FIT Umwelttechnik GmbH

Gesellschaft für Forschung | Innovation | Technologietransfer
an der Ostfalia Hochschule für angewandte Wissenschaften

Life Cycle Assessment for the chemical product „HILTI CP 672 CFS-SP WP“

July 2011

Wir entwickeln heute Lösungen für morgen!

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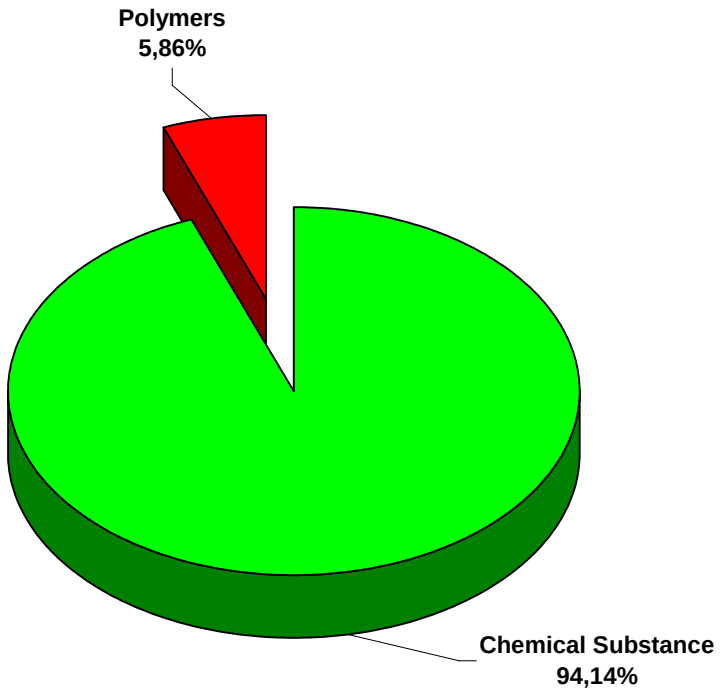
1 Technical data

Product:	**CP 672 CFS-SP WB**	**Generation:**	**01**
Weight:	**25,630 kg**		
Packaging unit:	**1 pcs.**		

2 Material Distribution

Material	Mass [g]	Mass [%]
Chemical Substances	24127	94,14
Polymers	1503	5,86
Total mass	25630	100



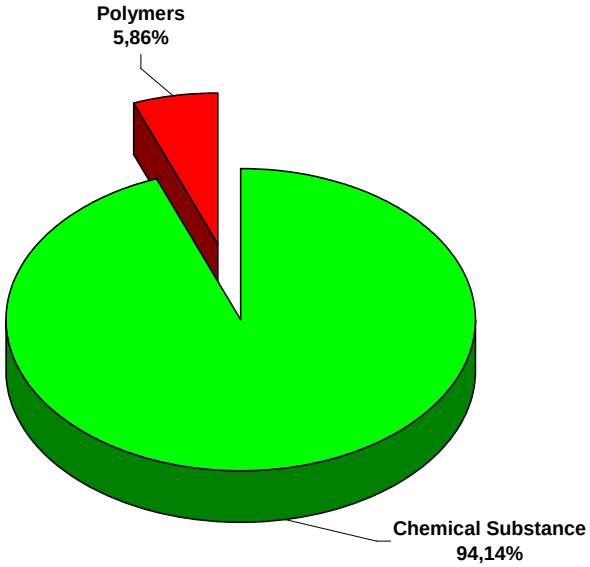
3 Summary

On a chemical product from the HILTI AG (CP 672-SP WB), a life cycle assessment according to DIN EN ISO 14040/44 was performed, which considers the entire life cycle of the product (cradle to grave).
The data for the material distribution of the unit come from a dismantling and disassembling that was already carried out on behalf of the company HILTI. They form the basis for this report.
The accounting data come from the source: GaBi 4.0, and are evaluated after CML 2001, Nov 09.

