Capitalizing on the Competitive Advantage of Sustainable Agriculture in Egypt

Sekem and Soil & More – a Partnership for Sustainable Development

Tobias Bandel

Sofia, September 29th 2009

Content

- Agricultural Challenges – The Motivation
- Sekem
- Soil & More
- The Project

Agriculture – Problem or Solution? Where to start?

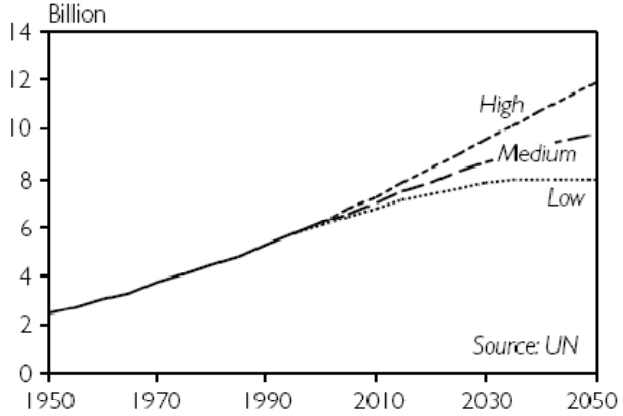
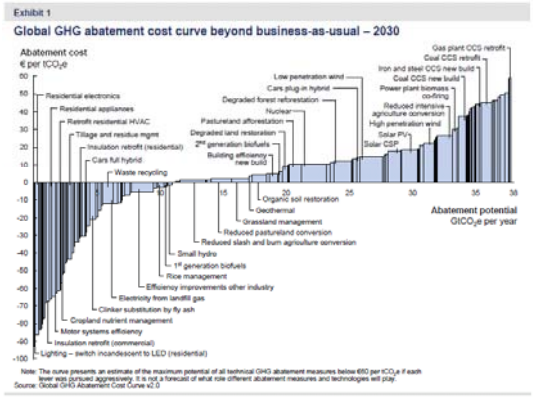
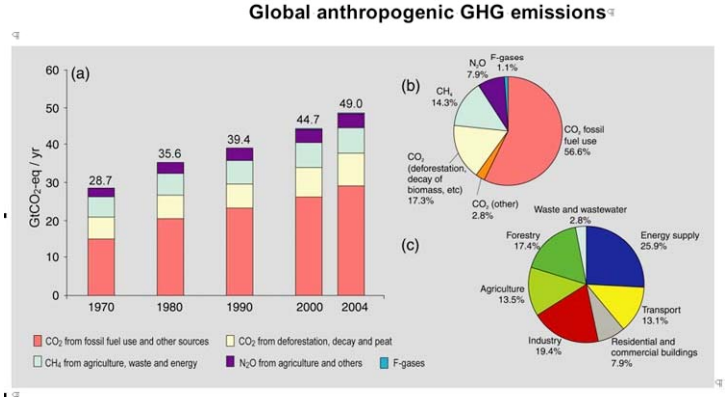
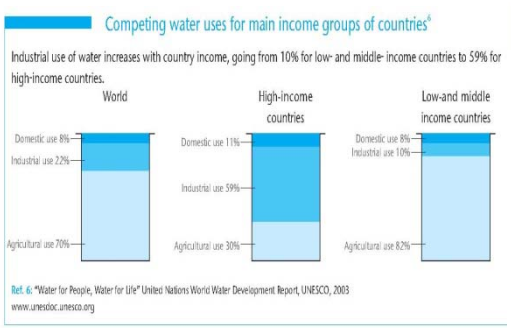
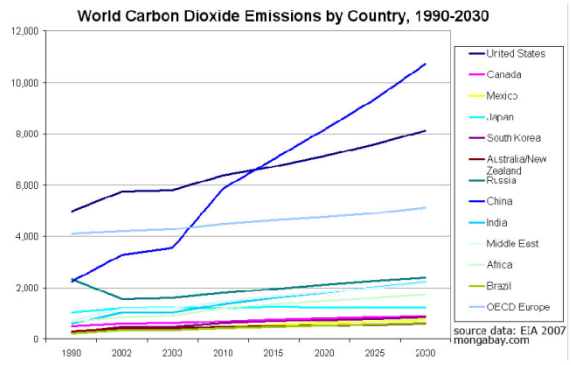


Figure 3–7. Total World Population, 1950–98, with Projections to 2050









What does really matter?

