

Innovation Transforming Energy Productivity

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Energy Productivity (EP)

- Value driven approach
EP = total value/energy
- Value chain methodology to examine delivery of energy services
Integrates materials efficiency and circular economy
- Achieve transformative change
- Build strong stakeholder groups
- Deliver real projects on the ground

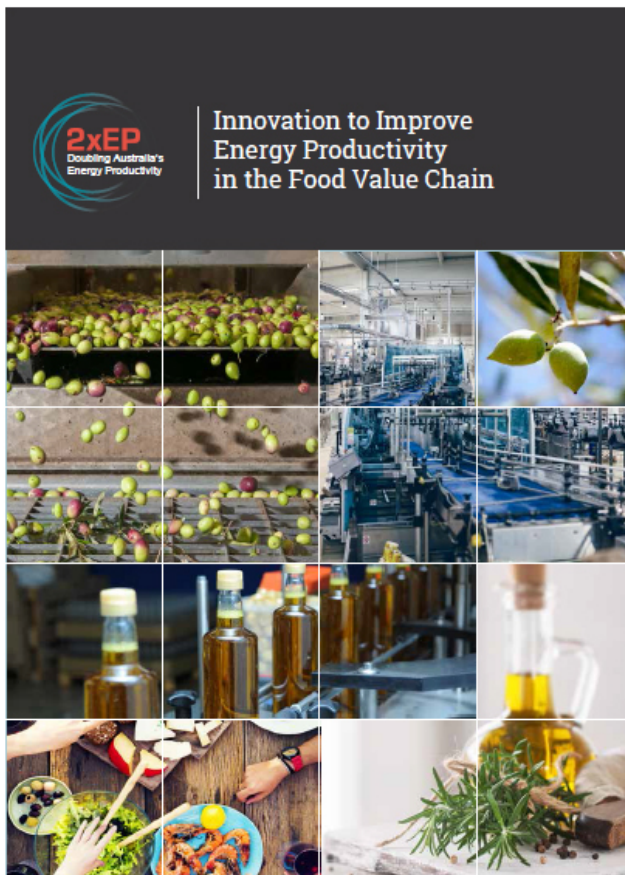
TRANSFORMING energy end-use through EP innovation



KEY SOCIETAL SERVICES REQUIRING ENERGY

Value Chain method to define and quantify key opportunities for transforming EP in delivery of services

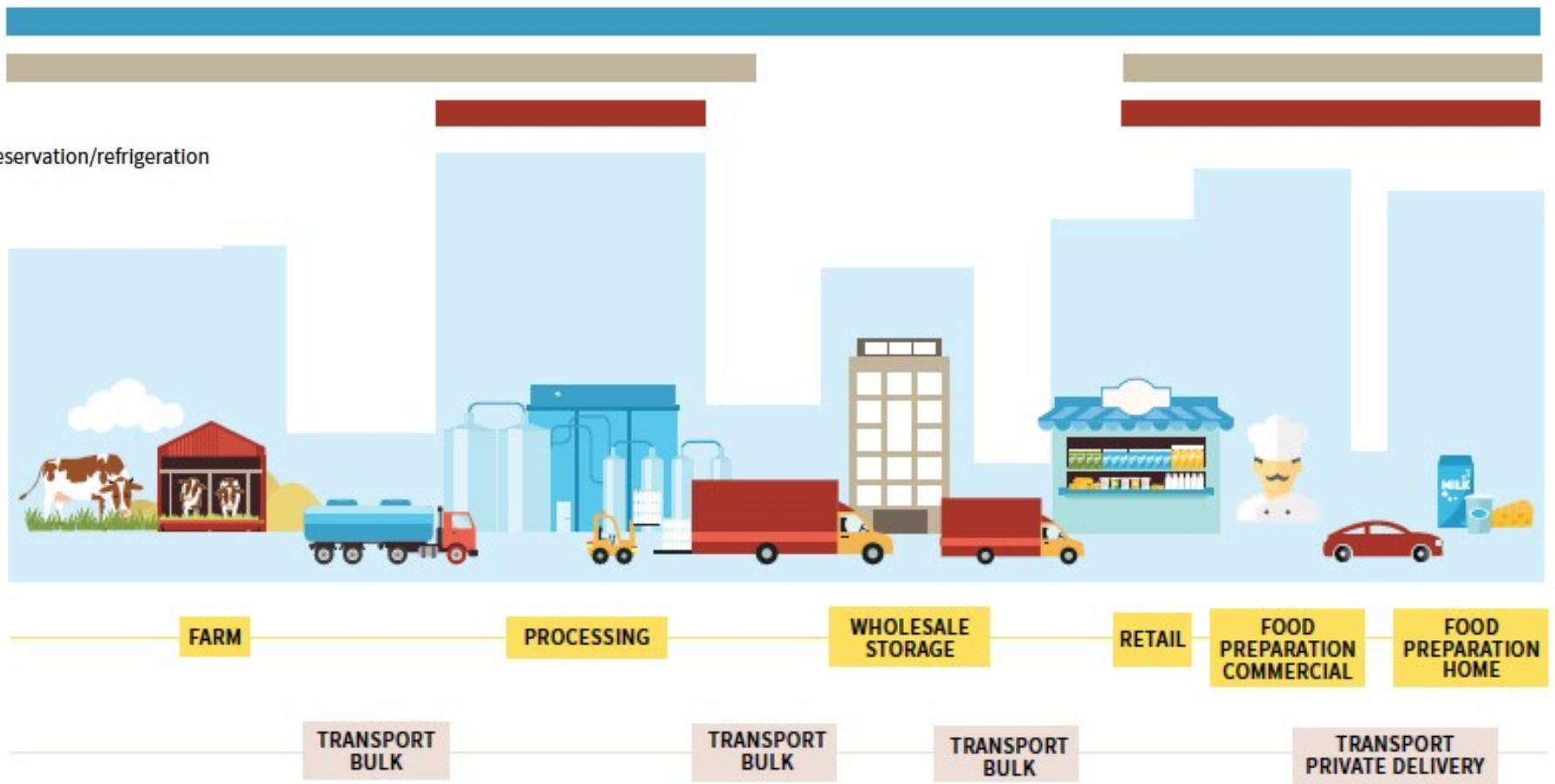
Example of value chain approach: Food value chain



