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Deutsches Institut für Entwicklungspolitik | German Development Institute

Green industrial policy in emerging countries

The case of renewable energy support

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Agenda

- Green industrial policy: why and how
- How the emerging countries manage
  - India
  - South Africa
- Lessons learned

Green industrial policy:

why and how

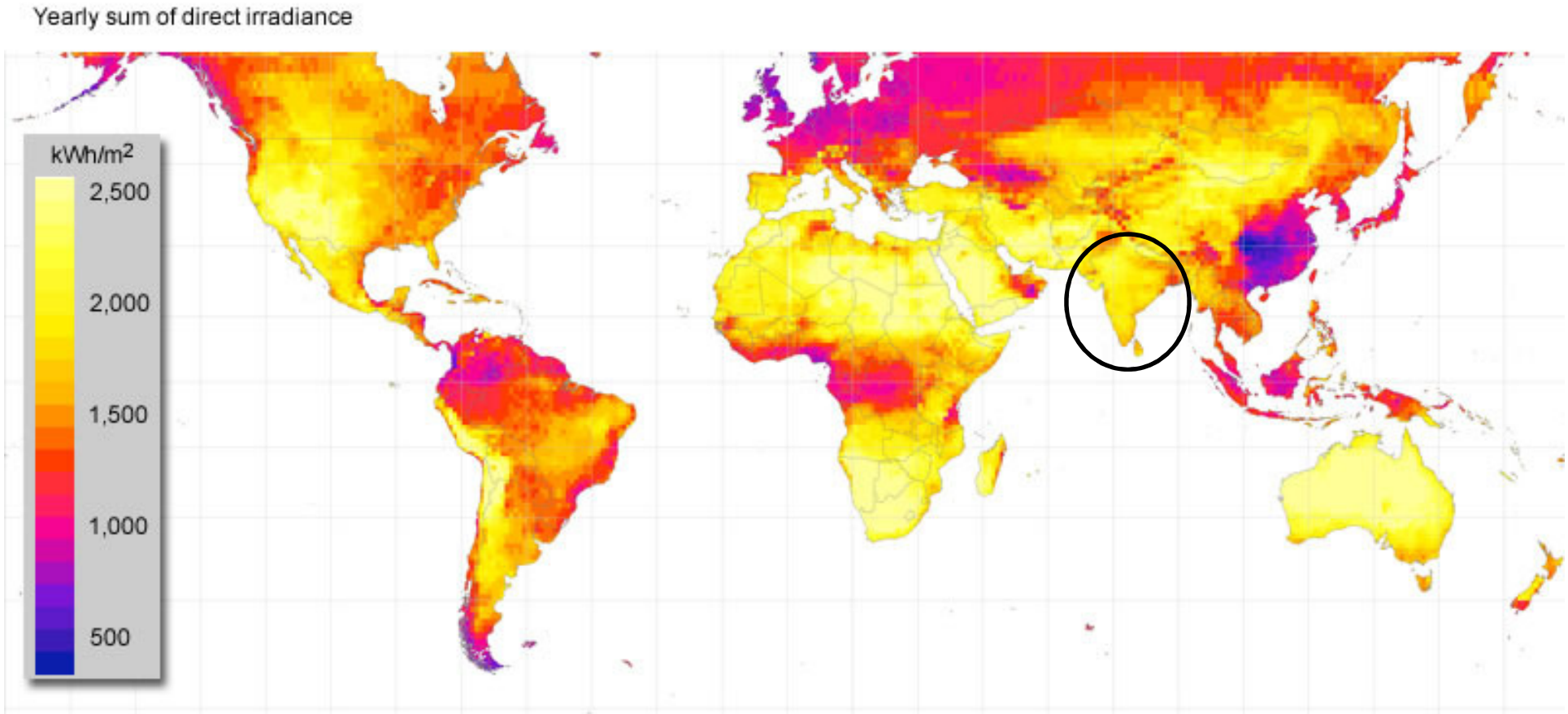
Green industrial policy: how

- Need for government intervention
- Fast and radical transformation of our economy
- Economy reacts to profit
- Governments need to shape profit opportunities (‚rents'): create and withdraw
- Risk of capture!
- Policy efficiency is key