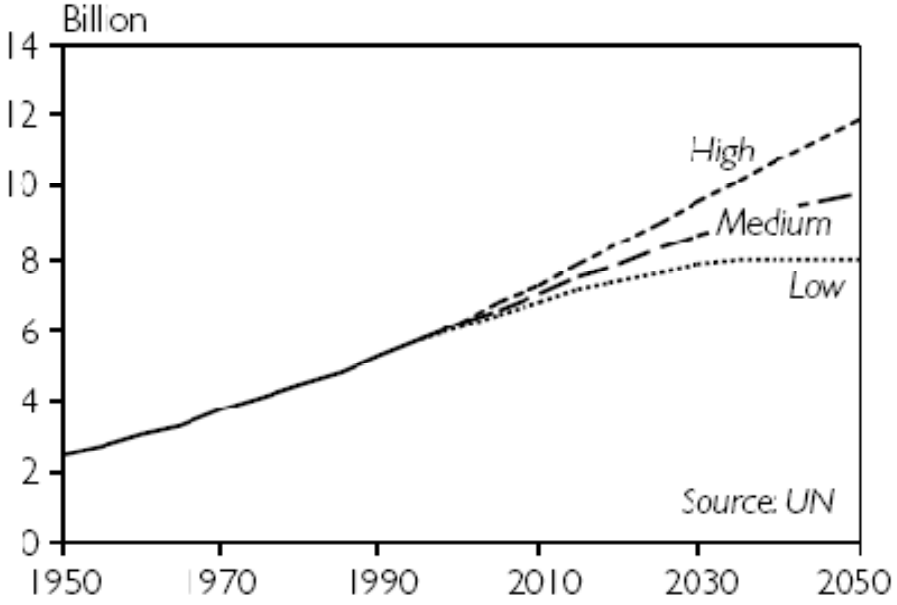


Figure 3–7. Total World Population, 1950–98, with Projections to 2050

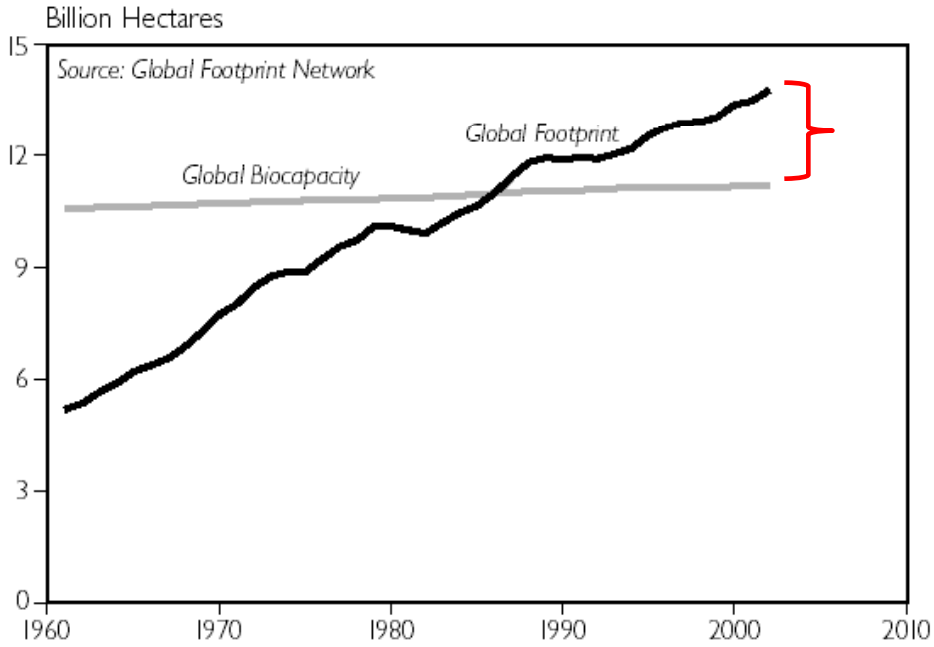
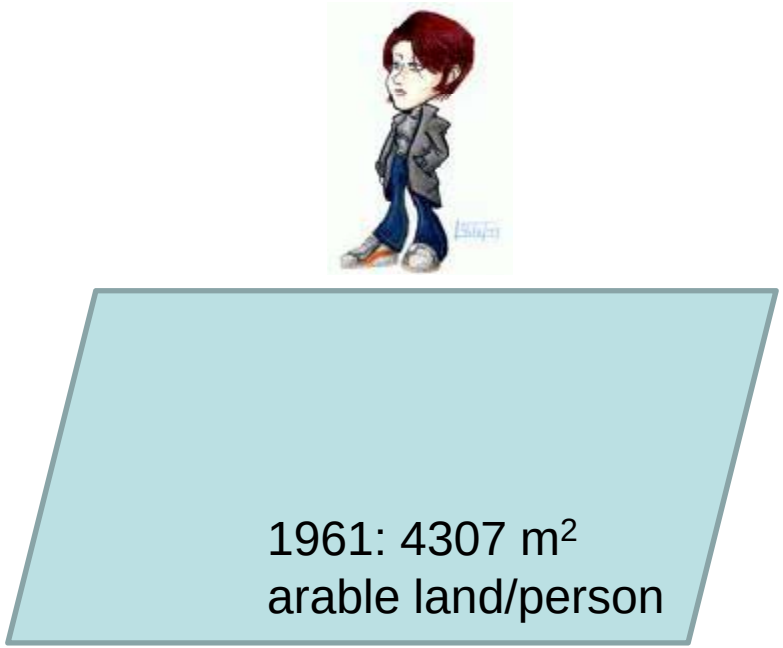


Figure 1–4. Global Footprint and Biocapacity, 1961–2002

We are living on credit without knowing the interest rate!

You and your Business – our Future at Stake!



Source: FAO

Source: FAO

?

2050

Carbon, Water, Oil, Minerals, Food, Jobs, Education, Peace, …

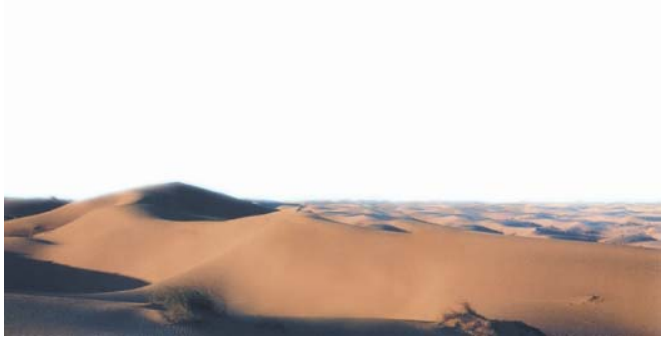
Egypt

- Egypt will suffer the most from climate change after Bangladesh
- Population growth (United Nations, 2009)
  - 1960: 27.7 Mio.
  - 2005: 77.1 Mio.
- Agricultural area increase (FAO Statistics Division, 2009)
  - 1960: 2,568,000 Hectares
  - 2005: 3,523,000 Hectares
- Agricultural land per person
  - 1960: 923 m^2/person
  - 2005: 456 m^2/person

Sekem – An initiative for Sustainable Development

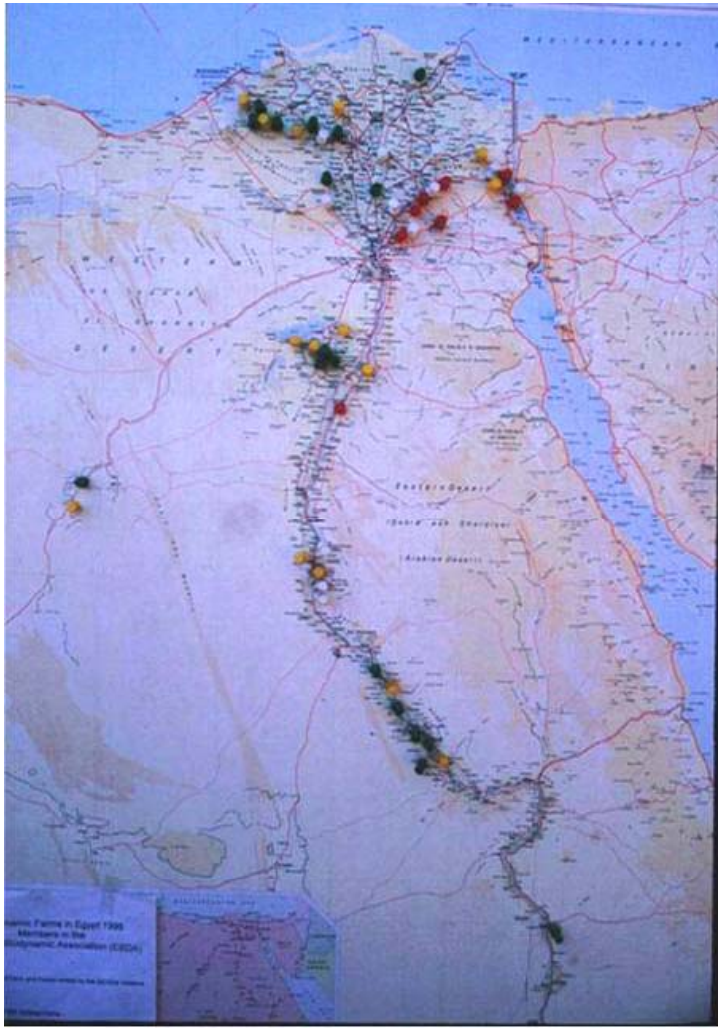
- The challenge
  - Food security
    - Arable land
    - Sustainable soil fertility
    - Water efficiency
    - Climate change
  - Human development
    - Education
    - R&D
    - Social empowerment

Dr. Ibrahim Abouleish realized the solutions provided by sustainable farming methods and started Sekem in 1977



1977 SEKEM was established by Dr. Ibrahim Abouleish
1984 Egyptian Society for Cultural Development (SCD)
1985 ISIS for herbal drinks
1986 ATOS
1987 MAHAD Adult Training Institute and Schools
1993 LIBRA for Organic Cultivation
1995 ATOS for Phytopharmaceuticals
1996 HATOR for fresh food
1996 EBDA
1997 ISIS for foodstuff manufacturing
2000 Heliopolis Academy: Center of Excellence for Sustainable Development
2001 SEKEM Holding
2003 SEKEM received the Right Livelihood Award
2005 LOTUS for organic herbs and spices & SEKEM Europe
2006 MIZAN for plant raising
2007 LOTUS Upper Egypt & SEKEM 30th anniversary

