



Print House **Triip**  
Environmental Statement  
2006



E L F



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# Introduction



The present environmental statement is celebrating its first anniversary – Triip has been assessing its environmental impact for 5 successive years, that is, since the year 2002. The application of the knowledge gathered is just as important as the assessment of the environmental load. And in this aspect, Triip is recognised as the pioneer among all legal entities in the Republic of Estonia, because after producing its first environmental statement back in 2002, Triip – including its entire staff – planted new trees in order to balance the environmental load created. Equally noteworthy is the fact that ever since that time, Triip (with all its employees!) has been continuously planting and maintaining its “own” forest.

Our printing service Green Print (materials printed with natural inks on environmentally friendly paper) is a registered trademark since 2004. Green Print is increasingly popular among clients; and in 2006, Green Print already accounted for 20 percent of the turnover of Triip. In general, this means that every fifth client of the company is environmentally aware and can appreciate the value of environmentally friendly print materials.

Triip is a “green” enterprise not only because it offers the Green Print service. Rather, Triip is a “green” enterprise because each year the company implements an environmentally friendly idea. Step by step, the company has reached the point where its ecologically renovated office and production building has a lawn roof, with the aim of both reducing heating expenses and creating a recreational and an alternative work environment (in summers, the lawn-covered roof terrace is used as an open air office). Triip was the first in Estonia to purchase photopolymer technology equipment which helps to considerably reduce the amount of chemicals used in the traditional printing process; it also reduces the number of initialisation sheets and the time spent on print preparation, which in turn reduces the printing shop’s consumption of electric and heating power, and so on.

In addition to that, Triip has for years been the client of Green Energy, which produces energy from renewable natural resources. Triip was the first print house in Estonia to start using Green Energy. By introducing the electronic customer management system, Triip has considerably reduced the consumption of office paper which reached a record low level in 2006.

The environmental statement is prepared for the fifth year in a row, with the aim to receive an overview of the impact of the company’s activities and its resource usage on the surrounding environment. The preparation of both environmental and social statements is a common practice among progressive companies around the world and is starting to take root in Estonia also. Triip is the first print house in Estonia to prepare and publish its environmental statement.

The methods of the measurement of the ecological footprint and CO<sub>2</sub> emissions are used in the preparation of Triip’s environmental statement. More detailed explanations as well as specific data on all measured components are included in the statement. Since the environmental statement is prepared for the fifth time already, it is now possible to compare the results of the different years.

In 2006, the number of employees at Triip was 17. The company’s turnover was 17.4 million kroons.

Triip’s environmental statement for 2006 was prepared by Anu Kõnnusaar, the environmental manager of the Estonian Fund for Nature.



# Methods for the Assessment of Environmental Impact

The calculation of the use of resources is based on the principle that the components are measured in the extent that Triip consumed the resources as the end-user (e.g. using thermal energy for heating the premises). The range of the measurements is parallel to the range of financial interests and all source data come from the accounting records.

In addition to the data acquired from Triip's accounting records, a percentual share (48%) of the resource usage at the Guttenberg print shop has also been taken into account (corresponding to Triip's share of the net turnover from Guttenberg's sales). As a print house, Triip orders printing services from the Guttenberg print shop, and therefore, it is fair to include Triip's share of the resource consumptions of Guttenberg when calculating the total resource consumption of Triip.

In the course of preparing Triip's environmental statement, 13 components were measured (electricity, heat, water, waste, transport for the carriage of people and goods, use of office paper, etc). The source data thus received were processed using several methods which are widely used around the world; the aim was to facilitate the understanding of the measuring results. The main method used is the ecological footprint, and also the measurement of the emissions of CO<sub>2</sub> and its equivalents. The Montreal (1987) and Kyoto (1997) protocols and the aims of Agenda 21 as well as the general principles of sustainable development have been used as a basis.

By measuring the use of resources, we do not prepare an ecological balance sheet where both the positive and negative environmental impacts would be balanced. Instead, we measure the negative environmental impact, i.e., the use of natural resources for the company's activities. At present, there is no methodology for equally assessing the numerical values of both "good" and "bad". **Therefore, the environmental statement of Triip specifies the amount of natural resources used in the course of the daily activities of Triip.**



# Ecological Footprint<sup>1</sup>

The calculation of the ecological footprint is based on **land as a limited resource** which people use to satisfy their needs. The surface of the Earth has been divided into categories:

- Energy land (land necessary for the production of energy and for distribution networks);
- Developed land (buildings, roads, etc.);
- Cultivated land (garden, farming, cattle and forest land);
- Bioproductive sea (main fishing territory);
- Biological diversity land (intact nature);
- Other land (rocks, deserts, etc).

The ecological footprint is a tool which is used to measure the use of natural resources required for activities. **The ecological footprint measures the use of space related to the life cycle of a product or service and is measured in hectares per year (ha-year)**. The ecological footprint index shows how much productive land and water is occupied for the production, use and absorption of the materials consumed.

The calculation of an organisation's ecological footprint is based on two simple factors. It is possible to monitor and identify most of the resources consumed by an enterprise, and also most of the waste substances that are created.

Most resource and waste flows can be re-calculated to determine the size of biologically productive area which is required for the production of these resources and for the elimination and neutralisation of the waste<sup>2</sup>.

