Emas Report 2011

Nokia plant

As an authorised auditor, DNV Certification Oy Ab, FI-V-0002 has, on 13 April, 2012, stated that Nokian Tyres plc's environmental system and the 2011 update of the EMAS report comply with the EU's EMAS regulation (EY 1221/2009). This English version is based on the Finnish text.

The environmental impacts of Nokian Tyres' operations include emissions into the air, water and soil. The classified emissions into the air comprise VOC (solvent) emissions, particles, noise and odour. Soil emissions consist of the mixed waste taken to landfill, and in case of accidents, it is possible that small amounts of chemicals end up in water systems. The company does its best to reduce these impacts by monitoring the emission levels, developing and enhancing activities and correcting detected deviations.

The increase in production (47% from the previous year) has also increased environmental impacts. The most significant impacts are solvent emissions and waste generation. In particular, the amount of mixed waste has grown noticeably. However, the company's waste recycling rate is still 94%.

Positive developments include the enhanced efficiency of water and energy consumption. Uninterrupted three-shift production, as well as various renovations and improvements have contributed to better energy efficiency.

ENVIRONMENTAL IMPACTS OF THE NOKIA PLANT 2011

SOLVENT EMISSIONS VOC
89.37 t/a

ODOUR

PARTICLE EMISSIONS
< 1.5 t/a

NOISE
< 50 dB

INPUT
Energy 187.7 GWh
- Water
  - Municipality 180,8 m³/d
  - Nokianvirta river 25,200 m³/d
- Raw materials
  - Chemicals 31,760 t
  - Rubber 37,300 t
  - Semi-finished products 11,350 t

PRODUCTS
73,600 t tyres
and tread materials

WASTE
- Mixed waste (landfill) 152 t
- Utilised 7 719 t
- Hazardous 318 t

WATER
- Into the sewage m³/d
- Into the Nokianvirta river ~25 000 m³/d

The image above summarises the operations of the plant and their environmental impact.

The total amount of raw material used was approximately 80,400 tons. The raw materials comprised rubbers, semi-finished products and chemicals. The most significant chemicals used were carbon black, plasticizers, fillers, and activators.

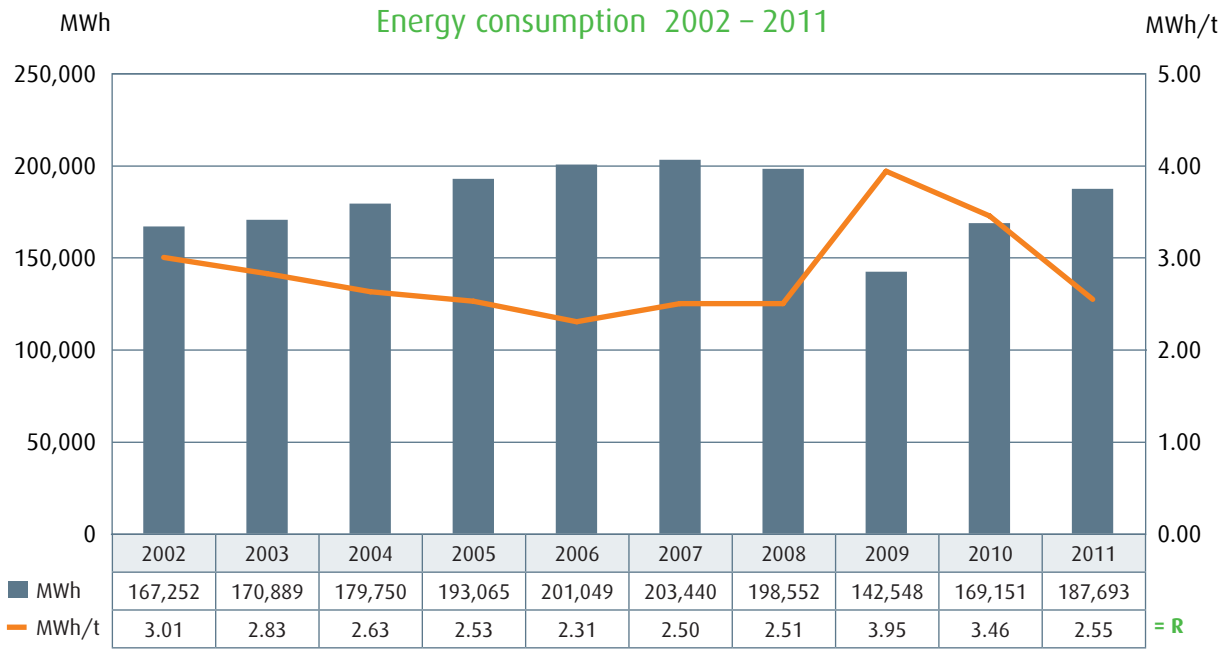
d = day
m³ = cubic metre
a = year
t = ton

