GEOLAC

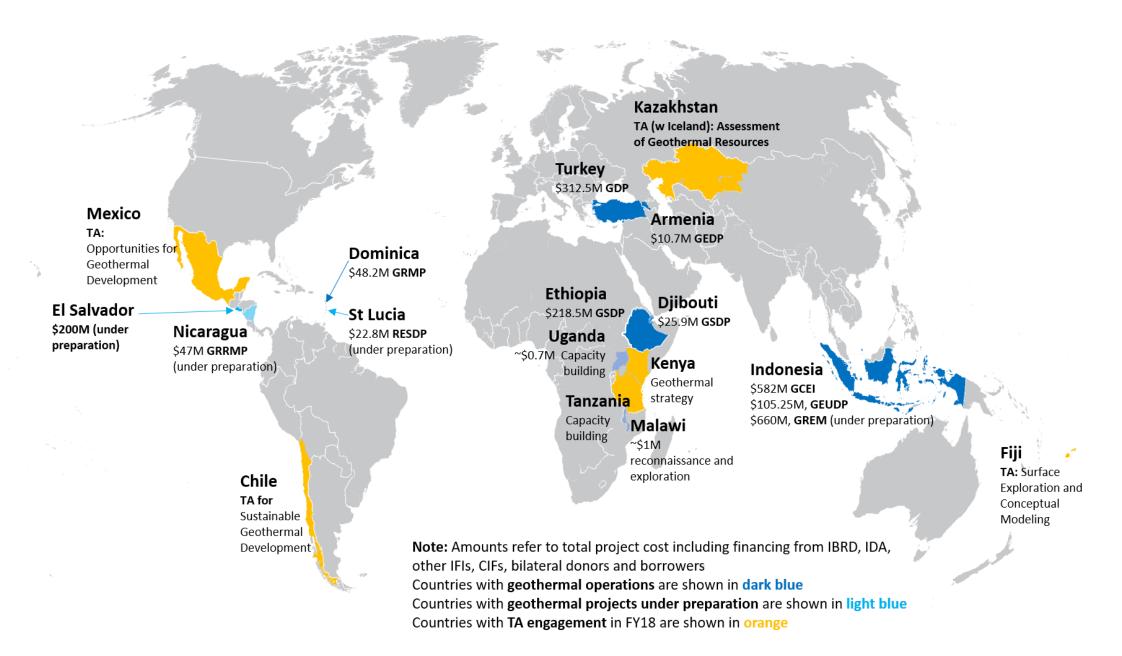
USING CLIMATE FINANCE FOR GEOTHERMAL DEVELOPMENT

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WORLD BANK GEOTHERMAL ACTIVITIES



WORLD BANK ENGAGEMENT IN INDONESIA

2008

Geothermal Energy Power Development

2011

Geothermal Clean Energy Investment Project

GEF Grant for Technical Assistance (TA) to MEMR to support development of geothermal regulation (2008 – 2012)

WB &CTF investments in PGE's geothermal projects in Ulubelu and Lahendong with a total capacity of 150 MW (2011 – 2018)

2014

Geothermal Energy Upstream Development Project

2017

Sustainable Geothermal Power Development in Conservation Forest Areas

2016

Geothermal Tariff
Study

CTF &GEF grants for government exploration drilling prior to concession tender (2017 – 2022)

TA to MEMR & MoEF on rapid environment and social assessment for power geothermal development (2016 – 2017)

TA to MEMR for a study on new ceiling tariff based on avoided cost (2014)

Geothermal Resource Risk Mitigation Project

2019

WB loans, CTF &GCF loans and grants for geothermal resource confirmation through a financial intermediary (exp. 2019 – 2029)

WORLD BANK ENGAGEMENT IN INDONESIA

DOWNSTREAM

GEOTHERMAL CLEAN ENERGY INVESTMENT PROJECT (completed)

- \$300m investment
- Steam-field and power plant development for 2x55MW in Ulubelu and 2x20MW in Lahendong
- Potential avoidance of ~1.1 million CO2 p.a. compared to coal-fired generation

