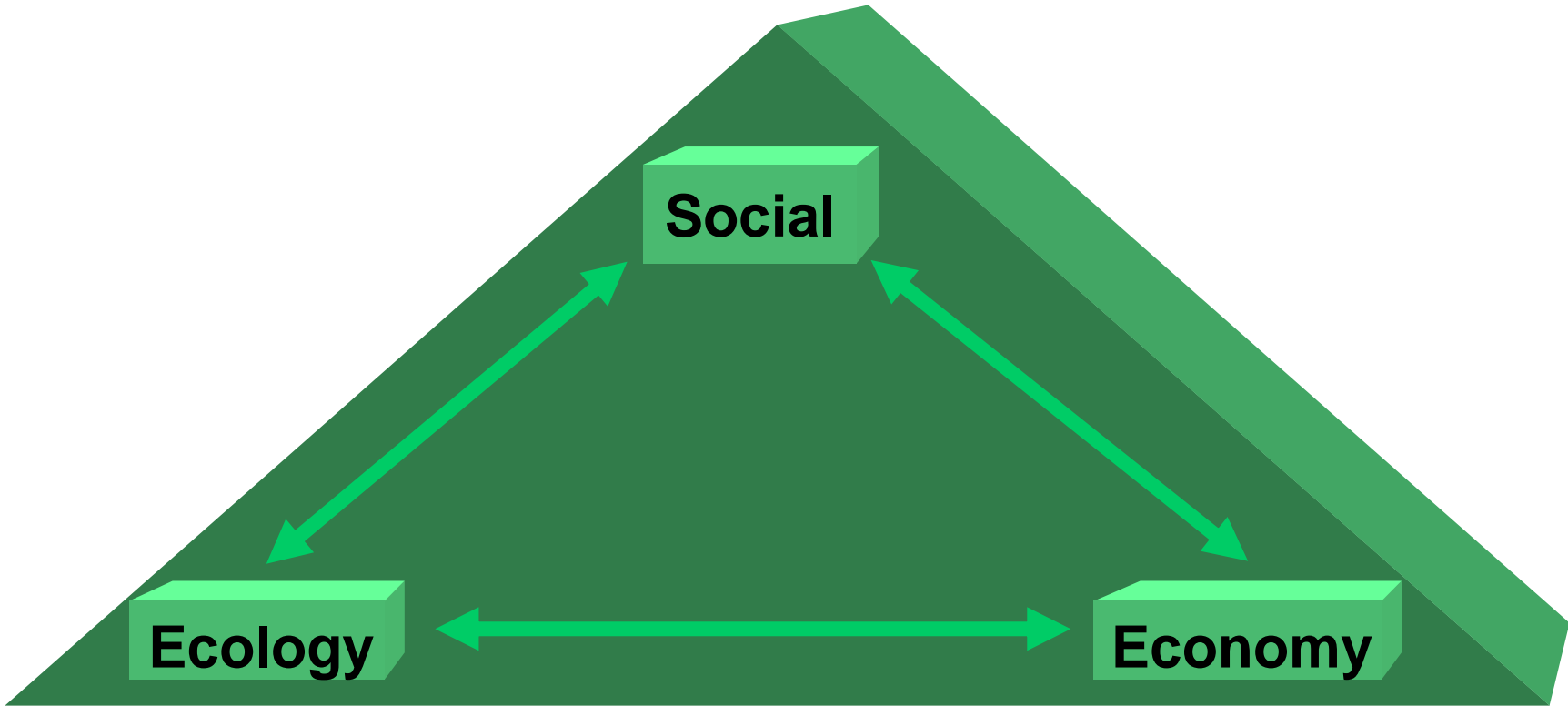




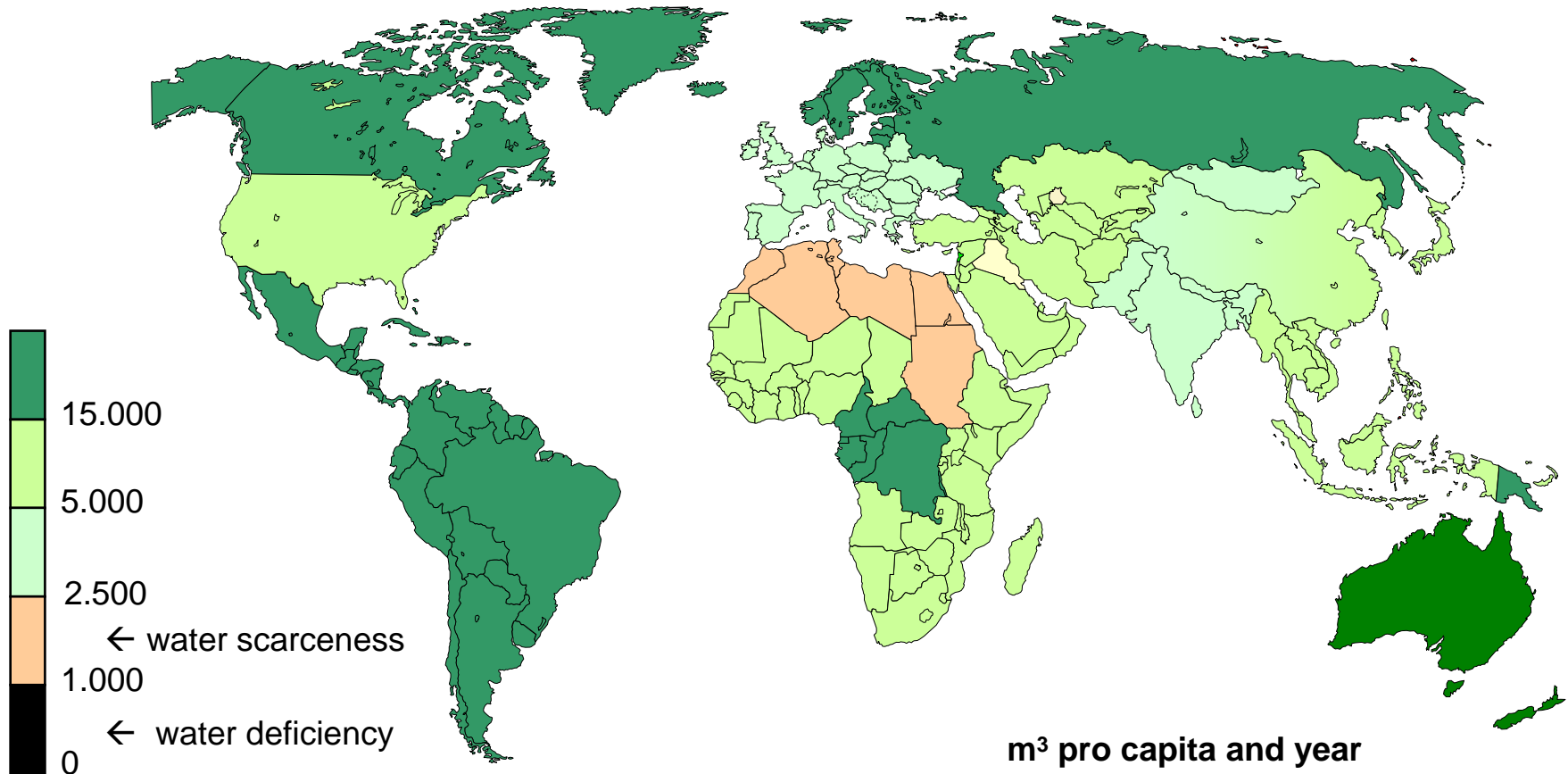
Sustainability in Detergents and Cleansers

