

Technology new-build limits in the Integrated Resource Plan (IRP)

Workshop and stakeholder engagement

*CSIR Energy Centre
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Draft IRP 2018 investigated implications of unconstrained least-cost (IRP1) whilst keeping RE new-build limits for other scenarios

The scenarios studied included demand-growth scenarios where the impact of projected load demand on the energy mix was tested. Other key scenarios were based on varying the key input assumptions. These included the use of carbon budget instead of peak-plateau-decline as a strategy to reduce greenhouse gas emissions in electricity, the removal of annual build limits on renewable energy (unconstrained renewables) and varying the price of gas for power.

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- The scenario without RE annual build limits provides the least-cost option by 2030.

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- Imposing annual build limits on RE will not affect the total cumulative installed capacity and the energy mix for the period up to 2030. See Table 7 and Table 8 for details.

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Why new-build limits (on any technology)?

Could be various reasons

- Import/transport link limitations (infrastructure – ports, roads)
- Industry ability to deliver (skills, development, construction)
- Available Tx/Dx networks to evacuate power
- System security/stability

Draft IRP 2018 RE annual new-build limits have thusfar not been justified

New-build limits on technologies means no more than these limits are allowed to be built in any given year

Limits have been applied to two technologies - solar PV and wind (others unlimited)

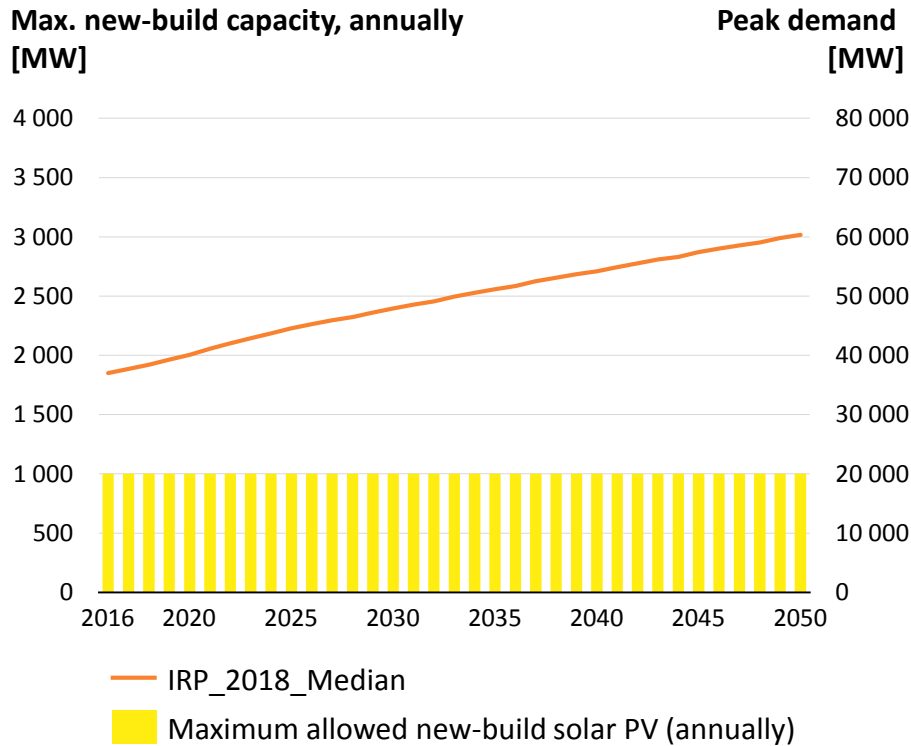
Limits are constant as power system grows

