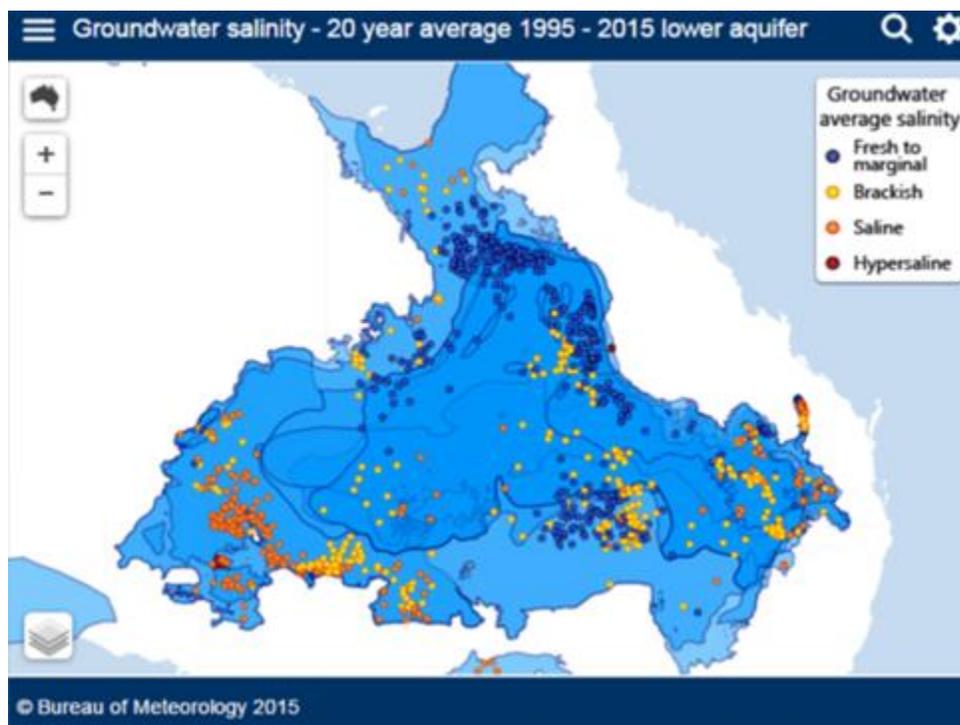


## Solar Powered Water Purification/Distillation Technology and Infrastructure Field Assessment in Identified Locations in Australian States & Territories with Focus on:

### Use & Applications for Strengthening of Drought Resilience and Future Water Security for Farmers and Rural and Regional Australian Communities

The devastating impacts of the current and prolonged severe drought conditions in Australia highlight the importance of securing water availability for farmers and rural and regional communities, particularly in the light of Bureau of Meteorology indications of “an ongoing trend towards more frequent and severe droughts in most parts of Australia”. (Bureau of Meteorology & CSIRO 2018) There are townships in Australia which are predicted to run out of water by mid-2020.

“Australia’s ground water quality has been noted to be steadily decreasing due to increase in salinity levels in both the lower and upper aquifers. Whilst the levels vary from fresh to brackish to hyper saline, water fit for human consumption is reducing in overall available volume. Varying concentrations of salts in water may still enable water to be used for agricultural and industrial applications. However, bringing saline water to the surface can create significant issues related to the increase of surface salinity levels.”

