CO2-eq-emissions of organic and conventional foodstuffs in Austria

and

CO2_Labeling-Project 100 organic products on a supermarket level

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Project information

Project commissioned by:

- Austrian BMLFUW
- W. Lampert Beratungsges.m.b.H. “Zurück zum Ursprung” / Hofer KG

Duration: 2 years (since July 2008)

Review:

- Öko-Institut Freiburg
- Research Institute of Organic Agriculture (FiBL) Switzerland

Internet-Link to the Project:

http://www.fibl.org/de/oesterreich/schwerpunkte-at/klimaschutz.html

Objectives of the project

1. to **compare the greenhouse gas emissions** (**CO2 eq**) of organic/ecological foodstuffs, with foodstuffs grown conventionally,
2. **to render the results visible for the consumer**.

The balanced organic and conventional foodstuffs are **retail products.**

→ the processing and marketing of the products takes place on the **level of nationwide supermarket companies.**

Objectives of the project

120 foodstuffs were/are being balanced:

- dairy products
- bread products,
- eggs, poultry
- fruit, vegetables, fruit juices

in 3 categories:

a) **Organic premium line**, „Zurück zum Ursprung“ - Back to the origin ***(Bio ZZU)***
b) **Organic EU standard *(Bio EU)***
c) **Traditional (conventional) foodstuffs *(KONV)***

Methods

- **CO2-balance** as a **„Life cycle assessment“ (LCA)** according to the guidelines of the **IPCC (2007)**
- **a climate assessment model was developed**
- was based strictly on the international eco-balance guidelines **(ISO 14040 and 14044)**
- along the **entire supply chain,** from the agricultural production including intermediate production, over the processing, packaging, storage to the retail of the product and the individual supermarket branches.
- **external review:** Ökoinstitut Freiburg and FiBL Schweiz

Methods

The greenhouse gases included are:

- ⇨ CO_2, CH_4, N_2O, which were calculated in the form of **„CO_2-equivalents“ (CO_2-eq)** (Climate-affecting-factor of CH_4: 23; climate-affecting-factor of N2O: 298).
- ⇨ **The balances were compiled using the program SIMA PRO 7.1.**
- ⇨ **Detailed primary data** in the areas of agriculture, transport, processing, packaging and distribution were accessed from the Austrian supermarket corporation HOFER KG's organic product line, „Zurück zum Ursprung“.
- ⇨ it was possible to calculate an Austria-specific **„supermarket standard“ for transport, processing, packaging and distribution**.

