

# A New Perspective for UV/EB Coatings

Radiation Cure Technology

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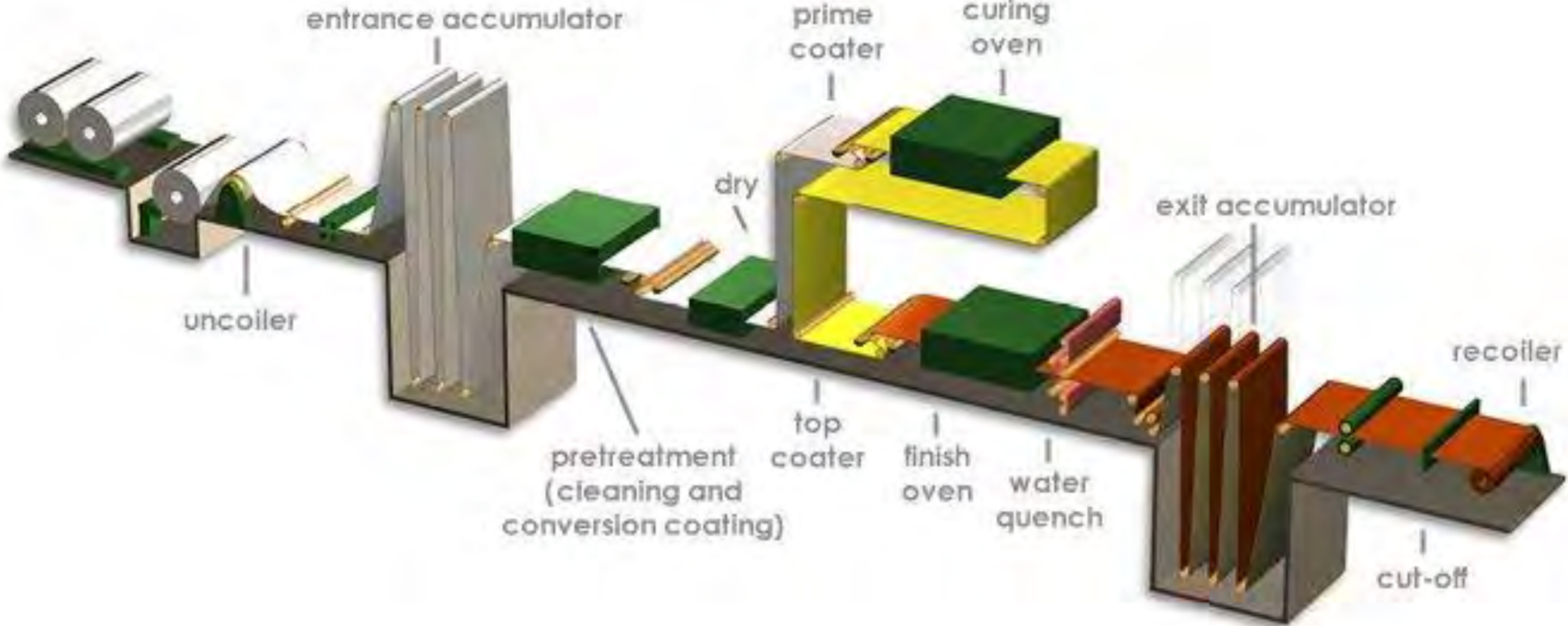


# The Focus

- Sustainability as a full Life Cycle Analysis
- Discuss only the sustainable impact of these curing technologies
- Sustainability includes the impact on People as well as the Environment

