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REGA FORUM 2002

SOLAR TOWERS

**POWER STATION
DIFFERENTIATION
WITHIN THE
SUN WIND WATER
POWER GENERATOR MIX**

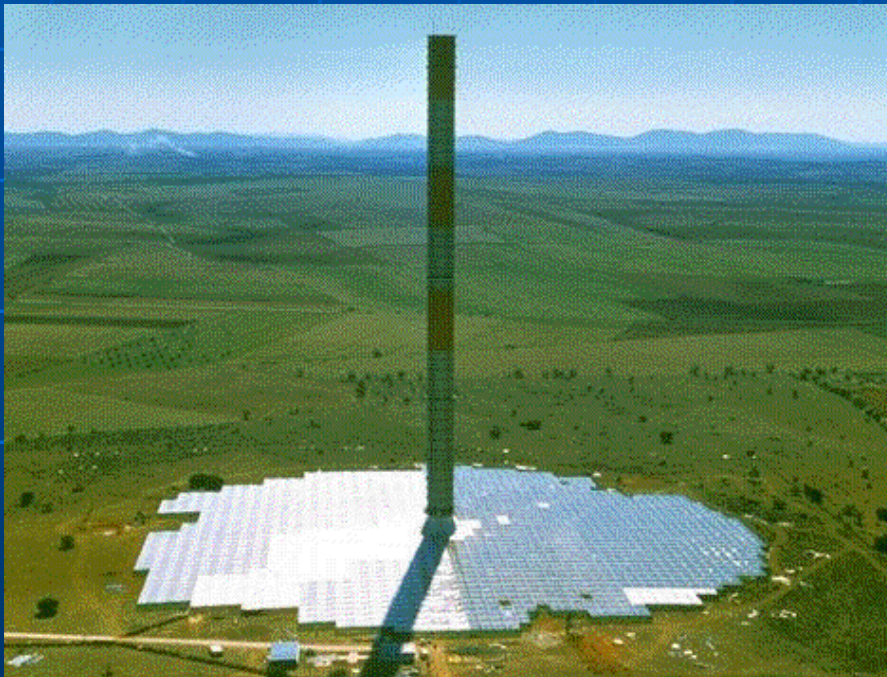


Solar Tower Dimensions

- **Tower** 1,000 meters, 130 meter diameter
- **Concrete** 700,000 m³
- **Collector** 7 km diameter (38 million m²)
glass/polycarbonate/plastic film
- **Turbines** 32 X 6.25 MW
- **Land** 10,000 hectares (10Km x 10Km)
- **Construction** 34 months
- **Jobs** 2700+ people



Pilot Plant Manzanares, Spain





Critical Renewable Technology Issues

- Scale
- Quality of energy – margins
- Capital cost per MegaWatt
- Finance, project & construction management
- Engineering and technology
- Efficiency
- Environmental benefits



Large-Scale Generation Benefits

- Substantial delivery of MRET objective
- Abate 830,000+ tonnes GHGs annually
- Large critical mass – 200MW output
- Access to infrastructure debt finance
- Potential government support
- Delivers on policy principals of ESD



Solar Tower Advantages

- Reliable output
- Generation mirrors user load curve
- Environmentally responsible investment
- Ethical investment
- Reliable cash flow generation
- Large-scale renewable power station
- Technology not complex
- Icon status



Sunraysia – Preferred Home Solar Tower Project

- World's first Solar Tower – destination and energy icon
- 200 MW of Clean Green Renewable electricity from single power station – enough to power 200,000 households
- Ten times larger than any solar/wind project
- One of Australia's largest infrastructure projects



Sunraysia Site Details

- Option to purchase 9517ha, Buronga NSW
- Junction of the Arumpo and Pooncarie Roads – 20Km North East of Buronga.
- Land is Grazing Lease in Perpetuity – controlled by DLWC in Wentworth Shire



Benefits to Sunraysia Region

- **Up to 2700 jobs over 3 years**
 - 1000 Base Workforce - Peak at 2700 between 12 and 18 month –
 - Solar Tower operation - 39 first year of operation – 15 on ongoing jobs
- **Tourism**
 - 80,000 tourists expected
 - 15 New Tourism jobs at solar tower
- **New Agribusiness utilising the collector area**
 - New Agribusiness jobs at solar tower
- **Communications/Telecommunications opportunity from tower**
 - Radio – Television – Mobile – Emergency Services
- **Opportunities for local Aboriginal People**
 - Job Opportunities: Construction, Tourism, Agribusiness, Maintenance, Fauna/Flora Care/Management, Cultural Exhibitions/Demonstrations – Visitors Centre
- **Economic Multiplier Effect Benefits for local businesses**
 - New workers and families living and spending in the area.
 - EVM will purchase local materials and services
 - Additional Tourists staying, eating, going to other tourist attraction in the area
- **Solar Tower will be an Australian Icon in Sunraysia Region**