No justification provided for these limits

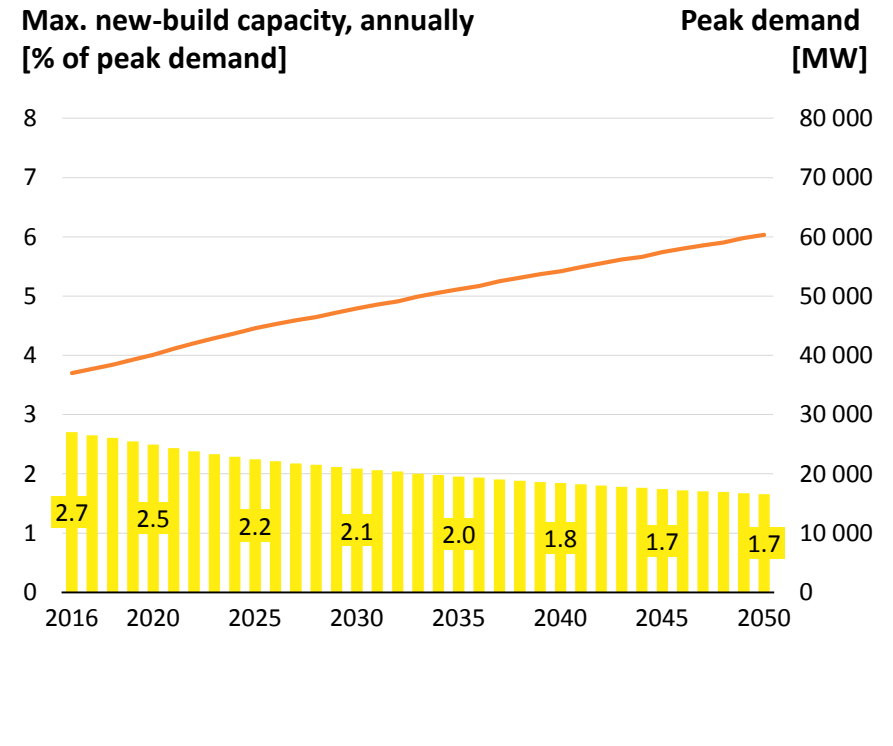


Solar PV is limited to 1000 MW annually resulting in a move from 2.5% of peak demand in 2020 to 1.7% of peak demand by 2050

