Experience in Geothermal Power Development

Barbados mars 2008

Gudmundur Thoroddsson

CEO REI

REI Builds upon Reykjavik Energy's Expertise and Operational Strength

- In operation since 1909
- Multi-utility
- 600 employees
- World's largest district heating system
- 290 MWe and 900 MWt
- Additional 400 MWe and 400 MWt in the pipelines until 2012
- RE's assets USD 2.5 Billion

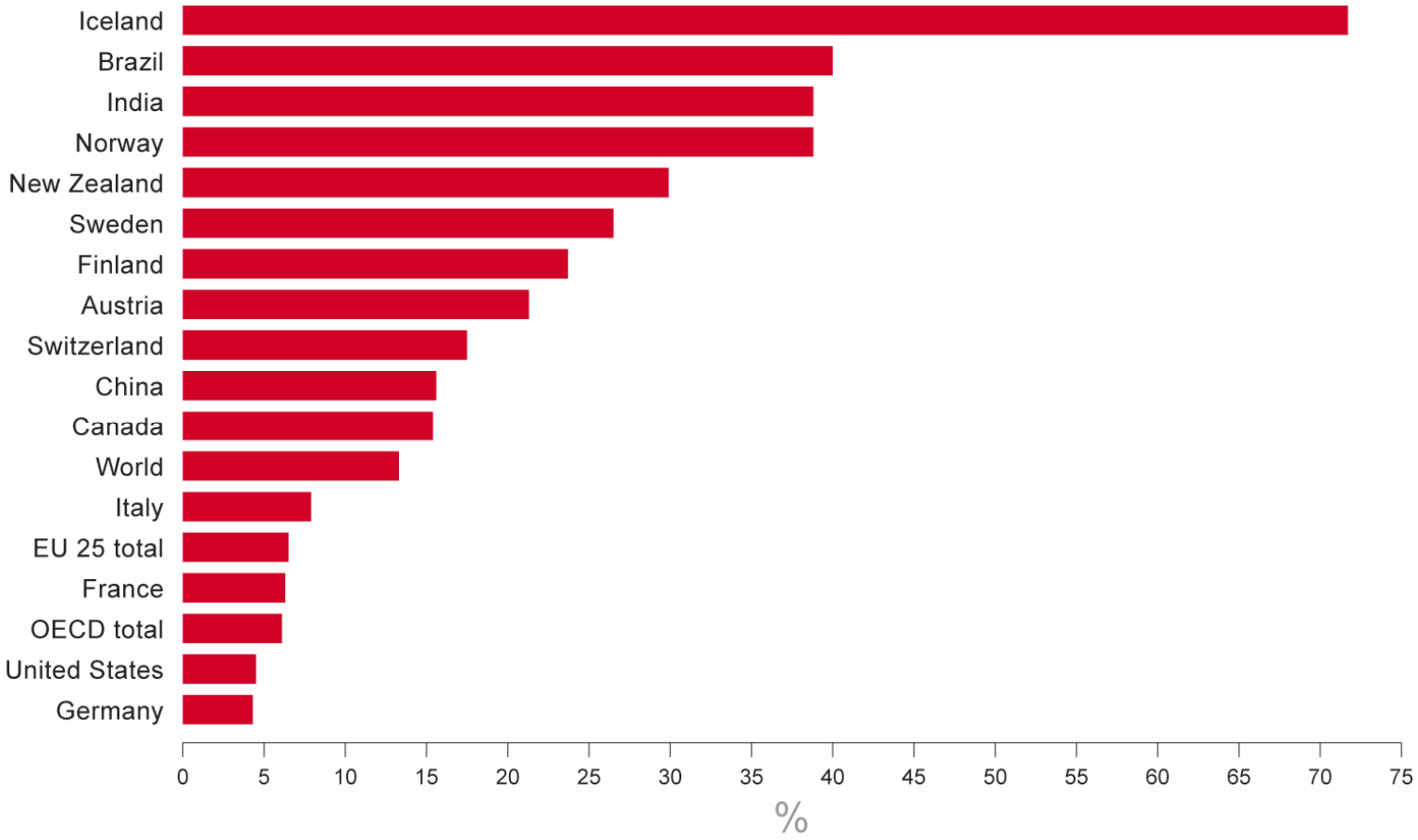
VOTTUN HF. ÍST ISO 9001

VOTTUN HF. ÍST ISO 14001

VOTTUN HF. OHSAS 18001

HACCP

Iceland is a world leader in renewable energy



