
THE SAINT LUCIA GEOTHERMAL DEVELOPMENT PROJECT

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SAINT LUCIA'S ELECTRICITY SECTOR

- 88.4 MW Installed Capacity
- 98% Dependent on Imported Fossil Fuels
- Peak Demand: 61.7 MW (2017)
- 400.3 GWh Units Generated in 2017
- Increase of 2.3% and 2.7% in 2016 and 2017
- ~ 900 kW Distributed Solar PV (2018)



3 MW Solar Farm Commissioned (2018)
1.3 % Share of Renewables

A wide-angle photograph of a geothermal power plant. The foreground is a dark, gravelly area. In the middle ground, several large, white, cylindrical pipes run across the landscape. To the left, a large plume of white steam rises from the ground. In the background, there are two large, white, geodesic domes and a small building. The sky is filled with large, white, fluffy clouds. The overall scene is industrial and natural.

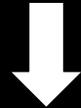
DRIVERS FOR GEOTHERMAL RESOURCE DEVELOPMENT IN SAINT LUCIA

RENEWABLE ENERGY TARGETS & STRATEGIES

National Energy Policy (2010) → 30% by 2020

NDCs → 35% by 2025 & 50% by 2030
from a mix of geothermal, wind and solar

National Energy Transition Strategy (NETS)