Absolute

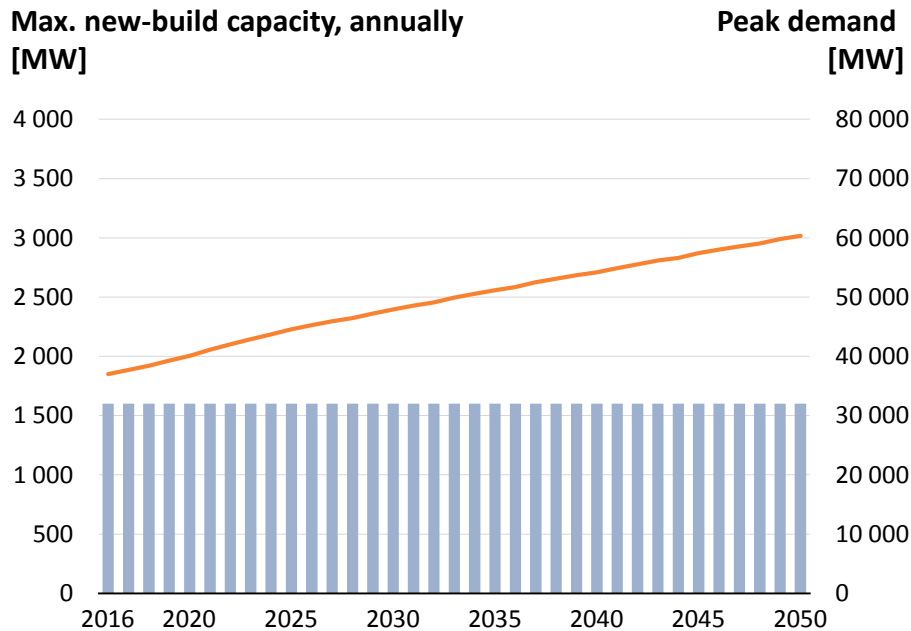


Relative

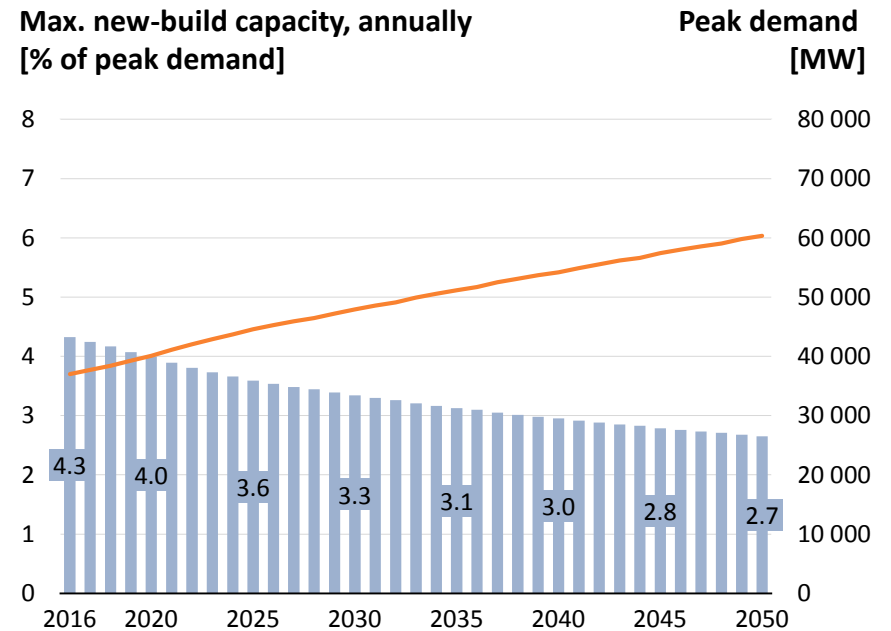


Wind is limited to 1600 MW annually resulting in a move from 4.0% of peak demand in 2020 to 2.7% of peak demand by 2050