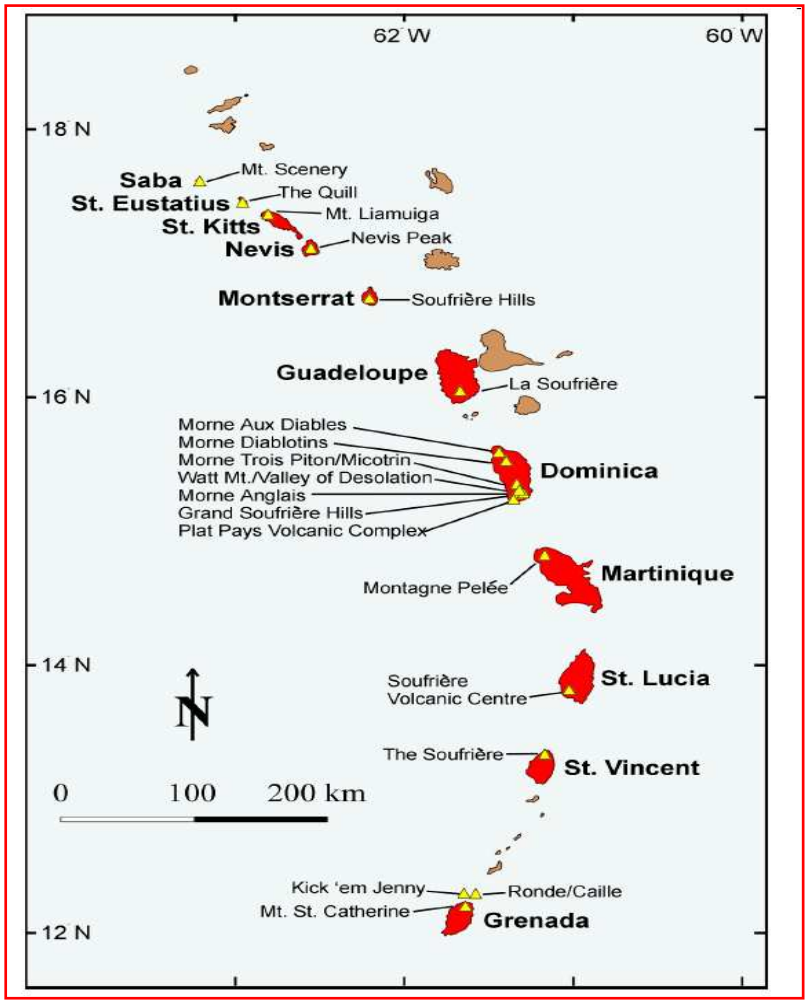
Renewable energy as % of total energy 2004

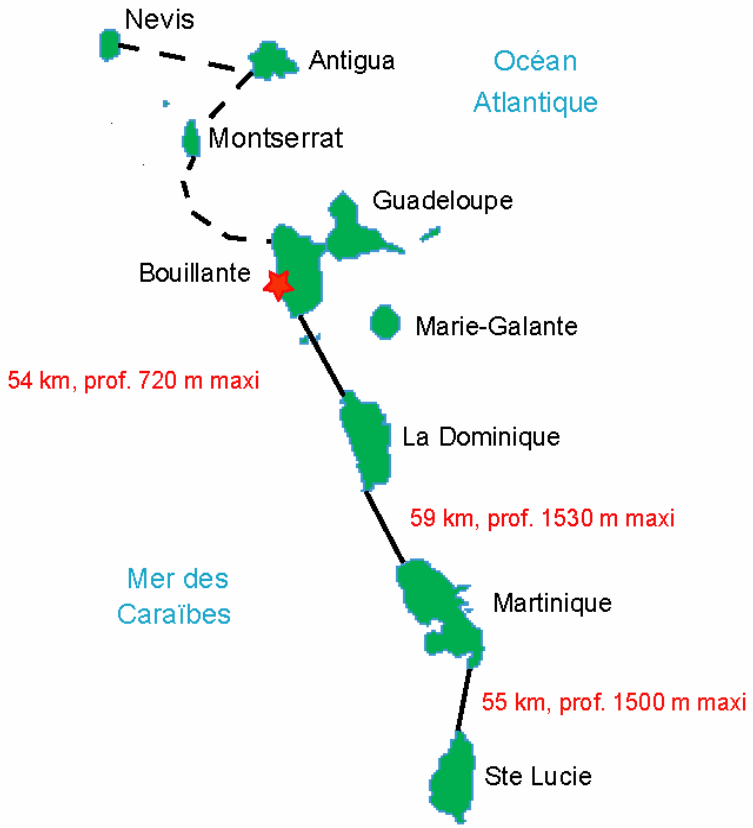
Source: OECD - Factbook 2007

Trends in power generation in Iceland

- Shift from electricity generation by hydro to geothermal
- New geothermal electricity from less than 100 MW in 1995 to 1100 MW in 2012
- New Geothermal more and more without heat production
- More and more of marginal areas being heated by geothermal as fossil fuel becomes more expensive and technology becomes better

