Electricity transmission planning

A perspective from Australia and the US
The ‘energy trilemma’ is common across the world, now with the added challenges of decentralisation and digitalisation.

Traditional one-way power flows...

...are increasingly replaced by complex flows:
- Large-scale renewables
- Renewables with storage
- Digitalisation
- Electric vehicles
- Distributed generation and storage
Countries are constrained in how they address these issues by the wider structure of the markets and the regulatory focus.

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<thead>
<tr>
<th>US ISO model</th>
<th>Europe</th>
<th>NEM</th>
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<tbody>
<tr>
<td>Nodal pricing</td>
<td>Zonal pricing (often whole country)...</td>
<td>Zonal pricing (Regional Reference Nodes)</td>
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<td>...but calls for LMPs (Poland?)</td>
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- Economic, reliability and public policy criteria
- Socio-economic welfare ...
- ...but some regulators focus on consumers (e.g. Ofgem)
- Socio-economic welfare ...
- ...historical shift away from consumer emphasis
US and Australia face the same problems of technological change and intermittency, but the approaches to planning differ significantly.
Market design can be adapted to improve outcomes, but policymakers need to make a concerted effort to deliver change.
Any questions?

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