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Iron and steel stock in Austria – Bottom up analysis



1. Introduction

Steel Industry & Metal ware production

- Sales in the metal industry 29 Mrd. €
- Share of GDP 4 – 10%%
- Crude steel production 7.5 Mio. t
- Employment 130,000
- Import dependence iron ore 75%



Steel scrap

- Current use 28 %
- Energy saving 20 %
- GHG saving 20 – 80 %





2. Goals and issues

Research questions

1. How big is the entire steel stock in Austria?

2. How is the steel stock divided among the individual sectors?

3. How big is the Austrian per capita stock of steel?

4. What is the lifetime of the different products & units?

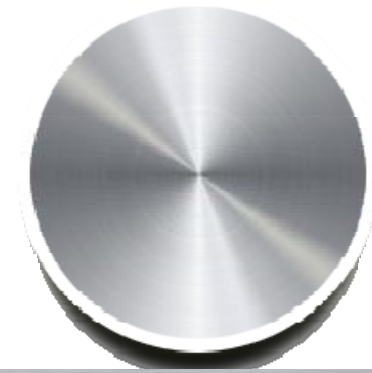
5. How big is the annual recovery potential from scrap?





Goals and issues

- Bottom-up analysis
- Presentation of steel stocks in Austria in different application sectors



3. Material und method



Sectors

- 1 Vehicles
- 2 Construction
- 3 Mechanical engineering
- 4 Metal ware

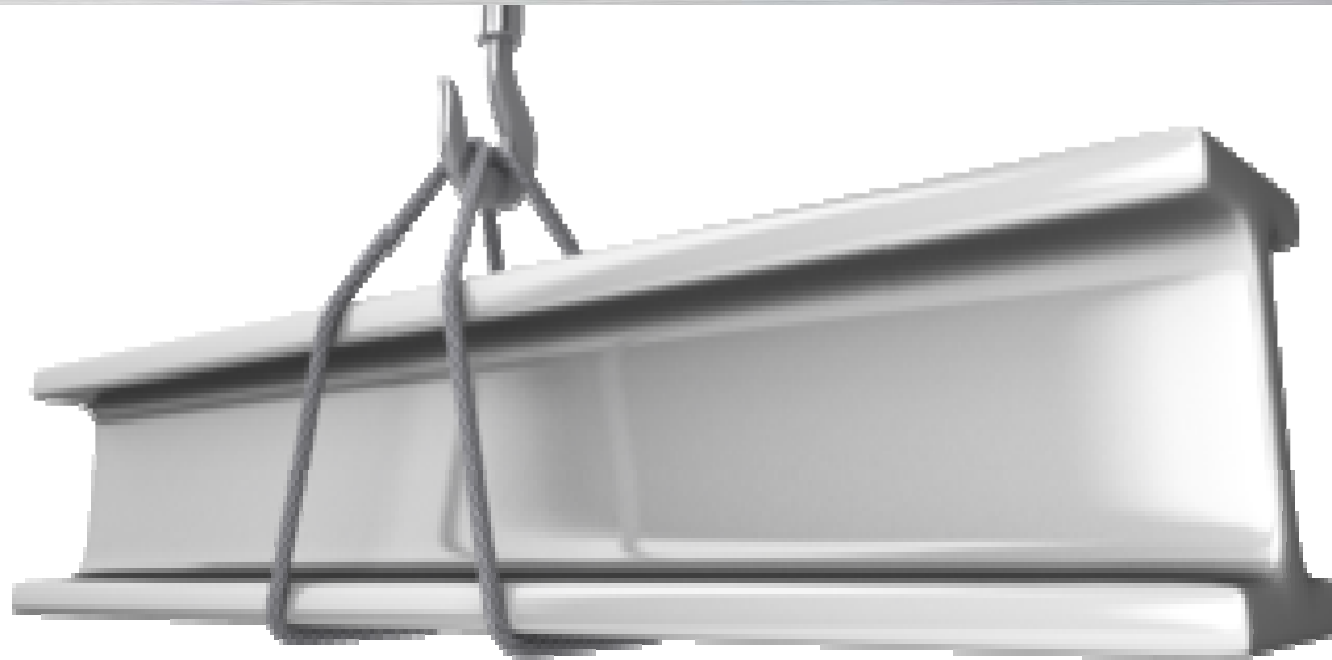
Lifetime

- 1 Literature
- 2 Stock change
- 3 Estimate

Material and method

1. Collection of statistical data on products and units
- multiplied by weight and steel content

2. Sales figures
- multiplied by lifetime



Stock of motor vehicles



Tabelle 1: Fahrzeug-Bestand am 31.12.2010 (absolut, Anteil in % und Veränderung in % zum Bestand 2009)					
Fahrzeugarten	Bestand 2010	Anteil in %	Bestand 2009	Anteil in %	Veränderung in %
Personenkraftwagen Kl. M1	4.441.027	72,9	4.359.944	72,9	1,9
<i>davon</i>					
<i>Diesel</i>	2.445.506	55,1	2.381.906	54,6	2,7
<i>Benzin</i> ¹⁾	1.988.079	44,8	1.972.352	45,2	0,8
<i>Elektro</i>	353	0,0	223	0,0	58,3
<i>Sonstiger Antrieb</i> ²⁾	7.089	0,2	5.463	0,1	29,8
Motorräder Kl.L3e ³⁾	224.717	3,7	218.135	3,6	3,0
Leichtmotorräder Kl. L3e	168.089	2,8	158.745	2,7	5,9
Motorfahrräder Kl.L1e	303.908	5,0	305.042	5,1	-0,4
Kleinmotorräder Kl.L3e	1.247	0,0	1.234	0,0	1,1
Motordrei- und -vierräder ⁴⁾	14.016	0,2	12.694	0,2	10,4
Mehrspurige Leichtkraftfahrzeuge ⁵⁾	15.875	0,3	16.242	0,3	-2,3
Omnibusse Kl. M2 und M3	9.648	0,2	9.599	0,2	0,5
Lastkraftwagen Kl. N	379.965	6,2	370.907	6,2	2,4
Zugmaschinen ⁶⁾	432.004	7,1	427.742	7,2	1,0
Sattelzugfahrzeuge	16.823	0,3	17.065	0,3	-1,4
Motor- und Transportkarren	11.928	0,2	11.844	0,2	0,7
Erntemaschinen	10.472	0,2	10.555	0,2	-0,8
Selbstfahrende Arbeitsmaschinen	16.766	0,3	16.422	0,3	2,1
Sonstige Kraftfahrzeuge ⁷⁾	45.396	0,7	44.905	0,8	1,1
Kraftfahrzeuge insgesamt	6.091.881	100,0	5.981.075	100,0	1,9
Anhänger für Lastenbeförderung Kl. O und R	613.118	92,6	596.853	92,4	2,7
<i>darunter Sattelanhänger Kl. O</i>	27.765	4,5	27.137	4,5	2,3
Landwirtschaftliche Arbeitsanhänger	47	0,0	19	0,0	147,4
Wohnanhänger	36.221	5,5	36.390	5,6	-0,5
Anhänger-Arbeitsmaschinen	9.595	1,4	9.650	1,5	-0,6
Sonderanhänger	2.779	0,4	2.897	0,4	-4,1
Anhänger insgesamt	661.760	100,0	645.809	100,0	2,5
Fahrzeuge insgesamt	6.753.641	100,0	6.626.884	100,0	1,9

Q: Statistik Austria, Kraftfahrzeuge, Kfz-Bestand. - 1) Inklusive Benzin/Ethanol (E85). - 2) Flüssiggas, Erdgas, bivalenter Betrieb und kombinierter Betrieb (Hybrid). - 3) Inklusive Invalidenfahrzeuge. - 4) Motordreiräder (dreirädrige Kraftfahrzeuge) Kl. L5e sowie vierrädrige Kraftfahrzeuge Kl. L7e. - 5) Mehrspurige (dreirädrige) Kleinkrafträder Kl. L2e sowie vierrädrige Leichtkraftfahrzeuge Kl. 6e. - 6) Land- und forstwirtschaftliche Zugmaschinen (Traktoren und Zweiachsmäher). - 7) Inklusive Wohnmobile. - Rundungsdifferenzen wurden nicht ausgeglichen.

