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SUPPORTING REDD+ IN DEVELOPING COUNTRIES: A REVIEW OF POLICY OPTIONS

FOREST CARBON, MARKETS AND COMMUNITIES (FCMC) PROGRAM

APRIL 2015

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The U.S. Agency for International Development (USAID) launched the Forest Carbon, Markets and Communities (FCMC) Program to provide its missions, partner governments, and local and international stakeholders with assistance in developing and implementing REDD+ initiatives. FCMC services include analysis, evaluation, tools, and guidance for program design support; training materials; and meeting and workshop development and facilitation that support U.S. Government contributions to international REDD+ architecture.

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ACRONYMS AND ABBREVIATIONS

A/R	Afforestation and Reforestation
AB	Assembly Bill
ACCU	Australian Carbon Credit Units
ACR	American Carbon Registry
AFOLU	Agriculture, Forestry, and Other Land Use
APD	Avoided Planned Deforestation
ARB	Air Resources Board
AU	African Union
AUFD	Avoided Unplanned Frontier Deforestation and/or Degradation
AUMD	Avoided Unplanned Mosaic Deforestation and/or Degradation
BAU	Business as Usual
BioCF	BioCarbon Fund
BNDES	Brazilian Development Bank
BRICS	Brazil, Russia, India, China, and South Africa
BSER	best system for emissions reductions
CAA	Clean Air Act
CAN	Comision Nacional Del Agua
CAR	Climate Action Reserve
CCAP	Climate Change Action Plan
CCB	Climate, Community, and Biodiversity
CCER	Chinese Certified Emission Reductions
CCS	Carbon capture and storage
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CETESB	São Paulo's Environmental State Agency
CFI	Carbon Farming Initiative
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (decision-making body of the Kyoto Protocol)

COAG	Council of Australian Governments
COFA	Amazon Fund Steering Committee
CONAFOR	Comisión Nacional Forestal
CONANP	National Commission of Natural Protected Areas
COP	Conference of the Parties (decision-making body of the UNFCCC)
CRA	Environmental Reserve Quota
CRP	Conservation Reserve Program
CSP	Conservation Stewardship Program
CSR	Corporate Social Responsibility
CTC-REDD+	REDD+ National Technical Advisory Council
CTFA	Amazon Fund Technical Committee
DETER	Detection of Deforestation in real time
ECOWAS	Economic Community of West African States
EGU	Electric Utility Generating Units
EII	Earth Innovation Institute
EIU	Economist Intelligence Unit
EL	Environmental Licensing
ENAREDD+	National REDD+ Strategy
EPA	Environmental Protection Agency
EPBC	Environment Protection and Biodiversity Conservation
EPC	Energy Performance Certificate
ER	Emission Reductions or Removals
ERPA	Emission Reduction Purchase Agreement
ERU	Emission Reduction Unit
ESD	Effort-Sharing Decision
EU	European Union
EU ETS	European Union Emissions Trading Scheme
FCI	Forest Carbon Index
FCMC	Forest Carbon, Markets and Communities Program
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Programme

FIRJAN	Federation of Industries of the State of Rio de Janeiro
FOLU	Forest and other land use
FPDF	Forest Plantation Development Fund
FRAC	Fitness, Risk, Abatement, and Cost
FSSP	Forest Sector Support Partnership
GCF	Green Climate Fund
GCI	Global Competitiveness Index
GEF	Global Environmental Facility
GEx/CIM	Executive Group of the Inter-Ministerial Climate Change Committee
GHG	Greenhouse Gas
GIZ	German Agency for International Cooperation (Deutsche Gesellschaft fur Internationale Zusammenarbeit)
HVR	High Value Regrowth
GtCO2e	Metric Gigaton Carbon Dioxide Equivalent
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IDESAM	Institute for the Conservation and Sustainable Development of Amazonas
IFM	Improved Forest Management
INEA	Rio de Janeiro State Environment Institute
ISFL	Initiative for Sustainable Forest Landscapes
JCM	Joint Crediting Mechanism
JI	Joint Implementation
JNR	Jurisdictional and Nested REDD+
KCERs	Korean Certified Emissions Reductions
KfW	Bankengruppe; German development bank (KfW comes from Kreditanstalt für Wiederaufbau, or Reconstruction Credit Institute)
LULUCF	Land Use, Land-Use Change, and Forestry
MBI	Market-based instrument
MBRE	Brazilian Emission Reduction Market
MCCF	Mexican Climate Change Fund
MESTI	Ministry of Environment, Science, Technology and Innovation
MFF	Mexican Forestry Fund

MIGA	Multilateral Investment Guarantee Agency
MLNR	Ministry of Lands and Natural Resources
MONRE	Ministry of Natural Resources and Environment
MOU	Memorandum of understanding
MRV	Monitoring, Reporting, and Verification
MtCO2e	Million metric tons of carbon dioxide equivalent.
NAMA	Nationally Appropriate Mitigation Action
NCCPF	National Climate Change Policy Framework
NDA	National Designated Authority
NDP	National Development Plan
NDRC	National Development and Reform Commission
NGCC	Natural gas combined cycle
NGO	Nongovernmental Organization
NICFI	Norway's International Climate and Forest Initiative
NREG	Natural Resources and Environmental Governance Programme
OSIRIS	Open Source Impacts of REDD Incentive Spreadsheet
PAT	Perform Achieve and Trade
PES	Payments for ecosystem services
PMF	performance measurement framework
PMR	Partnership for Market Readiness
PPCDAM	Action Plan for Prevention and Control of the Legal Amazon Deforestation
PROFEPA	Procuraduría Federal de Protección al Ambiente
PSAH	Payments for Hydrological Envrionmental Services Program
REC	Renewable Energy Certificate
REDD	Reducing Emissions from Deforestation and Degradation (only; i.e., excluding forest conservation, management, and enhancements)
REDD+	Reducing Emissions from Deforestation and Forest Degradation; and the Role of Conservation, Sustainable Management of Forests, and Enhancement of Forest Carbon Stocks
REL	Reference Emissions Levels
REM	REDD Early Movers
RER	reference emissions rate

RGGI	Regional Greenhouse Gas Initiative
ROW	REDD Offset Working Group
RSPO	roundtable on sustainable palm oil
SBSTA	Subsidiary Body for Scientific and Technical Advice
SEMARNAT	Secretaría del Medio Ambiente y Recursos Naturales
SIS	Safeguards Information System
SISA	System of Incentives for Environmental Services
SNS	Safeguards National System
SOE	State of the Environment
tCO2e	Metric Ton Carbon Dioxide Equivalent
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USDA	U.S. Department of Agriculture
USG	United States Government
VCS	Verified Carbon Standard
VCU	Verified Carbon Units
VER	Verified Emission Reduction
WAEMU	West African Economic and Monetary Union

EXECUTIVE SUMMARY

OBJECTIVE

The objective of this paper is to evaluate the potential of a range of market and non-market policy options available to developing countries willing to contribute to a global climate change solution by reducing emissions from deforestation and forest degradation, forest conservation, sustainable management of forests, and enhancement of forest carbon stocks (REDD+) and to deliver additional co-benefits. The covered policy options are domestic market-based instruments (MBIs), direct regulation of land clearing, payments for results, and environmental impact assessment.

BACKGROUND

Forest loss in developing countries threatens the livelihoods of 1.6 billion people and the habitat of 80 percent of the world's terrestrial biodiversity. It also represents a significant contribution to global emissions. The feasible emission reduction potential from reducing deforestation has been estimated at up to 1.8 Metric Gigaton Carbon Dioxide Equivalent ($GtCO_2e/yr$) at less than US$20/Metric Ton Carbon Dioxide Equivalent (tCO_2e), with significantly higher estimates for theoretical supply (up to 4.3 $GtCO_2e/yr$). These estimates represent significant and cost-effective climate change mitigation potential, which can also deliver additional social and environmental co-benefits.

How REDD+ will be incentivized in a future climate agreement is still being finalized under the United Nations Framework Convention on Climate Change (UNFCCC). One option being considered is the use of market mechanisms, which some interpret to include emissions-trading markets. Currently demand for REDD+ credits comes from a voluntary market for forest credits, which started in the 1990s and has grown over the past decade. Bilateral and multilateral initiatives are also piloting market mechanisms and non-market payments for emission reductions and removals (ERs). However, demand for REDD+ credits from market mechanisms in developed countries has been slow to materialize for a number of reasons. Recent Forest Carbon, Markets and Communities Program (FCMC) analysis estimates that, at most, markets may capture a maximum of 18 percent of the feasible credit supply. For this reason, other policies that will incentivize REDD+ need to be explored.

Many developing countries are considering market-based instruments (MBIs) as part of domestic policy response to reduce emissions. MBIs or market-based approaches are those where industries choose which abatement opportunities to exploit. The commonly encountered MBIs are: cap-and-trade emissions trading schemes, baseline and credit schemes, and carbon taxes. An environmental impact assessment (EIA), as reviewed here, may also be considered an MBI if there is no constraint placed on the choice of emissions reductions activities undertaken. These domestic policy initiatives will support additional demand for REDD+ credits if REDD+ is an allowable offset category.

Non-market based policies can also be an effective way for developing countries to reduce domestic emissions and protect forests. "Payment for results" is an example of a non-market mechanism in which payments are made after the achievement of pre-agreed results, but it does not involve tradable credits. Another example that does not rely on payments is direct regulations, which work by prohibiting land clearing or limiting the amount of forested and other land that can be cleared. If EIA offsetting is restricted to REDD+, then EIA is not considered an MBI even though a credit transfer/payment may be involved.

All of the policy initiatives discussed in this paper depend on the willingness of developing countries to implement policies that reduce emissions domestically. They may be implemented with a combination of international and domestic funding.

