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Technical Assistance for Developed Analytical Basis for Formulating Strategies and Actions towards Low Carbon Development



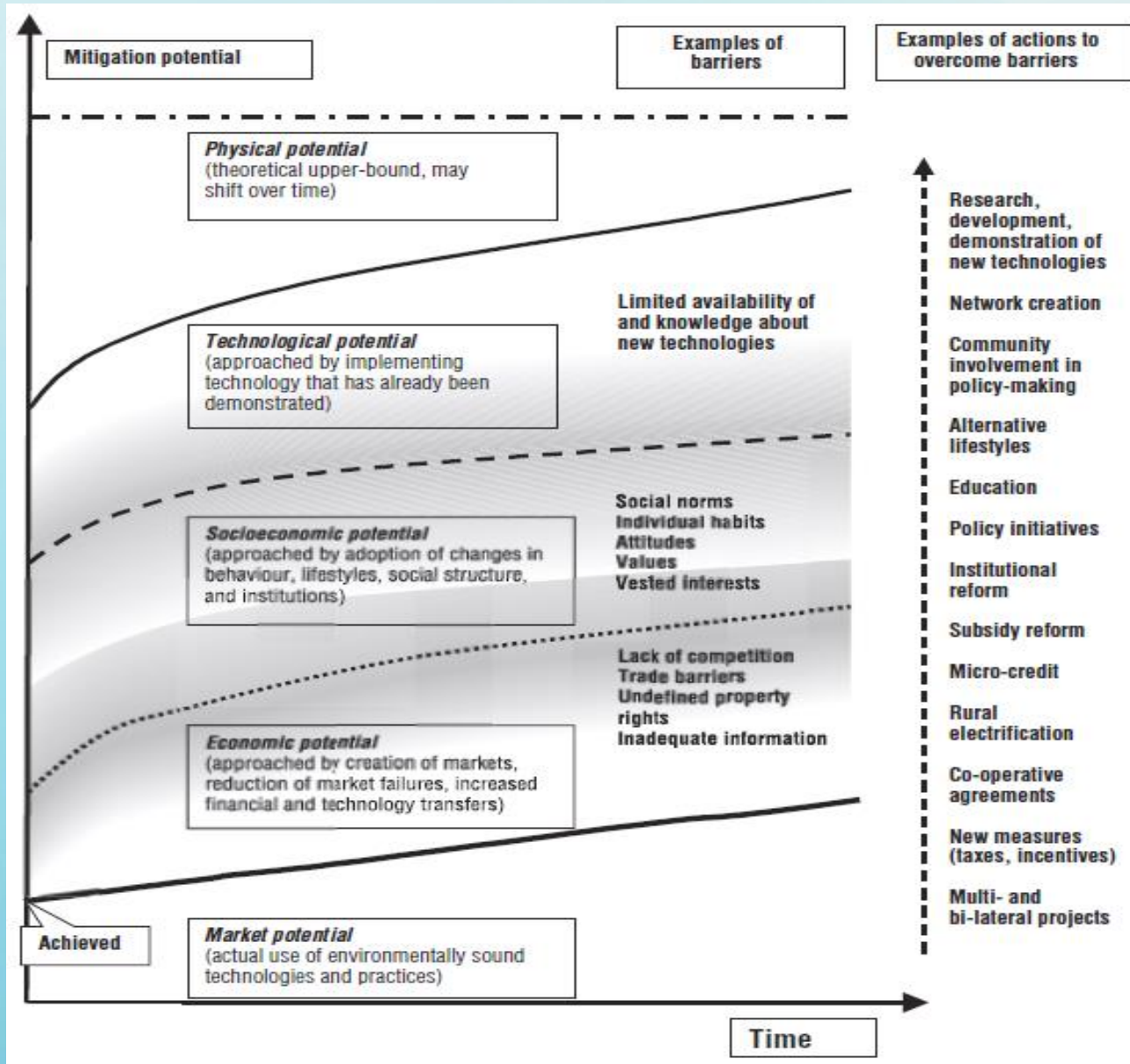
GHG Mitigation Opportunities/Potential, Barriers and Tools – Conceptual Framework

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GHG mitigation potential, barriers and actions/instruments to overcome barriers



