 GJ per tonne of product [KPI], and is a reduction of 2% compared to 2010.

On a constant production volume basis (i.e. neutralising the influence of relative production volume change at factory level), this ratio remains unchanged. Indirect energy consumption, through the purchase of electricity, heat and steam, was 70 PJ in 2011 [KPI].

Since 2001, Nestlé has maintained its energy consumption while increasing its production volume by 73%. This reflects:

- energy reduction initiatives at factory level, which form part of the continuous improvement efforts driven by Nestlé Continuous Excellence;
- changes in our product mix reflecting an overall strategy towards more value-added products; and
- changes resulting from acquisitions and divestitures.

### Target setting

As we seek to achieve energy efficiency improvements of at least 5% by 2015, we continue to investigate the setting of energy consumption targets by product category and are exploring the viability of additional lead performance indicators. As an integral part of Nestlé Continuous Excellence, we use i-nexus, a project-management system, to report any type of improvement projects, including energy savings.

Our Energy Target Setting Initiative completed 16 projects in 2011, during which we identified more than 379 projects for a total investment of about CHF 86 million. These projects have resulted in an annual energy saving of about 8 million GJ and a reduction of approximately 191 000 tonnes of CO<sub>2</sub> equivalent. Furthermore, we saved 2.6 million m<sup>3</sup> of water and CHF 41 million.

### Energy-saving equipment

The worldwide consumption of fossil fuels is constantly increasing, but the world's resources are becoming more limited and energy prices are rising. Therefore, when we look at investing in energy-saving industrial equipment, we assume that energy prices will continue to increase, and industrial equipment will continue to be used as long as the factory is operational.

Therefore, investments made in energy-saving projects and renewable energy solutions do generally provide long-term benefits, and we have both increased our investment in such schemes and extended the acceptable return on investment periods beyond our normal criteria.



## Expanding renewable energy use

### Renewable energy

Our renewable energy use accounts for 12% of the total consumption of Nestlé factories [KPI]. Spent coffee grounds represent 3.5%, wood represents 2.8%, and an estimated 5.3% can be attributed to the purchase of electrical energy generated from other renewable sources.

Below are a few examples of the different ways that we use renewable energy at our sites across the world:

- From 2012, following a power purchase agreement with CISA-GAMESA, 85% of the total electricity consumed by Nestlé factories in Mexico will be supplied by wind power. It is estimated that the project will reduce air emissions, including greenhouse gas (GHG), by more than 120 000 tonnes CO<sub>2</sub> equivalent annually.
- At our Bugalagrande factory in Colombia, a boiler fuelled by spent coffee grounds allows the recovery of energy from this biomass. This renewable fuel provides 13% of the total energy required in the factory and has 95% lower CO<sub>2</sub> emissions than the fossil fuel it replaces. We have been implementing this type of technology for the last 30 years; of its 32 coffee factories where spent grounds are a by-product, 20 are equipped with such technology.
- At our Coppa del Nonno ice cream factory in Ferentino, western Italy, we have installed a unique solar power system, which is the only one of its kind in the country to use a combination of three different solar power technologies on the same site. Supported by a smaller solar power system built in 2009, it provides all the energy needed to power the Coppa del Nonno ice cream production line.
- We have jointly developed a project to provide warm water using solar energy at our *Coffee Mate* factory in Chiapa de Corzo, Mexico. This required a total installation of 325 flat-plate collectors made in Mexico, which generate about 7% of the total energy used throughout the factory, thereby cutting the generation of CO<sub>2</sub> by around 240 tonnes. In 2011, Nestlé Group Mexico received the United Nations Development Programme award for Best Practices in the Application of Solar Water Heating.



**WIND POWER:** Nestlé employees Miguel A. Mendoza, energy champion, Antonio Nuñez L., technical manager and Enrique Mayer, chief engineer, visiting the new wind turbines that will supply Nestlé factories in Mexico.



## Air emissions

We continue to reduce environmentally adverse air emissions, such as SO<sub>x</sub> and NO<sub>x</sub>, which are sulphur and nitrogen gases arising from essential combustion processes in our factories that use fossil fuels. During the manufacturing and distribution of our products we use efficient technologies and apply best practices to control and, where possible, eliminate emissions.

The many measures we have taken include changing to alternative energy fuels, thereby reducing SO<sub>x</sub> and NO<sub>x</sub> emissions and improving energy efficiency.

Since 2001, absolute air acidification potential in our factories has decreased by more than a third, and the air acidification potential rate per tonne of product by more than half respectively. These reductions have been achieved through energy savings replacing fuels such as coal and heavy fuel oil by cleaner burning fuels such as natural gas.

### Key challenges

These improvements are constrained by the availability of cleaner fuels, such as gas, around manufacturing locations. Also, at sites we have to run diesel generators in case of electricity supply disruption.

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### Ozone-depleting substances

We are reducing our impact on the ozone layer by phasing out the use of refrigerants that are ozone depleting. These substances are primarily refrigerants in equipment used to cool or freeze products.

We have already pioneered the replacement of synthetic refrigerants in large-scale industrial installations with natural refrigerants, such as carbon dioxide and ammonia, investing over CHF 200 million to date. As we have now phased out more than 90% of refrigerants with high global warming and ozone depleting potential in our industrial operations, the focus has shifted to smaller refrigeration systems such as ice cream freezers. For full details, go to refrigerants.



## Transport and distribution

Our distribution network ensures that every day more than 100 000 tonnes of products are transported to customers from our factories and distribution centres.

### Goals and actions

Our goal is to optimise our distribution network (transport and warehousing) in order to minimise greenhouse gas (GHG) emissions. Our main focus is to ensure the most efficient use of our transport to reduce the distances travelled.

### Transportation

We aim to shift long distance transportation from the road to either rail or short-sea shipping, both of which result in significantly lower GHG emissions.