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## Environmental Impact Measured Using the Ecological Footprint Method

In the calculation of the ecological footprint, 12 different components<sup>3</sup> have been taken into account; these components correspond to the goods and services used or created as part of Triip's activities. The components, in their turn, are divided into six sub-groups (transport of people, electric energy, thermal energy, water, waste and transport of goods). For better comparability, the ecological footprint per each employee has been given<sup>4</sup>. It must be emphasised that a comparison of the ecological footprints per person between different

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<sup>1</sup> According to ELF, the ecological footprint method is one of the best and increasingly popular methods in the world at the moment, allowing the comprehensive assessment of the environmental impact of organisations and countries. Please refer to Chambers et al, *Sharing Nature's Interest*, 2000 (available at the library of ELF)

<sup>2</sup> „Riikide koormus ökosüsteemidele“ (translated from the book „Ecological Footprint of Nations“). Ministry of the Environment and Estonian Green Cross. 1997. 32 pp.

<sup>3</sup> The quantities of office paper used and hazardous waste are not included in the components of the ecological footprint because the appropriate ecological footprint factors are missing.

<sup>4</sup> The number of people has been determined similarly to the resource consumption calculation method, meaning that in addition to Triip's own employees, a percentual share of Guttenberg's staff has also been included (according to Triip's share in the net turnover from Guttenberg's sales). In 2005, Triip had 15 employees, plus 48% of Guttenberg's staff which is 12 people; the total is 27 employees.



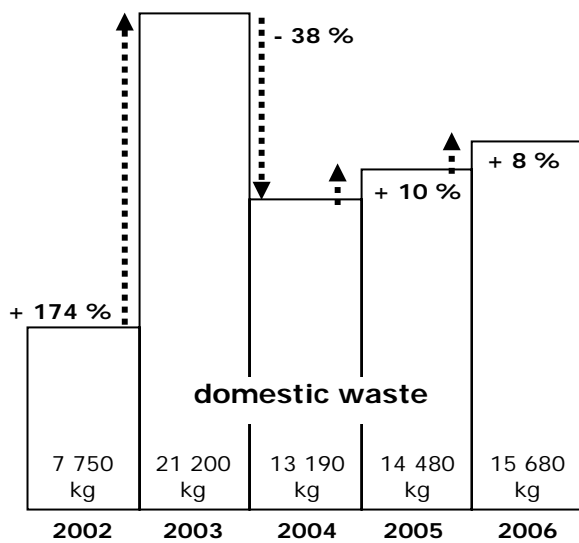
enterprises is fair only when companies that offer similar products or services are compared (e.g. an automobile manufacturer can be compared to another car manufacturer, but not to a bicycle manufacturer; although at first, it would seem that all are enterprises producing a means of transport).

## Waste

According to the ecological footprint method, Triip continues to have the largest environmental impact in waste generation, which is 78% or 95 ha-years. At the same time, since 2002, much attention inside the company has been paid on waste management. In 2002 the company launched the separate collection of waste paper and cardboard; in 2003, hazardous waste was included as a separate collection item. In 2004, the company purchased a photopolymer technology machine because using this device reduces the generation of hazardous waste and initiation sheets (i.e. waste paper). In 2005, the electronic customer management system was introduced, and has reduced paper consumption internally in the management of projects (the effect is clearly evident in the value for paper consumption in 2006). The aluminium printing plates and waste paper and cardboard are recycled.

<p><b>Generation of recyclable waste:</b></p> <p><b>Waste paper and cardboard</b> 12 120 kg</p> <p><b>Waste metal</b> 3 460 kg</p>	<p><b>Generation of waste sent to landfill:</b></p> <p><b>Domestic waste</b> generated per year: 15 680 kg</p>
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In terms of different waste categories, the biggest amount of waste generated in 2006 was domestic waste, at 15 680 kg or 63.3 ha-years (52% of the total footprint), if measured in ecological footprint units. A total of 12 120 kg of waste paper and cardboard was generated, with an ecological footprint of 29.7 ha-years (24% of the total footprint). 3 460 kg or 2.3 ha-years of metal waste were generated (2% of the total footprint).

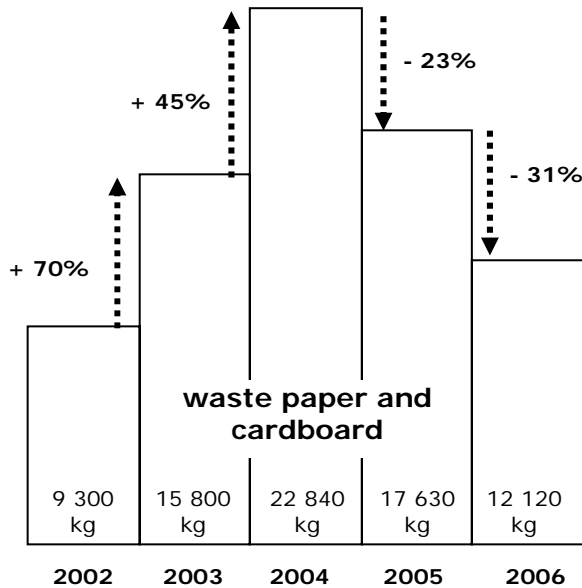


In 2006, 8% more domestic waste was generated than in the previous year. 570 kg of domestic waste per employee is generated in a year. The large amount of domestic waste in 2003 was caused by construction works which generated much domestic waste

At the same time, since 2004, the generation of domestic waste per employee has increased by 30 kg a year, that is, by 120 grams per each working day. Such an increase in the generation of domestic waste is not directly linked to any particular cause but it reflects the cost of the so-called welfare society.

