



# NDC implementation towards technological change in the energy sector

Evidence from Brazil, China and South Africa

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# Outline



- NDC implementation towards technological change in the energy sector
- Competing policy networks supporting renewable vs. fossil fuel based technologies
- Case Studies: CSP in SA, Wind in SA and Brazil, PV in China
- Implications for international cooperation



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# Energy technological change in the NDCs in Brazil, China and South Africa

## BRAZIL:

Increase RE in energy mix  
To 45% by 2030 other  
Than hydro



CHINA: To effectively control emissions from key sectors including power, iron and steel, nonferrous metal, building materials and chemical industries through energy conservation and efficiency improvement

SOUTH AFRICA: Increase RE Influx via REIPPP



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# R&D in CSP in South Africa



Patentable innovation in three CSP technologies

Technological capability depending  
collaboration with EU based companies and  
investments

R&D activities depend on sustained EU funding

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# Localisation of wind energy technologies in Brazil and South Africa



Local content requirements come with trade offs in timing, quality and price against potential benefits in job creation, foreign direct investment and skills development

- Carefully designed local content requirements can stimulate industrial development, skills and job creation  
(tower and blade manufacturing in SA and Brazil)
- Poorly designed local content requirements can jeopardize the successful implementation of RE programs  
(spiking prices, compromised quality and delays)

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# Solar PV in China



Although China can produce PV through domestic technologies, there remains still a large gap between Chinese PV technology and the international technology frontier.

- Barriers to technological development in China
- International anti-dumping (EU/ China)
- Domestic Government subsidy restrictions
- Improper protection of intellectual property rights (IPR)
- Weak infrastructure and absorption capacity of technology
  - Lack of skilled labour and capital

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Stable energy policy frameworks are critical for the influx of clean technologies and Implementation of NDC

