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KfW – IDB - BCIE - CAF Geothermal Development Facility

IRENA – OLADE Geothermal Workshop

Lima, November 21st 2013

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Bank aus Verantwortung

KFW

»» Geothermal Energy – Key features



Source: ESMAP 2012

What are the benefits ?

- A proven technology
- A stable source of base-load power
- Very low CO₂ emissions
- Relatively low levelized cost of electricity EUR 0,05-0,10/kWh

What are the challenges?

- Plant size limited by available resource
- Relatively high investment cost of EUR 3-4 Mio./MW
- Considerable Exploratory Risk acts as a serious impediment

»» Geothermal Energy – How does it work?

Electricity generation from geothermal resources

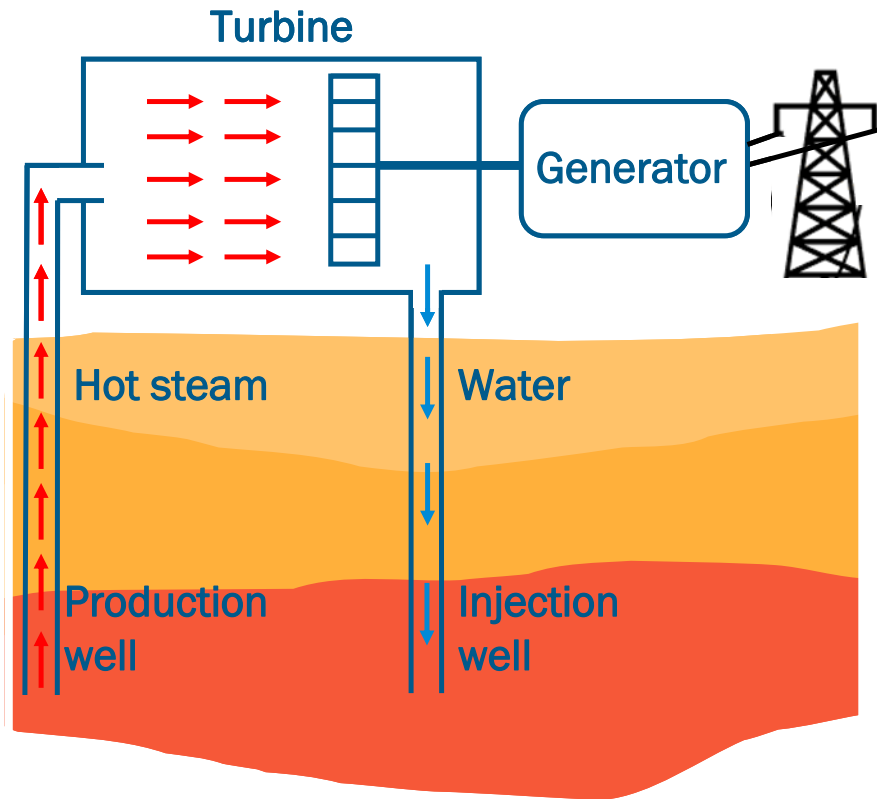
Electricity generation

- All geothermal power plants use steam to turn large turbines, which run electrical generators
- Different technologies are used for different environmental conditions (e.g. heat of the water, availability of steam and water)