The separate collection of hazardous waste began already in 2003. Cleanout scraps and packaging are collected separately. In 2006, 730 kg of hazardous waste were generated, and handed over to a licensed waste handler. The hazardous waste is not included in the

calculations of the ecological footprint and the CO<sub>2</sub> emission because, unfortunately, the required data is lacking.



In 2006, the generation of waste paper and cardboard was reduced by 31% which is a significant achievement, considering that the production volume remained the same!

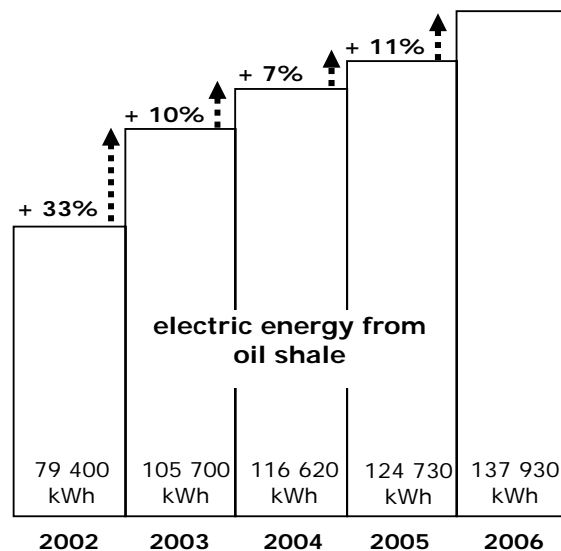
Already in 2005, we changed the printing technology, replacing the traditional print film+printing plate with the CTP (*computer to plate*) system. Printing the design directly from the computer onto the printing plate reduces the amount of chemicals and print films and also the number of initiation sheets, i.e., the generation of waste paper and cardboard is reduced.

Most of the waste paper is generated from the cutting scraps of prints, defective products, test sheets and packaging waste. High-quality office paper, newspapers and magazines, envelopes and similar items constitute a smaller share of waste paper.

Although waste generation has a big share in the ecological footprint, Triip has done much to reduce waste generation. Paper which has already been used once is reused as initiation sheets in printing presses; on the office side, printing two-sided invoices, contracts, and other documents is a common practice. The paper scraps from cutting prints to format are used as much as possible in the production of quail egg trays (200 kg of paper per month is used for egg trays).

## Electric Energy

In 2002, Triip started to use cleanly produced wind and hydroenergy (known as Green Energy, a trademark). Triip owns the category III license and consumes 6 000 kWh of Green Energy annually. In the footprint calculation, 19% of line loss has been added to both wind energy and hydroenergy as well as to energy produced from oil shale; this loss of electricity happens upon distribution from the producer to the consumer.





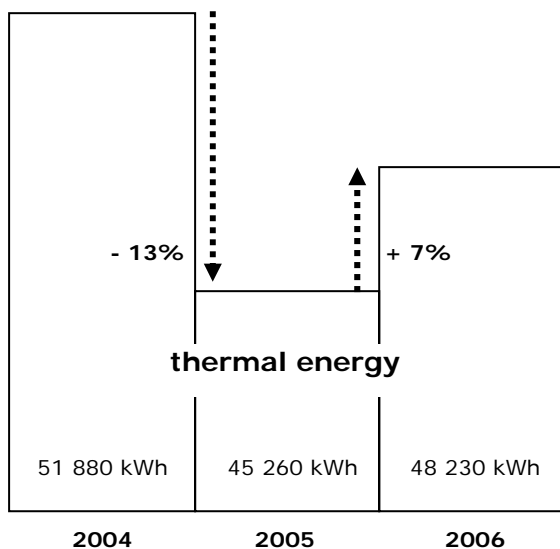
Together with line losses, a total of 7 140 kWh of Green Energy and 137 930 kWh of oil shale power was consumed in 2006. Although the energy produced from renewable natural resources accounted for 5% of the annual energy consumption, the footprint of wind and hydroenergy amounted to 0.2 ha-years and that of oil shale power to 22.2 ha-years (which is a 100-fold difference).

In 2006, consumption of energy increased by 10% which is probably connected with the introduction of a second shift as well as the first full operation of the new printing machines (MBOT530/44x folding machine and Ryobi 4-colour B3 printing press) in the printing process.

## Thermal energy

During the year, 48 240 kWh of thermal energy were consumed, of which 49% or 23 610 kWh was produced from peat, 40% or 19 360 kWh from natural gas, 11% or 5 170 kWh from wood and wood waste, and less than 1% or 80kWh from rape waste and another less than 1% or 20 kW from coal. Utility line loss (16.07%) in the distribution of heat from producer to consumer has also been included in Triip´s total consumption of thermal energy. Thus, in calculating the footprint, 16.07% has been added to the figure in Triip´s accounting records representing the consumed thermal energy in kWh. The ecological footprint of electric energy produced from biomass (peat, wood and rape waste) is 1.1 ha-years; the footprint values for natural gas and coal are 1.8 ha-years and 0.003 ha-years, respectively.