Enviromental impact category	Total	Raw material	Production	Use	End of life	Transportation
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	5,47E+01	2,20E+01	3,70E+00	0,00E+00	1,60E+01	1,30E+01
Acidification Potential (AP) [kg SO2-eq.]	1,91E-01	6,80E-02	2,20E-02	0,00E+00	-9,20E-03	1,10E-01
Abiotic Depletion (ADP) [kg Sb-eq.]	5,08E-06	4,60E-06	3,30E-07	0,00E+00	-1,20E-07	2,70E-07
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	2,53E-06	2,30E-06	6,70E-07	0,00E+00	-4,70E-07	2,60E-08
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	3,07E-02	1,70E-02	1,10E-03	0,00E+00	3,40E-03	9,20E-03
Energy (net calorific value) [MJ]	8,08E+02	6,00E+02	5,40E+01	0,00E+00	-2,60E+01	1,80E+02
Energy ren. (net calorafic value) [MJ]	6,24E+00	4,40E+00	4,00E+00	0,00E+00	-2,40E+00	2,40E-01
Dangerous Waste [kg]	7,03E-02	6,30E-03	6,40E-02	0,00E+00	0,00E+00	0,00E+00
Inert Waste [kg]	4,55E+01	1,60E+01	1,00E+01	0,00E+00	1,90E+01	4,50E-01
Radioactive Waste [kg]	1,13E-02	8,90E-03	8,40E-03	0,00E+00	-6,30E-03	3,20E-04
Hazard-free Waste [kg]	4,90E-02	4,90E-02	2,70E-06	0,00E+00	2,20E-11	0,00E+00
Water consumption [l]	2,75E+01	2,50E+01	8,90E+00	0,00E+00	-7,50E+00	1,10E+00
Water pollution [m³]	4,75E-01	4,70E-01	7,00E-04	0,00E+00	6,70E-04	3,90E-03
Air pollution [m³]	3,17E+02	2,00E+02	6,10E+00	0,00E+00	1,10E+02	1,30E+00

4 Life Cycle Assessment

4.1 Raw material



Global Warming Potential (GWP 100 years) [kg CO2-eq.]	2,20E+01
Acidification Potential (AP) [kg SO2-eq.]	6,80E-02
Abiotic Depletion (ADP) [kg Sb-eq.]	4,60E-06
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	2,30E-06
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	1,70E-02
Energy (net calorific value) [MJ]	6,00E+02
Energy ren. (net calorafic value) [MJ]	4,40E+00
Dangerous Waste [kg]	6,30E-03
Inert Waste [kg]	1,60E+01
Radioactive Waste [kg]	8,90E-03
Hazard-free Waste [kg]	4,90E-02
Water consumption [l]	2,50E+01
Water pollution [m^3]	4,70E-01
Air pollution [m^3]	2,00E+02

4 Life Cycle Assessment
4.2 Production

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	3,70E+00
Acidification Potential (AP) [kg SO2-eq.]	2,20E-02
Abiotic Depletion (ADP) [kg Sb-eq.]	3,30E-07
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	6,70E-07
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	1,10E-03
Energy (net calorific value) [MJ]	5,40E+01
Energy ren. (net calorafic value) [MJ]	4,00E+00
Dangerous Waste [kg]	6,40E-02
Inert Waste [kg]	1,00E+01
Radioactive Waste [kg]	8,40E-03
Hazard-free Waste [kg]	2,70E-06
Water consumption [l]	8,90E+00
Water pollution [m^3]	7,00E-04
Air pollution [m^3]	6,10E+00

In production, the following substances are consumed or emitted for one kg of product weight.

Type	Quantity	Unit
El. Energy	187,99	Wh
Th. Energy	66,98	Wh
Water	0,024	L
Inert waste	0,0116	kg
Waste for recycling	0,0086	kg
Waste for disposal	0,0007	kg
Aceton	0,0002	l
Spiritus	0,0001	l

4 Life Cycle Assessment
4.3 Use

In the use phase were produced no emissions, waste and pollution.

