

# LCA in Greenhouse Gas quantification: More than a *may be*

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## Integration of LCA in Greenhouse Gases (GHG) accounting protocols

- Compare existing GHG accounting protocols
- Point out LCA's assets
- Propose a simplified framework of integration focusing on major contributors

# Presentation Outline



- 🌐 **Context overview**
- 🌐 **Discrepancies**
- 🌐 **ISO 14 064**
- 🌐 **LCA in GHG accounting**
  - ISO 14064
  - Justification & warnings
- 🌐 **Conclusion**

# Context overview



## Buzzwords ...

Carbon  
footprinting

Carbon  
offsetting

GHG  
accounting



## A new context: the Carbon Market

- Loss of a free good vested right: CO<sub>2</sub> emission
- New idea of risk management
- You can't manage what you can't count

# Discrepancy – Definitions

🌐 **GHG accounting = Carbon footprinting?**

🌐 **What does it count ?**

- Only CO<sub>2</sub>
- Other GHG ?
- Only Kyoto GHG ?
- Only carbon-based molecules?
- Non carbon based but with a GWP ?

🌐 **Units**

**GHG accounting, 6 Kyoto GHG**

# Discrepancy - Topics

## **Baseline setting**

## **Boundary setting**

- Operational
- Organisational
  - Control
  - Equity share

# ISO 14064 – Critical review

## Specifications for quantifying and reporting GHG emissions

- Methodological answers ?...
- Not popular with enterprises
- Popularity contest with the *GHG Protocol*
  - More examples
- GHG Programme neutral

# ISO 14064 – Critical review

- GHG Programme neutral

ISO 14064 is GHG programme neutral. If a GHG programme is applicable, requirements of that GHG programme are additional to the requirements of ISO 14064.

NOTE If a requirement of ISO 14064 prohibits an organization or GHG project proponent from complying with a requirement of the GHG programme, the requirement of the GHG programme takes precedence.

**Power of the footnotes ...**

ISO 14064-2

# LCA & GHG Accounting

## ISO 14 064 position

- Blurry
- Apparent contradiction
- Only a « *may be* »

# LCA & GHG Accounting

## 🌐 ISO14064 position – only a « may be » ?

GHG projects may also be performed as a result of product development, where the GHG emission reductions or the GHG removal enhancements mainly occur in the use stage of the product life cycle (e.g. development of an air-conditioning system with lower energy requirements for a given cooling function than the baseline product). For product-related GHG projects, life cycle assessment (LCA) may be used to calculate GHG emission reductions or GHG removal enhancements<sup>[9]</sup>.

To ensure an appropriate comparison of the project and baseline (to calculate GHG emission reductions and removal enhancements), the services, products or function generally require a quantitative measure, and demonstrate functional equivalence.

ISO 14064-2

# LCA & GHG Accounting

## Reluctances

- Expensive
- Too complicated to include in an annual reporting

## Yet ...

- Bilan Carbone (ADEME)
- Green-E (Ecointesys)
- PAS2050 (BSI)

# LCA & GHG Accounting - Pleading

- 🌐 **Acknowledgement of the method**
- 🌐 **All life cycle stages**
  - Environmental improvement
  - Eco-design
- 🌐 **Wide range of impacts**
  - Avoid impact shifting

# LCA & GHG Accounting - Pleading

## Functional approach

- Comparison

- Enterprises' improvement performances within the same industrial sector
- Projects within a same enterprise

## Diminution of the uncertainty

(Ross 2003)

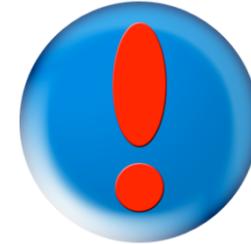
# LCA & GHG Accounting - Pleading

## Help with boundary setting

Organisational boundary setting	Flow allocation
<ul style="list-style-type: none"><li>• Emission responsibility</li><li>• Enterprise</li></ul>	<ul style="list-style-type: none"><li>• Emission responsibility</li><li>• Coproduct</li><li>• Multifunctional processes</li></ul>