Much of our short to medium distance transportation continues to be by road, and as such we ensure that the following mitigation measures are adhered to:

- optimising truck efficiency (new engines, aerodynamic devices and eco-driving training);
- increasing the load factor to optimise transport capacity;
- avoiding empty runs; and
- exploring alternative vehicles (smaller delivery vehicles, electric engines, hybrid vehicles, alternative fuels such as liquefied petroleum gas, methane or hydrogen).

### Warehousing

We are reducing energy consumption in warehouses by using natural and low-energy lighting and improved insulation, and we are currently exploring options for on-site energy production by using solar panels in our warehouses.

### Measuring, reporting and improving environmental performance

In the last two years we have made significant progress in environmental performance reporting and are confident that the existing data allows us to estimate our overall environmental impact from transport and distribution.

### Overall emissions

In 2009, we began estimating the overall GHG emissions resulting from the transportation of products from our factories to our customers, including warehousing and distribution centres. Approximately 2.4 million tonnes of CO<sub>2</sub> equivalent (eq) were emitted in 2010.

### Transportation

According to estimations from our global markets, our global GHG effectiveness is, on average, 61 gr CO<sub>2</sub> eq per kg of product and 30 gr CO<sub>2</sub> eq per litre of bottled water. Globally, therefore, we estimated that Nestlé's GHG emissions from transportation amount to approximately 2 million tonnes in 2010.

### Warehousing

We estimate that approximately 450 000 tonnes of direct and indirect GHG emissions was generated from our warehousing in 2010.



## Key initiatives

### Alternative engines

In the UK we worked with Eddie Stobart Ltd (ESL; a logistics and warehousing company) to successfully integrate liquefied methane powered trucks into our transport operation.

Volvo, who designed and built the first heavy truck to run on liquefied methane, asked ESL to field test five trucks in the UK. In 2010, Nestlé UK and ESL established a partnership to trial three trucks dedicated to Nestlé, which entered service in mid-December 2010.

Achievements:

- 225 000 km travelled, 25,800 tonnes lifted.
- 40 275 litres diesel saved, equating to 25,400 kg of CO<sub>2</sub> equivalent.

As a result of the initiative, Nestlé UK and Eddie Stobart won the 2011 Efficient Consumer Response (ECR) Award for Sustainable Distribution at the IGD Food Industry Awards.

In Germany, Mercedes-Benz is currently testing 50 hybrid trucks, which have the potential to reduce fuel consumption and carbon dioxide emissions by 10% to 15% in short-radius distribution work. One of the trucks is being used by Nestlé Schöller for the delivery of freezer cabinets.

In 2012, Nestlé will begin testing electric trucks for our deliveries to customers.

### Changes to UK transport and distribution

In the UK we have made extensive changes to our distribution centre and transport network. Our transport operations are now in-house and we use only two regional distribution centres (Bardon and York) to deliver the full range of products. This has delivered the following results:

- 38% improved trailer fill from factory to distribution centre;
- 20% improved trailer fill from distribution centre to customer;
- Approximately 806,000 transportation kilometres saved;
- Reduction of around 640 tonnes of CO<sub>2</sub> equivalent.

### Transport shifts in Europe

In our European operations, shifting from road to rail and short-sea shipping has delivered a reduction of approximately 2400 tonnes of CO<sub>2</sub> equivalent in 2011. An additional 2500 tonnes of CO<sub>2</sub> equivalent were also saved as a result of optimising vehicle loads and sourcing.



**PARTNERSHIP:** One of three trial trucks dedicated to Nestlé as part of the partnership with Eddie Stobart Ltd.



### Warehousing energy improvements

In 2011, photovoltaic panels, which generate electricity from solar energy, were installed on the roofs of the Singen and Weiding warehouses in Germany. At both sites, around 50% more energy was produced in 2011 than consumed onsite.

There are now plans to improve the thermal insulation and review heat generation and lighting design, all of which will lead to a significant reduction in energy consumption.

The installation of LED lighting systems in warehouses in Poland and Russia has reduced energy consumption by more than 60%, with a corresponding reduction in indirect GHG emissions. Power efficient heat insulation, which has been used in the roof of a distribution centre in Kinel, Russia, now delivers yearly energy savings of more than 75 707 kWh.



## Packaging optimisation

Packaging reduces waste by protecting food products during transportation and storage, in stores and at home, and is also essential for food safety, freshness and providing consumers with nutritional information and portion guidance at the point of purchase.

### Our approach

Packaging represents a small part of the total environmental impact of food products, but Nestlé has adopted an integrated approach to packaging in its continuous improvement policy. This involves what we call a '4R' approach:

- **R**educing the weight and volume of packaging materials;
- leading in the development and use of packaging materials made from sustainably managed **R**enewable resources;
- aligning with and supporting initiatives to **R**ecycle or recover energy from used packaging, and helping to inform consumers through the use of identification and recycling symbols, and by encouraging consumers to recycle where programmes are available; and
- using **R**ecycled materials wherever it makes sense.

### Our performance

#### Packaging source optimisation

In 2011, our source optimisation programme has helped to save 39 000 tonnes of packaging material by weight [KPI], which is equivalent to CHF 65 million.

#### Recyclable packaging

We use polyethylene terephthalate (PET) for water packaging and ready to drink products in a number of countries because it is a lightweight material that is easy to recycle.

We also encourage the development of packaging recycling schemes by local authorities and other stakeholders. For example, the Together We Can tin can recycling campaign by *Purina PetCare* aims to increase recycling rates of tin cans. In the USA and Thailand, meanwhile, we have launched campaigns to encourage PET bottle recycling. We are expanding the recycling capacity of *Nespresso* capsules to 75%, while an iPhone app in Singapore – i-Sort – allows consumers to receive information on proper disposal, recovery and recycling of used packaging by scanning the product bar code.

The Purina cat litter product, *Yesterday's News*, is made from post-consumer paper and corrugated paper. The paper bag packaging was modified by changing the adhesive and the type of lacquer to improve the acceptance of the re-pulped bags in the paper recycling process. These improvements allowed the bag to be recycled as corrugated or mixed paper material.