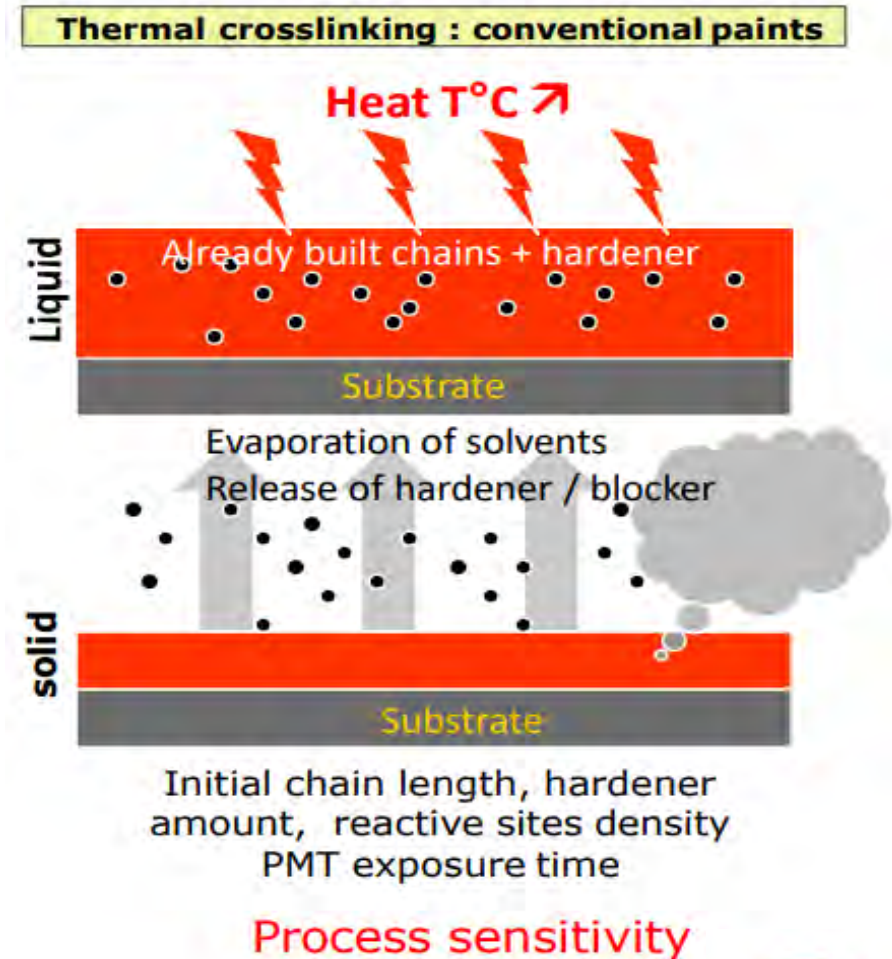


# Conventional Coil Coating Line



# Thermal Cure Systems: Focus on Sustainability

- Require Large Building Footprint
- High demand in both electricity and natural gas
- Controlled Water Quench
- Treatment of Water
- Increased inventory (paint & reduction solvents)
- Exposure to VOCs