Source: IPCC's 3rd Assessment Report, WG 3: Mitigation, 2001

Categories of GHG mitigation potential

- **Technical potential** - maximum amount of GHG mitigation achievable through technology implementation/diffusion. This is a hypothetical projection of the extent of GHG mitigation that could be achieved over time if all technically feasible technologies were used in all relevant applications, without regard to their cost or user acceptability
- **Market potential** - the amount of GHG mitigation that might be expected to occur under forecast market conditions, with no changes in policy or implementation of measures whose primary purpose is the mitigation of GHGs
- **Barriers (obstacles, constrains)** - physical, cultural institutional, social, or human factors preventing the progress from the market potential to the technical potential

Categories of GHG mitigation potential (2)

- **Economic potential** - level of GHG mitigation that could be achieved if all technologies that are cost-effective from consumers' point of view were implemented
- **Socioeconomic potential** - level of GHG mitigation that would be achieved if all technologies that are cost effective are implemented, without regard to existing concerns about their performance characteristics, and without regard to social and cultural obstacles to their use.

Examples of barriers and opportunities

Source of barrier and/or opportunity	Examples of market and/or institutional imperfections and opportunities ^a	Examples of social & cultural barriers and opportunities
Prices	Missing markets (market creation) Distorted prices (rationalization of prices)	
Financing	Financial market imperfections (sector reform or restructuring of economy) Constraints of official development assistance (ODA) (removing tied aid and/or better targeting of ODA)	Long time and high transaction costs for small projects (pooling of projects)
Trade and environment	Tariffs on imported equipment and restrictive regulations (rationalization of customs tariffs)	
Market structure and functioning		Circumstances requiring rapid payback (fuel subsidies) Weaknesses of suppliers in market research (form associations to support market research)
Institutional frameworks	Transactions costs Inadequate property rights (improve land tenure) Misplaced incentives Distorted incentives	Institutional structure and design (restructuring of firms) National policy styles (shifting balance of authority) Lack of effective regulatory agencies (informal regulation)
Information provision	Public goods nature of information (increase public associations) Adoption externality (build demonstration projects)	
Social, cultural, and behavioural norms and aspirations		Inadequate consideration of human motivations and goals in climate mitigation (modify social behaviour) Individual habits (targeted advertising)

Source: IPCC's 3rd Assessment Report. WG 3: Mitigation. 2001

Policy instruments/tools to address barriers: support of technology, infrastructure, institutions

Table 4.1 Policy Tools for Creating an Enabling Environment for Technology Transfer		
POLICY TOOL	BARRIERS ADDRESSED	RELEVANCE
NATIONAL SYSTEMS OF INNOVATION AND TECHNOLOGY INFRASTRUCTURE (4.3)		
<ul style="list-style-type: none"> • Build firms' capabilities for innovation • Develop scientific and technical educational institutions • Facilitate technological innovation by modifying the form or operation of technology networks, including finance, marketing, organisation, training, and relationships between customers and suppliers 	<ul style="list-style-type: none"> • Lack of technology development and adaptation centres • Lack of educational and skills development institutions • Lack of science, engineering and technical knowledge available to private industry • Lack of research and test facilities • Lack of information relevant for strategic planning and market development • Lack of forums for joint industry-government planning and collaboration 	<p>Primarily private-sector-driven pathways</p> <p>Primarily buildings, energy, and industrial sectors</p> <p>All stages</p>
SOCIAL INFRASTRUCTURE AND RECOGNITION THROUGH PARTICIPATORY APPROACHES (4.4)		
<ul style="list-style-type: none"> • Increase the capacity of social organisations and NGOs to facilitate appropriate technology selection • Create new private-sector-focused social organisations and NGOs with the technical skills to support replication of technology transfers • Devise mechanisms and adopt processes to harness the networks, skills and knowledge of NGO movements 	<ul style="list-style-type: none"> • Technology selection inappropriate to development priorities • Historical legacy of technology transfer in development • Problems of scaling cultural and language gaps and fostering long-term relationships 	<p>All pathways</p> <p>Particularly adaptation technologies, but applies to all sectors</p> <p>Particularly assessment, evaluation and replication stages, although NGOs are more and more participating in implementation stages</p>
HUMAN AND INSTITUTIONAL CAPACITIES (4.5)		
<ul style="list-style-type: none"> • Build capacities of firms, non-governmental organisations, regulatory agencies, financial institutions, and consumers 	<ul style="list-style-type: none"> • Inability to assess, select, import, develop and adapt appropriate technologies • Lack of information • Lack of management experience • Problems of scaling cultural and language gaps and fostering long-term relationships • Limited impact of technology because no long term capacity built to maintain innovation • Lack of joint venture capabilities for learning and integrating 	<p>All pathways</p> <p>All sectors</p> <p>Particularly assessment and implementation stages</p>