Biodynamic Farming

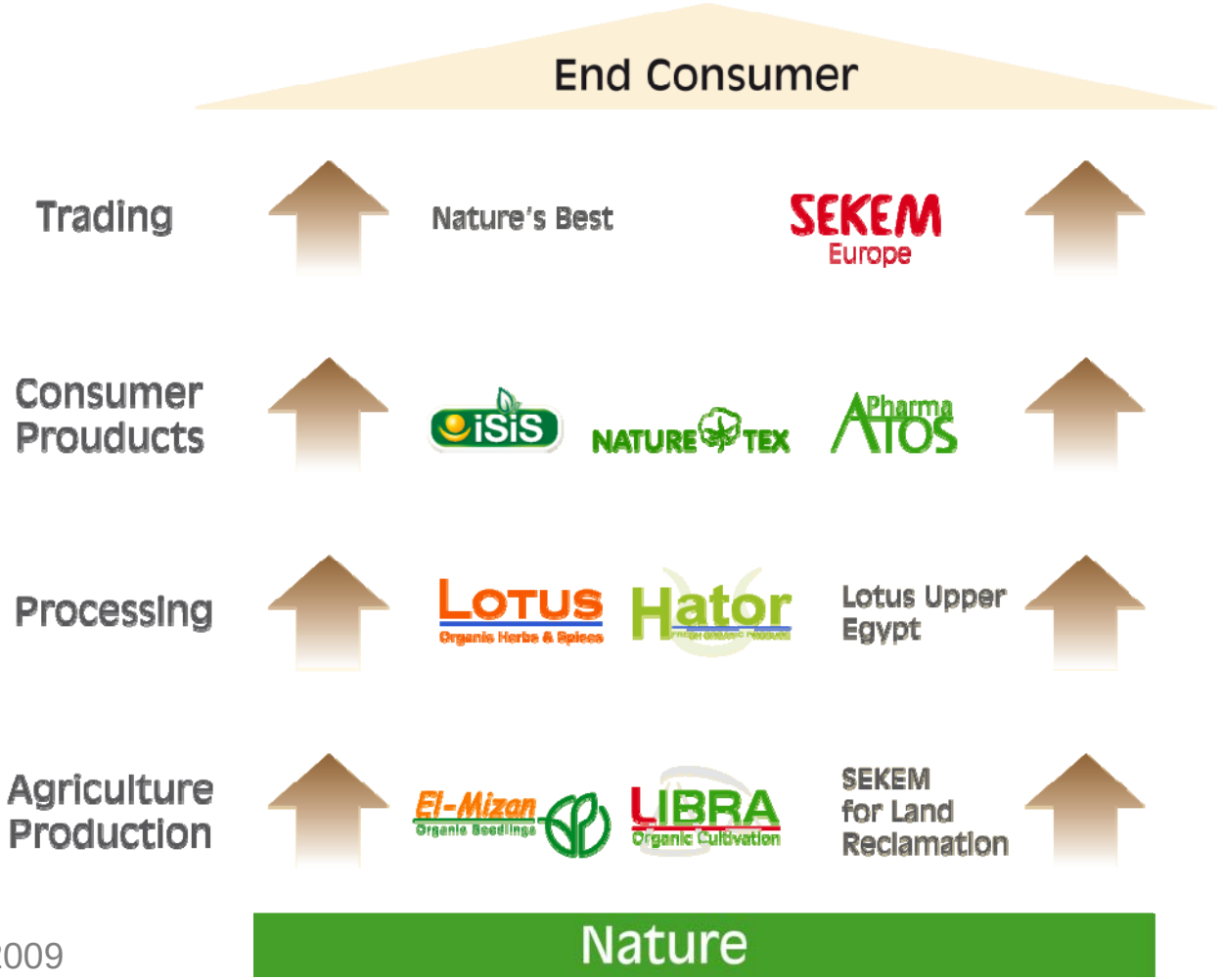


400 Small-Farmers
4500 Hectares

Certifications:

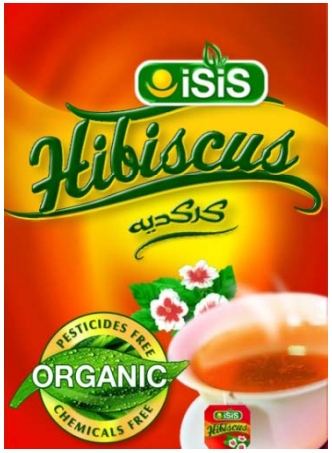
Demeter
EEC 2092/91
Fairtrade
CO_2-Neutral
...

The value added chain in SEKEM



Soil & More
International

ISIS



Soil & More International

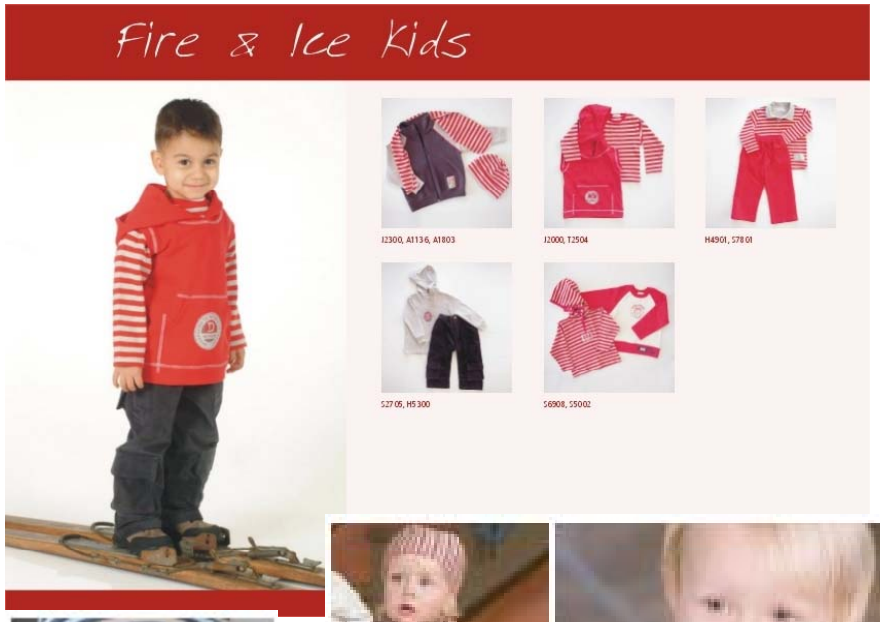
Pharma ATOS

Soil & More
International

NATURE TEX

ORGANIC 100%Bio COTTON

Cotton People
organic



Social and Cultural Development in Sekem

2000 Employees
45000 Beneficiaries

Sekem Development Foundation
- Kindergarten
- School
- Vocational Training Centre
- Medical Centre
- Academy and University

Awards and Innovation

SEKEM as *"A business model for the 21st century in which commercial success is integrated with and promotes the social and cultural development of society through the 'economics of love."*

- Renewable Energy and Emission Reduction
  - Solar Water Heaters
  - Wind & Solar Power
  - Compost
  - Footprinting
  - ...
  - Sustainability