Absolute



Relative

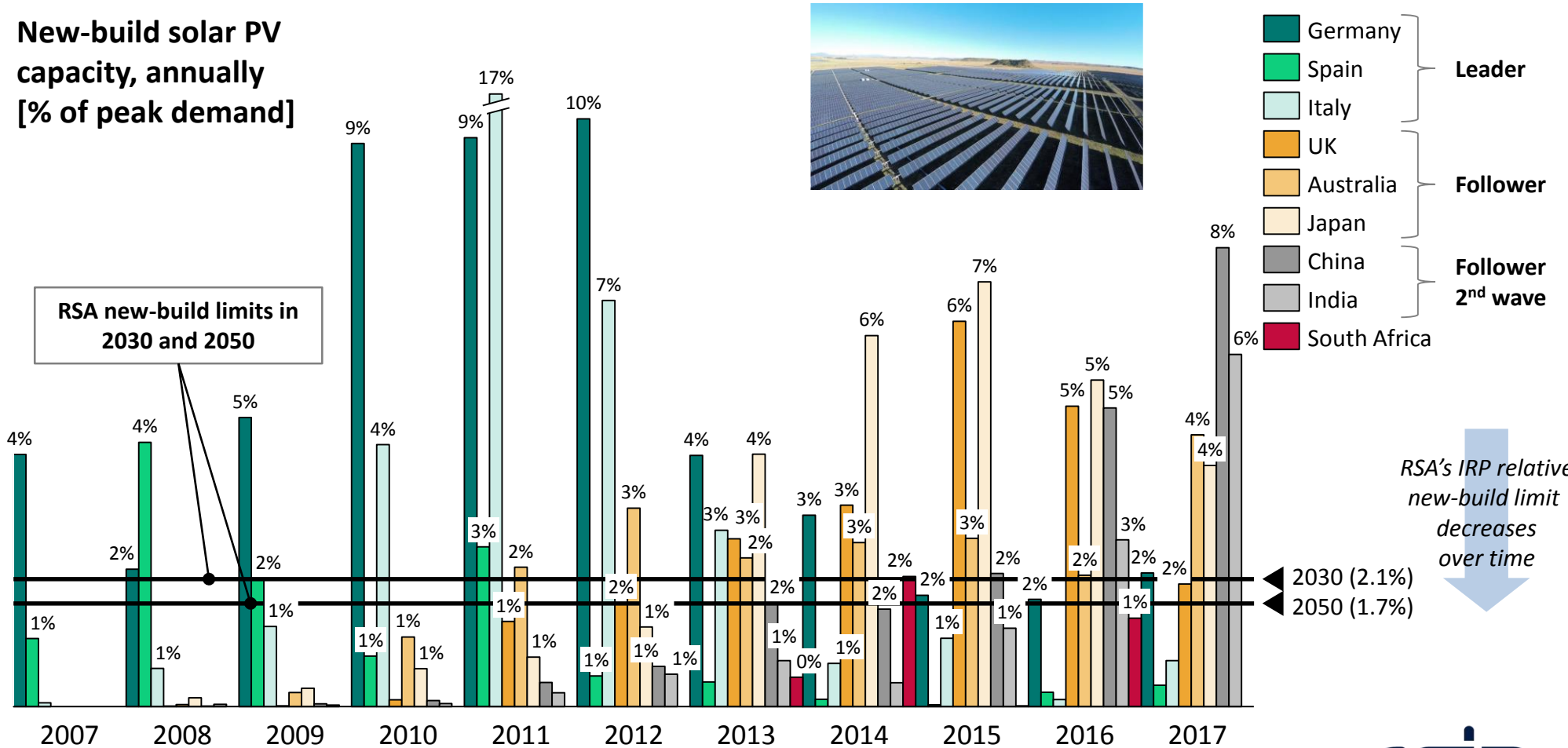


— IRP_2018_Median
 ■ Maximum allowed new-build wind (annually)



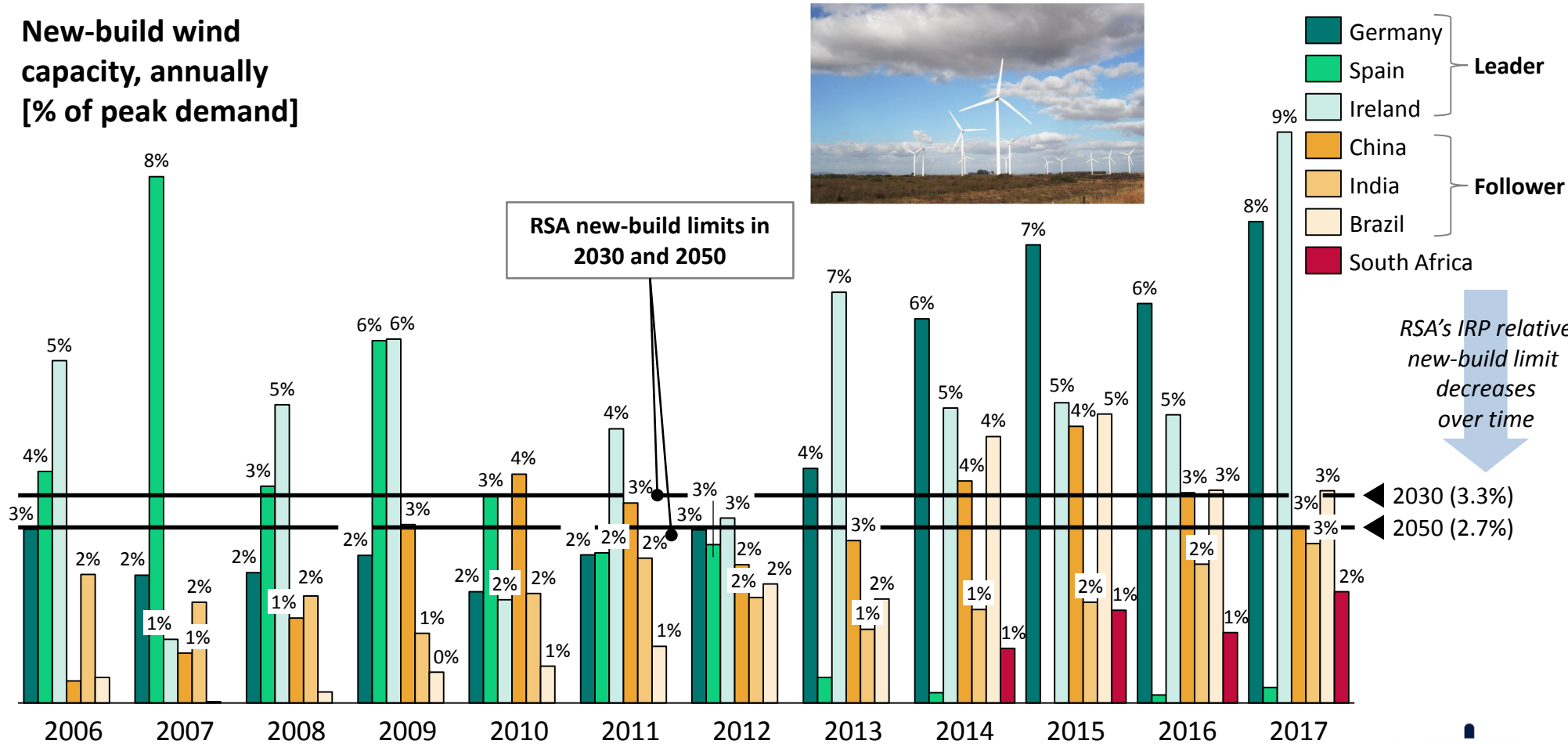
Already happening: Both leader, follower and 2nd wave countries installing more new solar PV per year than South Africa's IRP limits for 2030/2050