Stock of motor vehicles



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Stock of motor vehicles

Types of vehicles

Stock

Motorräder Kl.L3e ³⁾	224.717
Leichtmotorräder Kl. L3e	168.089
Motorfahrräder Kl.L1e	303.908
Kleinmotorräder Kl.L3e	1.247
Motordrei- und -vierräder ⁴⁾	14.016



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MANUFACTURED GOODS
(PRODCOM)

DATABASE

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[Europroms](#)

[Steel Data](#)

▲ Data

[Excel files \(NACE Rev.2\)](#)

[Excel files \(NACE Rev. 1.1\)](#)

DATABASE

Statistics on the production of manufactured goods (prom)

Detailed data by PRODCOM list (NACE Rev. 2) (prom2) (Excel tables N2)

Sold production, exports and imports by PRODCOM list (NACE Rev. 2) - annual data (DS-066341)

Total production by PRODCOM list (NACE Rev. 2) - annual data (DS-066342)

Detailed data by PRODCOM list (NACE Rev. 1.1) (prom1) (Excel tables N1)

Sold production, exports and imports by PRODCOM list (NACE Rev. 1.1) - annual data (DS-043408)

Total production by PRODCOM list (NACE Rev. 1.1) - annual data (DS-043409)

Sold production, exports and imports for steel by PRODCOM list (NACE Rev. 1.1) - monthly data (DS-008573)

Traditional international trade database access (ComExt) (comext)



Materials that may be used in a commodity group

Commodity Guide

- Home
- About

Year

2007 ▾

Section

Vehicles, aircraft, vessels and associated transport ▾

Commodity group

87010:Mopeds, motorbikes etc. ▾

[Read more about "Materials that may be used in a commodity group"](#)

Search

- Substances that may be contained in a commodity group
- Commodity groups that may contain a certain substance
- Materials that may be used in a commodity group
- Commodity groups that may contain a certain material
- Substances that may be used in a material
- Materials where a certain substance may be used

Tables

- Commodity groups
- Commodity groups - Statistical customs number
- Materials
- Substances
- Function

Commodity group (Mopeds, motorbikes etc.) may contain the following materials

Year: 2007

Material	Commodity group, %	Import, tonnes	Production, tonnes	Export, tonnes	Net amount, tonnes
<u>Cast iron/structural steel(micro/low alloy), recirculated</u>	42%	4,167	76	196	4,047
<u>Butadiene rubber (BR)</u>	21%	2,083	38	98	2,023
<u>Aluminum, recirculated</u>	16%	1,610	29	76	1,563
<u>Lead</u>	7%	663	12	31	644
<u>Polycarbonate (PC)</u>	4%	379	7	18	368
<u>Sintered steel (powderpressed steel)</u>	4%	379	7	18	368
<u>Copper</u>	1%	95	2	4	92
<u>Other plastic materials</u>	1%	95	2	4	92
<u>Other stone materials (slate etc.)</u>	1%	95	2	4	92
<u>Polyurethane (PUR)</u>	1%	95	2	4	92
<u>Floatglass</u>	<0.5%	24	0	1	23
<u>Other</u>	<0.5%	24	0	1	23
<u>Polyamide(nylon)(PA)</u>	<0.5%	24	0	1	23
<u>Polyethene (PE)</u>	<0.5%	24	0	1	23
<u>Stainless steel (min.12% Cr)</u>	<0.5%	24	0	1	23
<u>Structural steel (high-alloy)</u>	<0.5%	24	0	1	23
<u>Thermoplastic polyester</u>	<0.5%	24	0	1	23
Totalt	100%	9,825	180	463	9,542

För varugruppen	Import	9,825 tonnes
	Production	180 tonnes
	Export	463 tonnes

Year

2007

Section

Vehicles, aircraft, vessels and associated transport

Commodity

87010:Mopeds

[Read more about "Materials that may be used in a commodity group"](#)

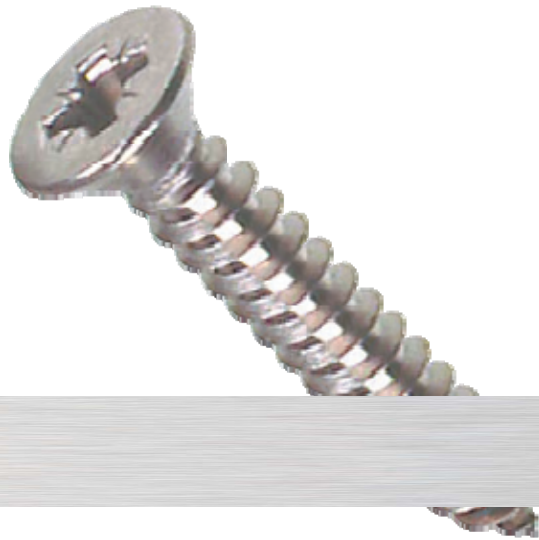
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<u>Sintered steel (powderpressed steel)</u>	4%	379	
<u>Copper</u>	1%	95	
<u>Other plastic materials</u>	1%	95	

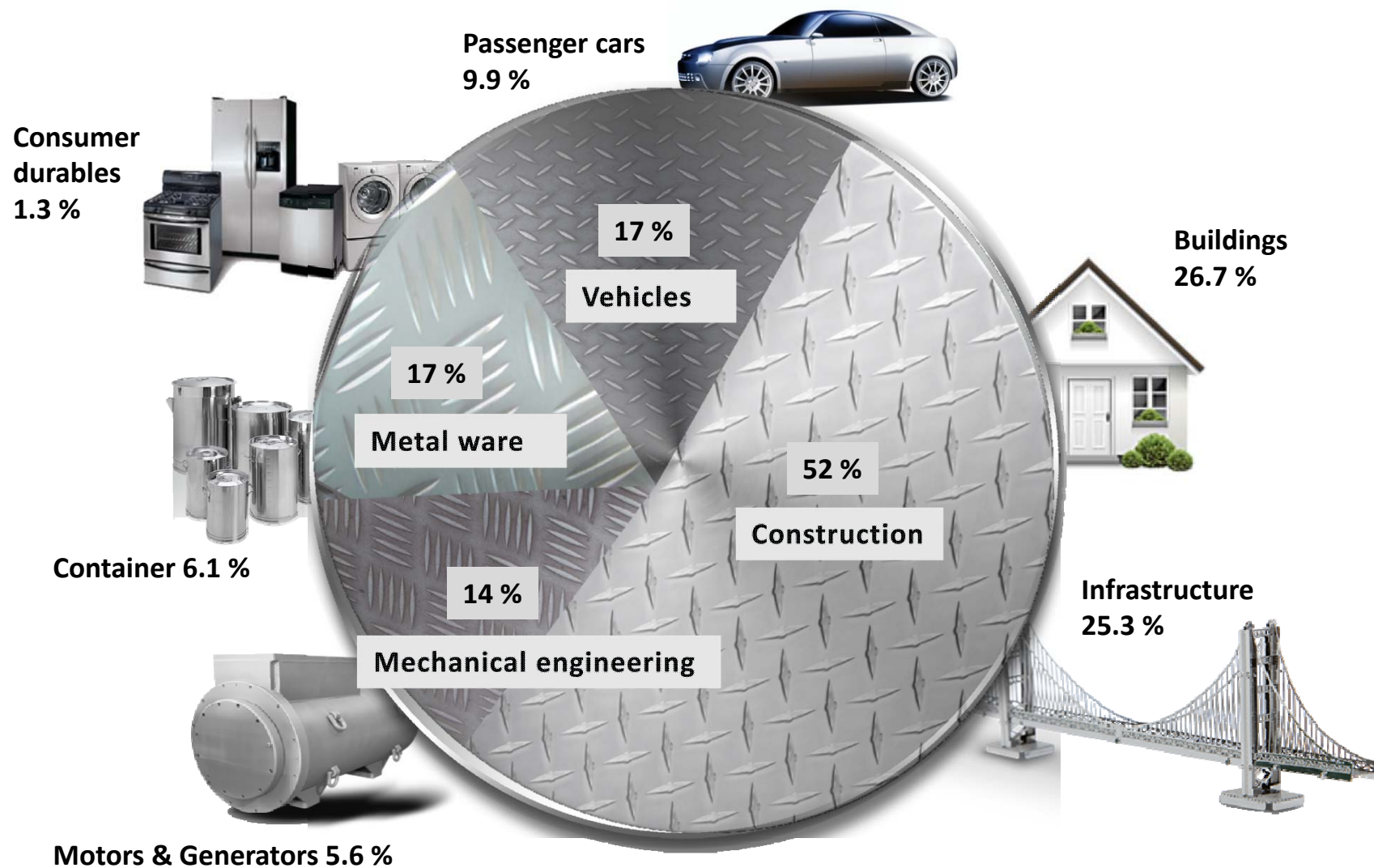
Excel- Sheets / Stock of vehicles

Typ of vehicle	Stock	Weight (kg)	Share (Iron & steel)	Steel(t)	Lifetime (years)	%	Reference vehicle
Cars	4,441,027	1,440	0.67	4,284,703	15.00	56.61	-
Motorcycles	224,717	251	0.46	25,946	18.50	0.34	-
Lightweight motorcycles	168,089	90	0.46	6,959	24.00	0.09	-
Mopeds	303,908	95	0.46	13,281	24.00	0.18	Peugeot Speedfight
Small motorcycles	1,247	148	0.46	85	24.00	0.00	Honda Forza 125
Motor tricycles & fourwheels	14,016	450	0.46	2,901	9.61	0.04	Rewaco HS4 Piaggio Mp3



