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Laws for solar energy in Australia



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Leyes para la energía solar en Australia



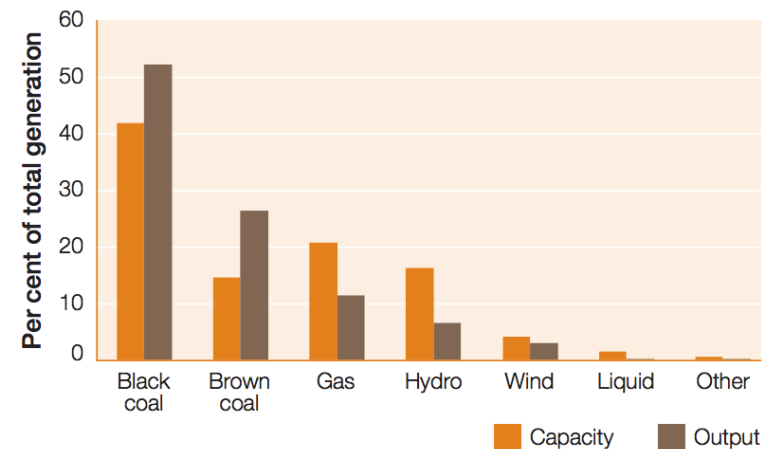
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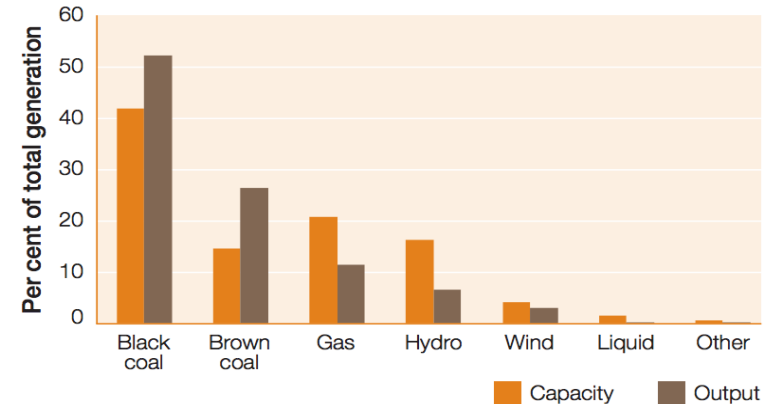
- Australia has the highest per capita GHG emissions among OECD countries
- Electricity sector is largest single source of emissions: responsible for ~35% of total emissions
- ~90% of electricity in Australia is generated from the combustion of fossil fuels (mainly coal)
- Important to move to low and zero-emissions power generation

Registered generation, by fuel source, 2011–12



- Australia tiene las mas altas emisiones de GHC per cápita entre los países del OECD
- El sector eléctrico produce las mayores cantidades de emisiones: responsable de ~ El 35% del total de las emisiones
- El 90% de la electricidad en Australia se genera mediante combustibles fósiles (especialmente carbón)
- Es importante cambiar hacia una generación de energía de | o cero emisiones

Registered generation, by fuel source, 2011–12



- Australia has abundant solar resources
- Technically feasible for renewables to meet 100% of Australia's electricity needs by 2030