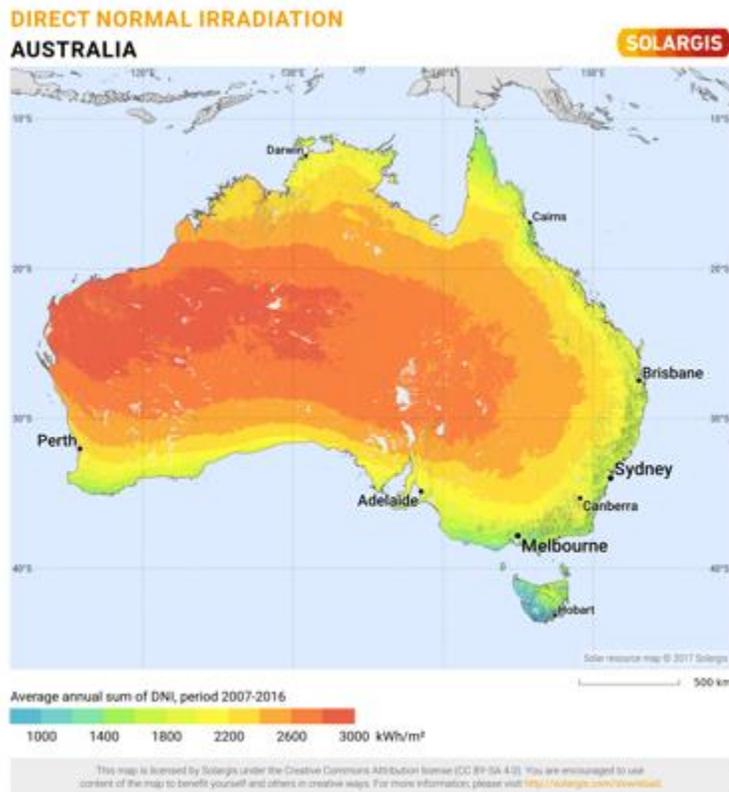


Further data of salinity levels in the 16,500 groundwater bores that are measured in Australia can be found using the Australian Bureau of Meteorology’s Groundwater Explorer tool found at:

<http://www.bom.gov.au/water/groundwater/explorer>

With surface water supplies diminishing or completely dry, farmers are faced with need to source groundwater. Some groundwater water supplies are unsuitable for stock and human potable use or for food production.

The high operational energy costs of reverse osmosis (RO) water purification technology may preclude installation of that infrastructure. Alternative technology with lower operational energy costs needs to be sourced.



Australia has some of the best average annual irradiance levels in the world.

It is proposed that solar powered water purification technology and infrastructure will afford significant benefits and advantages, particularly when significant operational energy cost savings, compared with other available technologies (e.g. reverse osmosis) are taken into account.

A Field Assessment could facilitate a comparative study of use of currently available Solar Powered Water Purification/Distillation technology infrastructure compared with various other existing water distillation/processing technologies regarding, for example:

- Range of source water/wastewater/sludge/contaminated water purification capabilities;
- Relative Accessibility of Water Supplies for Farmers and Rural and Regional Communities.

- Installation, Operation and Maintenance Costs;
- Energy/Fuel Cost Comparisons With Similar Capability Water Purification/Distillation Technologies Available in Australia;
- Water Processing Capabilities including, e.g. volumes (kl/day);
- Consistent Purification Capability (ppm);
- Concentrations of Waste Sludge/ Residues, and Toxic Residue Volumes, which require handling, transport, and safe disposal at end of processing;
- Scalability;
- Simplicity to Install e.g. where saline/hyper saline groundwater or seawater is to be used;
- Land Area required;'
- Groundworks required;
- Embedded Environmental Sustainability credentials;
- Environmental impacts, e.g. Soil and Seed Bed Disturbance, Leaching of chemicals/toxic chemicals risks.
- Efficiencies of Irradiance Utilisation re: Site Location;
- Impacts on Processing Capability During Maintenance.
- Maintenance Requirements and Frequency.
- Maintenance Costs;
- Level of Skills Sets Required for Operation and Maintenance;
- OH& S considerations;
- Ability to be located anywhere, including remote locations;
- Ability to be Disassembled and Relocated if required;
- Infrastructure Component Recyclability;
- Transportability;
- Estimated Infrastructure Life Span;
- Frequency of any component parts maintenance requirements and costs;
- Ability to withstand sustained high force winds;
- Cost Efficiencies for Farmers and Rural and Regional Community Applications;
- Accessibility for Emergency Use e.g. RFA, Natural Disaster Management, Emergency Response.
- Australian Manufacture and Supply.

Australian Government Future Drought Fund support for Field Assessments in identified sites would provide farmers and local government authorities with data which could be used to determine plans and strategies for building and strengthening drought resilience and future water security.

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