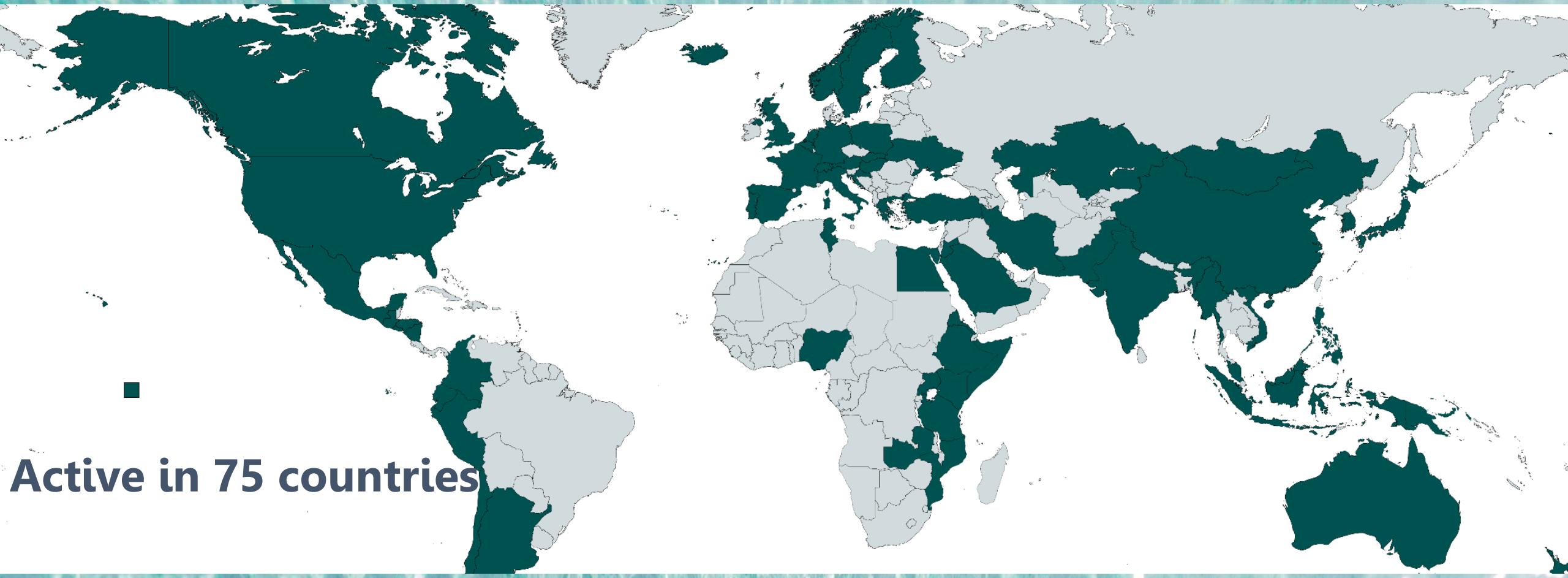
Geothermal Green Hydrogen

INTERNATIONAL GEOTHERMAL ASSOCIATION
IGA

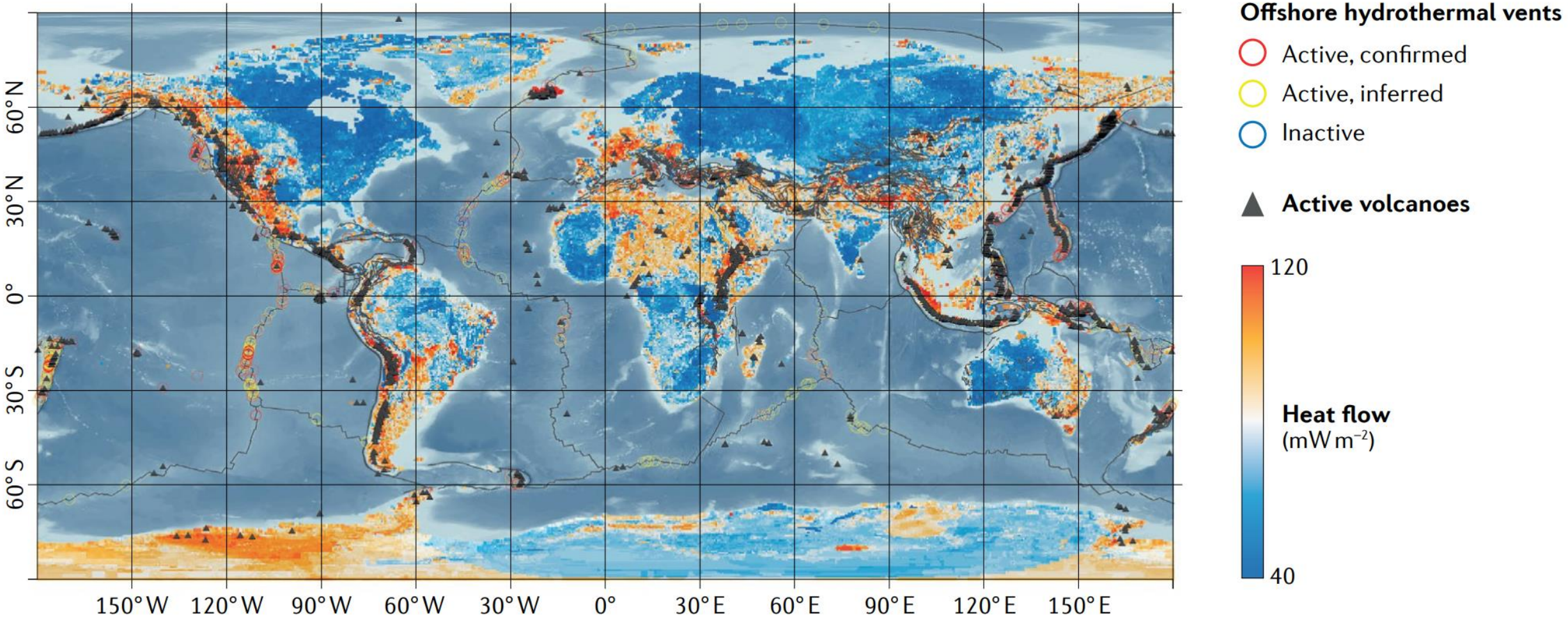
Marit Brommer

Our goal

Achieving SDG7: clean and affordable energy for all