The thermal energy consumption at Triip clearly demonstrates the nature of the ecological footprint method and gives a good overview of the environmental impact of the use of different types of fuel. The boiler house produced 60% (ca three fifths) of the total thermal energy consumed from bio-fuel (peat+wood+rape waste), but the resulting ecological footprint only constitutes 37% (ca two fifths) of the total thermal energy footprint. In a comparison of the environmental impact of different types of fuel, the ecological footprint of biofuel is among the smallest. For example, the emission of CO<sub>2</sub> in the burning of biofuel is calculated as 0 (zero) tons of CO<sub>2</sub> / kWh, because when growing, the biomass has accumulated the same amount of CO<sub>2</sub> that is emitted during burning.



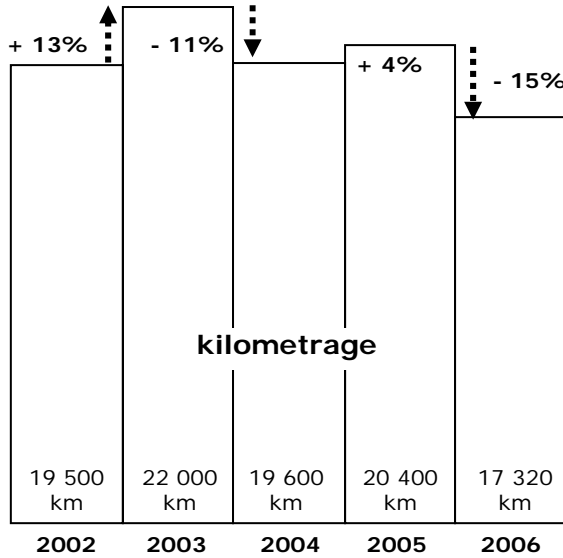
In 2006, the consumption of thermal energy increased by 7%. The consumption of thermal energy in the last three years was compared. Only three years are compared because in those years the utility line loss has also been added to the thermal energy consumption and the efficiency of the boiler house<sup>5</sup> has not been taken into account.

<sup>5</sup> The efficiency of the boiler house is confidential information and is not available from the boiler house.



## Transport

According to the calculation methods of the ecological footprint and CO<sub>2</sub> emissions, transport is divided into two categories: transport of people and transport of goods. Transport of goods covers goods transported with heavy goods vehicles, and transport of people covers the business trips of employees by car, bus, train, boat or plane.

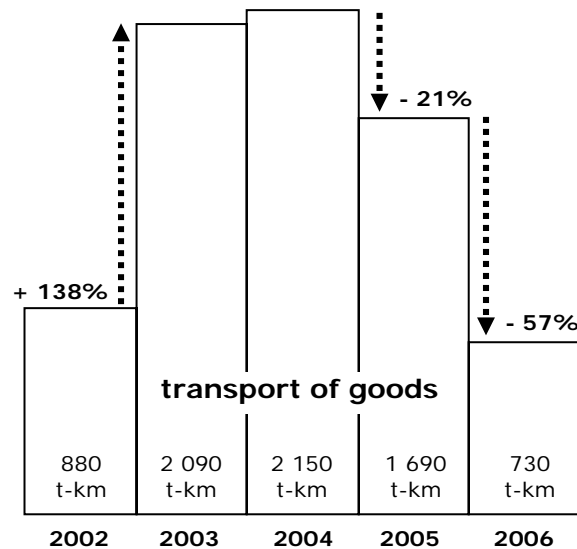


In the case of Triip, the tonne-kilometres of packages sent by courier have been included under transportation of goods. Under transportation of people, the company van's consumption of diesel fuel has been calculated, because Triip's driver coordinates all work-related trips.

Triip's van covered an estimated 17 320 kilometres, creating a 1.6 ha-year footprint.

Notionally, 730 tonne-kilometres<sup>6</sup> were covered for the transportation of goods, with a resulting ecological footprint of 0.05 ha-years.

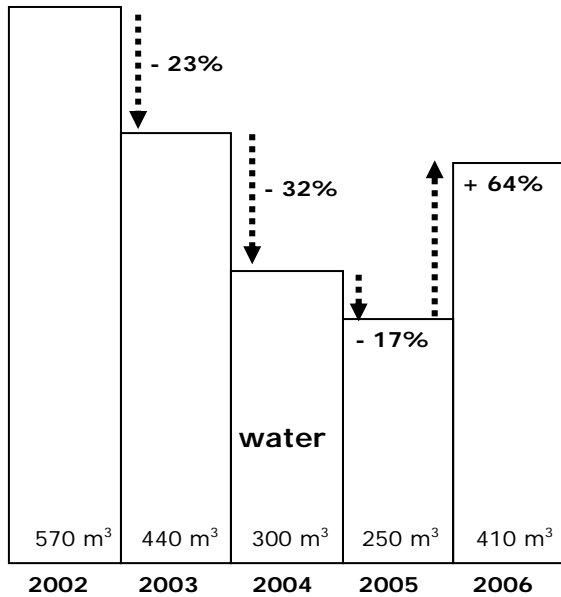
A good thing is that Triip uses the services of Cargobus and Eesti Post for the carriage of goods, because these service providers use public transport and a regular transport network, respectively, for their delivery services.



<sup>6</sup> The unit 1 tonne-kilometer equals the transport of 1 tonne of goods to a distance of 1 km; or the transport of 0.5 tonnes of goods to a distance of 2 km.



