



The African Rift Geothermal Energy Development Facility (ARGeo)

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Overview



- | Geothermal Energy in East Africa
 - Comparative Advantages
 - Barriers to development

- | The African Rift Geothermal Energy Development Facility – **ARGeo**
 - Rational
 - Setup and mechanisms
 - Project development timeline



Geothermal Energy in East Africa (1) Comparative Advantages



- | **Hydro-electricity:**
subject to silting of dams and and high sensitivity to drought
- | **Petroleum based electricity:**
highly sensitive to world petroleum price fluctuation
- | **Geothermal energy:**
 - | Vast untapped potential in East Africa
 - | Renewable
 - | Low pollution
 - | Insensitive to climate variability
 - | Increasingly cost-effective



Geothermal Energy in East Africa (2) The Challenge: Removal of Barriers



Main barriers to investment into geothermal-energy development:

- | Unproven resource fields
- | Technology constraints
- | Large up-front investment – exploration, appraisal and production drilling
- | Funding constraints
- | Commercial risk



Geothermal Energy in East Africa (3) The potential



Geothermal potential:

| ~ 7.000 MW

Installed capacity:

| Kenya: 127 MW

| Ethiopia: 8 MW



African Rift Geothermal Energy Development Facility - ARGeo



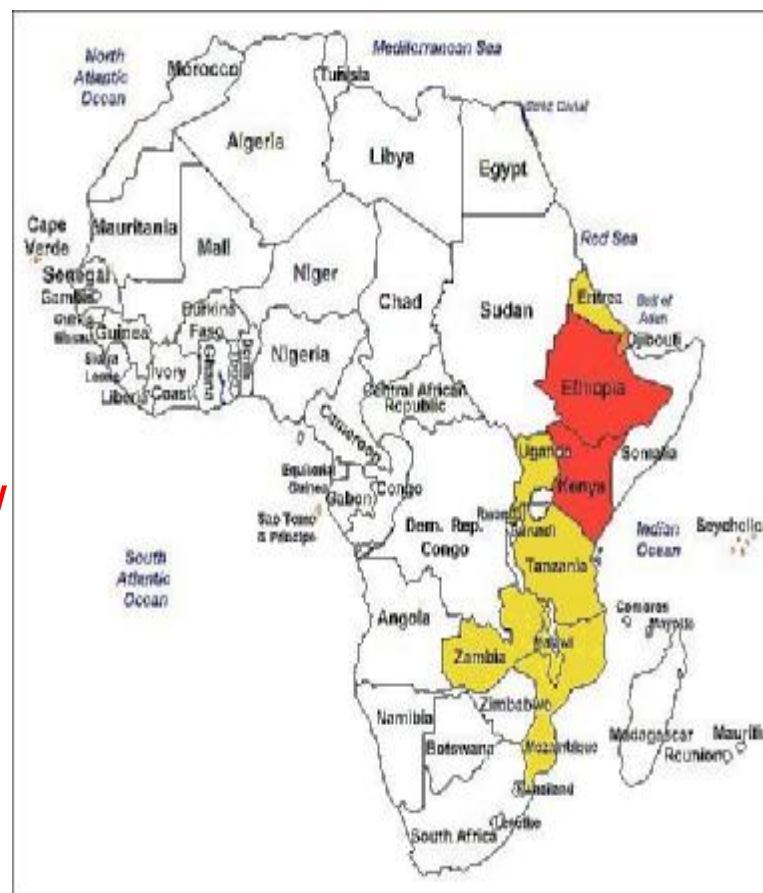
Program Initialisation: GEF, UNEP, KfW, Partner countries:

- Kenya, Ethiopia, Djibouti
- Uganda, Eritrea, Tanzania
- Malawi, Mozambique, Rwanda,
Zambia

Objectif: Geothermal-based power
generation capacity by **2020: 1000 MW**

Program start: 2005

**Execution: UNEP, KfW, with
national and bilateral partners**





The African Rift Geothermal Energy Development Facility – ARGeo

The Components



Component I

Geothermal Resource Assessment Network

US\$ 5 Mio

Component II

Geothermal Risk Guarantee Fund (revolving)

US\$ 40 Mio

Component III

Transaction Advice Fund

US\$ 5 Mio

Component IV


Geothermal Power Plant Development Funding scheme

Regional Geothermal Power Development Scheme



The African Rift Geothermal Energy Development Facility – **ARGeo** Risk Guarantee Fund (1)



Target Groups	Drilling stage	Drilling risks to be covered	Instruments
<p>Geothermal Field Developer</p> <p>Plant Investor</p>	<p>Gen. Resource Assessment</p> <p>Appraisal Drilling</p> <p>Production Drilling</p>	<p>Drilling risks to be covered</p> <p>high</p>  <p>low</p>	<p>?</p> <p>?</p>



The African Rift Geothermal Energy Development Facility – **ARGeo** Risk Guarantee Fund (2)