#### Recycled materials

Nestlé uses recycled paper, cardboard, PET, glass or tin plate wherever the safety and quality of the product is not jeopardised. We are also working with paper suppliers to make improvements in the quality of recycled paper.



**RECYCLING:** Aluminium is separated from the coffee grounds of returned, used Nespresso capsules at a recycling centre.



**ADAPTATION:** Changes to the Purina cat litter product, *Yesterday's News*, allowed the bag to be recycled as corrugated or mixed paper material.





### Key challenges

There are limitations on the applications of recycled board in our packaging in order to avoid migration of residual mineral oils and the possible consequent health concerns.

### PIQET tool

Our Packaging Impact Quick Evaluation Tool (PIQET) is a streamlined multi-criteria Lifecycle Assessment (LCA) tool, which assists in the selection of the most appropriate packaging for many products. It strictly follows LCA methodology.

As part of their everyday work, 500 packaging specialists around the world are using PIQET, allowing a factual comparison of the environmental impact of different packaging choices across a range of environmental indicators. Approximately 1700 Eco Design analyses have already been completed.

### Renewable materials

We use materials from sustainably managed renewable resources in some of our packaging – for example, the *Ninho* cap in Brazil and Purina ONE® beyOnd™ bags are now made with renewable materials, and the *Vittel* bottle in France is partly made with renewable materials.

### Key challenges

In early 2011, we used Der Grüne Punkt – Duales System Deutschland GmbH (DSD) to estimate the recycling rate of different used packaging materials. This enabled us to perform an infrastructure and packaging waste management analysis at 11 Nestlé markets, representing approximately two thirds of our total turnover (see table below).

The table below shows the recycling rate by packaging material category in each of the 11 selected markets. The rates are averages and also apply to our used packaging. In 2012, we will extend this study to cover the 15 principal Nestlé markets.

Creating Shared Value at Nestlé    Nutrition    Rural development    Water    **Environmental sustainability**    Compliance    Our people

**Recycling Rate**

	Year	Paper, Board, Cardboard %	Plastic %	PET-bottle %	Glass %	Tinplate %	Aluminium %
<b>Brazil</b>	<b>2009</b>	n.s.	21%	56%	47%	49%	98%
<b>China</b>	<b>2009</b>	56%	25–30%	n.s.	> 50%	> 50%	> 95%
<b>France*</b>	<b>2009</b>	54%	22.5%		80%	111%	32%
<b>Germany</b>	<b>2009</b>	83%	83.8%**	n.s.	86%	95%	84%
<b>Italy</b>	<b>2008</b>	74%	30%	n.s.	65%	70%	58%
<b>Japan</b>	<b>2008</b>	n.s.	20%	50%	49%	89%	87%
<b>Mexico</b>	<b>2009</b>	12%	0.5%	24%	19%	71%	13%
<b>Spain*</b>	<b>2010</b>	84%	42%	n.s.	n.s.	71%	
<b>Switzerland</b>	<b>2009</b>	57%	n.s.	81%	95%	82%	91%
<b>United Kingdom</b>	<b>2008</b>	80%	24%	39%	61%	62%	35%
<b>United States</b>	<b>2009</b>	71.8%**	13.7%**	28%**	31.1%**	66.2%**	38%

**Our initiatives**

**Source optimisation**

We are adopting a more global approach to packaging source optimisation. Using data from our Globe and LEAN tools, we are accelerating improved packaging performance by identifying key areas for source optimisation. Implementing these innovative solutions will help us avoid food waste across the value chain and improve our environmental performance.

**Assessing our products**

Nestlé has started developing Eco-D, a multi-criteria eco-design tool that covers both packaging and ingredients in all product categories, partnering with recognised LCA scientists and experts, as an extension of PIQET.

Eco-D takes into account the entire life cycle of our products, using environmental indicators such as climate change, land use, ecosystem quality, mineral and non-renewable resources and water consumption. Benefiting from a user-friendly interface, Eco-D is intended for non-expert use.

**Developing packaging materials from renewable resources**

Nestlé is exploring the potential of using bio-based material made from sugar cane waste, which is collected after processing, and other plant-based materials for our product portfolio. We are also investigating the properties of a third generation of plastics made from non-food sources such as algae, cellulose and waste products. Such materials are unlikely to be available on the scale required in the short term, but our goal is to optimise our packaging through the use of renewable resources that meet our quality standards.



## Recycling@home initiative

The Recycling@home initiative has been introduced in a number of European markets to encourage the recycling of our *Nespresso* capsules.

*Nespresso* UK piloted the scheme at the end of 2010 in a few communities around London, giving *Nespresso* Club Members the chance to return their used *Nespresso* capsules to the courier when replacement capsules are delivered. *Nespresso* UK is looking to extend this programme to the whole country in 2012.

*Nespresso* Benelux (The Netherlands, Belgium and Luxembourg) launched the same concept end 2010 for all *Nespresso* Club Members of the three countries, while also proposing used capsules collection points in the *Nespresso* Boutiques and pick-up points. The recycling@home programme is free of charge for the consumers but they have to buy the specific bag (5 cents of euro per bag).

In Switzerland, there are around 2500 collection points (including *Nespresso* Boutiques and offices) where consumers can pick up capsules, and 84% of capsules sold are in an area that features a collection point.



## Bottled water packaging

PET resin is from the polyester family. The bottled water industry accounts for 9% of the global market for polyester, and as the worldwide leader Nestlé Waters' core areas of responsibility include promoting the use and recycling of PET. Recycled PET (r-PET), which saves both energy and greenhouse gas (GHG) emissions, is used in textiles, building materials, furniture, toys and bottles, but availability lags behind demand. Therefore, we do not consider its use for manufacturing bottles to be a strategic priority, although where demand exists, it can be an appropriate solution. *Levissima* in Italy, *Resource* in the United States and *Montclair* in Canada all use bottles incorporating r-PET.