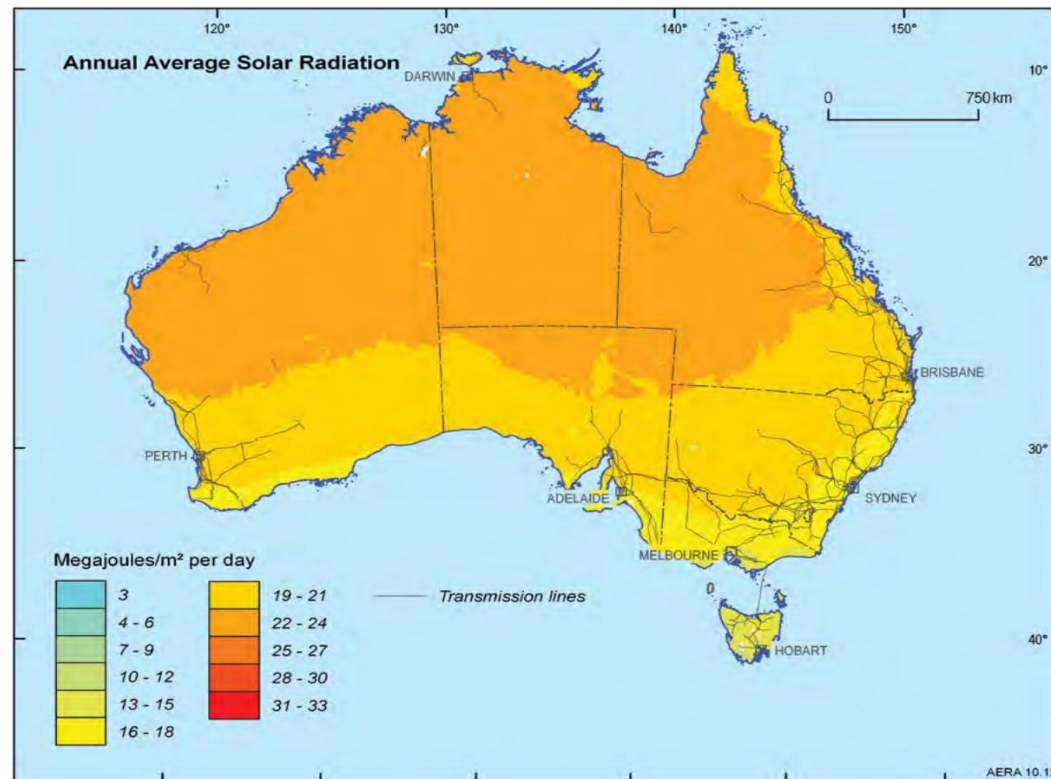



Figure 5: Map of Australia showing annual average solar radiation and locations of transmission line infrastructure in Australia.

Source:  © Commonwealth of Australia (Geoscience Australia), 2013

- Australia tiene recursos solares abundantes
- Es técnicamente posible que la energía renovable cumpla el 100% de las necesidades Australianas de energía antes de 2030