New-build solar PV capacity, annually [% of peak demand]



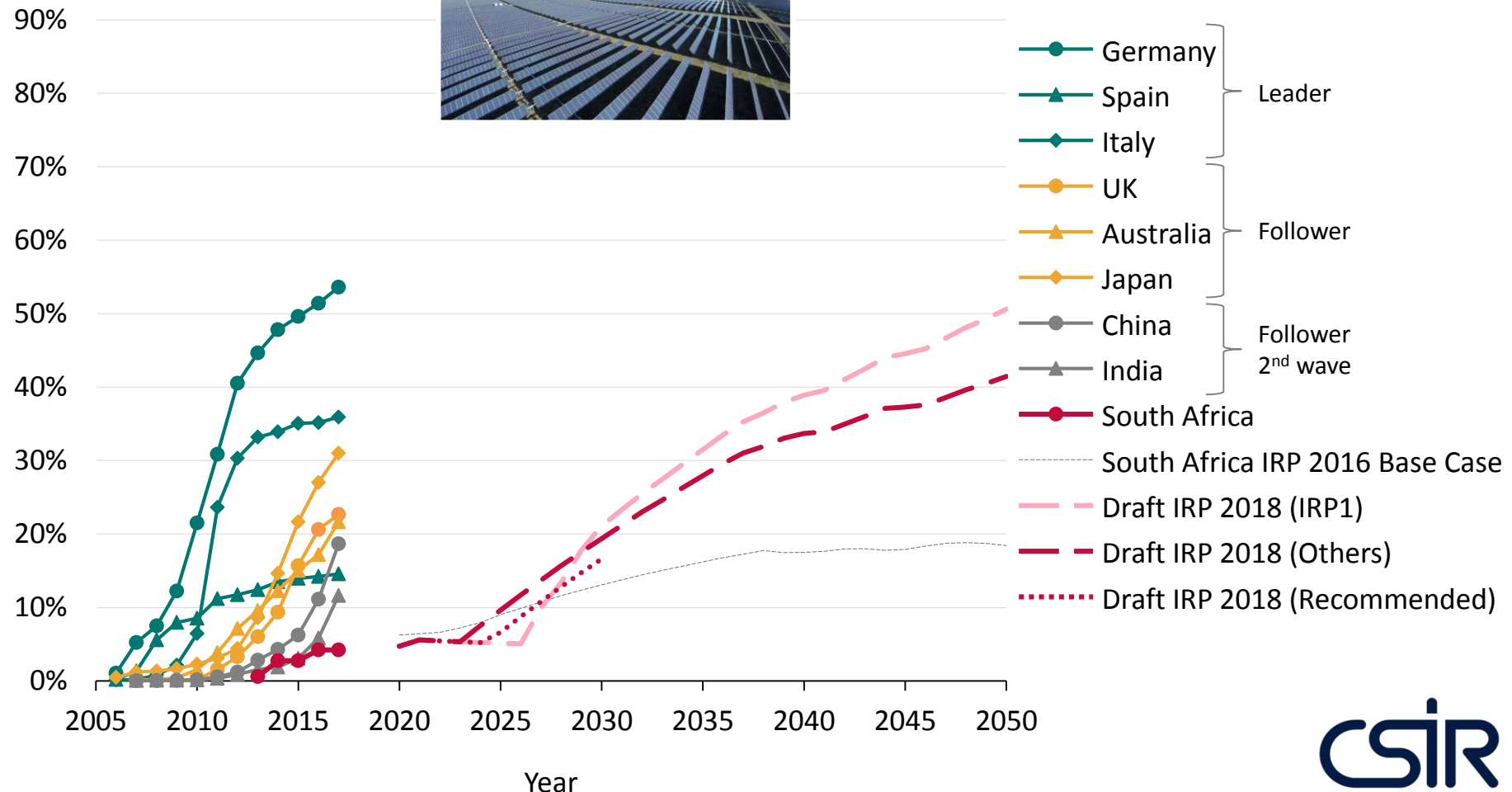
Already happening: Both leader and follower countries are installing more new wind capacity per year than South Africa's IRP limits for 2030/2050