3. Results

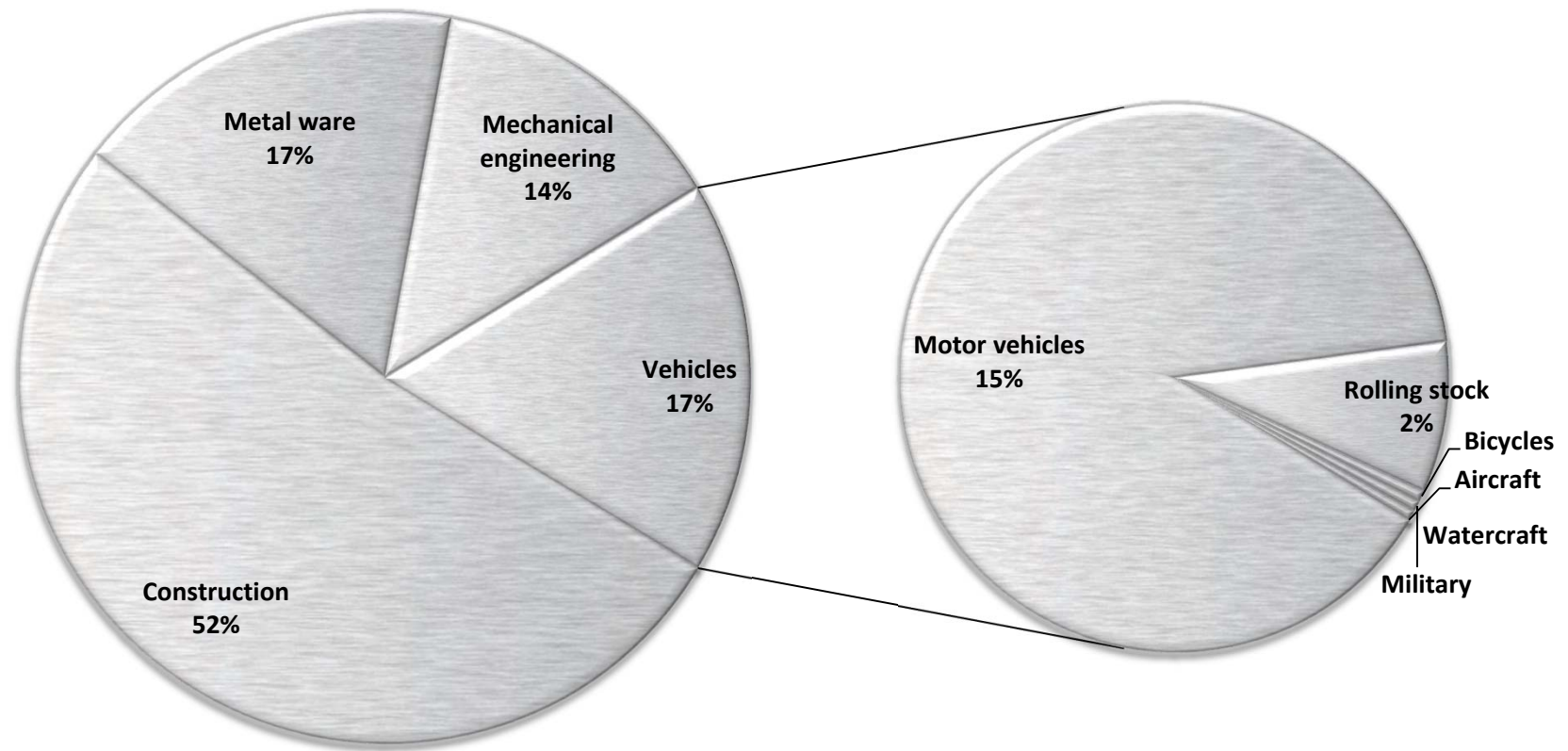
43.6 Mio. t / 5.2 t per capita





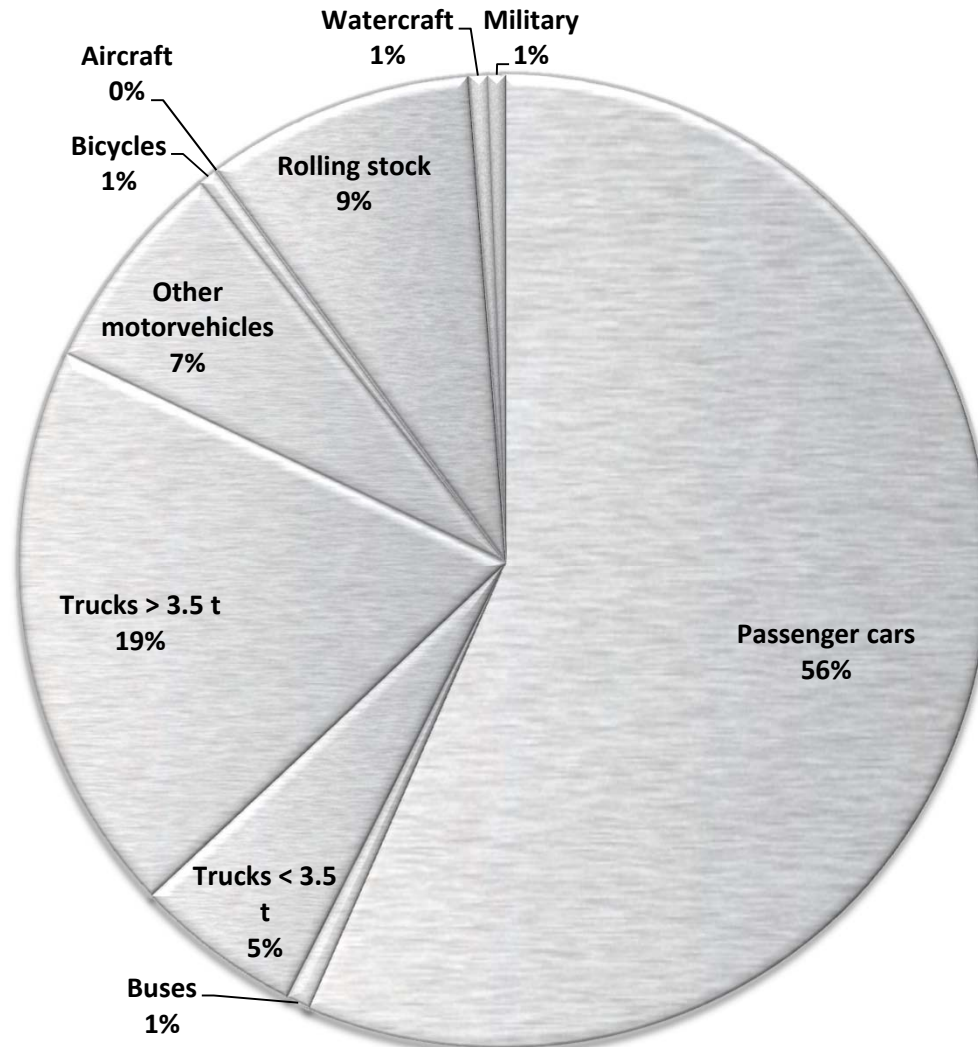
Vehicles

**Iron & steel by sector: Vehicles
7.6 Mio. t / 0.9 t per capita**



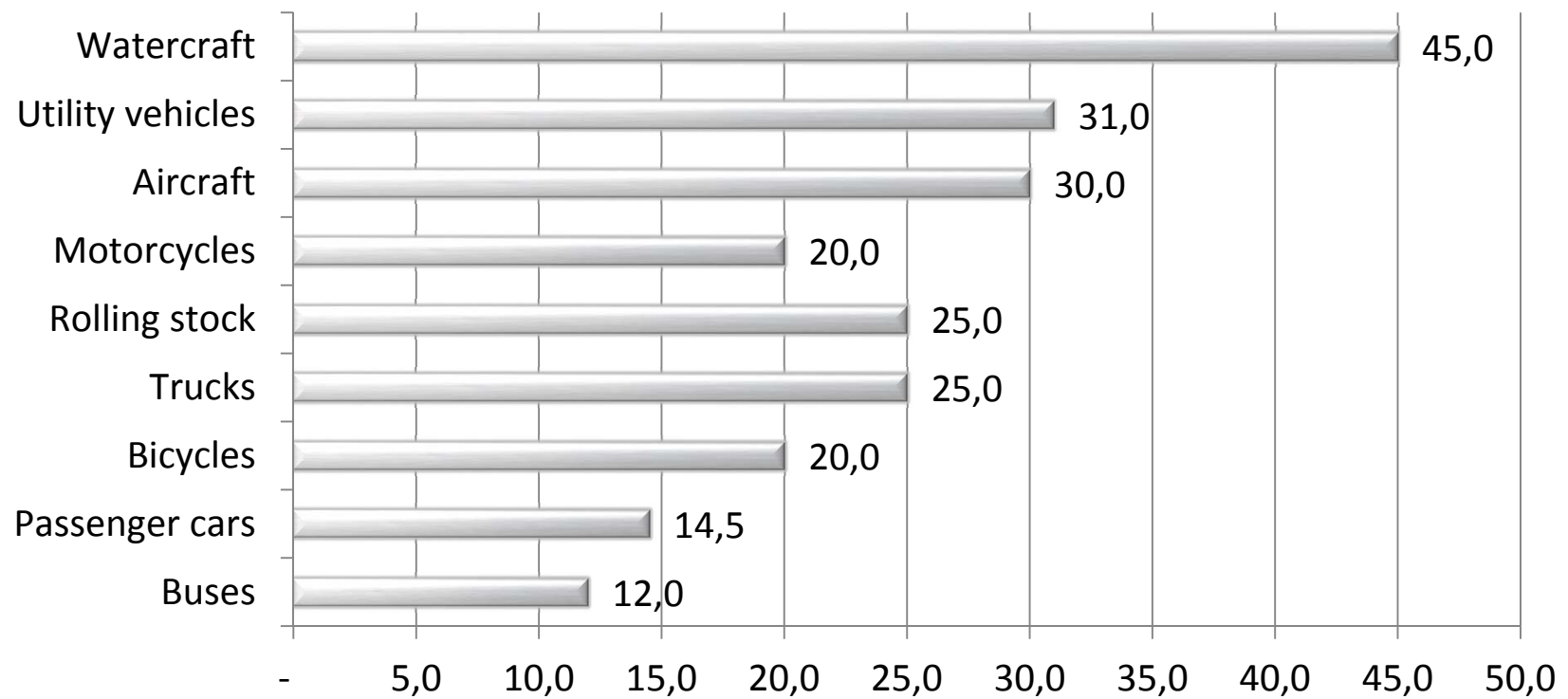
Iron & steel by sector: Vehicles
7.6 Mio. t / 0.9 t per capita