### Key challenges

Globally, an estimated one-third of PET bottles are recycled, but collection remains a challenge for producers, bottlers, consumers and public authorities. National recycling rates differ significantly, but on average collection rates worldwide are continuously improving.

For now, our priority is to contribute to increasing the availability of r-PET by raising consumer awareness through labels, advertisements, websites and events, supporting public and commercial collection schemes, and working to increase collection capacity through our own initiatives and in collaboration with others. For example:

- in France, Nestlé Waters co-founded Eco-emballages, whose household packaging waste collections have increased PET recycling, as has a partnership with Der Grüne Punkt – Duales System Deutschland GmbH (DSD) in Germany;
- in 2011, we introduced a 50% recycled r-PET bottle for the *Deer Park* brand in our Baltimore and Washington DC markets in the US. The bottle features an icon to educate consumers that recycling can provide material for new bottles and other products, and we are now able to bottle nearly a quarter of our *Deer Park* volume using the new 50% r-PET packaging;
- Nestlé Waters China combined an online recycling campaign with in-store promotions;
- in the UK, BUXTON's Recycle-on-the-Go programme will provide 41 recycling points in the local community by the end of 2011; and
- we support the Canadian beverage industry in Manitoba, where an industry-funded Recycle Everywhere programme involving public and commercial recycling schemes and public education aims to transform the province's poor recycling record into the best in North America.



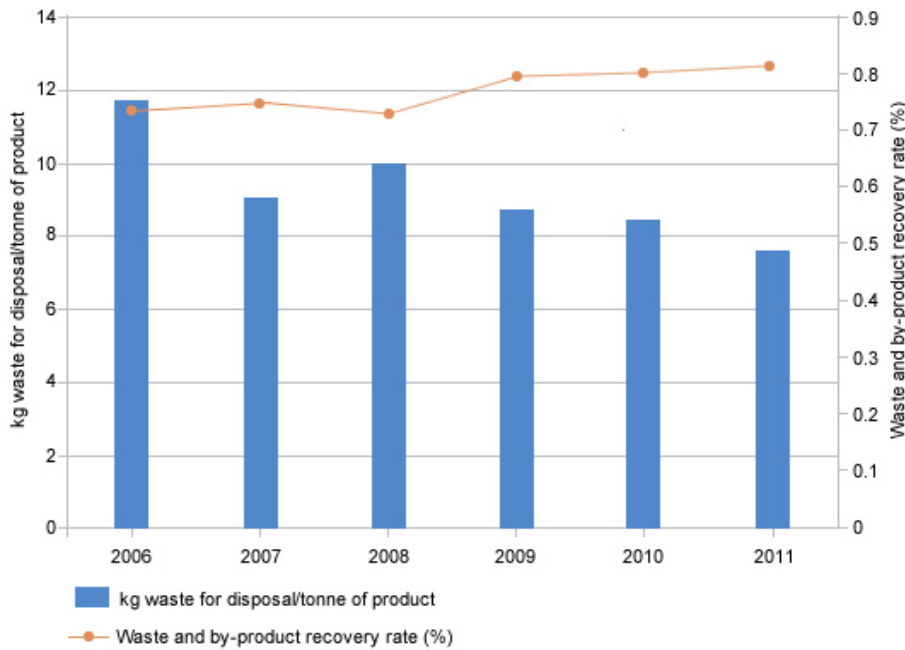
## Waste and recovery

### Our goals

Avoiding waste through the entire life cycle of our products is an important priority for Nestlé, as part of our commitment to preserve natural resources and to eliminate food wastage along the value chain. Our goal is zero waste and full recovery of unavoidable by-products.

### Our performance

Since 2001, we have reduced the waste for disposal generated in our factories by more than a third per tonne of product, and we continue to increase the rate of by-product reuse or recovery. In 2011, 22 factories generated zero waste for disposal.



### Waste for disposal

Waste is any material that arises during the manufacture or distribution stage of a product that is destined for final disposal to offsite landfill, or incineration without energy recovery. Since 2001, we have reduced more than a third of the waste for disposal per tonne of product.

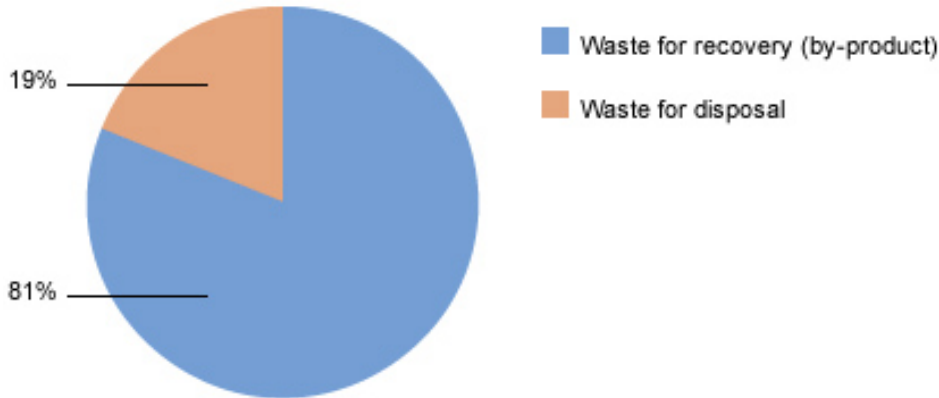
### By-product

By-product is any material generated during the manufacture of a product that leaves the factory and is destined for reuse or recovery, including recycling, composting and incineration with energy recovery. More than 80% of the waste generated in our factories is reused or recovered.



**RENEWABLE FUEL:** Discarded coconut shells are used as a source of renewable fuel for the boiler at the Nanjangud factory in India.

**Waste – recovery and disposal**



We continue to work on fine-tuning the reporting of the volume of waste for disposal and by-products by type and destination.