Raw materials	2011 (t)	In proportion to production (kg/production t)
Chemicals	31 760	432
Rubbers	37 300	507
Semi manufactured goods	11 350	154

ENERGY CONSUMPTION

The total energy consumption at the Nokia plant amounted to 187,693 MWh in 2011. In proportion to production, the energy consumption rate was 2.55 MWh/t, which shows a clear improvement on the previous year (3.46 in 2010). The enhanced energy efficiency can be attributed to the increased number of operating days, as well as various repairs and improvements in energy distribution.

Nokian Tyres uses energy in the form of steam, industrial water and electricity. Electricity accounts for 47% of the energy consumed, steam for 32% and industrial water for 21%.



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
MWh	167,252	170,889	179,750	193,065	201,049	203,440	198,552	142,548	169,151	187,693
MWh/t	3.01	2.83	2.63	2.53	2.31	2.50	2.51	3.95	3.46	2.55

= R

R = A/B, where
A = Total annual input = 187,693 MWh
B = Organisation's total annual output = 73,603 t

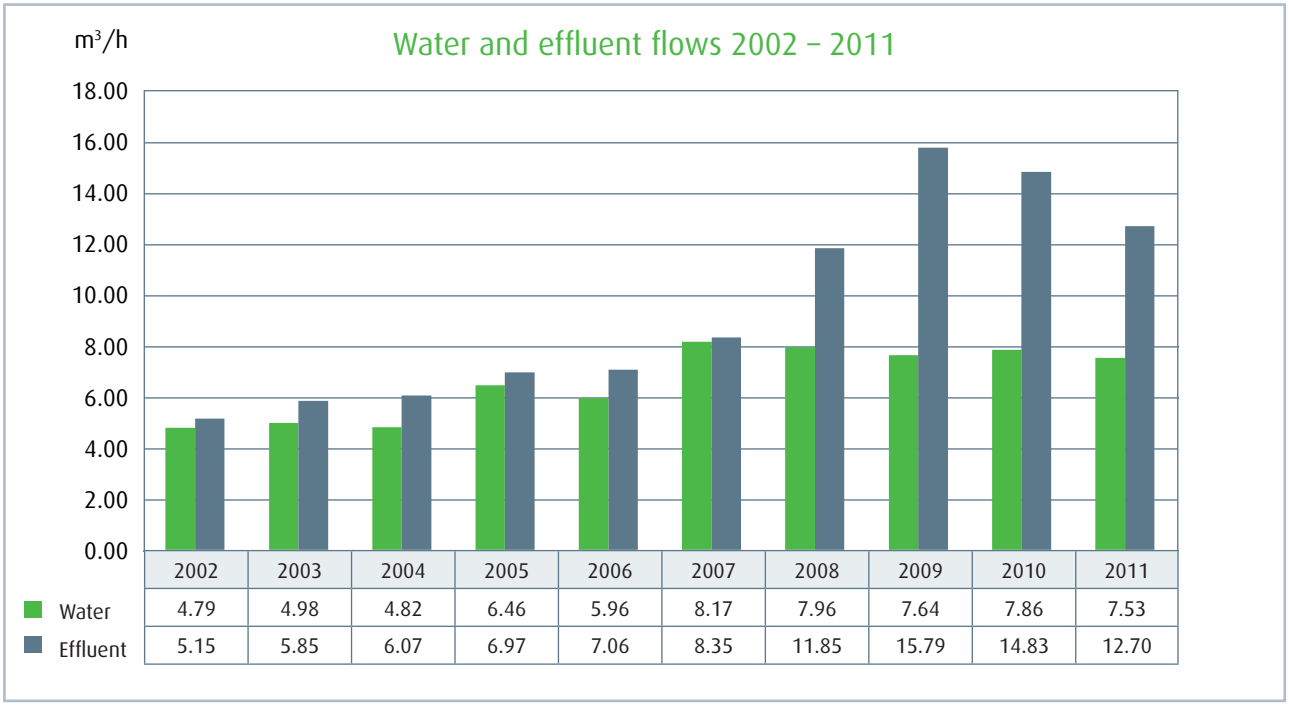
The energy is purchased from Energiakolmio, which produces energy as shown in the table below.