Active in 75 countries



Nature Geoscience Reviews: Jolie et al, 2021.

Geothermal Power

Geothermal Heat

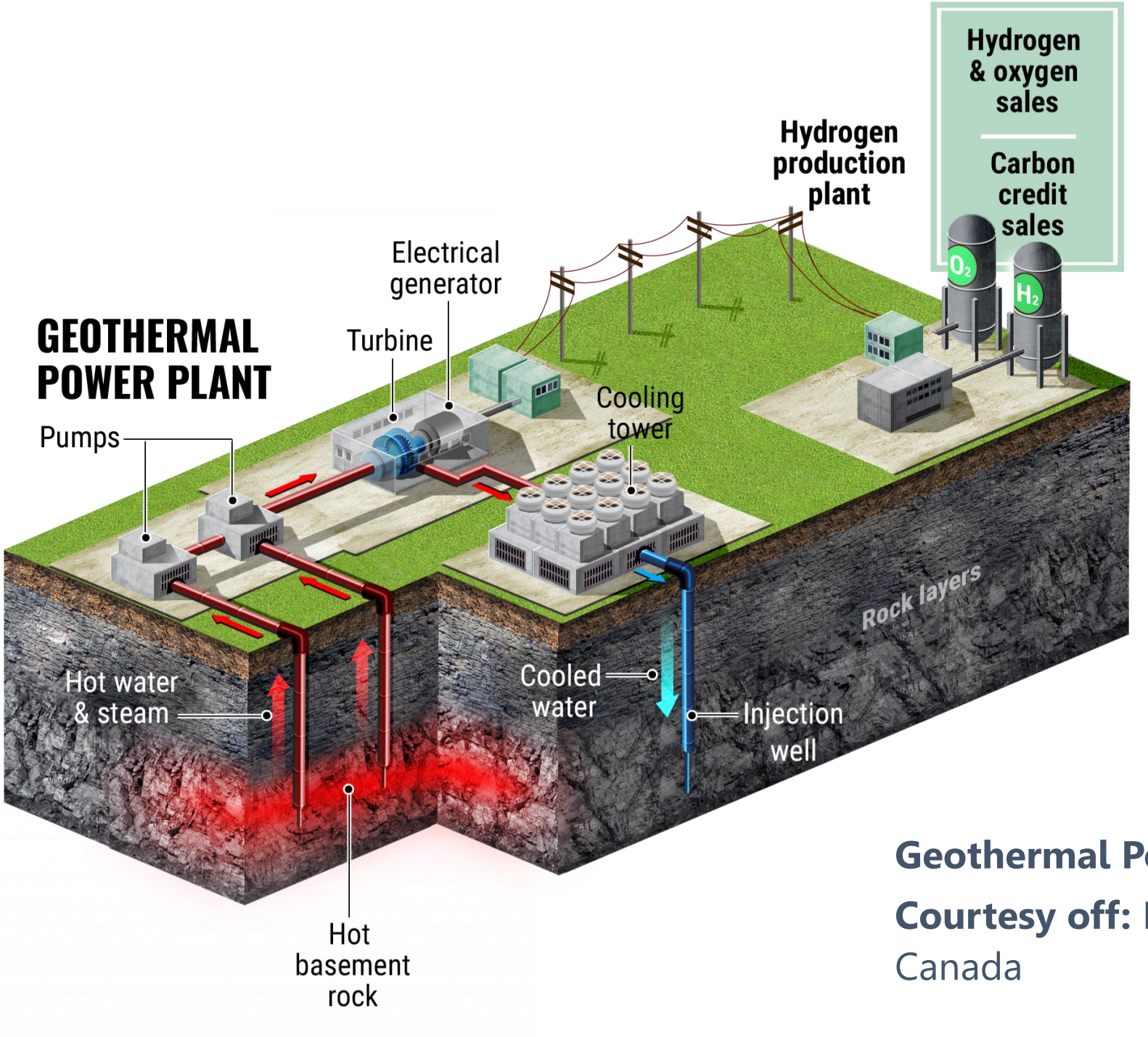
INTERNATIONAL GEOTHERMAL ASSOCIATION
IGA