There are many reasons for developing countries to engage in the policies considered in addition to contributing to global efforts to mitigate climate change. There are broad environmental benefits associated with direct regulation that supports sustainable land management. MBIs can help control pollution and improve waste management. EIAs can promote more complete assessment and mitigation of environmental impacts. In the context of using these policy instruments to support REDD+, there are numerous co-benefits, including improved forest livelihoods, biodiversity protection, and other environmental benefits.

METHODOLOGY

The review of policy options was conducted according to the following steps:

1. A conceptual framework to analyze policy options was developed. The conceptual framework covered categories of Fitness, Risk, Abatement, and Cost (FRAC) to identify key factors that may affect a policy's success and to evaluate its contextual suitability in a selected country.
2. A series of policies and countries were identified to carry out the FRAC analysis.
3. Existing information from reports and documents such as laws and regulations (draft and final) were reviewed and analyzed. Interviews with selected stakeholders and experts complemented this work.

KEY FINDINGS

- Direct regulation of land clearing is an essential foundation for countries to conserve and restore forests. It is a fundamental building block necessary for other policy tools – such as payment for results, MBIs, and EIA – to be effective. These policies may work together and play an important role in addition to direct regulation to help reduce "residual" land clearing by addressing the opportunity costs associated with removing land from agricultural production. Integrating direct regulation with MBI, payment for results, and EIA is likely to work best where countries are implementing robust monitoring, reporting, and verification (MRV) systems and environmental offset mechanisms, which offer a way to conserve the environment and link to finance mechanisms.
- MBIs in developing countries, especially emissions trading, have the potential to reduce domestic emissions and mobilize significant volumes of financing for REDD+. However, utilization of emissions trading is likely to be limited in developing countries due private and public sector capacity constraints as well as development and implementation costs. Loss of government revenue from allowing offsetting in some Emissions Trading Scheme (ETS) scenarios will also reduce the role of ETS as a leading driver of REDD+. Carbon taxes provide similar economic and environmental outcomes to emissions trading but require less capacity to develop and implement and may therefore be preferable to emissions trading in certain circumstances. The potential to support REDD+ under a carbon tax is also limited by losses of government revenue that flows from allowing offsets. Any offset limits associated with MBI will create an upper limit on the potential volume of REDD+ credits.
- A payment for results model that does not necessarily involve a REDD+ credit or offset transfer works best when recipient governments have demonstrated a commitment to reduce deforestation (e.g., through direct regulation) along with monitoring and enforcement capacity. Payment for results supports direct regulation to incentivize reductions in residual forest loss. Appropriate REDD+ programmatic and/or project structures need to be in place to drive ERs. As with reliance

on demand from international markets, scalability and reliability of funding for payment for results is a challenge.

- EIA offers a different policy approach to be considered alongside MBIs and payments for results. EIA can be used to trigger either compliance or voluntary offsetting. Compliance-based EIA offsetting is likely to be problematic due to political concerns over costs that may be perceived as creating barriers to investment attraction in an already competitive environment. Voluntary offsetting, while politically more palatable, offers less abatement potential and is affected by perceived public relations or corporate social responsibility values associated with offsetting and the local costs associated with generating REDD+ credits.
- Given the limitations of the mechanisms examined, further research should be considered to evaluate reforms in other areas. The practices of agricultural extension services, the policies of agricultural and forestry ministries, and the credit standards of agricultural development banks were identified in the research for this paper as potentially significant contributors to deforestation and therefore worth evaluating in specific country contexts. Additionally, depending on the country, subsidies and other forms of compensation such as land tax relief on cleared land may promote land clearing and should be re-evaluated. Canvassing a wider range of financial incentives that might be contributing to drivers of deforestation is worthwhile. Policy options that help change agricultural practices are particularly important, as agricultural interests were identified as a leading obstacle to governments passing direct regulation.

1.0 INTRODUCTION

Forest loss in developing countries represents a significant global problem, threatening the livelihoods of 1.6 billion people and the habitat of 80 percent of the world's terrestrial biodiversity.[1] Forest and other land use (FOLU) also accounted for about one-third of anthropogenic CO_2 emissions from 1750 to 2011 and 12 percent of emissions in 2000 to 2009.[2] Approaches to reduce emissions from deforestation and degradation, forest conservation, sustainable management and enhancement of forest carbon stocks (REDD+) are currently being negotiated under the United Nations Framework Convention on Climate Change (UNFCCC) and tested in developing countries.

How REDD+ will be incentivized in a future climate agreement is still being defined. Significant economic incentives need to be put in place to galvanize the financing necessary to reduce emissions from forest loss and will require the mobilization of public sector finance along with large amounts of private capital. The UNFCCC REDD+ decisions refer to using market and non-market approaches along with other solutions to incentivize REDD+. Given the need to attract private capital, many countries and investors expected that market-based approaches in the form of emissions trading markets would be developed. The feasible credit supply from REDD+ is estimated at up to 1.8 $GtCO_2e/yr$ at under 20 USD/tCO_2eq, with significantly higher estimates for theoretical supply (up to 4.3 $GtCO_2e/yr$).[3,4,5] These estimates represent significant and cost-effective climate change mitigation potential.[6]

However, emissions trading markets that support REDD+ have been slow to emerge. Even if new demand materializes through or after a UNFCCC agreement, it is unclear whether this demand will be adequate on its own to capture the low-cost mitigation potential of REDD+ in the near term. Results from the Forest Carbon, Markets and Communities Program's (FCMC's) 2014 supply and demand model, which considers market-based instruments (MBIs) and payment for results, suggest that even in

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1 UNEP. (n.d.). "Benefits of Forests, Forest Facts." Retrieved from http://www.unep.org/wed/forestfacts/. Accessed 20 February 2015.

2 IPCC. (2014). "Climate Change 2014: Mitigation of climate change. IPCC Working Group III Contribution to AR5. Chapter 11 - Agriculture, Forestry and Other Land Use (AFOLU)." Retrieved from http://report.mitigation2014.org/report/ipcc_wg3_ar5_chapter11.pdf.

3 Coren, M., Streck, C. and Myers Madeira, M. (2011). "Estimated supply of RED credits 2011-2035". *Climate Policy*, 11:6, 1272-1288.

4 There is a sizeable disparity between these annual figures. The total volume of emission reductions or removals available under 20 USD/tCO_2eq is unclear (i.e., how many years the 1.8 $GtCO_2eq/yr$ is available).

5 The theoretical supply is an upper limit on the feasible supply, which takes account of project and program development factors such as permanence buffers, stage of project/program development, credit production reductions, and so on.

6 For example, see the McKinsey Cost Curve for Greenhouse Gas Reduction, available at http://www.mckinsey.com/insights/sustainability/a_cost_curve_for_greenhouse_gas_reduction. Also see the Climate Works Forest and Land-use Sector Overview, available at http://www.climateworks.org/network/sectors/forests-and-land-use.

the most optimistic (and least probable) scenario, carbon market demand for REDD+ will not exceed 300 $MtCO_2e/yr$, well below the feasible credit supply of up to 1.8 $GtCO_2e/yr$.[7]

Countries with high marginal abatement costs will continue to be motivated to import some of their emissions reductions (abatement) from low marginal abatement cost countries, such as forest countries, in the form of REDD+ credits. However, given the uncertain state of policy options in developed countries to support such activities, new options are needed to incentivize REDD+ in developing countries, which will support forest livelihoods, protect biodiversity, deliver other environmental benefits, and contribute to global mitigation efforts by reducing emissions.

Incentivizing REDD+ may be possible, for example, via domestic climate change or environmental regulations, policies on supply chains or other regulations, and/or links to nascent domestic emissions trading or carbon-neutral schemes. These policy tools are used in various formulations in developed countries, but potential application for REDD+ in developing countries has not been fully explored.

The objective of this paper is to review a series of policy options that developing countries could pursue to support REDD+ in their own country. These options may be initiatives they assume themselves, and/or with international support from developed countries, depending on each country's capabilities and needs. As the suitability of a policy will vary country-to-country depending on national circumstances, the paper considers key needs and challenges to each policy successfully supporting REDD+.

This document is technical and assumes a certain level of prior knowledge. For the additional background on REDD+ and REDD+ markets, FCMC provides several resources.[8,9]

The following sections set out the methodology, results, and discussion, and provide conclusions and recommendations. This material is followed by appendices with further details on each policy and application in several countries.

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7 Linacre, N., O'Sullivan, R., Ross, D., and Durschinger, L. (2014). REDD+ Supply and Demand 2015 – 2025. United Stated Agency for International Development Forest Carbon, Markets and Communities Program: Washington, D.C., USA. (A customizable interactive graphic containing all the supply and demand results from the 2013 report and from the 2014 report can be found online at the REDD Desk, available at http://theredddesk.org.)

8 FCMC. (2013). Emerging Compliance Markets For REDD+: An Assessment of Supply and Demand. United Stated Agency for International Development Forest Carbon, Markets and Communities Program: Washington, D.C., USA. Retrieved from http://www.fcmcglobal.org/documents/Emerging_Compliance_Summary.pdf. Accessed 9 January 2015.

9 For further background on carbon markets: Linacre, N., et al. (2011). State and Trends of the Carbon Market 2011. World Bank: Washington, D.C. Retrieved from http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/StateAndTrend_LowRes.pdf

2.0 METHODOLOGY

The methodological approach adopted for the study includes: (a) development of a conceptual framework; (b) analysis of existing information, including reports and documents such as (draft as well as final) laws and regulations; and (c) interviews with stakeholders and key informants. A group of countries is chosen based on using a range of factors that include: economic, social, political, environmental, and fiscal indicators; geography and capacity; and some REDD+ countries participating in the Partnership for Market Readiness (PMR) – the World Bank managed fund that supports the development of Emissions Trading Schemes (ETSs) in non-Annex I countries. Data for the selection comes primarily from the World Bank's Governance Indications,[10] but the Economist Intelligence Unit's (EIU) Political Instability Index[11] and Multilateral Investment Guarantee Agency (MIGA) / EIU risk survey were also consulted.