- Accelerate introduction of technologies and business models to improve energy productivity in the food value chain
- Potential to generate \$Billions of value to the sector

Transforming energy in the food chain

- Primary energy use
- Extension of shelf life by preservation/refrigeration
- Dewatering and Drying
- Process heat and cooking



Food chain transformative projects

Optimise food preservation

- Real time on-line condition tracking to optimise cold chain
- Natural refrigerant chillers
- Smart packaging

Industry 1.0->4.0 Eliminating steam (and comp air)

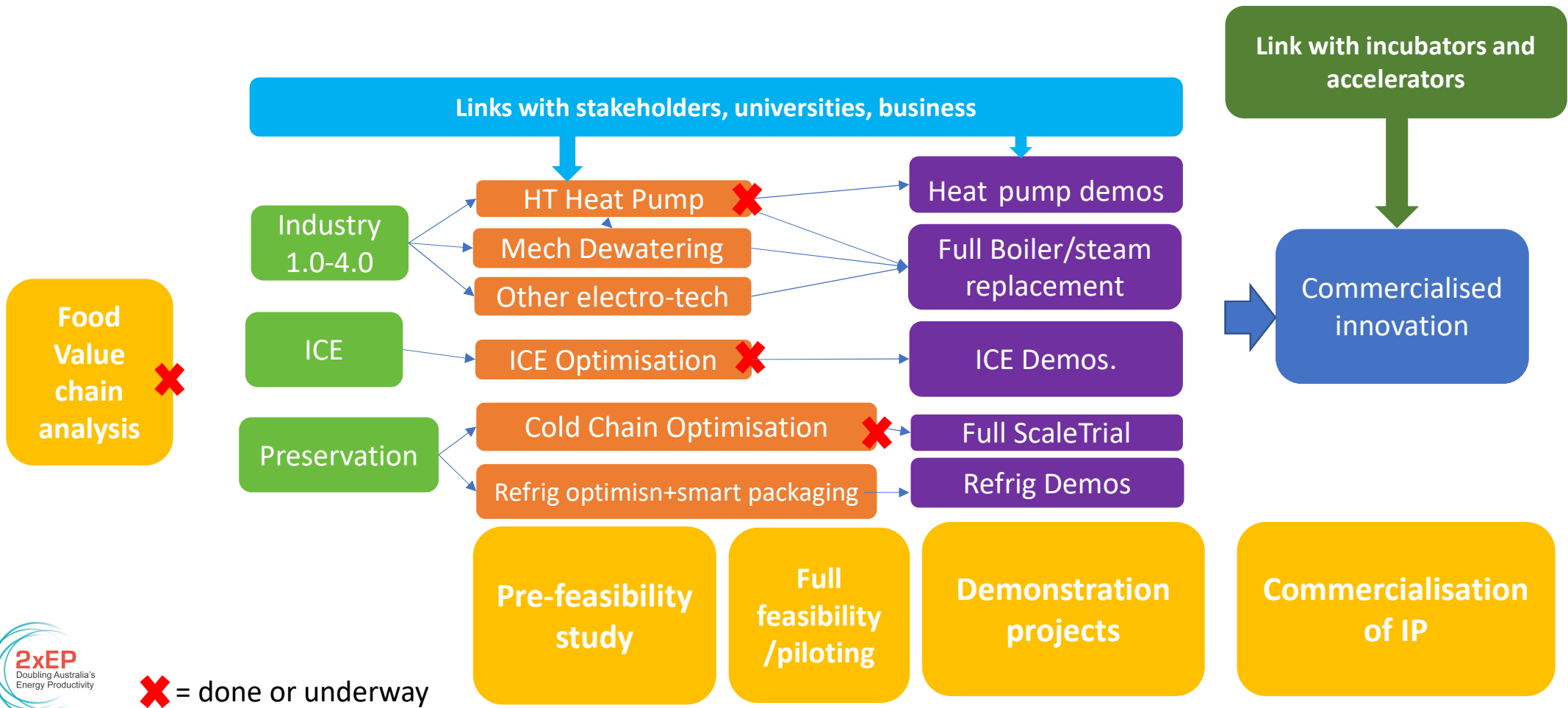
- HT heat pumps
- HP processing, dewatering with membranes...
- Digitalization improving energy performance

Sustainable on-farm processing

'Integrating clean energy' (ICE) in food

Attack EP loss from food waste

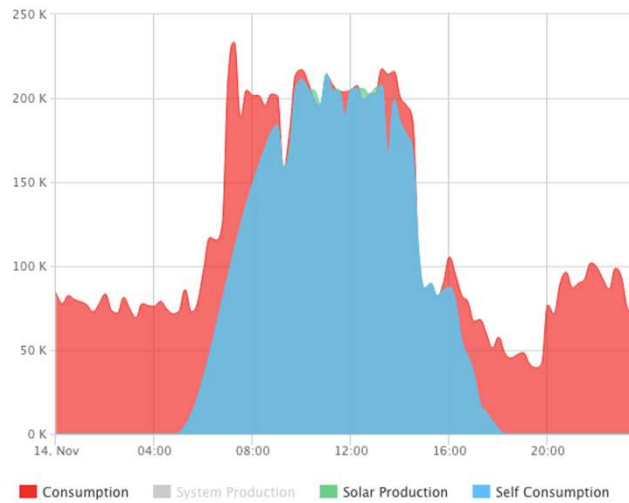
Food chain work program



On-site generation



Integrating Clean Energy

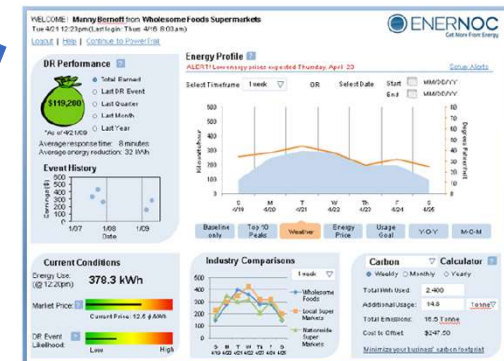


Energy efficiency



Storage for load management

Price signal(s) from grid



Demand response

EP transformation supersedes traditional energy management?

- Seeking transformation in energy using processes and business models to provide sustainable competitive advantage
- Must understand key value proposition for user – how energy relates to core business processes and product quality/throughput
- Business management and technical skills.
- Breadth of vision - value chain
- Understand material flows

Australian Alliance for Energy Productivity (A2EP)

- Not for profit business lead coalition
- Committed to doubling Australia's energy productivity = 2xEP
- Working groups covering all end use sectors – 2xEP sectoral roadmaps
- Planning public communications program
- Strong innovation agenda – the Next Wave



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