PNG’S GEOTHERMAL INDUSTRY – STATUS AND THE TASK AHEAD – (MRA PERSPECTIVE)

NRI Seminar – POM, 13th March 2023

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Outline

MRA’S
MANDATE

WORK
CARRIED OUT

TENEMENT
PROCESS

WAY
FORWARD
MRA’s mandate

- Advise Minister on matters relating to management, exploitation, and development of PNG mineral resources in Papua New Guinea
- Oversee administration and enforcement of Mining Act 1992, Mining Safety Act (chapter 195A), Mining Development Act, Ok Tedi Acts and Bougainville Copper Agreement Act (whose responsibility is now with the Bougainville government)
- Negotiate mining development contracts and MOAs; provide liaison & facilitate meetings between stakeholders of specific exploration and mining projects
- Provide small scale mining services
MRA’s mandate

Promote orderly exploration and development of PNG mineral resources; and administer & manage all exploration and mining tenements in PNG

Conduct geo-scientific investigations into PNG geological resources; and promote these resources to potential investors and developers
MRA Work covered...
Morobe (Wau)

- **a)** DEM image of Wau graben & sample sites; **b)** Wandumi salt (travertine deposit); **c)** Lithological boundaries

- **T = Low**
  - <125°C to intermediate
  - 125 – 225 °C

- **Carbonate Waters**

**Structurally controlled**

- Thermal features along faults and lithological boundaries
- Formation of travertine (Salt domes)
- Represent a heat sweep system. Meteoric waters percolating downwards getting heated by thermal gradient and ascends to surface.
Schematic diagram of Wau geothermal system; Travertine is deposited on the margin of high temperature up-flow zones. The heat source hot crustal rocks gain thermal energy from partial melting within the ductile upper crust.
Ferguson Is (MBP)

- T = >260 °C
- Neutral chloride water

(a) clear neutral pool; (b) Boiling hot pool; (c) Silica terraces
Talasea/Hoskins - WNBP

- **T = High, >260 °C**

- **Steam heated acid sulphate water** – Matagele, Wudi, Wavua, Magilae

- **Bicarbonate rich waters** – Rongo, Lake Dakataua,

- **Chloride rich Neutral waters** – Sakalu, Magouru

- **Mixed Waters** – Talasea Stn., Gariki, Rabili
**Feni island**

- **Mixed waters** – Nanum, Balamuson
- **Neutral chloride rich waters** - Waramong

- **T = High, >250 °C**
1. Tavurvur Hot spring 2. (Inset A & B; Close-up of sampling site)

2. Tavurvur Hot Spring 1 (Inset – Close-up of sampling site, boiling hot spring)
## Summary

<table>
<thead>
<tr>
<th>Studied sites</th>
<th>Low Temperature &lt;125 °C</th>
<th>Intermediate Temperature 125 – 225 °C</th>
<th>High Temperature &gt;225 °C</th>
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<tbody>
<tr>
<td><strong>Morobe</strong></td>
<td>• Buluwat</td>
<td>• Wandumi 1</td>
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<td>• Wandumi 2</td>
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<td>• Balamuson</td>
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Tenement process
1. **HoS** sends advice to **NEC**.
2. **NEC** submits to **Minister**.
3. **Minister** provides advice to **MAC**.
4. **MAC** submits reports to **Assessment**.
5. **Assessment** provides technical advice to **MAC**.
6. **MAC** collaborates with **Assessment**.

**Grants SML/Signs MDC**

**Grants tenements other than SML**

**Developer/Investor**
- Application documents
- Criteria/checklist
- Start and end of process

**Registry**
- No
- Pre. Examination

**Warden’s Hearing**
- Stakeholders
- Notice
- Published
- Accepted/Registered

**Pre. Examination**
- Yes

**Referral for Technical Assessment**
- Collaboration

**Returns Application**
- Yes
- No
Tenement Administration

TENEMENTS UNDER THE MINING ACT 1992

- Exploration License (EL)
- Special Mining Lease (SML)
- Mining Lease (ML)
- Alluvial Mining Lease (AML)
- Lease for Mining Purposes (LMP)
- Mining Easement (ME)
Way Forward

• Complete reservoir studies to determine power generation potential – modelling.
• Address bottle necks affecting geothermal resources (GR) development → Streamline processes in Policies and Laws.
• Market GRs as incentives for SEZ as energy sources for downstream processing.
• Need to look into green hydrogen energy policy development for long term.
Conclusion

✓ The newly established National Energy Authority (NEA) has indicated its intention to take carriage of the entire value chain of Geothermal Energy from licensing to regulation. However, whilst capacity is built, the MRA continues to administer tenement licensing and regulatory functions.

✓ With the emergence of a growing global demand for greener energy options, geothermal as an alternate with lower carbon footprint is becoming more prominent.

✓ Green “hydrogen” can also be harvested at geothermal sites in PNG.

✓ PNG remains a green field and more work is required to fully appreciate and understand its geothermal resources and its potential.
Thank you!