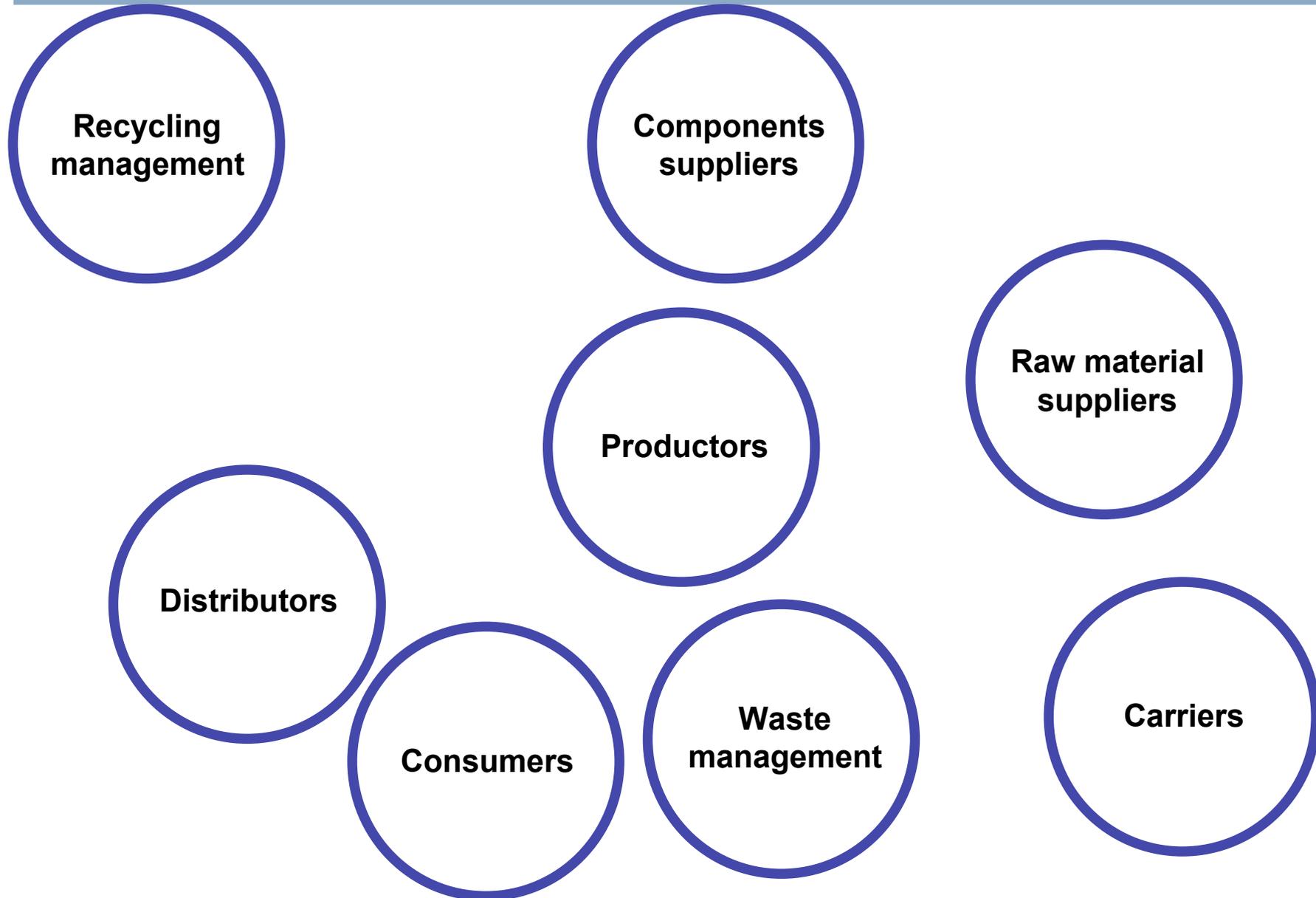
## Know-how already exists!

# LCA & GHG Accounting - Limitation



- 🌐 **Need for clarification and standardization in flow allocation**
- 🌐 **Overlap of supply chain**
- 🌐 **Double-counting or omissions**

# LCA & GHG Accounting - Limitation



# LCA & GHG Accounting - Limitation

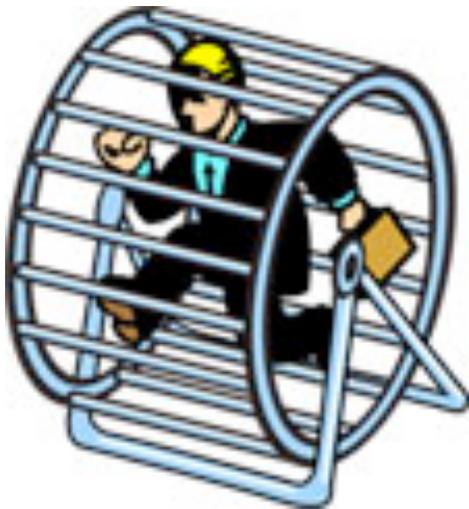
From simple discrepancies ...



... to a chain reaction ...

# LCA & GHG Accounting - Limitation

Omissions ...



... double-counting...

... Loss in consistency of SD tools !

