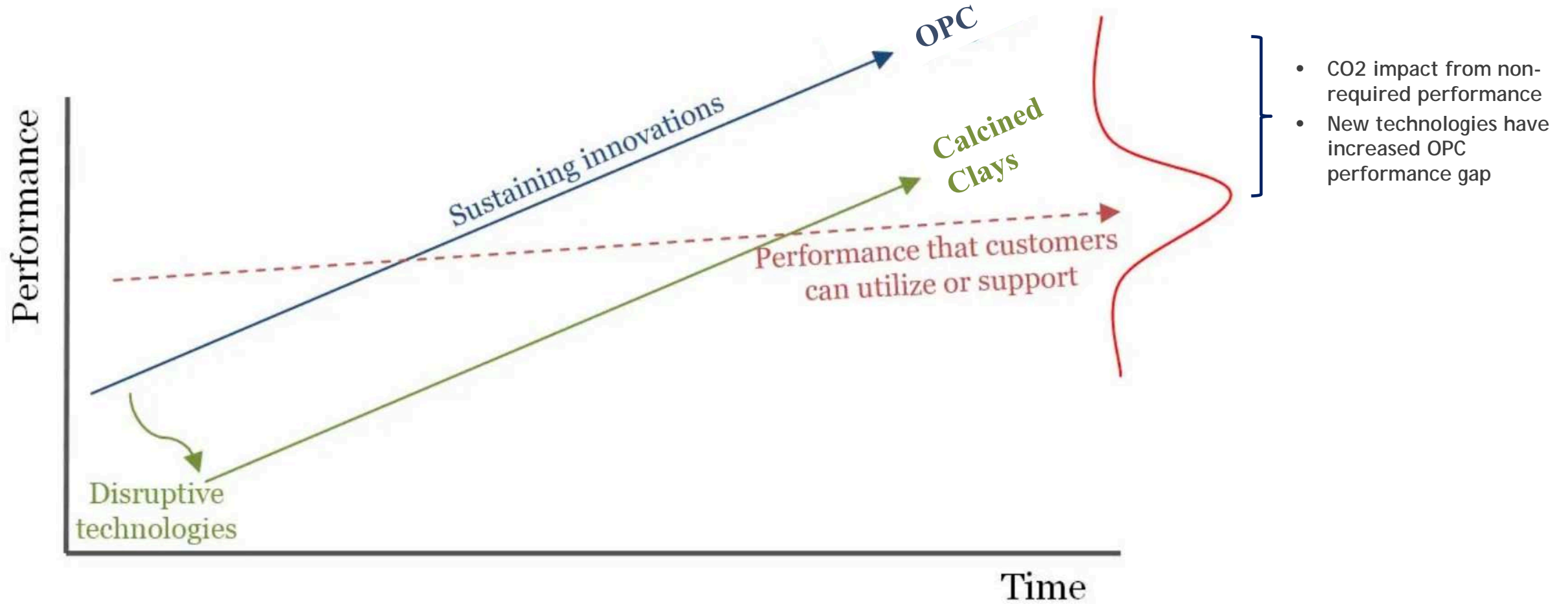




Market Transformation for Cement and Concrete

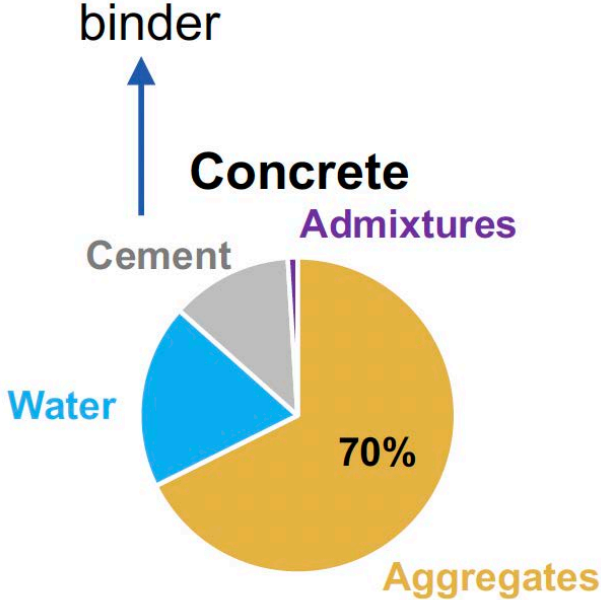
Are we thinking linearly? - change the optics