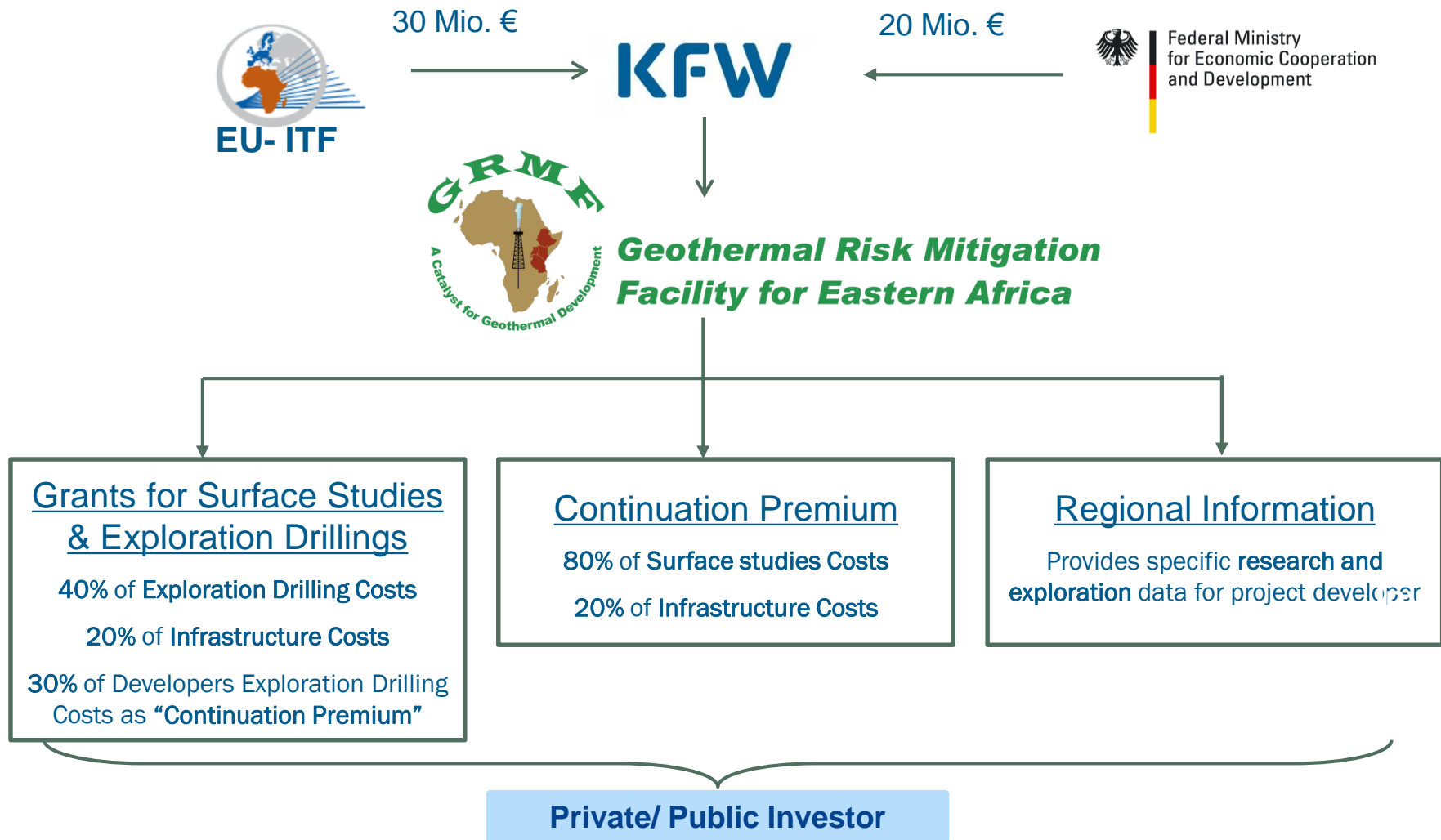
Source: KfW 2013

Concept of dry steam power plant



Source: KfW 2013

»» Geothermal Risk Mitigation Facility East Africa



»» Geothermal Risk Mitigation Facility East Africa – Status Quo

Successful first application round in 2012/2013

Expression of Interest

- 11 expressions of interest
- More than 50 % of applications for drilling projects
- Public, private & public private partnerships
- Institutions and companies from East Africa & int. companies