**EOS Golden Anniversary –
October, 24-26, 2007**

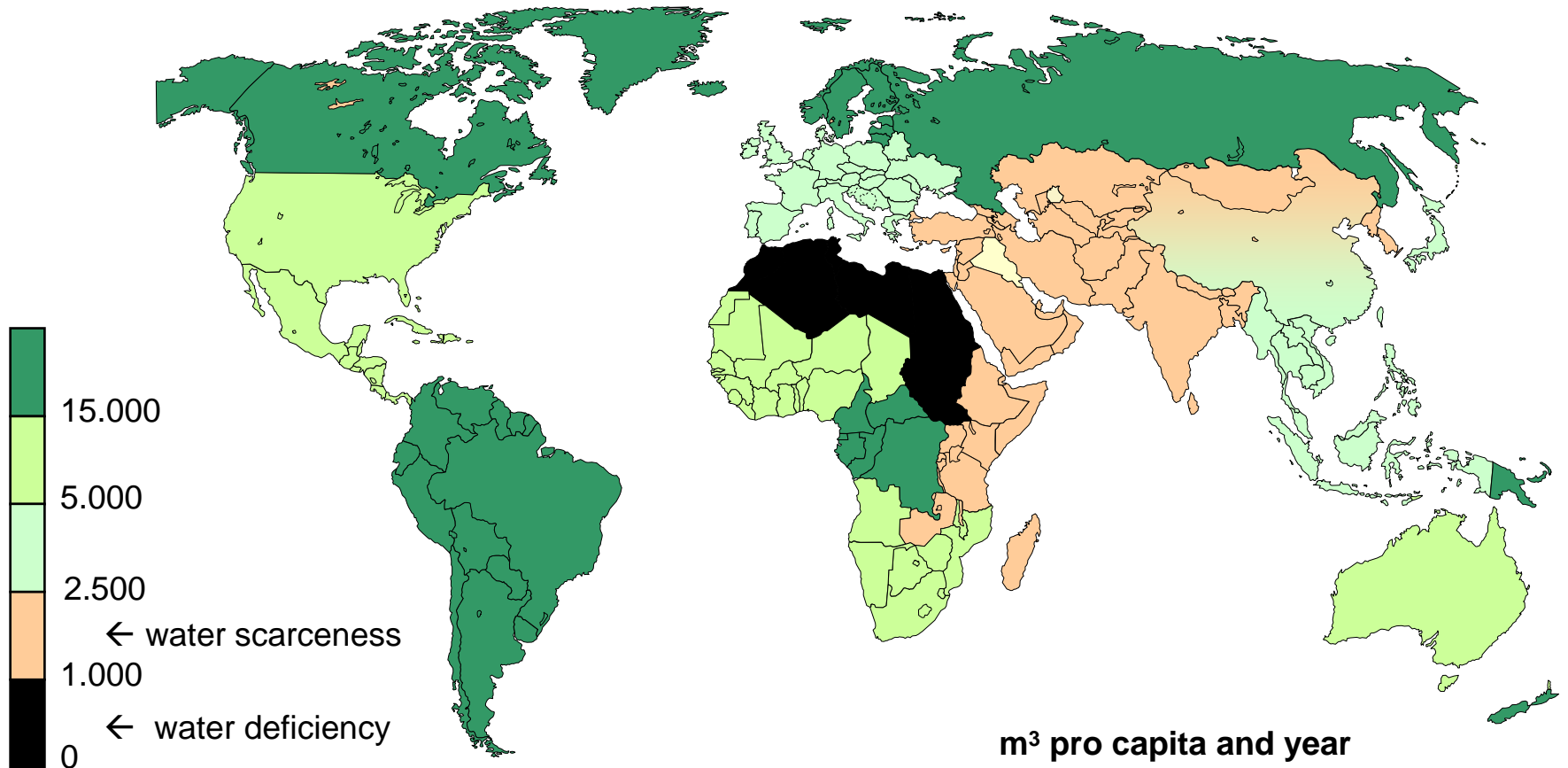
Dr. Frank Roland Schroeder



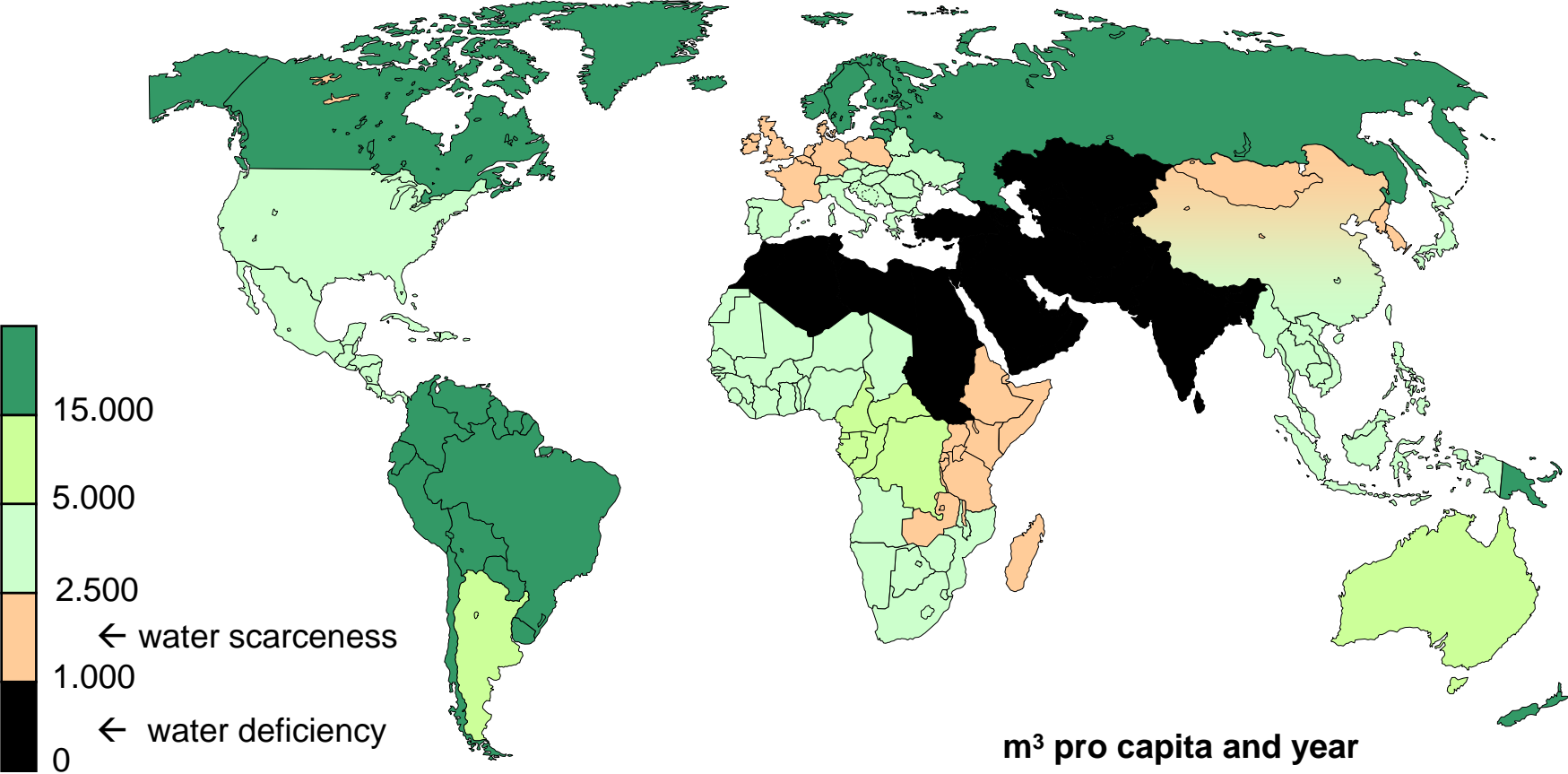
Availability of drinking water 1950



Availability of drinking water 1995



Availability of drinking water 2025