Motor vehicles



Vehicles

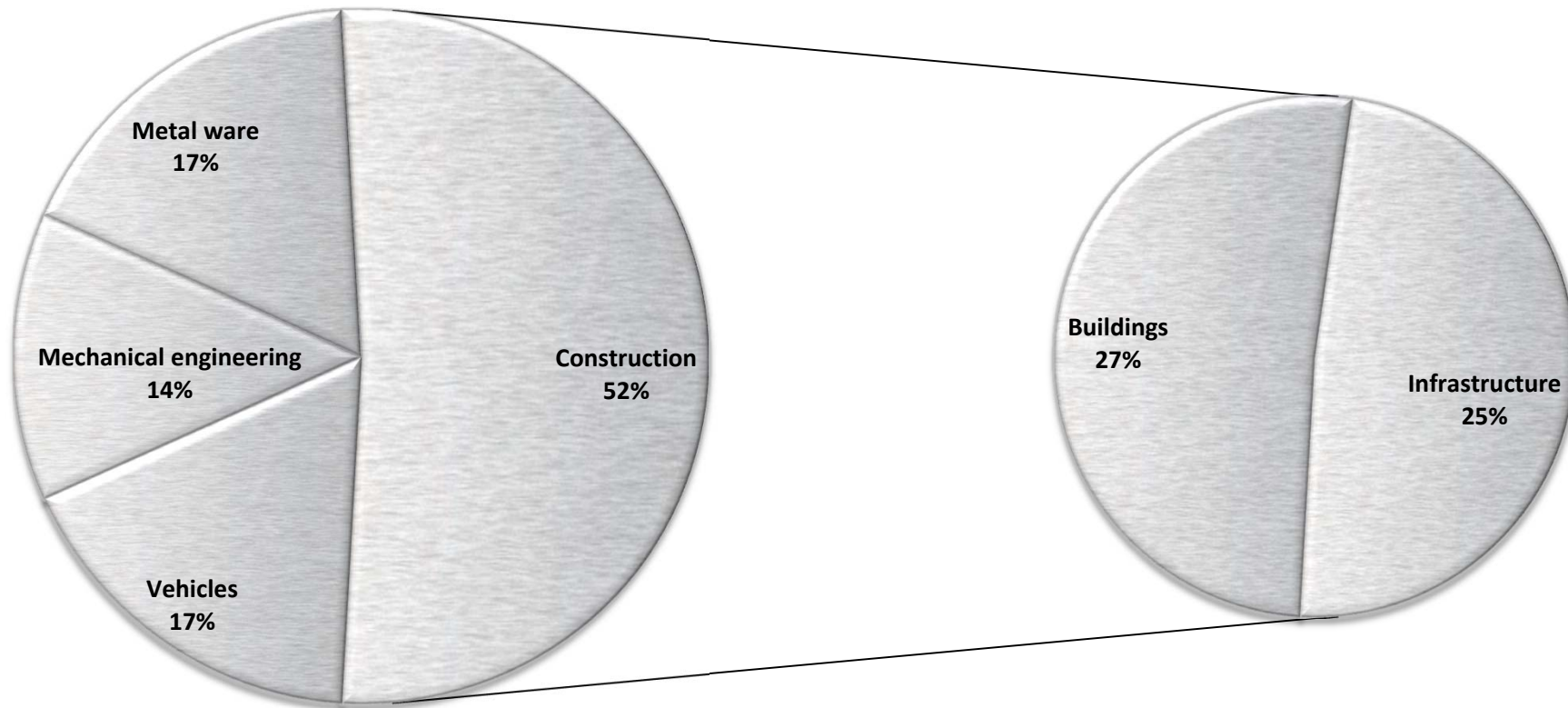
Lifetime (years)





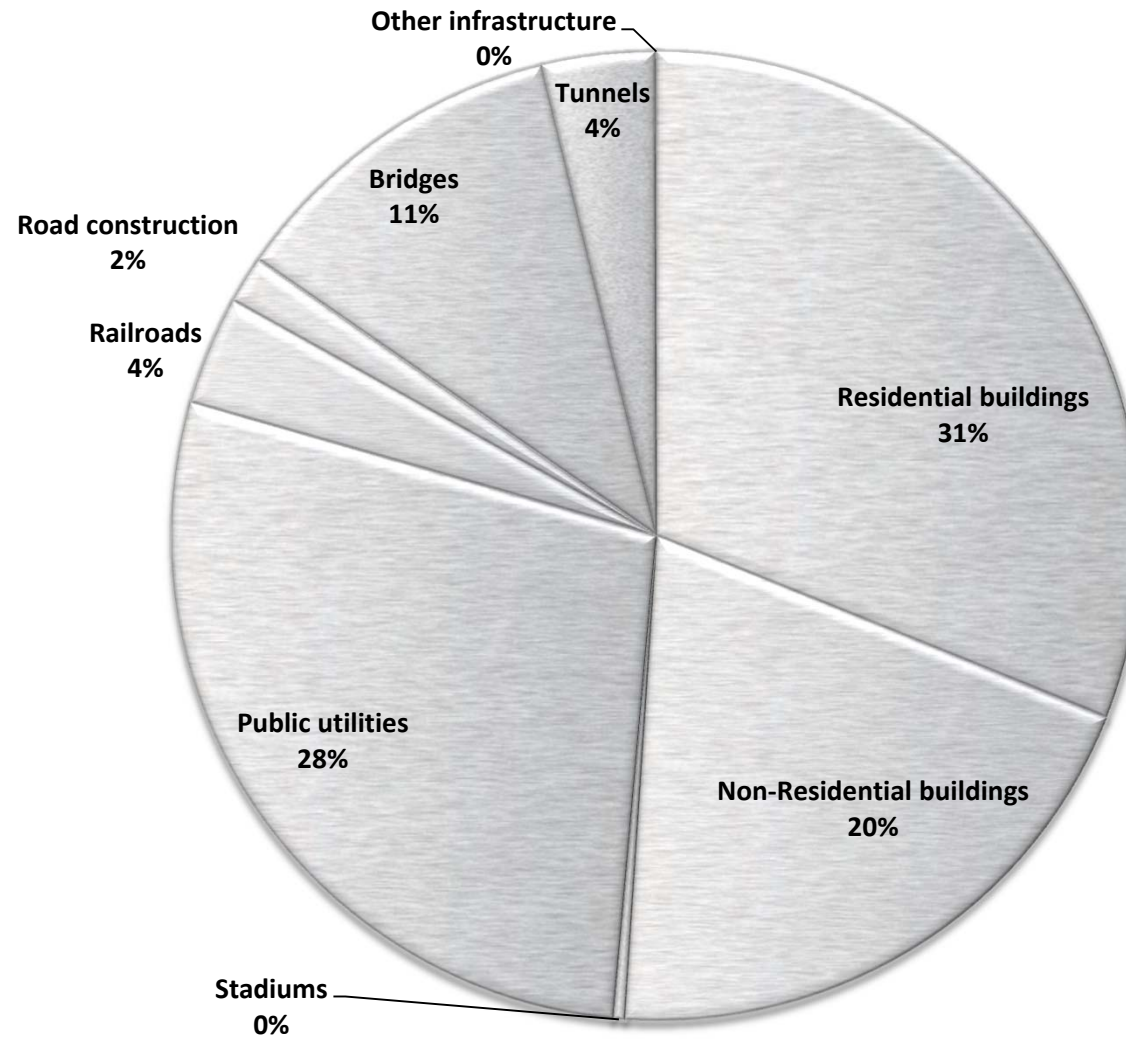
Construction

Iron & steel by sector: Construction
22.7 Mio. t / 2.7 t per capita



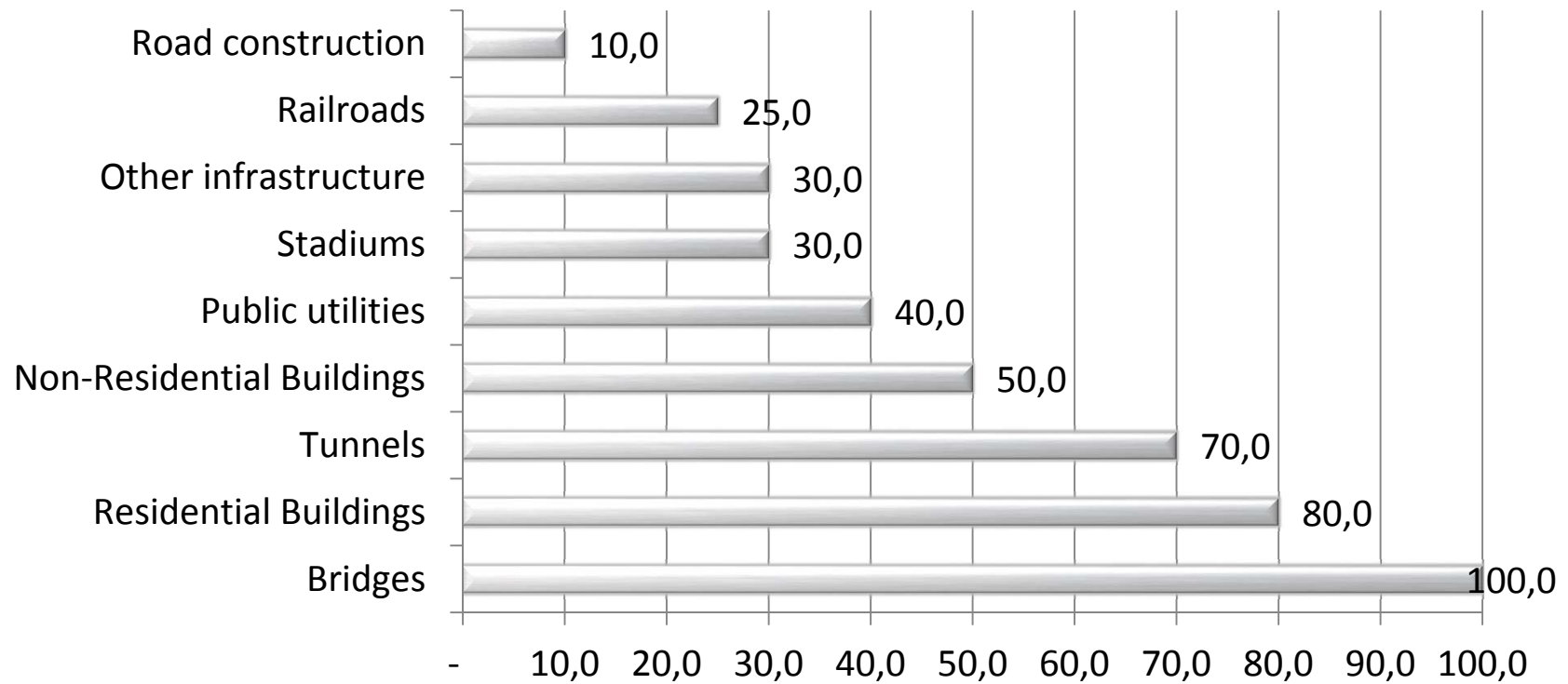
Iron & steel by sector: Construction
22.7 Mio. t / 2.7 t per capita