Energy source	%
Wind power	0.3
Other renewable	13.5
Fossil fuels	40.2
Nuclear power	28.4
Hydropower	16.6
Other	0.9

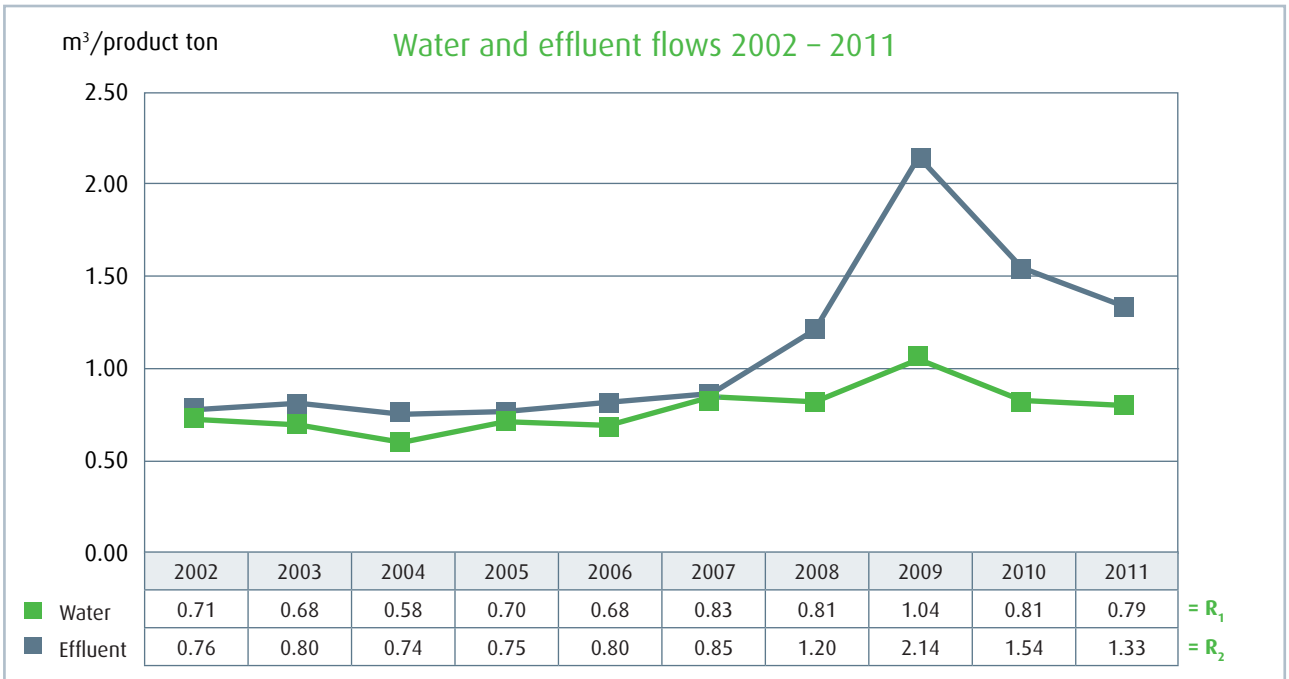
WATER AND EFFLUENT FLOWS

The tyre plant uses water for cooling, washing and household consumption. The cooling water is taken from the river Nokianvirta via the plant's own water treatment plant and returned to the river in a closed cycle. When river water is used for washing, the effluent flows are directed to the municipal sewage plant. The amount of water taken from the river in 2011 totalled 8,063,903 m^3, i.e. about 1,049 m^3/h.