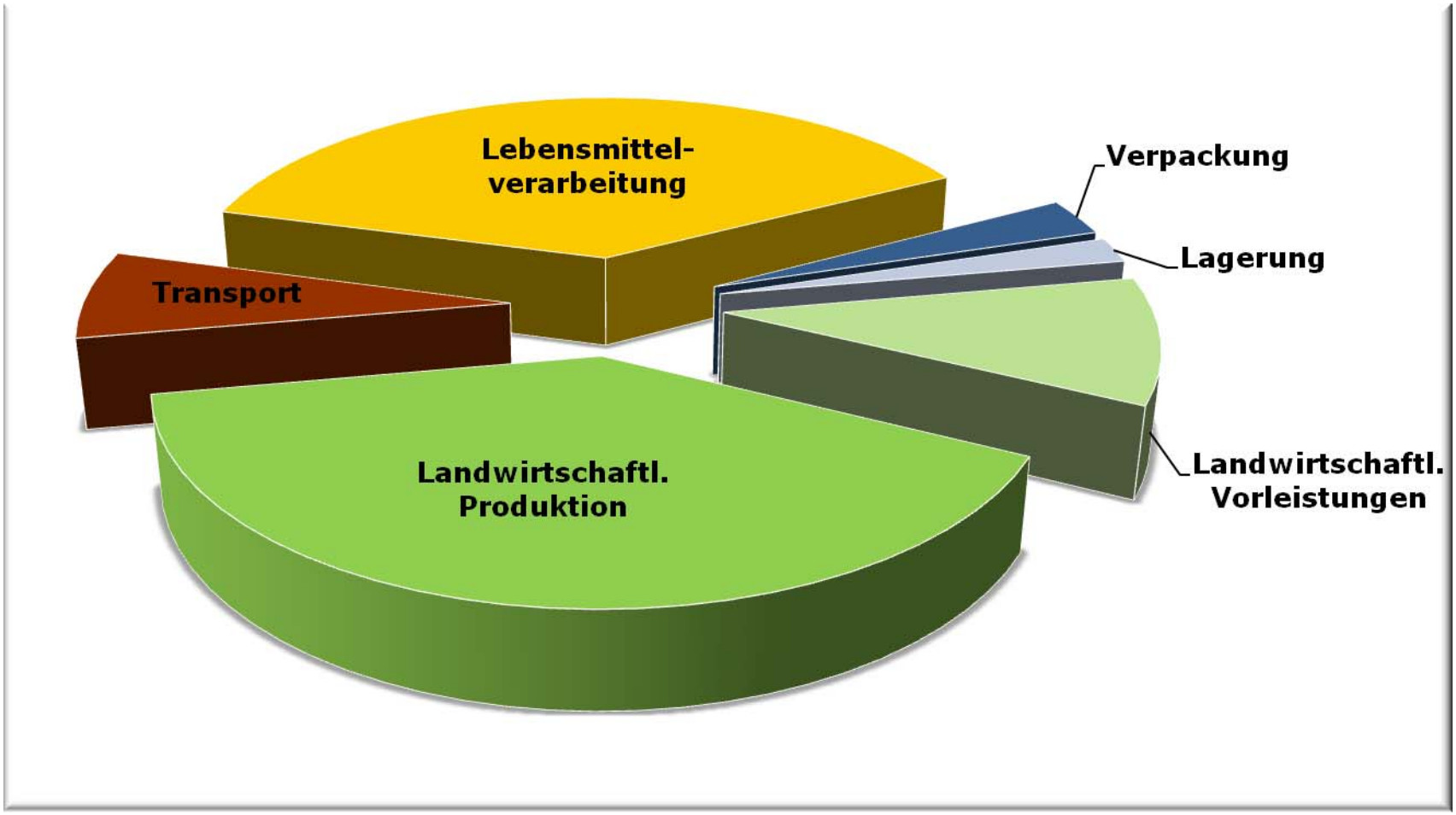
Methods

secondary data

- ⇨ databases GEMIS 4.42 and ECOINVENT,
- ⇨ secondary data from approx. 200 national and international publications and 20 Austrian and international statistics
- ⇨ current national and international literature regarding CO2-Balance evaluation

→ it was possible to take the specific production conditions in Austria, as well as the current level of knowledge about CO2-balance evaluation and land use change into consideration.

categories of supply chain



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Consideration of effects which have so far recieved little attention

1. **Land Use Change:** Consideration of the destruction of savannas and tropical land through soja cultivation (over 90% of soja used for animal feed in Austria is imported from Brazil).