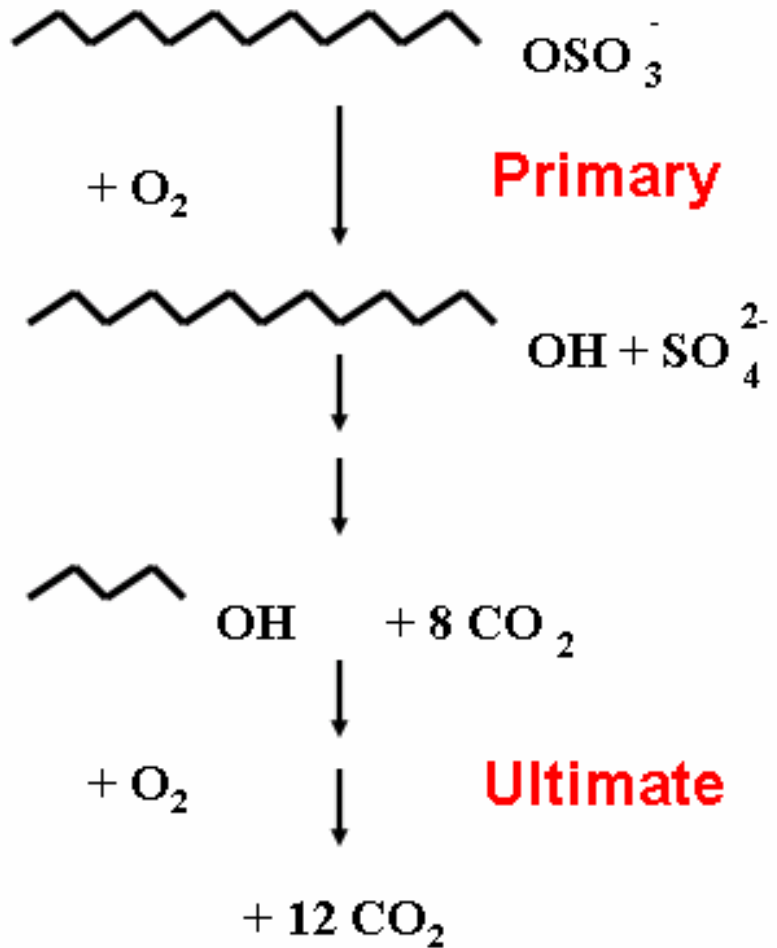




October 17, 2007

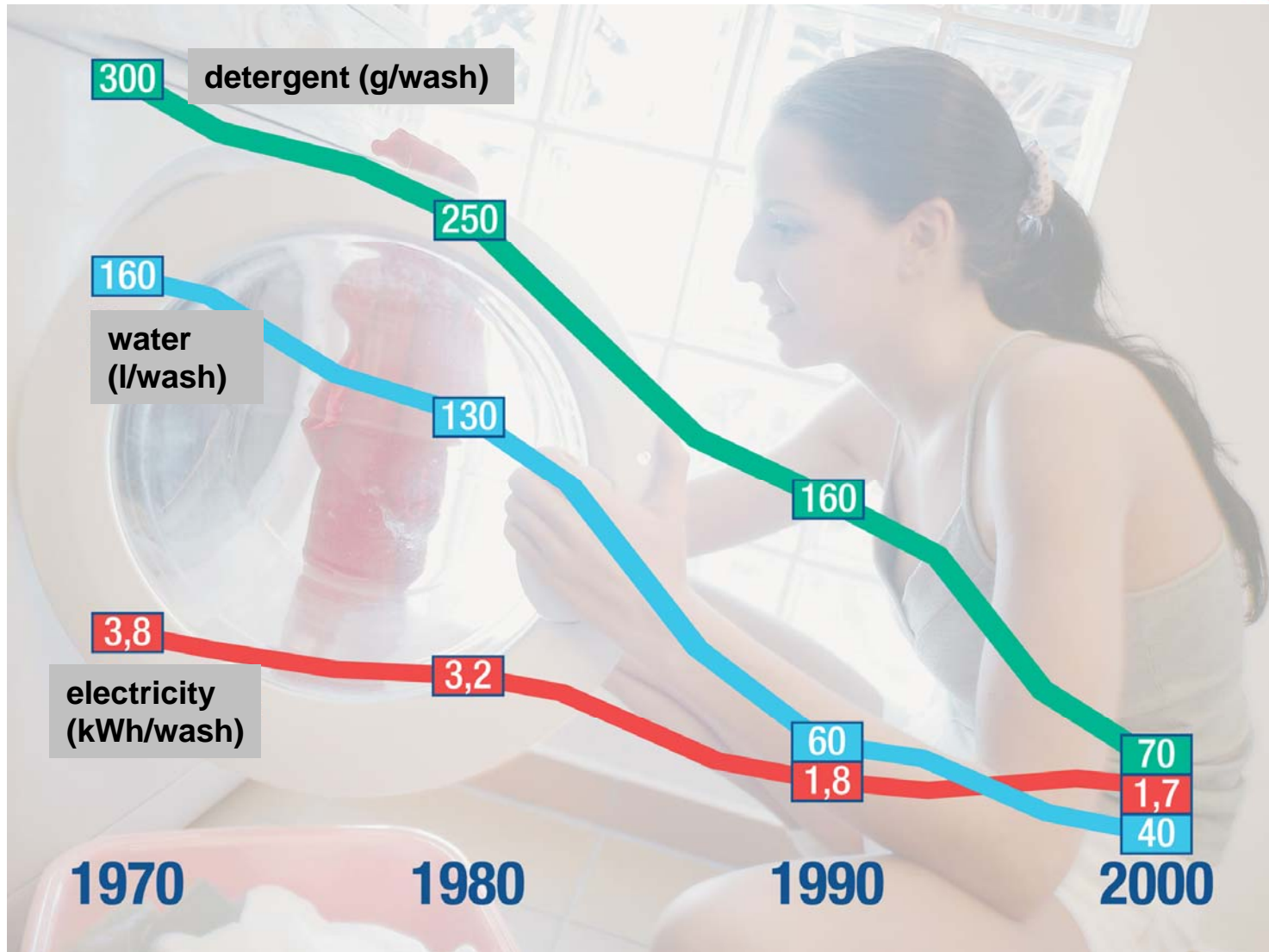
Roland Schroeder – 71024.SDV.EOS

(Aerobic) biodegradation: Primary vs. ultimate biodegradation



- Primary biodegradation
 - ◆ Just first step (disappearance of the starting molecule).
 - ◆ Claimed by “Frosch” (98 % biodegradation).
- Ultimate biodegradation
 - ◆ Legally prescribed for surfactants used in detergents since 10/2005.
 - ◆ OECD screening test 301 A-F
 - ◆ „Readily biodegradable“ if test criteria are fulfilled (60 / 70 %).