**Achieving zero waste to landfill**

Our Girvan site was the first factory in the UK to achieve zero waste to landfill. Factory employees use techniques similar to those used at home to separate waste into streams for recycling or reuse. The waste wood generated by the site is crushed into chips and sold on to a local company, which manufactures chipboard for use in kitchen counters. Product waste is processed for inclusion into feeds for farm animals within 50 miles of the factory. Metals, plastics, paper, cans and cardboard are processed by our contractor and traded as commodities and any remaining material that does not currently have a viable recycling option is sent for incineration, which generates electricity.

**Recovering sludge**

More than 80% of the sludge generated from Nestlé owned waste water treatment plants is recovered, and is therefore destined for incineration with energy recovery, land spreading, methanisation, composting or reuse.

**Hazardous waste**

Only 1.6% of the waste we generate can be classified, as per local regulations and standards, as hazardous waste. This includes detergents, oils, fuels and grease.

**Food waste**

According to the Food and Agriculture Organization (FAO), about one third of food produced for human consumption – approximately 1.3 billion tonnes per year – is lost or wasted. The reasons vary widely depending on the product life cycle stage. While in developing countries a large proportion of the harvest is lost on its way to the consumer due to poor farming practices, infrastructure (streets, storage, cooling), inappropriate packaging and means of transportation, in developed countries a significant share of food is wasted during manufacturing, transport, retailing and consumer use.



**ERO WASTE: 22 of our factories are already operating with zero waste for disposal.**



In developed countries, losses along the entire food product value chain range from 3% to as high as 50%. Higher losses, usually estimated at 30% to 50%, occur in developing countries. At individual consumer level, 14% to 26% of household food in the United States, and almost 27% in the UK, is wasted, with most of the food thrown away untouched and still fit for consumption.

Food waste generates wastage of resources such as water, energy, land, labour, capital and superfluous emissions. As the leading food and beverage company, we transform more than 14 million tonnes of perishable, raw materials into finished, shelf-stable products. Thus, we preserve food resources and contribute to food waste reduction. Moreover, we strive to avoid food waste all along our value chain.

To reduce food waste in agriculture and post-harvesting stages of the product life cycle, Nestlé supports farmers through capacity-building programmes, technical assistance and knowledge transfer to improve crop quality and storage. Our Responsible Sourcing Guidelines are also concentrating on reducing post-harvest losses.

### Improving environment impact in milk collection

With our system of collecting milk directly from farmers, Nestlé has succeeded in reducing milk losses to less than 0.6%. In India, for example, we have invested CHF 11 million in storage tanks, chillers and veterinary aid.

In manufacturing, we are committed to zero waste and full recovery of by-products, and 22 of our factories are already operating with zero waste for disposal. At consumer level, by offering consumers the right portion size of products we help them to better manage food at home.



## Biodiversity

Biodiversity is defined by the UN Convention of Biological Diversity as “the variability among living organisms, which includes the diversity at ecosystem, species and genetic levels”. Ecosystem services are the benefits that people obtain from ecosystems, and include the formation of soil, the regulation of the water cycle and climate, and the pollination of plants.

Biodiversity is one aspect of Natural Capital, which includes both biodiversity and ecosystem services as well as inert resources. The two terms are often used interchangeably, although we treat biodiversity as a subset of Natural Capital. Here, we report on our efforts on both biodiversity and Natural Capital.

### Improving biodiversity impacts

Nestlé is dependent on biodiversity in various ways. The Company operates 461 factories in more than 80 countries, some in locations of high biodiversity, and uses a range of products that originate from farms, forests and the oceans.

We are committed to business practices that safeguard Natural Capital, and in particular its constituent parts, including biodiversity and ecosystem services. To do this, we are working at various levels to:

- identify high biodiversity in proximity to Nestlé factories by applying a systematic, scientific methodology;
- develop Responsible Sourcing guidelines for commodities with a potential impact upon biodiversity;
- work with farmers from whom we buy directly to assess their agricultural practices and both mitigate their adverse impact upon biodiversity management and enhance the natural capital upon which they depend; and
- work with the University of Cambridge Programme for Sustainability Leadership to improve the understanding of Natural Capital and advocate for corporate and government action on the topic.





## Our approach

In the last two years, we have given new emphasis to our approach to biodiversity. During the International Year of Biodiversity in 2010, scientists, governments and non-governmental organisations (NGOs) produced a series of assessments of the status of biodiversity. We have taken these assessments as the basis upon which to identify a series of courses of action at both operational and public policy level. In particular, we have focused our efforts on measures that focus on our raw material procurement, factory operations and policy interventions.

These measures, in addition to our existing use of Life Cycle Assessment (LCA) for product and packaging design, incorporate biodiversity impacts, and we have implemented measures – in line with the Convention on Biological Diversity (CBD) guidance – to ensure that, for any genetic resources, we obtained prior and informed consent, and with mutually agreed terms with local or indigenous communities.

### Raw material procurement

Nestlé has identified 12 key commodities for the development of specific Responsible Sourcing Guidelines. As we develop and implement these guidelines, we are incorporating specific commitments on improving the impact of production and consumption of these commodities upon biodiversity.

Nestlé is actively engaged in efforts to curb deforestation through our Responsible Sourcing Guidelines, particularly in relation to palm oil, paper and soya. For more details, see the Rural Development section.

Sourcing directly from 680 000 farmers in our supply chain enables Nestlé to share good practice and work to reduce adverse biodiversity impacts at farm level.

### Factory-based interventions

Nestlé has taken a systematic and scientific approach to assessing its reliance and potential impact upon biodiversity, drawing on the knowledge of scientific experts.

Working with the UN Environment Programmes World Conservation Monitoring Centre (UNEP-WCMC), we undertook an exercise to understand the relative importance of biodiversity and the presence of legally protected areas relative to our factory sites. This process produced a searchable database that has allowed us to identify a list of factories, which are in areas of high biodiversity and/or located in or adjacent to protected areas, and where we will focus our future actions. The biodiversity assessment methodology developed by UNEP-WCMC with Nestlé will be prepared for scientific peer review.