SCHWAB FOUNDATION FOR **SOCIAL ENTREPRENEURSHIP**

Agriculture – Strategy for Sustainable Development

- Demand for sustainable solutions grew beyond Sekem
- Development partnership with Soil & More for composting, emission reduction, carbon and water footprinting, consultancy and lobbying

Soil & More

- Activities
  - Setup and management of medium to large scale composting facilities together with local partners in development countries
    - Primarily agricultural and municipal green waste streams are used as input materials
  - Develop and manage emission reduction projects within the agricultural sector
    - Methane avoidance
    - (Carbon sequestration and storage)
  - Advise companies and organizations about their corporate or products
    - Carbon and water footprint
    - Footprint improvement potential
    - Neutralization

Together with its partners and through the help of VER sales, Soil & More achieved worldwide:

- Compost production
  - Egypt: 110,000 tons
  - Mexico: 10,000 tons
  - South Africa: 50,000 tons
- Emission reduction
  - Egypt: 100,000 tons CO_2e
  - Mexico: 6,500 tons CO_2e
  - South Africa: 60,000 tons CO_2e
- Socio-economic impact
  - 600 farmers supplied
  - 150 jobs created directly and indirectly
  - food security & education

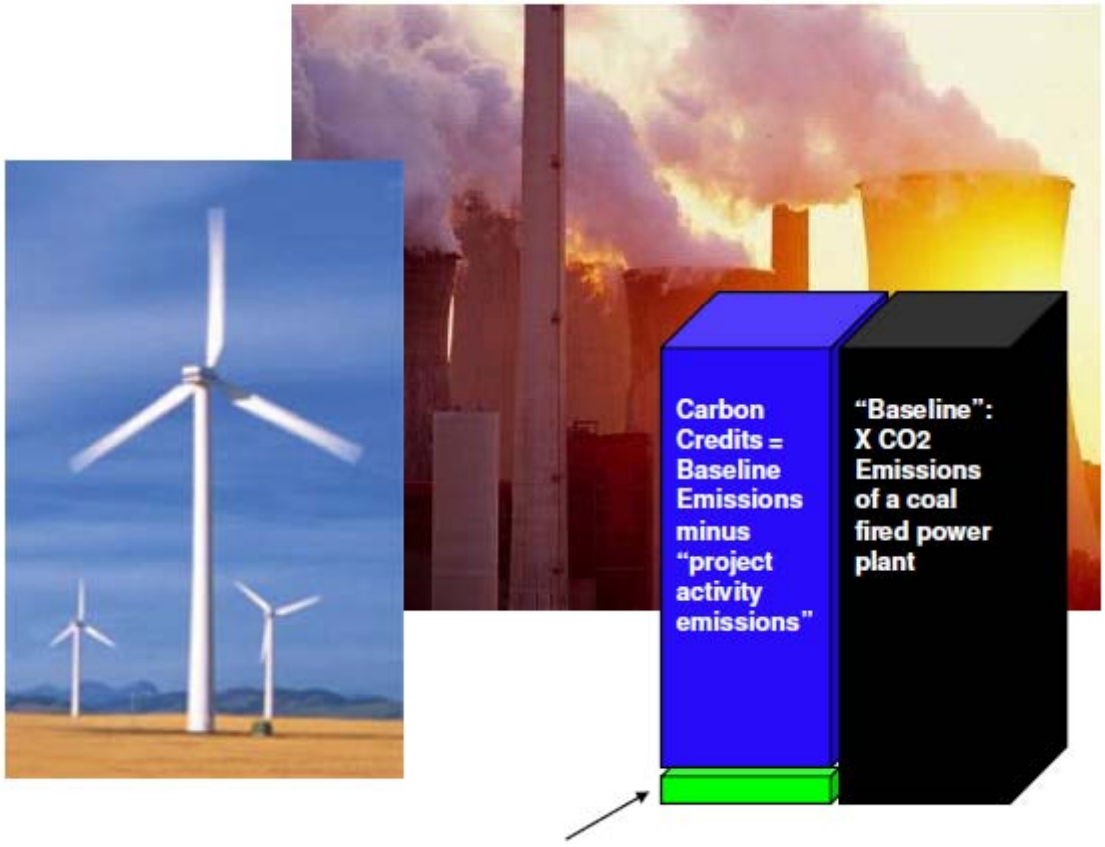


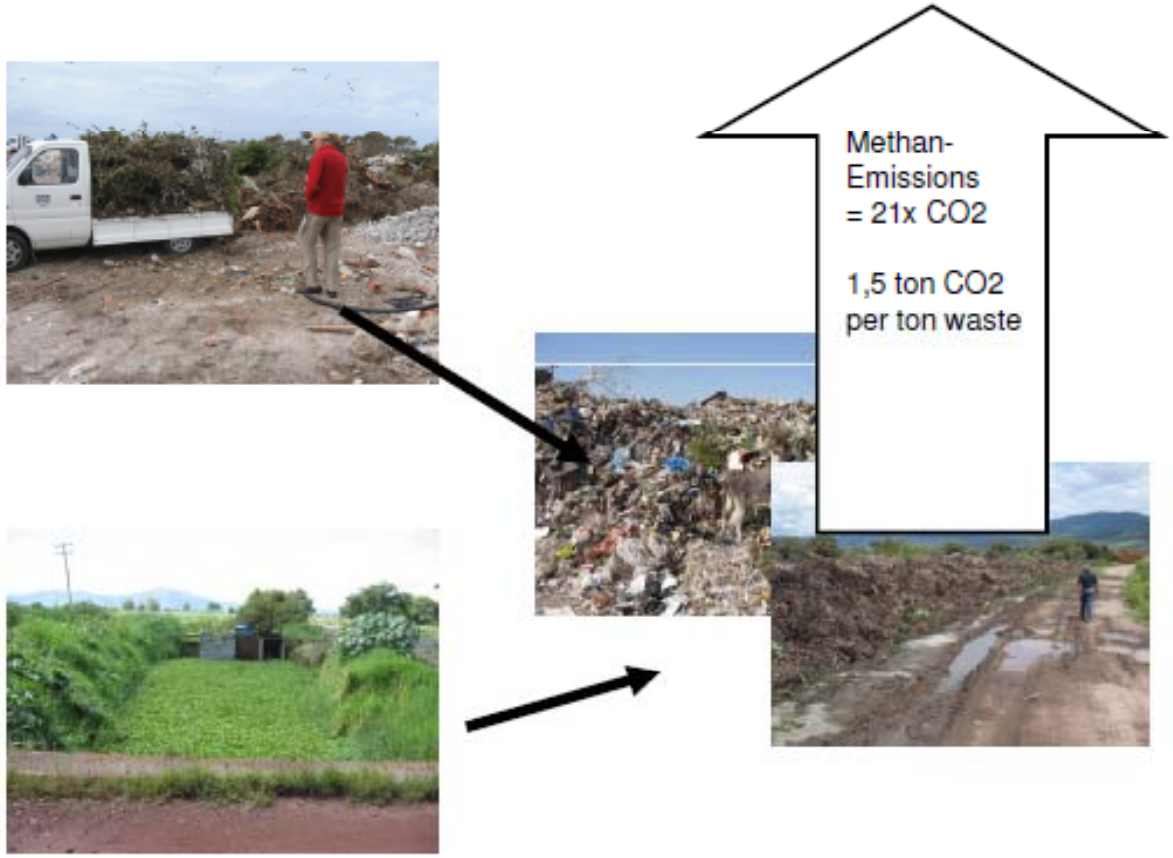

Input Materials

Processing

Finished Product

Reduction – Carbon Credits



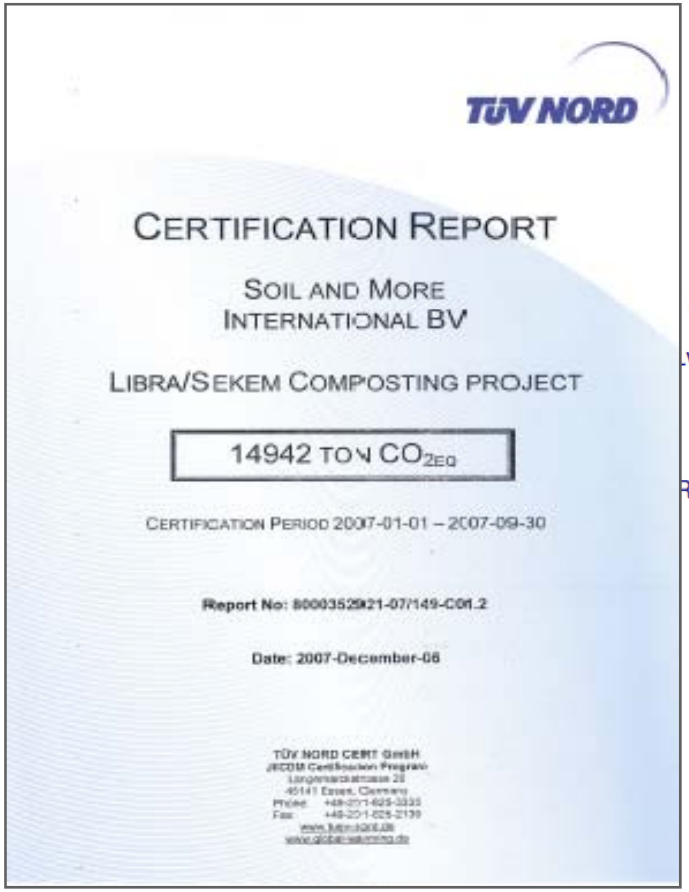

Methan-
Emissions
= 21x CO2
1,5 ton CO2
per ton waste

The Solution

Avoidance of Methane emissions through a unique composting technology

Solution for waste problems (waste & alien vegetation) and production of high quality compost, as a welcome alternative to the environmental harmful chemical fertilizers

Carbon Credits – TUEV verified



TÜV NORD

CERTIFICATION REPORT

SOIL AND MORE INTERNATIONAL BV

LIBRA/SEKEM COMPOSTING PROJECT

14942 TON CO_{2EQ}

CERTIFICATION PERIOD 2007-01-01 – 2007-09-30

Report No: 8000352921-07/149-COI.2

Date: 2007-December-06

TÜV NORD CERT GmbH
JI/CDM Certification Program
Langemarckstrasse 20
45141 Essen, Germany
Phone: +49-201-825-3335
Fax: +49-201-825-2139
www.tuev-nord.de
www.global-warming.de

TÜV NORD

VALIDATION REPORT
-VOLUNTARY EMISSION REDUCTION-