East - Caribbean



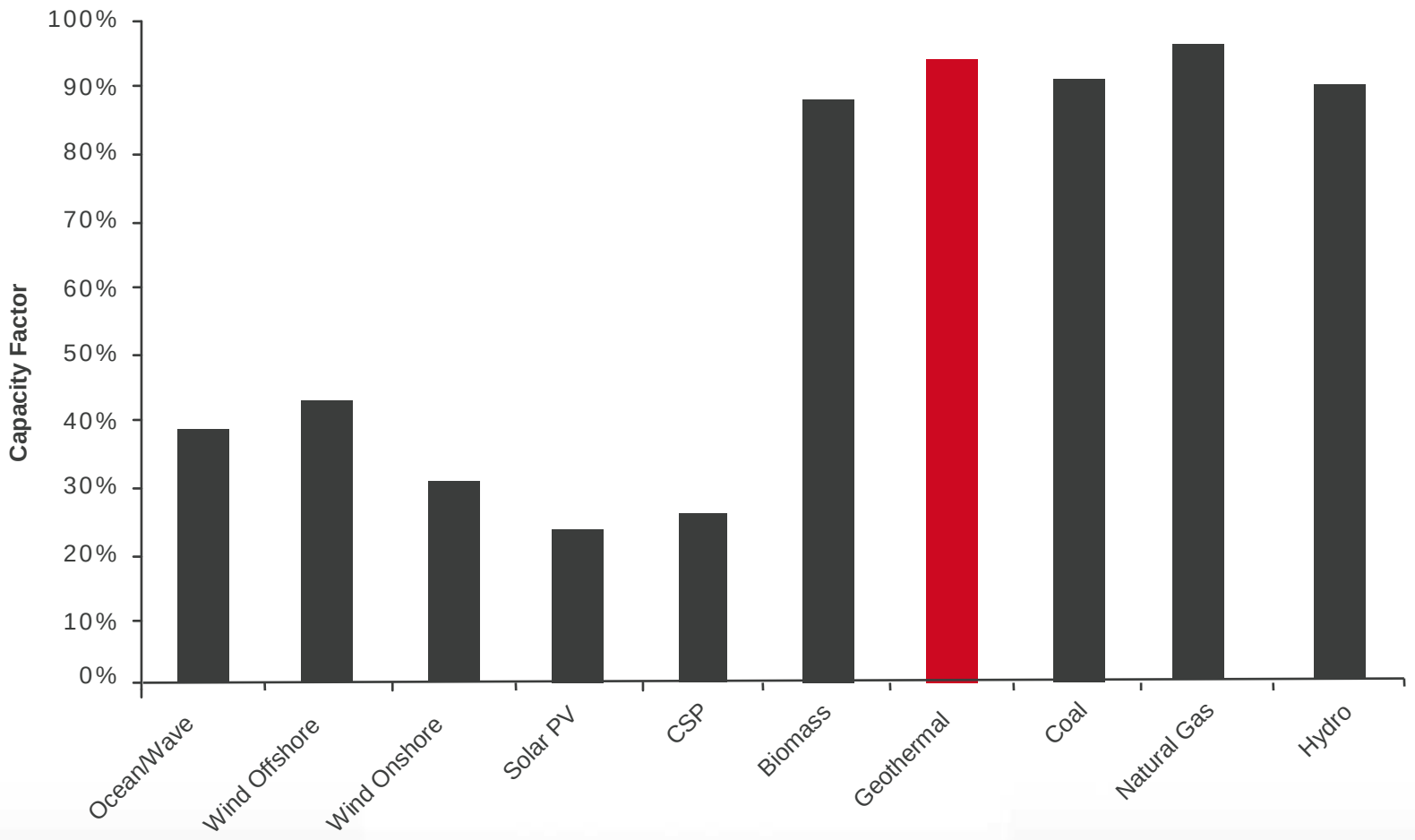


Bouillant Geothermal Power Plant

Trends in geothermal power generation

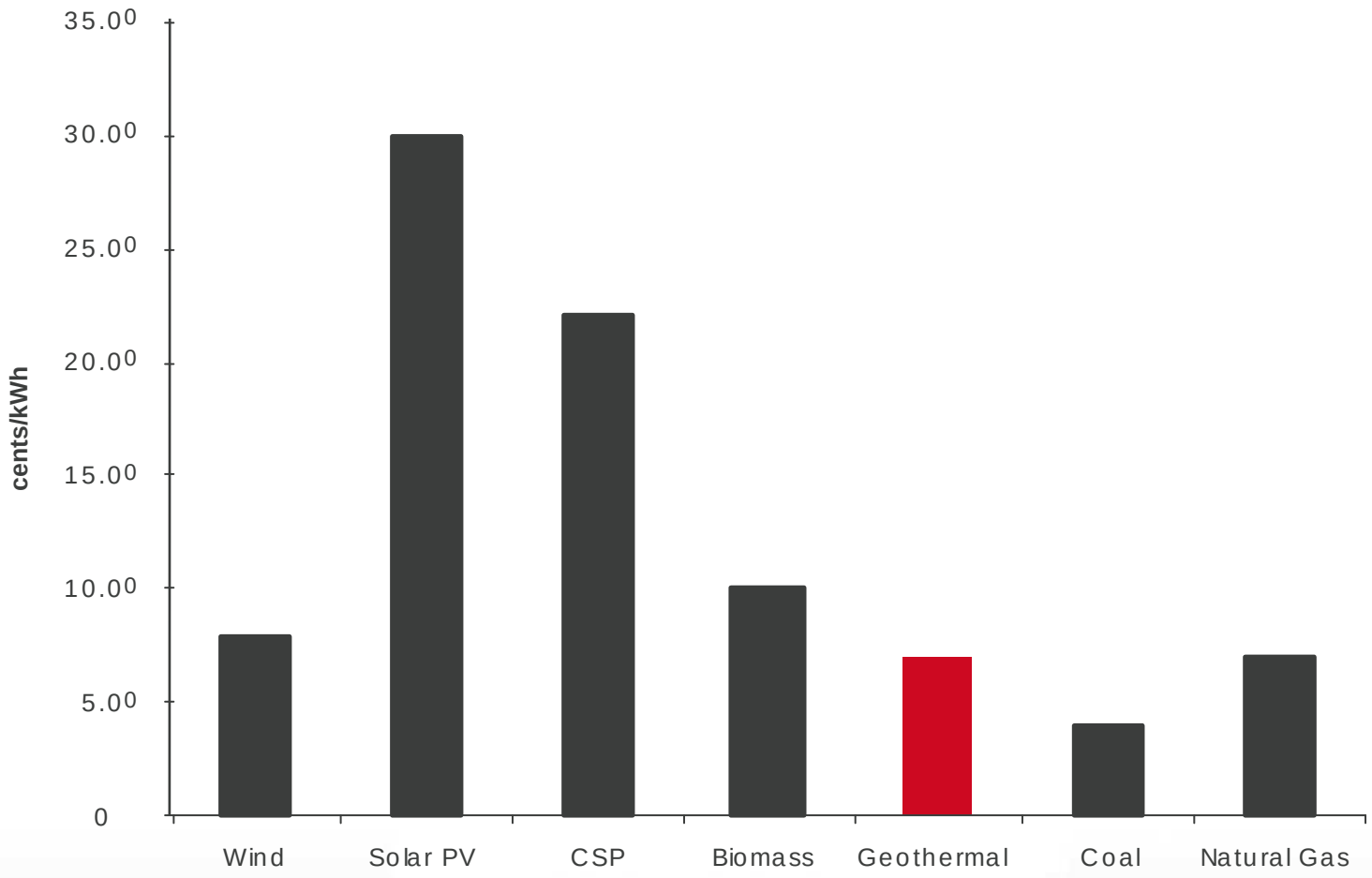
- Faster development of geothermal
- Shorter time from first permit to generation
- Bigger initial units – lower cost
- Competitive with hydro in Iceland
- In the last decade Iceland has been the biggest developer of new geothermal in the world
- Big demand for participation in overseas projects
- Direct use like district heating/cooling spreading