Benefits to Project

- **Access to Grid**
 - Lower Capital Cost
 - Lower Line Losses = more revenue
- **Access to Infrastructure**
 - Rail, Roads, Airport
 - Accommodation and amenity for workers
 - Concrete making facilities
- **Increased Non-Energy Revenue Streams**
 - Tourism
 - Agribusiness
 - Telecommunications
 - Salinity Mitigation/Salt mining



Non-Energy Business Opportunities

■ **Tourism**

- Observation Deck/Tours
- Souvenir Shop/Cafe

■ **Agribusiness**

- Growing and Drying (fruit, vegetables and flowers)
- Fish Farming

■ **Communications**

- Telecommunications – Mobile, Fixed and Data
- Radio and Television
- Emergency Services

■ **Salinity Mitigation**

- EC Credits
- Salt and Mineral Collection



Project Timelines

- Optimisation Phase – Sept 01 to April 02 (on time)
- Design Phase – May 02 to September 02
- Tender/Partnering Negotiations – Ongoing
- Financial Close – Dec 02
- Site Preparation – January 03
- Construction – April 03 to March 06



Solar Tower Project Socio-Economic Benefits

- Regional employment - 2700 + jobs
- Infrastructure development
- \$1.5 - \$2Billion flow-on economic benefit
- Leadership in renewable energy
- Exportable intellectual knowledge
- Diverse add-on industry opportunities



Project Optimisation Process

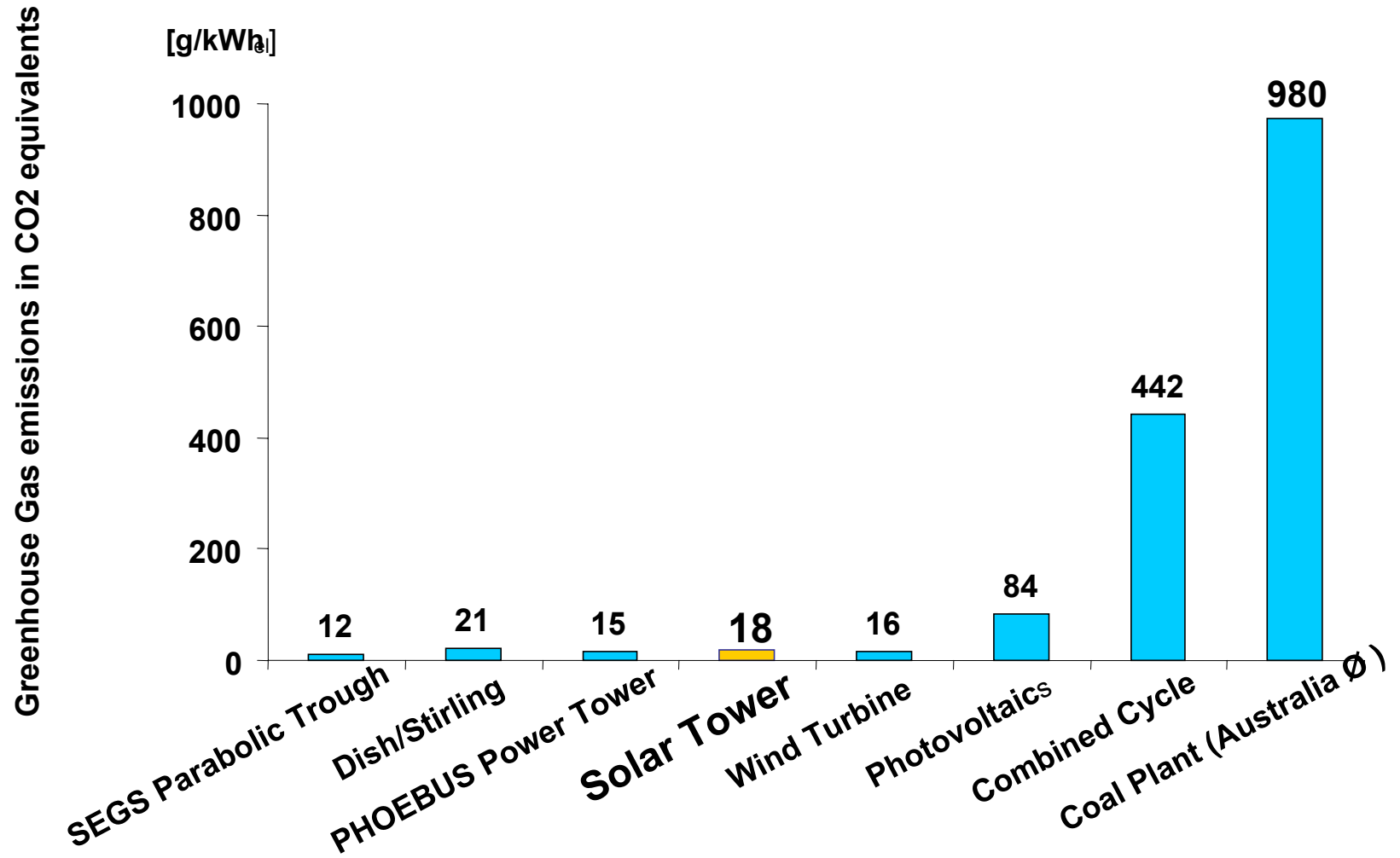
- Design modification to Australian conditions
- Project cost reduction via materials and design modifications
- Financial Modeling