When reviewed in proportion to production rates, the efficiency of water and effluent flows has improved from the previous year. The volume of clean water taken from the municipal supply system amounted to 0.79 m^3/t and the amount of waste water directed to the municipal sewage plant totalled 1.33 m^3/t.



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Water	4.79	4.98	4.82	6.46	5.96	8.17	7.96	7.64	7.86	7.53
Effluent	5.15	5.85	6.07	6.97	7.06	8.35	11.85	15.79	14.83	12.70



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Water	0.71	0.68	0.58	0.70	0.68	0.83	0.81	1.04	0.81	0.79	= R_1
Effluent	0.76	0.80	0.74	0.75	0.80	0.85	1.20	2.14	1.54	1.33	= R_2

R_1 = A/B, where
A = 57,868 m^3
B = 73,603 t

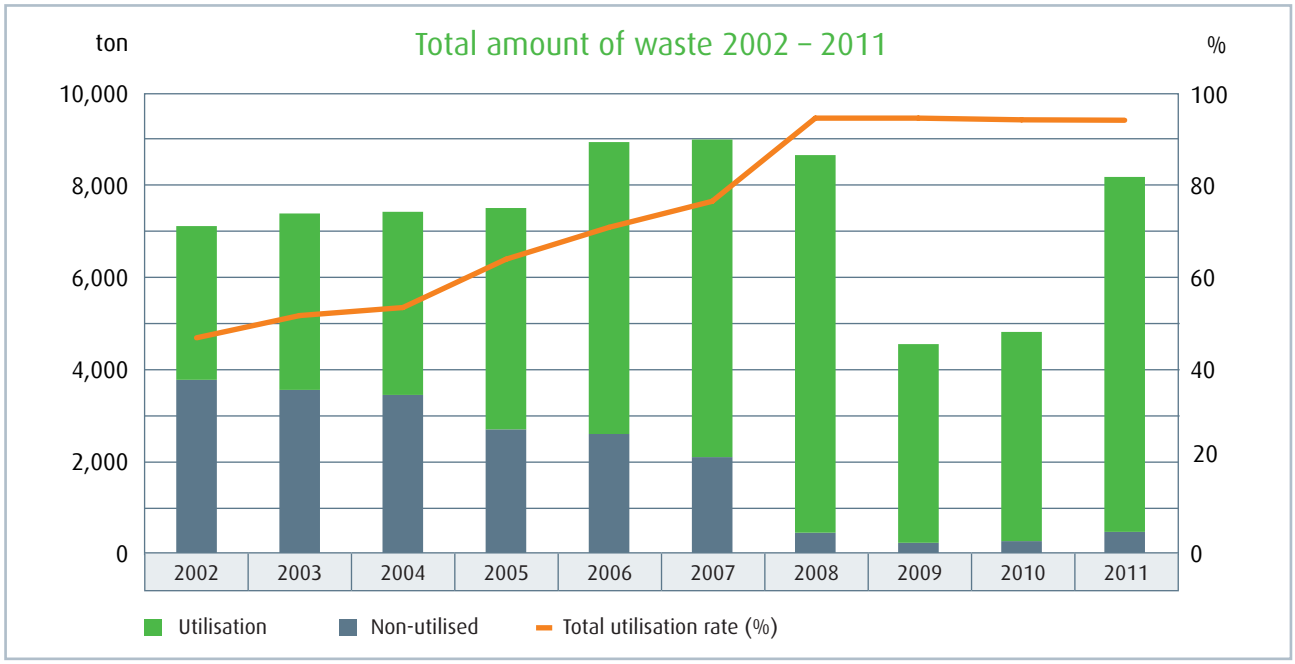
R_2 = A/B, where
A = 97,535 m^3
B = 73,603 t

THE AMOUNT OF WASTE

The amount of waste in proportion to production increased from the previous year. The targeted rate of total waste (< 100 kg/product ton) was not achieved. The relative amount of waste was 111.3 kg/product ton. The increased amount of waste can be partially attributed to the extensive construction and demolition projects implemented at the plant.