Laundry detergents and sustainability **Henkel**



A.I.S.E. Code of Good Environmental Practice 1996 - 2002



criteria	Target	Basis per capita	Basis per wash
PBO ¹	- 10% / p.c.	- 23.7%	- 30.4%
Detergent consumption	- 10% / p.c.	- 7.9%	- 16.0%
Packaging	- 10% / p.c.	- 6.7%	- 14.9%
Energy	- 5% / per wash	N.A.	- 6.4%

¹ Poorly biodegradable organics

Renewable raw materials I



- **Renewable raw materials [RRM] are based on ...**
 - ♦ **Plants (palm kernel oil, coconut oil, ...)**
 - ♦ **Animals (tallow, amino acids, ...)**
 - ♦ **Fermentation (white biotechnology)**

- **Chemical processing is usually required → bio-refineries (Verbund)**

- **Prices of RRM are not only market driven but reflect political decisions as well.**

Renewable raw materials II

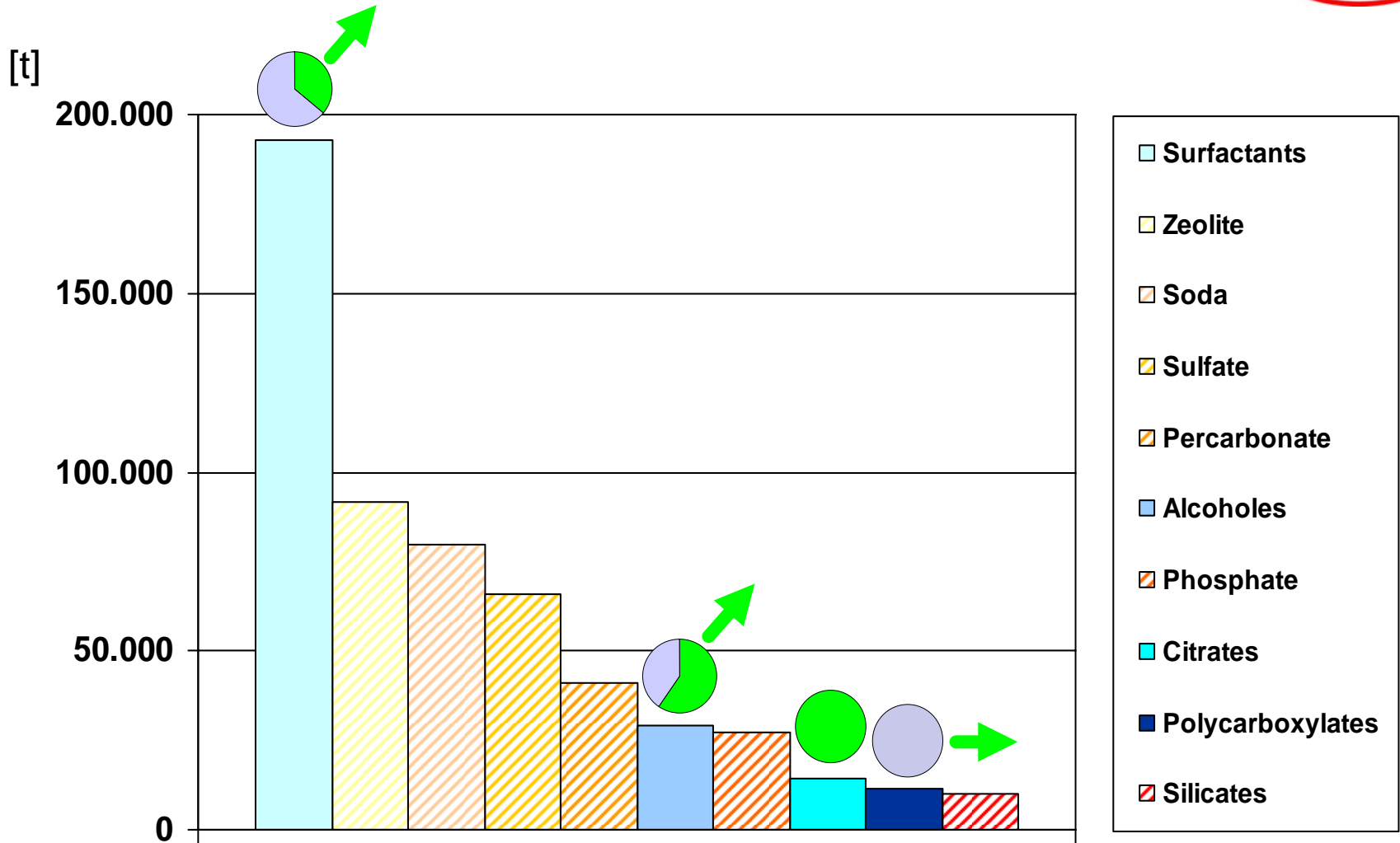


- **Potential benefits of RRM:**
 - ♦ **Reduction of CO₂ emissions (✓)**
 - ♦ **Conservation of fossil resources ✓**
 - ♦ **Limiting political frictions caused by conflicts on resources ✓**
 - ♦ **“Tailor made” functionality (✓)**
 - ♦ **Fostering rural societies ?**