Countries identified are: Brazil, Gabon, Ghana, Mexico, and Vietnam. To some extent this selection was dictated by the availability of data and research on the various policies and programs being investigated. Nevertheless, within this constraint we have tried to identify a representative group of countries using the available indicators discussed above. A hallmark of all countries chosen is a dependence on resource extraction and/or agriculture.

The methodology also involves identifying policies that could support REDD+, create demand for "REDD+ credits" / "REDD+ units", or create other payment-for-results mechanisms. Policies may include anything from direct regulation to greenhouse gas (GHG) emissions trading markets to EIA.

A group, comprising the authors and others REDD+ project developers and experts, was consulted to establish an initial list of policy options. At the Landscape Forum during the Lima Conference of the Parties (COP; December 2014), selected market participants were polled, using semi-structured interviews, on some of the policies initiatives and country selection. Subsequently, a short list of policy options was identified (see Table 1). The policies are organized around high-level policies with country specific implementations identified.

The analysis was conducted as follows: An appropriate model was identified and applied to a developing country to evaluate how it could work and how it could be used to support REDD+. The analysis covers each of the chosen policies, using examples and/or case studies from countries (as identified in Table 1) to explain the findings and provide country context. A Fitness, Risk, Abatement, and Cost (FRAC) analysis was developed to identify key factors that may affect a policy's success and to evaluate the contextual suitability of the policy model in the selected countries. Table 2 shows a generic outline for the FRAC analysis.

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10 World Bank. (2014). "World Bank Governance Indicators". Retrieved from http://info.worldbank.org/governance/wgi/index.aspx#countryReports. Accessed 20 February 2015.

11 The Economist. (2009/2010). "Political Instability Index". Retrieved from http://viewswire.eiu.com/site_info.asp?info_name=social_unrest_table&page=noads&rf=0. Accessed 20 February 2015.

TABLE 1. COUNTRY AND POLICY SELECTION

Policy Category	Policy	Existing Examples	Countries included in the analysis						
			Australia	Brazil	Indonesia	Mexico	Gabon	Ghana	Vietnam
Environmental safeguards / major project approvals	EIA	European Union (EU), British Columbia and Australian Government Biodiversity offsets, U.S. Wetland Mitigation Banking	Detailed Analysis	Detailed Analysis	No Analysis	No Analysis	Detailed Analysis	Detailed Analysis	Detailed Analysis
GHG Abatement	Cap-and-trade	EU ETS, California	No Analysis	Detailed Analysis	No Analysis	No Analysis	No Analysis	Detailed Analysis	Detailed Analysis
	Carbon Taxes	Chile, South Africa, Mexico	No Analysis	Detailed Analysis	No Analysis	Limited Analysis	No Analysis	Detailed Analysis	Detailed Analysis
	Offsetting	Costa Rica	Policy not considered.						
Payment for Results	Forest Carbon	Amazon Fund	Limited Analysis- Direct Action Policy	Detailed Analysis	Detailed Analysis	Detailed Analysis	No Analysis	No Analysis	No Analysis
	Agricultural Reserve Programs	U.S. Conservation Reserve Program and Conservation Stewardship Program; Landcare (Australia)	Policy not considered in detail, but there is some discussion of U.S. Conservation Reserve Program						
	Other payments for ecosystem services (PES)	PES tied to watershed protection / restoration in Colombia, Ecuador, United States, Vietnam	Policy not considered in detail, but there is some discussion of PES in Mexico and Vietnam						

Direct Regulation	Land-clearing policies	Australia (Queensland), Brazil's Forest Code	Detailed Analysis	Detailed Analysis	Not considered in detail, but some limited information on Indonesia is discussed under payment for results
Other MBI	Mandatory carbon reporting with offsets	Aviation	Policy not examined, but offsetting is discussed linked to other policy instruments		
Other domestic policy	Agricultural extension services, ministerial policy, government subsidies, financial institutions' lending policies, tax law		Policy options identified but not analyzed in detail; further country-specific analysis warranted		

TABLE 2. A GENERIC FRAC STRUCTURE WITH EXPLANATION FOR EACH CATEGORY

FRAC		
Fitness	Legal Context	This section covers important laws and regulations within which any policies to expand REDD+ must fit. To some extent the legal frameworks depend on tradition, and history and will be different for each country.
	Social and political acceptability	This section seeks to provide information on the likely acceptability of the proposed policy initiative and tries to identify if the initiative is likely to be highly contested.
	Institutional capacity	Capacity is a critical component affecting the likely success of any policy initiative and, where possible, is assessed against current capacity with commentary on how capacity gaps are being addressed.
	Transparency	Transparency and public participation are critical for natural resource management issues. Transparency International's country assessments are combined with academic and grey literature to develop a view on the status of the country's development in this area.[12]

[12] There is a lot of published literature on the transparency and natural resource management. The main focus is on transparency in extractive industries. For example, visit http://www.imf.org/external/np/sec/pr/2014/pr14473.htm, or

	Governance	Governance is complicated, involving multiple agencies, regulatory bodies, and private and public sector organizations. Governance and democratic reforms, while important, may not immediately result in reducing land clearance rates. Despite improvements in governance, it can take decades for land clearing rates to decline.
	Implementation	Implementation issues are important, and gaps often exist between a government's ability to develop policy and its ability to implement policy. As a rule of thumb, good policy should also be implementable policy. This section considers any country-specific implementation issues affecting the policy under evaluation
Risks	Environmental	This section identifies any risks that may be relevant to policy implementation. This is not an exhaustive list, but it highlights some of the risks that could limit the success of the policy initiative under evaluation
	Economic	
	Other	
Abatement potential		This section provides a qualitative commentary on the policy's ability to generate ERs. Quantitative estimations are presented when available.
Cost		This section provides a qualitative commentary on the policy's implementation and other costs, including who bears the cost. Quantitative estimations are presented when available.

see Acosta A.M. (2013). The Impact and Effectiveness of Accountability and Transparency Initiatives: The Governance of Natural Resources. *Development Policy Review*, 31 (S1): s89-s105.

3.0 RESULTS

This section provides generalized results informed by case studies developed to examine issues around implementing REDD+ as part of: direct regulation (Appendix I); payment for results models (Appendix II); MBIs (Appendix III); and existing EIA laws (Appendix IV). The results focus on each of these policies in light of how they could support or incentivize REDD+. The implications of these results are considered in the discussion section.

3.1 DIRECT REGULATION

Direct regulation of land-clearing prohibits or limits the amount of forested and other land that can be cleared and should form part of any country's national or subnational (state / jurisdictional) measures to drive REDD+. Brazil and Australia are used as case studies. In both cases the regulatory context can be characterized by i) influential political lobbies with conflicting interests at the national level; ii) environmental institutions without clear regulatory oversight of land clearing; iii) a strong, well-established national agricultural institution charged with expanding agricultural production that may even have policies promoting land clearing; and iv) difficulties in detection and enforcement of illegal clearing. Specific details on these issues for Australia and Brazil appear in Appendix I, which also contains a more detailed description of direct regulation policies in both countries. General issues that a REDD+ country would need to consider if it planned to implement direct regulation to support REDD+ have been identified and summarized using the FRAC framework in Table 3.

TABLE 3. FRAC TABLE OUTLINING SOME OF THE ISSUES INVOLVED IN ESTABLISHING DIRECT ACTION LAWS THAT WOULD SUPPORT REDD+.

		Direct Action
Fitness	Legal Context	Normally a specific land clearing law is established but can be part of wider biodiversity conservation laws. These laws depend on detection and enforcement capabilities.
	Social and political acceptability	Usually highly contested; agribusiness interests conflict with conservation interests. Agricultural constituencies generally oppose and/or impose restrictions on restoration efforts on cleared land and argue in support of expanding agricultural production.
	Institutional capacity	Timely and high-resolution monitoring capability combined with robust, timely, and vigorous enforcement capacity is needed.
	Transparency	Growing public awareness and concern about forest and biodiversity loss are important for providing a political climate for reform and for the emergence of constituencies to balance land-clearing interest. Where transparency is inadequate and environmental awareness is low, direct regulations do not function efficiently due to lax enforcement.

	Governance	Governance can be complicated, involving multiple agencies, regulatory, bodies, and private and public sector organizations. Governance and democratic reforms, while important, may not immediately result in reducing land-clearance rates. Despite improvements in governance, it can take decades for land-clearing rates to reduce.
	Implementation	Coordination across government can be problematic, as multiple agencies are normally involved. Strong opposition can arise from other ministries, which may even have policies and practices that promote land clearing. Intense local opposition can be difficult to overcome.
Risks	Environmental	Progress can be slow, leaving a highly fragmented habitat that can be difficult to recover even when strong land-clearing laws are enacted. Restoration efforts on cleared land can be problematic due to opposition from landowners, partly due to high costs and lack of financial resources. The possibility of enacting land-clearing laws stimulates preemptive land clearing. Leakage can occur. Land-clearing laws often are not balanced across biomes. For this reason, biomes that do not capture the public's imagination are more likely to receive less protection than biomes that do. Land clearing laws can be reversed.
	Economic	
	Other	
Abatement potential		Significant abatement potential for REDD+ depending on the strength and enforcement of land-clearing laws. The strength of the laws drives the potential.
Cost		The cost is usually borne by landholders.

3.2 PAYMENT FOR RESULTS

In this paper we consider payment for results to encompass non-market programs where payments are made after the achievement of pre-agreed results, rather than being made upfront to fund future activities.[13] Payments for ecosystem services (PES) policies are a form of payment for results but are not specifically examined in this report, as they have been extensively reviewed elsewhere. Under payment for results, the implementing country or organization may need to carry the initial financing and implementation risks. A large country or organization with significant capacity and robust processes may be able to more easily implement such policy without additional support compared to a small less-developed country or organization.