Early stage exploration drilling

High-risk drilling
à considerable probability of
unsuccessful drilling

Later stage production drilling

Advanced field assessment
à inferior drilling-failure rate

Calculation of cost-covering guarantee premia

insurance premium likely to be
prohibitively high for investors
à provision of **grant element**

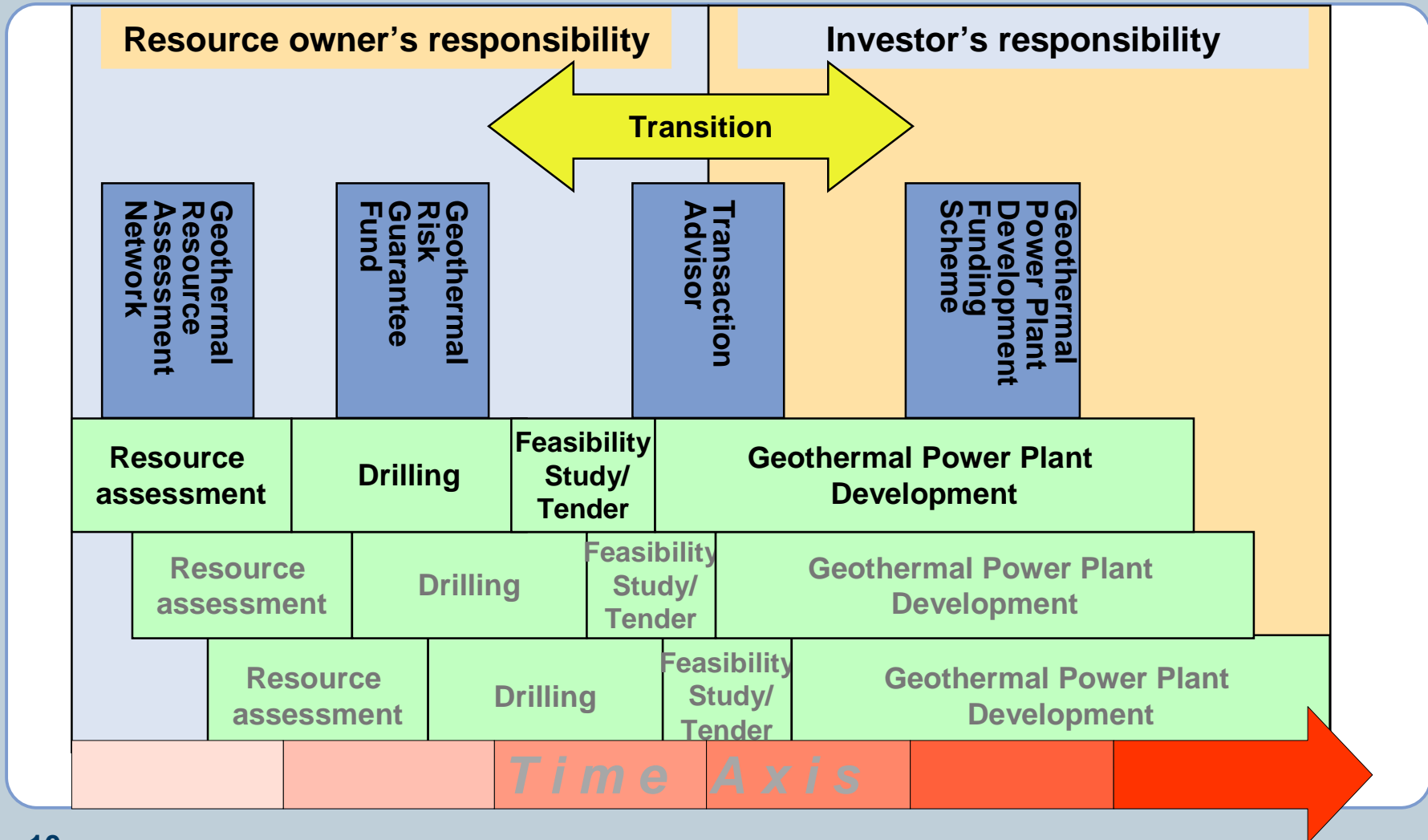
**“soft” guarantee window /
seed finance**

insurance likely to be provided on a
commercial basis

commercial window



The African Rift Geothermal Energy Development Facility - ARGeo Sequencing





Project Development Timeline



- | **April 2004:** National proposals received
- | **May-July 2004:** consultant missions to Africa
- | **27 July 2004:** Draft Project Brief with Country Annexes and Regional network structure defined
- | **2 August 2004:** Project Brief distribution www.unep.org/gef/geothermal
- | **14,15 Sept 2004:** Steering Committee and Donor Conference pledges and agreements (Rome?)
- | **1,2 2004 Dec 2004:** final review meeting
- | **7 January 2005:** Submission to GEF
- | **Fall 2005:** Project Launch



Contact



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