

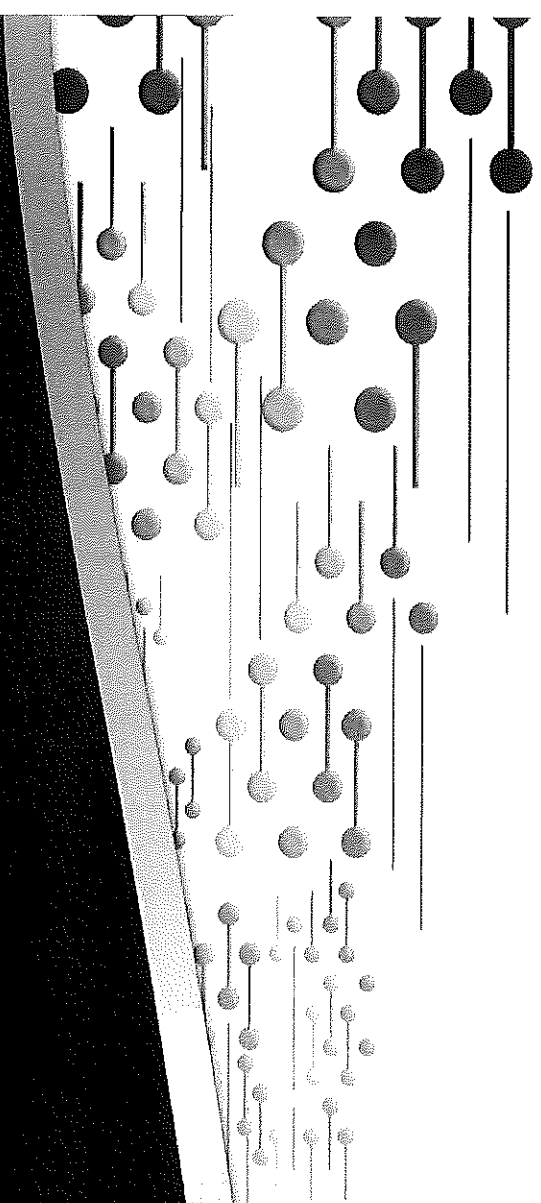


Annual new-build constraints in the IRP

Inputs into South Africa's Integrated Resource Plan 2016

CSIR Energy Centre

Pretoria, 1 December 2016



CSIR

our future through science

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IRP 2016: Annual new-build limits for solar PV and wind are constant in absolute terms but decrease relative to the size of the power system