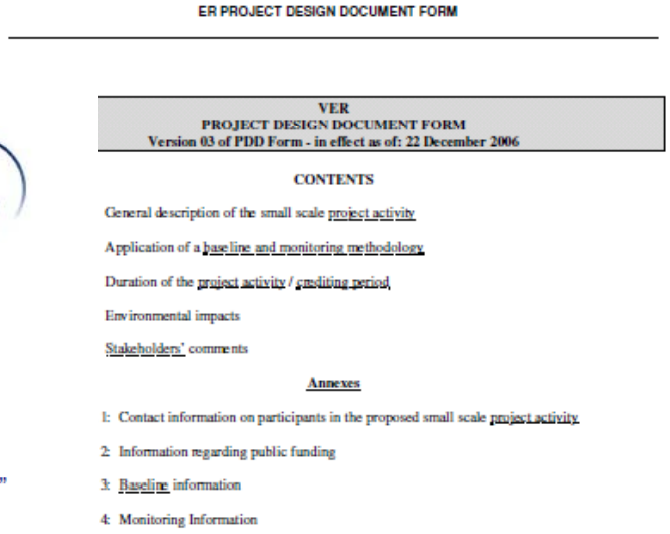
Soil and More International BV

RA/SEKEM COMPOSTING PROJECT"

Report No: 8000349319 - 07/38

TÜV NORD CERT GmbH
JI/CDM Certification Program
Langemarckstrasse 20
45141 Essen, Germany
Phone: +49-201-825-3335
Fax: +49-201-825-3290
www.tuev-nord.de
www.global-warming.de

Date: 2007-September-07



ER PROJECT DESIGN DOCUMENT FORM

VER
PROJECT DESIGN DOCUMENT FORM
Version 03 of PDD Form - in effect as of: 22 December 2006

CONTENTS

General description of the small scale project activity

Application of a baseline and monitoring methodology

Duration of the project activity / crediting period

Environmental impacts

Stakeholders' comments

Annexes

1: Contact information on participants in the proposed small scale project activity

2: Information regarding public funding

3: Baseline information

4: Monitoring Information

Full Transparency:
www.global-warming.de

Example of using compost for land-reclamation projects in Egypt

Wahat el Bahareya-Project

Sinai-Project

Minia-Project

Soil & More International

Inauguration Event at Sinai Project

The land before, and…

…after 18 months. From hostile desert to fertile soil – products - people

- Soil & More not only helps developing fertile soils but also helped producers and organizations to quantify and therefore capitalize on their environmental competitive advantage through providing carbon footprinting services
  - Argentina: Apples, Pears
  - **Egypt: Cotton Fabrics, Flowers, Grapes, Herbs & Spices, Lemons, Oranges, Potatoes, Strawberries, Tomatoes**
  - Netherlands: Greenhouse Products
  - New Zealand: Kiwis
  - South Africa: Grapefruit, Lemons, Oranges
  - USA: Apples, Cherries, Stonefruit
  - Natural Cosmetics and Healthcare Products
  - Germany: Various Chocolate Varieties
  - Competitiveness/Benchmarking Studies
- The carbon footprint and therefore environmental competitivness is remarkably improved through the use of compost and the avoidance of chemical fertilizers (**-18%**)

The Methodology

- Soil & More Carbon Footprinting Standard
  - Compatible with
    - PAS2050 (Defra/BSI)
    - ISO 14044/14064
    - WRI/WBCSD GHG Protocol
    - PCF Germany
    - Ademe France (?)
- Water Footprinting
  - Water Footprinting Network