## Water

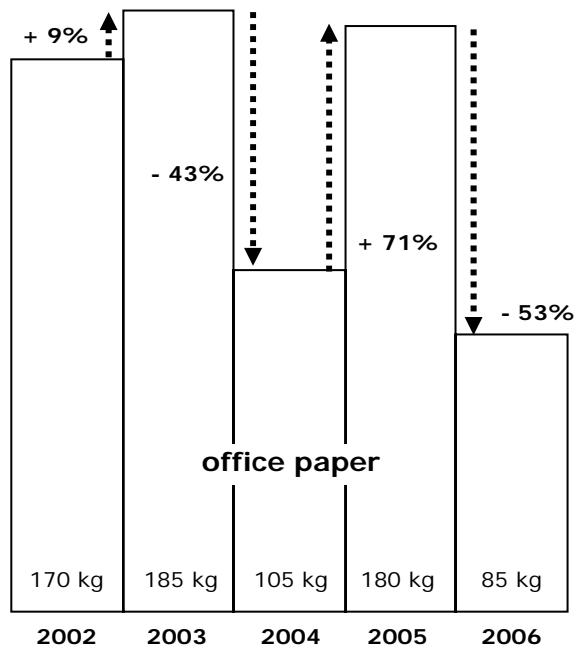


410m<sup>3</sup> of water were consumed in this year, with a footprint of 0.03 ha-years. In Between 2002 and 2005, water consumption decreased considerably, but in 2006 it was again the same as in 2003. In order to maintain optimum air humidity (required for the printing process), two humidity systems have been installed in the print house premises (water vapour is sprayed). Thus, about 70% of the water is used without discharging it to the sewer system. Guaranteeing the appropriate air humidity allows considerable savings through the prevention of defective production.

## Office Paper Used

In addition to the above-mentioned components, office paper consumption was also measured (but it has not been taken into account in the estimation of the ecological footprint and CO<sub>2</sub> emissions since the corresponding factors are missing). During the year, 34 packs or 85 kg of office paper was purchased. This means 3.1 kg of office paper per employee per year. Compared to the year 2005, the consumption of office paper has decreased by 53%!

There is no copying machine in the office of Triip. Any necessary papers are copied using the fax machine. In 2005, the company started gradually making the office operation paper-free, that is, digital. As a result, we have achieved the reduction in office paper consumption!



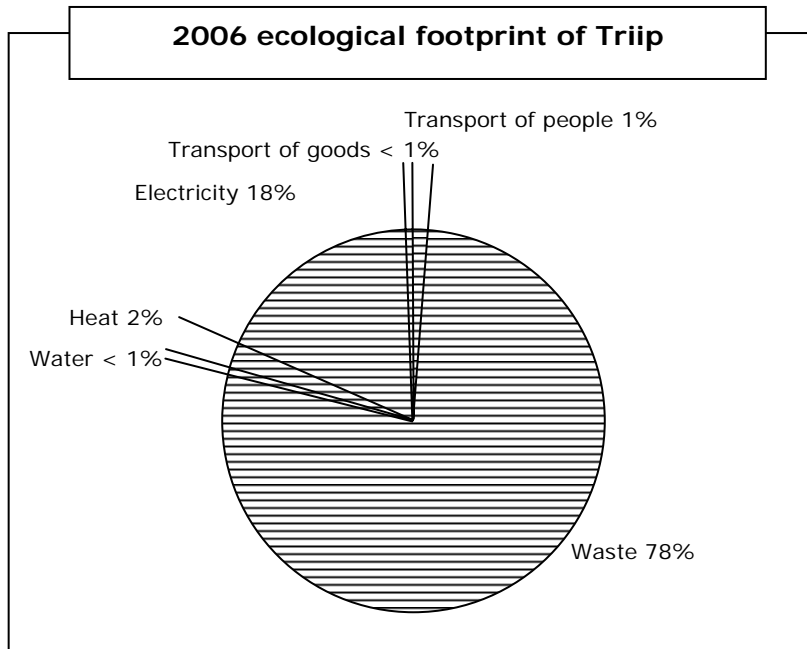


# Summary Table of the Ecological Footprint

The ecological footprint method was used to measure the environmental impact of 11 different components (there is no ecological footprint factor for converting the values of office paper consumption and hazardous waste; therefore, these have been left out of the estimation).

Components for the measuring of ecological footprint	Consumption (rounded)	Ecological footprint per employee (ha-years per employee)	Ecological footprint (ha-years)
<b>Transport of people (km)</b>			
1. Car	17 320	0.060	1.646
<b>Electricity (kWh)</b>			
2. Electric energy produced from oil shale	137 930	0.806	22.207
3. Green Energy	7 140	0.006	0.173
<b>Heat (kWh)</b>			
4. Thermal energy produced from biomass (peat, wood, rape waste)	28 860	0.031	0.862
5. Thermal energy produced from natural gas	19 360	0.066	1.820
6. Thermal energy produced from coal	20	0.0001	0.003
<b>Water (m<sup>3</sup>)</b>			
7. Water consumed	410	0.001	0.033
<b>Waste (kg)</b>			
8. Paper collected for recycling	12 120	1.077	29.688
9. Metal collected for recycling	3 460	0.082	2.249
10. Domestic waste (to a landfill)	15 680	2.297	63.314
<b>Transport of goods (tonne-kilometres)</b>			
11. Road transport	730	0.002	0.051
<b>Total:</b>		<b>4.4</b>	<b>122.0</b>

Triip has the biggest environmental impact in the area of waste generation (78%), followed by electric energy (18%), thermal energy (2%) and transport of people (1%). The share of the transport of goods (less than 1%) and of water and sewage (less than 1%) in the ecological footprint is the smallest.



