

Data Quality – Theory and Practise

Examples from ecoBUDGET Heidelberg

According to ecoBUDGET, indicators should be:

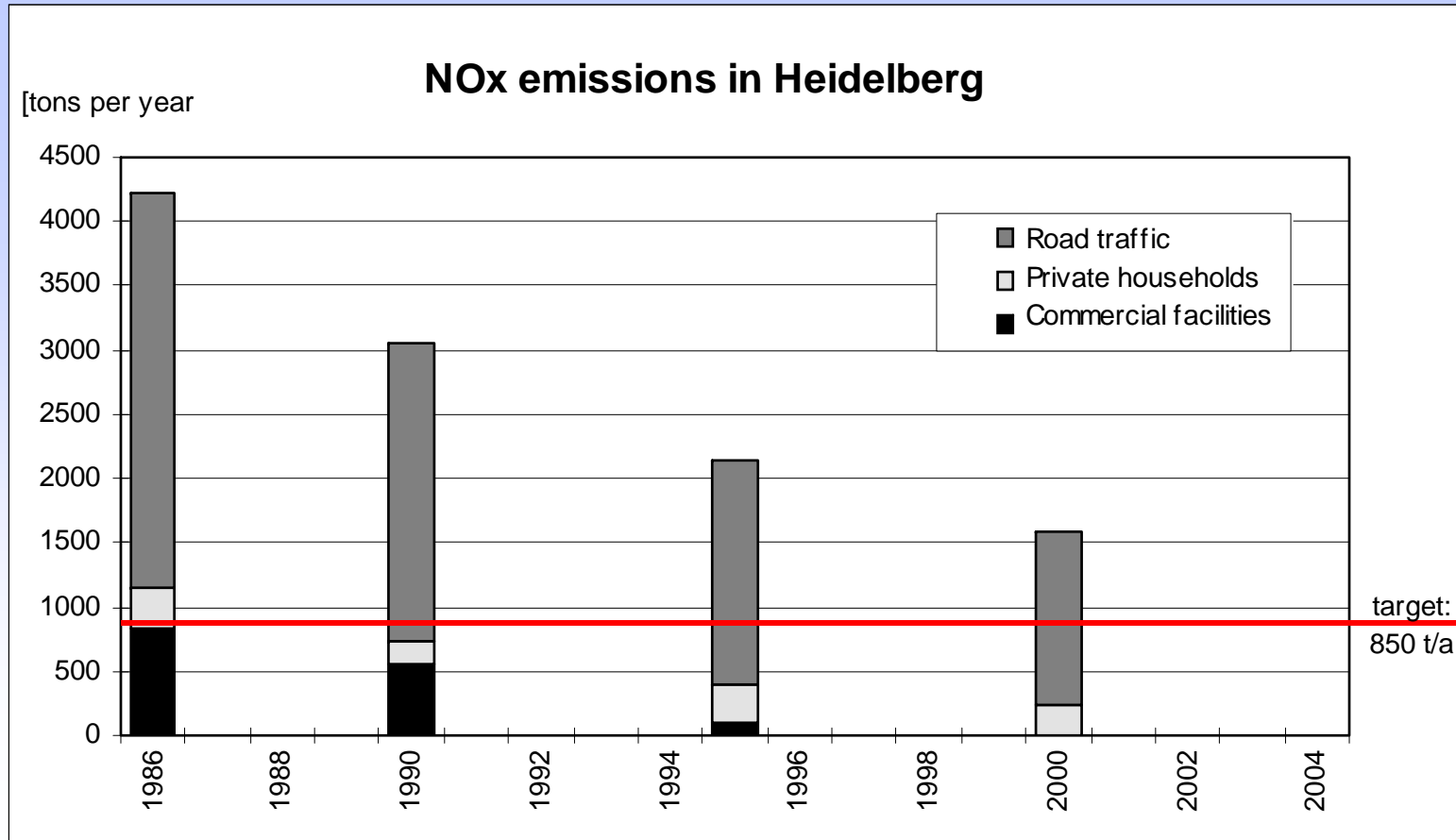
1. **Unambiguous**: clearly defined, scientific basis.
2. **Available**: adapted to local characteristics, no excessive waste of time and resources.
3. **Replicable**: statistical series allowing forecast of trends.
4. **Clear and easy to understand**: transparent for politicians, administration and citizens, not too comprehensive.
5. **Representative**: indicator set should possibly represents the entire scale of environmental priorities of local context.