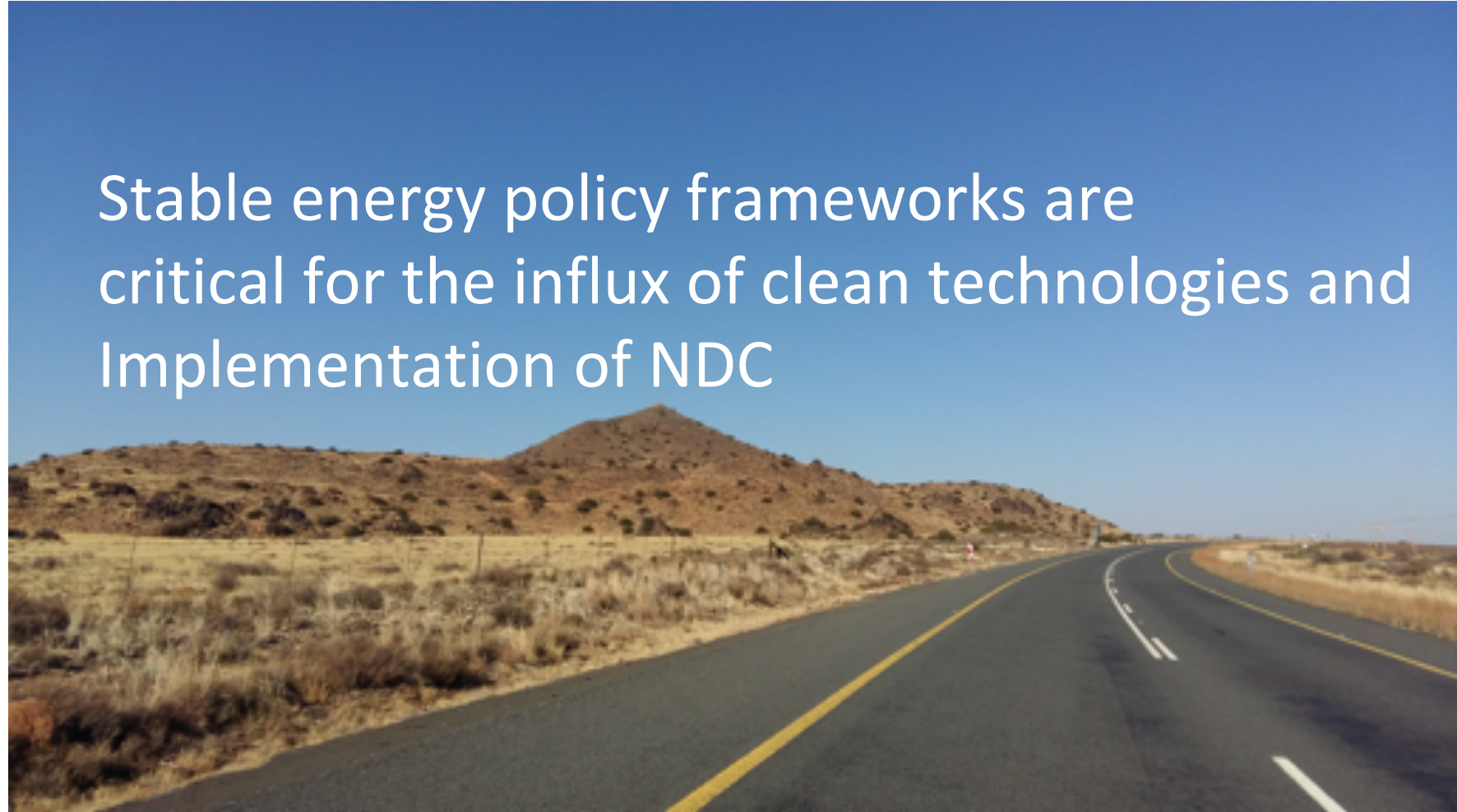


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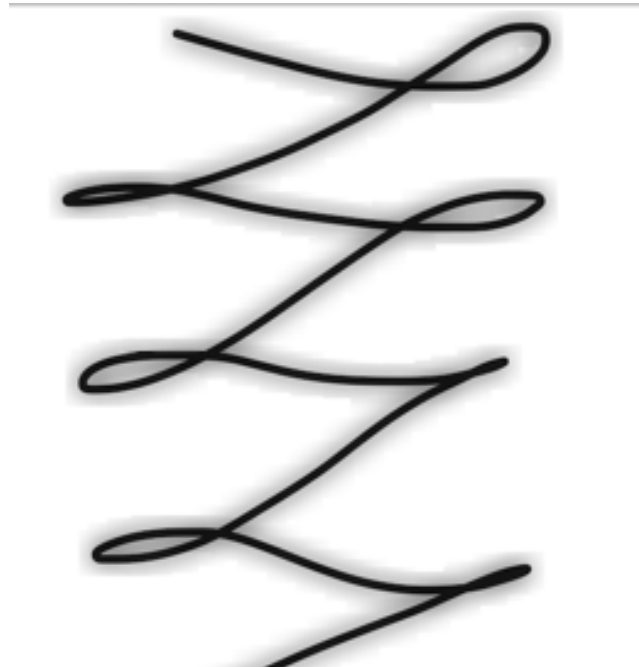
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# NDC implementation risks and domestic policy networks