Solar Tower Financing

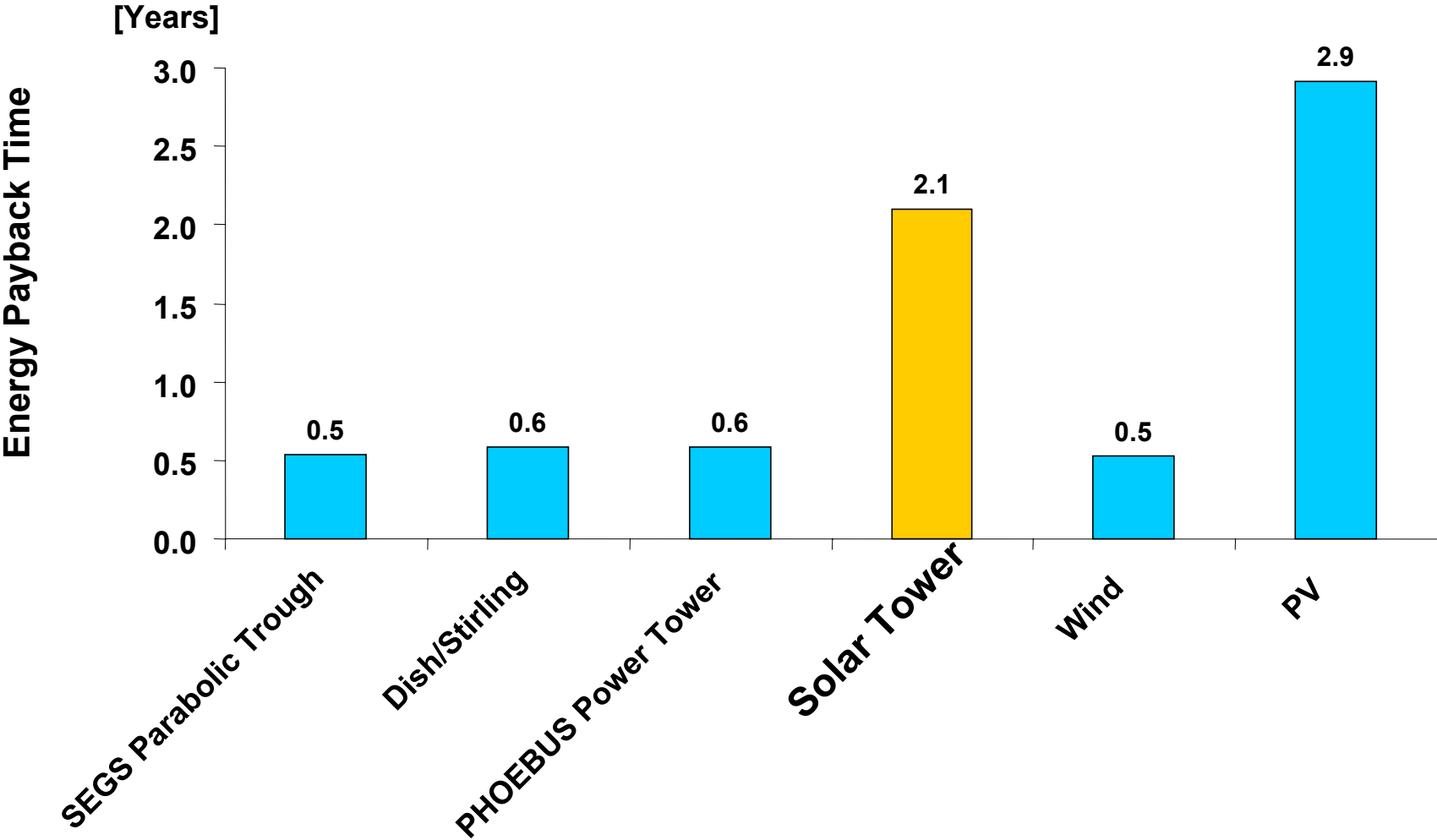
- Construction
- Power Take Out
- Suppliers
- Consortium/Alliance
- Bankability
- Govt. support
- RECs
- Carbon Credit Trading Instrument