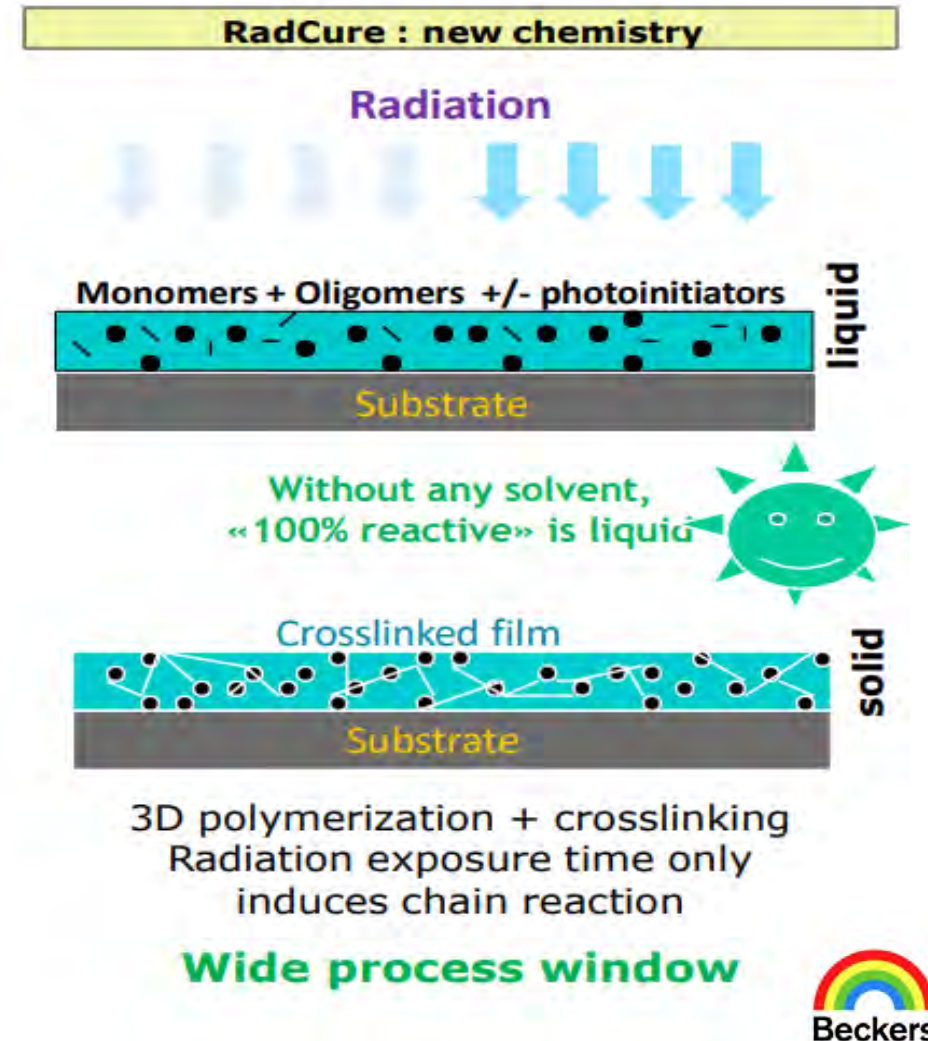


# Thermal vs Radiation Cure Systems: Focus on Sustainability

- Require Large Building Footprint → ✓ Minimal Equipment Footprint
- High demand in Electricity and Natural Gas → ✓ No Natural gas  
Cold curing system
- Controlled Water Quench → ✓ Cold curing system
- Treatment of Water → ✓ Cold curing system
- High inventory (paint & reduction solvents) → ✓ No Reduction Solvent  
Less FG inventory
- Exposure to VOCs → ✓ 100% Solids

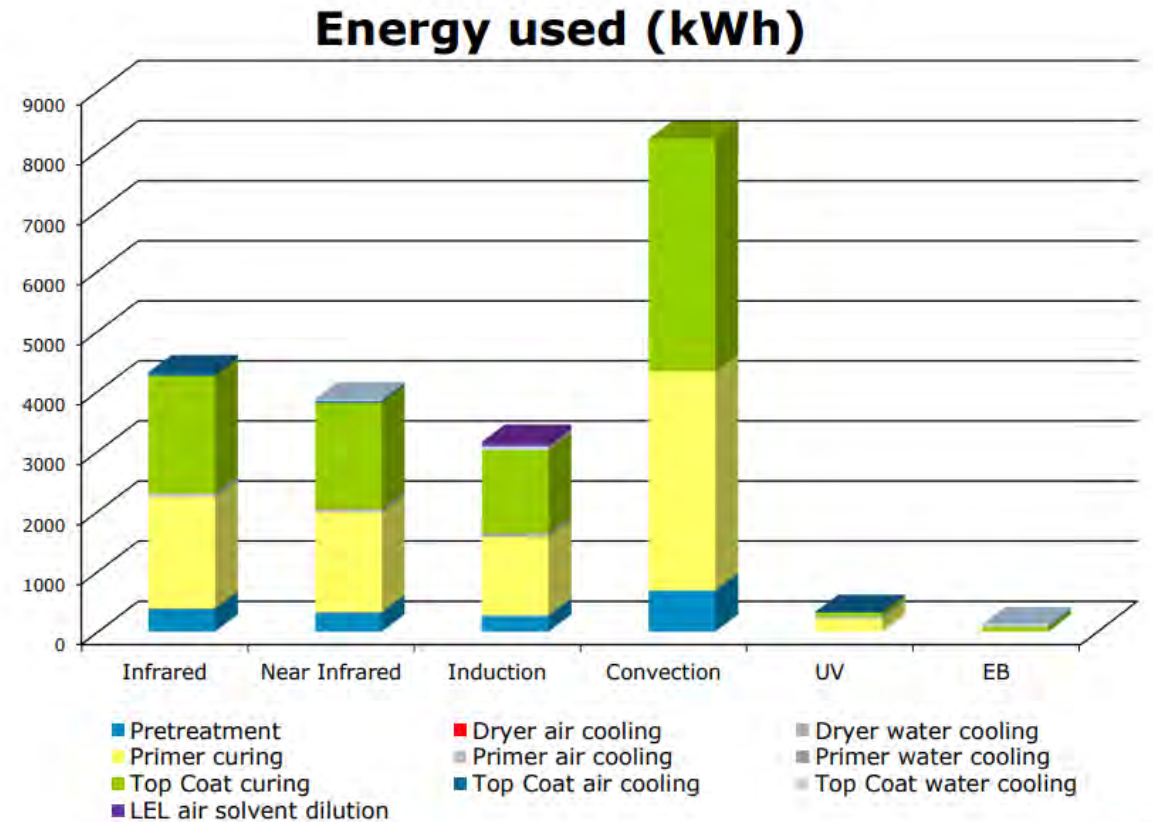
# Radiation Cure Systems: Focus on Sustainability