Source: A Special Report of IPCC Working Group III. 2000

Policy instruments/tools to address barriers : economic, financial and market development instruments

Table 4.1 Policy Tools for Creating an Enabling Environment for Technology Transfer		
MACROECONOMIC POLICY FRAMEWORKS (4.6)		
<ul style="list-style-type: none"> • Provide direct financial support like grants, subsidies, provision of equipment or services, loans and loan guarantees. • Provide indirect financial support, like investment tax credits • Raise energy tariffs to cover full long-run economic costs • Alter trade and foreign investment policies like trade agreements, tariffs, currency regulations, and joint venture regulations • Alter financial sector regulation (See also chapter 5 for further discussion of policy tools for financing technology transfer) 	<ul style="list-style-type: none"> • Lack of access to capital • Lack of available long-term capital • Subsidised or average-cost (rather than marginal-cost) prices for energy • High import duties • High or uncertain inflation or interest rates • Uncertain stability of tax and tariff policies • Investment risk • Excessive banking regulation or inadequate banking supervision • Incentives for banks that are distorted against risk taking • Banks that are poorly capitalised • Risk of expropriation 	<p>Particularly private-sector-driven pathway, but relevant to all pathways</p> <p>Trade and foreign investment policies particularly relevant to private-sector-driven pathways</p> <p>Particularly assessment and repetition stages</p> <p>All sectors; energy tariffs relevant to buildings, industry, and energy sectors</p>
SUSTAINABLE MARKETS FOR ENVIRONMENTALLY SOUND TECHNOLOGIES (4.7)		
<ul style="list-style-type: none"> • Conduct market transformation programmes that focus on both technology supply and demand simultaneous. • Develop capacity for technology adaptation by small- and medium-scale enterprises (SMEs) • Conduct consumer education and outreach campaigns • Targeted purchasing and demonstrations by public sector 	<ul style="list-style-type: none"> • High transaction costs • Inadequate strength of smaller firms • Uncertainty of markets for technologies prevents manufacturers from producing them • Lack of consumer awareness and acceptance of technologies • Lack of confidence in the economic, commercial, or technical viability of a technology 	<p>Private-sector-driven pathways</p> <p>Buildings, industry, and energy sectors</p> <p>All stages</p>

Source: A Special Report of IPCC Working Group III. 2000

Policy instruments/tools to address barriers: legislation, standards, certification, property rights

Table 4.1 Policy Tools for Creating an Enabling Environment for Technology Transfer		
NATIONAL LEGAL INSTITUTIONS (4.8)		
<ul style="list-style-type: none"> • Strengthen national frameworks for intellectual property protection • Strengthen administrative and law processes to assure transparency, participation in regulatory policy-making, and independent review • Strengthen legal institutions to reduce risks 	<ul style="list-style-type: none"> • Lack of intellectual property protection • Contract risk, property risk, and regulatory risk • Corruption 	<p>All pathways</p> <p>All sectors</p> <p>Particularly agreement stage</p>
CODES, STANDARDS, AND CERTIFICATION (4.9)		
<ul style="list-style-type: none"> • Develop codes and standards and the institutional framework to enforce them. • Develop certification procedures, and institutions, including test and measurement facilities 	<ul style="list-style-type: none"> • High user discount rates do not necessarily result in most efficient technologies • Lack of information about technology or producer quality and characteristics • Lack of government agency capability to regulate or promote technologies • Lack of technical standards and institutions for supporting the standards 	<p>All pathways</p> <p>Buildings, transport, industry, and energy sectors</p> <p>Assessment stage</p>
EQUITY CONSIDERATIONS (4.10)		
<ul style="list-style-type: none"> • Devise analytical tools and provide training for social impact assessment. • Require social impact assessments before technology is selected • Create compensatory mechanisms for "losers" 	<ul style="list-style-type: none"> • Social impacts not adequately considered • Some stakeholders may be made worse off by technology transfer 	<p>All pathways</p> <p>All sectors</p> <p>Assessment stage</p>
RIGHTS TO PRODUCTIVE RESOURCES (4.11)		
<ul style="list-style-type: none"> • Investigate impacts of technology on property rights, test through participatory approaches, devise compensatory mechanisms for losers. 	<ul style="list-style-type: none"> • Inadequately protected resource rights 	<p>All pathways</p> <p>Most sectors where land use is involved</p>

Source: A Special Report of IPCC Working Group III. 2000



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Thank you for your attention!

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