Detergents and renewable raw materials I

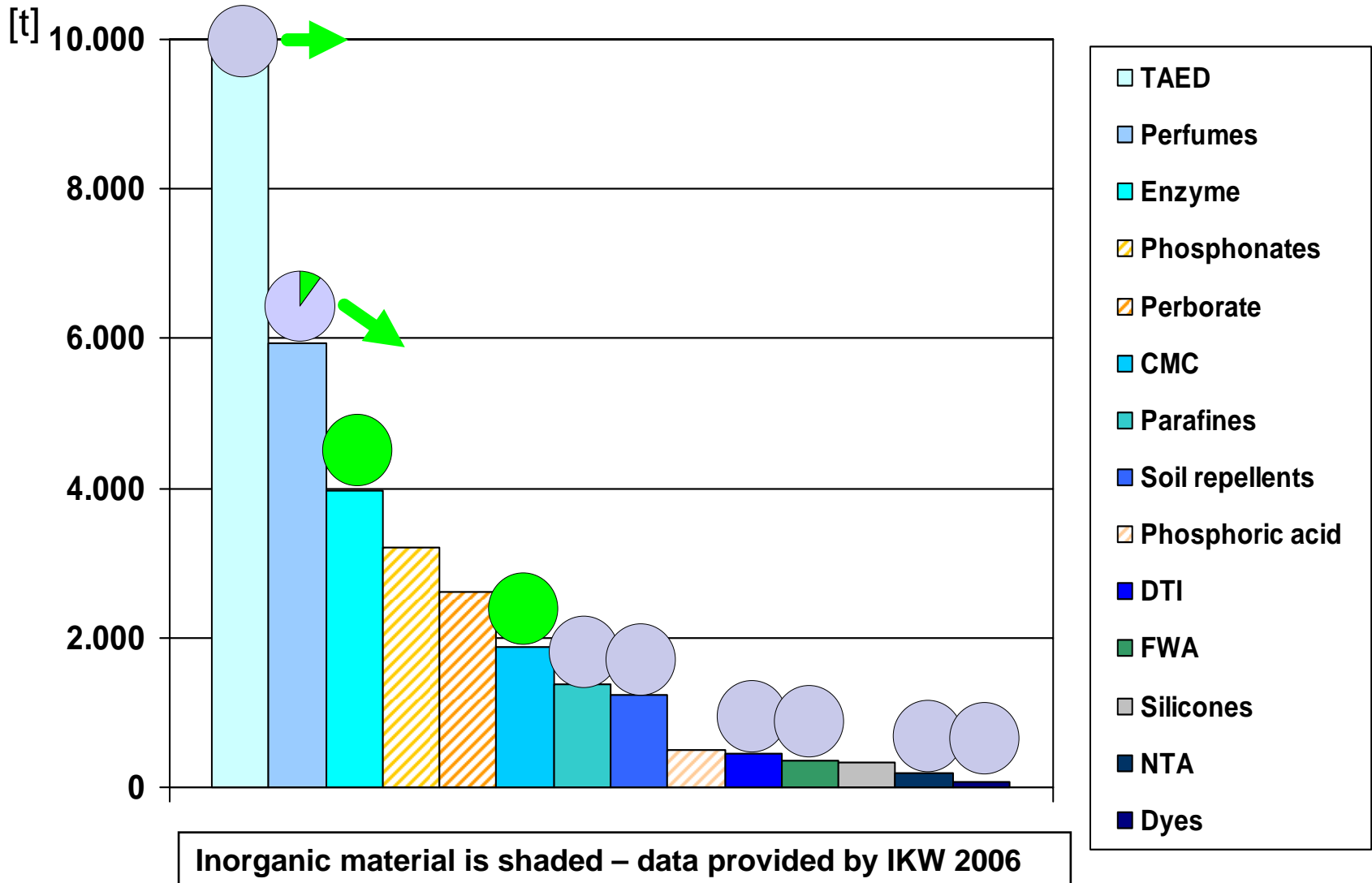
- ◇ **High potential for RRM in detergents due to high tonnages / volumes?**
 - **Search in Google® resulted in 10,100 hits!**
 - **Total tonnage in D 630 k t (detergents) + 220 k t (auxiliary detergents)**
 - **Market volume in D was 3.689 billion € in 2005 → share of heavy duty detergent was 26 % (0.95 billion €)**