**122.0  
ha-years or  
4.4  
ha-years  
per employee**

**The ecological footprint of Triip is 122.0 ha-years/ 4.4 ha-years per employee.**

According to the comparison of the ecological footprints of different countries, published in 1997, the area available for humans to use is 1.7 ha per person<sup>7</sup>. This is the average of the current ecological reality.

On the other hand, the year-2000 report of the World Nature Foundation estimated that the limit of sustainability is 2.2 ha per person, considering that 10% is required for the preservation of biological diversity.

The length of a normal working day is only one third of the whole day, and during this time, about three times as much biological resources are used than is available/allowed per one person.

**Thus, irrespective of which sustainability guideline we use as a basis, it is obvious that the use of resources far exceeds the optimum level, that is to say, people live at the expense of the future.**

<sup>7</sup> Considering the world population in 1993, there were 2.07 hectares of biologically productive land per person. Based on the world population in 1997 and the optimistic assumption that the size of biologically productive land has not decreased, there is today just 1.94 hectares per person. After allocating 12% of the amount for the preservation of biological diversity, the result is  $((1-0.12) \times 1.94 = 1.71)$  1.71 hectares of land per person.



## CO<sub>2</sub> Emission

In order to achieve sustainable development, it is necessary to restore a situation where human activity does not exceed the dynamic balance of the basic material cycles - CO<sub>2</sub> and water – or the buffering capacity of natural systems. In order to ensure sustainability, it is important to know how big this buffering capacity is, and to be able to estimate the quantitative impact of human activity.

CO<sub>2</sub> emissions were measured for 4 components. The UNEP Guidelines for Calculating Greenhouse Gas Emissions were used for the conversion of the measuring results into CO<sub>2</sub> emission<sup>8</sup>.

Measured component	CO <sub>2</sub> emission, CO <sub>2</sub> in tonnes
<b>Electric energy</b>	
1. Electric energy produced from oil shale	103.0
<b>Thermal energy</b>	
2. Heat energy produced from natural gas and coal	3.9
3. Heat energy produced from biomass	0
<b>Transport of people</b>	
4. Car (diesel)	4.6
<b>Transport of goods</b>	
5. Road transport	0.6
<b>TOTAL</b>	<b>112.2</b>

The Intergovernmental Panel on Climate Change (IPCC) has suggested that the size of the environmental space is 1.7 tonnes of CO<sub>2</sub> per person per year, which is 4.66 kg of CO<sub>2</sub> per person in a day<sup>9</sup>. The threshold quantity of CO<sub>2</sub> emitted per person during working time is calculated as 70% of what IPCC has suggested. Thus, the tolerated environmental space per person is 1.19 tonnes of CO<sub>2</sub> a year or 3.3 kg of CO<sub>2</sub> a day.



Considering that Triip generates 112.2 tonnes of CO<sub>2</sub> whereas the environmental space only allows 32.8 tonnes of CO<sub>2</sub>, Triip has to compensate for the generation of the excess 79.4 tonnes of CO<sub>2</sub> emission in year 2006. It is known that, on average, 1 km<sup>2</sup> of forest binds 97 tonnes of pure carbon a year, which is 356 tonnes of CO<sub>2</sub> per year.

**This means that 0.22 km<sup>2</sup> or 22 ha of forest is required to bind the excessive 79.4 tonnes of CO<sub>2</sub>.**

<sup>8</sup> The GHG Indicator: UNEP Guidelines for Calculating Greenhouse Gas Emissions for Businesses and Non-Commercial Organisations

<sup>9</sup> Vilu, R. Randla, T. "Kuidas mõõta keskkonna jätkusuutlikkust", unpublished, Tallinn, 2002



# Comparison of Resource Consumption from 2002 to 2006

The following table presents (in real units) the measuring results of different resource consumptions over five years.

Measured component	2002		2003		2004		2005		2006	
	General	Per person <sup>10</sup>	General	Per person <sup>11</sup>	General	Per person <sup>12</sup>	General	Per person <sup>13</sup>	General	Per person <sup>14</sup>
<b>Fuels (litres):</b>										
Petrol	1 950	100	2 200	90	1 960	80	1 190	40		
Diesel							850	30	1730	60
<b>Transport of goods (t-km):</b>										
Road transport	880	40	2 090	90	2 150	80	1 690	60	730	30
<b>Electricity(kWh)</b>										
Electric energy from oil shale	79 400	3 970	105 700	4 400	116 620	4 490	124 730	4 620	137 930	5 000
Green energy	600 <sup>15</sup>	30	7 140	300	7 140	270	7 140	260	7 140	260
<b>Thermal energy (kWh)</b>										
Heat energy from biomass	40 820	2 040	53 390	2 220	30 090	1 160	29 600	1 100	28 850	1 050
Heat energy from natural gas	17 500	880	34 250	1 430	21 790	840	15 660	580	19 360	700
<b>Water (m<sup>3</sup>)</b>										
	570	30	440	20	300	12	250	9	410	15
<b>Waste (kg)</b>										
Waste paper and cardboard	9 300	470	15 800	660	22 840	880	17 630	650	12120	440
Waste metal	780	40	2 130	90	3 430	130	3 660	140	3460	130
Domestic waste	7 750	390	21 200	880	13 190	510	14 480	540	15680	570
<b>Office paper (kg)</b>										
	170	8,5	185	7,7	105	4,0	180	7,0	85	3,1

Measuring the resource consumption in real units enables us to use other methods as well, in addition to the ecological footprint and CO<sub>2</sub> emission calculation.

