

Policy / Institutional perspective on proposed Circular Economy concept for Tonga with a focus on WtE technologies

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Austrian

Development Cooperation

The case for a circular economy

Energy

- Most fossil dependent region of the world
- Access to electricity is the lowest – lower than Sub-Saharan Africa
- Energy costs [fuel and electricity] is among the highest in the world
- Ambitious renewable energy targets
- Heavy reliance on intermittent renewable energy sources – solar and wind
- Limited economical baseload power generation sources
- Transport is 100% on fossil fuel

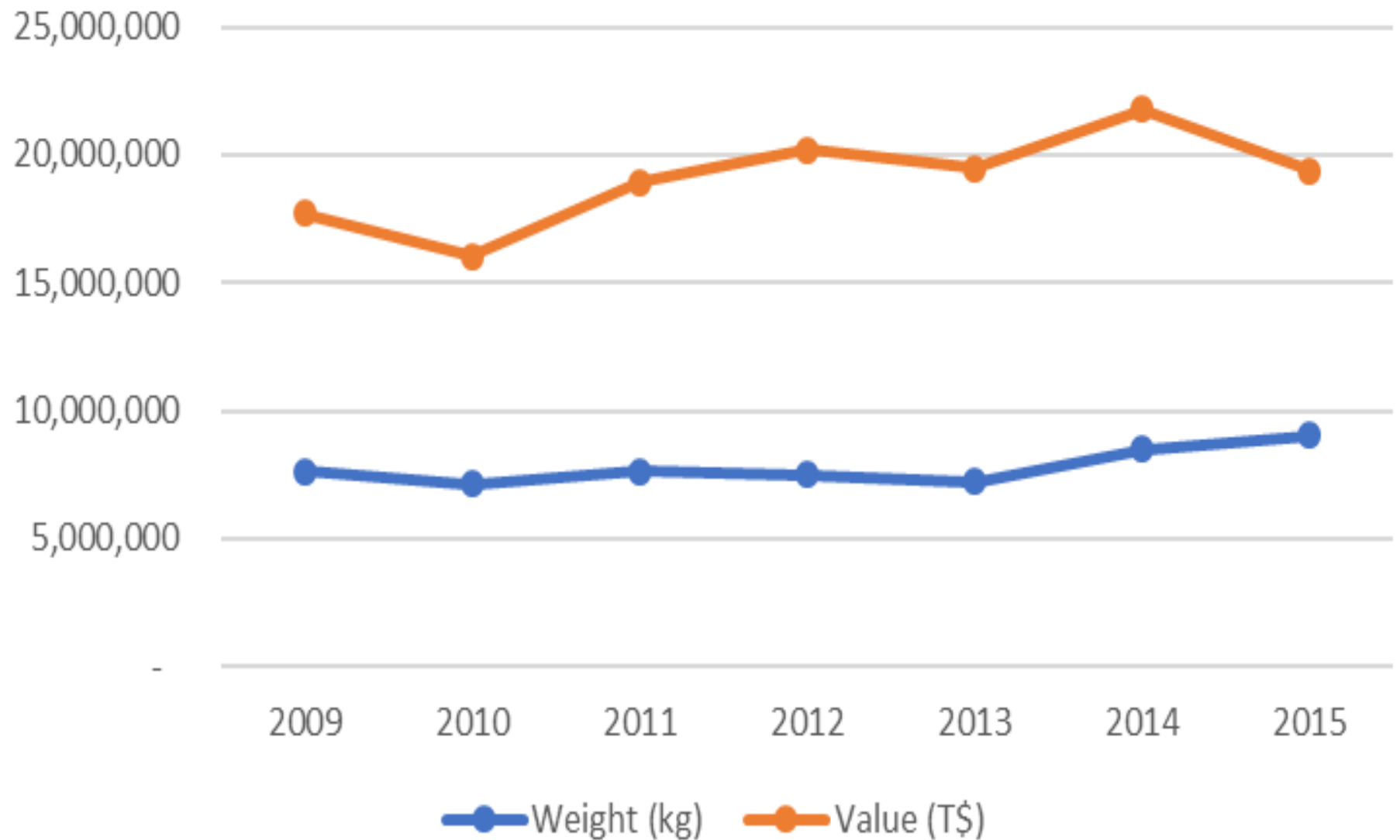


The case for a circular economy

Economy

- Agriculture-based economies
- Agro-wastes are mostly discarded and not used
- Heavy reliance on imports – food, fertiliser, etc
- Poultry meat consumption per capita is higher than in Australia

