

Considering technology within the UN climate change negotiations

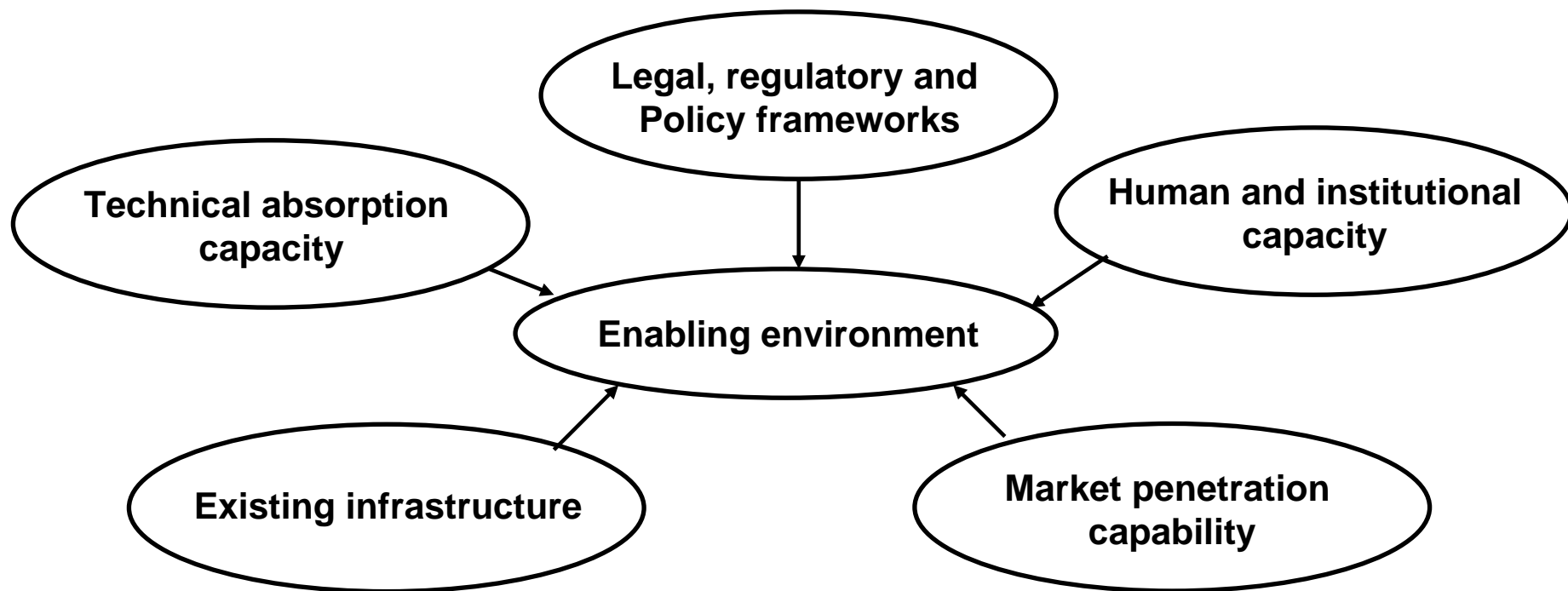
Morgan Bazilian, Heleen de Coninck, Mark Radka, Smita Nakhooda, William Boyd, Iain MacGill, Amal-Lee Amin, Fredrik von Malmborg, Jukka Uosukainen, Rob Bradley, Rick Bradley