Our factories already operate according to the Nestlé Environmental Management System and 413 are certified to ISO 14001 standard on environmental management. This is a solid foundation on which to develop specific local and business sector approaches to further reduce our impact and, where appropriate, to work with stakeholders to enhance biodiversity.



### Supporting public policy

Often, Nestlé is not alone in operating in a particular area, and it is therefore vital that we work in collaboration with other parties to take effective action where necessary.

We are keen to develop a balance sheet approach to Natural Capital. In other words, we see the necessity to safeguard biodiversity and ecosystem services at the same time as we rely upon them. A key element of this is to develop a better understanding of how to value the consequences of our activities throughout the value chain.

We are an active member of the Cambridge Natural Capital Leaders Platform, a major business-led programme focusing on practical evidence, action and policy influence. The cross-sectoral Platform, set up in 2010 as part of the Cambridge Natural Capital programme, addresses the impacts of ecosystems and Natural Capital loss and degradation on business, their customers and wider society.



## Status of biodiversity

A starting point for focusing our work on biodiversity is to understand both the status of the world’s biodiversity and Nestlé’s dependence upon it. Nestlé has drawn upon a wide range of research from recognised organisations such as International Union for Conservation of Nature (IUCN), Food and Agriculture Organization (FAO), Convention on Biological Diversity (CBD), United Nations Environment Programme (UNEP) and World Wildlife Fund (WWF) to build up a detailed understanding of the state of the different aspects of biodiversity and the natural capital upon which the company is dependent. For example, understanding geographical differences allows our work on Responsible Sourcing to focus on countries and regions where there are the greatest threats and where Nestlé can make the biggest impact through its procurement activities.

Similarly, understanding dependency upon nature provides us with insights on where to focus our activities. For example, in various countries, Nestlé Waters bottles water that may originate from areas of high biodiversity, including national parks. Nestlé Waters therefore works with local authorities and land-owners to conserve and restore the habitat in order to preserve the quality of water.

### The state of biodiversity

	Issues	Nestlé dependency
<b>Forest</b>	Deforestation; forest degradation.	Packaging, paper, timber pallets, shea, nuts, colorants.
<b>Ocean</b>	Overfishing; acidification; warming; nutrients/Dead Zones; plastics.	Seafood.
<b>Freshwater</b>	Water scarcity/over-extraction; water pollution.	Every stage of our value chain depends upon access to freshwater.
<b>Grasslands</b>	Loss of high value grasslands/biodiversity.	Agriculture, grazing (milk, meat).
<b>Atmosphere</b>	Increasing temperature; pollutants; ozone layer.	Stable climate, reliable precipitation, temperature.
<b>Soil</b>	Soil loss and degradation; increasing salinity.	All our agricultural crops rely upon soil with adequate structure and nutrients.



## Raw material procurement

Nestlé has identified 12 commodities (palm oil, pulp and paper, sugar, soy, seafood, vanilla, hazelnuts, cocoa, meat, coffee, dairy and shea) with a potential threat to biodiversity. Whilst the suppliers of these materials are already subject to our Nestlé Corporate Business Principles and Supplier Code, we are now developing commodity specific Responsible Sourcing Guidelines, which incorporate safeguards on biodiversity, forest conversion and destructive harvesting, and water management (among other aspects).

The assessment of actual impacts of the production of these raw materials is being evaluated through work to map our supply chains back to the producer. With traceability back to the farm level established, we are able to work with suppliers to help them improve their performance to be able to meet our Responsible Sourcing Guidelines. Habitat conversion, loss of high conservation values, soil management and water stewardship are common potential impacts across many commodities and a particular focus of our work (complemented by work on social aspects and human rights issues).

Assessment and compliance audits occur through on-the-ground visits and our partners are developing key performance indicators to track progress on actions.

Based upon the assessment of the state of biodiversity, the focus of our current work is on a shortlist of countries where biodiversity values are highest and where, through our interventions, we believe that we can bring about significant improvement in performance. For example, with paper packaging we are focusing on fibre sourcing from USA, Canada, Brazil, Chile, Russia and South East Asian countries (including Vietnam, Indonesia, Malaysia and China). For sugar, we are concentrating on Mexico, Brazil and India, whilst with soya our focus is on Argentina, Brazil and USA. As we advance in this journey, we will expand the countries of focus to a second wave.

For palm oil, we concentrated on our factories in Thailand, China and India, as these are particularly sensitive markets where volumes are significant. The focus on these markets is such that:

- 75% of Nestlé annual spend on palm oil is currently being addressed by the project;
- the top 10 suppliers, representing approximately 66% of Nestlé annual spend on palm oil, have been mapped back to Palm Oil Mill; and
- 19 Responsible Sourcing Guideline assessments have been completed and actions plans have or are being developed with assessed suppliers (as at November 2011).

For our direct sourcing programmes, which cover more than half a million farmers – primarily milk and coffee – we are able to take a more hands-on approach to assess impacts and influence behaviours to protect biodiversity at the farm level.



**POTENTIAL THREAT: Cocoa is one of the 12 commodities Nestlé has identified with a potential threat to biodiversity.**



**For milk**, using our assessment and action planning tool, RISE (Response-Inducing Sustainability Evaluation), we are working with dairy farmers across our markets to review their methods before developing action plans focused on economic, social and environmental improvements at their sites.

In many countries, there is a need to invest in manure management to reduce the adverse impact on biodiversity, particularly freshwater supplies, and financial incentives are available to farmers for implementing the RISE action plans. Over 70% of milk volumes have been assessed in this way, and several high-priority factories have implemented the RISE tool and subsequent action plans. In Mexico, the assessment of 65 farms has resulted in 16 biogas digesters being built since 2009, and more than 7000 have been built in China since then.