# Conclusion

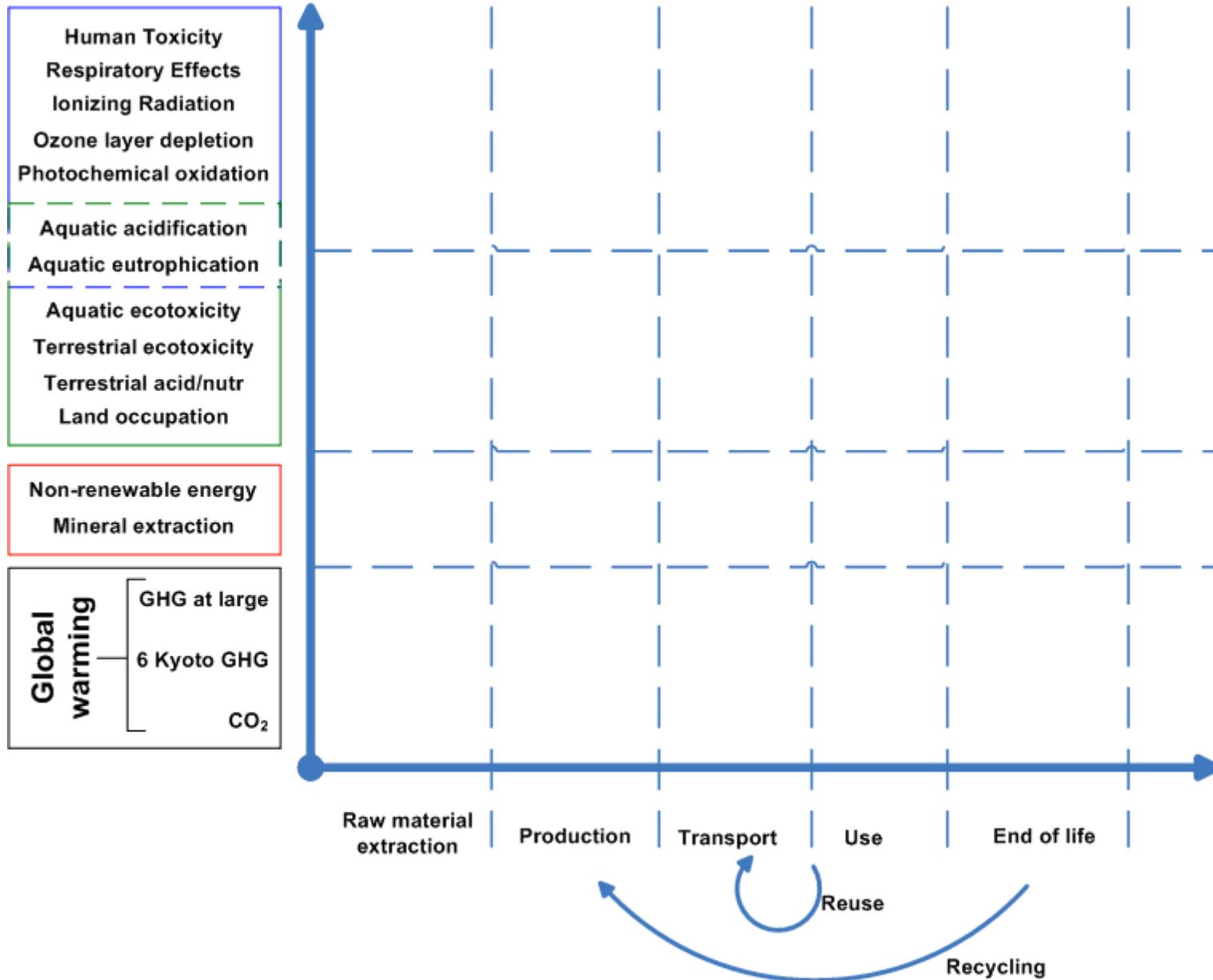
## Towards internalization

- « Collateral damages »
- Inclusion of an enterprise's external costs (pollution, noise, ...)