ADB (2007). Carmody, J. Ritchie, D. (2007) Investing in Clean Energy and Low-Carbon Alternatives in Asia, Manila. Aldy, J., Orszag, P., Stiglitz, J. (2001) Climate Change: An Agenda for Global Action. Pew Centre. USA. Aldy et al. (2003) Thirteen plus one: a comparison of global climate policy architectures, *Climate Policy*, 3, 373-397. Alfsen, K. & Eskeland, G. (2007) The Role of Technology in Climate Policy, Swedish Ministry of Finance. Alic, J. Mowry, D. (2003) US Technology and Innovation Policies: Lessons for Climate Change. In proceedings from Aspen Institute. Nov. 2003. USA. Amin, (2000): The Power of Networks: Renewable Electricity in India and South Africa, DPhil. Andersen, S. Sarma, Madhava, Taddonio, K. (2007) Technology Transfer for the Ozone Layer: Lessons for Climate Change. Earthscan, London, UK. 2007. Anderson, D (2006) Costs and Finance of Abating Carbon Emissions in the Energy Sector, Imperial College, UK. Arrow, K. (1962) "The Economic Implications of Learning by Doing", *Review of Economic Studies*, 29: 155-73. Arthur, W.B. (1989) Competing Technologies, Increasing returns, and Lock-in by Historical Example. *The Economic Journal*. Vol 99 (394). Bagwell, K., and R.W. Staiger (1999) An economic theory of GATT. *The American Economic Review* 89(1): 215-248. Baron R. (2007) Sectoral Approaches to greenhouse Gas Mitigation. OECD. Paris. Baron, R. Barnsley, I. Ellis, J. (2008) Options for Integrating Sectoral Approaches into the UNFCCC. OECD AIEG. Paris. Barrett, S. (2001), "Towards a Better Climate Treaty", *Policy Matters* 01-29, Washington, DC: AEI Brookings Joint Center for Regulatory Studies. Barton J (2007) Intellectual Property and Access to Clean Energy technologies in Developing Countries. Draft. ICTSD. Issue paper 2. Baumert, K., Blanchard, O., Llosa, S., Perkaus, J.F. (eds) (2002) Building on the Kyoto Protocol: Options for Protecting the Climate, World Resources Institute, Washington, DC [available at http://climate.wri.org/pubs_pdf.cfm?PubID=3762]. Baumert, K., Winkler, H. (2005) 'SD-PAMs and international climate agreements', in: R. Bradley, K. Baumert, J. Pershing (eds), *Growing in the Greenhouse: Protecting the Climate by Putting Development First*, World Resources Institute, Washington, DC, 15-23. Bazilian, M., Roques, F. (eds.) (2008) *Analytical Methods for Energy Diversity and Security*, Elsevier Science. Amsterdam. Bell, M., and K. Pavitt (1993) Technological Accumulation and Industrial Growth: Contrasts between Developed and Developing Countries *Industrial and Corporate Change* 2:157 – 210. Benedick, R.E. (2001), "Striking a New Deal on Climate Change", *Issue in Science and Technology*. Fall: 71-76. Bergek, A., Jacobsson, S., Carlsson, B., Lindmark, S. and Rickne, A. (2008) Analyzing the functional dynamics of technological innovation systems: A scheme of analysis, published in *Research Policy*, 37(3), 407-429. Betz, R. and Sato, M. (2006) Emissions trading: lessons learnt from the 1st phase of the EU ETS and prospects for the 2nd phase, *Climate Policy* 6, pp351-359. Blair, T. (2008) Breaking the Climate Deadlock, The Climate Group. London. Boeters, S. (2007) Post-2012 Climate Scenarios. MNP Report 500114006/2007. The Netherlands. Bozeman, B (2000) Technology transfer and public policy: a review of research and theory. *Research Policy* 29:627-655. Bradley, R. Baumert, K. Childs, B. Herzog, T. Pershing, J. (2008) International Sectoral Cooperation on Climate Change. Bradley, R., Pershing, J., (2005) 'Introduction to sustainable development policies and measures', in: R. Bradley, K. Baumert, J. Pershing (eds), *Growing in the Greenhouse: Protecting the Climate by Putting Development First*, World Resources Institute, Washington, DC, 1-14. Braczyk H-J, Cooke P, Heidenreich, M. (1998) *Regional innovation systems: the role of governance in a globalized world*. London: UCL Press. Brewer, T. (2007) US Climate Change Policies and International Trade Policies. Georgetown University, USA. Brown, M. Chandler, J. (2007) Carbon Lock-in. US ORNL ORNL/TM-2007/124 Bruckner T., Edenhofer O., et al. (2007) Robust Options for Decarbonisation: Background Paper on Energy Security for etc.etc etc etc

Priority elements

Enabling environments



An enhanced technology framework: elements and principles

Elements

Enabling environments

Organisational aspects

Technology agreements,
sectoral approaches

Finance for technology

Principles

Is embedded in existing context

Is demand-driven (and well
informed)