- O<sub>3</sub> depletion (UV)
- Maintenance to prevent radiation leakage
- Hazardous codes
- Skin sensitisation



# Energy Usage

## Radiation cure vs “Conventional” curing methods



# Radcure: Carbon Footprint

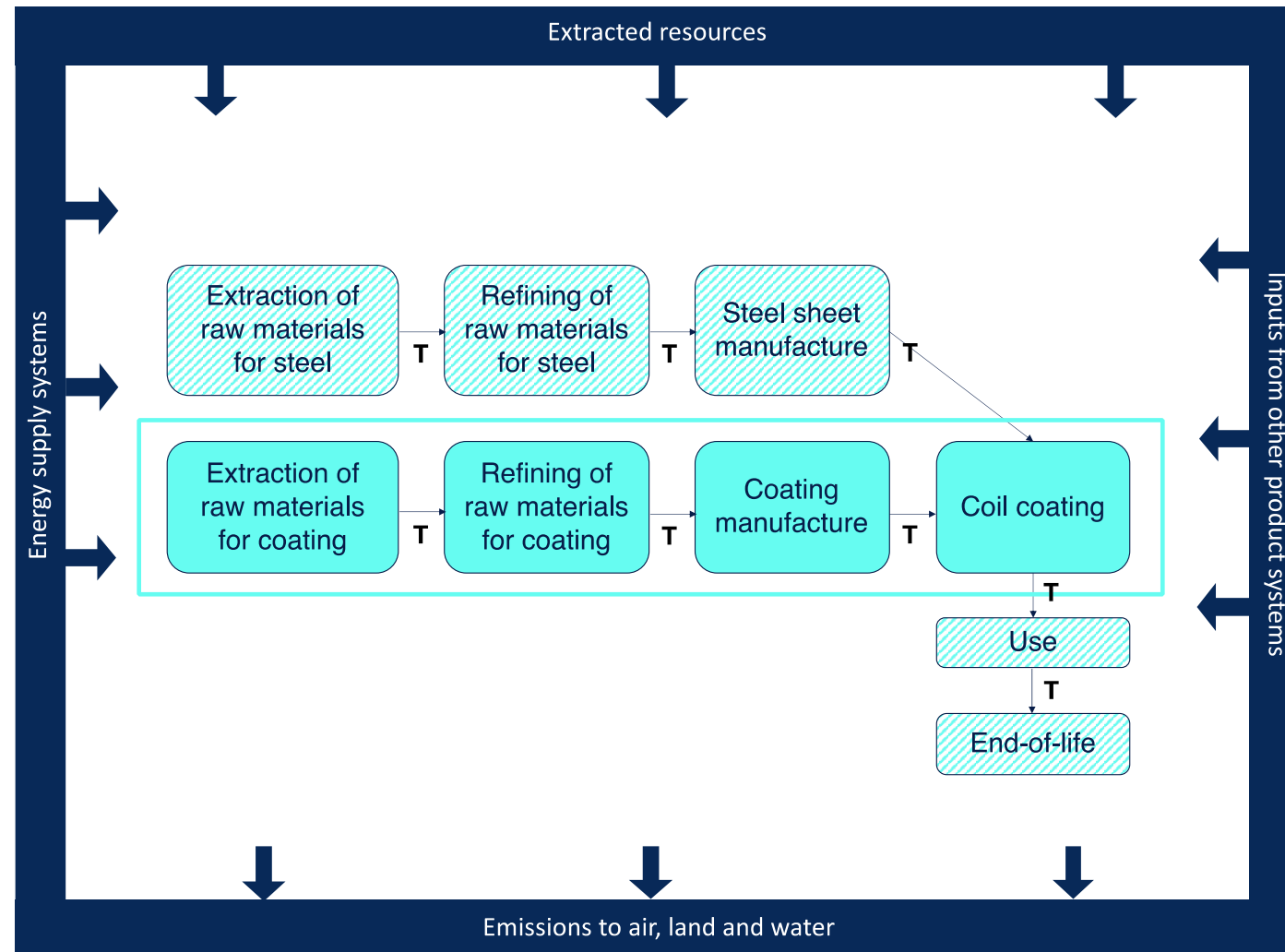
Functional Unit = Framework for the LCA

- 0.2 mils Non-Chrome Primer
- 0.8 mils Off-White Topcoat
- 0.4 mils Grey Backer
- Applied to 1m<sup>2</sup>
- Cradle-to-Coil Coater Gate
  