**For coffee**, biodiversity issues are managed primarily through the use of the 4C Coffee Code and the *Nespresso* Sustainable Quality™ AAA programme for coffee sourcing. Both of these include safeguards against sourcing from protected areas, restrictions on pesticide use, soil conservation and water course protection. Following a 2007 World Wildlife Fund (WWF) report identifying that coffee cultivation in Sumatra was encroaching on the Bukit Barisan Selatan National Park, Nestlé Indonesia implemented a traceability programme to ensure that its Lampung factory does not source coffee from within the National Park. Traceability has subsequently become a cornerstone of Nestlé's approach.



**POTENTIAL THREAT:** Coffee is one of the 12 commodities Nestlé has identified with a potential threat to biodiversity.



## Factory-level initiatives

To complement the work on Raw Material Procurement we have worked with UN Environment Programmes World Conservation Monitoring Centre (WCMC) to identify factories and business sectors that are most reliant upon biodiversity. We looked not only at the factory locations themselves, but also the direct sourcing of raw materials from the region around the factories.

The assessment of factory locations and biodiversity has permitted a more detailed understanding of not only the dependence of the Company on nature, but the potential impacts. Some 60 factories on 57 sites have been identified for future attention to reduce potential adverse impacts and, where appropriate, enhance biodiversity. There are currently 12 factory sites located within, and 12 factory sites within 2km of, legally protected areas. A further 33 factory sites are located in areas of high biodiversity that have also been prioritised by Nestlé for future detailed action.

Of the 12 factories within protected areas, eight are within International Union for Conservation of Nature (IUCN) Category V or VI protected areas, including the following:

- one factory is on the edge of a city within a buffer zone of a Category IV protected area;
- one factory is bisected by the boundary of a Category IV protected area;
- one factory is within a small town that is within a Category II protected area; and
- another is within a Natura2000 site.

Of the 60 factories that are therefore within areas of high biodiversity, 60% are either Nestlé Waters factories or milk factories. Both these businesses already have significant bodies of work that mitigate impacts, and in many cases strengthen local management of biodiversity.

### Additional factories actions

Our initial focus is on actions in the two businesses that make up 60% of the identified factories – the dairy and bottled water businesses. The significance for the dairy factories is not so much the location of the factory itself, rather the high levels of biodiversity within the region from which milk is sourced. The dairy business, supported by Nestlé's Agriculture team, is already well advanced in responding to the need to safeguard biodiversity, by rolling out the RISE tool. This addresses biodiversity issues in milk production and has led to investments in pasture management and tree planting as well as cow waste management and biogas generation. This assessment will further guide the roll-out of the RISE tool to ensure that all the farmers supplying factories, in high biodiverse areas, have implemented appropriate measures to safeguard biodiversity.

For factories inside legally protected areas, Nestlé is committed to ensure that through its presence in protected areas there is effective management of the protected area to deliver upon the conservation objectives. During 2012, we will investigate a more formalised approach to working with protected area authorities to achieve this.



A more formal procedure on the assessment and due diligence around new factory sites has been developed to assess the status and likely impact on biodiversity, primarily focusing on the proximity to protected areas.

All factories will continue to implement measures to safeguard biodiversity, and continue to engage with employees, authorities and local communities. Nestlé has assessed each of its factories to determine their location with respect to water-stressed areas. A first analysis has been performed, and will be extended in the near future to determine overlaps and potential coordinated actions to the related issues of water stress and biodiversity.

### Project examples

#### Watershed conservation and quality – Henniez, Switzerland

We are investing CHF 1.7 million into the Eco-Broye project over a five-year period, with the aim of optimising the nitrate content in the spring water. Actions have included a detailed risk assessment in the catchment area, implementation of agriculture regulations, tree planting and biogas production facilities to use excess manure.

#### Wetlands waterfowl habitat – Texas, USA

Healthy wetlands are good indicators of biodiversity, and in 2003 Nestlé Waters North America (NWNNA) began ecological baseline assessments to inform our management approach. More recently, NWNNA has been working with Ducks Unlimited, a non-profit organisation, to restore biodiversity and enhance wetlands habitats for wildfowl.

#### Restoration – Santa Maria, Mexico

The waters of the Santa Maria Atepatzingo spring now lie at the heart of a 2438 hectare protected ranch, thanks to a major restoration project. Formerly utilised for agricultural fields and fruit trees, restoration of the bare, unused land began in 2001. Within a few years, approximately 100 hectares of pine and oak – species that are important in preventing erosion and replenishing the groundwater – had been restored to native forest.

In 2006, a Mexican environmental agency classified the area as an experimental ecology zone devoted to the protection of forest and wildlife. Today, the ranch provides a diverse ecosystem that contributes to the protection of the watershed and provides the basis for the water needs of the surrounding community.

#### Best site management initiative in biodiversity – Vittef, France

Nestlé received a special commendation for the best site management initiative in biodiversity, for a scheme to protect water reserves and restore biodiversity around the *Vittef* water source, awarded by the French Ministry for Sustainable Development and the French Environment and Energy National Agency (ADEME).

## Collaborative work on policy and advocacy

We are an active member of the University of Cambridge Natural Capital Leaders Platform, a major business-led programme focusing on practical evidence, action and policy influence. The cross-sectoral Platform, set up in 2010 as part of the University of Cambridge Natural Capital programme, addresses the impacts of ecosystems and Natural Capital loss and degradation on business, their customers and wider society. The results of the first part of this work will be launched prior to the Rio+20 Summit. A series of collaborative work programmes are currently further delving deeper into topics, such as the pricing of externalities, and will be used to advocate for changes by both businesses and governments.