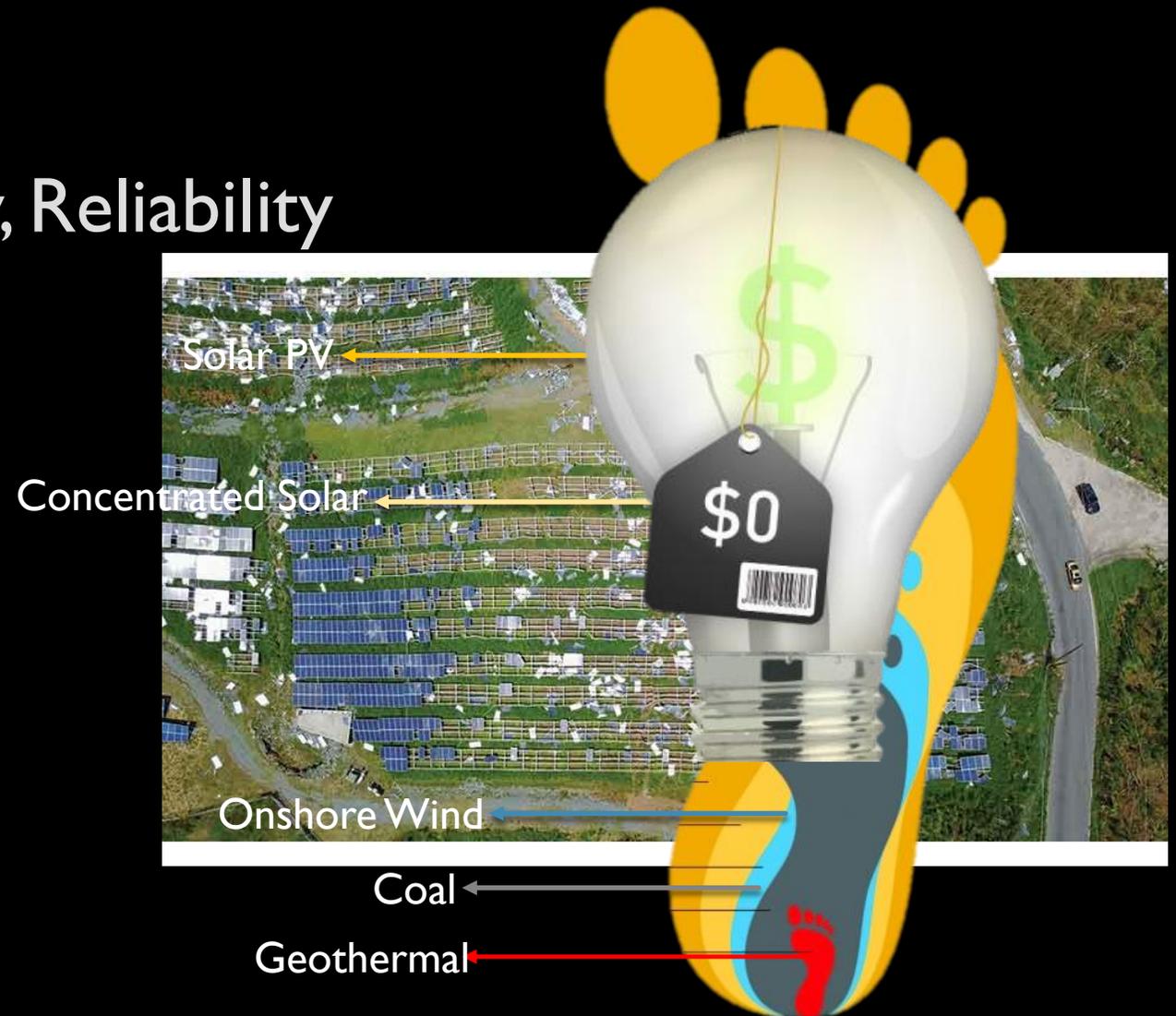


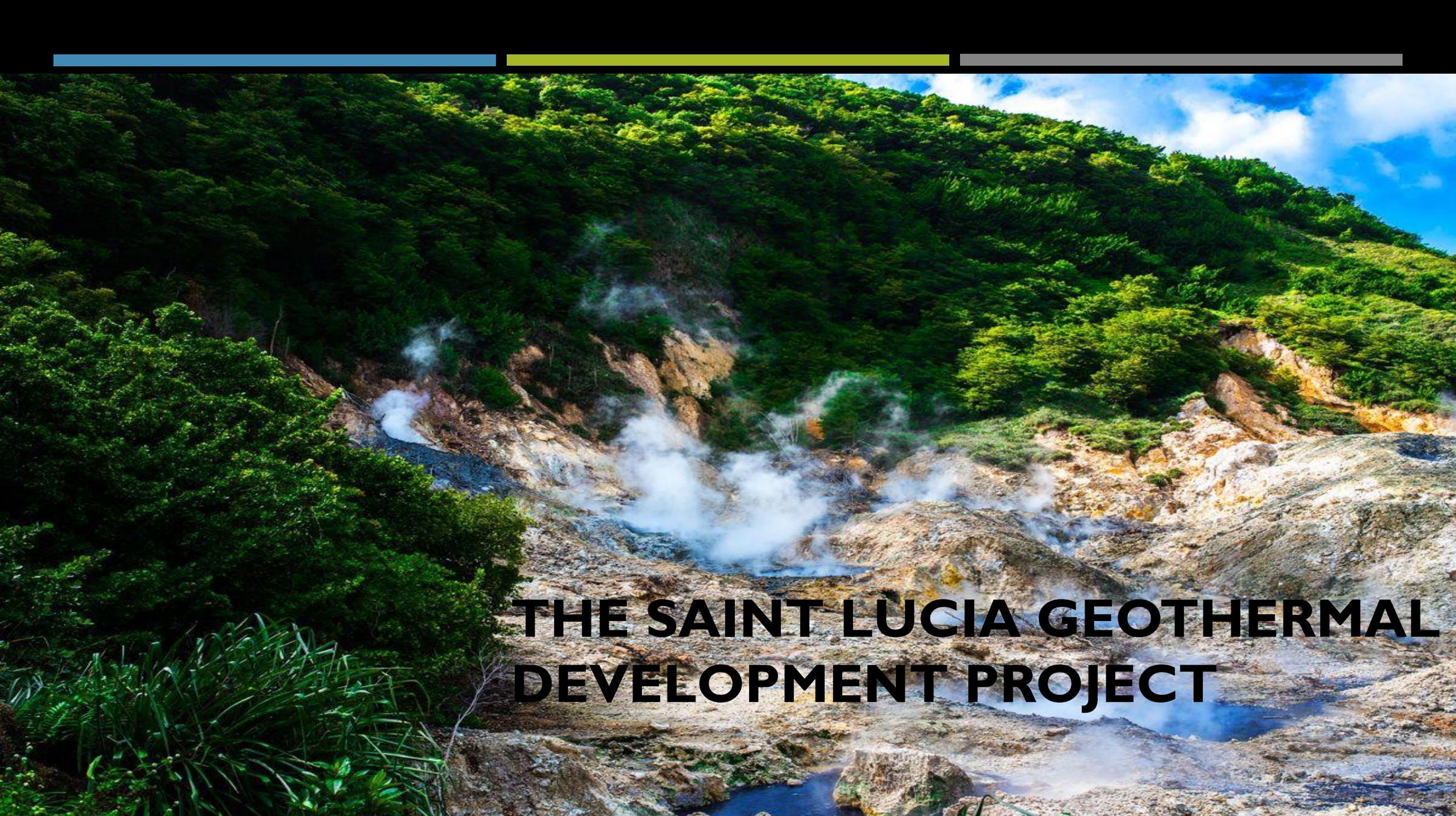
Recommends conditional continued development of geothermal