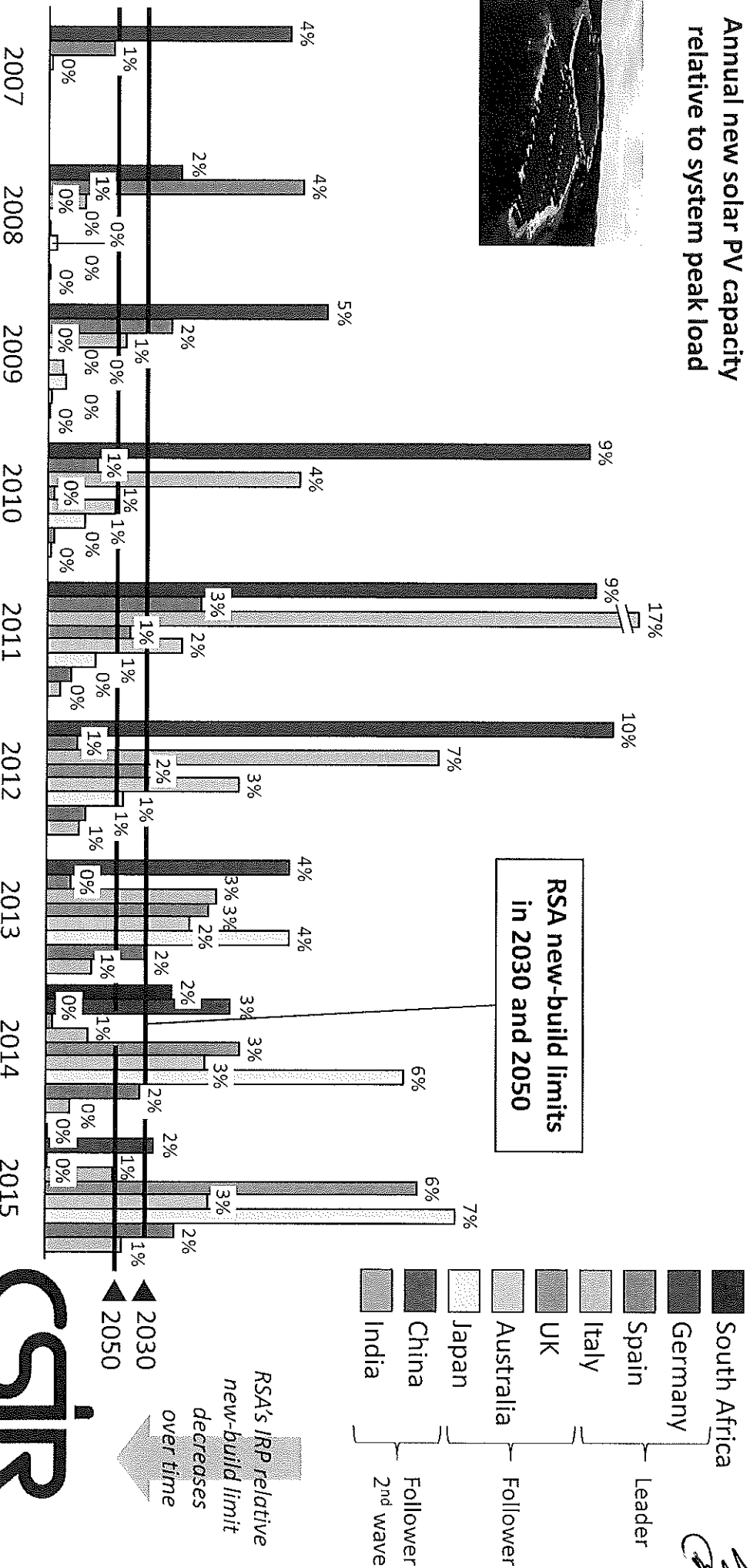
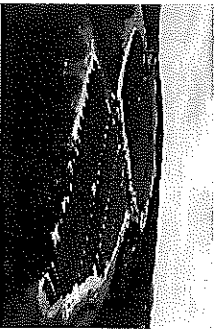
Relative new-build limit = New-build limit / system peak load

| Year | System Peak Load in MW | New-build limit Solar PV in MW/yr | Relative new-build limit Solar PV | New-build limit Wind in MW/yr | Relative new-build limit Wind |
|------|------------------------|-----------------------------------|-----------------------------------|-------------------------------|-------------------------------|
| 2020 | 44 916 | 1 000 | 2.2% | 1 600 | 3.6% |
| 2025 | 51 015 | 1 000 | 2.0% | 1 600 | 3.1% |
| 2030 | 57 274 | 1 000 | 1.7% | 1 600 | 2.8% |
| 2035 | 64 169 | 1 000 | 1.6% | 1 600 | 2.5% |
| 2040 | 70 777 | 1 000 | 1.4% | 1 600 | 2.3% |
| 2045 | 78 263 | 1 000 | 1.3% | 1 600 | 2.0% |
| 2050 | 85 804 | 1 000 | 1.2% | 1 600 | 1.9% |