Urban Geothermal

INTERNATIONAL GEOTHERMAL ASSOCIATION
IGA

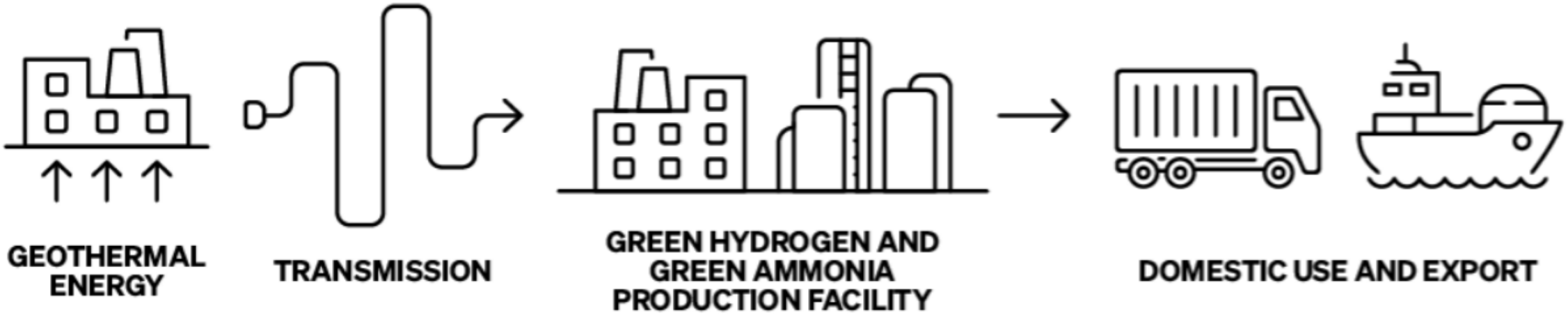
Geothermal for Remote Areas (off grid)

