Gumuskoy Geothermal PP, Turkey

First Geothermal Dialogue

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Why is Gumuskoy GPP interesting

Development and Financing model

- Heavy exploration and development risk appetite from developer
- Public-private financing

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<th>Debt</th>
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<tbody>
<tr>
<td><strong>EBRD MidSEFF</strong></td>
<td>Loan Public</td>
<td>24.9</td>
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<td><strong>Yapikredi</strong></td>
<td>Lease Finance Private</td>
<td>9.6</td>
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<td><strong>Equity</strong></td>
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<td><strong>BM Holding</strong></td>
<td>Equity Private</td>
<td>15.1</td>
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Total Project Cost 49.6
Context for the Project

Policy and regulatory changes
- 2007 Geothermal law
- 2010 Renewable Energy law amendment

Project Timeline

- **2006**: Exploration Licence
- **2006-2009**: Exploration
- **2010**: Operation Licence
- **2010 - 2012**: Resource Development
- **April 2012**: Financial Close
- **April 2012 - 2013**: Commercial Drilling and Construction
- **Nov 2013**: 1st unit commissioned
- **Mar 2014**: 2nd unit commissioned
Gumuskoy GPP: Role of public finance

[Chart showing financial projections for Gumuskoy Geothermal Power Plant, including FIT support, exploration, revenues at market prices, forecasted, equity, debt, Opex, Fin Ex, and tax.]
## Risk Allocation and Mitigation

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<th>Turkey Govt</th>
<th>Lenders</th>
<th>Developer</th>
<th>Contractors</th>
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<tbody>
<tr>
<td><strong>Exploration</strong></td>
<td></td>
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<td>Resource risk</td>
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<td><strong>Development</strong></td>
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<td>Drilling risk</td>
<td>Construction risk</td>
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<td><strong>Operation</strong></td>
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<td>Price Risk</td>
<td>Resource risk</td>
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<td><strong>Outcome</strong></td>
<td>Carbon leakage</td>
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<td>Loan Risk</td>
<td>Turbine performance</td>
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## Gumuskoy GPP: Early Takeaways

### Challenges
- Private-sector risk appetite for exploration
- Provide certainty to cover cost of risk capital
- Access to debt capital at suitable rate and tenor

### Responses/Results
- Transferable skills/knowledge base to manage risk
- 10 year FIT plus high equity IRR
- 2-3 year longer tenor at 200-250bps cheaper cost of capital
Gumusko y GPP: Early questions for policy

- Managing carbon leakage risk
- Encouraging significant private activity vs limited role in policy targets

Beyond Turkey – can private sector take exp. risks

- Transferability of existing drilling and geological resource management skills/knowledge in-country
- Identifying private sector capability/appetite
- Identifying local banks to channel public finance
Thank you!
Questions for Discussion

• What are the implications for private sector exploration model for growth of geothermal in Turkey?

• What are the technology and financing challenges of medium-enthalpy binary plants?

• What is the role of international development finance for ensuring project feasibility?

• Were all risks allocated to those best suited to manage them?

• How will future changes to regulations alter project development?

• What are Government’s lessons from this type of project for their geothermal development strategy going forward?