New-build wind capacity, annually [% of peak demand]



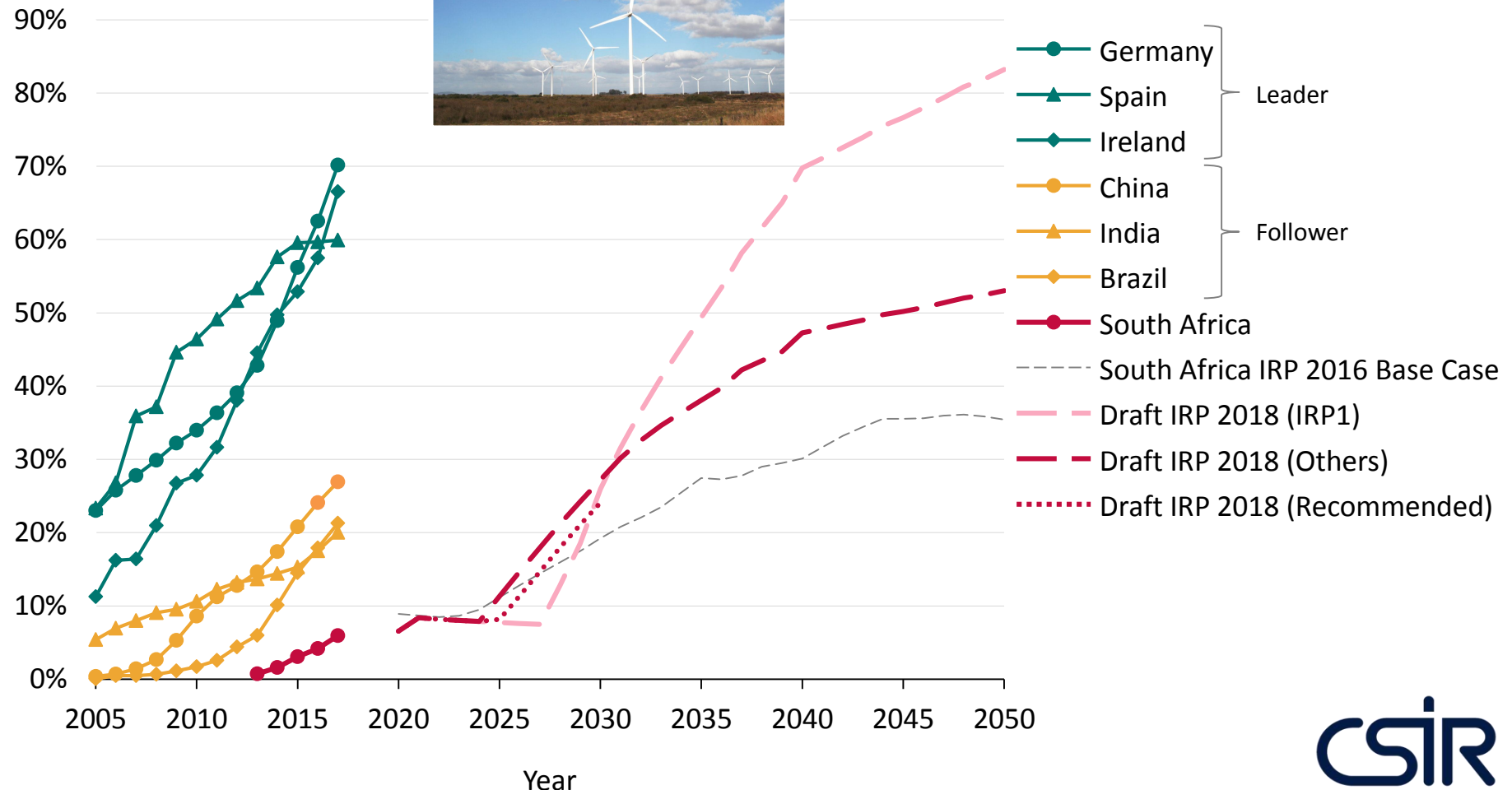
Solar PV penetration in leading countries already 1.0-1.3x levels expected in Draft IRP 2018 (constrained scenarios) for the year 2050

Total solar PV capacity relative to system peak demand



Wind penetration in leading countries is already at levels 1.2-1.3x Draft IRP 2018 (constrained scenarios) for the year 2050

Total wind capacity relative to system peak load





Thank you

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