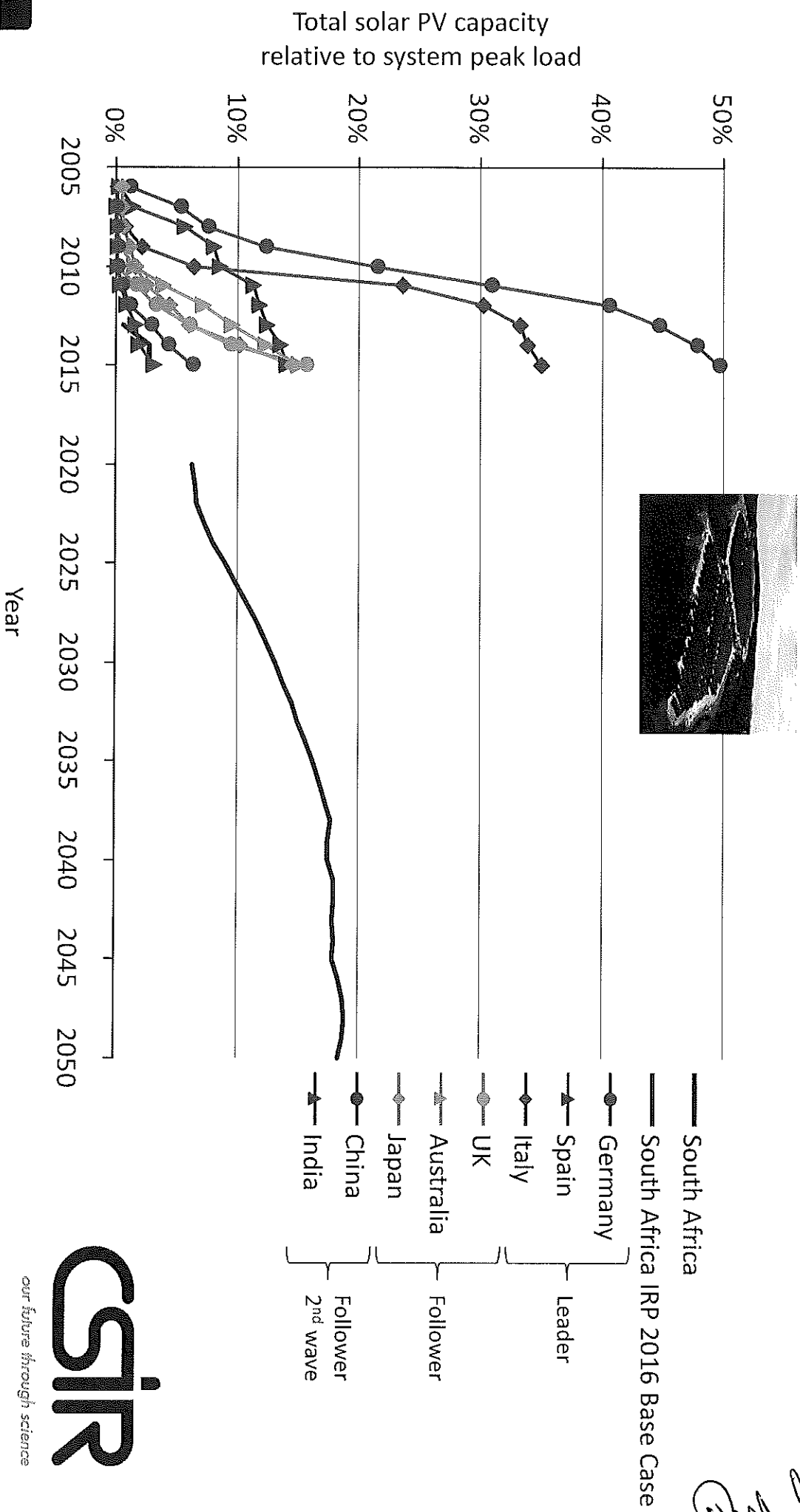
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Today: Both leading and follower countries install much more new solar PV capacity per year than what South Africa's limit is in 2030

Annual new solar PV capacity relative to system peak load



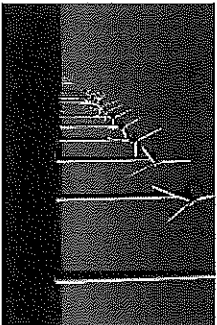
Today: Solar PV penetration in leading countries 2.5 times RSA's plan for 2050 – follower countries already today almost at RSA's 2050 level