Buildings

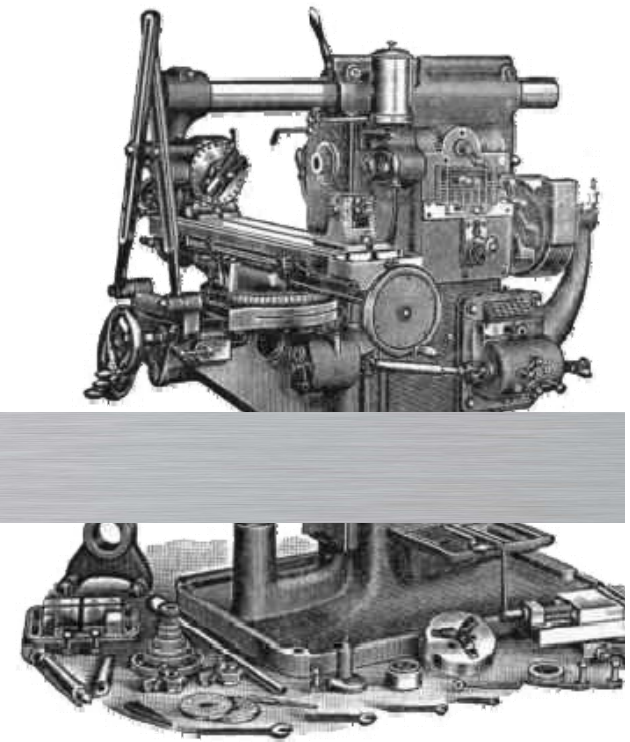


Construction

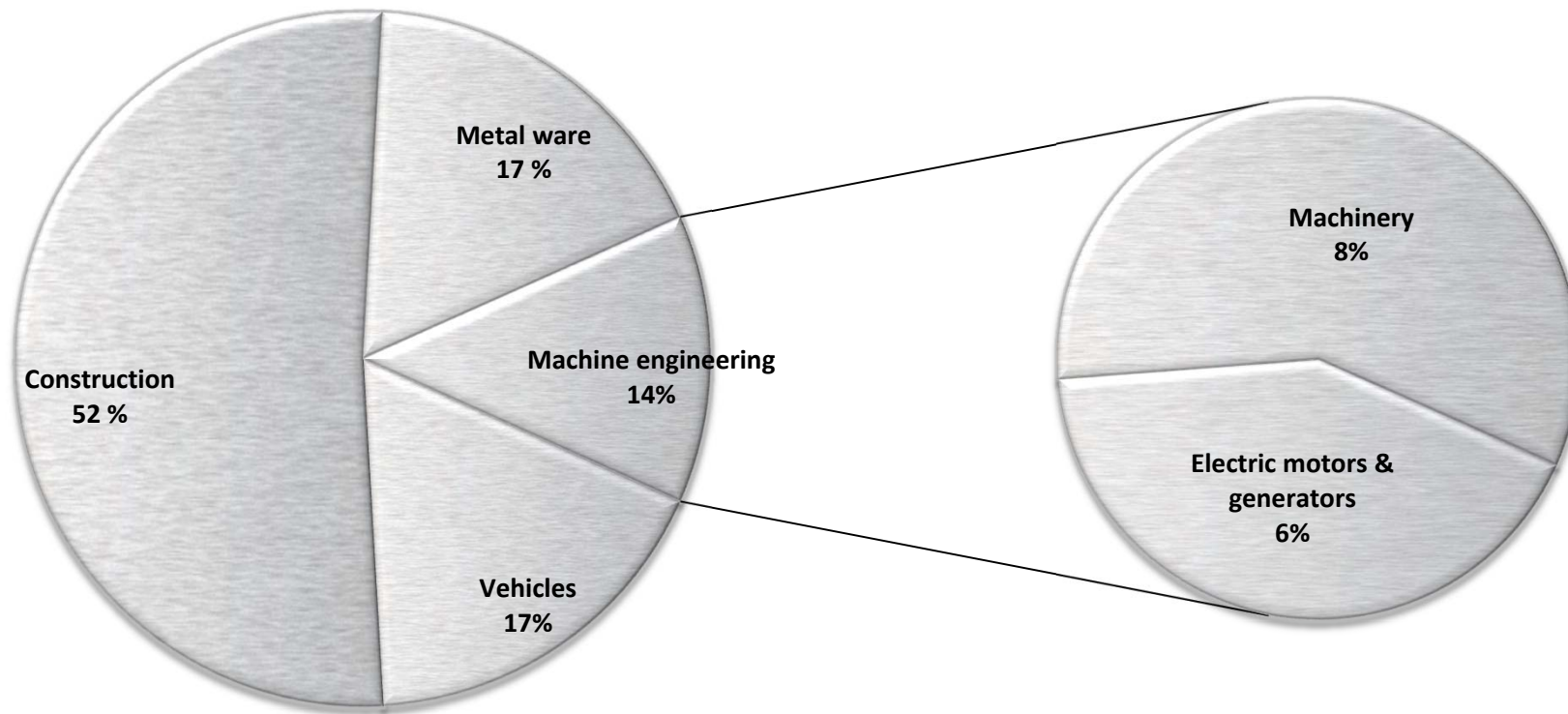
Lifetime (years)