Renewable energy support:

how the emerging countries manage

Solar irradiation



Source: SolarGIS

Support: auctioning and systematic learning

Preferential tariffs, effective and efficient

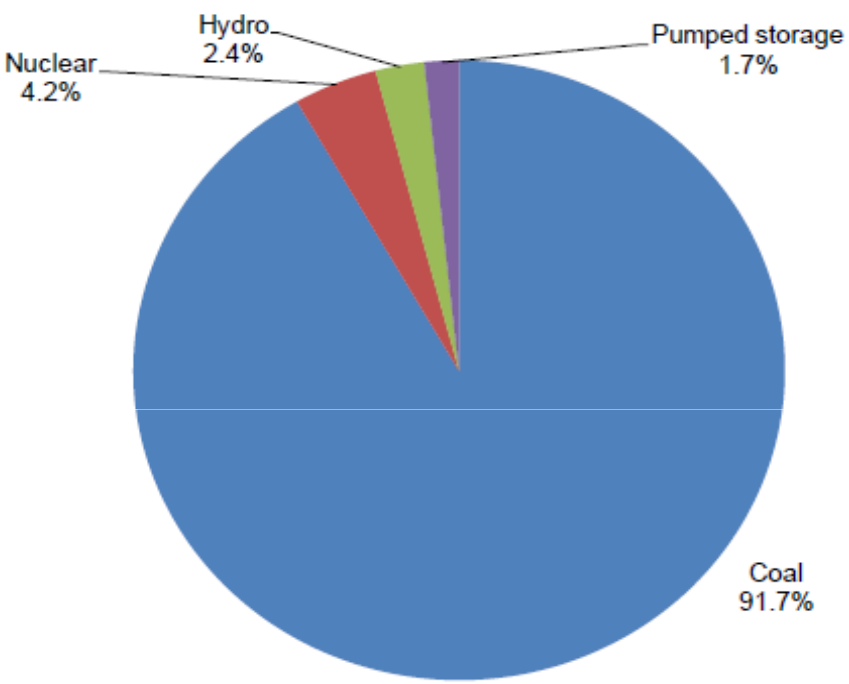
Success factors:

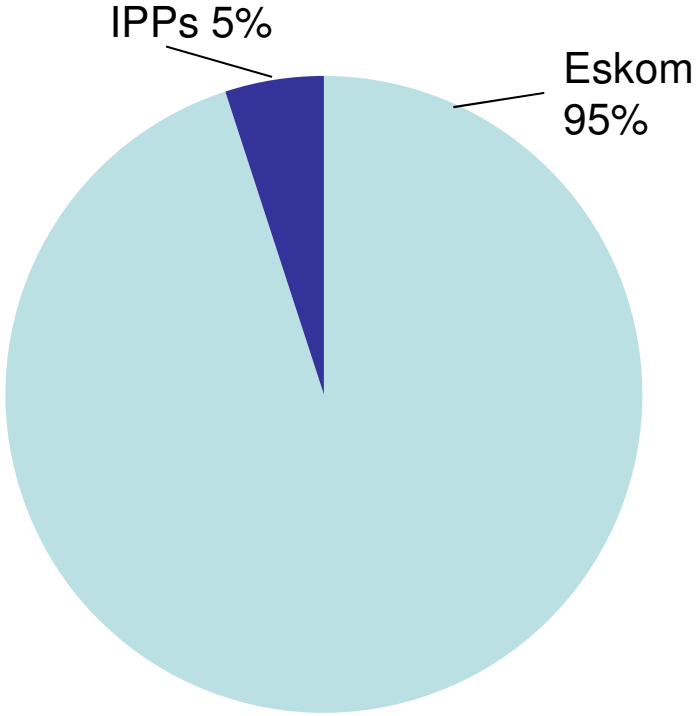
- Tariff auctioning (as opposed to pre-determining, as in Germany, Spain)
- Continuous built-in policy revisions

Effects:

- Triggered large investments, capacity growth from 0.1 to > 1 GW in first 18 months
- PV tariff offers decreased from 0.27 to 0.14 €/kWh in first year
- Retail grid parity now to be achieved in 2017 (original plan: 2022)