- Exclusion: Metal sheet manufacturing – focused only on paint system



# Radcure: Carbon Footprint

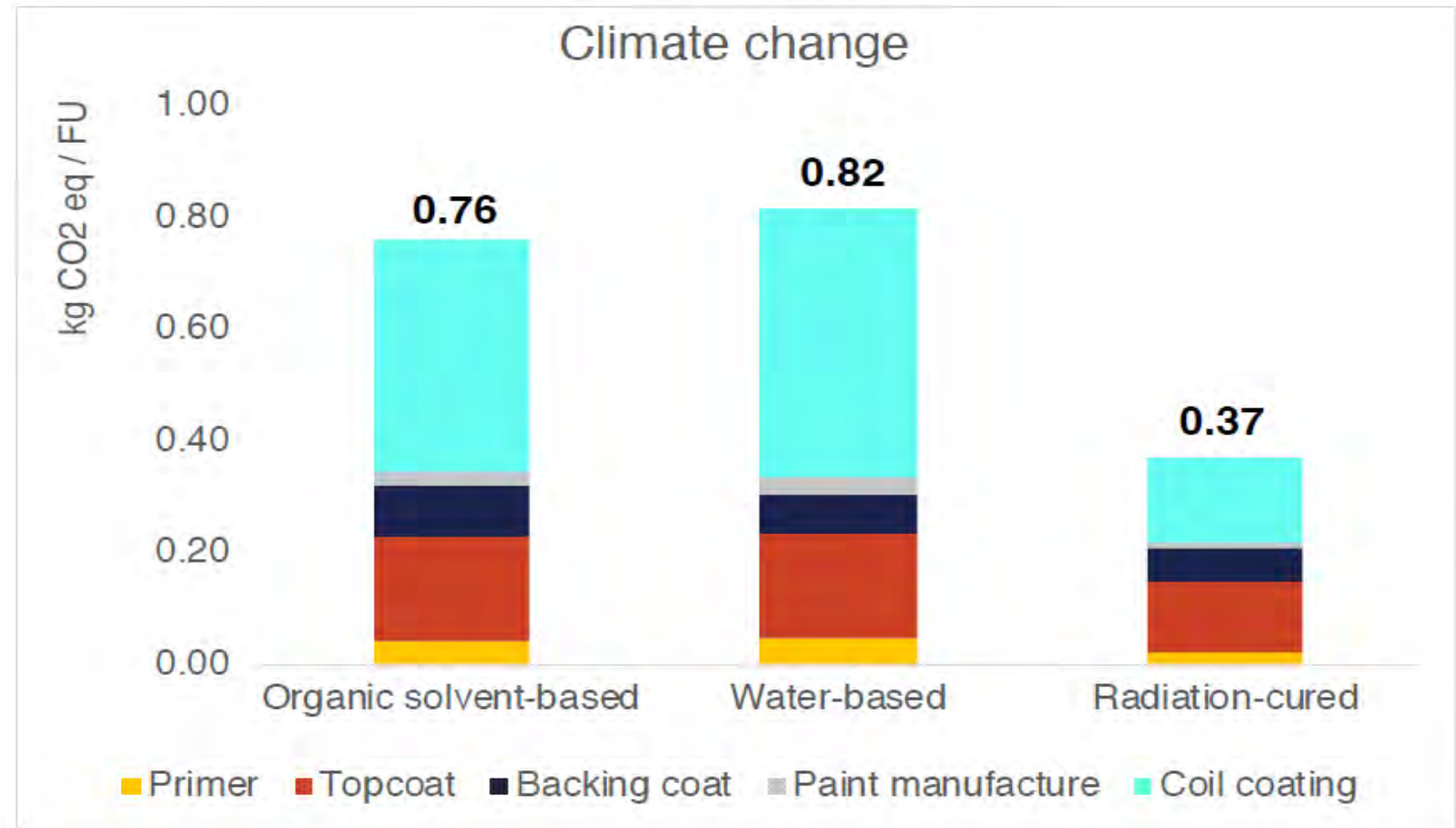
## Scope and System Boundaries



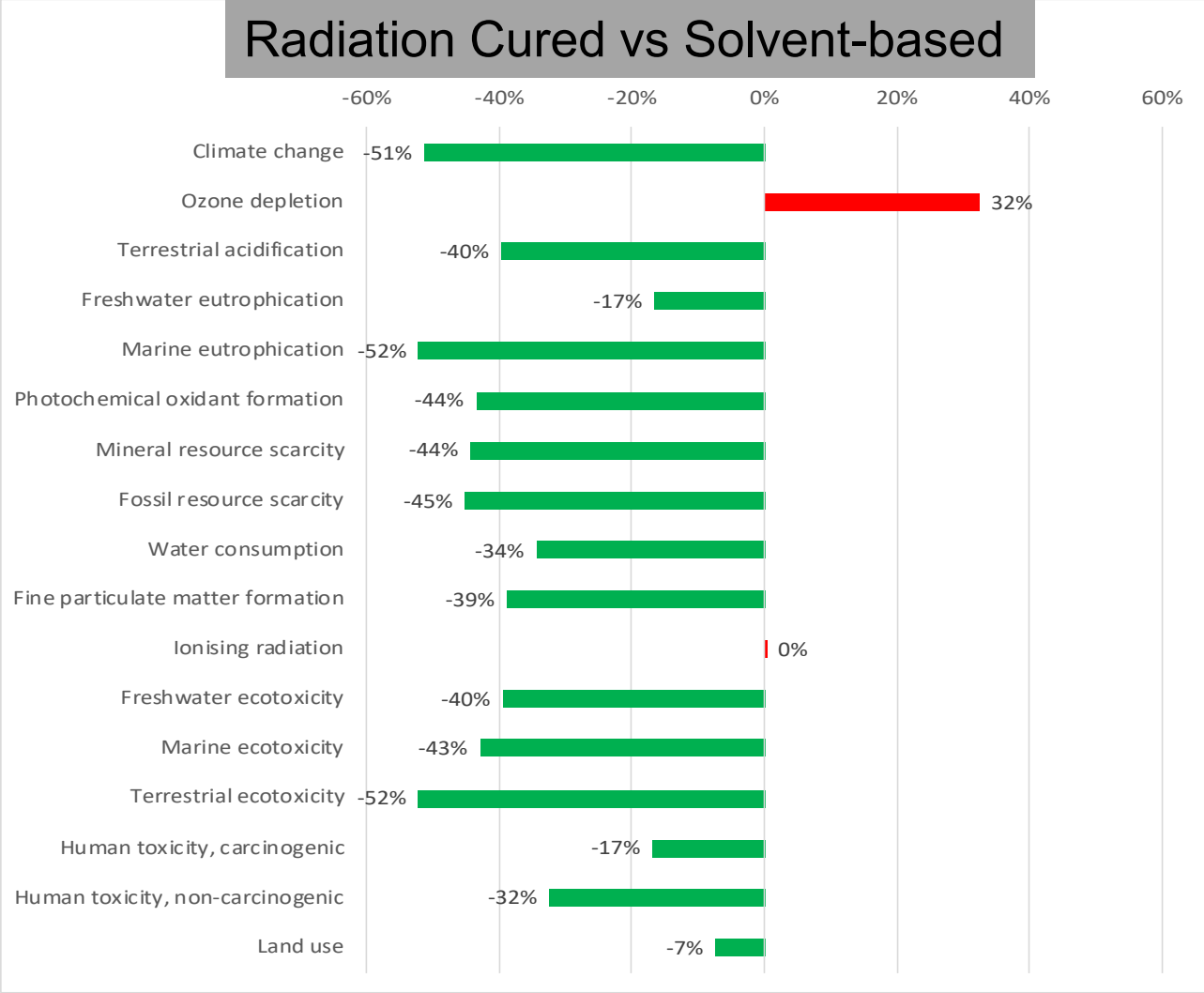
# Radcure: Carbon Footprint

## LCA Results – Cradle-to-Coil Coater Gate

- ✓ Radiation cure has the lowest carbon footprint
- ✓ Reduction over 50% embodied carbon