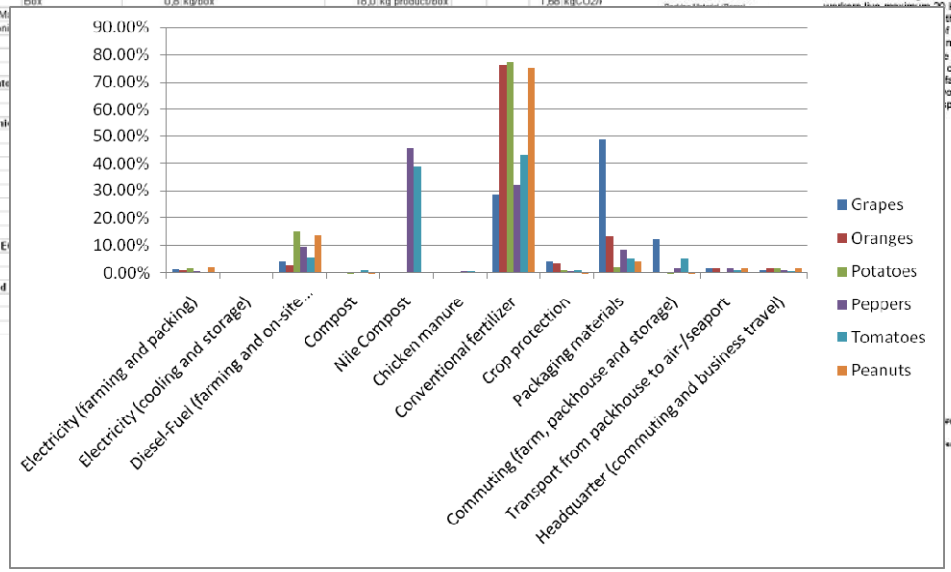
- Identify, measure, calculate the emissions of products & facilities

Results

	Argentina Apples								
	Farm Level								
			Supplier Data				EF	Tot. Em.	Source
Scope 1	Frost Control (Diesel)		1.500,0 l Diesel/ha/year	25.000,0	kg product/ha		2,66 kgCO2/litre	3.990,0 kg CO2	IPCC
Scope 2	Frost Control (Electricity)		235,0 kWh/ha/year	25.000,0	kg product/ha		0,44 kgCO2/kWh	103,5 kg CO2	UNFC
Scope 1	Weeding		5,0 h Tractor/ha/year	6,0	l Diesel/h		2,66 kgCO2/litre	79,8 kg CO2	IPCC
Scope 1	Application Plant-Protection		10,0 h Tractor/ha/year	6,0	l Diesel/h		2,66 kgCO2/litre	159,6 kg CO2	IPCC
Scope 3	Transport of Plant-Protection		0,3 kgCO2/ha	25.000,0	kg product/ha				IPCC
Scope 3	Fertilizer Production		15.893,00 kgCO2/ha	25.000,0	kg product/ha				IPCC
Scope 1	Application of Fertilizer		2,0 h Tractor/ha/year	6,0	l Diesel/h		2,66 kgCO2/litre	31,9 kg CO2	IPCC
Scope 3	Transport of Fertilizers		89,0 kgCO2/ha	25.000,0	kg product/ha				IPCC
Scope 2	Irrigation		335,0 kWh/ha/year	25.000,0	kg product/ha		0,44 kgCO2/kWh	147,5 kg CO2	UNFC
Scope 3	Transport of Farm-Workers		240,0 days/picker/ha/year	40,0	km/return trip	15 l/100km	2,38 kgCO2/l		
Scope 1	Harvest		8,0 h Tractor/ha/year	6,0	l Diesel/h		2,66 kgCO2/l		
	Total Farm Emissions								
	Farm - San Antonio								
			Exporter Data				EF		
Scope 3	Transport from Field to Packhouse		18.000,0 kg/Truckload	100,0	km/return trip	30 l/100km	2,66 kgCO2/l		
Scope 2	Pre-Cooling & Storage		821.682,0 kWh/year	15.000,0	tons/year		0,44 kgCO2/l		
Scope 3	HFC for Cooling & Storage at Grower		12,0% HFC factor of Cooling Energy						
Scope 2	Packing, Handling & Office		282.729,0 kWh/year	15.000,0	tons/year		0,44 kgCO2/l		
Scope 3	Transport of Packhouse-Workers		120,0 workers	120,0	days/year	15 l/100km	2,38 kgCO2/l		
Scope 3	Packing Material	Paper	0,18 kg/box	18,0	kg product/box		2,05 kgCO2/l		
Scope 3		Box	0,8 kg/box	18,0	kg product/box		1,68 kgCO2/l		
Scope 3	Transport of Packing M								
Scope 3	Transport to San Anton								
Scope 3									
Scope 3									
	Total Farm - San Ant								
	Transport San Antoni								
Scope 3	Ocean Transport								
Scope 3									
Scope 3									
Scope 3	Transport to EOSTA								
Scope 3									
Scope 3									
	Total San Antonio - E								
	EOSTA Handling and								
Scope 2	Handling at EOSTA								
Scope 2									

Scope 3 Calculation

Transport of Plant-Protection
Fertilizer Production
Transport of Fertilizers
Transport of Farm-Workers
Transport from Field to Packhou
HFC for Cooling & Storage at G
Transport of Packhouse-Worker
Packing Material (Apples)
Packing Material (Apples)



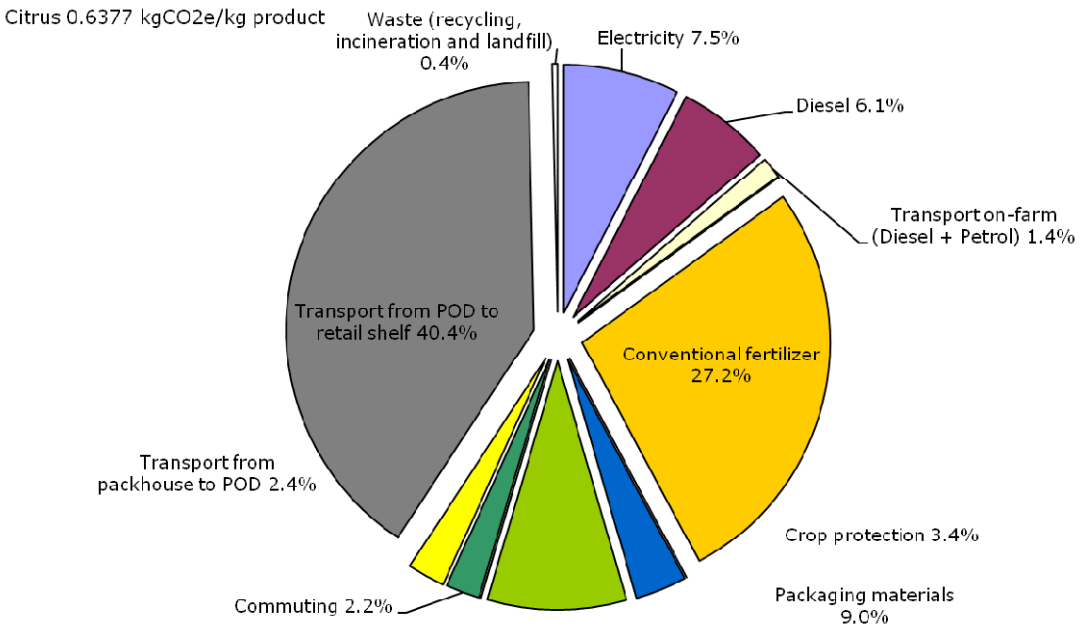
Manufacturing of export packaging materials: it has been difficult to find emission factors from reliable sources for the manufacturing of the different packaging materials but the values used in this calculation are taken from a study carried out in the UK from an independent consultancy office. According to the growers, 0,8 kg of cardboard and 0,2 kg of paper inlays are used per export carton. 1 export carton contains 18 kg of apples or 15 kg of pears.

