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Opportunities and Challenges of LCA applied to the Natural Gas Industry – Triennium Work Report PGCA - 3

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What is Life Cycle Assessment ?



Focus on **environmental aspects**

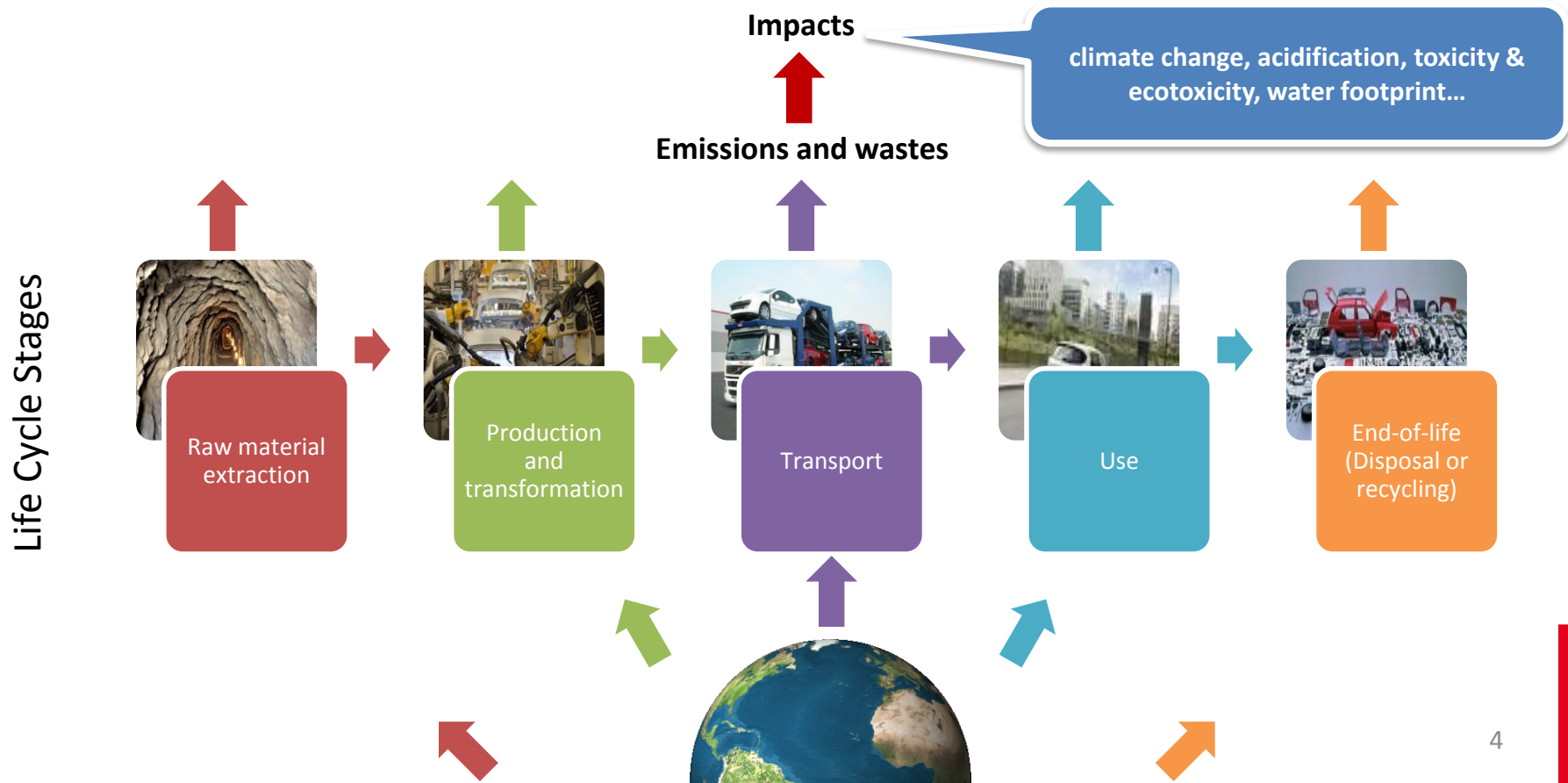
Social impacts are not included in LCA

LCA avoids the « pollution displacement » trap :