INTERNATIONAL GEOTHERMAL ASSOCIATION
IGA



Geothermal Power basic set-up

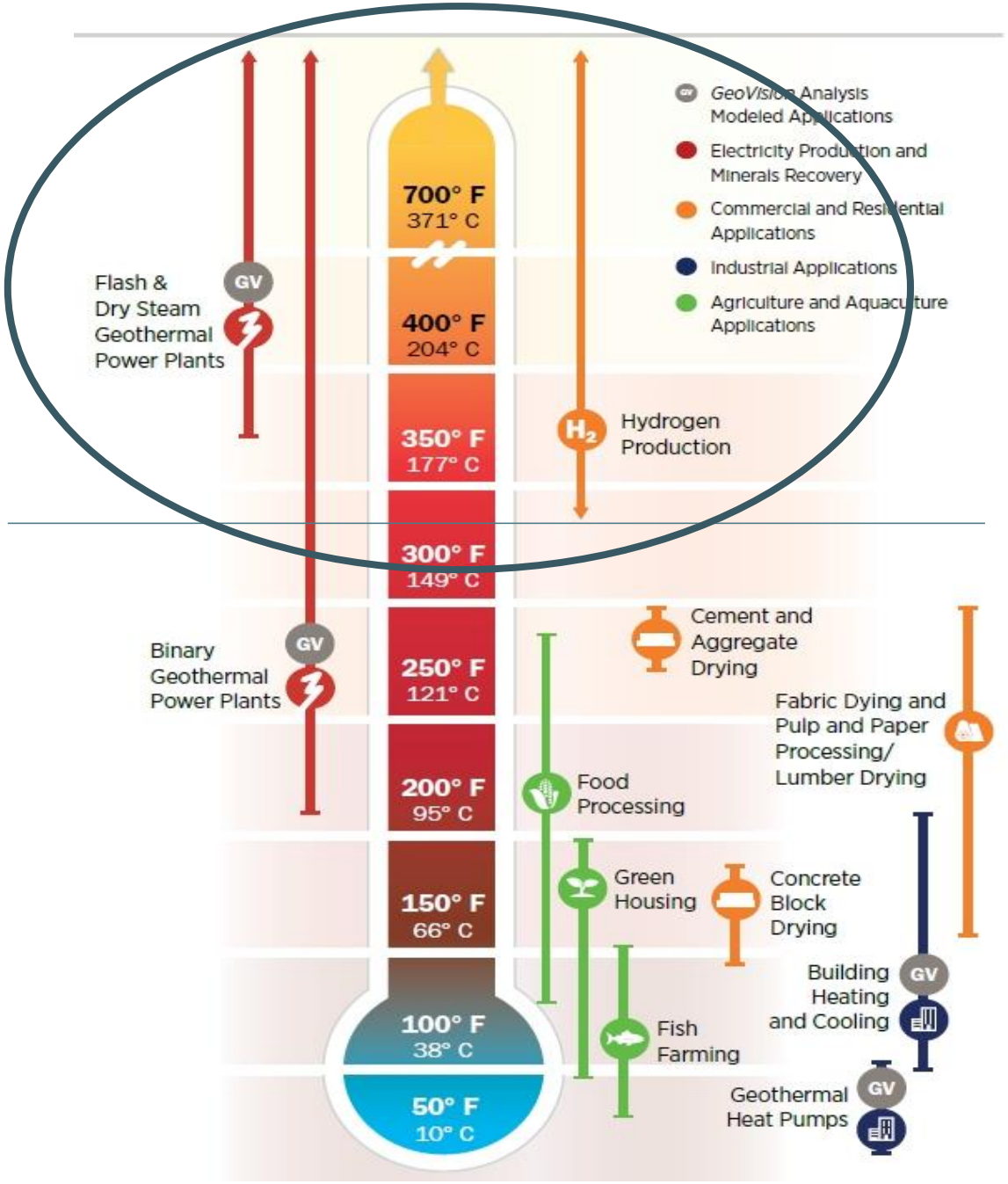
Courtesy off: Meager Creek Development Canada



Geothermal Green Hydrogen Value Chain

Courtesy off: Fortesque Future Industries

GeoVision - Harnessing the Heat Beneath our Feet. Chapter 2: What is Geothermal Energy. U.S. Department of Energy. 2019



Baseload (24/7) – 90% capacity factor

Temperature

Heat

Water (H_20)

Optimal ingredients for electrolysers to generate

Hydrogen (H)