RRM:Detergent raw materials in D 2006 I Henkel

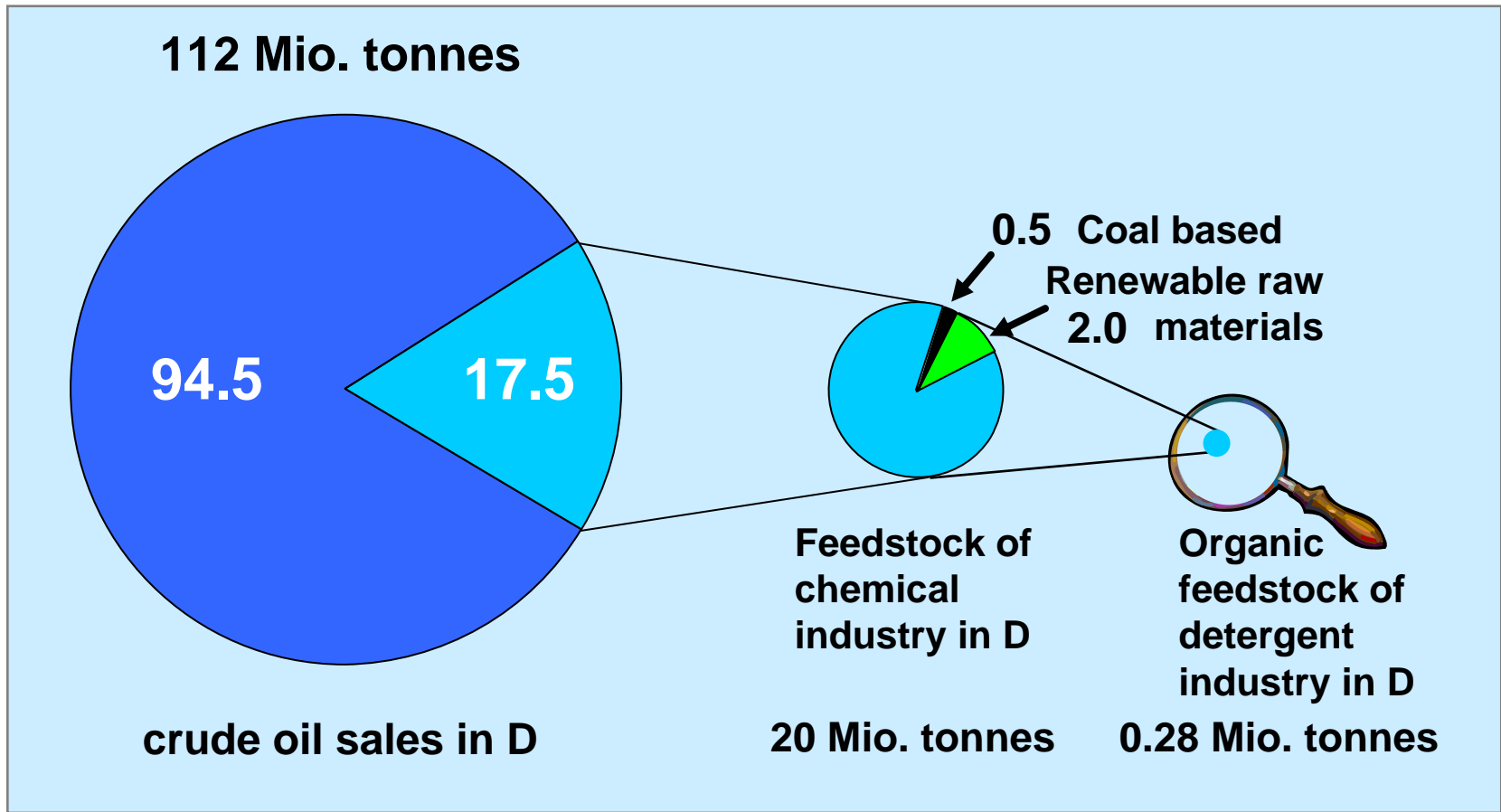


Inorganic material is shaded – data provided by IKW 2006

RRM: Detergent raw materials in D 2006 II Henkel



Use of petrochemicals and renewable raw materials in D (2005)



T-A-C-T: Sinner's Wash Cycle



temperature

action



chemistry

time

Life Cycle Assessment: Concept



Raw Materials: Mineral
Oil, Renewable Raw
Materials,
Minerals



Transport

Manufacturing of
Ingredients



Transport

Detergents
+ Packaging



Use

Disposal

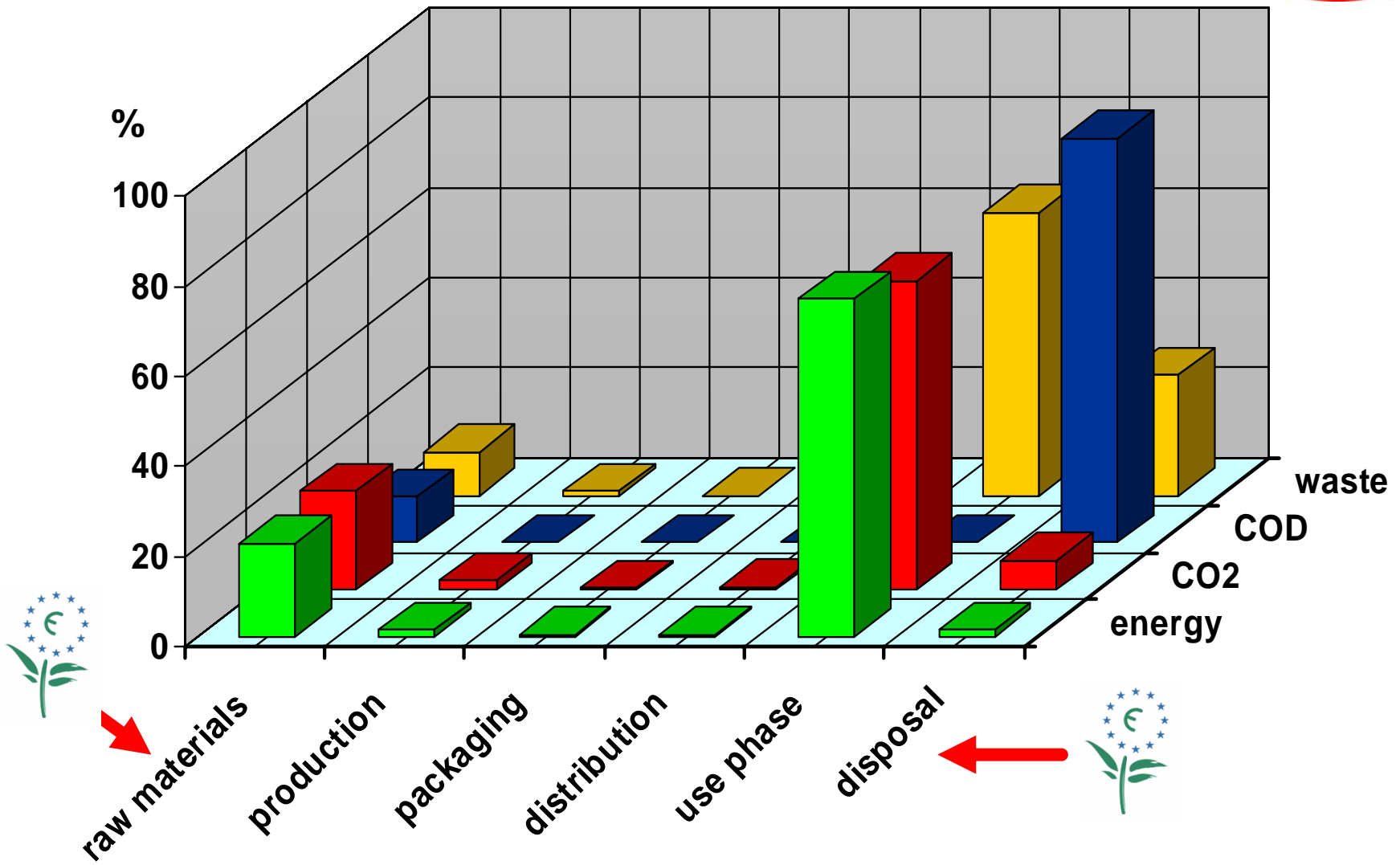


Cradle to Gate
includes 4 stages



Cradle to Grave
includes 6 stages

Laundry detergents and energy saving



A.I.S.E. Charter - aims

Henkel

The A.I.S.E. Charter for sustainable cleaning...

