

Waste-to-Energy

Transforming Strategy Into Reality

Asia Clean Energy Forum 2016





Ricardo
Energy & Environment

Session B: Utilising landfill gas
Technology and deployment
overview

Dr Mark Broomfield

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Overview

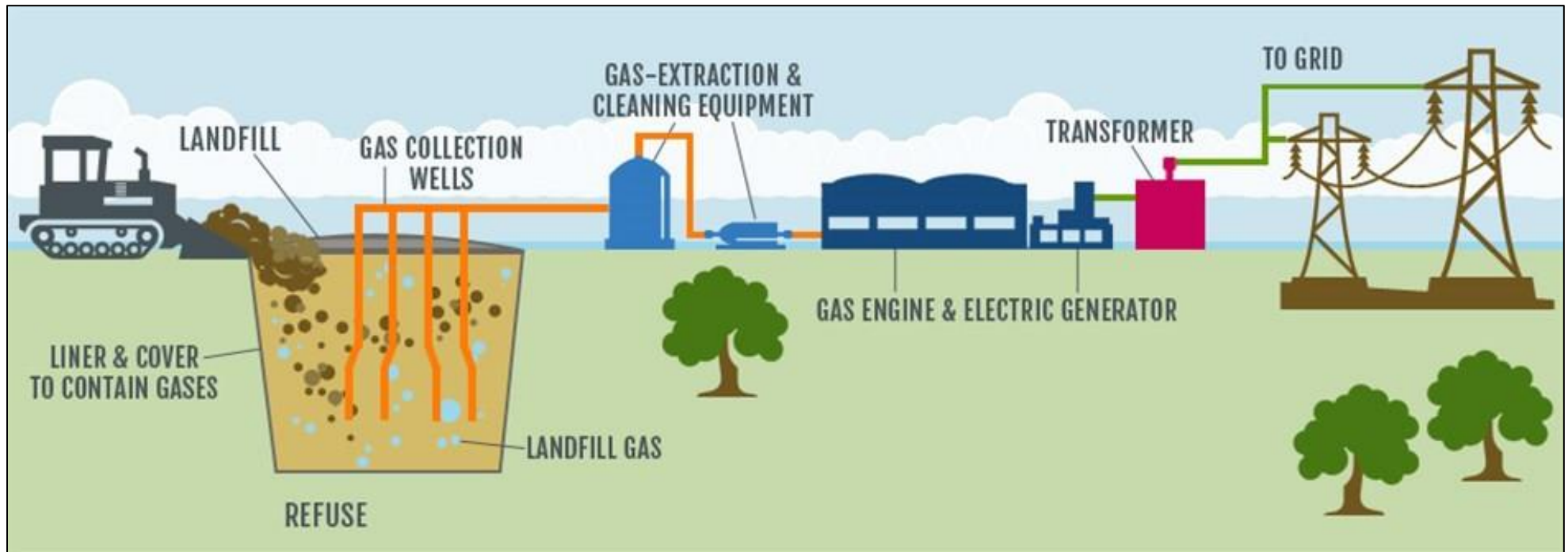
1. Overview of landfill gas utilisation technology
2. Deployment scenarios



Biogas engines and flares installed at Brogborough landfill site, UK and Bisasar Road landfill site, South Africa

Technology overview

- Biodegradable waste is deposited at a landfill site
- Decomposes to form methane and carbon dioxide within the landfill site
- Pipework installed to collect the gas formed in the landfill
- Landfill gas is cleaned and burnt in engines to generate renewable electricity

