GEOTHERMAL RISK MITIGATION

FACILITIES

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INTRODUCTION

• **Turkey – Geothermal Development Project**
  - July 2016 to December 2022
  - Total funding $352 million of which $38 have been committed for Geothermal Risk Sharing Mechanism (RSM)
  - Government has set renewable energy target of 4GW of geothermal energy by 2030

• **Indonesia – Geothermal Resource Mitigation Facility (GREM)**
  - September 2019 to September 2029
  - Total Funding: $665 million of which $455 is estimated from GREM
  - Government has set renewable energy target of 23% energy mix by 2025
Turkey – Geothermal Development Project

1. Beneficiary Agreement
2. $38 million
3. Reporting
4. GEOHERMAL DEVELOPER
5. TURKEY GEOTHERMAL RISK SHARING MECHANISM
6. Management support
7. $38 million
8. Loan Facility for Resource Development
   - $312 million
9. RSM Consultant

The diagram illustrates the flow of support and resources for the geothermal development project in Turkey.
RSM FACILITY — SUPPORT TO PRIVATE DEVELOPERS

• Open for Private Developers
• Risk prime is dependent on location.
  • 40% or 60% for first 3 wells
  • 40% for wells 4 and 5
• Success fee
  • 10% for first 3 wells
  • 25% for wells 4 and 5
• 4 m USD cap
• First round of application finished
  • 7 projects selected
  • Well success criteria agreement
  • E&S compliance

Source: Development bank of Turkey, Isor, Veris and ÅF
SUCCESS/FAILURE OF WELLS

Determination of Success/Failure

1. Results from flow testing
   - Enthalpy/temperature
   - Flow rate
   - Wellhead pressure/drawdown

2. Do the measured flow test parameters meet the success criteria?
   - Yes: Successful well
     - Drilling of 2nd well, which will go through same success criteria, then 3rd etc.
   - No: Unsuccessful well
     - Drilling of 2nd well, covered by RSM

3. > 583 g/kWh CO₂
   - Yes: Agreement terminated
     - RSM waives success fee
   - No: Agreement terminated
     - RSM retains success fee

   - If two wells fail:
     - RSM payout
INDONESIA GEOTHERMAL RESOURCE MITIGATION FACILITY

• GREM seeks to mitigate geothermal resource risk through a cost-efficient risk-sharing mechanism
• Technical assistance to support improvements in licensing and PPA award procedures
• Open for Private and Public Developers but rules differ
• It is expected that around 2/3 of the projects will be private or PPP
• Facility to deploy funds over 10 years due to long lead time for geothermal
The private developers will be required to commit Sponsor Funds (equity) equivalent to at least 25% of the total cost of the exploration drilling program, which will disburse first to finance prerequisite resources to drilling.

- Maximum $30 million total support for exploration and delineation.
- Exploration (100% of drilling cost):
  - 50% exploration sub-loan sourced from IBRD, fully guaranteed by the Sponsor
  - 50% as subscription to a Financial Instrument funded by GCF / CTF, to be issued by the Developer, the value of which is linked to the market value of the shares.
- Delineation (100% of drilling cost):
  - sub-loan from IBRD, fully guaranteed by the Sponsor
Innovative Risk Sharing Facility Through Financial Instrument (Private Sector)

**Successful Exploration**
- Repayment of full amount Financial Instrument with success premium (130% after 4 years)

**Partially Successful Exploration**
- A model to calculate the Developer Fair Market Value (DFMV) of the Project Company will be agreed upfront with developers
- After exploration, actual parameters on steam yield will be updated to obtain DFMV.
- Repayment of the Financial Instrument will be determined based on the DFMV

**Unsuccessful Exploration**
- There will be no repayment of the Financial Instrument for unsuccessful exploration

The conventional loan (50% of the loan) will be repaid regardless the result of exploration drilling.
• Will fund 75%-90% of exploration costs (Developer must finance infrastructure)
• Half of funding as a soft loan (from GCF/CTF) and half as IBRD loan
• GoI may provide grant support of up to 50% in case of unsuccessful exploration
• The grant support will be scaled down based on Project Net Present Value (PPV) of the sub-project. If exploration results indicate good steam resources and PPV therefore will be high, GoI will not provide grant support.
• The CTF/GCF and IBRD loan are on-lent to PT SMI through MoF.
EXPECTED RESULTS FOR THE INDONESIA GREM

FACILITY
- IBRD
  US$ 325m
- PT SMI
  US$ 150m
- Climate Funds
  US$ 260m

Leverage an additional US$3.5-4 billion investments by 2030

Avoided GHG Emissions
- 5-10 MtCO2e/year
- 150-300 MtCO2e over 30-years

Additional Geothermal Power Capacity
- 600-1,000 MW
Thank you

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