The targeted rate of waste taken for reuse was achieved, which was 94.3%. Some non-vulcanised scrap rubber and rubber crumb are reused in the plant's own production as raw material in rubber compounds.

TYPE OF WASTE	2007	2008	2009	2010	2011
Landfill wastes	99.02	125.7	68.2	63.58	151.75
Hazardous waste	297.2	324.8	169.8	207.71	318.46
Non-vulcanised scrap rubber to landfill	1 703.6	3.68	0	0	0
Waste delivered for utilisation	6 903.7	8 216.91	4 316.11	4 553.22	7 719.81
Total waste kg/product ton	110.8	109.5	125.6	98.7	111.3
Utilised %	76.7	94.8	94.8	94.4	94.3

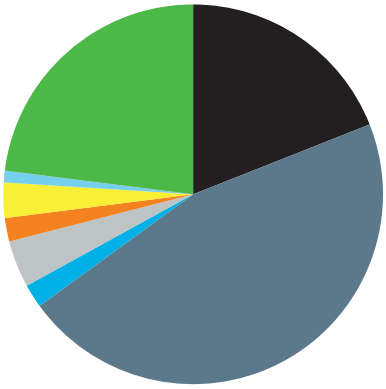


R = A/B, where
A = 8,190,000 kg
B = 73,603 t

Waste delivered for utilisation

Various types of waste are delivered for further utilisation. The existing national collection and utilisation channels for different kinds of waste make the utilisation process easier. In most cases, waste is utilised as material. Apart from the separately sorted energy waste, only some scrap wood is utilised as energy. Nokian Tyres handles packaging utilisation jointly with the Environmental Register of Packaging PYR Ltd, a community of packaging-industry producers.

Waste utilisation 7,720 t in 2011



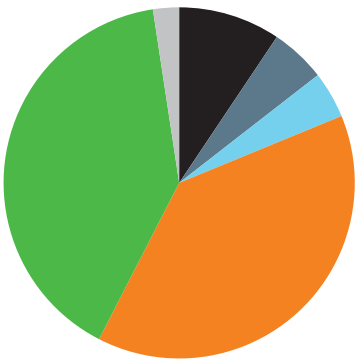
- Scrap tyres 19%
- Non-vulcanised scrap rubber 46%
- Plastic 2%
- Energy waste 4%
- Mixed waste for material use 2%
- Iron/steel 3%
- Cardboard 1%
- Paper 0%
- Wood 23%
- Other 0%

Scrap tyres 19.5 kg/production tonne, non-vulcanised scrap rubber 48.7 kg/production tonne, wood 24 kg/production tonne.

Division of hazardous waste

The total amount of hazardous waste in 2011 was 318 tonnes, which corresponds to 4.33 kg/product ton. All hazardous waste is taken to an authorised hazardous waste processing plant.

Division of hazardous waste in 2011



- Solid oily waste 9.4%
- Liquid oily waste 5.1%
- Paint and solvent waste 4.3%
- Chemicals waste (cleaning, detergents, dust etc.) . 38.8%
- Gear boxl oil 40.1%
- Batteries, fluorescent tubes, mercury lamps etc. 2.4%