In 2006, Triip achieved the biggest reduction in its office paper consumption (by 53%), which is followed by road transport (57%) and transport of people (15%), and the generation of waste paper and cardboard (31%) and waste metal (5%). The consumption of electric energy has increased by 10%, the generation of domestic waste by 8% and the consumption of thermal energy by 7%. The consumption of water and sewage has increased the most (by 64%) which is directly linked to the installation of the second moisturising system in the print shop premises (in order to maintain optimum air humidity, extra water is vapourised into the print shop premises).

<sup>10</sup> The number of people has been determined similarly to the resource consumption calculation method, meaning that in addition to Triip's own employees, a percentual share of Guttenberg's staff has also been included (according to Triip's share in the net turnover from Guttenberg's sales).

In 2002, Triip had 12 employees, plus 43% of Guttenberg's staff which is 8 people; the total is 20 employees.

<sup>11</sup> In 2003, Triip had 14 employees, plus 52% of Guttenberg's staff which is 10 people; the total is 24 employees.

<sup>12</sup> In 2004, Triip had 15 employees, plus 53% of Guttenberg's staff which is 11 people; the total is 26 employees.

<sup>13</sup> In 2005, Triip had 15 employees, plus 48% of Guttenberg's staff which is 12 people; the total is 27 employees.

<sup>14</sup> In 2006, Triip had 17 employees, plus 44% of Guttenberg's staff which is 11 people; the total is 28 employees.

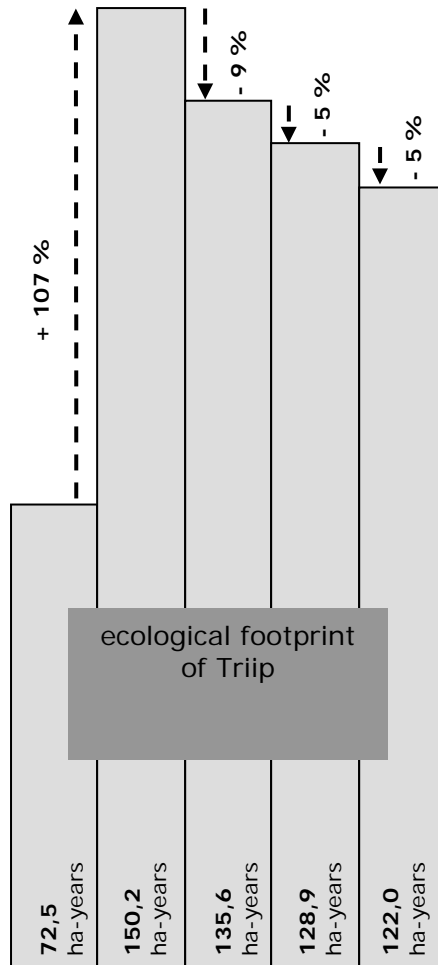
<sup>15</sup> Triip joined the Green Energy system in November 2002, so only the consumption in two months was included in the resource calculation. Since the year 2003, the annual consumption is included in the calculations.



## Comparison of Ecological Footprints from 2002 to 2006

The environmental statements for the last five years have been prepared based on similar principles; therefore, it is fair to compare these statements, keeping in mind certain specifics. In the 2002 statement, the heat energy and domestic waste conversions were done using general indicators, and not in directly measured real units (kWh and tonnes, respectively).

Measured component	Footprint per employee (ha-years)					Triip's footprint (ha-years)				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
<b>Transport of people</b>										
Car	0.077	0.086	0.073	0.070	0.060	1.851	2.094	1.860	1.935	1.646
<b>Electric energy</b>										
Electric energy from oil shale	0.639	0.697	0.733	0.731	0.806	12.780	17.013	18.775	20.082	22.207
Green Energy	0.001	0.007	0.007	0.007	0.006	0.014	0.173	0.173	0.173	0.173
<b>Thermal energy</b>										
Heat energy (biomass)	0.075	0.080	0.042	0.039	0.031	1.490	1.949	1.098	1.080	0.862
Heat energy (natural gas and coal)	0.082	0.132	0.079	0.054	0.066	1.645	3.219	2.048	1.472	1.823
<b>Water</b>										
Water consumed	0.002	0.001	0.001	0.001	0.001	0.045	0.035	0.024	0.020	0.033
<b>Waste</b>										
Paper coll. for recycling	1.142	1.585	2.186	1.571	1.077	22.835	38.685	55.959	43.183	29.688
Metal coll. for recycling	0.025	0.057	0.087	0.087	0.082	0.503	1.387	2.232	2.379	2.249
Domestic waste (to landfill)	1.566	3.505	2.080	2.128	2.297	31.320	85.513	53.240	58.480	63.314
<b>Transport of goods</b>										
Road transport	0.003	0.006	0.006	0.004	0.002	0.062	0.146	0.151	0.118	0.051
<b>TOTAL</b>	<b>3.6</b>	<b>6.2</b>	<b>5.3</b>	<b>4.7</b>	<b>4.4</b>	<b>72.5</b>	<b>150.2</b>	<b>136.0</b>	<b>128.9</b>	<b>122.0</b>



In 2006, Triip's ecological footprint has decreased by 5% in comparison with year 2005. This was mostly caused by waste handling where there was a 31% decrease (13.5 ha-years) in waste paper and cardboard for recycling, and a 5% decrease (0.1 ha-years) in waste metal. There was an 8% (4.8 ha-years) increase in the generation of domestic waste. The significant decrease in the generation of waste paper and cardboard is the result of the introduction of a second moisturising system in the print shop, the optimisation of the emptying of waste paper and cardboard containers as well as the more skilful use of waste paper and cardboard scraps as secondary raw material, e.g. for quail egg trays. At the same time, with the introduction of the second moisturising system, the consumption of water has increased by 64% or 0.01 ha-years.