Hellisheidi Iceland

Icelan
d
New
Zealan
d

Mokai Powerplant

Powerplant details

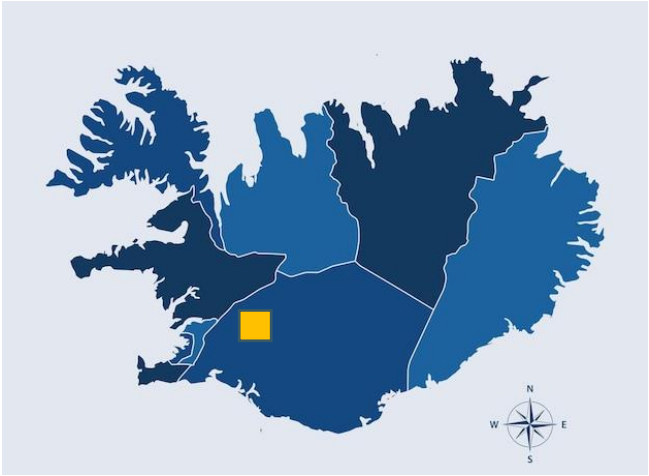
112Mw installed (Combined Heat / Power). Binary Turbines.
30Mwe potential expansion
Annual energy produced 927 (GWh)
Delivers electricity with 110kv line to Whakamaru national grid
96% Capacity Factor
300-326 deg C

Geothermal Asset Thinking

Halcyon Power is a joint venture between New Zealand's Tuaropaki Trust and Obayashi Corporation.

Obayashi is one of Japan's leading construction companies and is also active in the next generation energy sector.

Bringing together local and international technological expertise, Halcyon has developed a 1.25 MW green hydrogen plant.