→ main reason for CO_2-saving from organic **milk products**

2. **Humus accumulation** through organic/ecological agriculture

Results - Examples

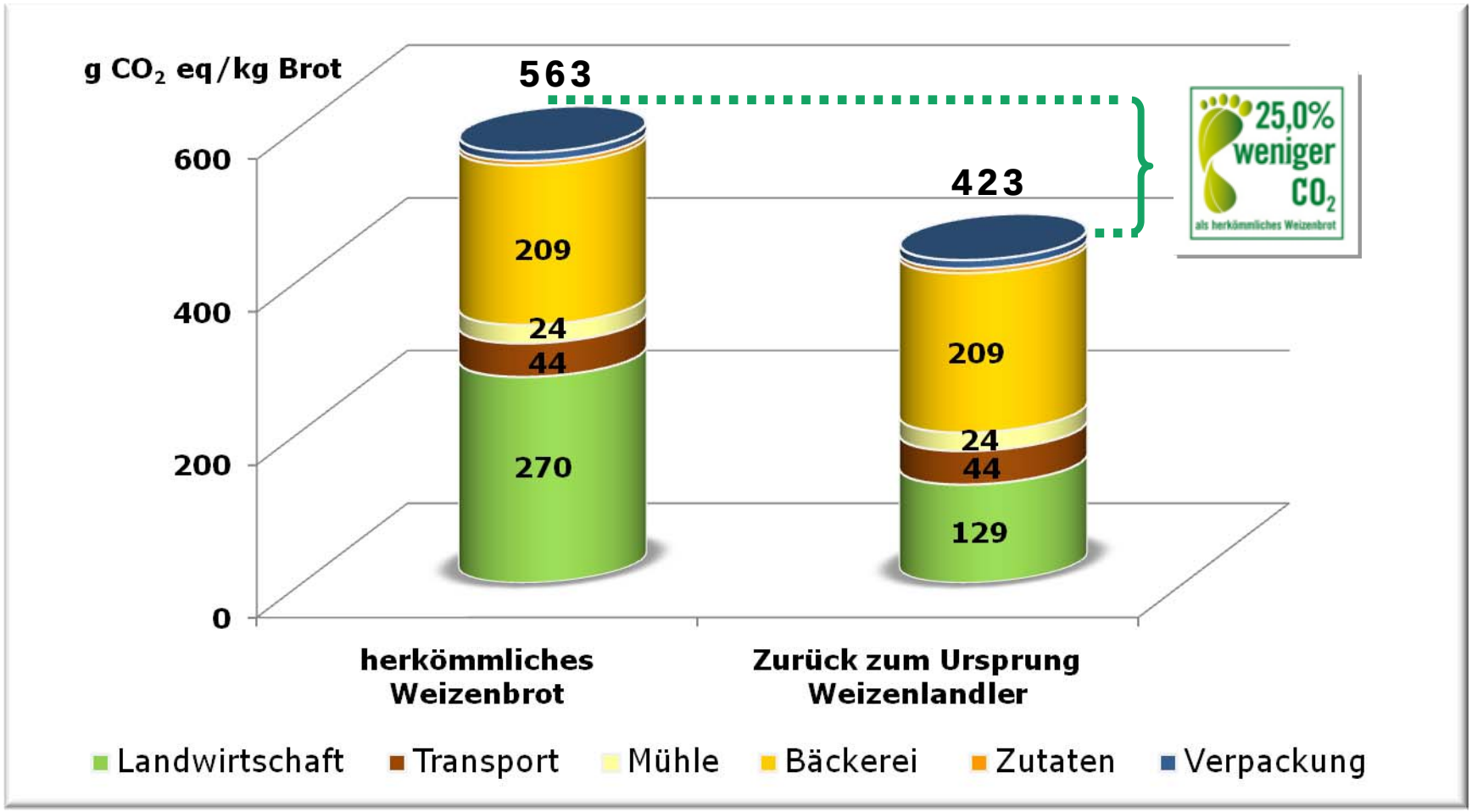
Organic products (Bio-ZZU and BIO EU) constantly display lower CO2-eq-Emissions than comparable, conventional products:

- **Dairy products: 10 - 21% lower CO2-eq-emissions** (based on 1 kg of the product)

- **bread and breasd products: 17-45% lower CO2-eq-emissions** (based on 1 kg of the product)

- **Vegetables: 10-35 % lower CO2-eq-emissions** (based on 1 kg of the product)

Results: example wheat bread:



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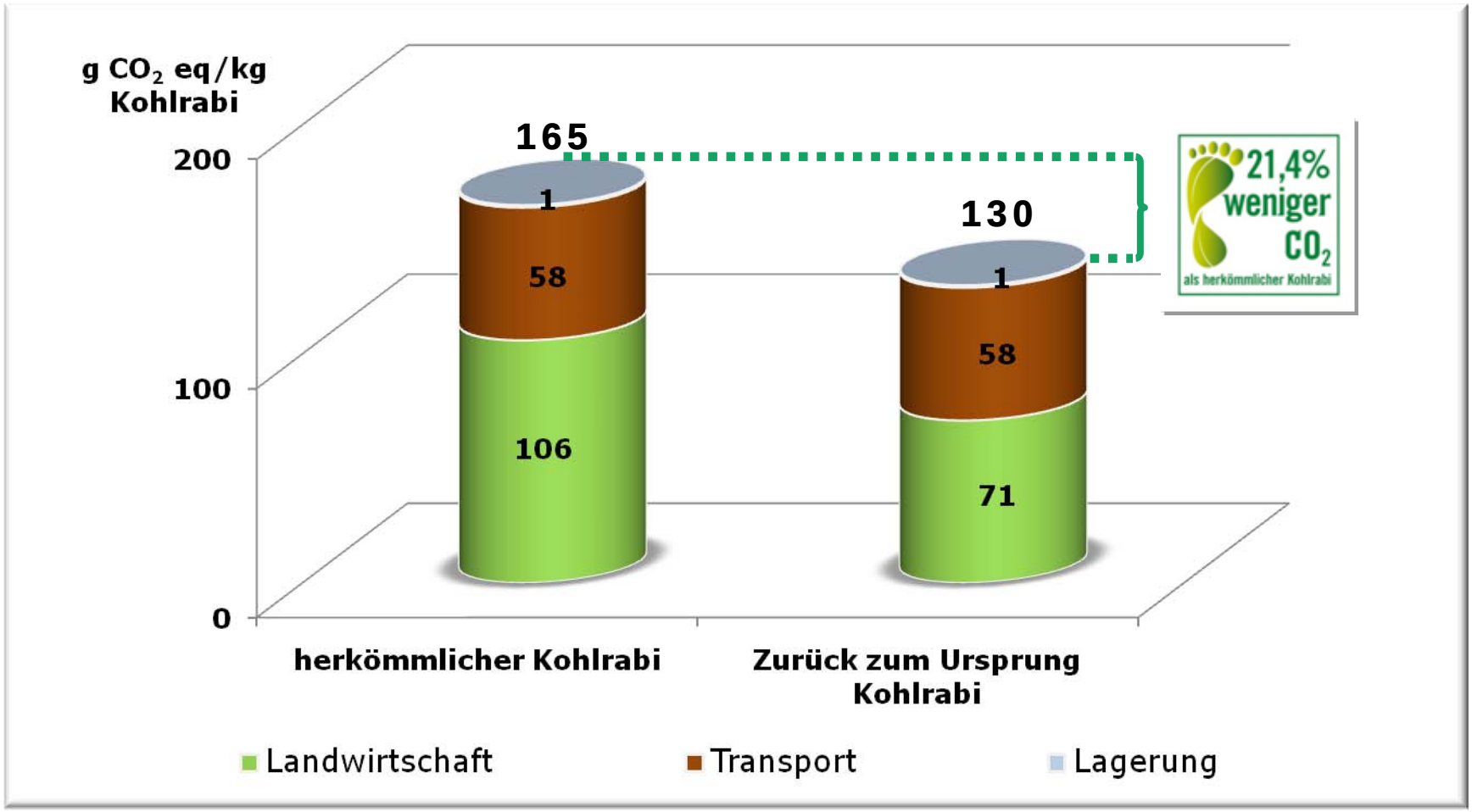
Results - example: Kohlrabi