Application

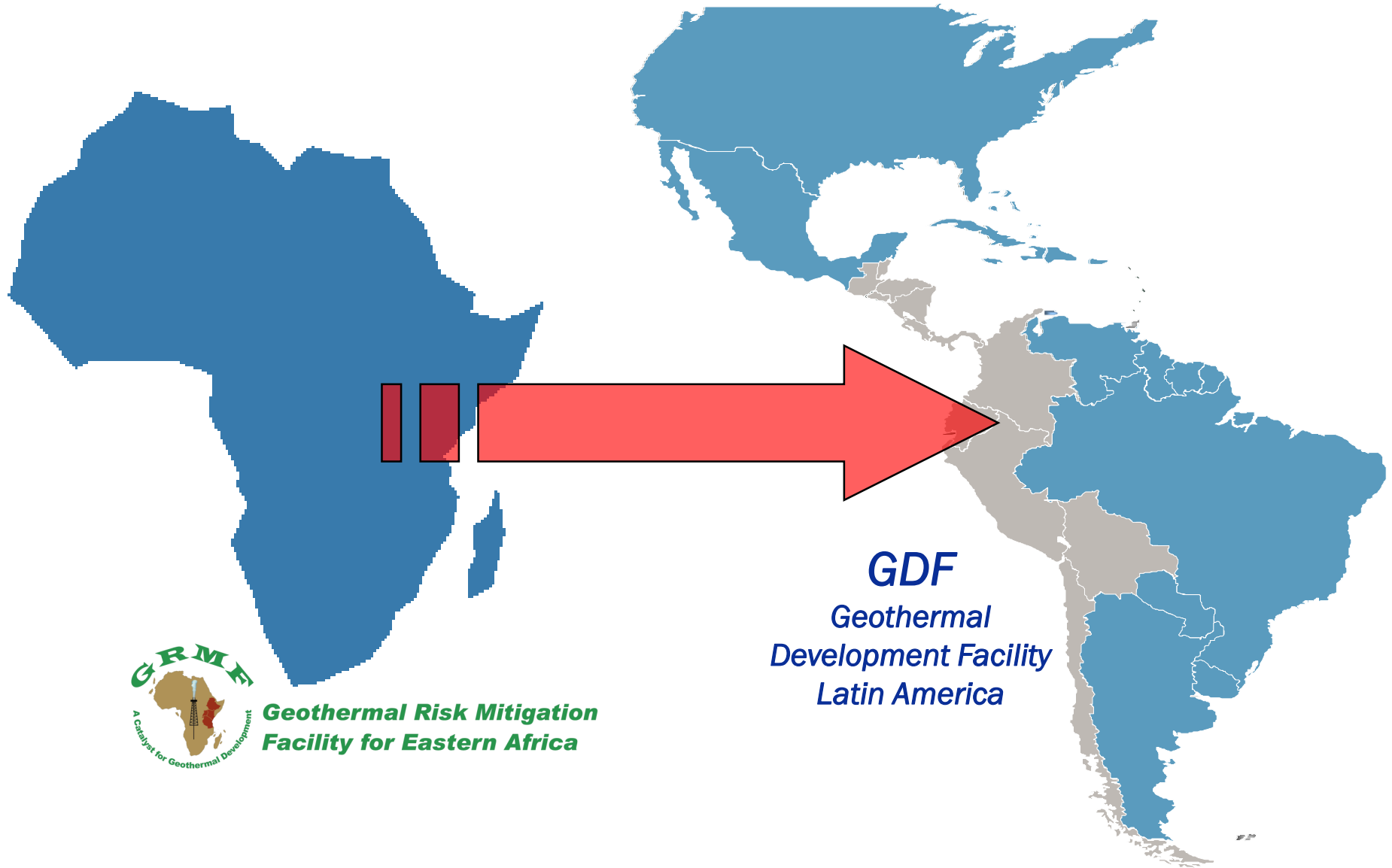
- Out of 8 shortlisted projects 7 applications were submitted
- 6 drilling projects and 1 surface study
- 5 projects are invited to sign a Grant Agreement

Outlook

- Extension to 11 countries:
 - Burundi, Comoros, Djibouti, DRC, Eritrea & Zambia
- Additional funds required for rounds 2 – 4
- Other donors interested to join

→ This shows, that GRMF is the right instrument at the right time!

»» If we have a successful approach - why not replicate it ?