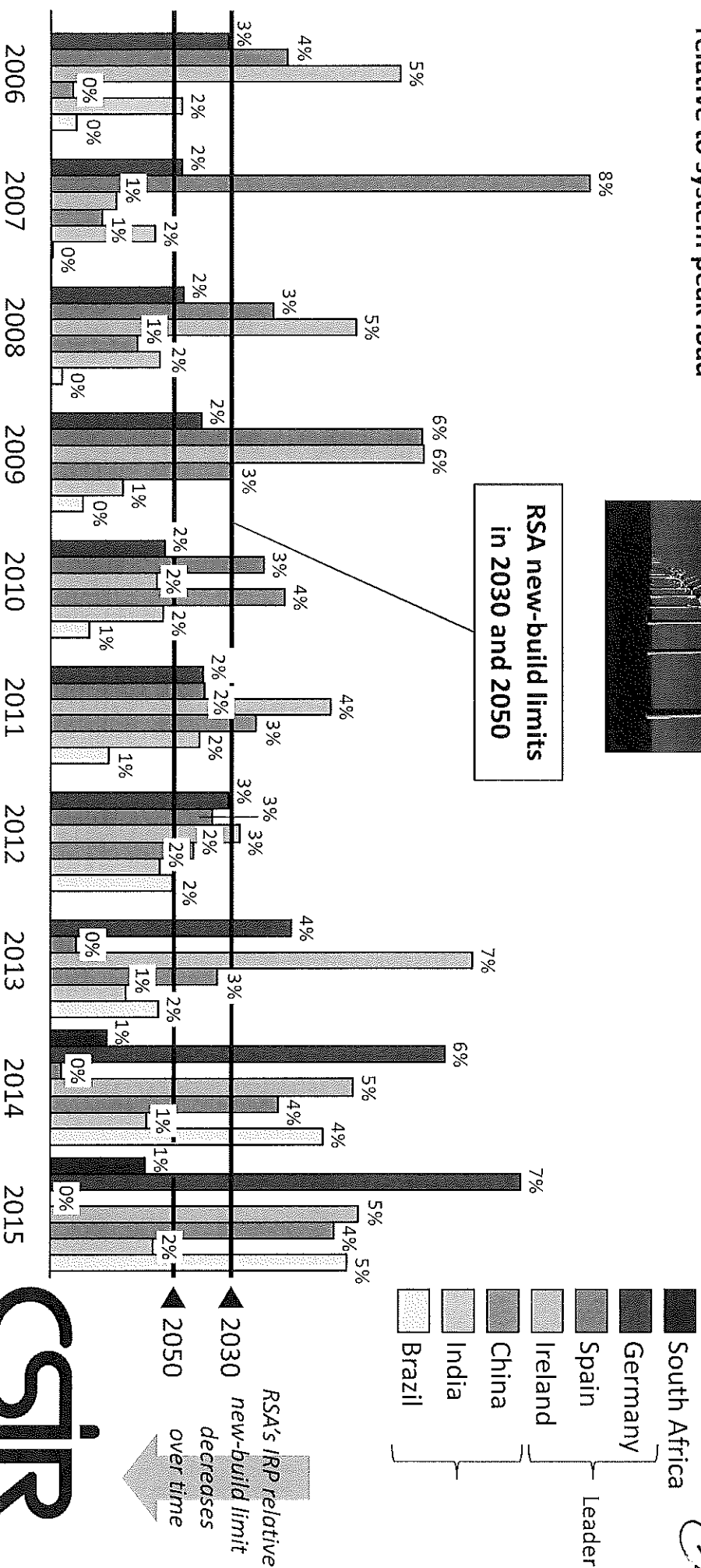
Handwritten signature

Today: Both leading and follower countries install much more new wind capacity per year than what South Africa's limit is in 2050