Tonga Poultry Meat Import: 2009 - 2015





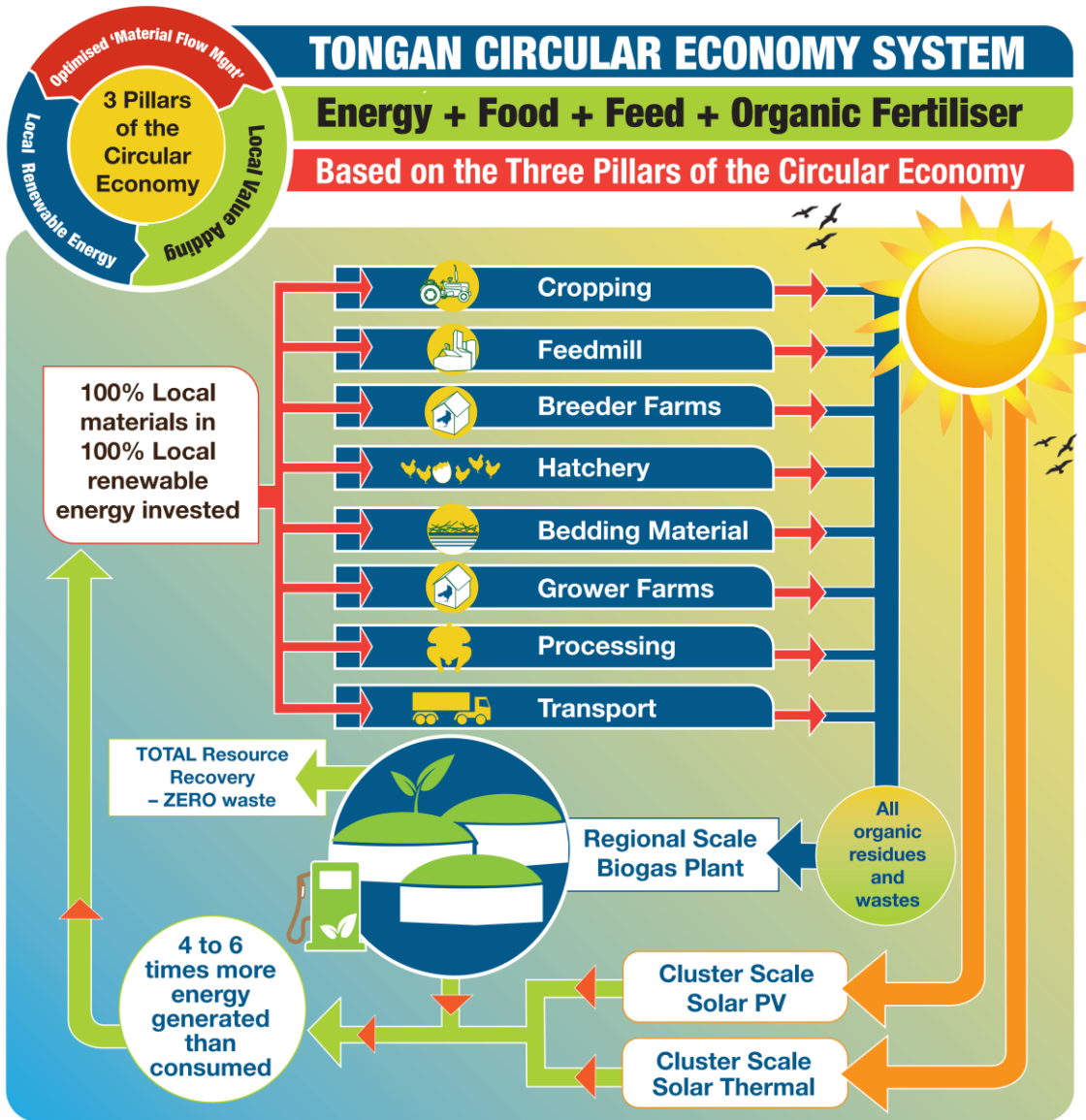
The case for a circular economy

Socio-Environment

- Fragile environment ruined by chemicals and plastics
- Growing problem with waste disposal
- NCD is an epidemic
- Growing population with rising youth unemployment and associated social problems
- Need to **reshape** the way PICs view socioeconomic development