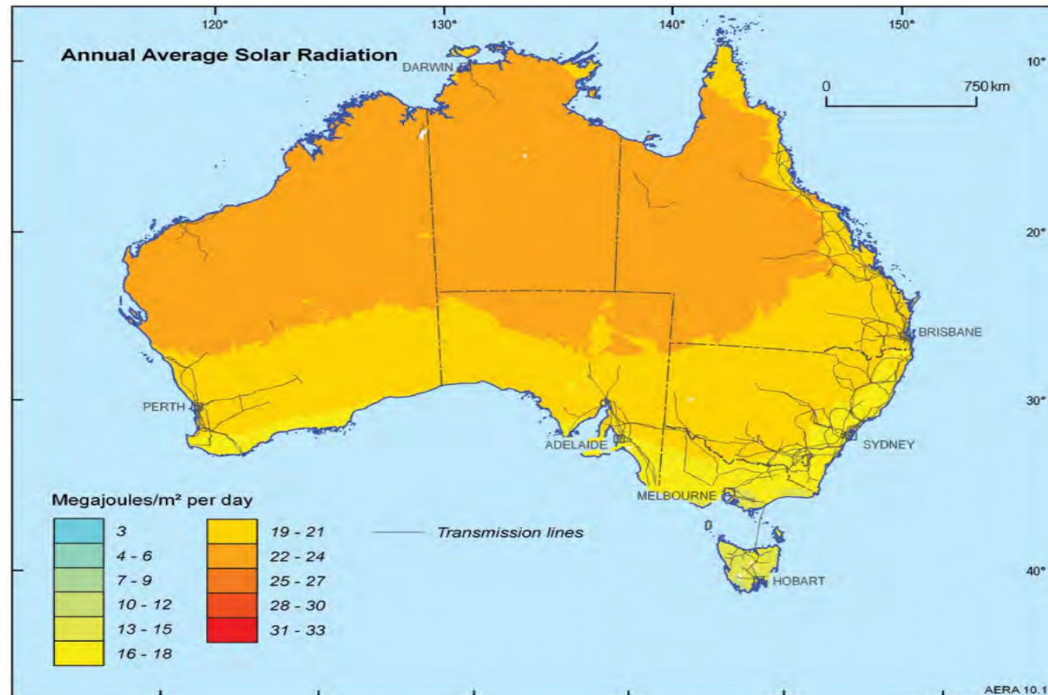

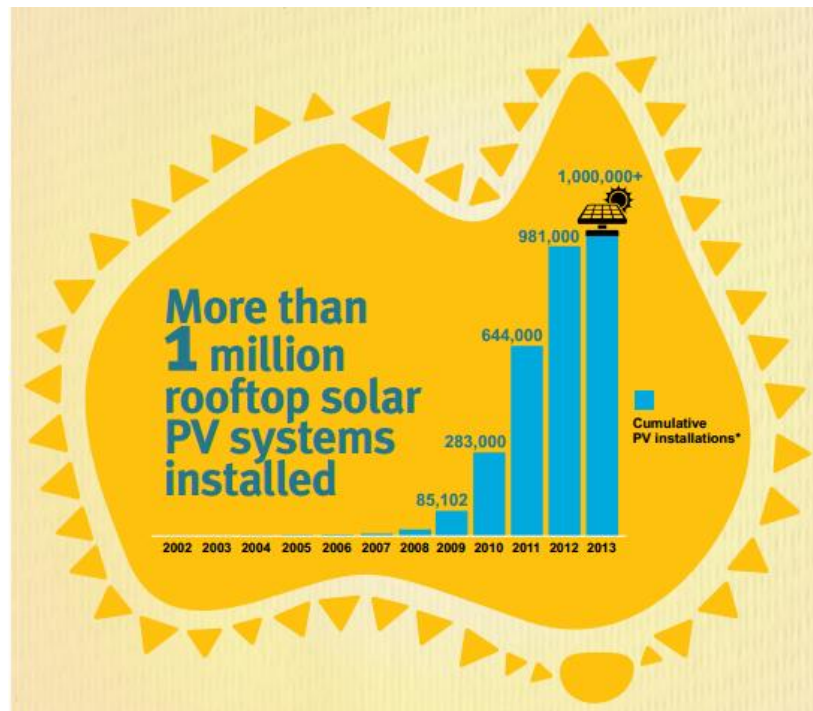


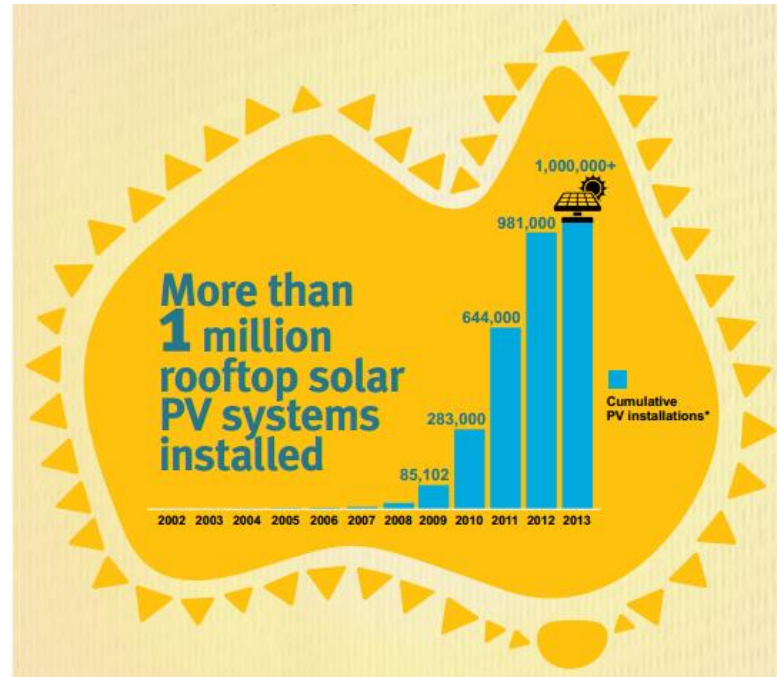
Figure 5: Map of Australia showing annual average solar radiation and locations of transmission line infrastructure in Australia.