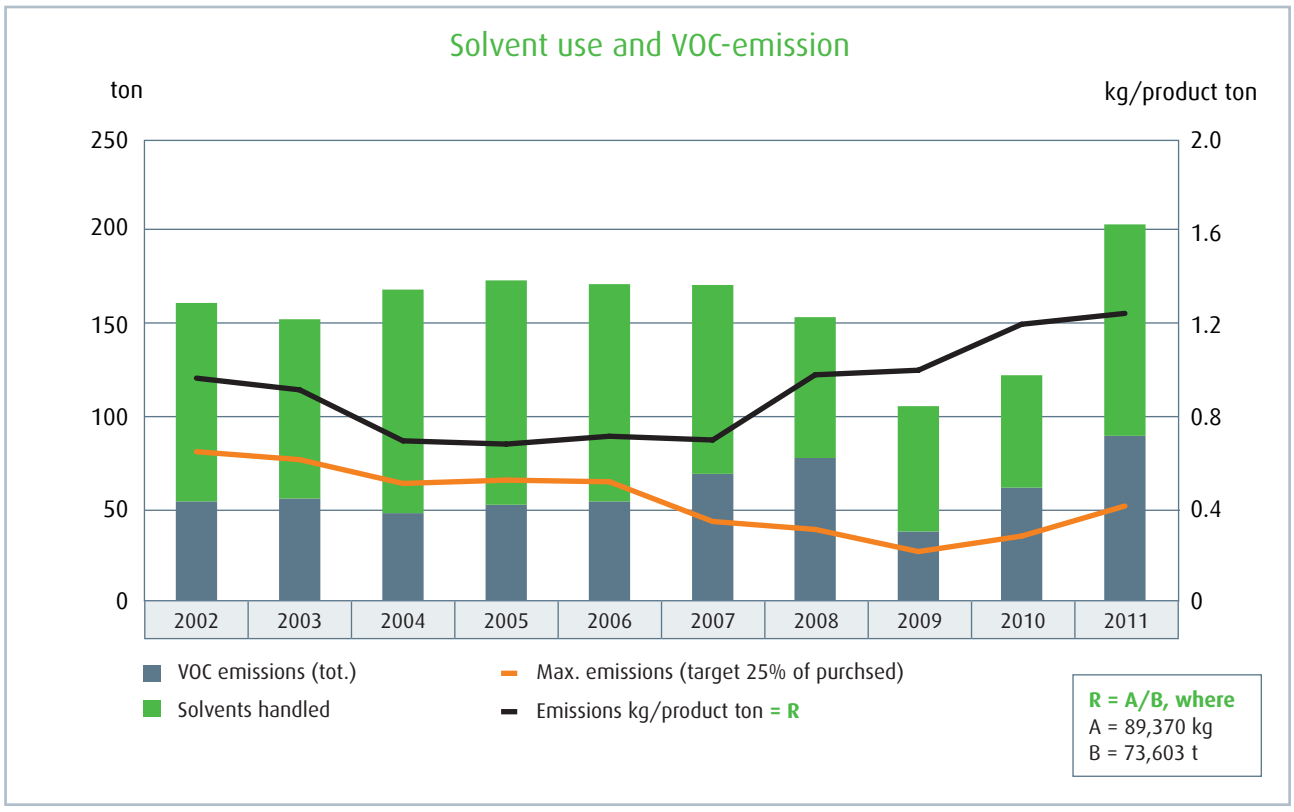
Chemical waste 1.68 ka/production tonne, gear box oil 1.73 kg/production tonne.

SOLVENT EMISSIONS IN PRODUCTION

Solvents are normally used in the rubber industry as adhesives. Volatile organic compounds increase lower atmospheric ozone, and for that reason the EU has set targets to decrease solvent emissions. Nokian Tyres has not been able to achieve the industry-specific emission limit value outlined in the VOC directive, which is set at a maximum of 25% of the total amount of used solvents. In 2011, the emission rate was 44%. Nokian Tyres' environmental permit sets the maximum limit of VOC emissions at 68 tons per year, and Nokian Tyres exceeds this limitation.

Nokian Heavy Tyres prepared a project plan to reduce VOC emissions in late 2009. The aim is to develop the activities, production processes and products of Nokian Heavy Tyres in such a manner that the solvent emission limits set forth in environmental legislation can be achieved by the end of 2013. The target is to decrease the overall use of solvents by 60% from the relative level of 2008 by year 2013. The project shall focus on rubber compound material development, production technology development, as well as possibly developing purification technology suitable for heavy tyre production.