WHY GEOTHERMAL ENERGY?

- Energy Independence, Security, Reliability
- Lower Electricity Costs
- Relatively Small Footprint
- RESILIENCE



A wide-angle photograph of a geothermal area. In the foreground and middle ground, there is a rocky, light-colored terrain with several plumes of white steam rising from the ground. The background is a steep, lush green hillside covered in dense tropical forest. The sky is blue with scattered white clouds. At the top of the image, there are three horizontal bars: a light blue one on the left, a lime green one in the middle, and a grey one on the right.

THE SAINT LUCIA GEOTHERMAL DEVELOPMENT PROJECT

GEOHERMAL DEVELOPMENT: EARLY EXPLORATION

- Previous drilling activities (from 1951-1980s) unable to confirm commercial viability
- 7 shallow exploratory wells drilled in 1970's
- Geoscientific surveys completed in 1980's.



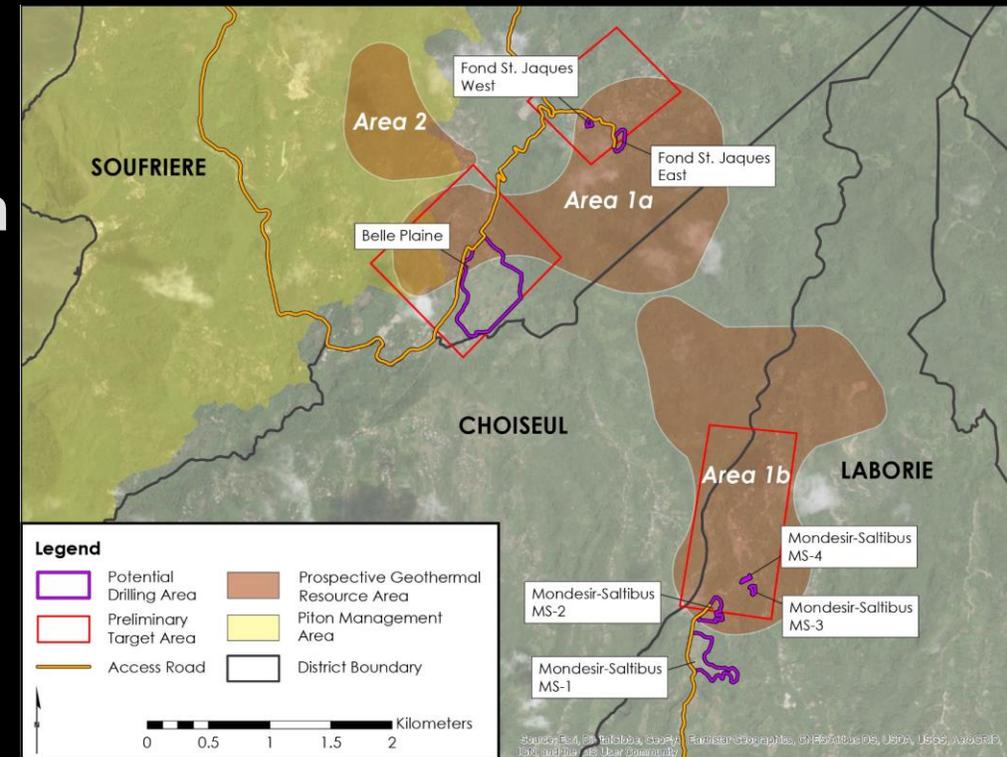
FIRST DEEP WELL EXPLORATION IN SAINT LUCIA