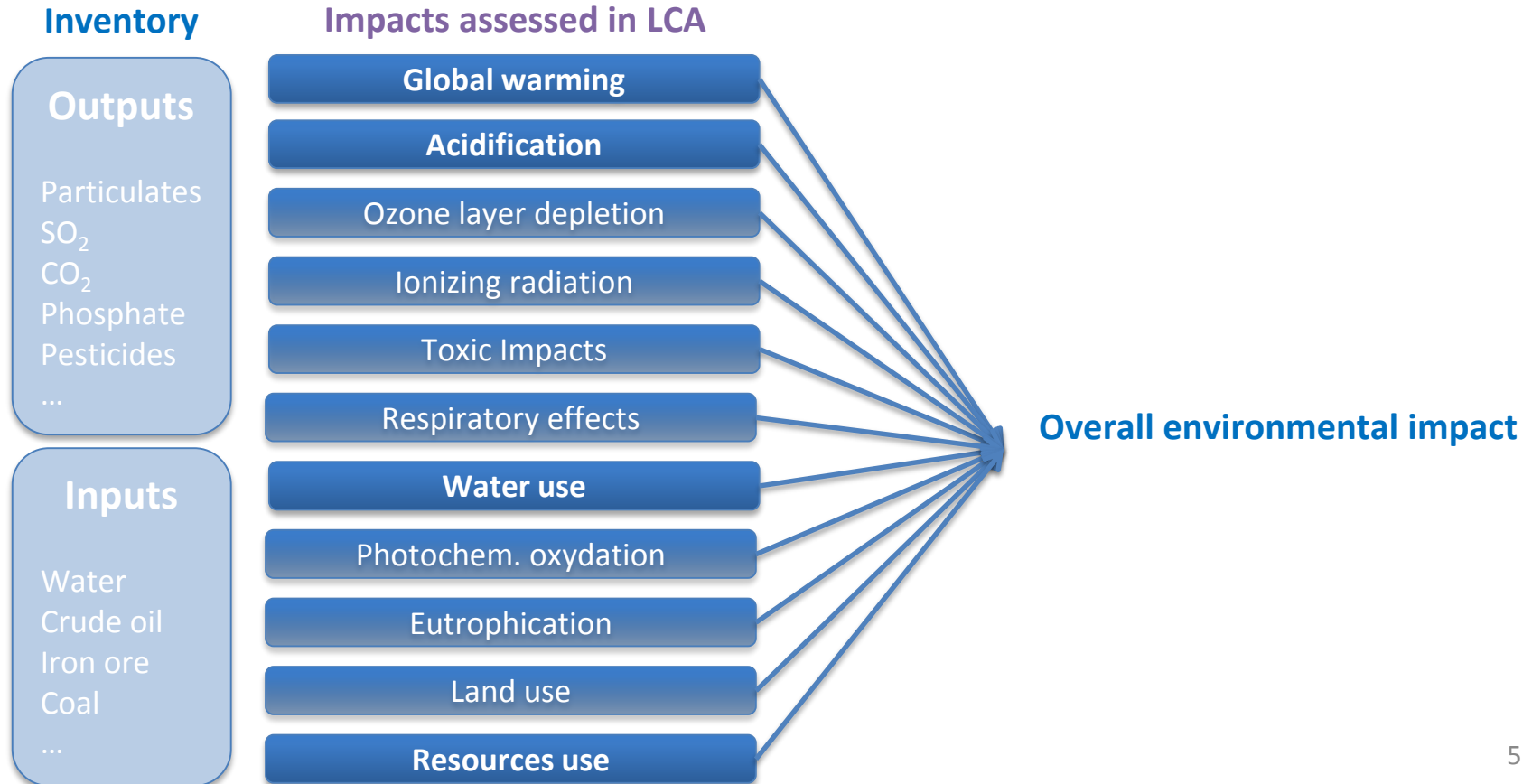
-from one step of the life cycle to another

-or from one impact category to another

Life Cycle Thinking



LCA Approach: a global and multicriteria Assessment



Why using LCA in the Natural Gas Industry ?



Examples of LCA applied in the Natural Gas Industry

- LCA applied to conventional natural gas pathways
 - Benchmark of NG pathways
 - Assessments mainly focused on GHG emissions
 - Sensitive parameters : CH₄ emissions, auto-consumption rates, compressors efficiencies
- LCA applied to unconventional natural gas resources
 - Benchmark of unconventional gas vs. conventional resources
 - Identify environmental hotspots and best practices
- LCA applied to carbon capture and storage (CCS) technologies
 - Quantify the potential GHG emissions reduction, depending on the CCS technology
 - Identify the potential trade-offs between environmental impact categories
- LCA applied to renewable gases
 - Verify the environmental performances of existing biogas/biomethane routes, in particular in terms of greenhouse gases emissions
 - Identify potential trade-offs between environmental impacts

How to improve LCA and its use towards a more sustainable natural gas chain ?

- Improved data collection
 - IGU could support the development of a LCA database
 - First attempt of data collection during the triennium
- Further work towards consensual indicators
 - Not only focus on GWP but include other impact categories (e.g. related to air quality)
- Increase robustness of LCA in order to compare NG with other fuels
 - And thus increase the acceptability of LCA results
- Gas chain new activities have to be assessed for a full understanding of tomorrow's gas chains

Program of the session: Practical examples of LCA

- LCA of a biogas plant with biomethane as transport fuel from pig manure,
[Angel Gutiérrez, Laura Barrio](#)
- LCA of Organizations - An example of O-LCA applied to natural gas storage: the case of Storengy,
[Laurent Achet](#)
- Natural gas LCA from the wells to the gas transmission system based on the case study of the largest gas production company OAO “Gazprom”,
[Nataliya Kruglova](#)
- GHG LCA for a LNG plant in Qatar,
[Khalifa Ahmed Al-Sulaiti](#)
- Environmental LCA of North American shale gases,
[Ian Laurenzi](#)