The consumption of electrical energy from oil shale has increased by 10% or 2.1 ha-years which has been mostly caused by the fact that in 2006 Triip started working in two shifts.

## Summary

By now, Triip has been preparing environmental statements for 5 years which, as far as we know, is the longest period among Estonian companies who prepare environmental statements using the ecological footprint and CO<sub>2</sub> emission methods. Over these years, many environmental events have been organised, which is also reflected in the environmental statements. The environmental awareness of the employees and customers of Triip has increased in connection with the creation of the environmental management system, the adoption of an environmental policy and the creation of the environmentally friendly product "Green Print". In 2006, the turnover from Green Print products constituted 20% of the total turnover of Triip, which means that every fifth customer can appreciate both environmentally friendly printing as well as the environmentally friendly staff at Triip!

Triip's environmental statement is based on 13 measurable components (electricity, heating, etc.) which also form the basis for calculations. The company's ecological footprint in 2006 was 122.0 ha-years, or 4.4 ha-years per employee. This is more than the biological resources allow. Similarly to the ecological footprint, CO<sub>2</sub> emissions were also measured. 112.2 tonnes of CO<sub>2</sub> was produced which is 79.4 tonnes of CO<sub>2</sub> more than a balanced environmental space can accommodate. 22 ha of forest is needed to bind the excess CO<sub>2</sub>.

In 2006, Triip reduced its ecological footprint by 5%, which is a significant result since at the same time, the volume of production remained the same. However, according to

the CO<sub>2</sub> calculations, Triip generated 9.5 tonnes more CO<sub>2</sub> in 2006 than in 2005. 2 ha of forest are required to bind this amount of CO<sub>2</sub>.

This situation – where the source data are the same, but the ecological footprint has diminished and the CO<sub>2</sub> emission has increased – is the best demonstration of the differences of the methods used and also indicates the need to always collect data in real units (kg, m<sup>3</sup>). The ecological footprint method takes into account the whole life cycle of a product or a service (from production to utilisation), whereas only non-renewable natural resources are taken into account when measuring CO<sub>2</sub> emission; thus it is clear that the main difference between these methods is in waste handling. In 2006, Triip managed to considerably reduce waste paper and cardboard generation, and thus the ecological footprint resulting from this waste diminished much more than the ecological footprint resulting from the bigger consumption of electrical and thermal energy grew. At the same time, the increase of CO<sub>2</sub> emission was, indeed, caused by the increased electric and heat energy consumption in 2006.

Taking into account all of the above, the measuring results in real units (m<sup>3</sup>, kg) have been used to in the comparison of the years 2005 and 2006. This comparison shows that waste paper and cardboard generation has decreased the most (by 31%) – these materials are collected separately from domestic waste and are sent for recycling, resulting in a lesser environmental impact than when sent to a landfill together with the domestic waste. In 2006, also 5% less metal waste was generated, as measured in real units (kg). However, the amount of domestic waste increased by 8%.

With the production volume remaining at the same level, the company managed to reduce the transportation of goods by 57%, and in terms of kilometrage, there was 15% less trips with Triip's van. In 2005 Triip bought a new van which uses diesel fuel and complies with the new environmental standards for exhaust gases.

In 2005, office paper consumption increased by 71% (or approximately three fourths) compared to 2004, whereas in 2006 office paper consumption was reduced by 53% and the company achieved the lowest office paper consumption in the five years, both in the total amount and per employee. In 2006, Triip consumed 85 kg of paper, or 3.1 kg per employee. Considering that usually an office worker uses about 10 kg of office paper per year, a Triip's employee uses more than 3 times less office paper!

When measured in real units, water consumption has increased by 64%, largely due to the installation of the second moisturing system in the print shop, which at the same time considerably reduces the generation of defective products – which can be clearly seen in the lower figures for waste paper and cardboard generation from defective products.

The consumption of thermal energy, measured in real units (kW), increased by 7%. In addition to a general increase in consumption, the ecological footprint of heat energy consumption also increased because in 2006 the boiler house used 16% more non-renewable natural resources (natural gas, coal) than renewable natural resources (peat, wood, rape waste), in comparison with 2005.

Measured in real units (kWh), electricity consumption in 2006 increased by 10%, which was mainly due to starting a second shift as well as the full application of the new printing machines in the printing process.

The creation of Triip's "own" fir tree forest and its maintenance is something that no other company, as far as we know, has managed to do in the Republic of Estonia. Many organisations, in cooperation with the State Forest Management Centre, have participated in the planting of trees but this has been more like one-time campaign participation, and has not meant the creation of a company's "own" forest, which the company maintains and where it plants new trees.



The environmental activities of Triip are increasingly recognised but despite our huge and innovative work, we must not rest on our laurels, because there is still a little further to go, towards sustainable production and consumption.