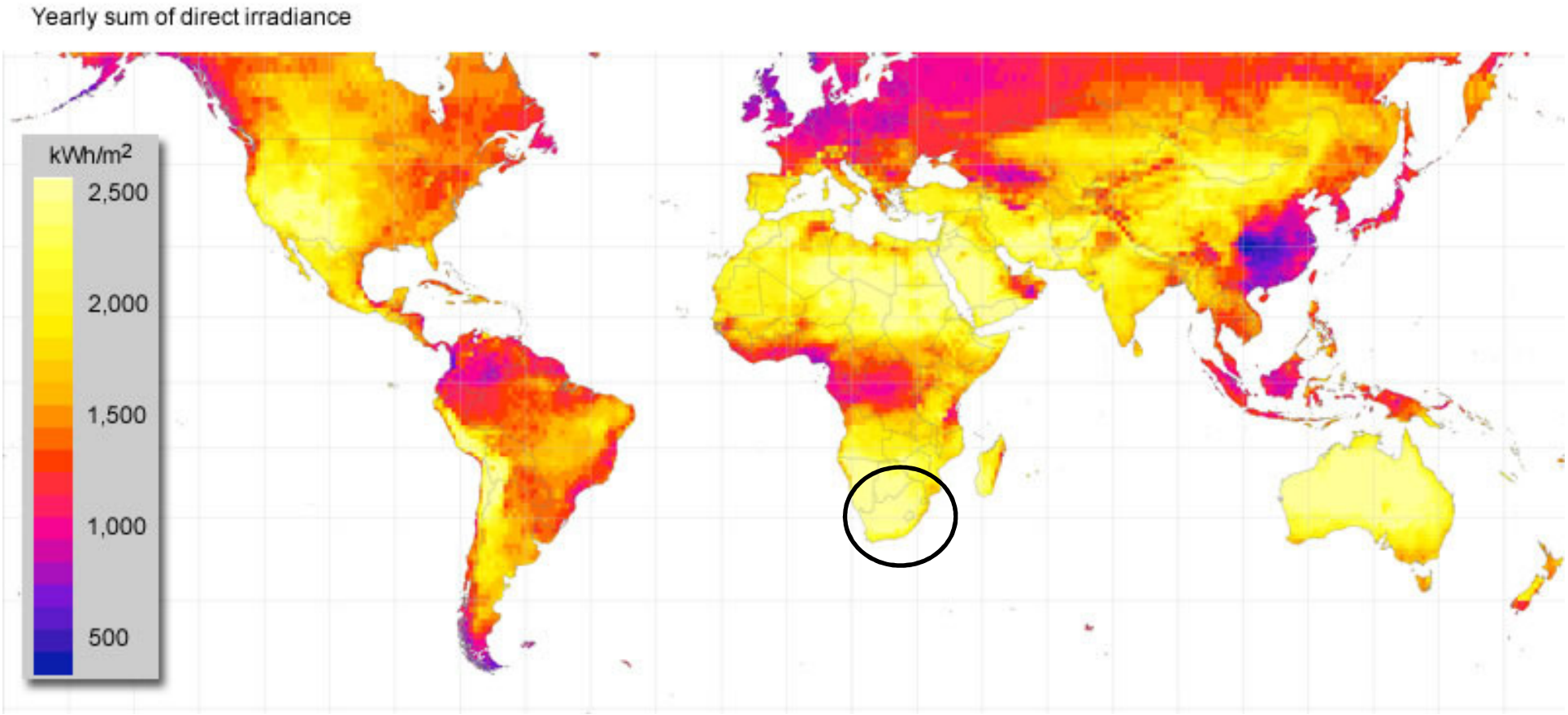
Electricity sector South Africa





Sources: DoE 2010, 2012

Solar irradiation



Source: SolarGIS

Support: planning (IRP 2010)

- ~18 GW renewables until 2030,
  wind and solar PV: 8.4 GW each, CSP 1 GW.