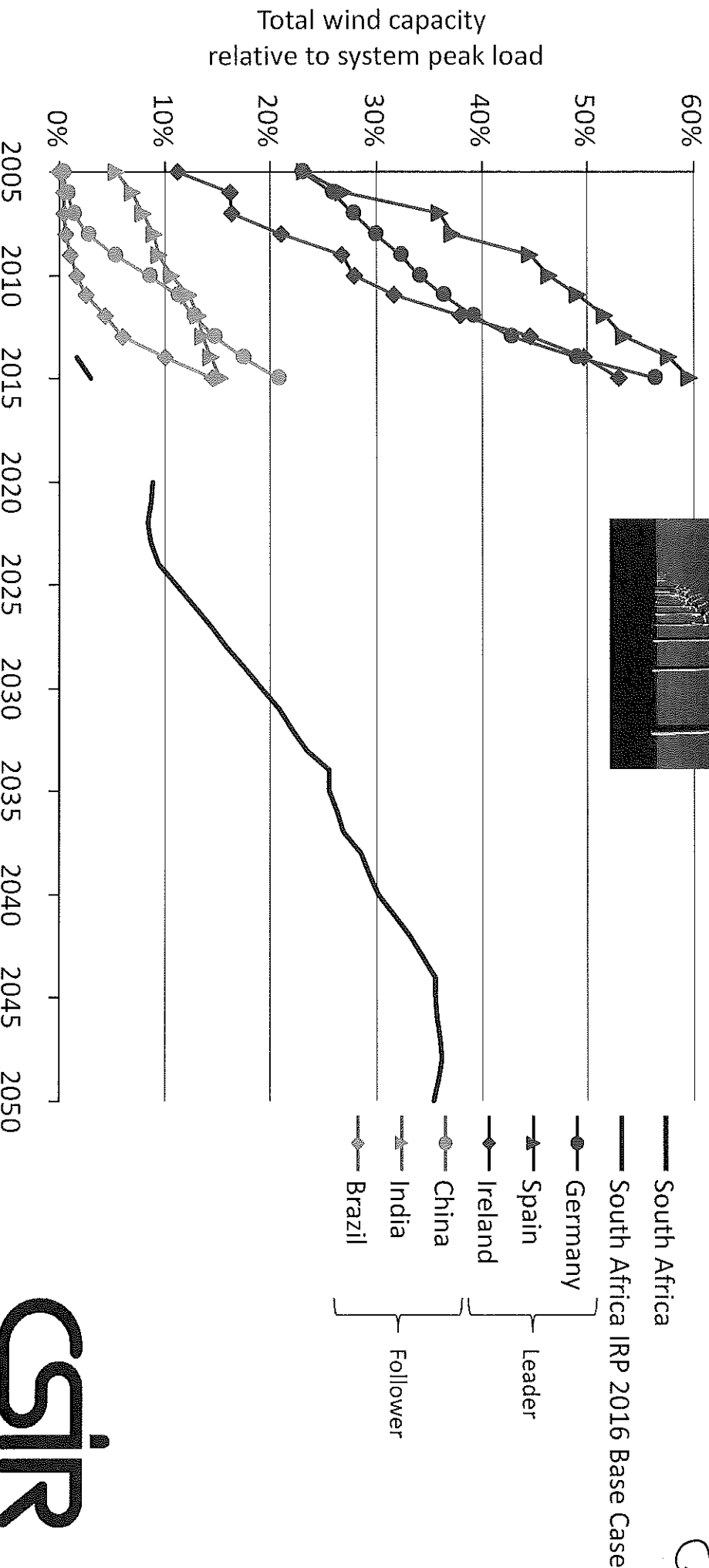
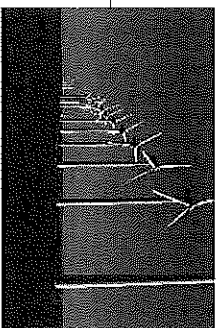
Annual new wind capacity relative to system peak load



RSA new-build limits in 2030 and 2050



Today: Wind penetration in leading countries almost twice RSA's plan for 2050 – follower countries already today at 60% of RSA's 2050 level





A handwritten signature in black ink, appearing to be 'M. M. M.', located at the bottom right of the page.

Re a leboha

Ha Khensa

Enkosi

Siyathokoza

Thank you

Re a leboga

Ro livhuha

Dankie

Siyabonga