All solvent fumes from the retreading material production are diverted to a catalytic combustion plant.



BIODIVERSITY

The total area of the Nokia plant is 125,1932, of which built-up areas account for 118,0932.
The ratio of built-up area in proportion to production is 0.61t/m^2.
The plant has no impact on biodiversity.

DISTURBANCE

Reported disturbance and feedback 2011	Cause
Equipment downtime	124-hour bypass of catalytic combustion plant due to reactor resistor defects
Disturbance notifications	No notifications or reports of disturbance were submitted by the plant's neighbours in 2011.
The equipment defect incidents were immediately reported to the municipality of Nokia and Pirkanmaa Regional Environment Centre.	

KEY ACTIONS IN 2011

Object	Planned for 2011	Realised 2011	Description/Result
Implementation of the REACH regulation	According to project plan	Completed according to project plan	
Annual emission measurements	VOC, cooling and effluent water measurements	Completed according to project plan	
VOC emissions	< 25% of the purchased solvents, proceeding according to NHT's project plan	44% of the purchased solvents	Solvent use reduction has not succeeded as planned. The project continues according to plan in co-operation with public authorities.
CO2 emissions	Defining the product's carbon footprint	Calculated for one tyre type	
Total amount of waste	< 100kg/product ton, utilisation rate >95%	111.3kg/product ton, utilisation rate 94.3%	
Non-vulcanised scrap rubber	< 1,500 t (1661 t in 2010) According to department-specific targets	3,582.5 t	Increase in production has increased the amount of scrap rubber
Safety audits	2 audits/department	2 audits/department	
Emissions into the air	Mastication	According to the project plan, washers were installed on the mixing machine to minimise odour emissions	
Internal audit at Vsevolozhsk	In 2011	Vsevolozhsk plant audited 11/2011	
Chemicals control	Chemical use control	Quarterly inspections/audits (storage and use of chemicals)	
Increasing environmental awareness among personnel	According to the environmental programme	Implemented	

KEY ACTIONS IN 2012

Object	Area	Objective	Schedule
Legislation	Implementation of the REACH and CLP regulations	According to project plan	12/12
Emissions into the air	VOC emissions	< 25% of the purchased solvents, proceeding according to NHT's project plan (to be continued)	12/12
Emissions into the air	Measurements according to the environmental permit		12/12
Emissions into the air	Particle emissions	Developing assurance activities	12/12
Waste management	Total amount of waste	< 100kg/product ton, utilisation rate >95%	12/12
Waste management	More efficient waste management	Increasing the relative proportion of bio and energy waste	12/12
Waste management	Non-vulcanised scrap rubber	According to department-specific targets	12/12
Waste management	Waste law amendment	Ensuring compliance	5/12
Safety	Safety audits	2 audits/department	12/12
Chemicals control	Ensuring chemical safety	4 times/year	12/12
Chemicals control	Authority inspection (TUKES)		10/12
Products	Materials development	Ensuring that our products are free of any substances on the REACH SVHC list	12/12
Products	Product development (rolling resistance and noise)	According to directive	12/12
Communication	Increasing environmental awareness among personnel	According to environmental policy	12/12

REACH

REACH
The EU's new REACH regulation sets new obligations to the importers, producers and users of certain substances. The producers and importers of articles should know the chemical composition of their products because they are obliged to submit a so-called Substances of Very High Concern (SVHC) statement concerning the product upon request. Nokian Tyres does not use any SVHC substances in its production. Moreover, it has made sure that its contractual manufacturers also refrained from using these substances in their production since 2009.

Nokian Tyres Plc upholds all obligations pursuant to the REACH regulation. An up-to-date REACH statement is available on the company website.

Verified on 13 April 2012
Tuula Leppänen
Main Reviewer DNV Certification Oy Ab, FI-V-002
The published update of the EMAS report complies with the EU's EMAS Regulation