Hellisheidi

Powerplant

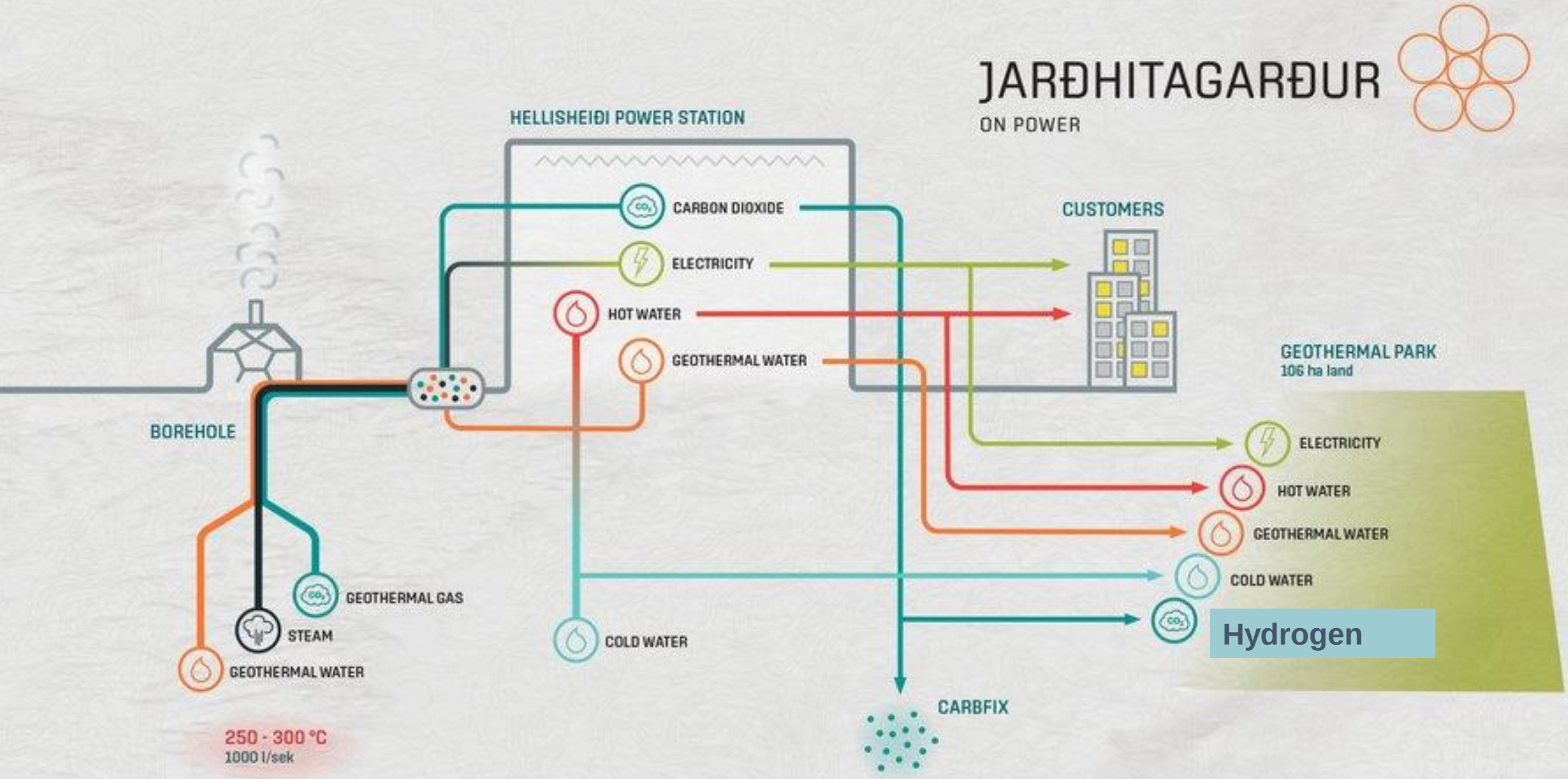
Powerplant details

303MW of electricity and 400MW of thermal energy
92% Capacity Factor
30 wells
182 deg C
50MVA generator, 50MVA/220kV step-up transformer and 11/11 kV transformer

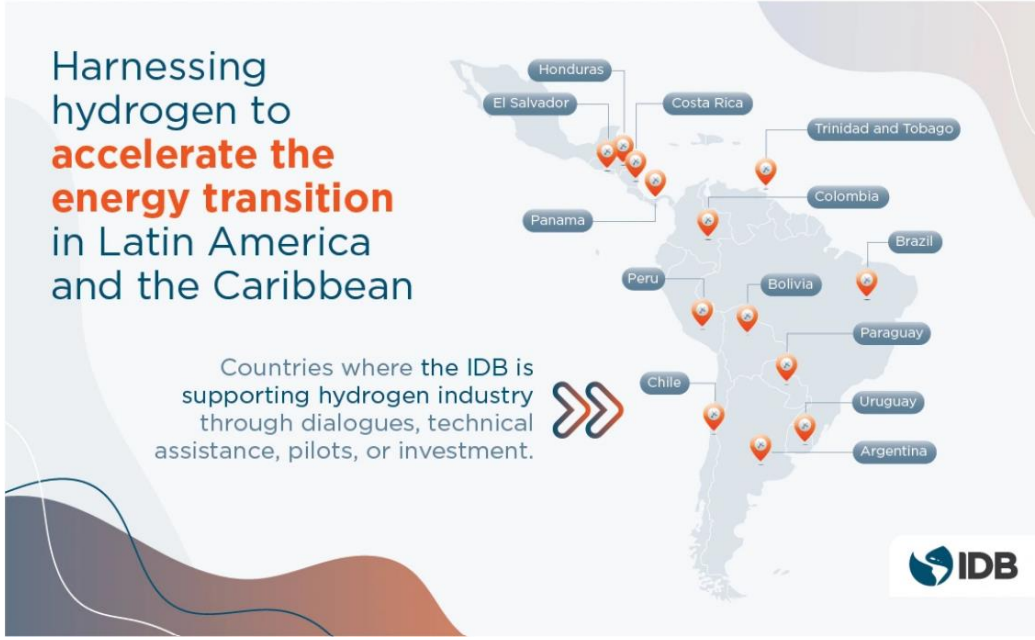
Ownership: Reykjavik Energy

The Orca carbon capture plant was developed and is operated by Climeworks air CO_2 capture technology company. This is called CarbFix.