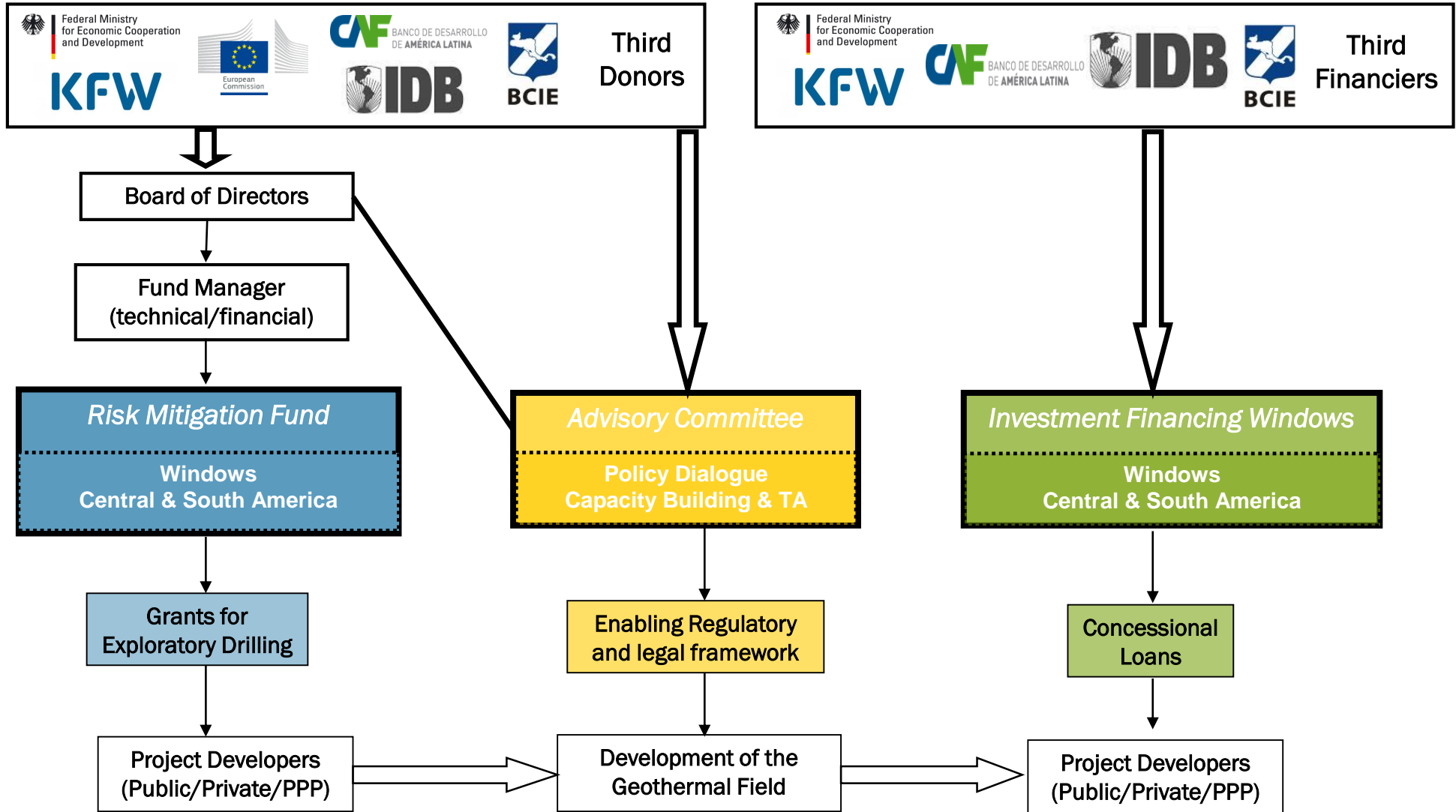
»» Latin America might be the right place at the right time...