[13] U.K. Government. (2014). Sharpening Incentives to perform: DFID's Strategy for Payment by Results. Department for International Development (DFID).

The Amazon Fund is the preeminent example. In 2006 Brazil presented a proposal at COP 12 to reduce emissions from deforestation, based on a payment for results model rather than on tradable credits.[14] The Amazon Fund became operational in August 2008. As the first contributor to the fund, Norway pledged US$1 Billion. The fund channels finance to REDD+ projects via the Brazilian Development Bank (BNDES). However, the model has not been as successful in Indonesia due to challenges with forest governance. The details of how payments for results has worked in Brazil and Indonesia is analyzed in Appendix II. This analysis helped identify general issues that a REDD+ country would need to consider if it planned to implement payments for results to support REDD+. These issues are summarized using the FRAC framework in Table 4 below.

TABLE 4. SOME OF THE ISSUES INVOLVED IN ESTABLISHING PAYMENTS FOR RESULTS THAT WOULD SUPPORT REDD+.

		Payments for Results
Fitness	Legal Context	A payment mechanism such as a fund is needed. Specific laws or amendments for the establishment of the fund to allocate payments may be needed. Donor and recipient must agree on performance benchmarks, with the ability to control deforestation as a pre-condition. This effort requires land-clearing or REDD+-specific laws and institutions with legal mandates for monitoring and enforcement. MRV standards are required.
	Social and political acceptability	Legal deforestation is often contested with economic interests (e.g., farmers and cattle ranchers) and conservationists opposing each other. Payments for results models can be an effective way to bridge the gap between different stakeholders. Consequently governments do not generally encounter strong social and political opposition when such funds are established, especially if financing comes from international donors.
	Institutional capacity	Capacity must exist to meet the agreed-upon benchmarks in the program; otherwise, payments will not be made. This capacity includes timely and high-resolution monitoring capability combined with robust, timely, and vigorous enforcement capacity. Additional capacity is needed in funds management and the establishment of REDD+ projects or programs. Depending on the organization of the MRV system, both private and public sector capacity may be required.
	Transparency	The donors must have confidence in the reported data that triggers a payment to the recipient. Data should comply with defined quality criteria: transparency, comparability, consistency, completeness, and accuracy. Corruption and a lack of transparency

[14] UNFCCC. (2006). UNFCCC Submission from Brazil. Retrieved from https://unfccc.int/files/meetings/dialogue/application/pdf/wp_21_braz.pdf. Accessed 20 February 2015.

		is likely to be highly problematic, particularly when taxpayer funds are being deployed in this way.
	Governance	Governance can be complicated, involving multiple agencies, regulatory bodies, and private and public sector organizations. Governance structures supporting the fund need to be established along with structures that will control land clearing, including project or program emission reduction MRV capacity, land clearing laws, and enforcement.
	Implementation	Assuming that the basic land-clearing reduction architecture is in place, the fund must establish business processes and systems for the evaluation, approval, and disbursements of funds from specific applications. Capacity needs to be built among the implementing partners and other stakeholders such as auditors capable of verifying ERs. A registry may also need to be established to track ERs to prevent double payment and track ERs.
Risks	Environmental	Leakage can be problematic. Land clearing laws often are not balanced across biomes. For this reason, biomes that do not capture the public's imagination are less likely to receive financial support than those that do. Other risks include fund operational risks associated with ensuring that abatement is real, verifiable, and permanent.
	Economic	
	Other	
Abatement potential		There is significant abatement potential for REDD+ depending on the strength and enforcement of land-clearing laws. The strength of the laws drives the potential volume of REDD+.
Cost		Sources of funds for payments need to be secured. International sources are most likely, but potential for application at scale in multiple countries is unlikely, in particular due to potential competition with the donors preferentially directing support to the Green Climate Fund (GCF). Implementation cost depends on the costs associated with undertaking the reduction in land clearing, such as the development of national laws, MRV systems, and enforcement capacity.

3.3 MARKET-BASED INSTRUMENTS (MBI)

Market-based approaches are those where industries choose which abatement opportunities to exploit. The commonly encountered MBIs are: cap-and-trade emissions trading schemes[15], baseline and credit

[15] European Union Emissions Trading Scheme. (n.d.). Retrieved from http://ec.europa.eu/clima/policies/ets/index_en.htm. Accessed 20 February 2015.

schemes[16], and carbon taxes[17]. Baseline and credit schemes are not considered in this analysis. In the context of controlling pollution, direct regulations (non-market) approaches – which work by prescribing (that is, requiring) or proscribing (that is, banning) particular technologies or production processes – are potentially inefficient in achieving environmental outcomes and likely to impose significant costs on the economy.[18] Carbon taxes and emissions trading schemes can deliver comparable economic and environmental outcomes at a lower cost than direct regulations.[18]

A carbon tax fixes the price for each unit of emission and allows the quantity of abatement to emerge from the market. This approach is different from an emissions trading scheme that establishes the level of abatement and allows the price to emerge from the market. Both the price and the quantity of emissions reductions cannot be controlled at the same time — control over one necessarily affects the other. Therefore, the choice of policy instrument will be guided by the relative importance placed on having greater control over the emissions outcome or the price (cost) imposed.[18] In practice most emissions trading systems mix approaches by having ceiling and / or floor prices. Governments are often tempted to intervene in emissions markets to adjust prices; see, for example, the back-loading proposals in the EU ETS.[19,20] Offset rules can also be changed, thus affecting the supply of credits and REDD+ if allowed.

There are a variety of mechanisms for including REDD+ in MBIs, either through: i) inclusion of forestry and land use emissions/removals as a covered sector; ii) use as an offsets sector for cost containment and; iii) provision of subsidies, loans, grants, and investments directed to emissions reductions from REDD+. The experience in Australia and the United States suggests that including land use as a covered sector is problematic due to political and technical considerations. Therefore, a combination of financial incentives and using land use as an offset sector is normally preferred. For developing countries, supporting the expansion of REDD+ as an offset could make sense given the potential for REDD+ credits to be used in MBIs in developed countries in the future.[21] MBIs can also channel financing to REDD+ projects and programs via market prices established by a carbon tax or emissions trading scheme. In some respects this approach is analogous to financing via payments for results and materially different from the land-clearing control policies discussed under direct action.

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16 Alberta's Greenhouse Gas Reduction Program. (n.d.). Retrieved from http://esrd.alberta.ca/focus/alberta-and-climate-change/regulating-greenhouse-gas-emissions/default.aspx. Accessed 20 February 2015.

17 Carbon Tax in Mexico. (2014). Partnership for Market Readiness, World Bank. Retrieved from https://www.thepmr.org/system/files/documents/Carbon%20Tax%20in%20Mexico.pdf. Accessed 20 February 2015.

18 Government of Australia. (2006). Prime Ministerial Task Group on Emissions Trading. Retrieved from http://pandora.nla.gov.au/tep/72614. Accessed 20 February 2015.

19 European Commission. (2015). Structural Reform of the European Carbon Market. Retrieved from http://ec.europa.eu/clima/policies/ets/reform/index_en.htm. Accessed 20 February 2015.

20 This is partly a design issue, and some policy decisions can increase the transparency and independence of the scheme, reducing potential political interventions.

21 Linacre, N.; O'Sullivan R.; Ross, D.; and Durschinger, L. (2015). REDD+ Supply and Demand 2015-2025. United Stated Agency for International Development Forest Carbon, Markets and Communities Program: Washington, D.C., USA.

3.3.1 Carbon Tax

A carbon tax is a form of explicit carbon pricing; it refers to a tax directly linked to the level of carbon dioxide (CO_2) emissions, often expressed as a value per tonne CO_2 equivalent (per tCO_2e)[22,23]. Fourteen countries around the globe have implemented or passed legislation on carbon tax to address GHG emissions. A carbon tax places a direct cost for pollution on applicable emitters and incentivizes investment toward more efficient processes and lower carbon technologies. Carbon taxes can be introduced as an independent instrument or they can exist alongside other carbon-pricing instruments, such as an energy tax.

How a carbon tax could be applied in Brazil, Ghana, and Vietnam to support REDD+ is analyzed in Appendix III, which also contains a more detailed description of emissions trading and carbon tax policy. General issues that a REDD+ country would need to consider if it planned to implement a carbon tax that could support REDD+ are summarized using the FRAC framework in Table 5.

TABLE 5. FRAC TABLE OUTLINING SOME OF THE ISSUES IN ESTABLISHING A CARBON TAX THAT WOULD SUPPORT REDD+.