- SL-1: drilled to 2,208 m, July 1987, High temperatures, low flow
- SL-2: drilled to 1,408 m, Jan 1988, Productive, tested in 1990-1991



GEOHERMAL DEVELOPMENT STATUS

- Surface exploration complete (2016)
- ESIA and prefeasibility studies for exploration drilling complete (2018)
- 3-4 slim exploration wells to be drilled
- Indicative 60 MW (Area 1a and 1b)



FINANCING SAINT LUCIA'S GEOTHERMAL DEVELOPMENT

*Stage I: Early Prep
& Reconnaissance
(GOSL)*



*World Bank Project Management &
Advisory Support
NZ technical support
Grant funding support*

*Stage II –
Exploration (GOSL)*



*World Bank Project Management and
Advisory Support
Grant funding support
Financing towards risk capital*

*Stage III:
Development (IPP)*



Potential private financing

CHALLENGES IN GEOTHERMAL DEVELOPMENT: THE SAINT LUCIAN CONTEXT



POLICY, LEGAL AND REGULATORY FRAMEWORK

- Lack of necessary policy, legal, and regulatory framework for commercial geothermal development
 - Geothermal development regulations (Draft)
 - Electricity Supply Services Bill (Draft)
 - Environment and Social Impact Assessment regulations (Draft)
 - Physical Planning and Development Act (Amendments) (Draft)
 - Geothermal exploration currently considered under the Mining Act



POLICY, LEGAL AND REGULATORY FRAMEWORK

- Power Purchase Agreement (PPA)
- Concession: Geothermal Development Agreement (GDA)
- Rights Transfer Agreement (RTA)