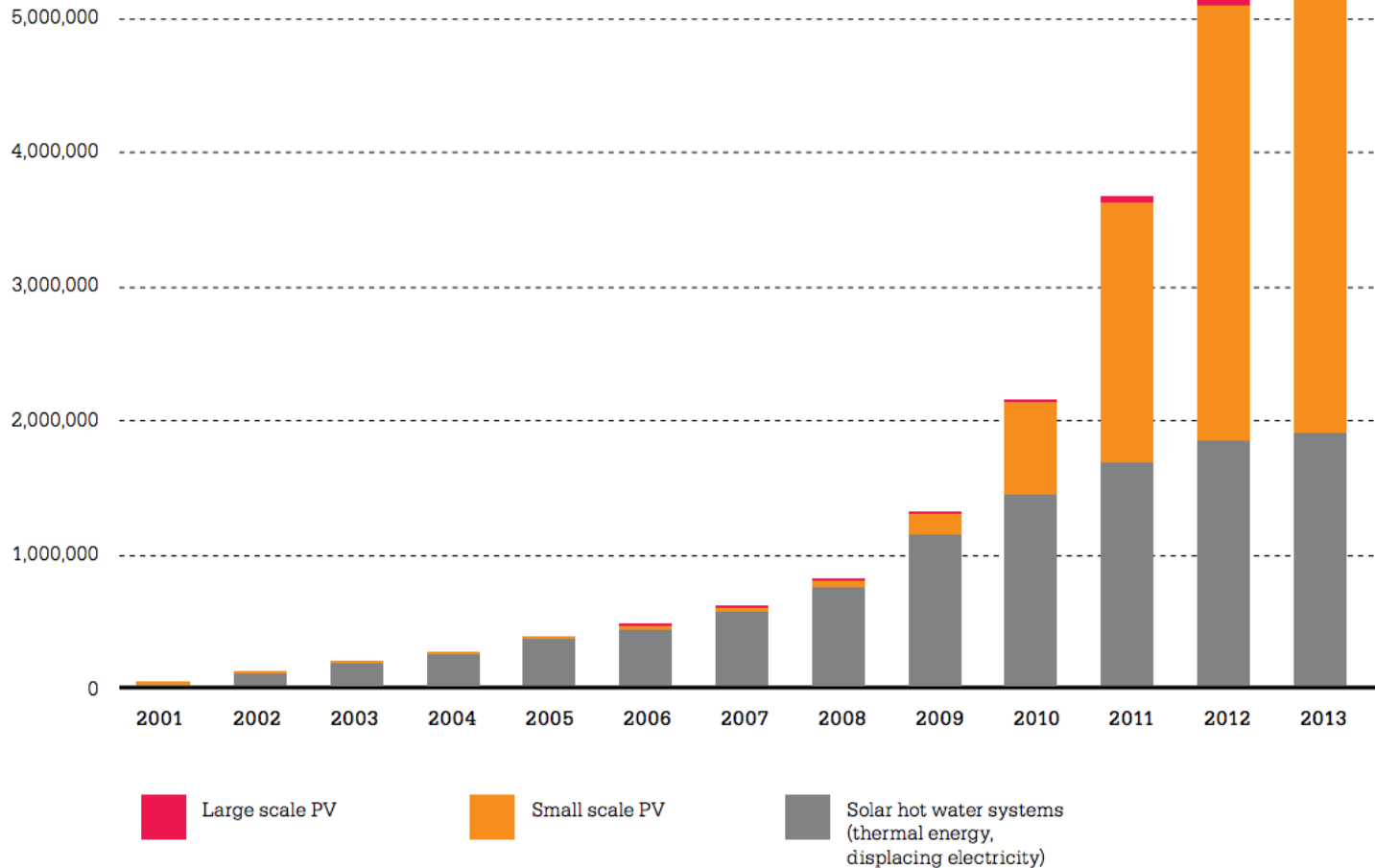
Source:  © Commonwealth of Australia (Geoscience Australia), 2013

- Small-scale solar (mainly solar photovoltaic (PV) panels)
- Rapid uptake of solar PV: from 8,000 to 1,000,000 in 5 years.