Greenhouse Gas Emissions

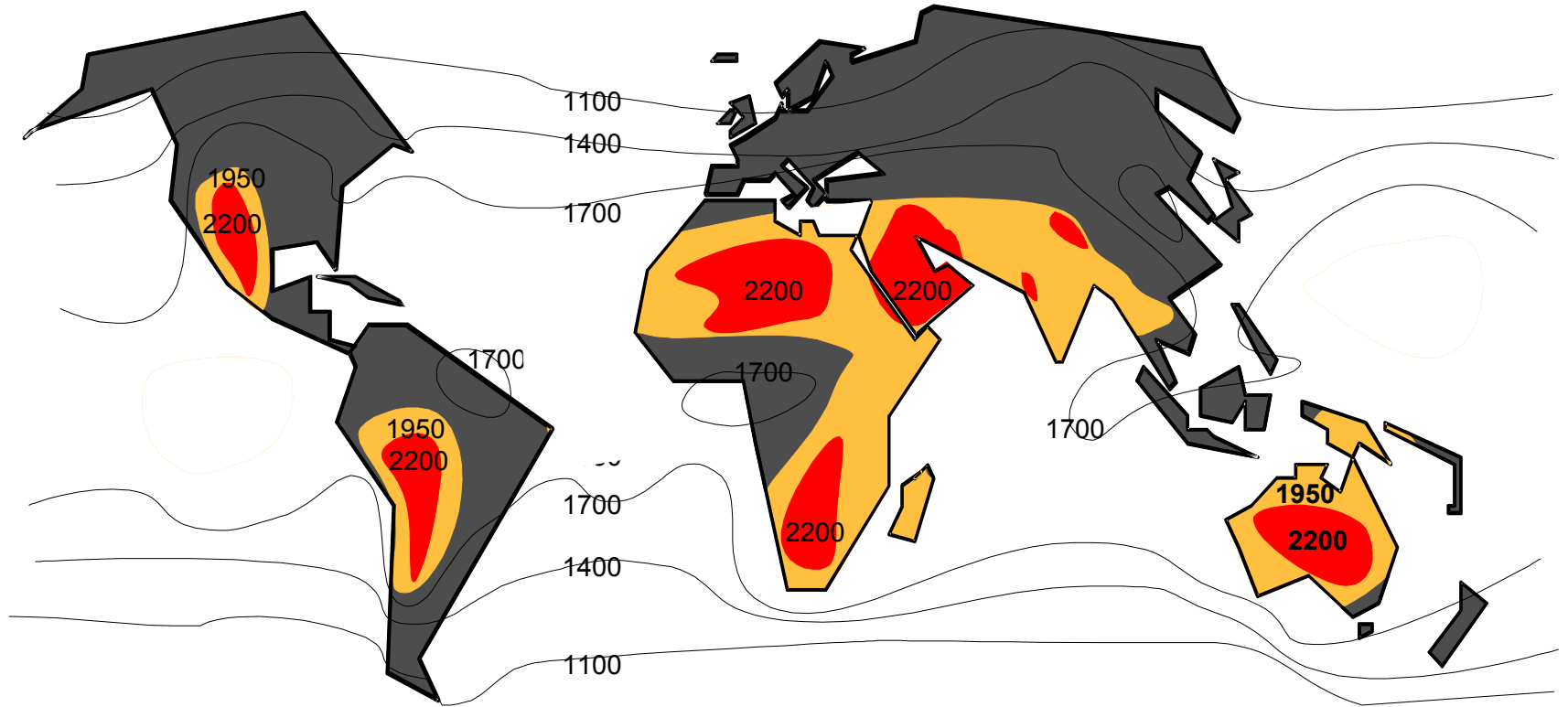


Source: Weinrebe, G.: "Greenhouse Gas Mitigation with Solar Thermal Power Plants", Proceedings of the PowerGen Europe 1999 Conference, Frankfurt, Germany, June 1-3