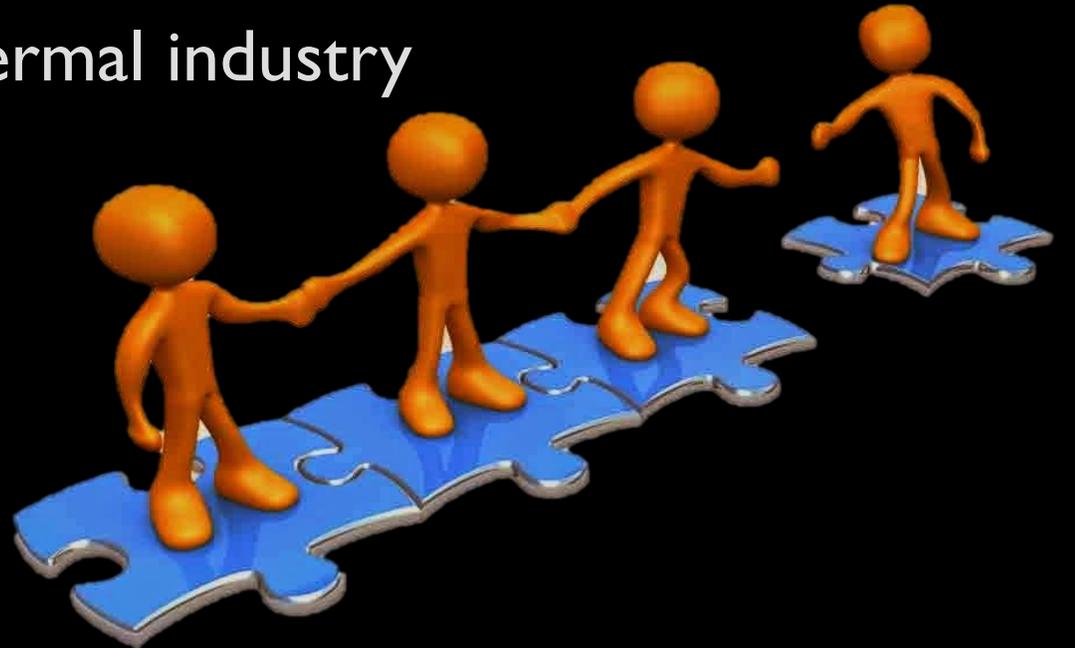
INSTITUTIONAL STRENGTHENING

- A legal framework for geothermal resource development provides a foundation for institutions
- Explicitly-defined institutional responsibilities
- Transparent and equitable procedures
- Dedicated national geothermal development organization
- At present, Depart. of Energy is responsible for technical aspects of the projects & Dept. of Economic Development maintains fiduciary and financial responsibilities



CAPACITY BUILDING

- Institutions must be adequately staffed
- Industrial capabilities which span the gamut of geothermal development
- Cadre of local professionals in the geothermal industry



ACCEPTANCE & PERCEPTION



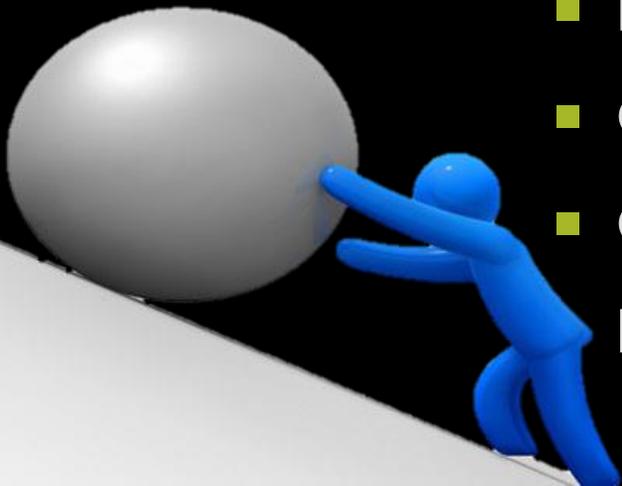
“Make geothermal EIA a public document” – Protesters

OTHER CHALLENGES

- Urgency to make investment decisions
- Project delays
- Project site location: access roads & distances between project sites
- Land use and ownership

OVERCOMING THE CHALLENGES

- Incentivizing development through innovative financing options to de-risk the upstream development stage
- Finance and risk management, through support of the World Bank
- Public awareness and education campaigns
- Community consultations
- Engagement with land owners
- Early engagement of utility
- Capacity building
- Creation of a dedicated geothermal unit
- Procurement of EMC