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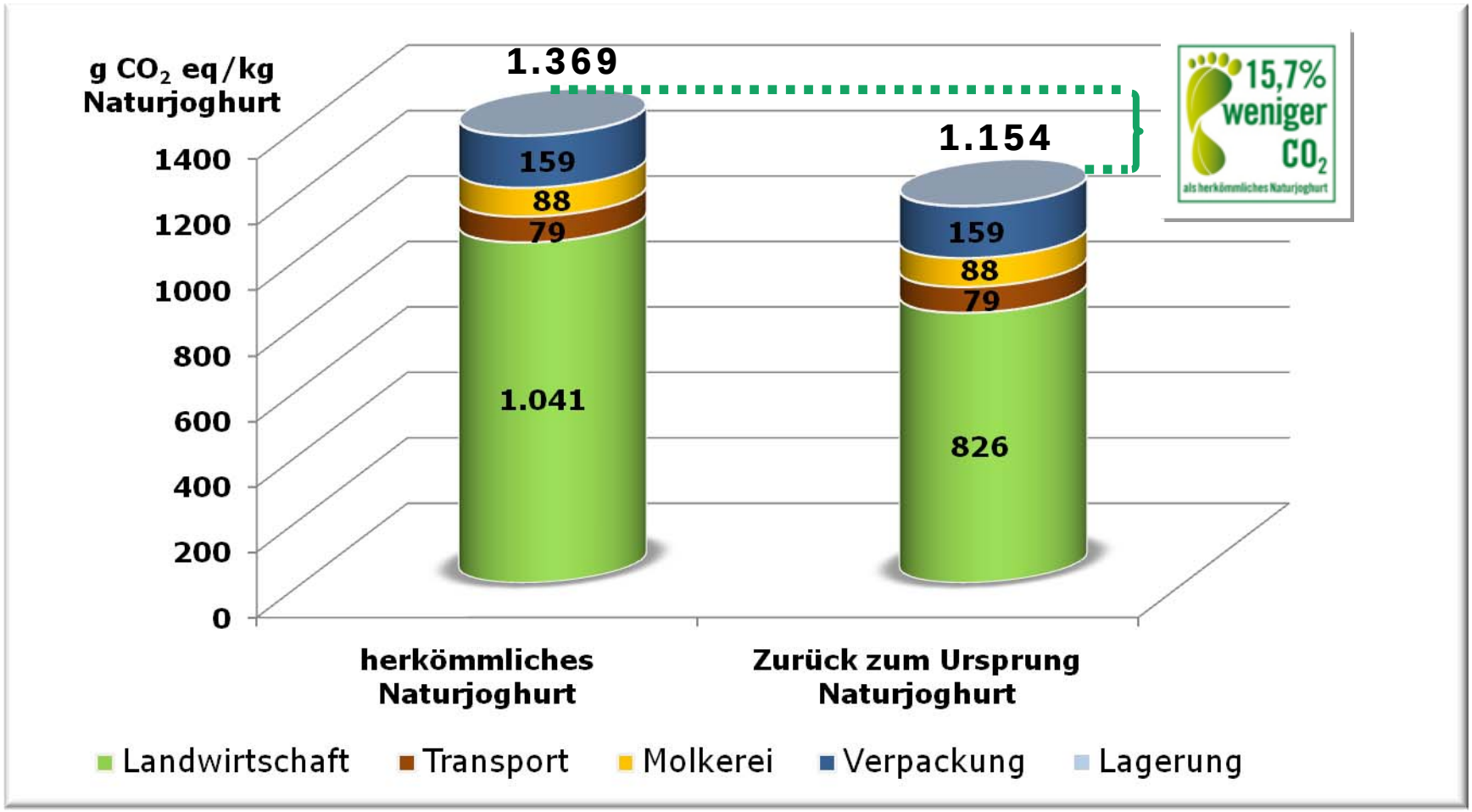
Results – example: Naturjoghurt 3,5 % Fett



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Further results - examples

1.) Role of transport

dairy products: 5-10 % of total CO2-eq-emissions / kg product.

bread and bread products: 5-15 %.

open-land vegetables: 20-50 %.

In the case of transport, it is important to consider the efficiency of the transport means (advantages in transport with ships and large trucks compared with small trucks).

2.) Avoidance of convenience

- **An important CO2–saving effect in foodstuff processing is the avoidance of convenience,** for example **the freezing and re-baking of dough pieces** in the production of bread(rolls):

→ increases the CO2-saving from 17-25% to over 40%

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Internet links to the project results:

http://www.fibl.org/de/oesterreich/schwerpunkte-at/klimaschutz.html

http://www.zurueckzumursprung.at/co2-fussabdruck/co2-ihres-produktes

Lindenthal, T., Markut, T., Hörtenhuber, S., Rudolph, G. (2009): CO2-eq-emissions of organic and conventional foodstuffs in Austria - Results summary of 74 CO2-balanced products. Executive summary. http://www.fibl.org/de/oesterreich/schwerpunkte-at/klimaschutz.html

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