Global climate governance

International patronage networks



International programmatic issue networks & global governance functions

Domestic climate governance

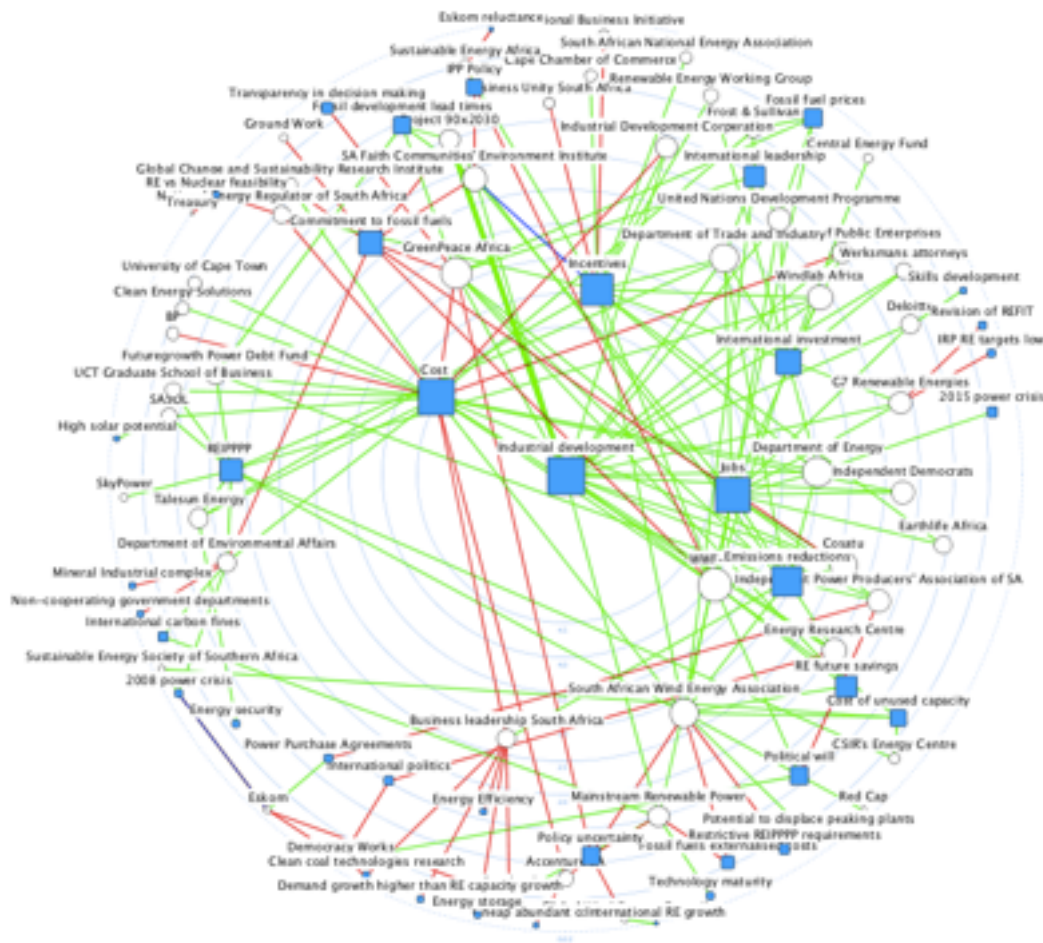
Domestic patronage networks

Domestic programmatic issue networks





# Snapshot example: Coalitions in support and opposition of technological change in the energy sector



guidance and signal

rule-setting

transparency and accountability

means of implementation:

- **capacity** building,
- technology and **finance**;
- **knowledge** and learning



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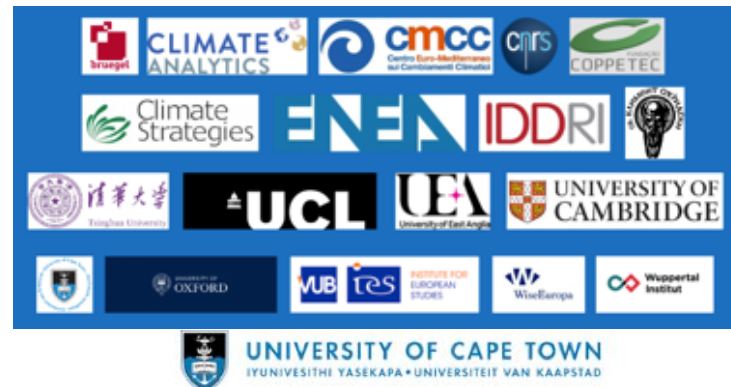
# Thanks for your attention



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