		Carbon Taxes
Fitness	Legal Context	Usually multiple legal instruments are required, covering: tax law changes, compensation for trade-exposed and emissions-intensive industries and households, point of obligation and the establishment of a registry for liability management and acquittal, energy and GHG reporting requirements, and any corporation law changes. Additionally, oversight amendments may be required to establish relevant powers for the tax-collection agencies.
	Social and political acceptability	Carbon taxes are regressive in nature, affecting poorer people disproportionately. Therefore, household compensation can be important for the acceptability of any package. Carbon taxes have an economy-wide inflationary impact, which can affect acceptability. Trade-exposed and emissions-intensive industries may need compensation to mitigate the competitive impact of the scheme and to reduce the chance of leakage. Using REDD+ credits to offset industrial emissions can also be contentious for some members of civil society.
	Institutional capacity	An efficient and effective tax collection system is needed; however, depending on the point of obligation, often only a few companies will be involved in paying the tax. This approach

22 A carbon tax can cover other greenhouse gasses apart from carbon dioxide.

23 OECD. (2013). Climate and carbon - Aligning prices and policies, OECD policy paper. Retrieved from http://www.oecd-ilibrary.org/environment-and-sustainable-development/climate-and-carbon_5k3z11hjg6r7-en. Accessed 20 February 2015.

		greatly simplifies the situation. Technology needs may include a registry, finance system, emissions reporting system, and customer service all supported by appropriate business processes.
	Transparency	Transparency and public participation are usually an important aspect for obtaining community support for a tax scheme. One benefit of a carbon tax is that it is a familiar system, especially in countries that already collect fuel taxes on petroleum products.
	Governance	Governance can be complicated, involving multiple agencies, regulatory, bodies, and private and public sector organizations.
	Implementation	Regulatory packages and business processes for the registry – and GHG reporting systems – need to be developed. Customer service and financial systems are required. A single customer record system should be developed for a single point of contact to avoid regulatory arbitrage. This concept applies to all regulatory interactions across the scheme. Scheme participation rules need to be established. Purchasing computer systems can be a major issue, as can be financing the cost associated with market infrastructure.
Risks	Environmental Economic Other	There are scheme risks. Political risks are significant and can affect implementation details, durability of the scheme, and compensation to industries and households.[24] Leakage is both an environmental and economic risk to the scheme. Adequacy of compensation for households may be important. Purchasing computer systems and software can be a risk. Permanence for REDD+ credits used as offsets would need to be addressed.
Abatement potential		Significant general abatement potential depends on the price signal from the scheme. Potential to drive REDD+ abatement depends on total demand for offsets within the scheme and any quantitative limitations on REDD+ offsets. Countries with smaller economies (particularly compared to the size of its forests) will not be expected to generate significant demand for REDD+.
Cost		The cost is borne by the domestic economy. This approach is cost effective when compared to direct regulation (non-market) approaches, which work by prescribing or proscribing / banning particular technologies or production processes.

[24] Linacre, N. (2011). "The risks of investing in Australia's clean energy future". *Trading Carbon* 5(8), 30-31.

3.3.2 Emissions Trading

Emissions trading involves issuing allowances to achieve a measurable emissions reduction target. The number of allowances issued by either auction or administrative allocation must be less than the amount required under normal 'business as usual' conditions. The scarcity of allowances gives them a value. [178] Cap-and-trade emissions trading schemes are the most familiar due to the European Union Emissions Trading Scheme. Cap-and-trade establishes a 'cap', or limit, on the total amount of certain greenhouse gases that covered entities in the system – factories, power plants, and other installations – can emit. The cap is chosen to achieve a desired environmental outcome and is reduced over time so that total emissions fall. Covered entities may receive allowances freely through administrative allocations and/or by purchasing them through public auction. These allowances can be traded between the scheme participants as needed. Offsets are also often incorporated in cap-and-trade schemes.[25]

Most national and regional GHG abatement schemes that allow offset mechanisms restrict the use of credits to ensure that scheme participants take meaningful operational emission reduction actions to meet emission reduction targets. REDD+ can be incentivized if REDD+ credits can be used to meet a covered entity's emission allowance (i.e., offsetting an entity's emissions).

Nearly 40 national and more than 20 subnational jurisdictions are participating or preparing to participate in emissions trading systems today, and other countries are considering other market options.[26] How an emission trading scheme could be applied in Brazil, Ghana, and Vietnam is analyzed in Appendix III, which also contains a more detailed description of emissions trading policy. The general issues that a REDD+ country would need to consider if it planned to implement a cap-and-trade scheme that could also support REDD+ are summarized using the FRAC framework in Table 6.

TABLE 6. FRAC TABLE OUTLINING SOME OF THE ISSUES IN ESTABLISHING AN EMISSIONS TRADING SCHEME THAT WOULD SUPPORT REDD+.

		Emissions Trading – Cap-and-Trade
Fitness	Legal Context	Multiple legal instruments are usually required for Emissions Trading. These instruments will cover: specifics of cap-and-trade (e.g., allowance allocations, auctions, point of obligation, registry, banking, linking, liability rules, compensation for trade exposed industries, household compensation, carbon budgets and cap setting, and so on); energy and GHG reporting requirements; corporations law changes; financial oversight amendments (e.g., securities and commodities laws); and regulatory oversight of the scheme.

25 The offset market is based on the principle that the benefit to the climate of reducing GHG emissions is the same regardless of where the GHG emissions are reduced. For this reason, countries with high marginal abatement costs may choose to import some of their emissions reductions (abatement) from low marginal abatement cost countries in form of carbon credits or offsets.

26 World. Bank. (n.d.). Globally Networked Carbon Markets. Retrieved from http://www.worldbank.org/en/topic/climatechange/brief/globally-networked-carbon-markets. Accessed 20 February 2015.

	Social and political acceptability	Emissions Trading is regressive in nature, affecting poorer people disproportionately. Therefore, household compensation can be important for the acceptability of any package. Emissions trading has an economy-wide inflationary impact, which can affect acceptability. Individual action such as buying green power needs to occur in addition to the cap to avoid negative impressions of the scheme. Trade exposed emissions intensive industries may need compensation to mitigate the competitive impact of the scheme and to reduce the chance of carbon leakage. Some members of civil society consider the use of REDD+ credits to offset industrial emissions to be controversial.
	Institutional capacity	Existing sophisticated market capacity is needed in the form of a derivatives (futures) market, spot markets, clearinghouses, and government debt auctions management. The government needs regulatory experience of complex financial and / or commodity derivatives and it needs capacity in regulating emissions reporting. Capacity is also needed to assess REDD+ projects or programs and confirm the credibility of REDD+ credits used as offsets.
	Transparency	Transparency and public participation are usually an important aspect for obtaining community support for an emissions trading scheme. One of the problems with emissions trading is the perceived complexity of the system and the difficulty in communicating it.
	Governance	Governance can be complicated, involving multiple agencies, regulatory bodies, and private and public sector organizations. Typically it involves treasury, finance, environment, foreign affairs, financial and commodity market regulators, stock market and futures exchanges; clearinghouses; and private vendors.
	Implementation	Regulatory packages and business processes for the auction, registry, and GHG reporting systems need to be developed. Customer service and financial systems are required. A single customer record system should be developed for a single point of contact to avoid regulatory arbitrage. This approach applies to all regulatory interactions across the scheme. Scheme participation rules need to be established. Appropriate safeguards must be established to prevent money laundering, tax manipulation, and other abuses. Purchasing technology can be a major issue, as can financing the cost of associate market infrastructure.
Risks	Environmental	There are scheme risks due to the complexity of the system. Political risks are significant and can affect the implementation
	Economic	
	Other	

		details, durability of the scheme, and compensation.[27] Leakage is both an environmental and economic risk to the scheme. The adequacy of compensation for households can be important for obtaining lock-in and buy-in to the scheme, as can recognition of individual actions (e.g., green power) outside the cap. Purchasing technology can be a risk. Cap setting and carbon budgets can be a problematic issue. Administrative allocations must be well managed to ensure that polluting industries do not receive windfall profits. Permanence for REDD+ credits used as offsets must be addressed.
Abatement potential		There is significant general abatement potential depending on the price signal from the scheme, which depends on the cap (supply of allowances); demand for allowance; offset volumes (increase supply); and linking rules. Potential to drive REDD+ abatement depends on total demand for offsets within the scheme and any quantitative limitations on REDD+ offsets. Countries with smaller economies (particularly compared to the size of its forests) will not be expected to generate significant demand for REDD+ credits.
Cost		The cost is borne by the domestic economy. This approach is cost effective when compared to direct regulation (non-market) approaches, which work by prescribing or proscribing / banning particular technologies or production processes.

3.4 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

EIA focuses on harnessing an established mechanism in a new way to support demand for REDD+. The EIA model discussed here is somewhat different from the other models but similar to payments for results and MBIs in that it has the potential to create financing for REDD+. These policies differ from direct regulation, which is largely about the types of policies needed to control land clearing.

To date EIA has not been widely used as a policy tool to reduce GHG emissions, but if strengthened and implemented effectively[28] it could be used on a voluntary or compliance basis to support REDD+. In several countries EIAs use environmental offsets, which are measures that seek to achieve equivalent environmental outcomes to compensate for the residual adverse impacts of an action on the environment. Globally there is growing interest in the use of environmental offsets as a way to protect the environment and allow growth and development. Incorporating GHG emissions in EIA will help broaden out the scope of an EIA to better include the full impact of a project. This approach requires assessing GHG emissions, options to mitigate and/or offset GHG impacts, and incorporating accounted emissions into decision-making, as is discussed further in Appendix IV.

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27 Linacre, N. (2011). "The risks of investing in Australia's clean energy future". *Trading Carbon* 5(8), 30-31.

28 EIAs suffer from some general problems. In many situations EIAs are either poorly done and / or poorly reviewed – cut and paste – and sometimes politicized if a favored project is the subject.

Environmental offsets, biodiversity offsets, and REDD+ offsets are related. Environmental offsets conceptually have the broadest definition, followed by biodiversity offsets and then REDD+, which restricts the definition to forest carbon stocks and GHG emissions abatement. The link to GHG abatement in REDD+ creates the possibility of financing through carbon markets and other mechanisms, in this case EIA.

The way an EIA scheme could be applied in Brazil, Gabon, Ghana, and Vietnam is analyzed in Appendix IV, which also contains a more detailed description of EIA. General issues that a REDD+ country would need to consider if it planned to implement an EIA scheme that could also support REDD+ are summarized using the FRAC framework in Table 7.

TABLE 7. FRAC TABLE OUTLINING SOME OF THE ISSUES IN ESTABLISHING AN EMISSIONS TRADING SCHEME THAT WOULD SUPPORT REDD+.