Capacity Factor Comparison shows unique status in sustainable energy



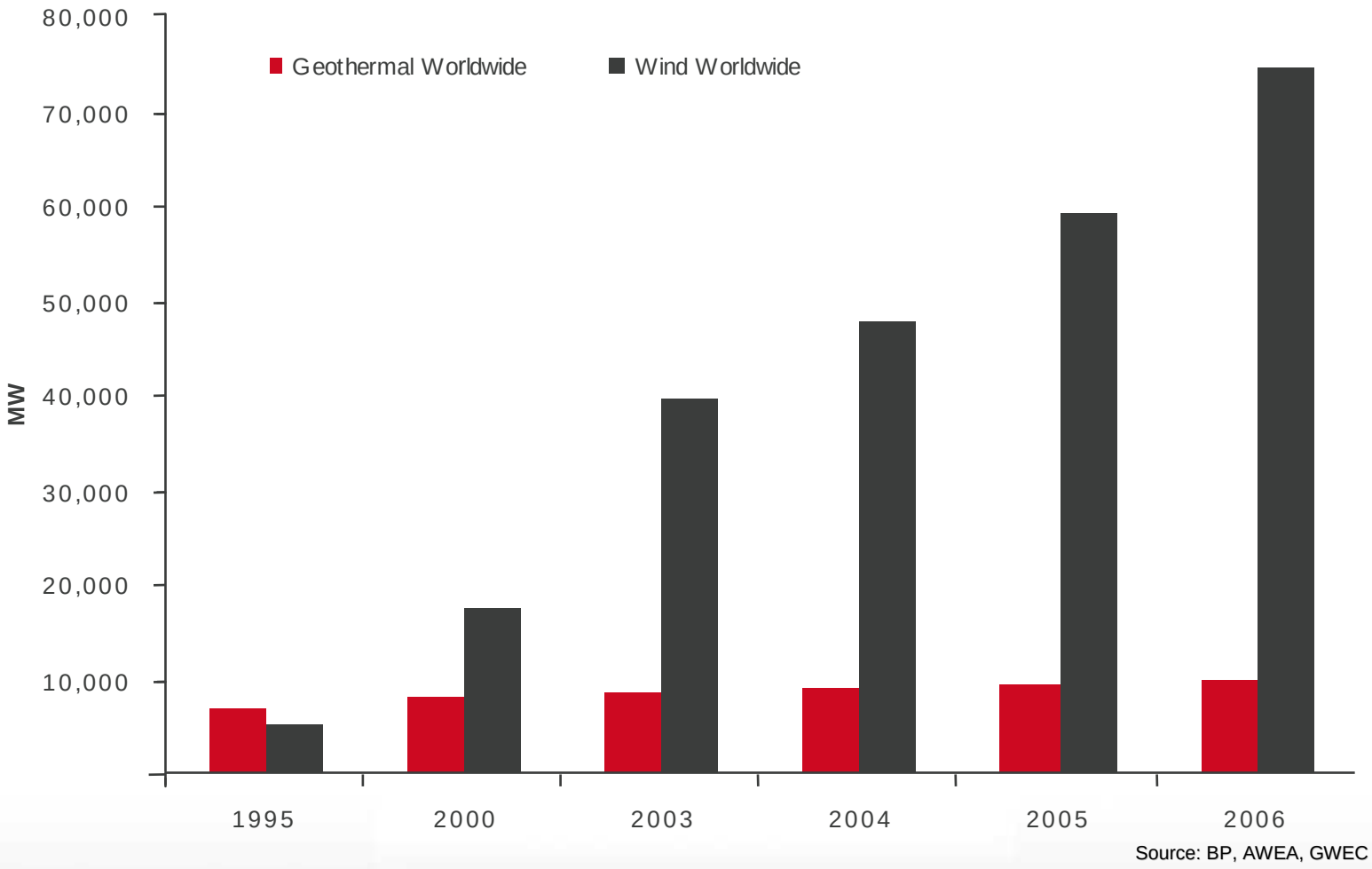
Source: Glitnir Bank

Levelized Cost Comparison makes Geothermal competitive



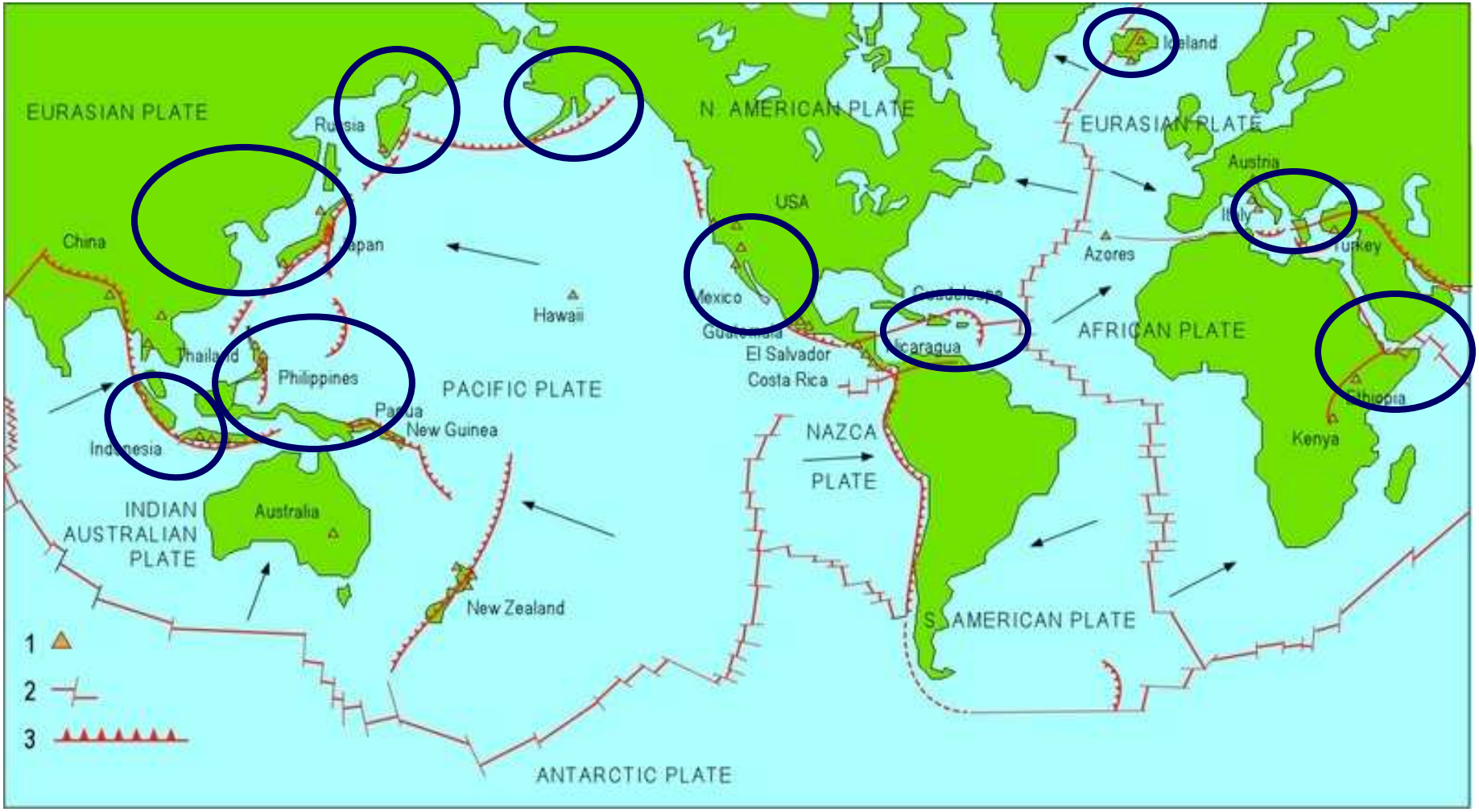
Source: Glitnir Bank

But investment has been low due to entry barriers



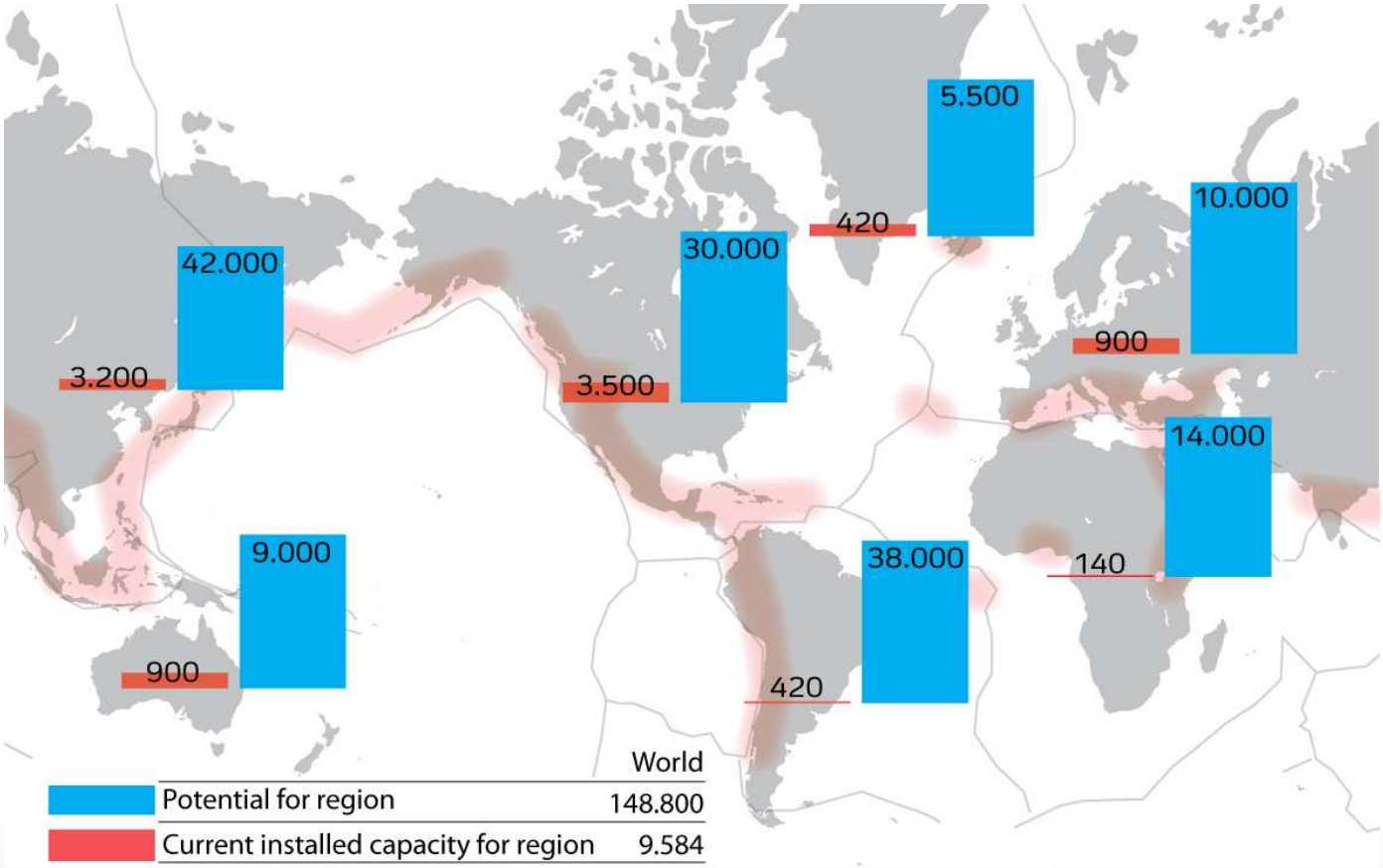
Source: BP, AWEA, GWEC

The Global Hot-spots



The world is our oyster with unharnessed potential

Utilized vs Available Geothermal Energy



Challenges to geothermal development

- High initial investment
- Big initial risk
  - Exploration risk
  - Long developing time 5+ years
- Limited knowledge, few experts
- Long delivery time
  - Turbines > 2 years
  - Wellheads > 1 year
- Few vendors
  - One to three in most critical parts