- ◆ is a life-cycle based framework for promoting a common industry approach to sustainability practices and reporting (human/ environmental safety/ eco-efficiency/ integrated product policy).
- ◆ is going beyond current legislative requirements.
- ◆ aims at driving the industry towards continual improvement in sustainability.



Charter web
address

A.I.S.E. Charter - basics

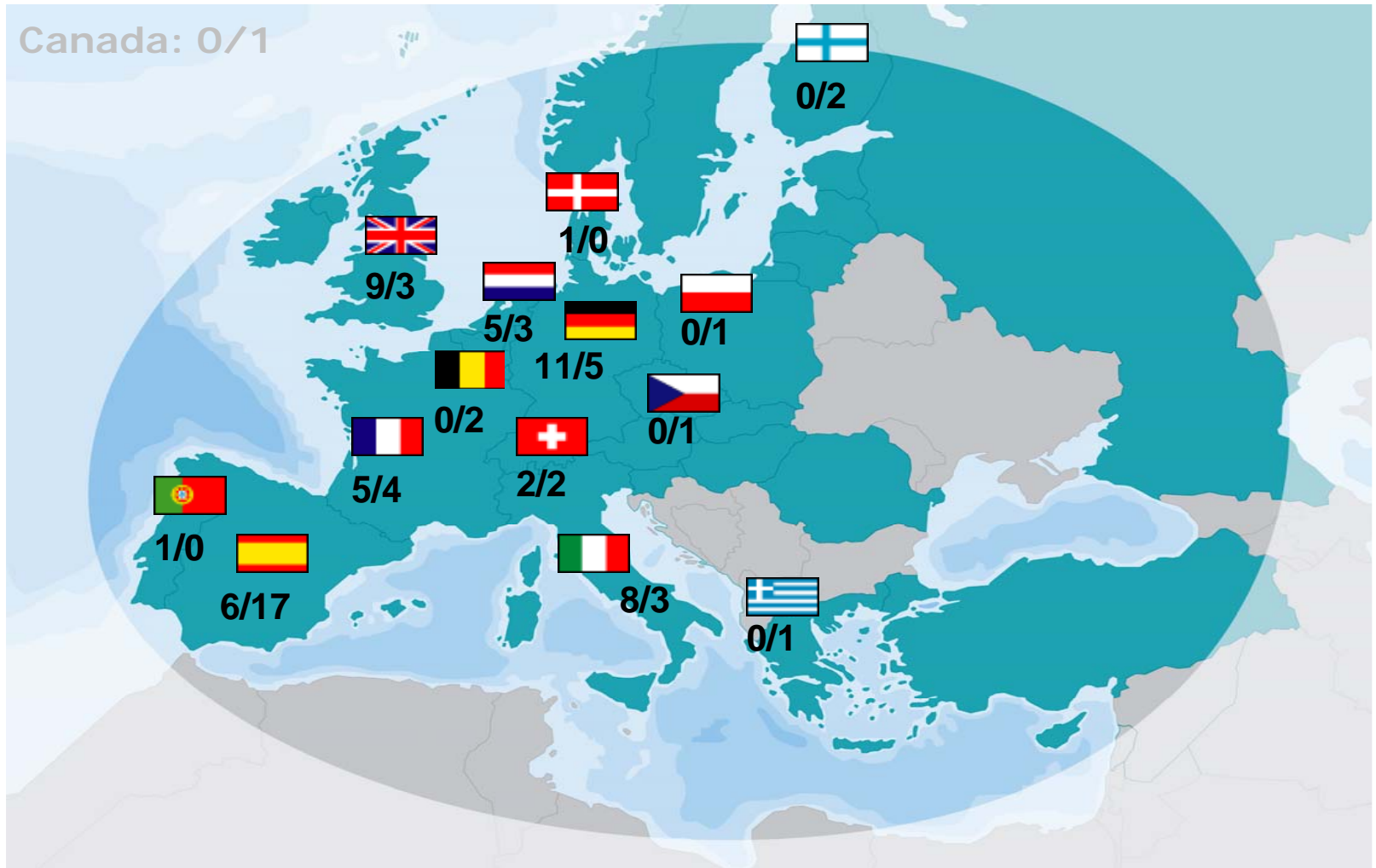


- A.I.S.E. Charter was officially presented on December, 01, 2004.
- A.I.S.E. Charter is based on:
 - ◆ Charter Sustainability Procedures [CSPs]
 - to be checked by independent external verifier
 - ◆ Key Performance Indicators [KPIs]
- Contrary to the A.I.S.E. Code, only companies that meet the Charter criteria are entitled to use the Charter logo



Example:
detergents

A.I.S.E. Charter – members



A.I.S.E. Charter – KPIs



- To demonstrate progress 10 key performance indicators [KPIs] have been developed, addressing the economic, social, and environmental aspects of sustainability.



Association Internationale de la Savonnerie, de la Détergence et des Produits d'Entretien
International Association for Soaps, Detergents and Household Products

- Examples for KPIs:

- ◆ Participating companies (KPI 1)
- ◆ Chemical safety evaluation (KPI 2)
- ◆ Accidence frequency rate (KPI 3)
- ◆ Consumer and customer safety (KPI 4)
- ◆ Consumer and user information (KPI 5)
- ◆ PBOs / energy / CO2 / H2O / solid waste / packaging used (KPI 6-10)

- KPIs are reported on an annual basis.



A.I.S.E. Charter – Consumer Safety

Henkel

Safe Behaviour Tips



Keep away from children.



Keep away from eyes. If product gets into eyes rinse thoroughly with water.



Rinse and dry hands after use.



People with sensitive or damaged skin should avoid prolonged contact with the product.



Do not ingest. If product is ingested then seek medical advice.



Do not change container to store contents.



Do not mix with other products.



Ventilate the room after use.

www.sustainable-cleaning.com

© A.I.S.E. 2004