First Environmental Budget Balance Heidelberg

Indicator	Unit	Reference value (year)	Target value (year)	Actual value	Target index
Air					
NO _x emissions ...	tons per year	4.230 (1986)	-80% (2005) = 850 t/a	1.473	81%
Climate					
CO ₂ emissions	1000 t /year	907 (1987) [+273 traffic]	-20% (2005) = 726 (without traffic)	965 [+ca. 200 traffic]	-32% [without traffic]
Noise					
Traffic noise	length of streets > 55dB(A) in residential areas	63,4 km (1995)	longterm: 0 km	63,4 km	0%
Waste					
Specific residual waste	kg per inhabitant per week	5,06 (1990)	2,5 (2003)	2,67	84%
Water					
Specific drinking water consumption ...	liter per inhabitant per day	116,5 (1990)	110 (2003)	102,6	> 100%



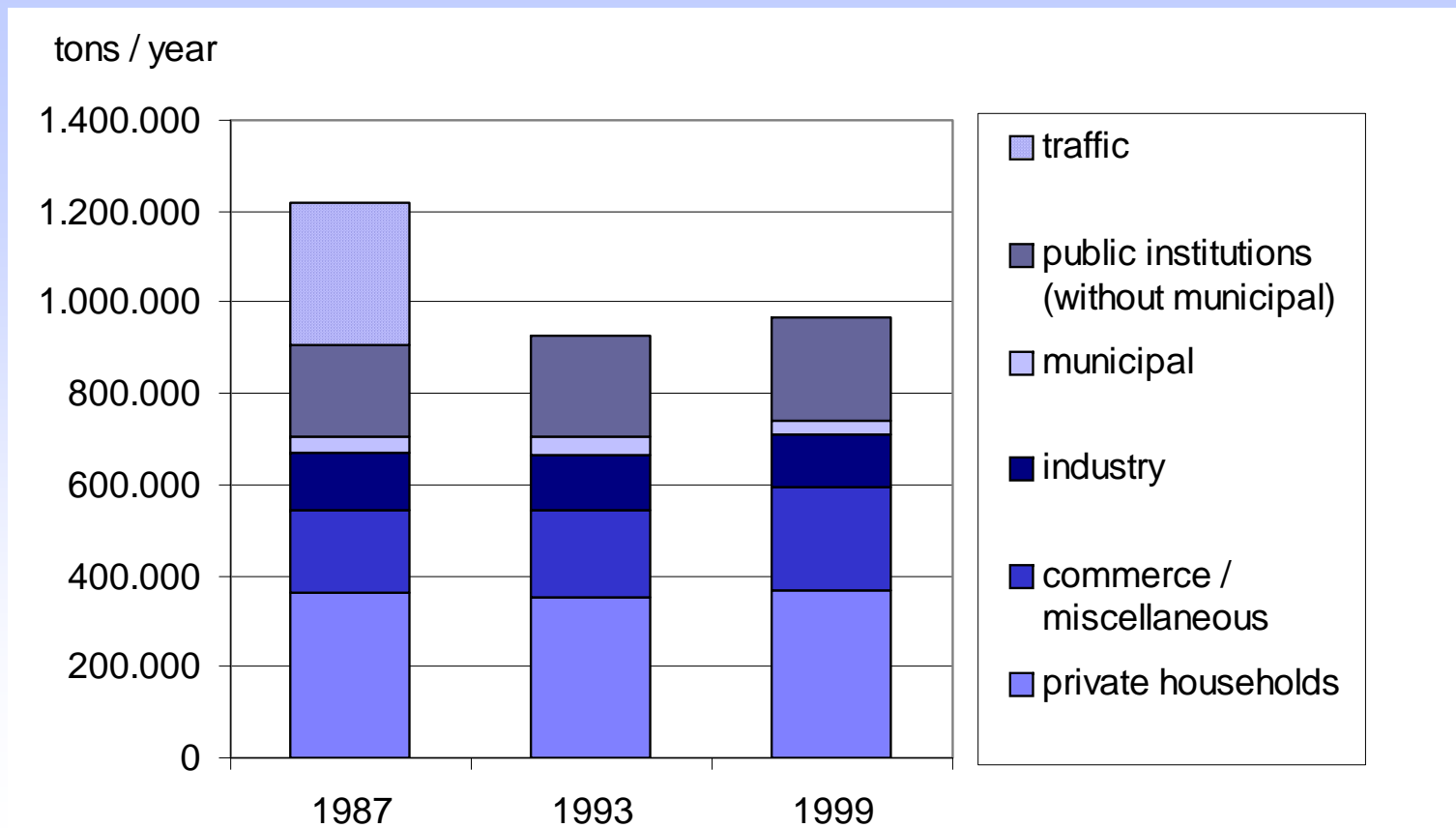
Example: Air quality - NO_x emissions



NO_x emissions data: Problems and solutions

- + Seen as best indicator for air quality, clearly linked to main environmental problem: traffic.
 - Has to be calculated; statistical data series available at state board for statistics, but delay of ~3 years; own calculation did not correspond to state calculation.
- ➔ Differentiated use of indicator:
- municipal overview every 5 years
 - own calculations for specific traffic planning projects