The landfill in Tonga

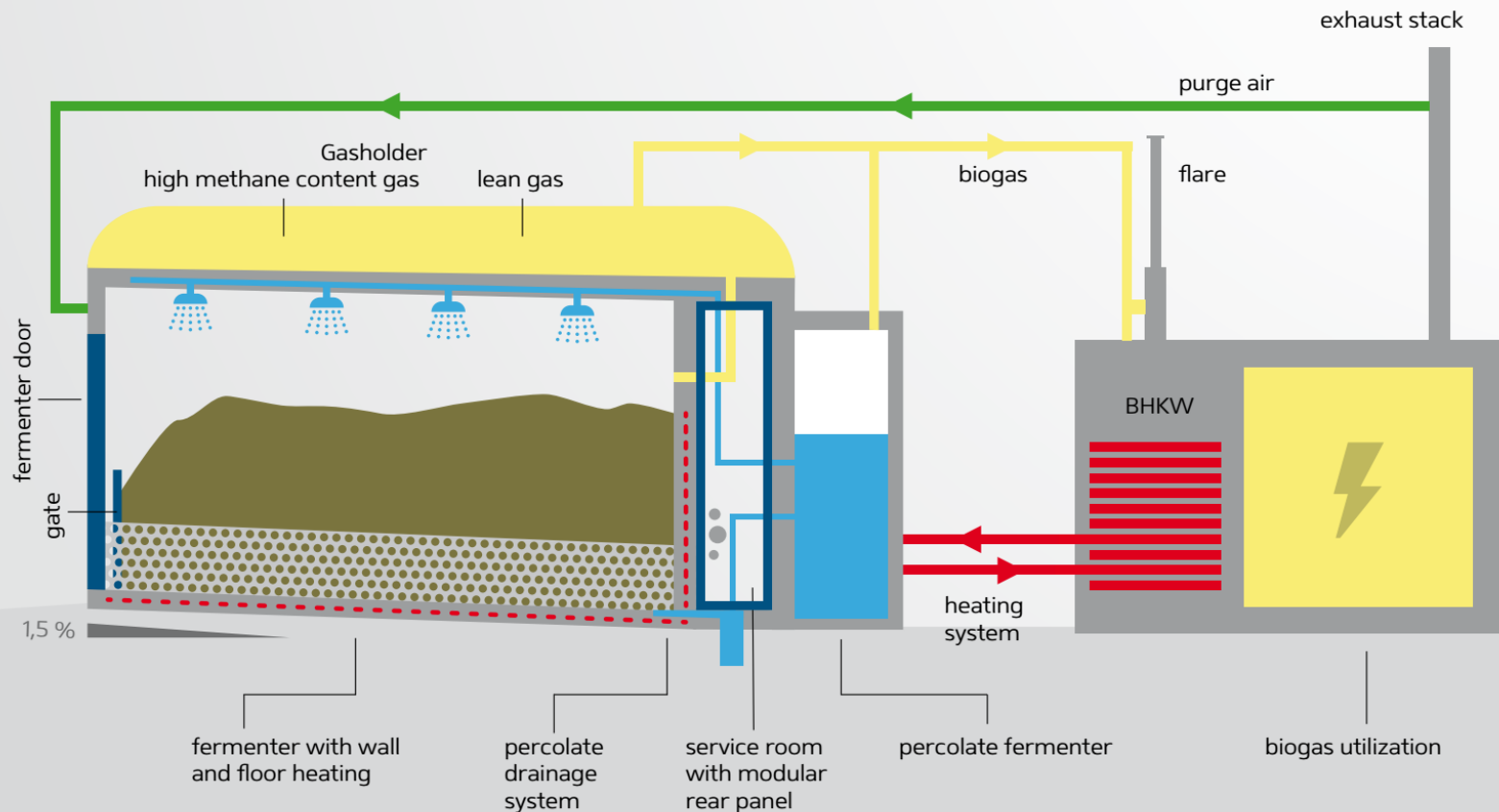




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| <ul style="list-style-type: none"> • New and expanded agricultural enterprises • New and expanded ag support services • Eliminate imported poultry meat products • Eliminate imported feed • Minimise / eliminate imported fertilisers | <ul style="list-style-type: none"> • Continually increasing soil fertility • New energy platform '100% Local Renewable Methane' • Initiate transition to a more expansive, prosperous, self-determined Circular Economy future |
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Bekon Mini – investment for innovation energy production from organic waste material

THE TECHNOLOGY



Benefits of Biogas

- A 1MW PV system = 1,600,000kWh/year of intermittent electricity
- A 1MW biogas fuelled generator = 8,322,000 kWh/year of baseload electricity.
- Assuming 95% availability, biogas will generate 8,322,000 kWh/year, 5.2 times more electricity into the grid than the 1MW PV system
- No diesel back up nor battery storage
- 1MW of biogas generation directly displaces 1MW of diesel generation
- Biogas will co-generate around 8,000,000kWh/year of usable thermal energy
- Will deliver a substantial number of real, fully sustainable long-term jobs.
- Displacement of much higher quantities of diesel, the displacement of imported chemical fertilisers and substantial increases in soil fertility

Challenges

- Adopting a technology and system that works well in Europe
- Moving from subsistence biogas plants to industrial scale
- Promoting local production while complying with international free trade agreements
- Balancing methane production with GHG reduction commitment

Current Status

- Key Project Partners identified:
 - Institute for Applied Material Flow Management (IfaS), Germany, 2001**
 - SPC – PCREEE**
 - Tonga Govt - MEIDECCC**
- Preliminary visit completed in June
- Reciprocating visits
- Signing of a tripartite MoU – IfaS, SPC and Tonga
- Begin project implementation

3 Phases

1st - Conceptual Planning

- Delivers a high-level **Concept Plan** with baseline CAPEX & socioeconomic analyses
- Should be largely driven by the commercial stakeholders, **experts in their respective fields**

2nd - Detailed planning, engineering & consent authority approvals

- Signing of a tripartite MoU – IfaS, SPC and Tonga

3rd - Construction & commissioning

- Brings the **project to life**

Thank You