		Environmental Impact Assessment
Fitness	Legal context	EIA laws often exist but would need to be amended to include environmental offsets that encompass GHG emissions abatement using REDD+. This new instrument depends on existing REDD+ capabilities but utilizes current regulatory frameworks of EIA.
	Social and political acceptability	Potentially contested by industry, as it creates a new form of environmental obligation within the EIA framework. It is probably less controversial from a community standpoint as it broadens the application of existing laws, though some members of civil society consider the use of REDD+ credits to offset industrial emissions to be controversial.
	Institutional capacity	Institutions need EIA assessment capabilities along with emissions reporting capacity. Capacity is also needed to assess REDD+ projects or programs and confirm the credibility of REDD+ credits used as offsets.
	Transparency	Transparency is usually a component of most existing EIA laws and REDD+, and research on the effectiveness of awareness and consultation processes is often available. From this perspective the shortcomings of any specific EIA schemes are often known and can be reformed if necessary.
	Governance	Governance can be complicated, involving multiple agencies, regulatory bodies, and private and public sector organizations. Conflict can exist between the various ministries within government responsible for EIA and between the government and industries subject to EIA (e.g., mining, agriculture). A single lead agency may be important to resolve conflicts between agencies.
	Implementation	Coordination across government can be problematic, as multiple agencies are normally involved. Strong opposition can arise from other ministries. Law reform may be needed and capacity must be established to administer the system.

Risks	Environmental	Abatement volumes may not be high.
	Economic	May create disincentives to invest due to costs of REDD+ credits – and may provide an advantage to established operations, which could be seen as anti-competitive
	Other	Competitiveness in terms of attracting investment may be an issue.
Abatement potential		Abatement potential is limited to new projects and emissions associated with those projects.
Cost		The cost is borne by project proponents. The cost of implementing an EIA scheme that includes REDD+ offsets could be lower than that of more complex options discussed above.

4.0 DISCUSSION

The previous section provides generalized results from the FRAC analysis. Here we discuss how some of these generalized results are observed in national schemes. An important distinction between the policy options is that direct regulation is less about financing emissions reductions from land clearing and more about the policies, regulations, and rules that are put in place to control land clearing. This approach should be part of any government's national or subnational REDD+ efforts.

One way to create a link to financing is the establishment of offsets. For example, amendments to Brazil's direct regulation policy, the Forest Code, allows for the possibility of offset trading, creating a potential financing channel to REDD+. Arguably as land clearing rates decline, it becomes more complex, costly, and difficult to reduce the remaining "residual" land clearing due to price incentives from commodities.[29] Additional efforts are often needed to incentivize further reductions by channeling financing.

Payments for results, MBIs, and EIA policies aim to channel financing to REDD+. These policies may work together and play an important role in addition to direct regulation to help reduce "residual" land clearing by addressing the opportunity costs associated with removing land from agricultural production. EIA is alone in this policy mix by not necessarily having a direct link to financing. Payment for Results provides an explicit financial incentive to reduce land clearing, but is limited by the level of current and ongoing financial support from international and domestic sources and does not catalyze the potential of MBIs.

To date MBIs have failed to provide the much-anticipated demand that would channel financing to REDD+. Carbon taxes are unlikely to drive significant volumes due to quantitative restrictions on offset use, limiting support for REDD+. In the case of carbon markets, support for REDD+ so far has been limited, primarily because REDD+ is not included in any emissions trading schemes. Should REDD+ be included, there are likely to be quantitative limits on its use, which would restrict the ability of carbon markets to drive financial flows in this situation. Even so, significant financing could be stimulated through carbon markets that incorporate REDD+.[30] This situation leaves EIA as the remaining policy option considered in this paper.[31]

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29 Nepstad D., et al. (2014). Slowing Amazon deforestation through public policy and interventions in beef and soy supply chains. *Science,* 344(6188), 1118-1123.

30 Linacre, N., O'Sullivan, R., Ross, D., and Durschinger L. (2014). REDD+ Supply and Demand 2015 – 2025. United Stated Agency for International Development Forest Carbon, Markets and Communities Program: Washington, D.C., USA.

31 Of the two MBI policies considered, a carbon tax is the instrument least likely to deliver significant emissions reductions from REDD+. The motivation for introducing a carbon tax is to broaden a government's revenue base. Therefore, treasury and finance ministries will oppose offsets vigorously, because they represent lost revenue.[31] This case is also true for emissions trading schemes with auctions, where offsets reduce government revenues. In emissions trading schemes that use administrative allocations, the government has already foregone all potential revenues; as such, offsets do not have a revenue impact.

Due to the history of agricultural development and land tenure, EIA has not played a pivotal role in agricultural development. EIA is used by larger commercial agribusinesses but is less commonly used within the national agricultural systems of many developing countries, due in part to the majority of farmers and farmer collectives being smallholders. EIA is project-based and usually applies to significant new industrial investment proposals but could also be applied to agricultural investments. It is unlikely that EIA alone could play a pivotal role in reducing land clearing, but it may have utility as an additional funding mechanism for REDD+.

The remaining sections discuss key points from the analysis of direct regulations (Appendix I); payments for results (Appendix II); MBIs (Appendix III); and EIA (Appendix IV). The discussion examines each of these policies in light of how they could support or incentivize REDD+.

4.1 DIRECT REGULATION

The ever-expanding agriculture frontier in developing countries is a primary driver of land clearing. Continued global population growth and changing consumer preferences for diets with more meat and dairy products in developing countries require continued increases in agricultural production.[32] This shift does not necessarily mean that the area under cultivation must be expanded. Technology improvements, intensification, irrigation, fertilizer use, and mechanization can all contribute to increasing output from existing land.[33] Economic modelling of global population growth and agricultural productivity suggests that increases in agricultural production will exceed the growth rate of the human population, but these models do not necessarily factor in the effects of climate change, biodiversity protection, and forest livelihoods.[34]

In developing countries, the majority of people (60-70 percent) depend directly or indirectly on productivity increases in agriculture to get out of poverty[35] and commonly spend 50 percent of their household income on food.[36] Environmental impacts linked to climate change may reduce productivity, negatively affecting peoples' lives. Clearing more land will continue to drive up GHG emissions and exacerbate the problem. As such, both developed and developing countries have a mutual interest in reducing deforestation from agriculture. Brazil and Queensland, Australia are used as case studies of direct regulation – policies that directly limit land clearing.

Both Australia and Brazil have historically high deforestation rates and dependence on agriculture. They are regarded as resource economies – similarly dependent on iron ore and other minerals exports. Both countries also have a history of trying to control land clearing through direct regulation. Land clearing in

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32 Pinstrup-Anderson, P. (2001). The Future World Food Situation and the Role of Plant Disease. International Food Policy Research Institute, Washington D.C. Retrieved from http://www.ifpri.org/srstaff/pinstrup.htm

33 Linacre et al. (2005). Analysis for Biotechnology Innovations Using Strategic Environmental Assessment (SEA). EPT Discussion Paper 140. International Food Policy Research Institute: Washington, D.C. Retrieved from http://ebrary.ifpri.org/cdm/compoundobject/collection/p15738coll2/id/64948/rec/1. Accessed 20 February 2015.

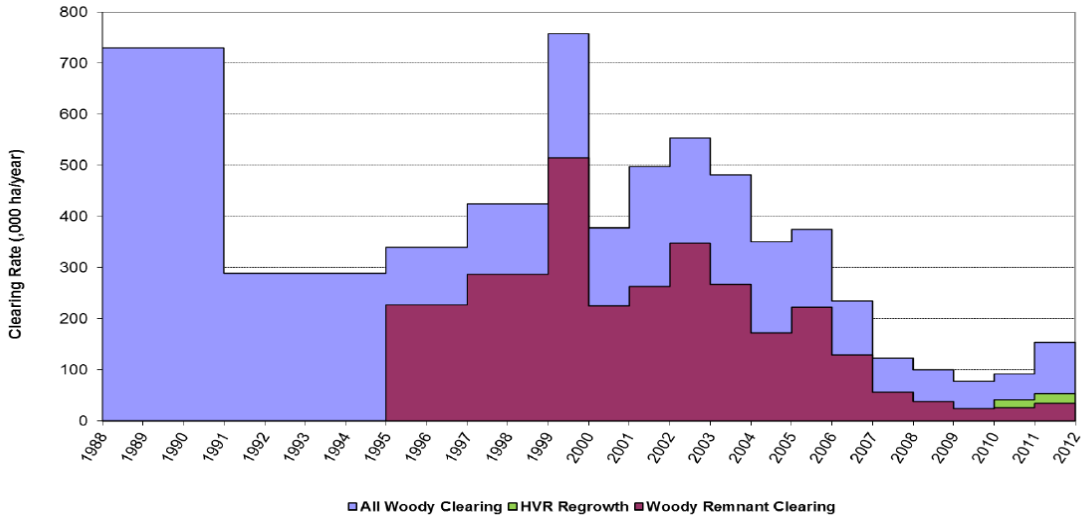
34 Mitchell, D. O., Ingco, M. D., and Duncan, R. (1997). The World Food Outlook. Cambridge University Press, Cambridge, UK.

35 Or to survive through subsistence.

36 Pinstrup-Andersen, P., R. Pandya-Lorch, and M. W. Rosegrant. (1999). World Food Prospects: Critical Issues for the Early Twenty-First Century. International Food Policy Research Institute: Washington, D.C. Retrieved from http://www.ifpri.org/srstaff/pinstrup.htm

Queensland has largely occurred over the past 50 years, driven by demands for agricultural and grazing land (Figure 1).[37] Expansion of cattle grazing is a significant driver of this change. Beef production is now the most common enterprise on Australian farms, with nearly half of all farms having some beef cattle.[38]

FIGURE 1. ANNUAL WOODY VEGETATION CLEARING RATE IN QUEENSLAND (1988–2012)[39]



The fight against rapacious land clearing in Australia began in the 1980s and 1990s. Queensland was among the worst national and international land clearing offenders.[40] The 1990s ushered in a period of environmental reforms aimed at reducing land clearing. In 1995 the Labor Government developed a draft set of guidelines for management of leasehold land. The state National Party subsequently rescinded these guidelines in 1996.[41] During the same year the Commonwealth government's 1996 State of the Environment (SOE) report highlighted the impact of land clearing on biodiversity loss, increasing

37 Bradshaw, C.J.A. (2012). Little left to lose: deforestation and forest degradation in Australia since European colonization. *Journal of Plant Ecology,* 5(1), 109-120.