Manufacturing of retail packaging materials: it has been difficult to find emission factors from reliable sources for the manufacturing of the different packaging materials but the values used in this calculation are taken from a study carried out in the UK from an independent consultancy office. According to EOSTA packing department, the following quantities of packaging materials are used to pack the fruit according to retail specifications: 0,013 kg of a paper tray per pack (4 apples or pears per pack), 0,005 kg cellophane per pack and 1 kg of cardboard for the transport carton. 1 transport carton contains 12 packs. Although a considerable amount of fruit is sold loose to the retail, this calculation is based on the assumption that all fruit is packed using above stated packaging materials, following the approach of most conservative values.

Transport of packaging materials: the emissions related to the transport of the various packaging materials are calculated according to the shipping specifications of the suppliers and confirmed by the growers and EOSTA concerning pieces per pallets and truckloads. The distance from the supplier to the grower and EOSTA incl. Diesel consumption of the trucks used, has been taken into account. Although not always the case, the distances were calculated double, assuming that the trucks return empty.

Transport of farm workers: the amount of farm workers needed is highly seasonal. During the four harvest months many workers are required, whereas outside the season just a few workers have to maintain the orchards. According to the growers a conservative average is 1 worker per ha and year. It is assumed that the farm
km away and travel this distance twice per day, either in 9
the ones who live closer come by bike. As per the farm
f the workers come by bike. This study takes into account
minibus of 50% of the workers, assuming all of them live 20
e manufacturer of the minibuses, the fuel consumption is 15
order to calculate the emissions due to the combustion of
factor of 2,38 kgCO2e per litre fuel burned is used. In order
orker transport related emissions to kg of product, the total
port of farm workers per ha were divided by the yield of 25

Benchmarking



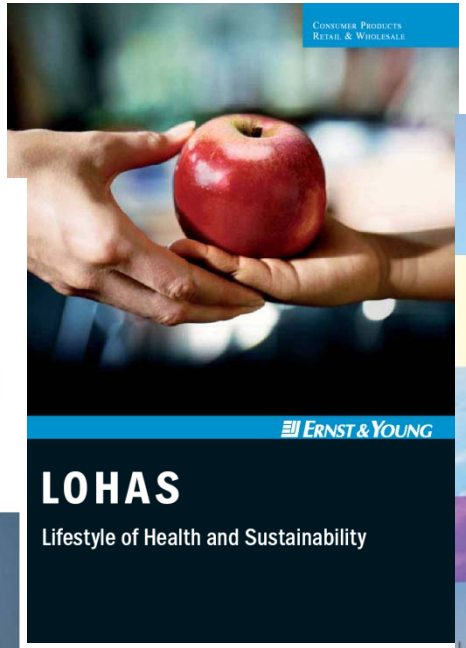
Product	Country of Origin	$kgCO_2e$/kg Product
Apples	Argentina	1.5523
Pears	Argentina	1.5720
Oranges	Egypt	0.7519
Tomatoes	Holland	2.7674
Oranges	RSA	0.6148
Easy-Pealer	RSA	0.6148
Lemons	RSA	0.6099
Kiwi	New Zealand	1.2599
Chocolate (milk)	various	1.5199
Chocolate (Rum, Raisons, Nut)	various	1.6641
Instant Pasta/Fish	various	2.0800
Straberries	Spain	0.6456
Coffee	Ghana	5.4529
Eggs	Germany	1.9509
Grapes	Egypt	1.1856
Oranges	Egypt	0.6178
Peppers	Egypt	0.5961
Potatoes	Egypt	0.5886
Tomatoes	Egypt	0.8356
Peanuts	Egypt	0.8585
Beans (Greenhouse)	Egypt	3.2510
Beans (Open Field)	Egypt	3.1486
Citrus	**Test**	**0.6377**
Strawberries	**Test**	**6.5165**
Grapes	**Test**	**1.8496**
Lettuce	**Test**	**1.6235**
Herbs	**Test**	**16.6528**
Peppers	**Test**	**5.9740**
Flowers	**Test**	**6.2355**
Chamomile	Egypt	3.8136
Hibiscus	Egypt	3.8129
Peppermint	Egypt	3.6803
Spearmint	Egypt	3.6803
Average (excl. MAFA)		**1.9250**

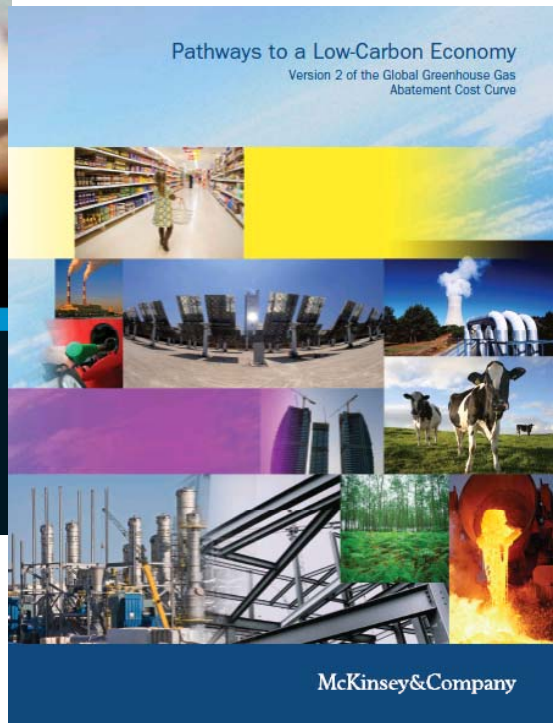
Soil & More International

& more

- These products were sold under the Soil & More climate-neutral label in the following supermarkets/countries:
  - Deko, BioMarche, Pharmacies in Benelux
  - COOP in Denmark
  - REWE, Edeka, Alnatura, Aldi Sued in Germany
  - Satotuku in Finland
  - Casino, Champion, Carrefour in France
  - COOP in Norway
  - M Preis in Austria
  - ICA in Sweden
  - Essalunga in Italy
  - Wholefoods in the USA

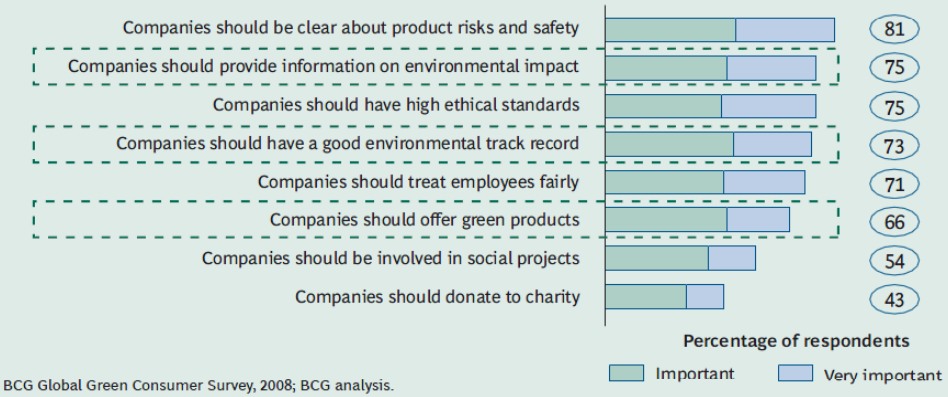
Changing Consumer Behavior





Soil & More International

Exhibit 3. Most Consumers Think It Is Important or Very Important for Companies to Be Green

