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Consumer Goods and Life Cycle Assessment Section

The relation between greenhouse gas accounting and life cycle assessment – A federal authority's view

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What is the issue here?

All depends on the asked question.

See ISO standard 14040:

1. Goal definition and scope
2. Life cycle inventory
3. Environmental impact assessment
4. Interpretation

What is the issue here?

It depends on the specific nature of the questions themselves. (Nothing new for You!)



Question 1

What is the volume of greenhouse gases emitted by Switzerland within its own sovereign territory?

Goal:

- Record and report direct emissions of greenhouse gases within Switzerland.

Inventory:

- Compiled in accordance with the Kyoto Protocol.

Impact assessment:

- on the basis of the CO₂ equivalents specified in the Kyoto Protocol (Houghton et al, 1996).



Question 1: Application in Switzerland

This question is dealt with within the scope of the national reporting procedure in accordance with the obligations specified in the Kyoto Protocol.



Question 2

What are the impacts of the consumption of goods and services in Switzerland on the global climate?

Goal:

- Estimate the total GHG emissions of Switzerland considering the embodied emissions due to imports and exports.

Inventory:

- Direct and indirect emissions of GHG are recorded throughout the world. LCI are required.

Impact assessment:

- Made on the basis of the CO₂ equivalents defined by IPCC 2001 (GWP 100).



Question 2: Application in Switzerland

- Switzerland has low per capita emissions of GHG
- Only domestic emissions are considered in the official “Kyoto” GHG inventory.
- A more realistic view based on Swiss consumption: embodied emissions due to imports and exports of goods and services
- First BUWAL 2000, second edition BAFU 2007.



Question 3

«How much land does a man need?»

(Leo Tolstoy)

And to quote the Global Footprint Network,

«How many Earths does mankind need?»

Goal:

- To measure how a given country (over-) uses its available natural resources.

Inventory:

- Once again, inventories based on life cycle assessments are required for the consumed products and services.

Impact assessment:

- Based on the method developed by the Global Footprint Network (www.footprintnetwork.org).



Question 3: Application in Switzerland

- Analyses carried out by the Swiss Federal Statistical Office (in co-operation with some other Federal Offices).
- Periodical comparisons between Switzerland and other countries.



Question 4

Which recycling rates are needed for beverage containers?

Goal:

- Only as many legal provisions governing the collection and recycling of beverage containers as necessary.

Inventory:

- For all existing scenarios a comprehensive LCI in accordance with the standards for compiling inventories.

Impact assessment:

- With available fully aggregated assessment models (In the past: eco-indicator and ecological scarcity).



Question 4: Application in Switzerland

- Studies since 1985 within the scope of national waste management legislation.
- Starting point of Swiss activities in LCA, LCI and LCIA.



Question 5

Which is the better solution: recycling waste material such as paper and cardboard, or incinerating it?

Goal:

- Clear regulations need to be specified for the management of waste material.
- How much and which kind of legislation is required from an ecological point of view.

Inventory:

- LCI are designed to compare the available methods of waste disposal and recycling during all relevant stages.

Impact assessment:

- Rule: comparisons are made with fully aggregated LCIA
- If necessary: supplemented by material-related assessments.
- The main criterion here is the overall ecobalance.



Question 5: Application in Switzerland

- Findings obtained from LCA have led to the formulation of adequate targets of legislation.
- From LCA we learned:
recycling is much better than disposal or incineration.



Question 6

- With which fuels from renewable sources – i.e. bio-fuels – can lower levels of GHG emissions be achieved (in comparison with petrol), as well as a better overall ecobalance?

Goal:

- In Switzerland, this question is examined by the legislator responsible for oil-tax provisions.



Question 6

Inventory:

- LCA for a bio-fuel, from planting and cultivation through to delivery to the fuel tank.
- Standards for data compilation.
- The reference fuel is petrol. These LCI are compiled using the “ecoinvent” database, version 2.

Impact assessment:

- Carried out using fully aggregated methods.
- Also taking account of any other ecologically relevant aspects.



Question 6: Application in Switzerland

- To the best of my knowledge:
LCA in the form of evidence of a positive overall ecobalance is being used as a measurement basis in tax legislation in Switzerland for the first time.
- The associated enforcement instruments (ordinances) are currently in preparation.
- Today, no details concerning their exact content can be given.
- However, the new legislation is expected to enter into force on 1 July 2008.



Question 7

How to assess the level of environment-friendliness of a passenger car, and compare it with other models?

Goal:

different purposes:

- standardised information for buyers of new cars;
- special financial bonus for buyers of “clean” new cars
- to determine the level of the yearly vehicle tax;
- to regulate access to city centres
 - permanent access
 - restricted access during smog periods



Question 7: Application in Switzerland (1)

- Climate or overall ecobalance?
- Questions 1 to 6: the legislator and enforcement authorities have made their decisions.
- Question 7: a decision has yet to be made.
- Two key questions from an ecological point of view:
 1. Should only the impact on the climate be taken into account, or should air pollutants and noise also be considered?
 2. Should fuel production be included in the equation?



Question 7: Application in Switzerland (2)

Second question: a clear answer can be given:

- only petrol and diesel: fuel production is not necessary, since both fuels are produced together in the refinery.
- other fuels: we can no longer ignore the differences in production methods. This was the main factor that the legislator took into account when preparing oil-tax legislation and considering the situation with respect to bio-fuels.

First question – climate only vs. overall ecobalance:

- a decision at the political level has not yet been taken for passenger cars – no prediction at this stage.



Question 7:

Application in Switzerland 3

From a practical point of view:
both options are prepared

- the “climate assessment” is used for the existing “energy label”
- LCA are used in the official guidelines concerning the acquisition of cars for the federal government’s own fleet.



Conclusions

Things should be kept as simple as possible.

But as Einstein so aptly pointed out, everything should be made as simple as possible, but not simpler.

With respect to the question as to when a focus exclusively on GHG can be deemed reasonable, there is no generally valid answer. But we can also turn this question around:

- When can we reasonably do without a comprehensive life cycle assessment?
- Here the answer is clear:
it is the mandate of the legislator that is the determining factor – either implicitly (for example in connection with the Kyoto Protocol or waste management) or explicitly (for example in connection with bio-fuels).



Conclusions

- A LCI of a complete system is only reliable if uniform data collection rules have been used for all associated components.
- For the Swiss federal administration, this is a minimum requirement.

This brings us to tomorrow's "ecoinvent" meeting

- The Swiss Federal authorities recognised the strategic importance of reliable life cycle inventories at an early stage – and support ecoinvent.
- We have been able to focus on the question of climate vs. ecobalancing today thanks to the fact that we have suitable, reliable inventory data and compilation rules at our disposal for both these aspects.



Thank you very much for your kind attention!



- [end]