NEW OPPORTUNITIES

Value added:
Direct Use

Alternatives &
new
technologies

Collaboration
among
member states



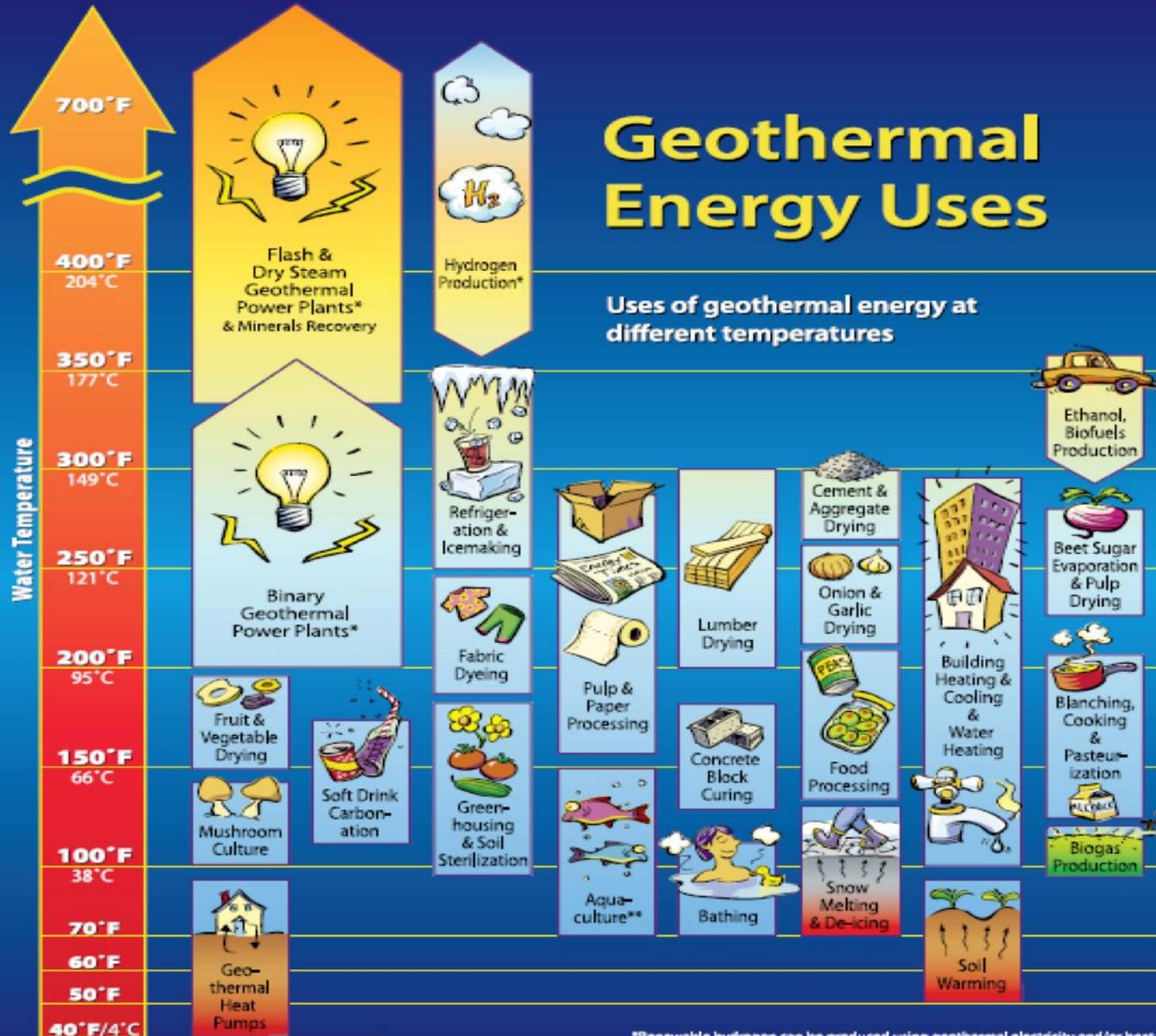
DIRECT UTILISATION

- GREEN HOUSES
- AGRO-PROCESSING
- RECREATIONAL USE
- FISH-FARMING



Geothermal Energy Uses

Uses of geothermal energy at different temperatures



*Renewable hydrogen can be produced using geothermal electricity and/or heat.
 **Cool water is added as needed to make the temperature just right for the fish.

ALTERNATIVE TECHNOLOGIES

Total installed capacity from well head units: 83.5 MW

2.4 MW units: 1

3.2 MW units: 8

5 MW units: 11



Kenya is the first country in the world to make use of temporary geothermal wellheads



THANK YOU FOR YOUR ATTENTION