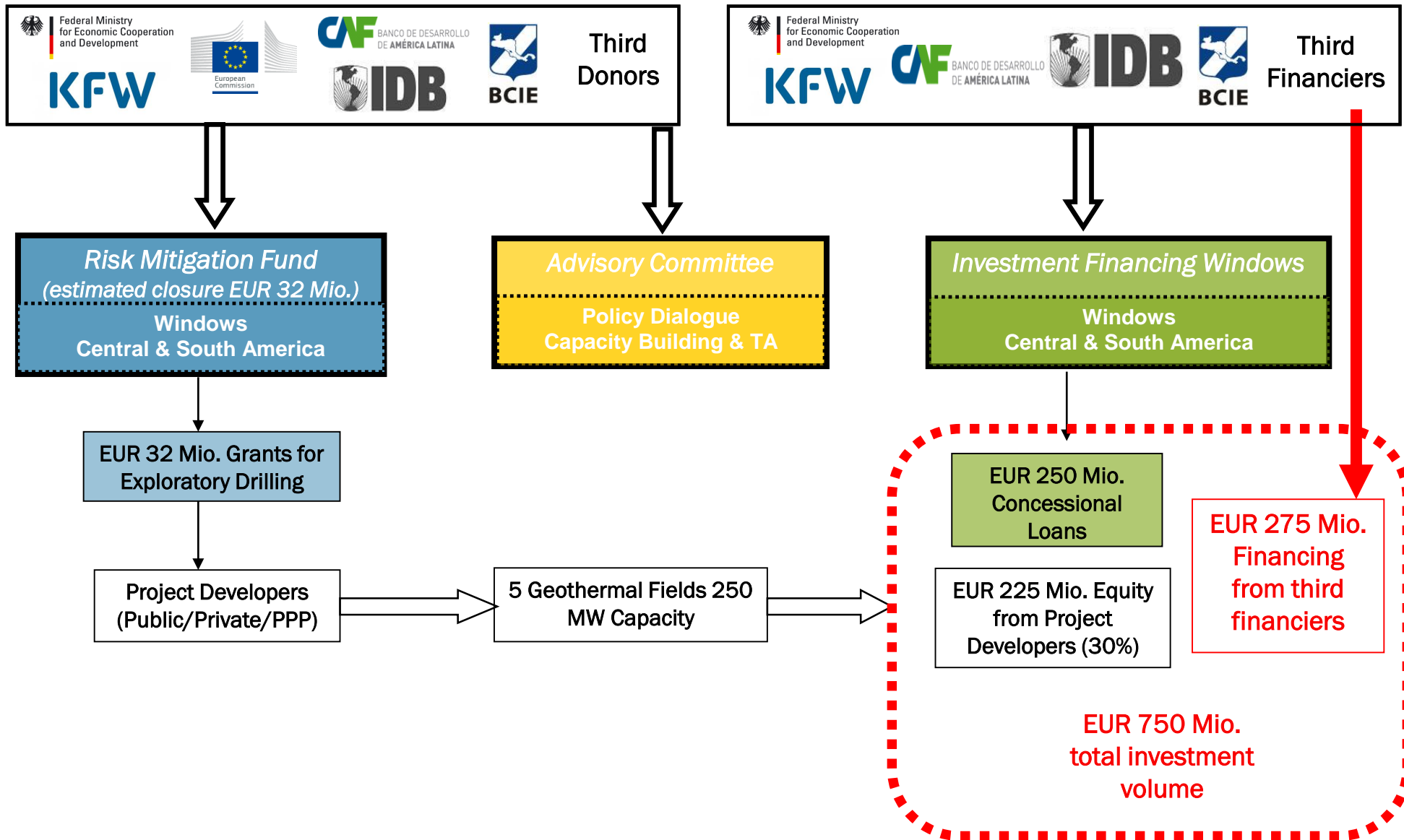
Source: IGA, 2011

- › Strong interest from governments, utilities and project developers
- › Considerable Geothermal Potential
 - › Central America:
 - Considerable amount of geothermal capacity installed and considerable pipeline of projects, however sector stalled due to lack of risk mitigation mechanisms and suitable financing.*
 - › Andean Region:
 - Considerable pipeline of projects in advanced stages of development, however due to lack of risk mitigation mechanism and financing not a single commercial plant under operation so far.*
- › Political Window of Opportunity:
 - › Joint Initiative by IRENA, OLADE and the International Geothermal Association (IGA), to promote Geothermal Energy in South America