38 McAlpine, C.A., Etter, A., Fearnside, P.M., Seabrook, L., and Laurance, W.F. (2009). *Global Environmental Change,* 19, 21-33.

39 Government of Queensland. (2014). Land cover change in Queensland 2011–12, Remote Sensing Centre, Science Delivery, Department of Science, Information Technology, Innovation and the Arts. Retrieved from https://publications.qld.gov.au/storage/f/2014-09-11T02%3A11%3A13.856Z/slats-report-2011-12.pdf. Accessed on 18 January 2015.

40 Australian Broadcasting Commission. (2014). Retrieved from http://www.abc.net.au/news/2014-04-04/queensland-government-under-fire-over-land-clearing-permits/5367458. Accessed 18 January 2015.

41 Whelan, J. and Lyons, K. (2005). Community Engagement or Community Action: Choosing Not to Play the Game. *Environmental Politics,* 14(5), 596-610.

salinity, and climate change.[42] The SOE and failure to address land clearing at the state level led to a widespread nongovernmental organization (NGO) campaign.

In 1999 the Queensland Labor Government committed to reducing land clearing and introduced vegetation management legislation. The introduction of this legislation ushered in panicked land clearing by farmers with land clearing rates soaring to their highest levels since monitoring commenced (see Figure 1). Urgent action was needed to address this problem, but it took several years for the government to introduce a moratorium on land clearing.[43] During 2004, legislation was introduced to parliament to phase out broad-scale land clearing of all remnant vegetation by 31 December 2006 (see Figure 1).[44] In 2009, the Queensland Labor Government imposed a three-to-six month temporary ban on the clearing of regrowth vegetation.[45] The ban aimed to stop land clearing of regrowth vegetation in endangered regional ecosystems.

In 2013 the Queensland National-Liberal Coalition Government introduced the Vegetation Management Framework Amendment Act.[46] NGOs have criticized the Act extensively on four grounds: allowing a new category for broad-scale clearing of mature vegetation for high value agriculture; removal of protections of high conservation value regrowth vegetation; removal of requirement for permits to clear native vegetation in riparian zones; and altered provisions in regard to enforcement of illegal clearing. [47] The Act appears to open the possibility of biodiversity offsets by allowing adverse impacts of clearing to be minimized or mitigated.[48] The extent to which offsets may or may not be used is unclear, as are the full environmental consequences of the amendments to the Vegetation Management Framework. Offsetting is also a feature of Brazil's Forest Code.

In Brazil during the early 2000s, the relatively high and increasing rate of land clearing is attributable to the rapid globalization of soy commodity markets combined with technological changes and high soy prices driving a rapid expansion of the soy crop. More than half of the area cleared until 2004 took place

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42 Government of Australia. (1996). State of the Environment 1996. Retrieved from http://www.environment.gov.au/topics/science-and-research/state-environment-reporting/soe-1996/soe-1996-report. Accessed 18 January 2015.

43 Australian Broadcasting Corporation. (2003). Radio National Interview with Peter Beattie. Retrieved from http://www.abc.net.au/pm/content/2003/s857045.htm. Accessed 18 January 2015.

44 Government of Queensland. (2004). An End to Broadscale Clearing by 2006 under the Vegetation Management and Other Legislation Amendment Bill 2004 (Qld). Retrieved from http://www.parliament.qld.gov.au/documents/explore/ResearchPublications/ResearchBriefs/2004/200406.pdf. Accessed 18 January 2015.

45 Government of Queensland. (2009). Vegetation Management (Regrowth Clearing Moratorium) Act 2009. Retrieved from https://www.legislation.qld.gov.au/LEGISLTN/ACTS/2009/09AC006.pdf. Accessed 18 January 2015.

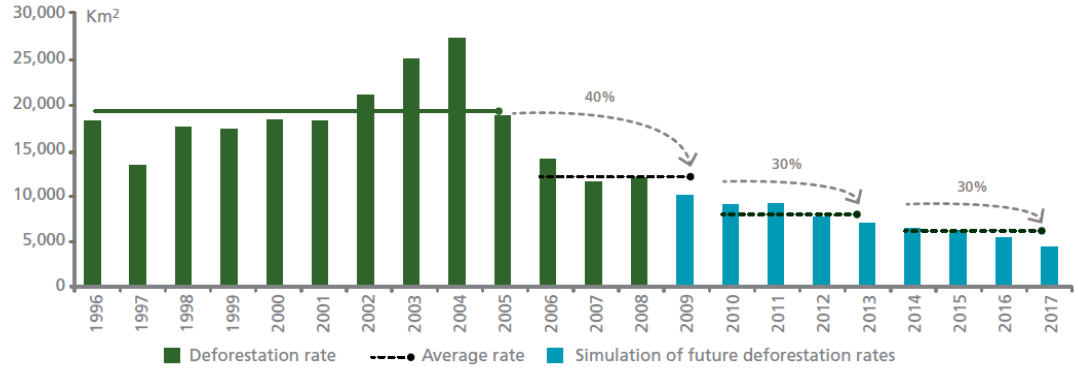
46 Government of Queensland. (2013). Vegetation Management Framework Amendment Act 2013. Retrieved from https://www.legislation.qld.gov.au/LEGISLTN/ACTS/2013/13AC024.pdf. Accessed on 18 January 2015.

47 World Wildlife Fund. (2013). Bushland at risk of renewed clearing in Queensland. Retrieved from http://www.wwf.org.au/news_resources/?6800/Bushland-at-risk-of-renewed-clearing-in-Queensland. Accessed on 18 January 2015.

48 Vegetation Management Framework Amendment Act 2013, Section 22DAC(1)(e)

in the southeastern Amazon state of Mato Grosso, Brazil's largest agricultural producer. Cattle production also expanded and intensified during this period, with yields increasing fivefold.[49]

FIGURE 2. BRAZIL'S FOUR-YEAR TARGET FOR REDUCING DEFORESTATION IN THE AMAZON.[50]



The reduction in land clearing since 2004 is largely attributed to a period of intense political action, championed by the Ministry of the Environment and resulting in enhanced enforcement capability due to the 2004 introduction of the "Action Plan for Prevention and Control of the Legal Amazon Deforestation" (PPCDAM) and Detection of Deforestation in real time (DETER) system for detecting and responding to deforestation events (Figure 2).

Brazil's revised Forest Code 2012 weakens restoration requirements on land illegally deforested before 2008, with landowners no longer required to restore illegally deforested land at their own expense. It is estimated that under the new rules 90 percent of Brazilian rural properties qualify for amnesty.[51] However, key implementation details are still being negotiated. A new feature of the Code is a mechanism called the Environmental Reserve Quota (CRA, in Portuguese).

The CRA is a tradable legal title to an area with intact or regenerating native vegetation exceeding Forest Code requirements. A CRA surplus on one property may be used to offset a legal reserve requirement on another property within the same biome and, preferably, state. These transfers or transactions will be tracked through the Rural Environmental Registry (known as the CAR, but henceforth referred to as the Registry), [52] a mandatory electronic registry that applies to all rural properties, to be implemented at the state and/or municipality level, with the purpose of integrating the environmental information of the rural properties.

Direct regulation has had mixed results in both Australia and Brazil. In both countries, politically powerful agricultural interests have influenced land-clearing laws, with agrarian constituencies generally

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49 Nepstad, D., McGrath, D., Stickler, C., et al. (2014). Slowing Amazon deforestation through public policy and interventions in beef and soy supply chains. *Science,* 344(6188), 1118-1123.

50 Government of Brazil. (2014). Activity Report 2013 Amazon Fund. Retrieved from http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en. Accessed 25 August 2014.

51 Soares-Filho B., et. al. (2014). Cracking Brazil's Forest Code. *Science,* 344, 363-364.

52 For more information (in Portuguese) visit: http://www.car.gov.br.

opposing land-clearing laws and restoration efforts, arguing for expanding high-value agricultural production. In Queensland this effort led to legal amendments in the Vegetation Management Framework Amendments Act introducing a new land-clearing category for broad-scale clearing of mature vegetation for high value agriculture. In Brazil the revised Forest Code weakens restoration requirements via an amnesty on illegally deforested land. In both countries significant reductions in land-clearing rates have occurred for specific vegetation categories.

Despite improvements in governance and democratic reforms, it has taken decades for land-clearing rates to reduce in both examples. In both cases, growing public awareness and concern about biodiversity loss were important for providing a political climate for reform, and the emergence of constituencies to balance land-clearing interest was important for making progress on land clearing. The political process in both countries has tried to balance agribusiness and conservation interests using innovative policies, settling on the use of biodiversity offsets as a mechanism for balancing these interests. Both countries are developing fledgling biodiversity offset markets.

Direct regulation policies is essential for reducing land-clearing rates. Direct regulation is not about financing emissions reductions from land clearing, but rather about the policies, regulations, and rules that are put in place to control land clearing, which should be part of any government's national or subnational REDD+ efforts. Market mechanisms that potentially reduce cost are developing via biodiversity offset markets, but the environmental outcomes are unclear, particularly when habitat fragmentation is considered.

4.2 PAYMENT FOR RESULTS

Norway's International Climate and Forest Initiative (NICFI) is the leading international example of payments for results in REDD+. The NICFI funds several bilateral and multilateral efforts aimed at reducing deforestation and testing results-based payments, including the Amazon Fund.[53] The fund grew out of an initiative between government and civil society for coordinated action between federal, state, and municipal governments to tackle deforestation in the Brazilian Amazon. An advantage of the Amazon Fund is its ability to bridge the gap between conservationist, farmer, and ranchers. The fund has enjoyed broad community support but has suffered from some implementation issues (see Table 9 in Appendix II for details). The benefits of the Amazon Fund are yet to be fully explored. The Fund is potentially complementary to the CRA as it may be used to finance setting aside areas with intact or regenerating native vegetation exceeding Forest Code requirements – which otherwise may not have been set aside due to opportunity costs.