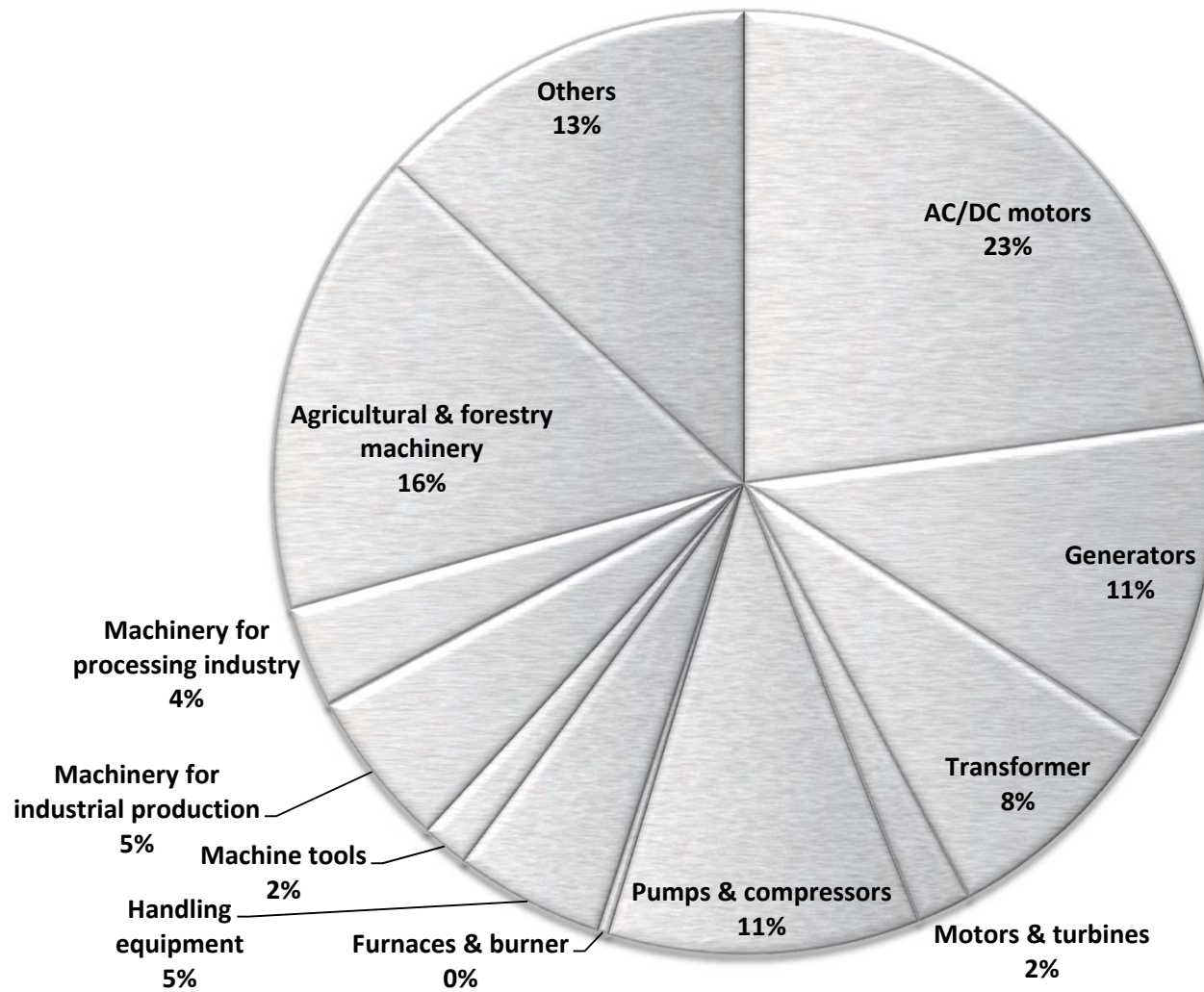
Mechanical engineering



Iron & steel by sector: Mechanical engineering
5.8 Mio. t / 0.7 t per capita

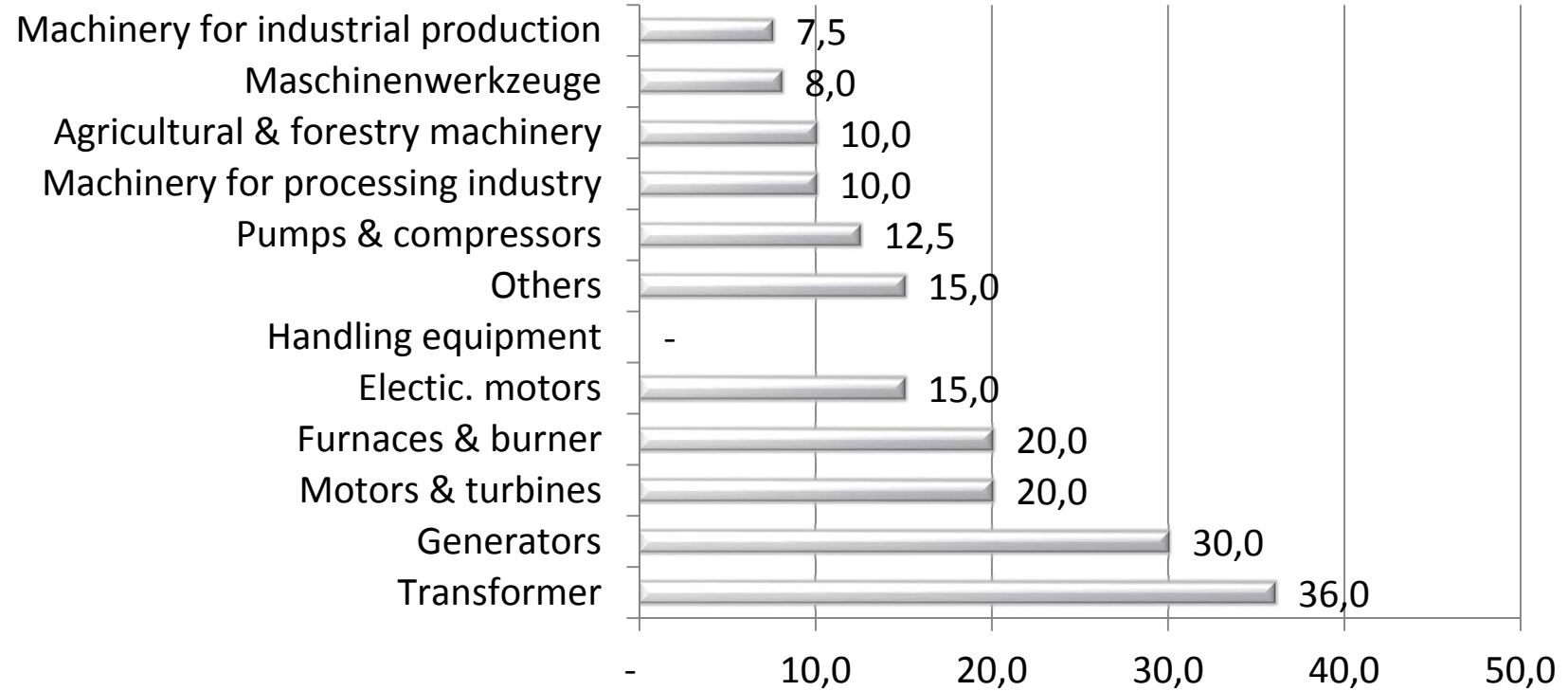


Iron & steel by sector: Mechanical engineering 5.8 Mio. t / 0.7 t per capita





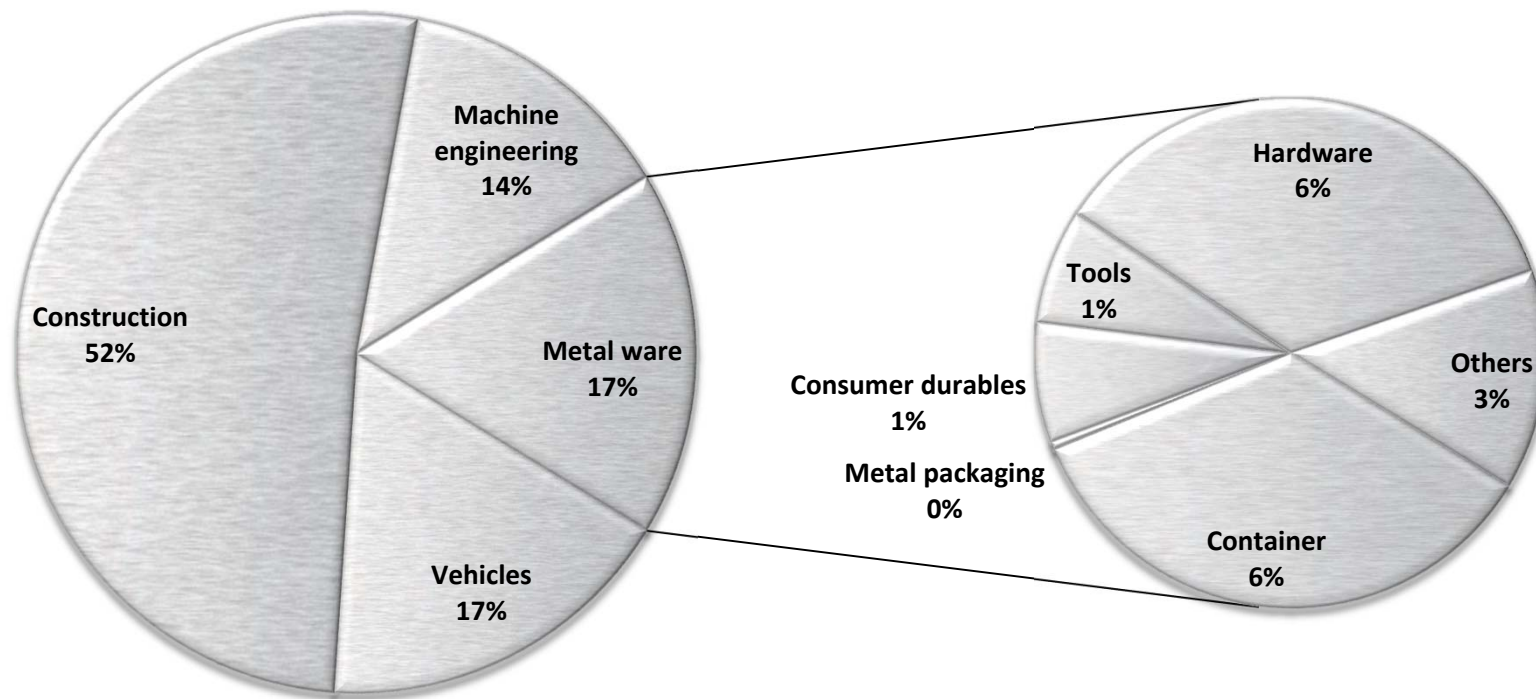
Lifespan (years)