UPSTREAM

GEOTHERMAL ENERGY UPSTREAM DEVELOPMENT PROJECT (under implementation)

- \$54.25m grant
- Exploration drilling by government to confirm resources up to 65 MW prior to concession tender
- Capacity building on tariff setting methodology & tendering

UPSTREAM

GEOTHERMAL RESOURCE RISK MITIGATION PROJECT (under appraisal)

- \$840m investment
- Resource confirmation for up to 16 greenfield projects
- Expected leverage of \$4b commercial finance and adding 1 GW of geothermal capacity by 2030.

INDONESIA: LEVERAGING PUBLIC AND PRIVATE FINANCE THROUGH RISK SHARING

Exploration

Delineation

GREM Facility

Managed by PT SMI

Phase 1 financing
WB IBRD \$150 m
GCF \$100 m
CTF \$75 m
GoI \$75 m
Private equity \$60 m
ESMAP \$2.5 m
GIF \$2.5 m

Total: \$465 m

Public Window Max \$40 million / project WB IBRD 50% | Gol 50%

Up to 25% loan forgiveness

Private Window Max \$30 million / project
Equity 25% | WB IBRD 37.5%
| GCF/CTF 37.5%

Up to 50% loan forgiveness

Max \$40 million / project

No loan forgiveness

Max \$30 million / project

No loan forgiveness

USE OF REIMBURSABLE GRANT FOR RISK MITIGATION

- Under GREM, 50% of support to private developer will be given as an innovative equity-linked debt instrument, up to a maximum of \$15m. This will provide debt financing for the Developer SPV.
- The general principle is that if exploration is successful, the debt instrument will be paid back in full, plus a success fee; if unsuccessful, it can be 100% forgiven.
- The amount to pay back for the debt instrument will be linked to the Developer SPV through a mechanism to determine the fair market value of the SPV postexploration.
- The fair market value will be determined by a pre-set formula with the only variable being: (i) steam capacity, (ii) enthalpy and (iii) expected cost per well.

TURKEY: RISK SHARING BASED ON WELL PRODUCTIVITY

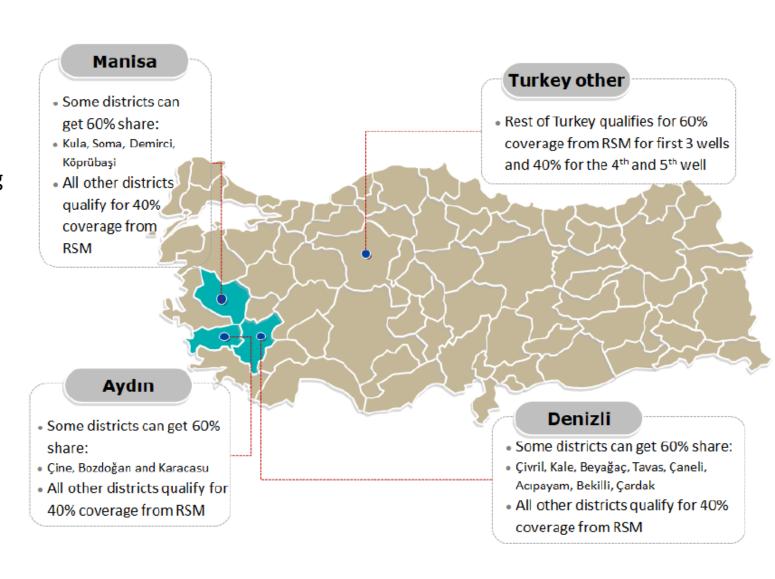
Wells covered: Up to 3 initially, with an option for a total of 5

Compensation: 40% or 60% of acceptable well costs of unsuccessful wells depending on regions: higher coverage in less explored areas of Turkey.

Success Fee: 10% of acceptable well costs for successful wells

Maximum payout: \$4 million per project

Success criteria: Project-specific, based on pre-agreed well productivity criteria (temperature, flowrate)



THANK YOU

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