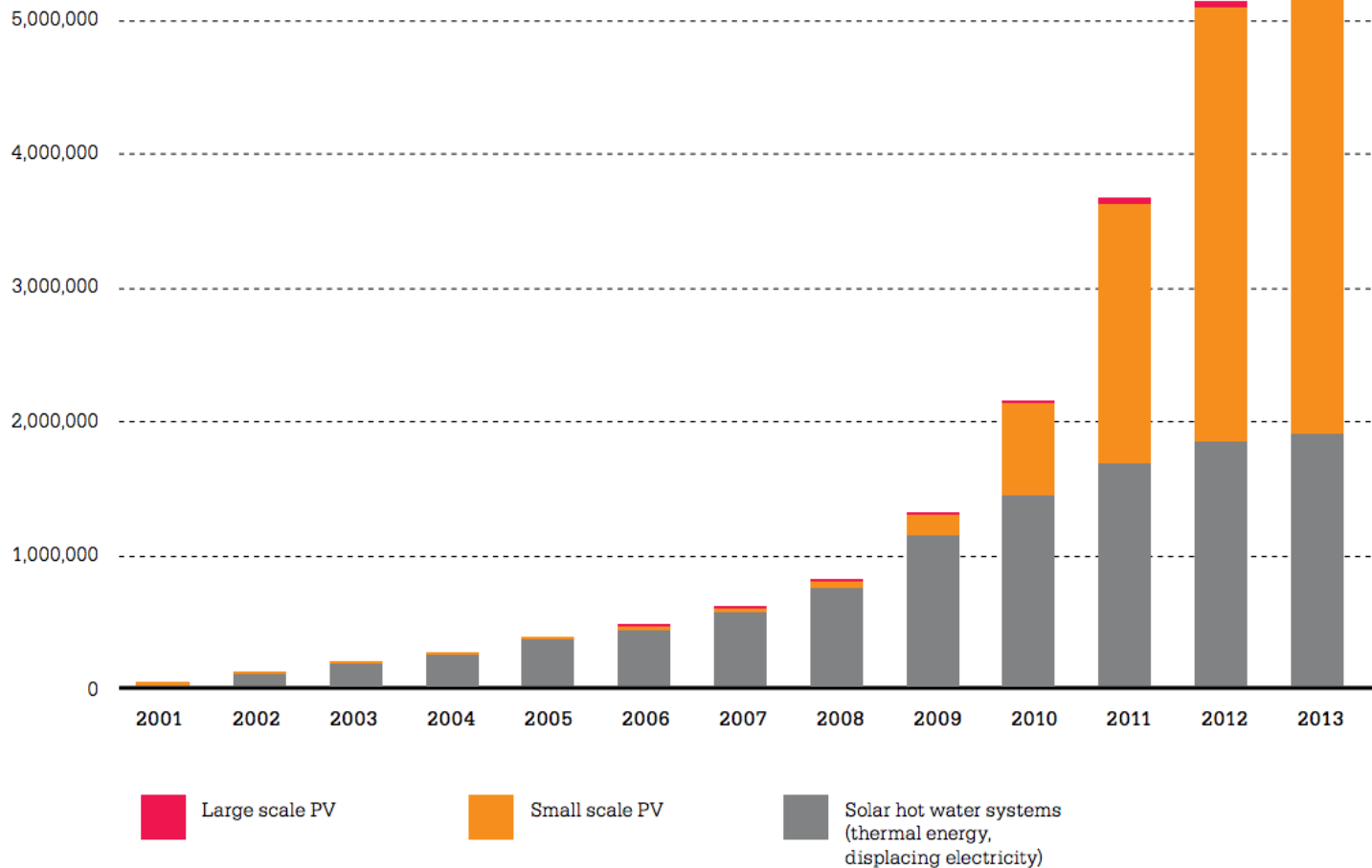


- Tecnología solar de pequeña escala (por la mayor parte paneles solar fotovoltaicos (PV))
- Crecimiento rápido de uso solar PV: desde 8,000 a 1,000,000 en 5 años.





Annual solar energy generated in Australia 2001–2013, measured in MWh.



Energía solar generada en Australia por año
2001–2013, medida en MWh.

- Large-scale solar:
 - Solar thermal
 - 1 project (no storage capacity)
 - Solar photovoltaic (PV)
 - Two major projects to be developed
 - Three medium-scale solar PV farms to be developed
 - Able to power 10,000 homes



Artist's impression of the Nyngan solar plant.

- Tecnología solar de gran escala:
 - Termo-solar
 - Un proyecto (sin almacenamiento de energía)
 - Solar fotovoltaico (PV)
 - Dos grandes proyectos en desarrollo
 - Tres campos solares PV de escala media a desarrollar
 - Puede dar energía a 10,000 casas



Artist's impression of the Nyngan solar plant.