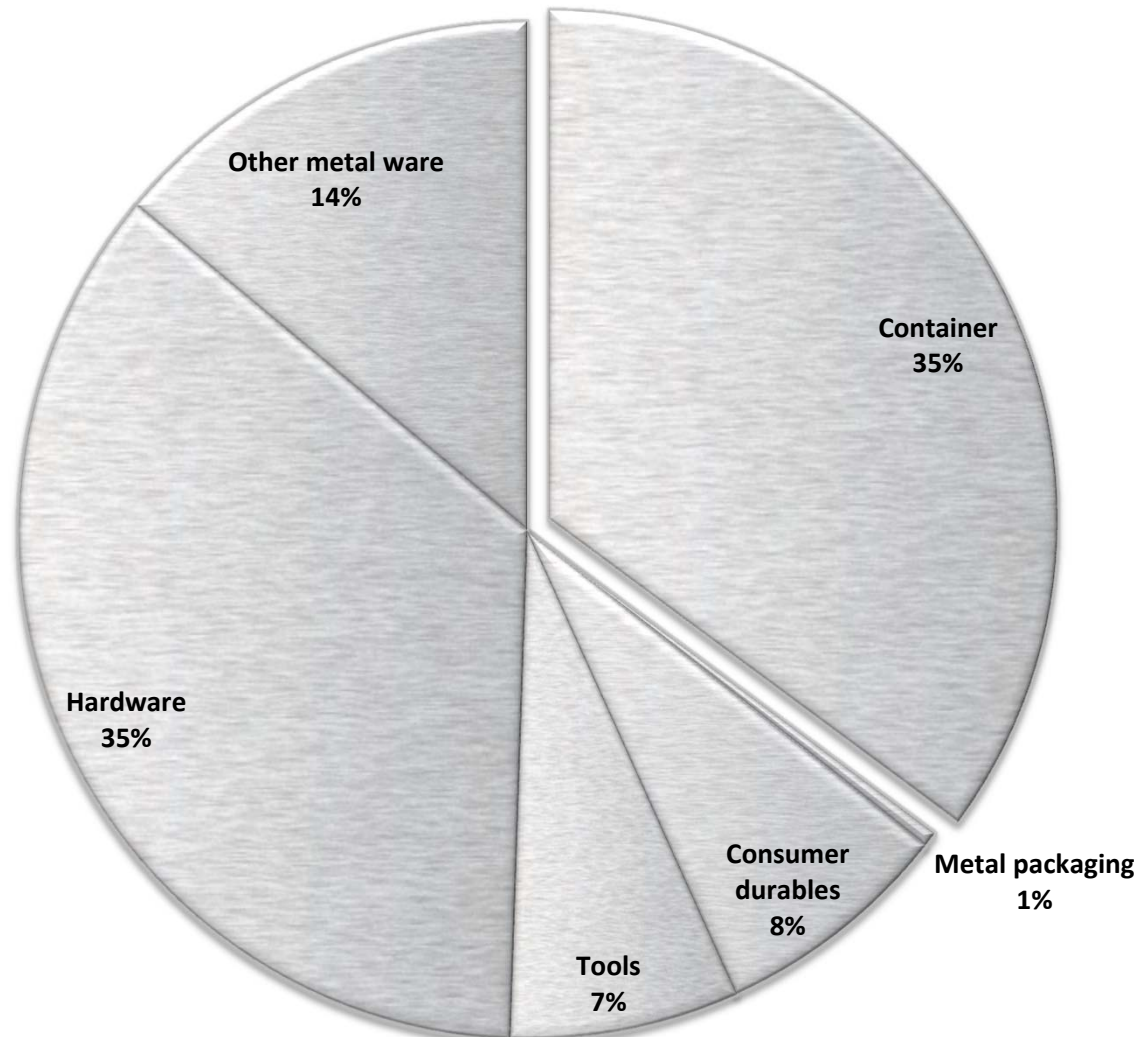


Metal ware

**Iron & steel by sector: Metal ware
7.6 Mio. t / 0.9 t per capita**

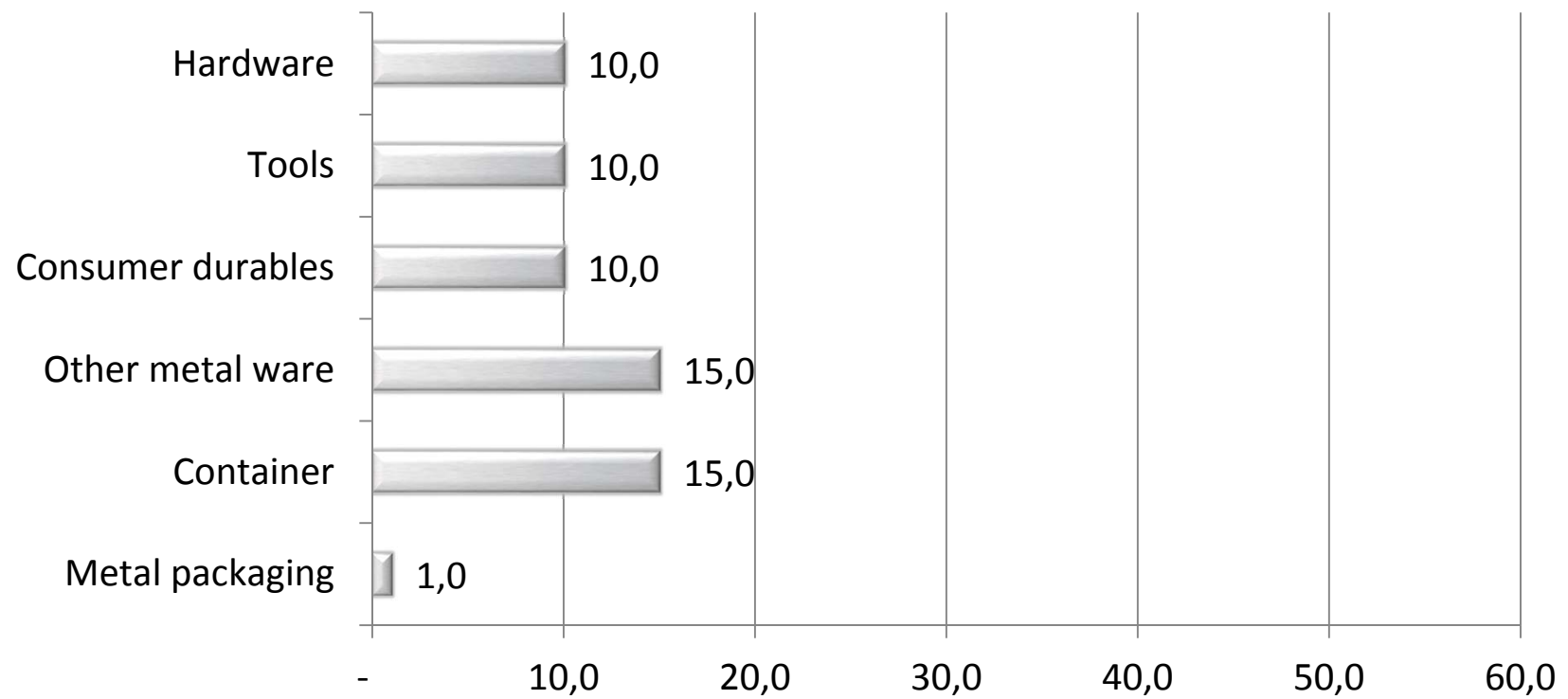


**Iron & steel by sector: Metal ware
7.6 Mio. t / 0.9 t per capita**



Metal ware

Lifespan (years)





Conclusions

Comparison of literature studies

- Total steel quantities 8 – 12 t per capita

Deviations

- +/- 10 % to 50% 3.5 – 8.3 t per capita



Lifetime

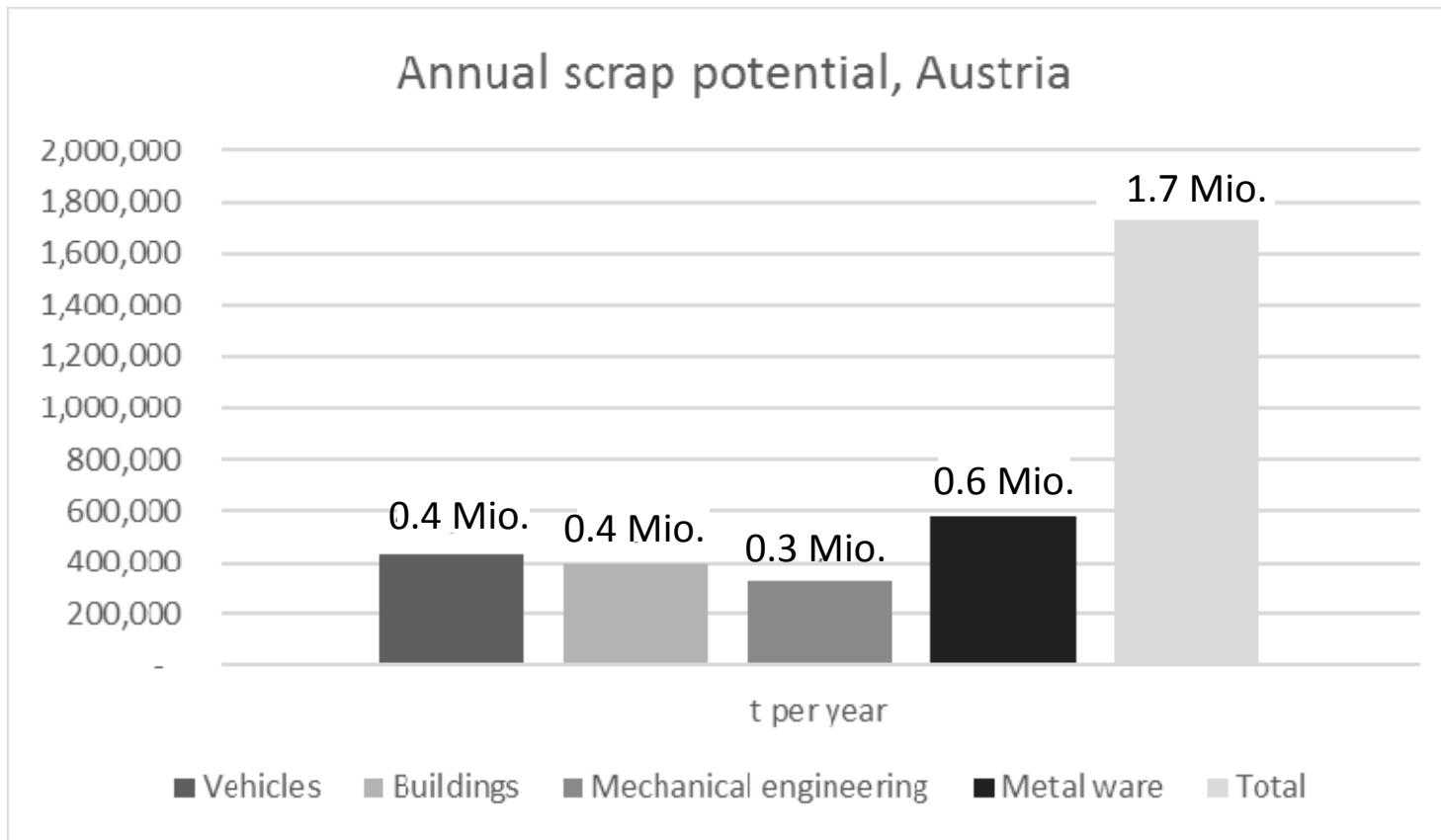
- mostly < 20 to 30 years → Exchange instead of wear
- longer life in construction (50 to > 100 years)