Table 3. Policy-Adjusted IRP

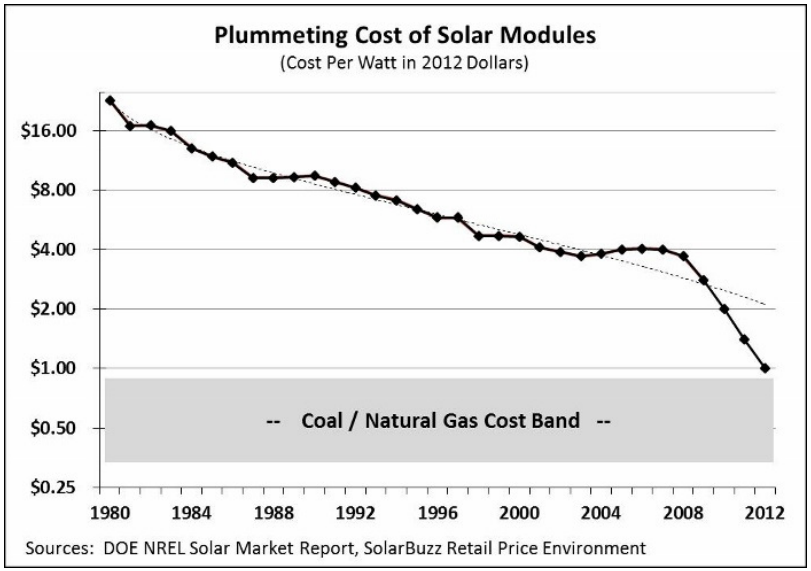
	Committed build											New build options										
	RTS Capacity (coal)	Medupi (coal)	Kusile (coal)	Ingula (pumped storage)	DOE OCGT IPP (diesel)	Co-generation, own build	Wind	CSP	Landfill, hydro	Sere (wind)	Decommissioning	Coal (PF, FBC, Imports)	Gas CCGT (natural gas)	OCGT (diesel)	Import Hydro	Wind	Solar PV	CSP	Nuclear	Total new build	Total system capacity	Peak demand (net sent-out) forecast	Demand Side Management
	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW
2010	380	0	0	0	0	260	0	0	0	0	0	0	0	0	0	0	0	0	0	640	44535	38885	252
2011	679	0	0	0	0	130	0	0	0	0	0	0	0	0	0	0	0	0	0	809	45344	39956	494
2012	303	0	0	0	0	0	300	0	100	100	0	0	0	0	0	0	300	0	0	1103	46447	40995	809
2013	101	722	0	333	1020	0	400	0	25	0	0	0	0	0	0	0	300	0	0	2901	49348	42416	1310
2014	0	722	0	999	0	0	0	100	0	0	0	500	0	0	0	400	300	0	0	3021	52369	43436	1966
2015	0	1444	0	0	0	0	0	100	0	0	-180	500	0	0	0	400	300	0	0	2564	54933	44865	2594
2016	0	722	0	0	0	0	0	0	0	0	-90	0	0	0	0	400	300	100	0	1432	56365	45786	3007
2017	0	722	1446	0	0	0	0	0	0	0	0	0	0	0	0	400	300	100	0	2968	59333	47870	3420
2018	0	0	723	0	0	0	0	0	0	0	0	0	0	0	0	400	300	100	0	1523	60856	49516	3420
2019	0	0	1446	0	0	0	0	0	0	0	0	250	237	0	0	400	300	100	0	2496	63352	51233	3420
2020	0	0	723	0	0	0	0	0	0	0	0	250	237	0	0	400	300	100	0	2010	65362	52719	3420
2021	0	0	0	0	0	0	0	0	0	0	-75	250	237	0	0	400	300	100	0	1212	66574	54326	3420
2022	0	0	0	0	0	0	0	0	0	0	-1870	250	0	805	1143	400	300	100	0	1365	67939	55734	3420
2023	0	0	0	0	0	0	0	0	0	0	-2280	250	0	805	1183	400	300	100	1600	2358	70297	57097	3420
2024	0	0	0	0	0	0	0	0	0	0	-909	250	0	0	283	800	300	100	1600	2424	72721	58340	3420
2025	0	0	0	0	0	0	0	0	0	0	-1520	250	0	805	0	1600	1000	100	1600	3835	76556	60150	3420
2026	0	0	0	0	0	0	0	0	0	0	0	1000	0	0	0	400	500	0	1600	3500	80056	61770	3420
2027	0	0	0	0	0	0	0	0	0	0	0	250	0	0	0	1600	500	0	0	2350	82406	63404	3420
2028	0	0	0	0	0	0	0	0	0	0	-2850	1000	474	690	0	0	500	0	1600	1414	83820	64867	3420
2029	0	0	0	0	0	0	0	0	0	0	-1128	250	237	805	0	0	1000	0	1600	2764	86584	66460	3420
2030	0	0	0	0	0	0	0	0	0	0	0	1000	948	0	0	0	1000	0	0	2948	89532	67809	3420
TOTAL	1463	4332	4338	1332	1020	390	700	200	125	100	-10902	6250	2370	3910	2609	8400	8400	1000	9600	45637			