Example: Climate – CO₂ emissions



CO₂ emissions data: Problems and solutions

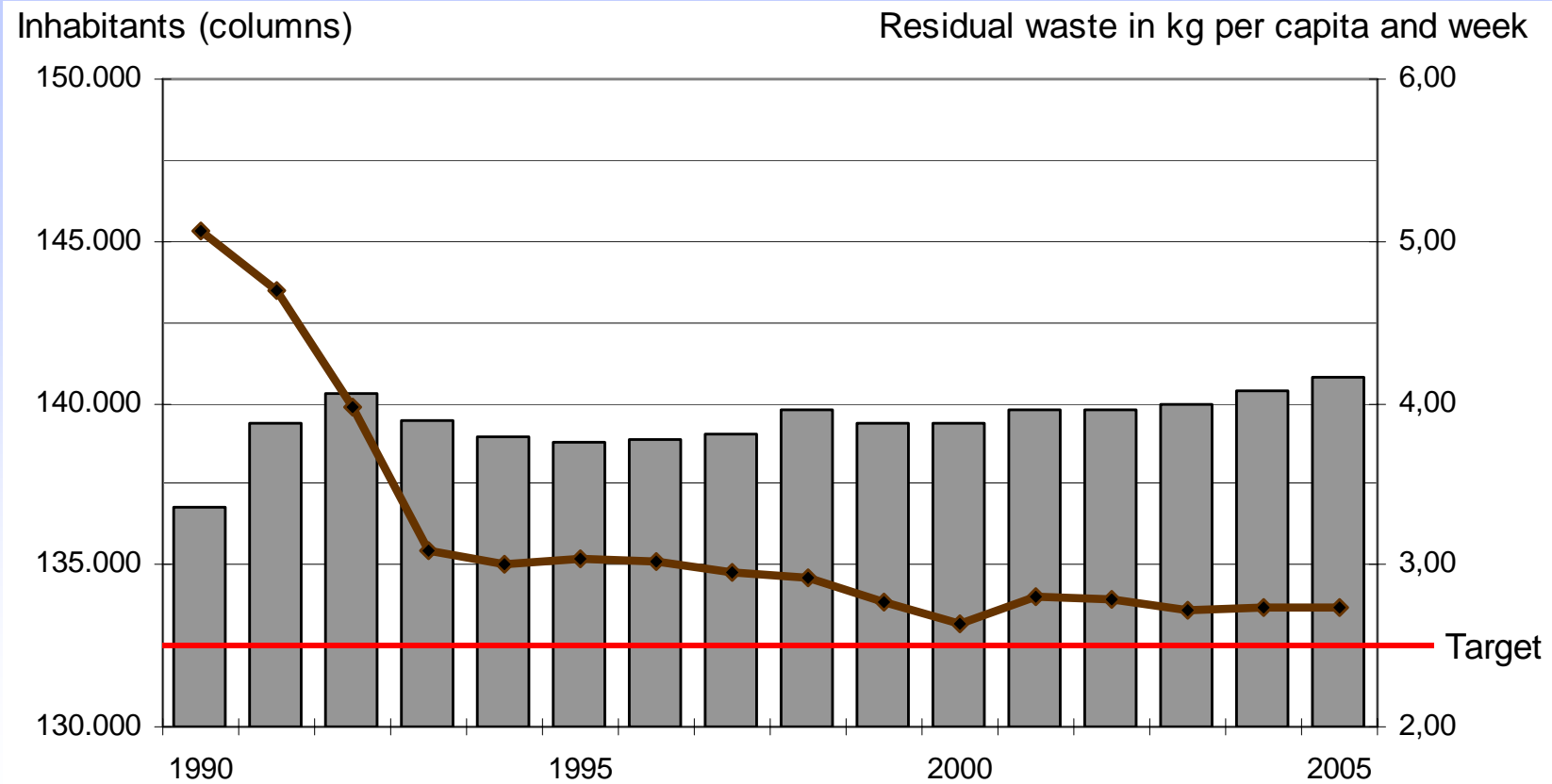
- + Common indicator in most of existing environmental accounting systems; data correspond to climate protection activities.
 - See above „NO_x“ – additional: different approaches to calculate traffic emissions.
- ➔ Using 2 indicators in practise:
- overview for all sources every 5 years
 - annual controlling of municipal CO₂ emissions, directly linked to municipal energy management.