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	0,00
Acidification Potential (AP) [kg SO2-eq.]	0,00
Abiotic Depletion (ADP) [kg Sb-eq.]	0,00
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	0,00
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	0,00
Energy (net calorific value) [MJ]	0,00
Energy ren. (net calorafic value) [MJ]	0,00
Dangerous Waste [kg]	0,00
Inert Waste [kg]	0,00
Radioactive Waste [kg]	0,00
Hazard-free Waste [kg]	0,00
Wate rconsumption [l]	0,00
Water pollution [m^3]	0,00
Air pollution [m^3]	0,00

4 Life Cycle Assessment
4.4 End of life

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	1,60E+01
Acidification Potential (AP) [kg SO2-eq.]	-9,20E-03
Abiotic Depletion (ADP) [kg Sb-eq.]	-1,20E-07
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	-4,70E-07
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	3,40E-03
Energy (net calorific value) [MJ]	-2,60E+01
Energy ren. (net calorafic value) [MJ]	-2,40E+00
Dangerous Waste [kg]	0,00E+00
Inert Waste [kg]	1,90E+01
Radioactive Waste [kg]	-6,30E-03
Hazard-free Waste [kg]	2,20E-11
Water consumption [l]	-7,50E+00
Water pollution [m^3]	6,70E-04
Air pollution [m^3]	1,10E+02

Here we assumed that the product is completely deposited.

From the organic materials resulting credits, which have a positive impact on the overall result of the product.

4 Life Cycle Assessment
4.5 Transportation

For the transportation by truck, a truck with the pollutant class euro 3 and a volume capacity of 20 tonnes is assumed.

For transportation by sea is a container ship with about 27 500 dwt accepted

Transport mode	Distance [km]	Mass [%]
Sea	16800	30
Truck	4716	70
Total	21516	100

Transport mode	Distance [km]	Mass [%]
Truck	2300	100

Global Warming Potential (GWP 100 years) [kg CO2-eq.]	1,30E+01
Acidification Potential (AP) [kg SO2-eq.]	1,10E-01
Abiotic Depletion (ADP) [kg Sb-eq.]	2,70E-07
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	2,60E-08
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	9,20E-03
Energy (net calorific value) [MJ]	1,80E+02
Energy ren. (net calorafic value) [MJ]	2,40E-01
Dangerous Waste [kg]	0,00E+00
Inert Waste [kg]	4,50E-01
Radioactive Waste [kg]	3,20E-04
Hazard-free Waste [kg]	0,00E+00
Water consumption [l]	1,10E+00
Water pollution [m^3]	3,90E-03
Air pollution [m^3]	1,30E+00

This transport scenario is based on the assumptions of the limit stretch of the EPTA study by PE International in the year 2009 and was evaluated for the product weight.

The first transport reflects the distances again, which are essential for bringing together the individual components.