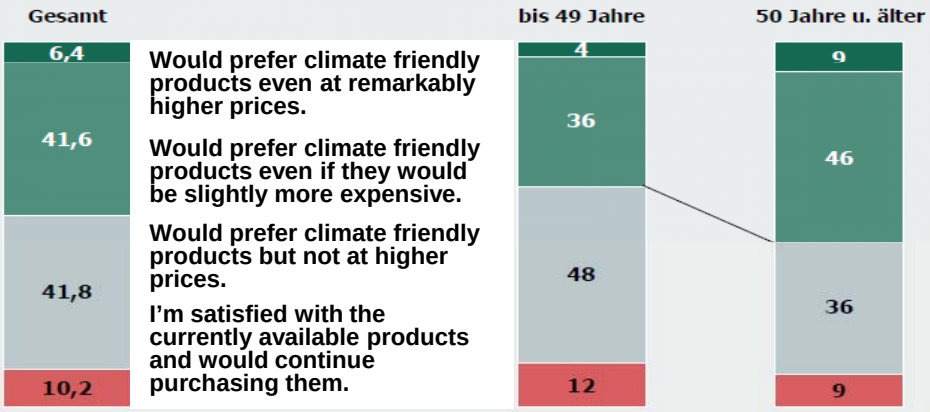


Sources: BCG Global Green Consumer Survey, 2008; BCG analysis.
Note: Data are from 1,000 responses across all countries in our survey.

Almost every second consumer would accept a slightly higher price for climate-friendly products

Oktober 2008

Angaben in %



Wenn es ein Kohlendioxid-Label in Deutschland gäbe, würden Sie dann beim Einkauf zukünftig darauf achten?

GfKConsumerScope 2008

GfK

"Go green or go out"

Voices from the market

Leading by example

Build Carbon management into our core KPIs

"Our work to deliver sustainable consumption is not some add-on extra.

Cutting carbon emissions is now locked into our business strategy."

Sir Terry Leahy, CEO

PCF and Carbon labelling

Learn by doing in a trail of different categories

30 own label products in first phase

- Agricultural : Potatoes
- Iconic : Lightbulbs
- Processed foods : Orange Juices
- Domestic use phase : Detergents

Followed PAS 2050

Worked

Certifica

Results

Leading by example

Measure and reduce our direct footprint

60%	Grid electricity
19%	Refrigerant
12%	Diesel/oil
7%	Natural gas/LPG
2%	Business Travel

- **50% cut in emissions from existing buildings by 2020**
- **50% cut in carbon footprint of all new stores built by 2020**
- **50% cut in CO2 created per case of goods delivered by 2012**

TESCO

Tesco and carbon labelling

Stephen Heal

Director, Climate Change Programmes

PCF World Forum
Berlin Feb 2009

Cornelia Diethelm

Head of Issue Management, Migros Switzerland

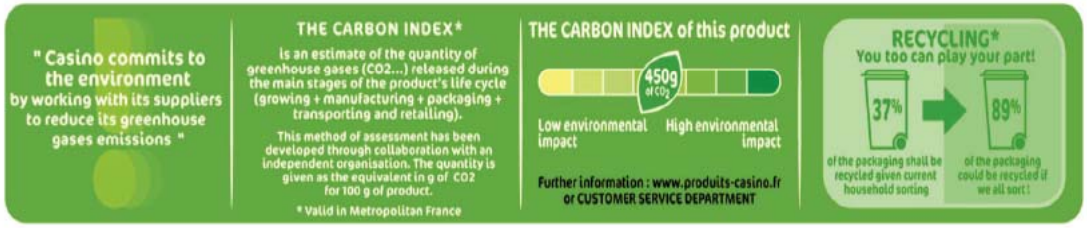
Labelling Top Runner Products

MIGROS climatop®

Displaying complete information

Corinne Picard Casino

Packaging and Environment Manager, Casino France



Soil & More International

Lobbying for the benefits of sustainable farming at expert level.

Dialogue Forum
Low Carbon Society

First PCF World Summit 2009

International Approaches to Product Carbon Footprinting and Carbon Labelling

The Road Ahead for Business

Berlin, 26-27 February 2009

Deloitte. Thema1

Outstanding opportunity to expand your network

Confirmed speakers from:

- **AIST**, Japan
- **ADEME**, France
- **Casino**, France
- **Co-Convener ISO/TC207/SC7/WG2**, Austria
- **defra**, UK
- **DG Environment**, European Commission
- **Federal Environmental Ministry**, Germany
- **krav and Svenskt Sigill**, Sweden
- **Nature&More/Soil&More**, The Netherlands
- **Migros**, Switzerland
- **New Zealand Greenhouse Gas Footprint Strategy**, New Zealand
- **PCF Pilot Project**, Germany
- **The Carbon Disclosure Project**, UK
- **Tesco**, UK
- **WBCSD/WRI**, Switzerland/USA

Deloitte. Thema1

- **World Future Council**
- **COP15**
- **Seal the Deal**

Contribution to Food Security and Sustainable Development

- Compost
  - CDM subsidized compost is **commercially more feasible** than synthetic fertilizer
  - Accumulates up to **26 tons** of carbon per hectare Egypt (Louis Bolk, Soil & More 2009)
  - Increases water holding capacity/irrigation efficiency by **20-100%** (Lotter et al. 2003)
  - Through the absence of chemical fertilizers organic products carbon footprint is min. **18%** lower (Maeder et al. 2002, Oeko-Institut 2007)
  - Organic systems achieve **90-170%** yield potential, specifically in marginal areas (Badgley et al. 2007)

Capitalizing on Competitiveness

- Sekem and Soil & More provide local and international organizations with carbon credits obtained from the agricultural sector, to offset the organizations footprint
  - The revenues allow a feasible compost production and distribution
    - Arable land is developed, carbon stored, water saved, food production, jobs, income secured

- "...Dear Customer, through the purchase of this climate neutral product, you support sustainable development in the agricultural sector towards food security..."

Conclusion

- Don't burn biomass, we need every gram in the soils
- We have to produce enough food; sustainable, competitive, but stimulating greener production, otherwise there is only lunch no dinner if all soils are gone
- Organic PROFESSIONAL farming is a solution for the part of the world where the fastest development takes place
- Soil is the engine, the seed for any socio-economic development

- CO_2 is just one part, we started with water and soil fertility towards sustainability flower.
  - In order to develop sustainable consciousness we need to capitalize on changing consumer behavior – not losing the bigger picture

Why to start with CO_2

- Share of mineral fertilizer related CO_2e emissions on a products carbon footprint in Egypt from selected growers
  - Citrus: 41%
  - Grapes: 27%
  - Capsicum: 24%
  - Peanuts: 50%
  - Potatoes: 43%
  - Tomatoes: 57%

Leading by example
Build Carbon management into our core KPIs

TESCO

"Our work to deliver sustainable consumption is not some add-on extra.

Cutting carbon emissions is now locked into our business strategy."

Sir Terry Leahy, CEO

- **50% cut in CO2 created per case of goods delivered by 2012**

- It's just one part but it raises awareness
- They started to use compost instead, which contributes to soil fertility, water efficiency, biodiversity and increase of arable area - sustainable

Redefining Competitiveness

- Survival of the cheapest?
- Survival of the one, who can best manage the worlds challenges
  - Soil
  - Water
  - Food
  - Society

Survival of the most sustainable

...everything else is too expensive

Thank You

Tobias Bandel
www.soilandmore.com