

# Convergence of energy, material and innovation



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Energy and carbon performance is the defining challenge of our generation.

# The energy challenge

- Existing methods of roadbuilding have limited scope for change.
- The root of the energy challenge is at its very core:
  - Quarrying and transport of virgin materials.
  - Use of bitumen.
    - Increasing quality issues.
    - Health and Safety.
    - Requires heavy use of fossil fuels throughout manufacturing and construction process.
  - Further efficiency and AI application is an accelerant to the associated emissions of the socially aware business-as-usual model.

# The emissions challenge

Boundary limits: A trajectory to 2050



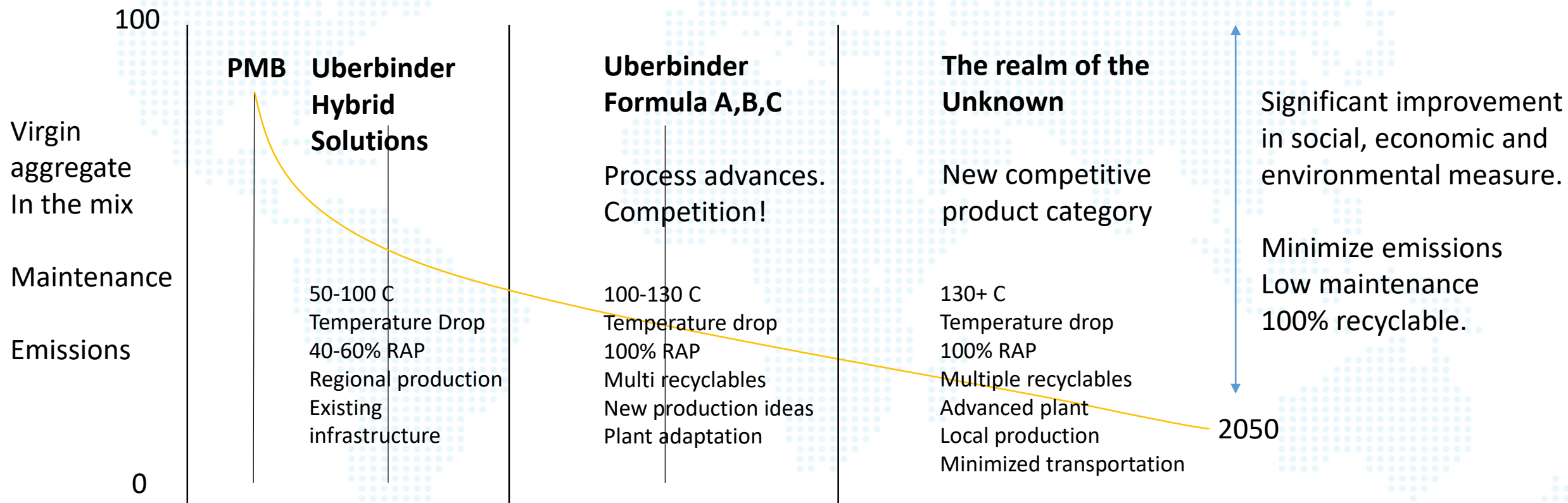
Advanced materials are the building  
blocks of our sustainable future



# Materials challenge

- Existing roadbuilding materials are inefficient.
- Material resources will have to be reused, particularly in cities.
- Use and creation of heat is a barrier to progress and efficiency.
- Health and safety is paramount.
- Business cannot model social, economic and environmental efficiency by maintaining existing materials and process.

# Advanced binder solutions



Technical / electrical integration with road surface –smart, intelligent and integrated infrastructure.

# Key features of advanced binders

- Root level solutions.
- Scalable and cost effective (initially interoperable).
- Deliver performance, resilience, sustainability and equity.
- Replace the need for oil-based bitumen, energy and carbon intensive fossil fuel use and virgin aggregate quarrying/transport.
- Creation of a paradigm shift and the need to collaborate, innovate and advocate the desired change.



The inflection  
point



Everything we  
know and love.

Social,  
environmental  
and economic  
approach.

FOIK Technology  
Convergence  
Advocacy

# The roadmap for a sustainable future

Development timelines from investment to market are typically very long but with huge potential payoffs.

Innovation requires multi-stakeholder collaboration.

Advocacy will be the key to pushing the boundaries of what is possible.

CIRCUIT with FEHRL in EU is providing a consortium and advocacy to trial.

Many challenges but breakthrough opportunities are ahead.

<sup>1</sup> MITMA: Ministry of Transport, Mobility and Urban Agenda

<sup>2</sup> CIRCUIT: Circular and Resilient Transport Infrastructure Project