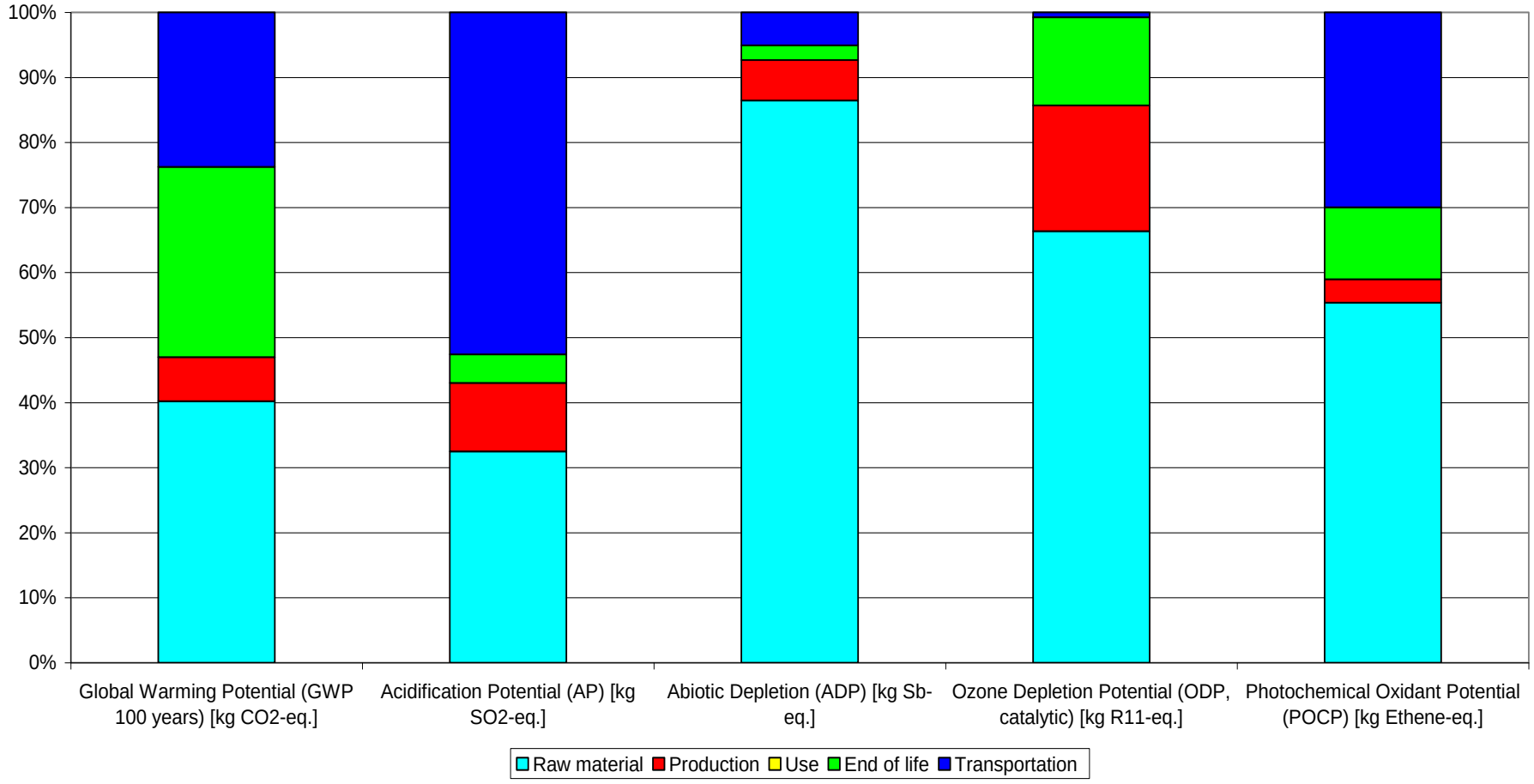
The second transport reflects the spreading of the product to the individual sales companies within the EU again.

The emissions of both transports are summarized here.