### 1. Factories inside legally protected areas

Name	Location	Position in relation to PA	Size of factory site in ha	Protected status
Montes Claros Factory	Brazil	inside	2.1	IUCN cat. V
Petropolis Factory	Brazil	inside	1.2	IUCN cat. V
Ribeauville Carola Factory	France	inside	1.2	IUCN cat. V
St. Remy Les Chevreus Factory	France	inside	0.9	IUCN cat. V
Korpi Factory	Greece	inside	4.1	IUCN cat. IV (bisect.)
Pejo Factory	Italy	inside	2.4	IUCN cat. II
Matagalpa Factory	Nicaragua	inside	8.3	Nature Reserve cat. IV + Buffer Zone
Viladrau Factory	Spain	inside	2.5	IUCN cat. V
Karacabey Factory	Turkey	inside	9.2	IUCN cat. VI
El Tocuyo Factory	Venezuela	inside	9.8	IUCN cat. V
Santa Cruz Factory	Venezuela	inside	1.3	IUCN cat. V
S. Stefano Quisquina Factory	Italy	inside	1.2	Natura2000, Special Area of Conservation (SAC)
<b>Total factories inside legally protected areas</b>	<b>12 factories</b>	<b>Total area [ha]</b>	<b>44.2</b>	<b>1 cat. II / 1 cat. IV / 7 cat. V / 1 cat. VI / 1 NR / 1 N2000</b>



**2. Factories adjacent (<2km) to legally protected areas (in high-risk countries and including Nestlé Waters)**

Name	Location	Position in relation to PA	Size of factory site in ha	Protected status
Manama Factory	Bahrain	adjacent	0.6	Wetlands of International Importance (Ramsar)
Vila Velha I Factory	Brazil	adjacent	8.4	IUCN cat. II
Jacarepagua Factory	Brazil	adjacent	1.3	IUCN cat. II
Guayaquil Factory	Ecuador	adjacent	4.1	Wetlands of International Importance (Ramsar)
Cayambé Factory	Ecuador	adjacent	5.9	Wetlands of International Importance (Ramsar)
Yokneam Factory	Israel	adjacent	4.0	IUCN cat. II
Hope Factory	Canada	adjacent	1.4	IUCN cat. II
Aumuehle Factory	Germany	adjacent	10.0	IUCN cat. IV
Kekkut Factory	Hungary	adjacent	3.5	Wetlands of International Importance (Ramsar)
Cepina Factory	Italy	adjacent	10.3	IUCN cat. II
Henniez XIII Cantons Factory	Switzerland	adjacent	7.9	IUCN cat. IV
Buxton Factory	UK	adjacent	0.8	IUCN cat. IV
Jersey City Factory	USA	adjacent	1.5	IUCN cat. IV (Liberty State Nature Preserve)
<b>Total factories adjacent (&lt;2Km) to legally protected areas* *In high risk countries</b>	<b>13 factories 12 sites</b>	<b>Total area [ha]</b>	<b>59.8</b>	<b>5 cat. II / 4 cat. IV / 4 Wetlands</b>

### 3. Factory sites in areas of high biodiversity

Name	Location	Position in relation to PA	Size of factory site in ha	Protected status
Aracatuba Factory	Brazil	Hi Biodiv.	4.3	-
Araraquara Factory	Brazil	Hi Biodiv.	2.5	-
Araras Factory	Brazil	Hi Biodiv.	2.7	-
Cacapava Factory	Brazil	Hi Biodiv.		-
Cacapava Factory	Brazil	Hi Biodiv.	49.6	-
Carazinho Factory	Brazil	Hi Biodiv.	3.5	-
Feira de Santana Factory	Brazil	Hi Biodiv.	35.0	-
Goiania Factory	Brazil	Hi Biodiv.	1.5	-
Ibia Factory	Brazil	Hi Biodiv.	52.1	-
Itabuna Factory	Brazil	Hi Biodiv.	67.7	-
Ituiutaba Factory	Brazil	Hi Biodiv.	2.0	-
Jatai Factory	Brazil	Hi Biodiv.	0.4	-
Marilia Factory	Brazil	Hi Biodiv.	4.7	-
NPPC Ribeirao Preto Factory	Brazil	Hi Biodiv.		-
Palmeira das Missoes Factory	Brazil	Hi Biodiv.	5.8	-
Rialma Factory	Brazil	Hi Biodiv.	0.8	-
Rio Pardo Factory	Brazil	Hi Biodiv.	33.4	-
Dongguan I Factory	China	Hi Biodiv.	10.3	-
Dongguan MAGGI Factory	China	Hi Biodiv.	10.0	-
Guangzhou Factory	China	Hi Biodiv.	10.2	-
Kunming Factory	China	Hi Biodiv.	5.6	-
NHL Hulunbeir Factory	China	Hi Biodiv.	12.0	-
NPPC Mosquera Factory	Colombia	Hi Biodiv.	4.6	-
Guane Factory	Cuba	Hi Biodiv.	2.8	-
Pant Nagar Factory	India	Hi Biodiv.	9.8	-
Batu Tiga Factory	Malaysia	Hi Biodiv.	2.2	-
Shah Alam Factory	Malaysia	Hi Biodiv.	8.2	-
Cajamarca Factory	Peru	Hi Biodiv.	4.3	-
Cabuyao Factory	Philippines	Hi Biodiv.	25.3	-
Cagayan de Oro Factory	Philippines	Hi Biodiv.	25.5	-
Lipa Factory	Philippines	Hi Biodiv.	29.6	-
Pulilan Factory	Philippines	Hi Biodiv.	5.0	-
Mossel Bay Factory	South Africa	Hi Biodiv.	6.2	-
<b>Total factory sites in areas of high biodiversity</b>	<b>35 factories 33 sites</b>	<b>Total area [ha]</b>	<b>437.5</b>	



**4. Total area of factory sites adjacent to protected areas**

Name	Location	Position in relation to PA	Size of factory site in ha	Protected status
<b>In low-risk countries</b>		<b>Total area [ha]</b>	<b>773.6</b>	
<b>Total Area for GRI EN11</b>			<b>1315.1</b>	

Note that the area for Water factories is for the factory itself. The water recharge and abstraction area is much larger, varying from several km<sup>2</sup> to over 300km<sup>2</sup>. Due to the difficulties of measuring actual areas and relating these to protected area locations, this information is not provided in this report.