## Still methodological improvements

## First step might be to...

# Conclusion – First step = definition's standardization





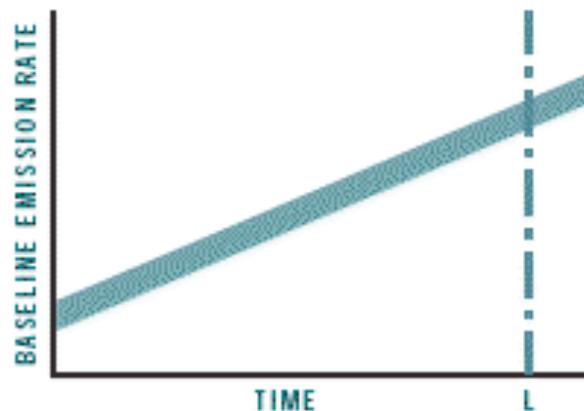
# Discrepancy topics – Baseline Scenario

## Baseline scenario :

- Reference level of emissions
  - Absolute, static
  - Relative, dynamic

t. CO<sub>2</sub>-eq

$\frac{\text{t. CO}_2\text{-eq}}{\text{MWh}}$

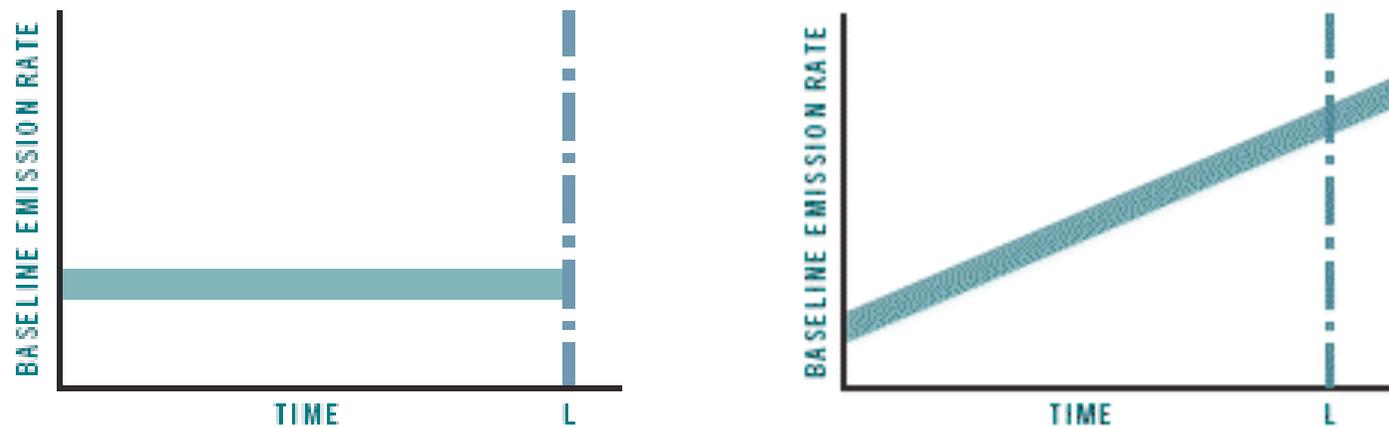


L = end of valid time length  
for the baseline scenario

# Discrepancy topics – Baseline Scenario

## 🌐 Baseline scenario:

- Why is it so tricky ?
  - Assumption
  - Level of an hypothetical level of emission
  - Quantification of additionality