Construction largest share (2.7 t per capita / 51.8%)

- Buildings (27%)
- Infrastructure (25%)





Steel Industry

- Crude steel production per year 7.5 Mio. t
- Share of scrap 28 %

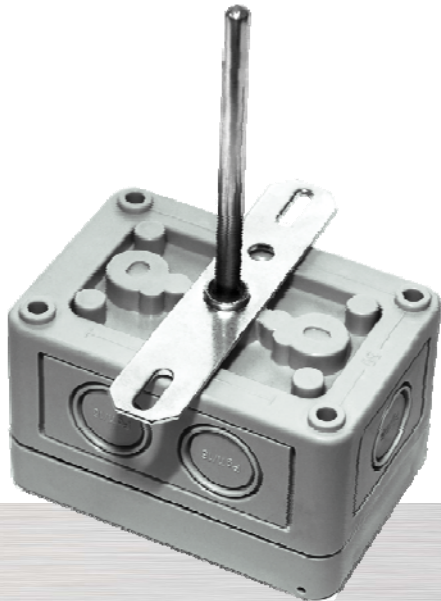
- Scrap potential per year 1.7 Mio t
- Potential share of scrap 23 %



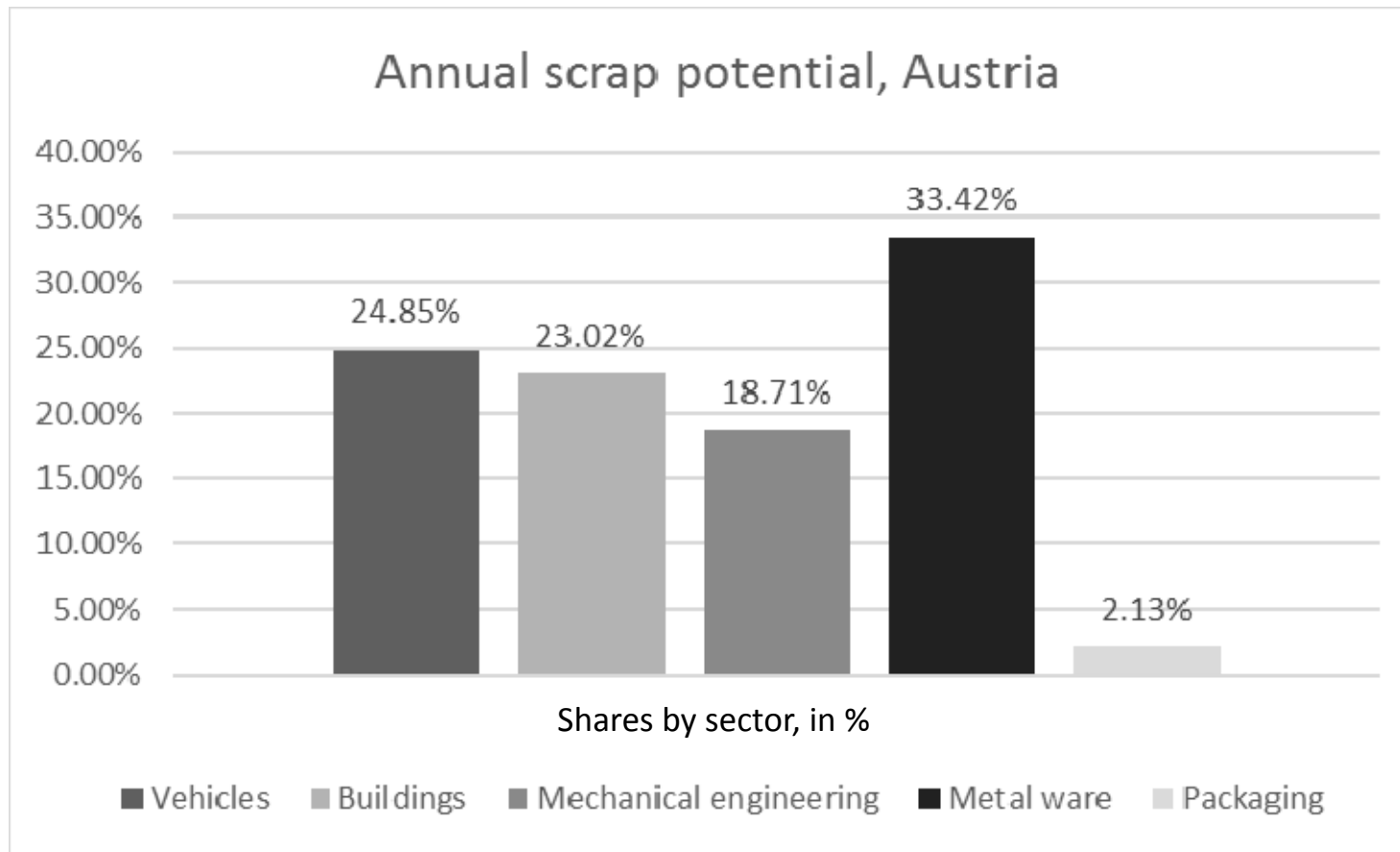
Legislation EU

Circular Economy Package - Recovery and Recycling

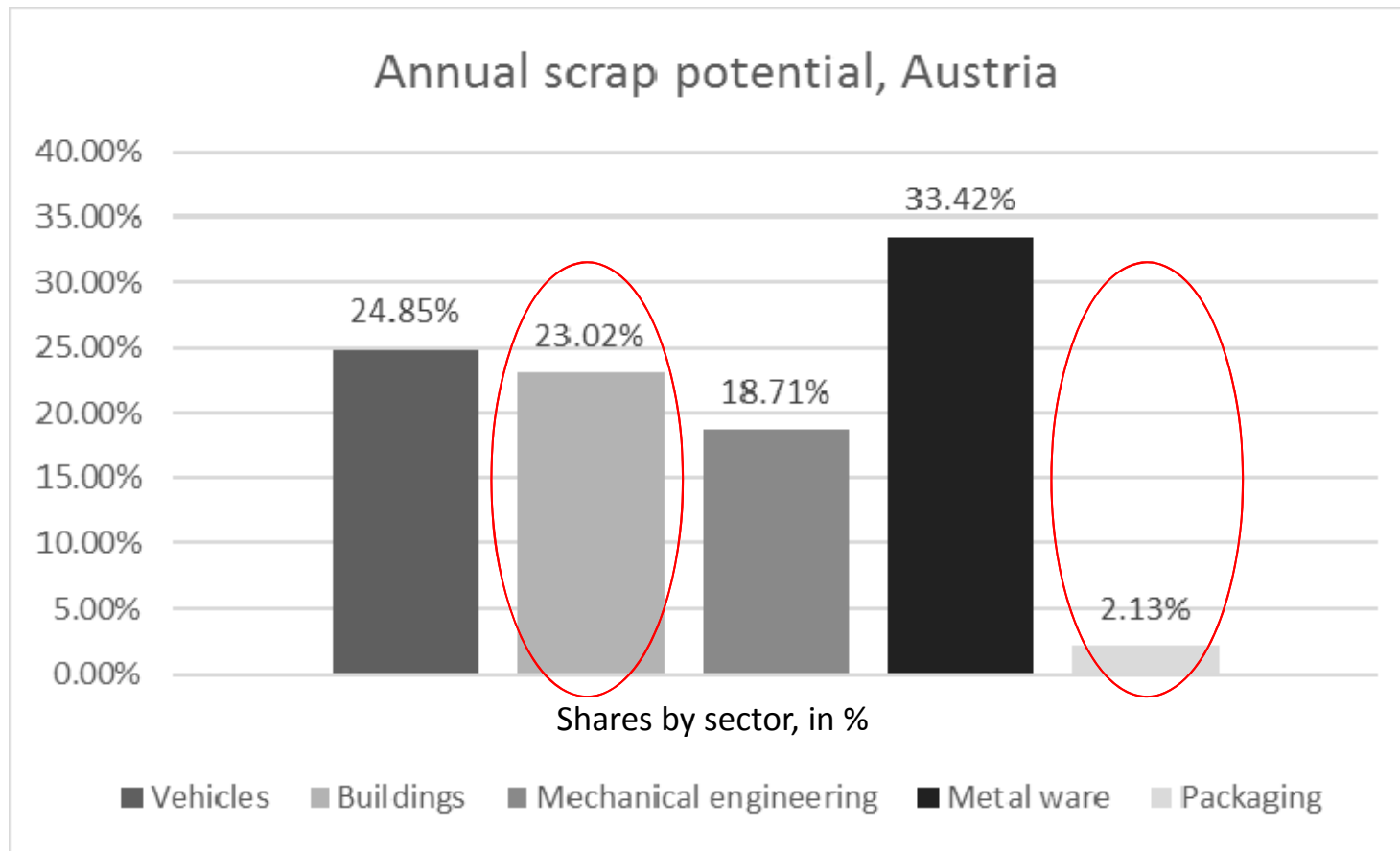
- Construction & demolition waste 70% (by 2025)
(no specification for metals)
- Ferrous packaging 70% (by 2025)
80% (by 2030)



Conclusion



Conclusion



Thank you for your attention!

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