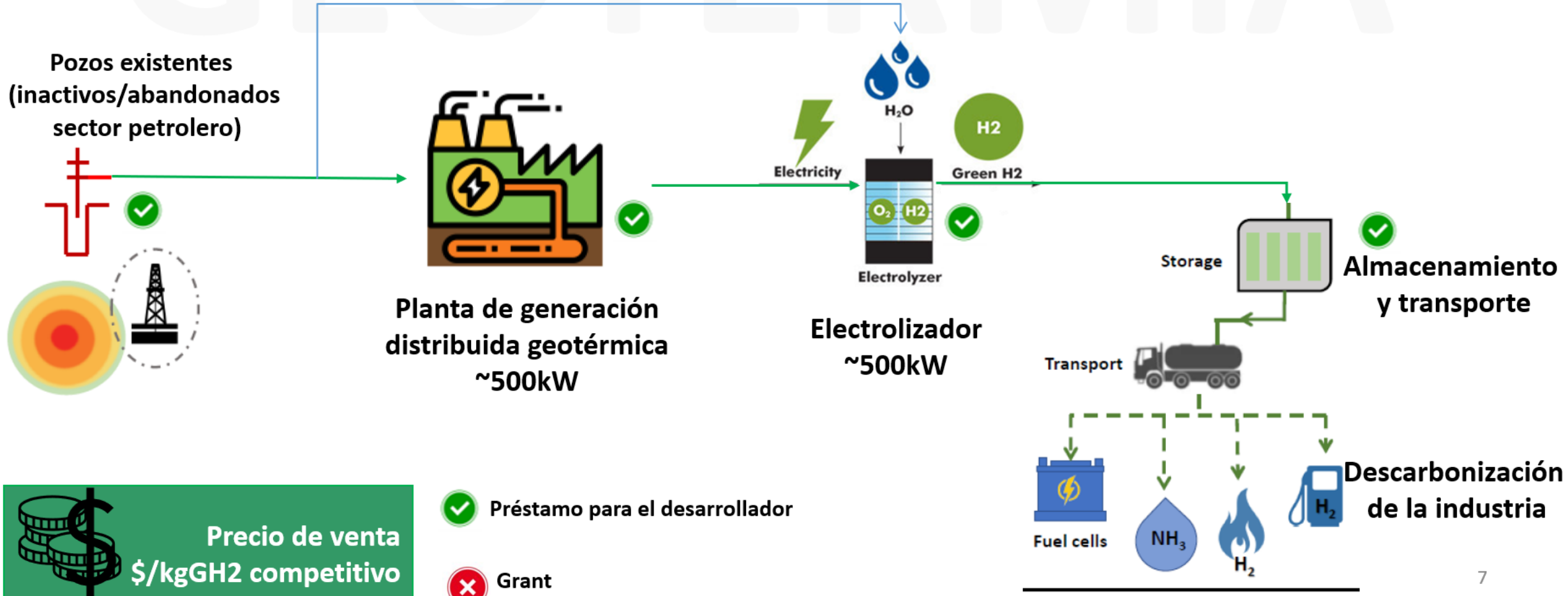
Hydrogen Production as part of the EU Hydrogen Mobility Europe Project.


JARÐHITAGARÐUR
ON POWER
HELLISHEIÐI POWER STATION
CARBON DIOXIDE
ELECTRICITY
HOT WATER
GEOTHERMAL WATER
CUSTOMERS
GEOTHERMAL PARK
106 ha land
ELECTRICITY
HOT WATER
GEOTHERMAL WATER
COLD WATER
Hydrogen
BOREHOLE
GEOTHERMAL GAS
STEAM
GEOTHERMAL WATER
COLD WATER
CARBFIX
250 - 300 °C
1000 l/sek

ST.KITTS & NEVIS
MONTSERRAT
GUADELOUPE
17
DOMINICA
ST. VINCENT & GRENADINES
MÉXICO
926 MW
1 Cerro Prieto - 570 MW
2 Las Tres Virgenes - 10 MW
3 Domo San Pedro - 25 MW
4 Los Azufres - 225 MW
5 Los Humeros - 95.6 MW
GUATEMALA
49 MW
6 Amatitlan - 25 MW
7 Zunil - 24 MW
EL SALVADOR
204 MW
8 Ahuachapan - 95 MW
9 Berlin - 109 MW
HONDURAS
35 MW
10 Platanares - 35 MW
NICARAGUA
150 MW
11 San Jacinto- Tizate - 72 MW
12 Momotombo - 78 MW
COSTA RICA
262 MW
13 Las Pailas - 97 MW
14 Miravalles - 165 MW
BOLIVIA
0 MW
15 Poject al Laguna Colorada - 100 MW
CHILE
48 MW
16 Cerro Pabellon Plant - 48 MW
GUADELOUPE (France)
15 MW
17 Bouillante - 15 MW


Harnessing hydrogen to accelerate the energy transition in Latin America and the Caribbean
Countries where the IDB is supporting hydrogen industry through dialogues, technical assistance, pilots, or investment.
Honduras
El Salvador
Costa Rica
Trinidad and Tobago
Colombia
Panama
Brazil
Peru
Bolivia
Paraguay
Chile
Uruguay
Argentina
IDB

PRODUCCIÓN DE HIDRÓGENO VERDE A PARTIR DE GEOTERMIA EN POZOS INACTIVOS



Precio de venta $/kgGH2 competitivo

Préstamo para el desarrollador

Grant

Needless to say …

INTERNATIONAL GEOTHERMAL ASSOCIATION

IGA

iga@lovegeothermal.org