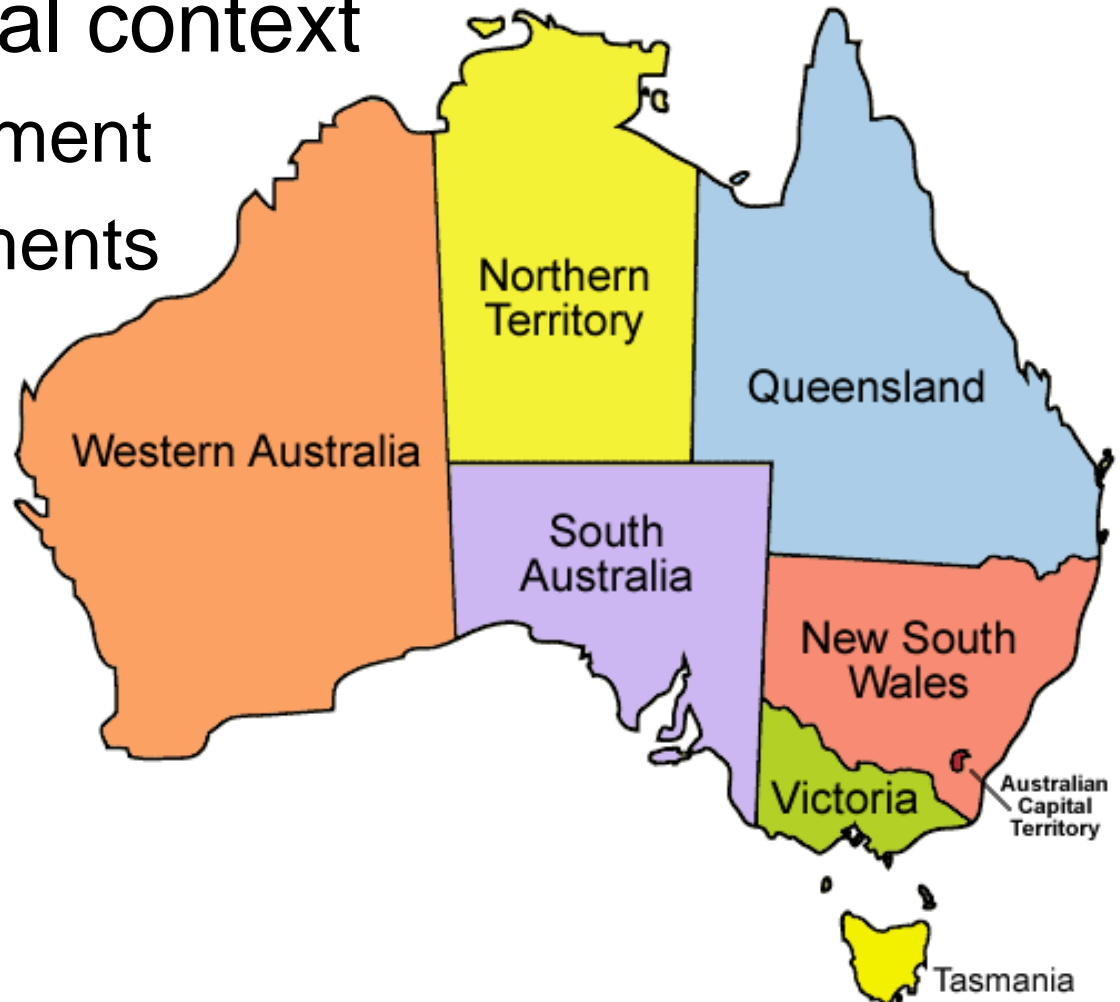


- Drivers for solar energy development
 - Cost: rapid reduction in cost of rooftop solar panels
 - Policy instruments:
 - Renewable Energy Target (federal)
 - Feed-in tariffs (state-based)



- Incentivos para el desarrollo de la energía solar
 - Costo: reducción rápida del costo de paneles solares para techos
 - Instrumentos políticos:
 - Renewable Energy Target (Federal)
 - Feed-in tariffs (por Estado)

- Australian federal context
 - Federal government
 - 6 state governments
 - 2 territory governments



- Contexto Federal Australiano

- Gobierno Federal
- 6 Estados
- 2 Territorios





Policy instrument	Type of mechanism	Jurisdiction
Renewable energy target	Quota scheme	Federal
Australian Renewable Energy Agency	Grants, funding	Federal
Clean Energy Finance Corporation	Public financing	Federal
Carbon Pricing Mechanism	Hybrid price/volume instrument (\$/tonne CO₂-e)	Federal
Feed-in tariff scheme	Price scheme (\$/MWh)	State



Instrumento político	Tipo de mecanismo	Jurisdicción
Renewable energy target	Esquema de cuota	Federal
Australian Renewable Energy Agency	Financiamiento, bonos	Federal
Clean Energy Finance Corporation	Financiamiento público	Federal
Carbon Pricing Mechanism	Instrumento híbrido de precio/volumen (\$/tonne CO₂-e)	Federal
Feed-in tariff scheme	Esquema de precio (\$/MWh)	Estatal



- Putting a price on carbon makes fossil fuel energy projects more expensive, and renewable energy relatively less expensive.
 - Shifts energy investment towards renewables
- Technology-neutral policy mechanism
 - No specific support for solar energy
 - Up to the market to determine the cheapest way of producing low-emissions electricity.
- Revenue from the sale of units to fund renewable energy through the Clean Energy Finance Corporation.