A direct route to decarbonation of concrete is to improve/ reduce the embedded CO₂ in the binder content



Cement (or binder mix) is a small share of concrete...



but accounts for close to 96% of its CO₂ emissions

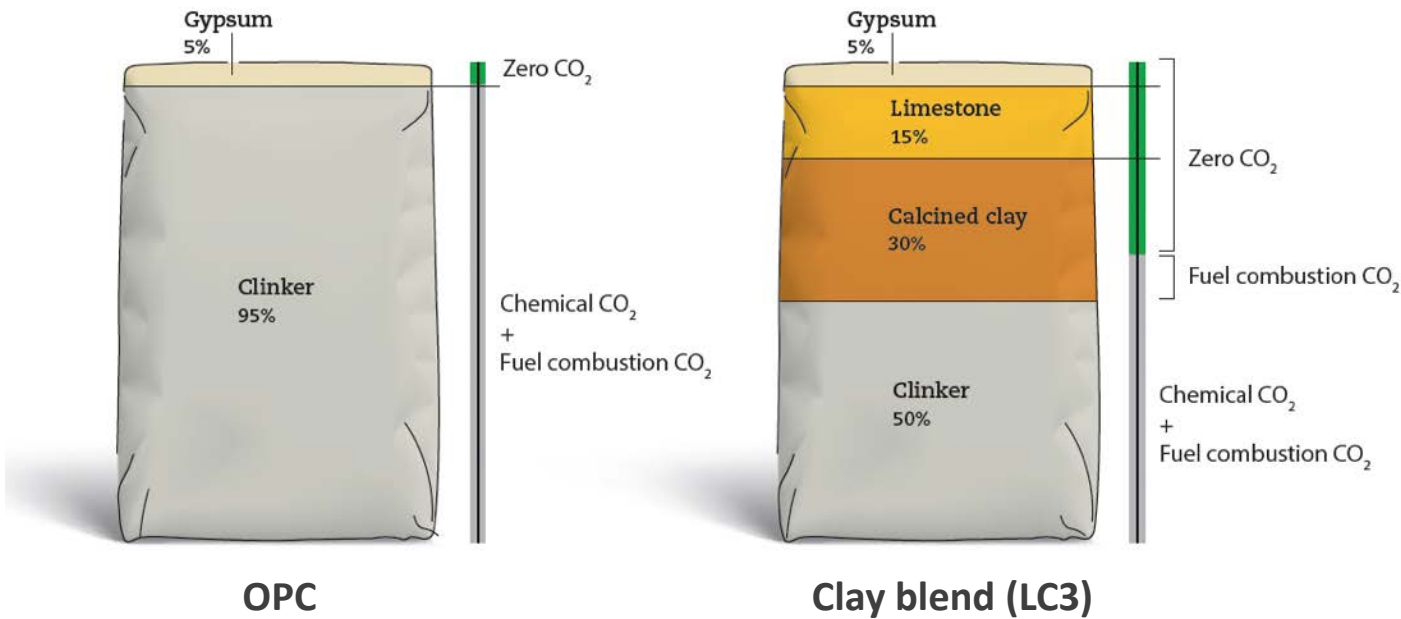


- Reduction of concrete related emissions starts with active reduction of cement/clinker/binder emissions.
- Multiple strategies are available to reduce emission

Calcined clays have immediate potential to reduce CO₂ emissions in concrete by up to 40% while creating new business opportunities



Comparison of constituent materials of OPC vs. Calcined Clay blend



Clay potential

- Short term 40% embedded emissions reduction
- Performance equivalent to OPC cement (chemistry synergies between limestone and calcined clays)
- Improved performance over Type IL and Type IL with FA or Slag mixed

What do we need to do to make it happen?



- 1. Adjust our xDOT standards**
- 2. Support to reduce perceived market risk – Demonstration / Catalyst Funding**
- 3. Evolve existing permitting processes**