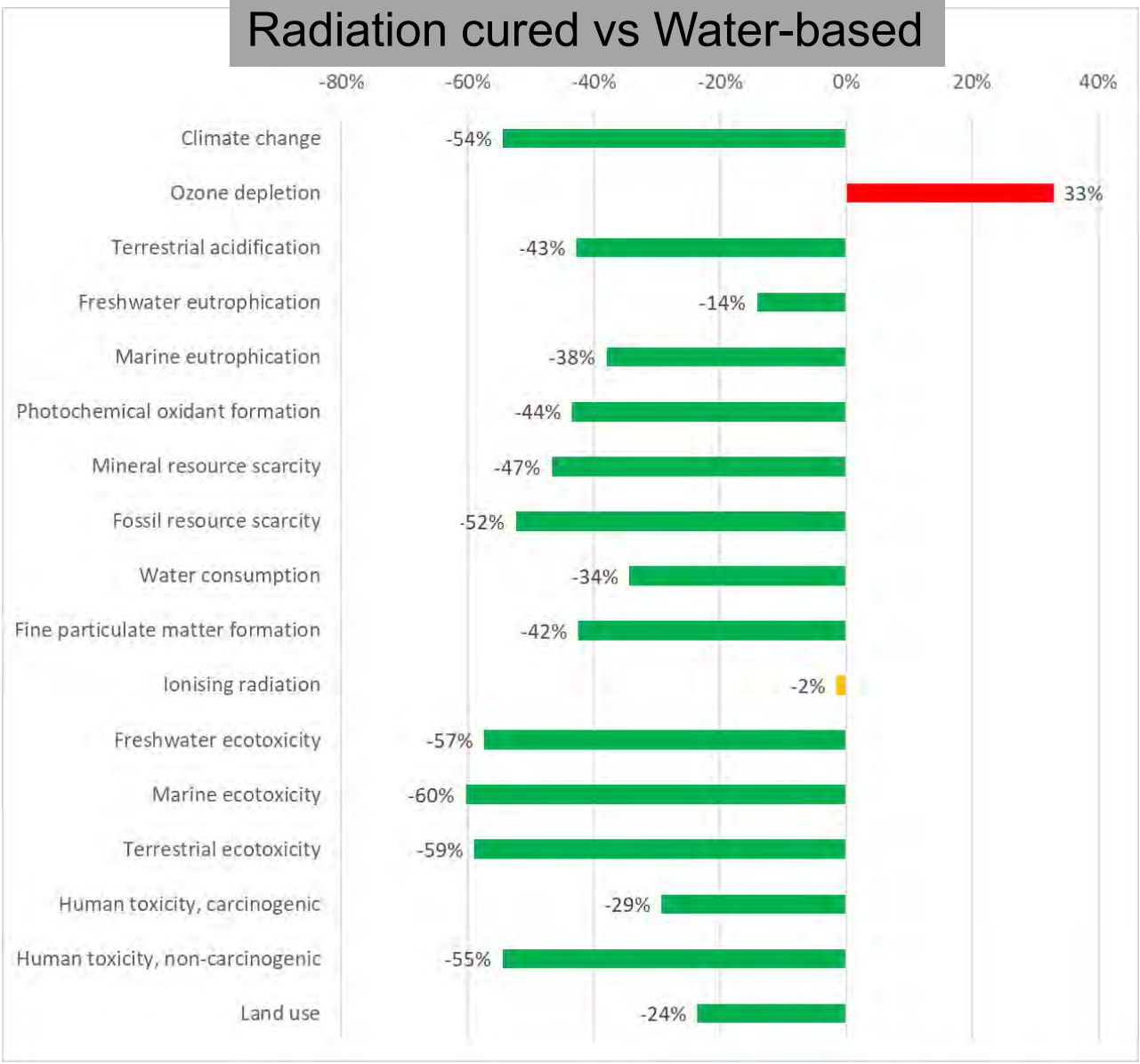
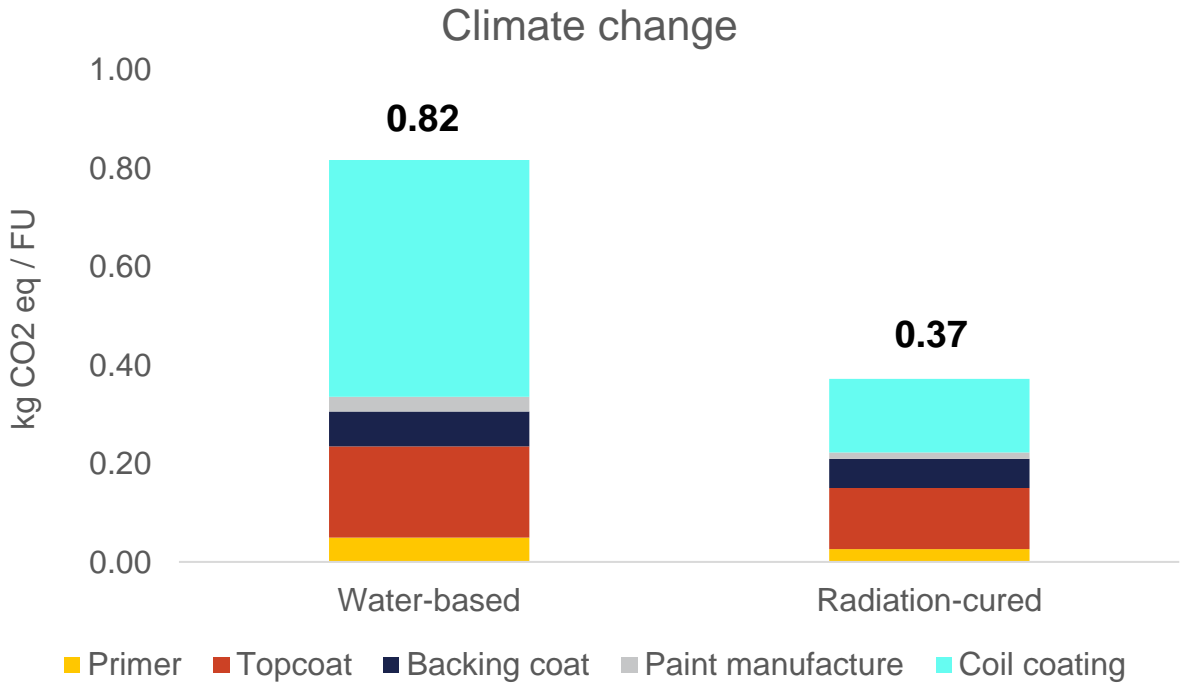
# Radcure: Overview



Cradle to Coil Coating Gate LCA – Conform with international LCA standard ISO 14044:2006+A1+A2:2020



# Radcure: Water-based, an alternative?



# In Summary...

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- Coil Coating process today has a high energy demand
- LCA and clear scopes are essential to evaluate new technologies and compare their sustainability impacts
- UV/EB technologies are a sustainable alternative for the Coil Coating Industry