- El poner un precio al carbón hace que los proyectos de energía de combustibles fósiles sean mas caros, y la energía renovable más barata relativamente.
 - Cambios de inversión en energía hacia renovables
- Mecanismo político tecnológicamente neutral
 - No existe apoyo específico para energía solar
 - El mercado determina la manera mas económica de producir energía de bajas emisiones.
- Ingresos por la venta de unidades para financiar la energía renovable por la Clean Energy Finance Corporation.



Renewable Energy Target (RET).

2020 target: at least 20% of Australia's electricity is to be generated from renewable energy sources

- 41,000 GWh to be generated from large-scale renewable energy
 - Supports *all* kinds of renewable energy: mostly wind energy.
- 4,000GWh to be generated by Small-scale Renewable Energy technologies.



Renewable Energy Target (RET).

Meta de 2020: por lo menos 20% de la electricidad Australiana será generado por fuentes de energía renovable

- 41,000 GWh será generado de energía renovable de larga escala
 - Incluye *todos* tipos de energía renovable: por mayora parte energía eólica.
- 4,000GWh será generado por tecnologías de energía renovable de pequeña escala.



Clean Energy Finance Corporation (CEFC)

- \$10 billion over 5 years to encourage private financing of renewable energy technologies

Australian Renewable Energy Agency (ARENA)

- \$3 billion to 2022 to fund renewable energy projects and related research
 - Funding two major solar power stations (\$166.7 mil)
 - <http://www.arena.gov.au/programs/projects/index.html> for a list of all solar projects
- Granted in accordance with a funding strategy <http://www.arena.gov.au/about/funding.html>



Clean Energy Finance Corporation (CEFC)

- \$10 billón a través de 5 años para fomentar el financiamiento privado de tecnologías de energía renovable

Australian Renewable Energy Agency (ARENA)

- \$3 billón hasta 2022 para financiar proyectos de energía renovable e investigación relacionado
 - Financiamiento de dos grandes plantas de energía solar (\$166.7 mil)
 - <http://www.arena.gov.au/programs/projects/index.html> para una lista de todos los proyectos de energía solar
- Según una estrategia de financiamiento
<http://www.arena.gov.au/about/funding.html>



- **State solar feed-in tariffs**

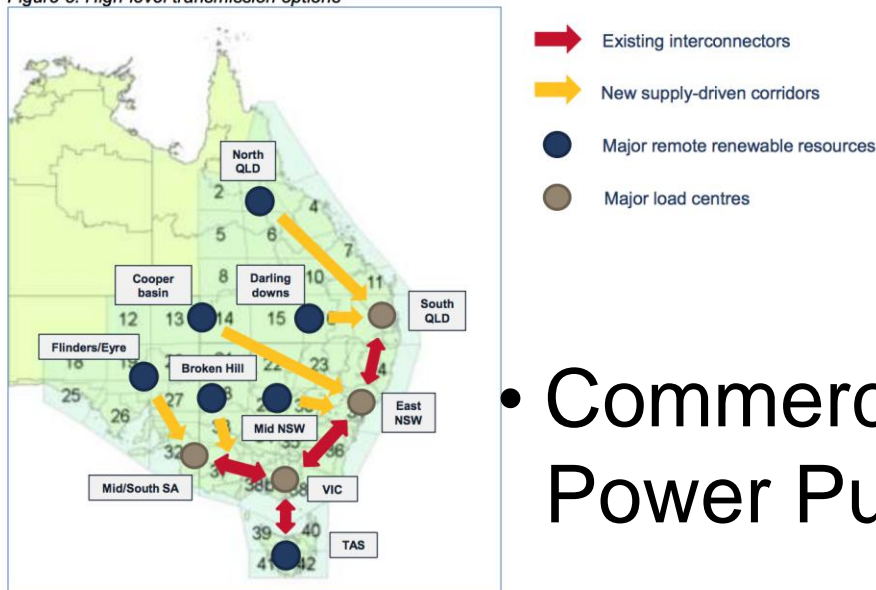
- Generally for rooftop solar
 - Australian Capital Territory has a large-scale feed-in tariff
- Very common in many states
- Currently being suspended due to ‘expense’
- ‘Fair’ price?
- Balance between
 - benefits for owner and cost of electricity to other consumers
 - Energy value: value of electricity generated
 - Network value: lower grid maintenance costs
 - Externality value: reducing greenhouse emissions