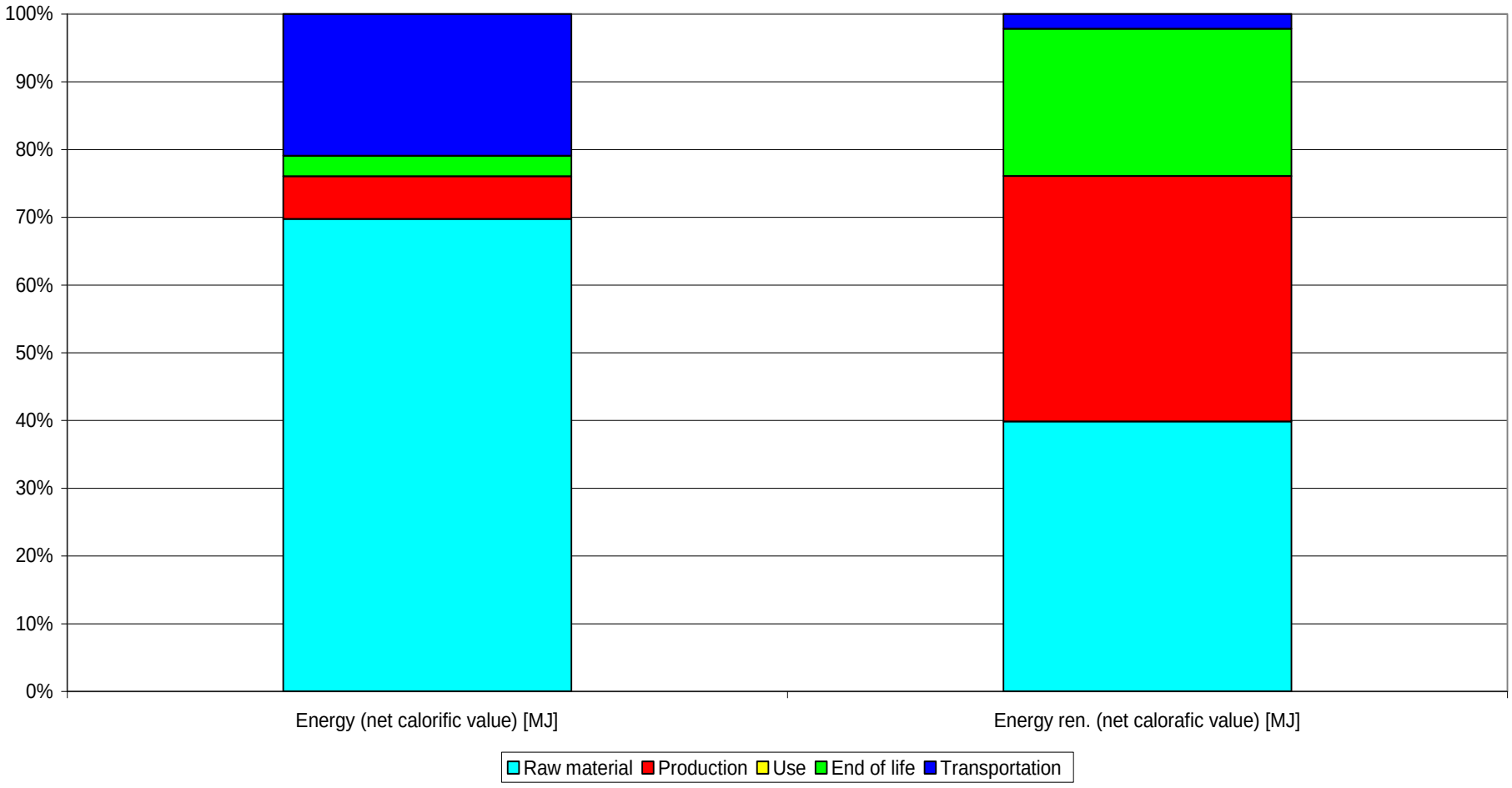
5 Total score of LCA

Enviromental impact category	Total	Raw material	Production	Use	End of life	Transportation
Global Warming Potential (GWP 100 years) [kg CO2-eq.]	5,47E+01	2,20E+01	3,70E+00	0,00E+00	1,60E+01	1,30E+01
Acidification Potential (AP) [kg SO2-eq.]	1,91E-01	6,80E-02	2,20E-02	0,00E+00	-9,20E-03	1,10E-01
Abiotic Depletion (ADP) [kg Sb-eq.]	5,08E-06	4,60E-06	3,30E-07	0,00E+00	-1,20E-07	2,70E-07
Ozone Depletion Potential (ODP, catalytic) [kg R11-eq.]	2,53E-06	2,30E-06	6,70E-07	0,00E+00	-4,70E-07	2,60E-08
Photochemical Oxidant Potential (POCP) [kg Ethene-eq.]	3,07E-02	1,70E-02	1,10E-03	0,00E+00	3,40E-03	9,20E-03
Energy (net calorific value) [MJ]	8,08E+02	6,00E+02	5,40E+01	0,00E+00	-2,60E+01	1,80E+02
Energy ren. (net calorafic value) [MJ]	6,24E+00	4,40E+00	4,00E+00	0,00E+00	-2,40E+00	2,40E-01
Dangerous Waste [kg]	7,03E-02	6,30E-03	6,40E-02	0,00E+00	0,00E+00	0,00E+00
Inert Waste [kg]	4,55E+01	1,60E+01	1,00E+01	0,00E+00	1,90E+01	4,50E-01
Radioactive Waste [kg]	1,13E-02	8,90E-03	8,40E-03	0,00E+00	-6,30E-03	3,20E-04
Hazard-free Waste [kg]	4,90E-02	4,90E-02	2,70E-06	0,00E+00	2,20E-11	0,00E+00
Water consumption [l]	2,75E+01	2,50E+01	8,90E+00	0,00E+00	-7,50E+00	1,10E+00
Water pollution [m^3]	4,75E-01	4,70E-01	7,00E-04	0,00E+00	6,70E-04	3,90E-03
Air pollution [m^3]	3,17E+02	2,00E+02	6,10E+00	0,00E+00	1,10E+02	1,30E+00