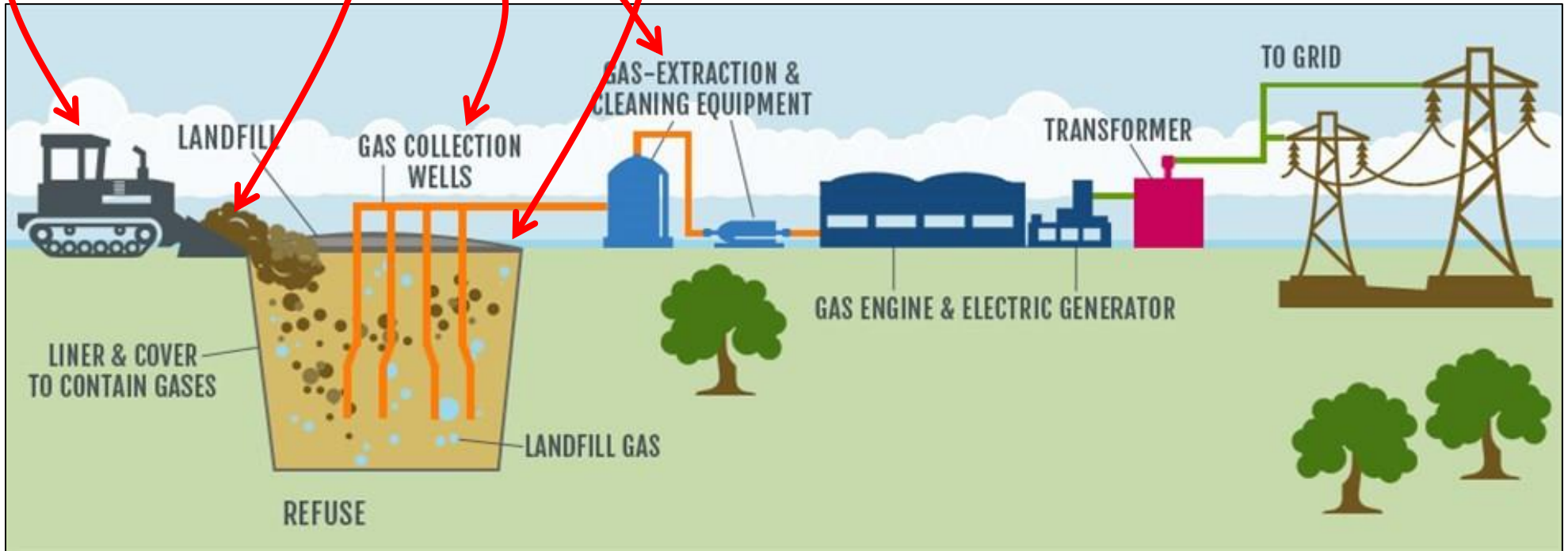


Schematic diagram of landfill gas collection

Diagram: Advanced Disposal

Technology overview

- Technology starts at the landfill site
 - Landfill liner and cap
 - Waste composition
 - Compaction and landfilling
 - Gas collection wells
 - Gas extraction

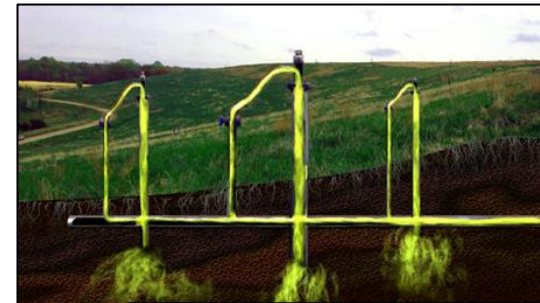


Schematic diagram of landfill gas collection

Diagram: Advanced Disposal

Deployment scenarios

- Retro-fit gas collection technology at existing sites
 - Projects have practical issues, but can be delivered effectively
 - Requires adequate site liner and cap
 - Challenges in accessing gas safely and effectively
 - Likely to be associated benefits
e.g. safety; improvements in odour and public health impacts; reduced greenhouse gas emissions
- Gas collection and utilisation at new landfill sites
 - Integrate landfill gas collection infrastructure into site design
 - Opportunities for direct use; heat use
 - Better landfill and gas management
- Funding mechanisms
 - Clean Development Mechanism
 - ACM0001 (landfill gas) and
 - ACM0002 (renewable electricity)
 - 127 flaring projects and 185 power projects, 50%-60% success
 - Global methane initiative





Dr Mark Broomfield
Ricardo Energy & Environment
Chadwick House
Birchwood Park
Warrington WA3 6AE
UK

Tel. +44 1235 753493
Web ee.ricardo.com
Email mark.broomfield@ricardo.com

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