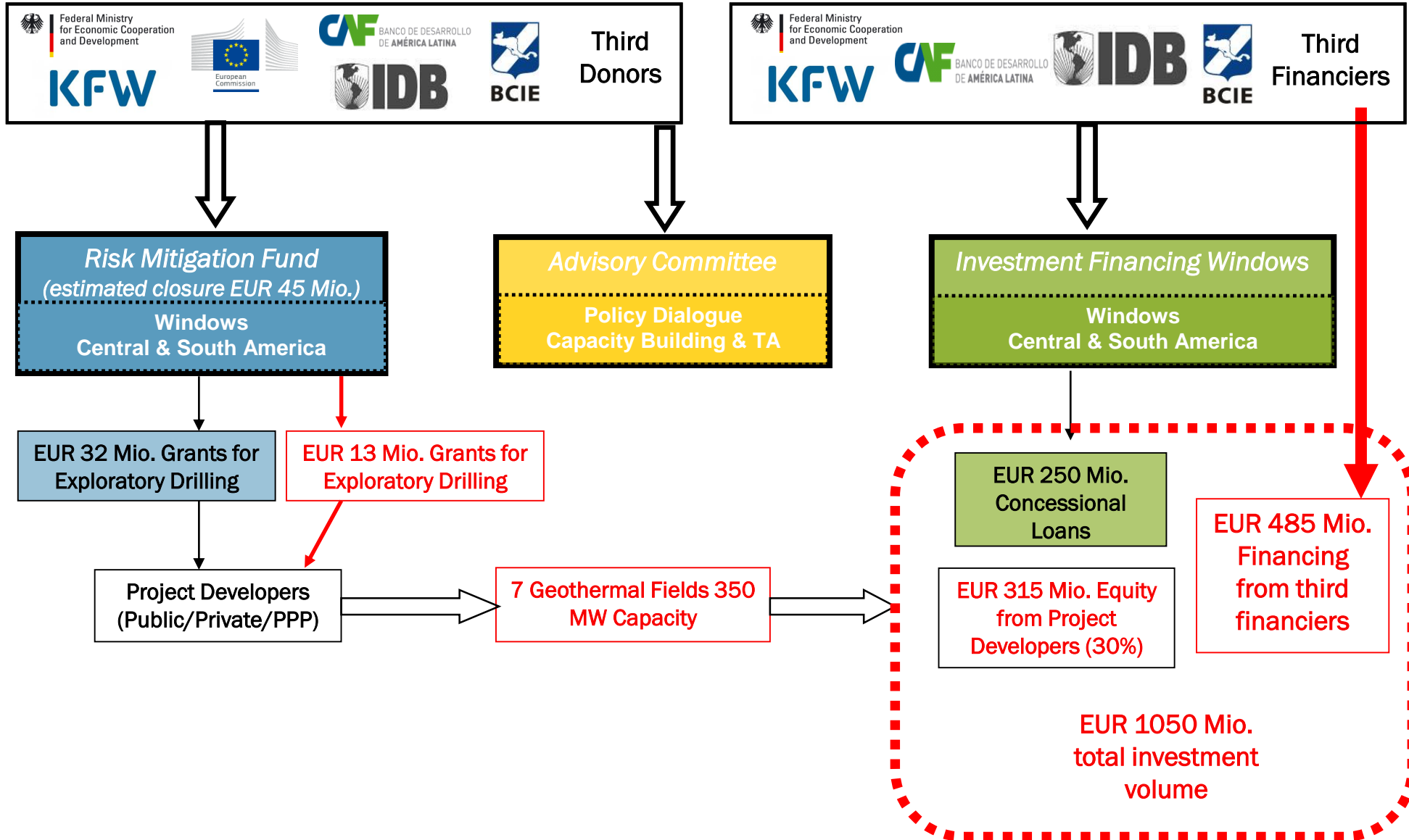
»» Geothermal Development Facility – Potential Design



»» Geothermal Development Facility – Potential Design



>>> Geothermal Development Facility – Potential Design



»» Geothermal Development Facility - Timeline



- Design as well as feasibility studies for Central & South America by Q1 2014
- Securing political approval and applying for funding for the facility:
 - FZ-R grant funds of up to EUR 15 Mio. from BMZ
 - EU-LAIF grant funds of up to EUR 20 Mio. from the European Commission
- Due Dilligence in Q2 2014
- Tender for the Fund Manager by Q1 2015
- Launch of the Fund by Q4 2015
- 1st application round in Q1 2016
- First grant agreements signed in Q3 2016
- First loan agreements signed in Q4 2017
- ...

»» Geothermal Development Facility - Summary

- › Replicate a proven approach for market development
- › Develop a clean, cheap, proven and base-load technology
- › Leverage substantial investment flows
- › Generate considerable CO2 emission savings
(~ 587.000tCO2e/yr)



»» Thank you for your attention!

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