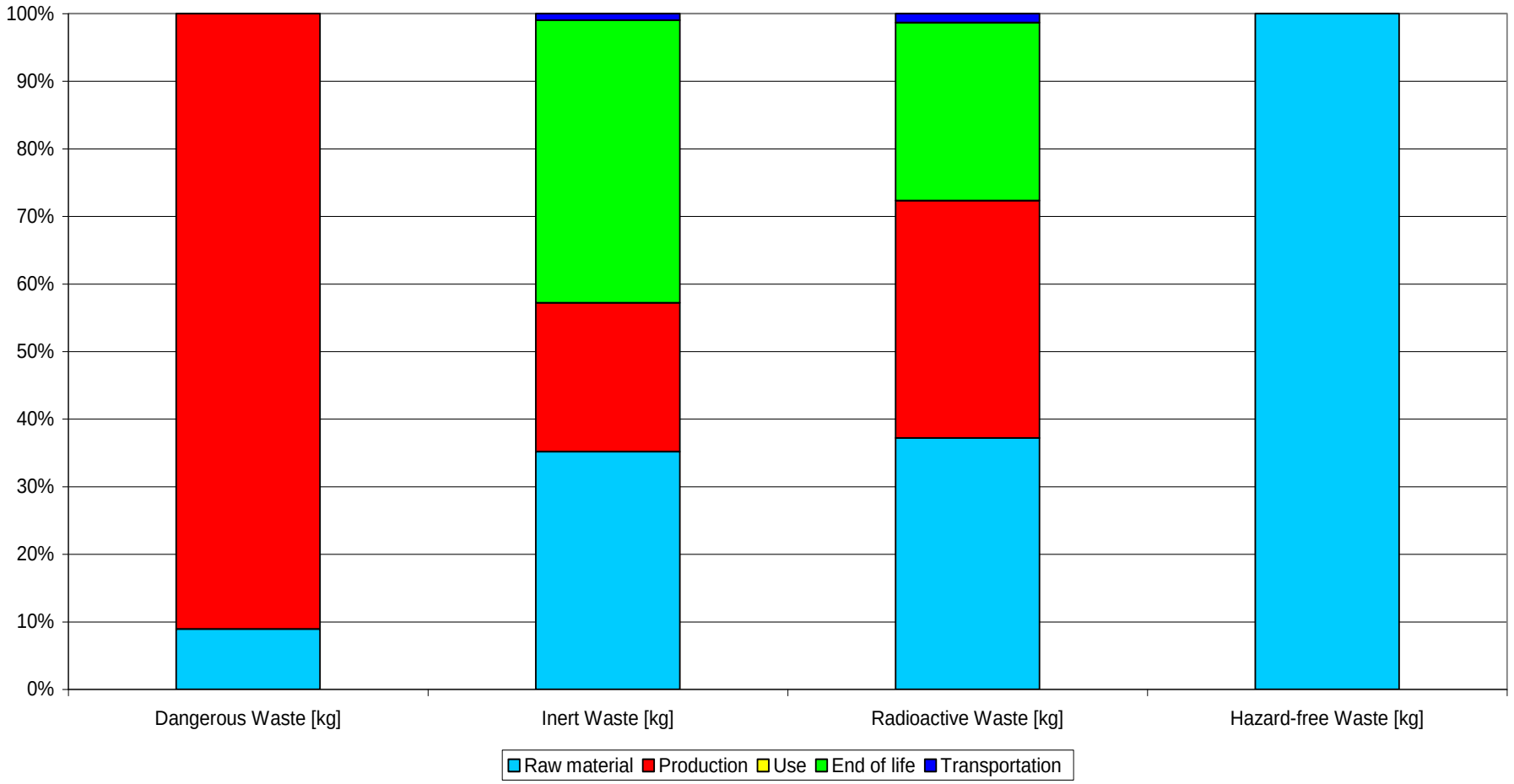
5.1 Total score – Equivalents



5.2 Total score – Energy



5.3 Total score – Waste



5.4 Total score – Water consumption, Air pollution and Water pollution