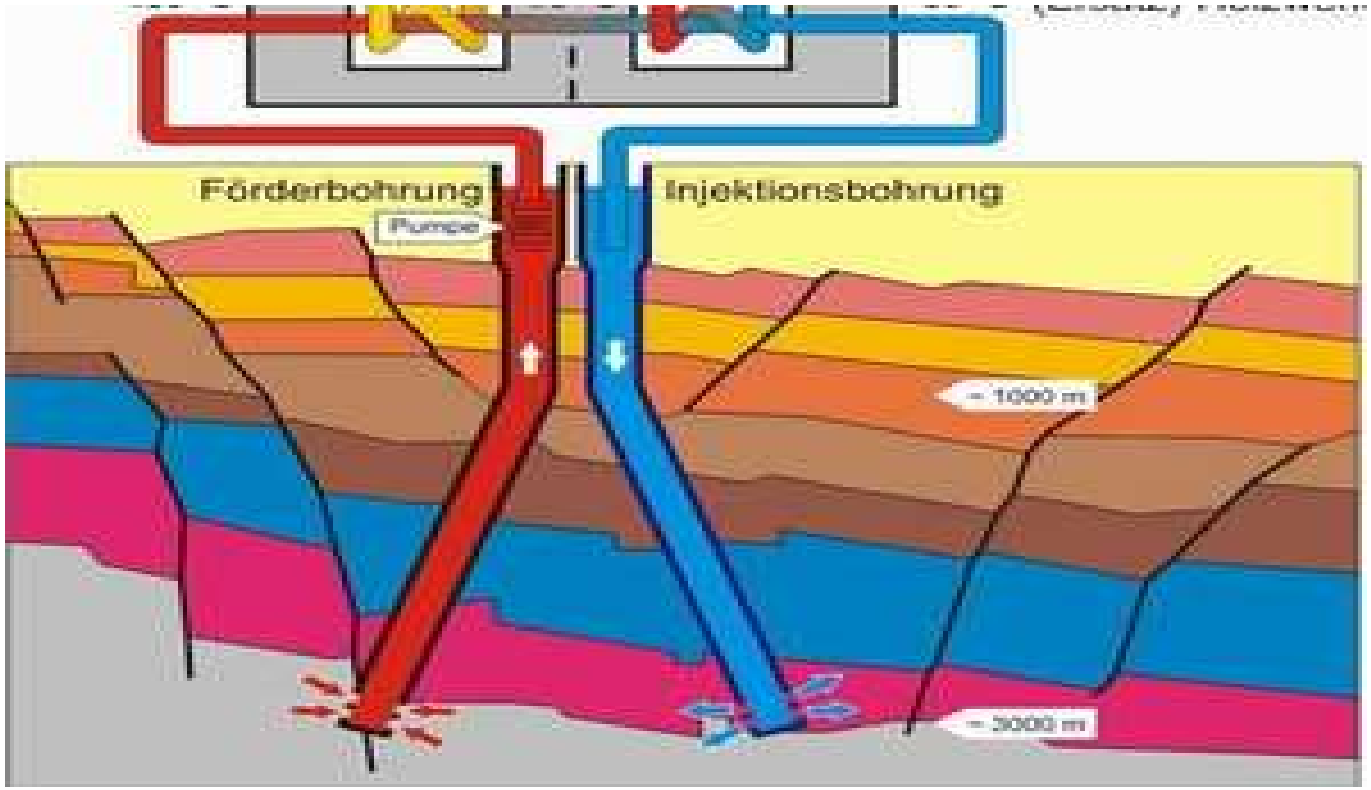
New opportunities in geothermal development

- Increasing energy prices worldwide
- Increased energy demand
- Environmental concerns
- Technological development
  - Advances in drilling techniques
    - Rigs hydraulic, smaller footprint
    - Top drives
    - Air assisted drilling
    - Directional drilling
  - Binary cycles
  - Injecting fluids back into reservoir
  - Rotors and turbines
  - Lower cost
- The new green energy option that needs little or no subsidies

Promising developments in the future

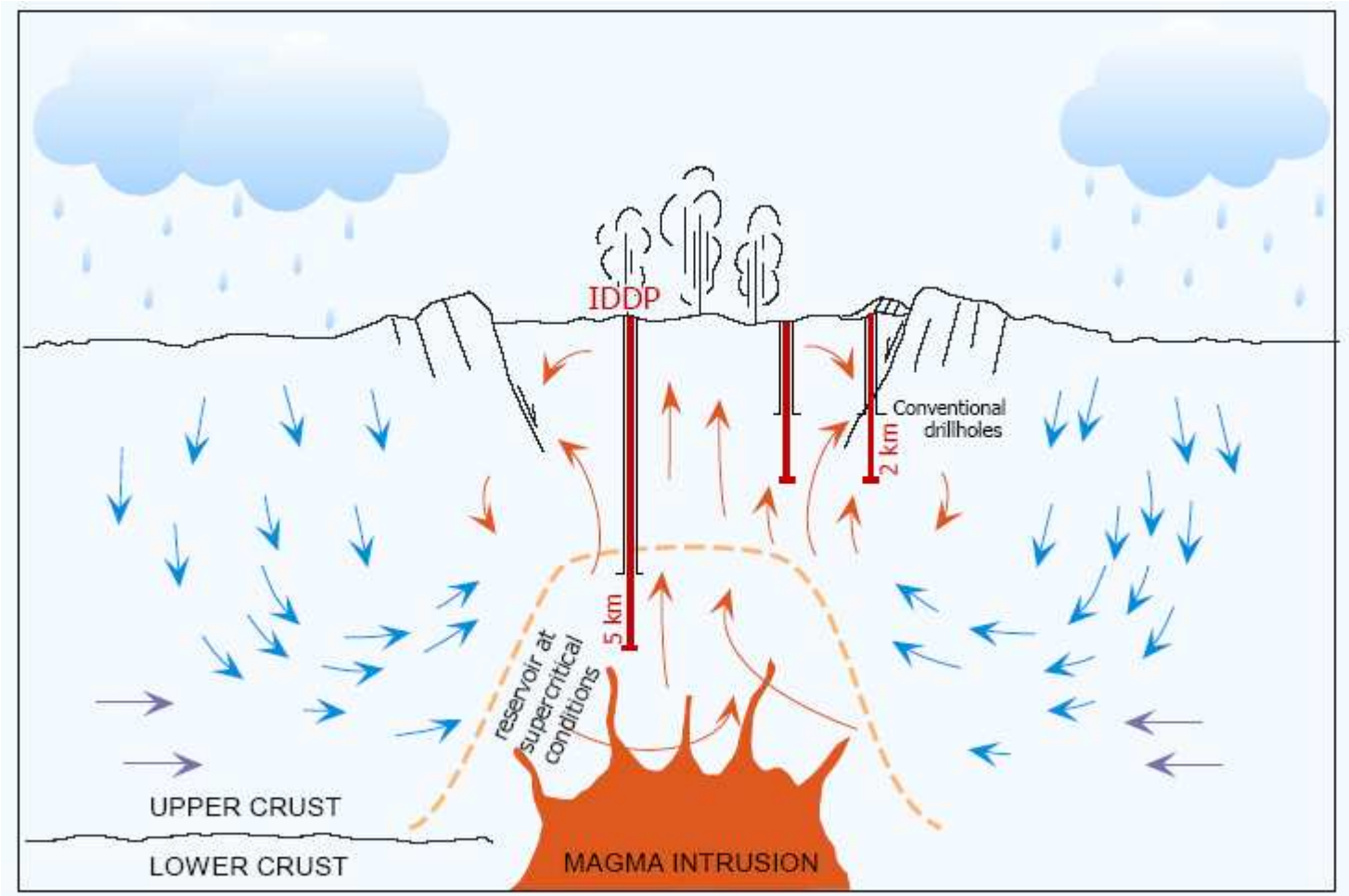
- Deep drilling
- Enhanced systems
- Cooling with low grade geothermal power
- New drilling technicks