- **Feed-in tariffs solar estatal**
 - Generalmente para solar de techos
 - Australian Capital Territory tiene un feed-in tariff de larga escala
 - Muy común varios estados
 - Actualmente suspendido por ‘costo’
 - Precio ‘justo’?
 - Balanza entre
 - Beneficios para dueño y costo de electricidad a otros consumidores
 - Valor de energía: valor de electricidad generado
 - Valor de red: bajos costos de mantención de red
 - Valor de externalidad: reduciendo gases de efectos invernadero (GEI)

- Legal barriers: national electricity law framework
 - Grid access
 - Transmission planning and investment

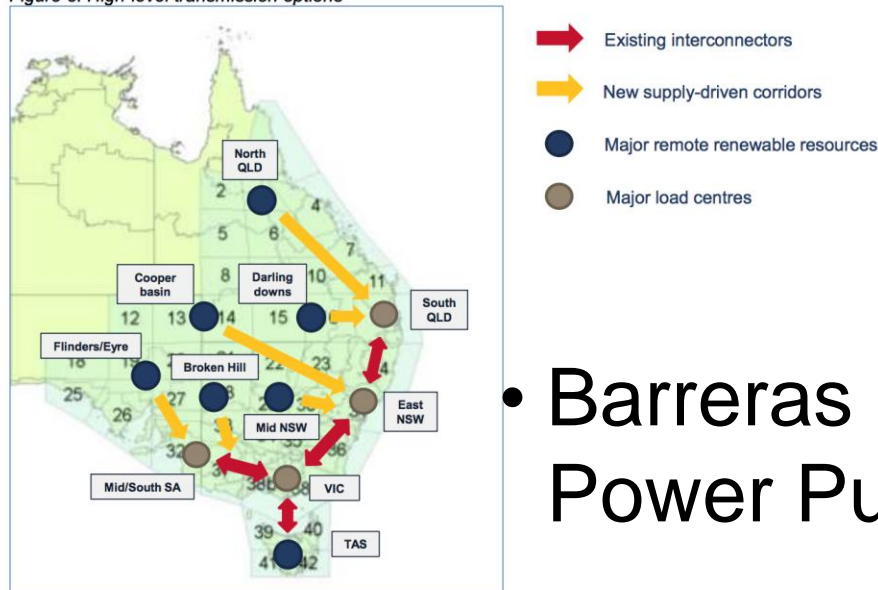
Figure 5: High-level transmission options



- Commercial barriers:
 Power Purchase Agreements

- Barreras legales: marco legal nacional de derecho de electricidad
 - Acceso al red
 - Planificación e inversión en transmisión

Figure 5: High-level transmission options



- Barreras comerciales:
Power Purchase Agreements



- Abbott government elected in Sept 2013
 - Policies include abolishing:
 - Carbon Pricing Mechanism
 - Clean Energy Finance Corporation
- Abbott government proposal – “direct action” funding
 - Solar Towns and Schools
 - Household solar support
 - \$500 rebate for installing solar panels and solar hot water systems.



- Gobierno de Abbott elegido en Sept 2013
 - Políticas incluyen abolir:
 - Carbon Pricing Mechanism (mecanismo de precio del carbon)
 - Clean Energy Finance Corporation
- Propuesta del Gobierno de Abbott – “direct action” financiamiento
 - Pueblos y colegios solares
 - Apoyo solar para domicilios
 - Bono de \$500 por instalar paneles solar y sistemas de agua caliente solar.



Climate Commission (2013) *The Critical Decade: Australia's future – solar energy*

<http://pandora.nla.gov.au/pan/136923/20130919-1415/climatecommission.gov.au/resources/commission-reports/index.html>

AEMO (2013) *100 per cent renewables study – modeling outcomes.*

Centre for Policy Development (2013) *Going Solar: Renewing Australia's electricity options.*



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