Support: from FIT to ABT

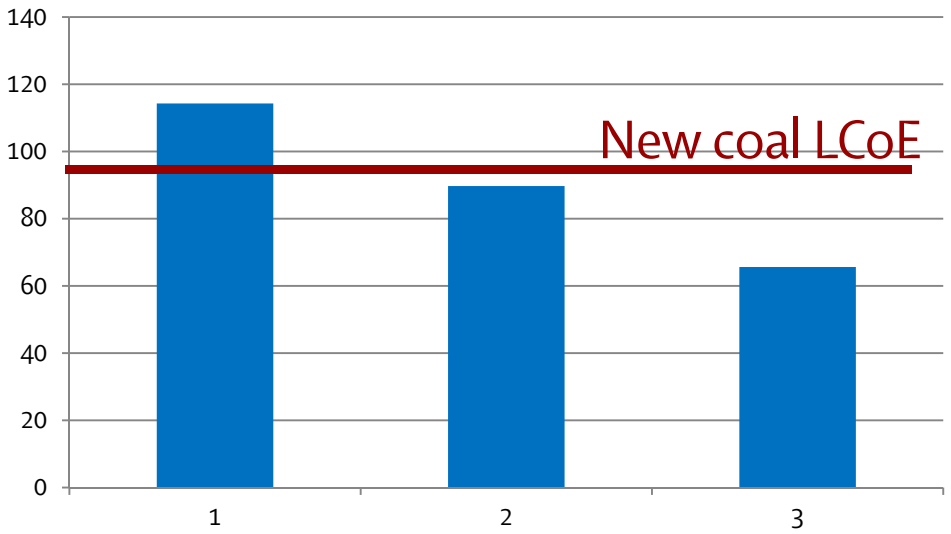
- Renewable energy feed-in tariff (2009):
  - Emulated 'German model'
  - Fixed feed-in rates for several RE technologies
- Treasury intervened, 2 years stalemate and confusion
- Conversion to auction-based tariffs 2011
- Market has taken off since then
  - Increasing interest in bidding rounds
  - Falling tariffs, high investments (nationally and FDI)

Cost development renewable energy

Cost of solar PV modules (USD/Watt)



Wind bids South Africa, round 1-3(SAc/kWh)



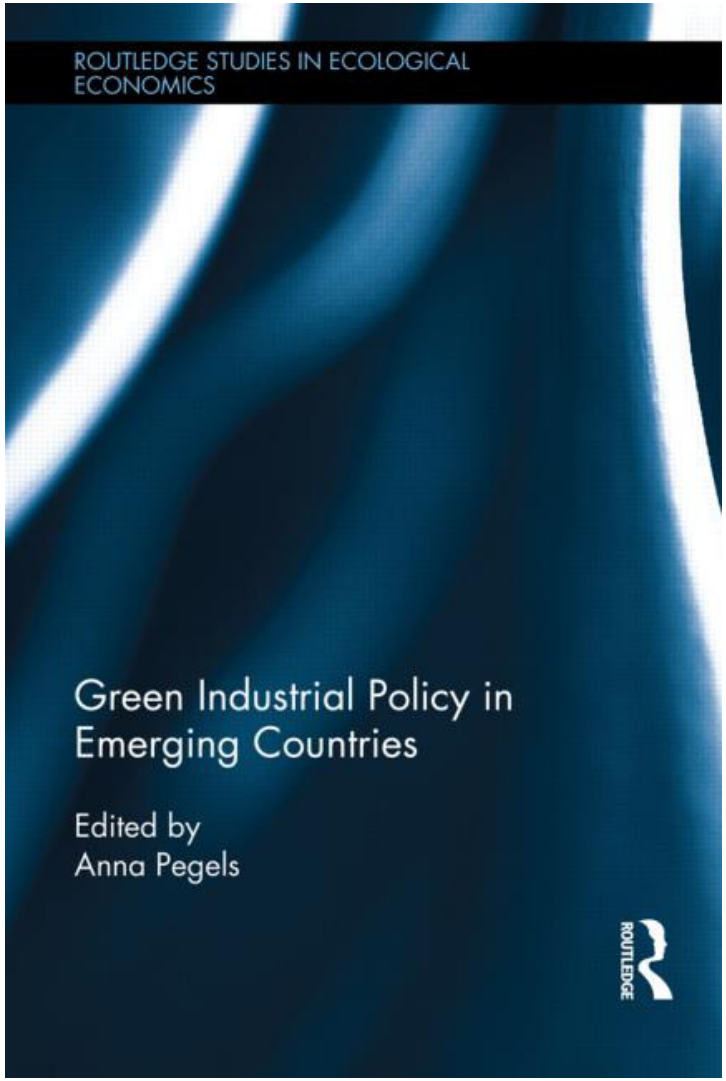
Wrap up

- Emerging countries will be central players in environmental protection (or degradation) in the coming decades
- Green industrial policy as part of the solution
- Lessons learned from India, South Africa,…
  - Create a credible long-term strategy with short and mid-term targets
  - Ensure ‚embedded autonomy': co-design of policies and co-funding with private sector without capture
  - Introduce competitive elements in support (IF technology is mature enough and project developers accept additional risk)

Wrap up

- Introduce systematic learning cycles: from suitable other countries (no blueprints) and over time. Maintain investment certainty!
- Consider required technocratic management capacities for planned measures
- Build reform coalitions, e.g. by keeping benefits local.

Don‘t underestimate risk of capture – but BAU is the greatest risk!



Thank you!

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