Enhanced Geotermal

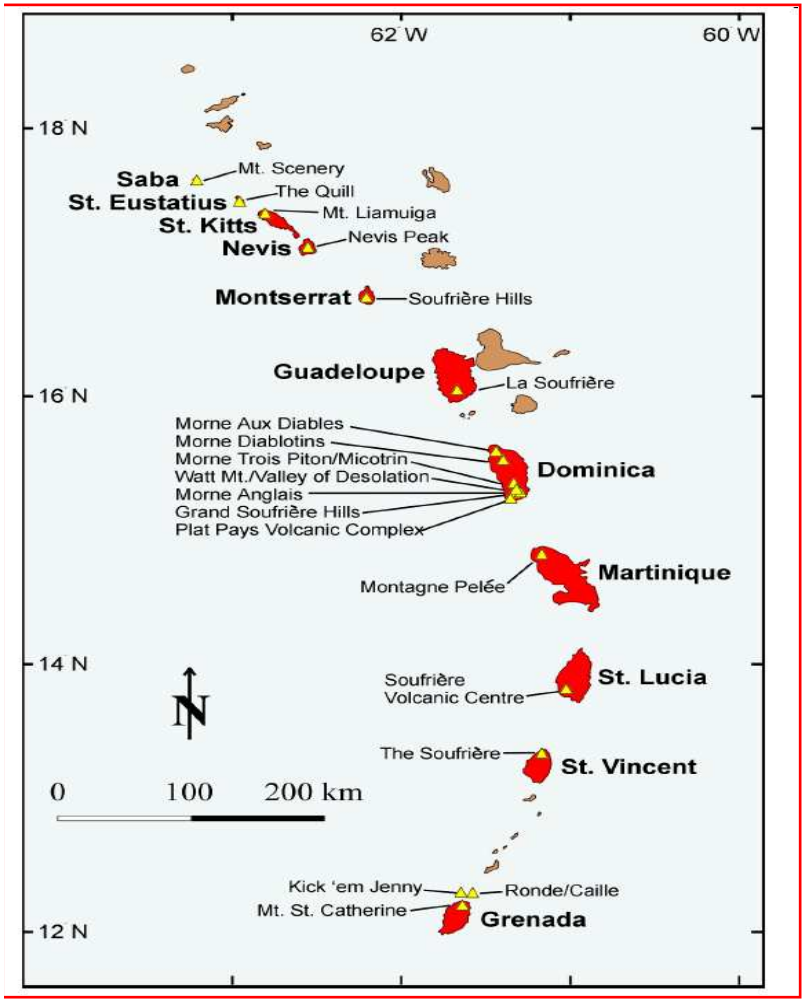


Drilling of Super-Deep, Super-Hot Wells

THE ICELAND DEEP DRILLING PROJECT (IDDP)



Conceptual Model of a High-temperature Geothermal System in Iceland


62 W
60 W
18 N
16 N
14 N
12 N
Saba
Mt. Scenery
St. Eustatius
The Quill
St. Kitts
Mt. Liamuiga
Nevis
Nevis Peak
Montserrat
Soufrière Hills
Guadeloupe
La Soufrière
Morne Aux Diables
Morne Diablotins
Morne Trois Piton/Micotrin
Watt Mt./Valley of Desolation
Morne Anglais
Grand Soufrière Hills
Plat Pays Volcanic Complex
Dominica
Montagne Pelée
Martinique
Soufrière
Volcanic Centre
St. Lucia
The Soufrière
St. Vincent
N
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Kick 'em Jenny
Ronde/Caille
Mt. St. Catherine
Grenada