Example: Traffic noise – problems and solutions

[Length of streets > 55 dB(A) in residential areas]

- + „Correct“ indicator according to scientific suggestions at 1997; data was available due to a scientific survey.
- Indicator includes the target that is probably too ambitious according to actual conclusion – no change of indicator value yet!
- ➔ Indicator will probably be adapted to actual European noise legislation (for example „number of citizens being affected by a noise level of XX dB(A)“)

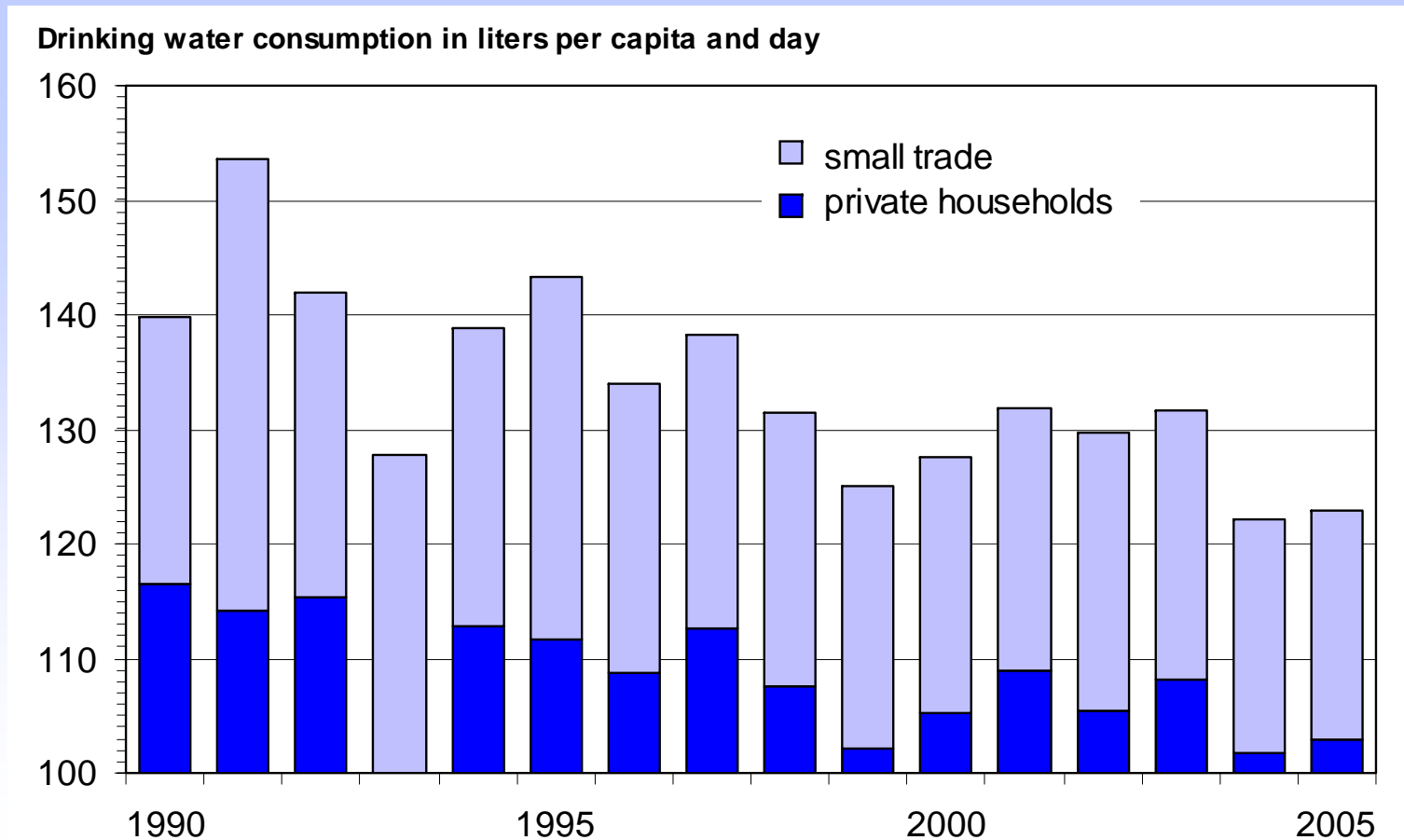
Example: Specific residual waste



Specific residual waste data

- + Good data availability due to quarterly report of the responsible municipal office; directly linked to waste management plan; due to relation to number of inhabitants no failing of target if number of inhabitants increases.
- [No disadvantages found yet!]
- ➔ Perfect indicator in terms of environmental management procedures!

Example: Specific drinking water consumption



Drinking water consumption data: Problems

- + Annual data availability; only available data describing „sustainable use of water resources“; indicator often used in national and international benchmarking systems.
 - No link to action/management plans yet; no explanation of reasons for increase/decrease of indicator value.
- ➔ Due to lack of alternative indicator will remain – but not satisfying in terms of environmental management.

Data quality: Conclusion

- Definition of data quality depends also on strategic options: Which activities affect the data / which activities shall be illustrated by the chosen indicator?
- Ideally all required data should be available „inside“ – „Don't trust any statistics that you did not fake yourself!“
- Ideally all used indicators should be directly linked to an existing management system (example: waste) in order to control the specific aspect of sustainable development efficiently.