Energy Payback Time



Global Solar Radiation

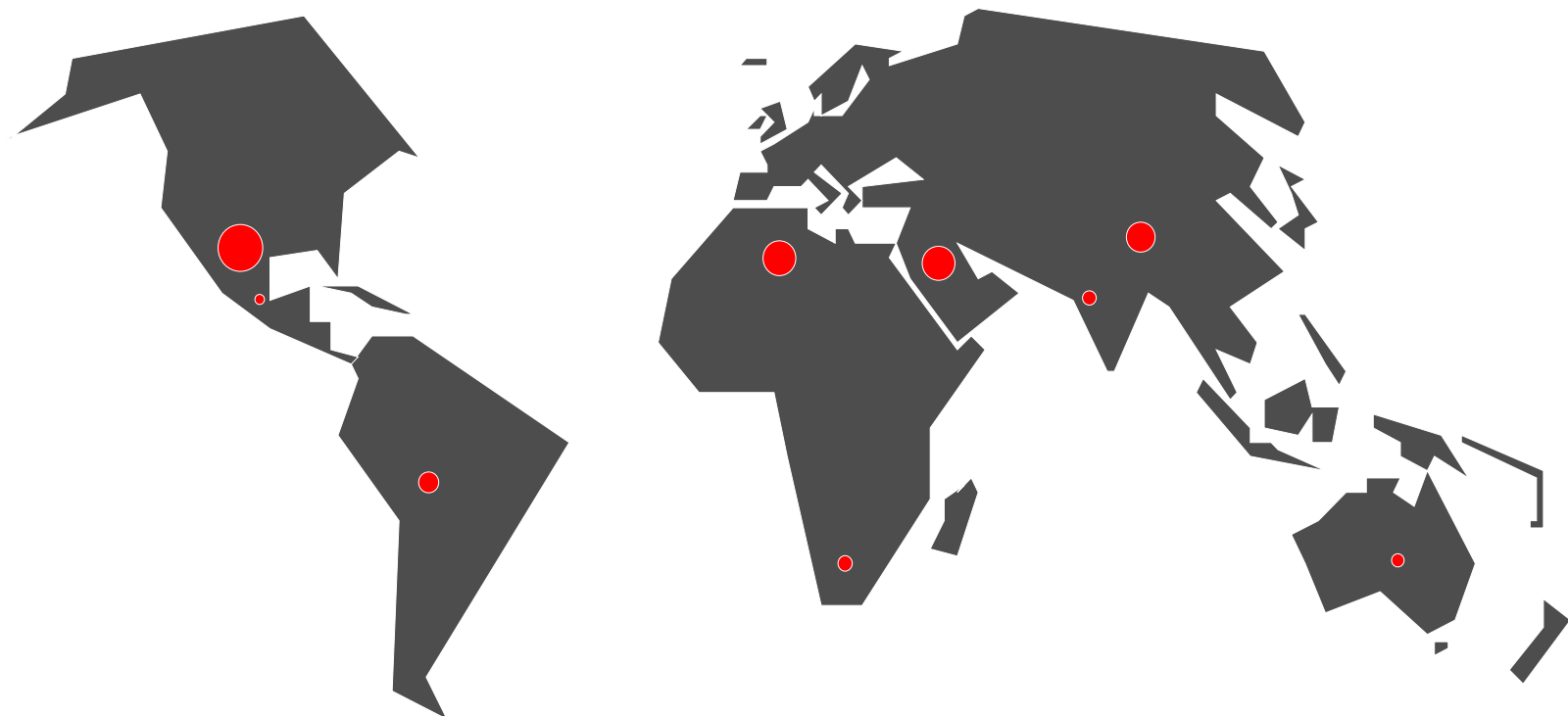


Suitability for Solar Tower Electricity Generation

- Solar Global Radiation > 2200 kWh/m²a **very good - qualified**
- Solar Global Radiation > 1950 kWh/m²a **good - qualified**

There is enough...

Area needed to supply today total gross energy consumption using Solar Towers in regions where solar radiation is suitable.



Area needed for the Supply for the Gross Energy Consumption of the World $d=2000$ km
Europe $d=950$ km
Germany $d=440$ km

Australia: $d \approx 240$ km





Summary

- Breakthrough Clean Renewable Technology
- Optimisation proves commercial viability
- Large-scale
- Listed company – controlled locally
- First round investment successful
- Increased market awareness
- Ethical and sustainable investment