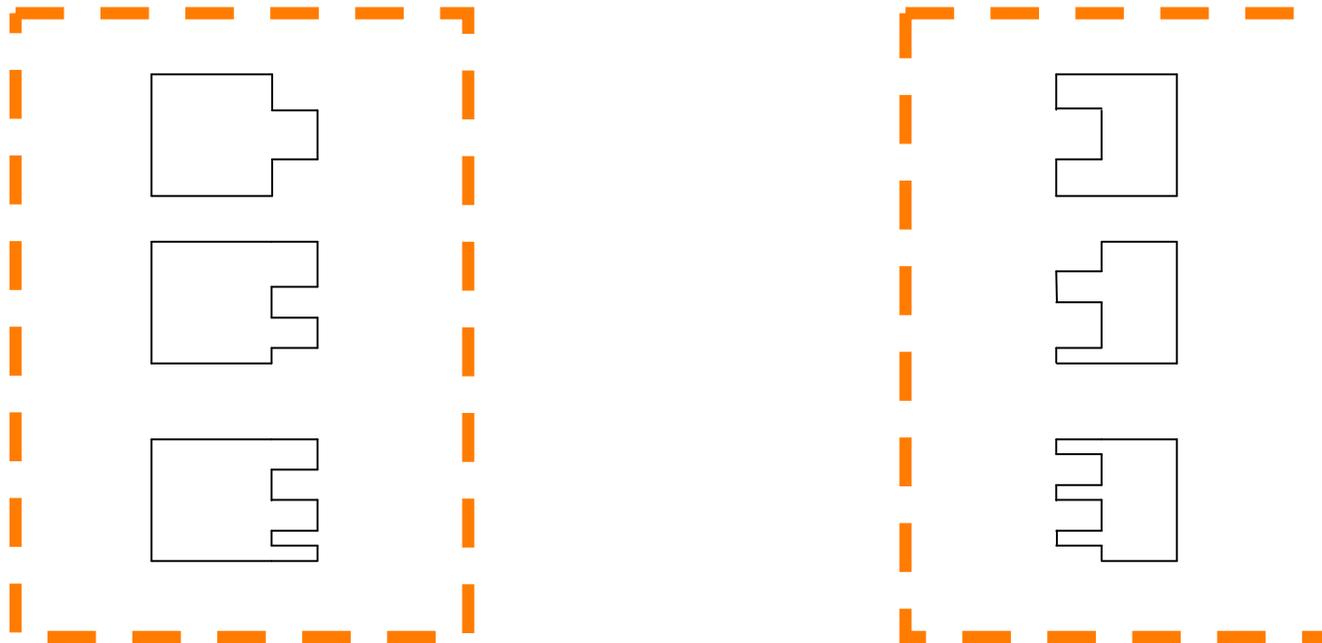


L = end of valid time length  
for the baseline scenario

# Discrepancy topics – Boundary setting

## Operational boundaries

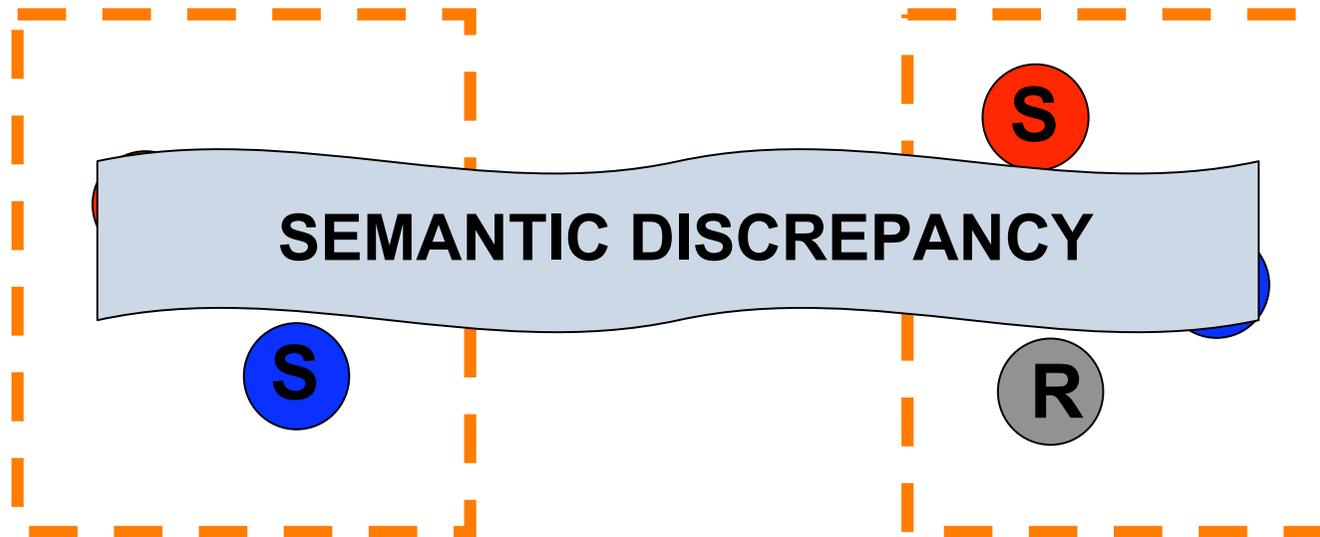
- Where emissions/reductions come from
- Corporate point of view
  - « Scope » 1, 2, 3
  - Direct, electricity indirect, other indirect



# Discrepancy topics – Boundary setting

## Operational boundaries

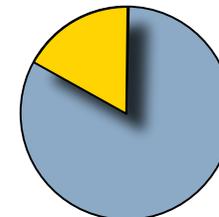
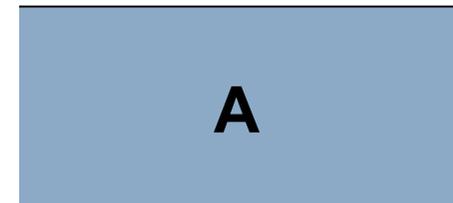
- Project point of view
  - S&S: Primary, secondary (one-time effect, upstream & downstream effects)
  - SSR: controled, related, affected



# Discrepancy topics – Boundary setting

## Organizational boundaries

- Endorsement of emission responsibility
  - Control approach
    - Operational
    - financial
  - Equity-share approach



# Accounting protocols

## 4 levels

- National
- Corporative
- Project
- Product