Is self-reinforcing (leads to
opportunity)

Rewards success

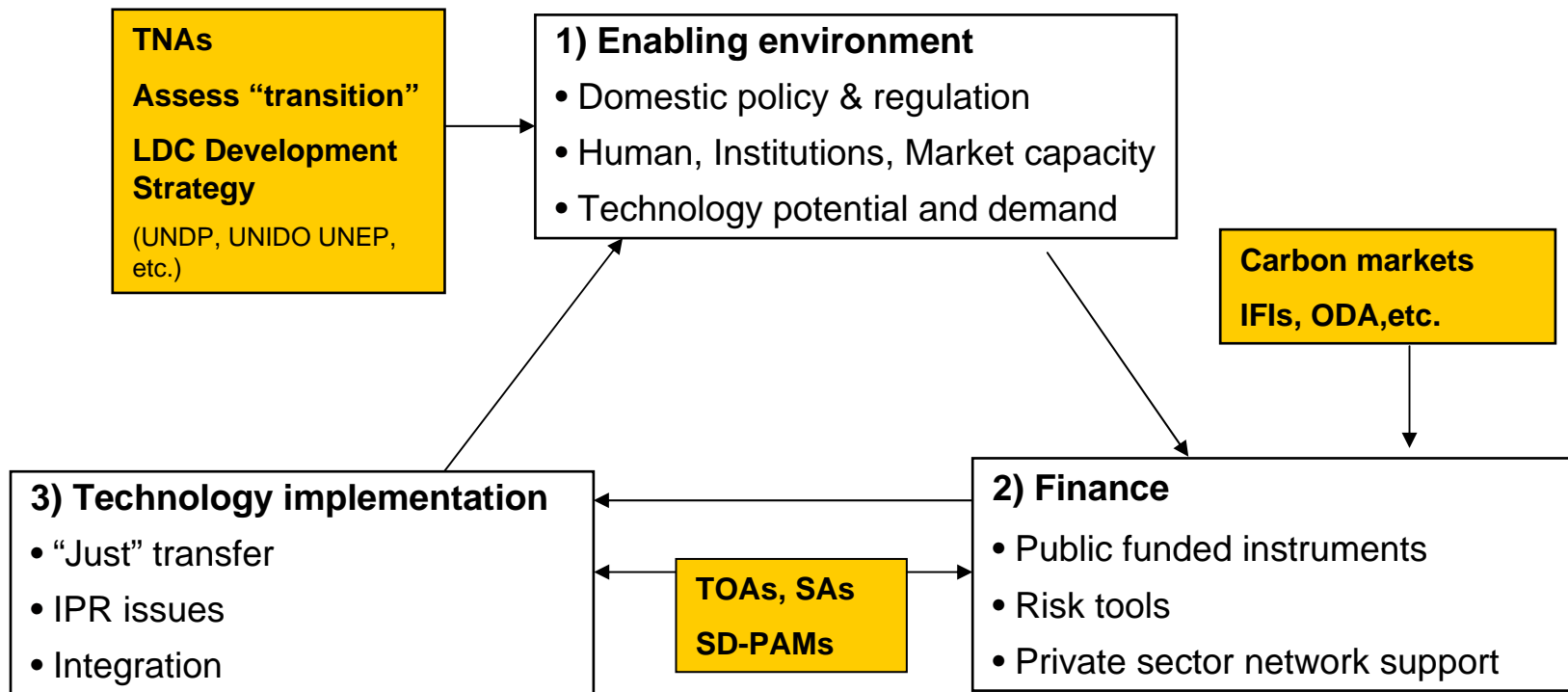
Provides flexibility

Does not require too much finance
initially

Conceptual technology and finance framework

Organisational Framework:

- UNFCCC oversight for MRV, Technology Body



Technology in a Copenhagen agreement?

Copenhagen: scope and underlying principles on how to advance low-carbon technology

Conceptual framework with self-reinforcing characteristics identified

- Use of public financing for enabling environment: long-term delivery
- Enabling environment: make concrete by success stories; develop indicators
- Framework with gradually increasing vested interest in further diffusion the low-carbon technology