Given the success of the Amazon Fund, it is useful to compare it with Norway's experience with payment for results in Indonesia. The Norwegian Climate and Forest Initiative promised payments of up to $1 billion for stemming deforestation in Indonesia's carbon-rich forests. With $100 million up-front for preparatory and readiness phases, the remaining $900 million is to be disbursed during the payment-for-results phase, originally expected to begin in 2014 although as yet not begun.[54] Indonesia has had some successes in readiness planning, yet Norway's own funding body acknowledges that "changes in

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53 Government of Norway. (2014). The Government of Norway's International Climate and Forest Initiative. Retrieved from http://www.norad.no/en/thematic-areas/climate-change-and-the-environment/norways-international-climate-and-forest-initiative. Accessed 20 February 2015.

54 WRI. (2010). What's Next for Indonesia-Norway Cooperation on Forests? [Online]. Accessed February 2015.

government and weaknesses in the legal basis for REDD+ constitute a serious threat to the results attained".[55]

Governance issues lay at the core of differences between Brazil and Indonesia in effectiveness at combatting deforestation. Other factors include the relative strength of civil society in Brazil compared to Indonesia, Brazil's demonstrated ability to reduce the rate of deforestation, and the effectiveness of Brazil's soy and beef moratoria. Powerful agricultural interest groups exert their pressure for continued development in both countries; however, an engaged civil society, a powerful environmental lobby, and the democratic processes in Brazil all contribute to a significant countervailing voice balancing economic interest. In Brazil, REDD+ development has enjoyed the benefits of pre-existing tenure reform and environmental compliance regulations from a national policy framework that is largely in place, with REDD+ funds being used to bolster these efforts rather than develop them from scratch.[56]

The Brazil system has strong analogies with the environmental offset system used in Australia (for example BushBroker in Victoria)[57] and the fledgling offsets system in Queensland's Vegetation Management Framework Amendment Act 2013,[58] which allows a new category for broad-scale clearing of mature vegetation for high value agriculture and removes protections of high conservation value regrowth vegetation.[59] If biodiversity offsets are allowed, then the system may be able to take advantage of Australia's Carbon Farming Amendment Bill that creates an AUD$2.55 billion Emissions Reduction Fund to purchase emission reductions.[60] Some monies from this fund might conceivably be used to incentivize setting aside areas with intact or regenerating native vegetation that might otherwise be cleared. Such models also exist in the United State of America.

The Conservation Reserve Program (CRP) and Conservation Stewardship Program (CSP) are two examples of domestic payment for results models in the United States (see text box on the following page). Both of these programs focus on farmland; the CRP pays to remove farmland from productive use, and the CSP pays agricultural and forestry producers to conserve and enhance soil, water, air, energy, plant, and related natural resources. Both programs receive federal funding through the U.S. Department of Agriculture (USDA).

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55 NORAD. (2014). Considerable progress for Norway's International Climate and Forest Initiative (NICFI). Retrieved from http://www.norad.no/en/evaluation/news/considerable-progress-for-norways-international-climate-and-forest-initiative-nicfi. Accessed February 2015.

56 Larson, et al. (2013). Land tenure and REDD+: The good, the bad and the ugly. *Global Environmental Change*, 23, 678–689.

57 Government of Victoria. (2015). BushBroker Program. Retrieved from http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/native-vegetation/native-vegetation-permitted-clearing-regulations/native-vegetation-offsets/bushbroker. Accessed 20 February 2015.

58 Government of Queensland. (2013). Vegetation Management Framework Amendment Act 2013. Retrieved from https://www.legislation.qld.gov.au/LEGISLTN/ACTS/2013/13AC024.pdf. Accessed on 20 February 2015.

59 World Wildlife Fund. (2013). Bushland at risk of renewed clearing in Queensland. Retrieved from http://www.wwf.org.au/news_resources/?6800/Bushland-at-risk-of-renewed-clearing-in-Queensland. Accessed on 20 February 2015.

60 Parliament of Australia. (2014). Carbon Farming Amendment Bill. Retrieved from http://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/Bills_Search_Results/Result?bId=r5280. Accessed on 20 February 2015.

TEXT BOX 1. THE U.S. CONSERVATION RESERVE PROGRAM AND CONSERVATION STEWARDSHIP PROGRAM[61]

Enacted in 1985, the CRP is the largest private-lands conservation program in the United States that removes farmland from productivity. There are currently approximately 27 million acres (10.9 million hectares) enrolled in the program, with total annual rental payments to farmers of $1.6 billion as of July 2013,[62] and spending between 1995 – 2012 amounting to $31.5 billion.[63] Enrolled farmers receive a yearly per-acre rental payment in exchange for replacing crops on highly erodible and environmentally sensitive land[64] with long-term, resource-conserving covers. The CRP sequesters more carbon dioxide than any other conservation program in the country and reduces both fuel and fertilizer use.[65] The CRP is funded through the USDA, and Congress authorizes a specified acreage enrollment level each year.

Created in the 2008 Farm Bill, the CSP provides financial and technical assistance to agricultural and forestry producers to conserve and enhance soil, water, air, energy, plant, and related natural resources on tribal and private working lands. The CSP pays for conservation performance – the higher the performance, the higher the payment. This approach differs from the CRP, where payments are based on a per-acre rental rate. In the first four enrollment years for the CSP (2009-2012), 50 million acres (20.2 million hectares) of farm and ranch land were enrolled under five-year, renewable CSP conservation contracts. For those enrollment classes, annual CSP payments are currently $680 million per year.[66] The program is funded through the USDA, and Congress authorizes the CSP at a specified acreage enrollment level each year. Each state is then allotted a share of total annual CSP acres.

The payment for results model is arguably a useful approach for altering the opportunity costs associated with setting aside land as clearing rates decline. It is difficult to reduce the remaining deforestation due to continued commodity-driven incentives. Appropriate REDD+ programmatic and/or project structures supported by direct regulation should be in place to drive emission reductions or removals for a payment for results model to work. However, the willingness of donors, such as Norway, to pledge funds limits the system.

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61 Text extracted from: O'Sullivan, R., Lee, D., Zamgochian, A. and Durschinger, L. (2013). U.S. Experience on Results-based Finance. USAID-supported Forest Carbon, Markets and Communities Program. Washington, D.C.: USA.

62 See the Conservation Reserve Program Monthly Summary for July 2013, Retrieved from http://www.fsa.usda.gov/Internet/FSA_File/julysummary13.pdf. Total program costs are estimated at approximately $2 billion per year. See Stubbs, M. (2013). *Conservation Reserve Program (CRP): Status and Issues,* Congressional Research Service 7-5700, R42783, Retrieved from http://www.nationalaglawcenter.org/assets/crs/R42783.pdf.

63 Environmental Working Group. (n.d.). Farm Subsidy Database. Retrieved from http://farm.ewg.org/progdetail.php?fips=00000&progcode=total_cr

64 Environmentally sensitive land may include agricultural land prone to erosion, pasture or agricultural land that borders river or stream banks or field margins.

65 For more information, please visit http://www.usda.gov/wps/portal/usda/usdahome?contentid=2013/07/0149.xml.

66 Sustainable Agriculture. (2013). 2013 Conservation Stewardship Program Sign Up Information Alert, April 2013. Retrieved from http://sustainableagriculture.net/wp-content/uploads/2013/04/CSP-info-alert-4-15-13-final.pdf.

4.3 MARKET-BASED INSTRUMENTS

Carbon taxes and emissions trading provide market-based approaches to the problem of climate change. Under both policies, industries choose which abatement opportunities to exploit, given the price. Because of the cost effectiveness of market approaches, a number of countries and provinces have chosen to either implement cap-and-trade emissions trading schemes[67], baseline and credit schemes[68], or carbon taxes[69]. Many countries favor emissions trading over carbon taxes, because it is easy to link with other national schemes, permitting cross-border trade in allowances. This approach is viewed as important in helping shape a global solution to mitigate climate change. Offset markets can be used initially to create indirect linkages between emissions trading schemes and facilitate the emergence of a global price on carbon.

Carbon taxes cannot be linked as emissions trading schemes can through the import and export of allowances. Carbon taxes can be harmonized through political negotiations and as such are often considered as a less useful policy instrument in shaping a global solution to climate change. Linking emissions trading schemes does not rule out complex political negotiations over caps and cap setting, which can affect the price in countries directly linked by export and import of allowance or indirectly linked through offset markets.

Some economics literature supports the idea that carbon taxes have lower transaction costs than emissions trading schemes do. This idea is based on the argument that regulating emissions upstream by means of a carbon tax yields lower transaction costs than regulating polluters downstream through tradable emissions permits, since the number of emitters is larger than the number of firms producing or importing fuel.[70,71,72] This discussion is largely an argument about the point of obligation and depends on the scheme design. For example the now repealed Australian Carbon Pricing Mechanism was implemented as a fixed price (carbon tax) transitioning into an emissions trading scheme. The points of obligation were similar for the emissions trading scheme and carbon tax.

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67 European Union Emissions Trading Scheme. (n.d.). Retrieved from http://ec.europa.eu/clima/policies/ets/index_en.htm. Accessed 20 February 2015.

68 Alberta's Greenhouse Gas Reduction Program. (n.d.)/. Retrieved from http://esrd.alberta.ca/focus/alberta-and-climate-change/regulating-greenhouse-gas-emissions/default.aspx. Accessed 20 February 2015.

69 World Bank Partnership for Market Readiness. (2014). Carbon Tax in Mexico 2014. Retrieved from https://www.thepmr.org/system/files/documents/Carbon%20Tax%20in%20Mexico.pdf. Accessed 20 February 2015.

70 Coria, J., and Jūratė Jaraitė. (2015). Carbon Pricing: Transaction Costs of Emissions Trading vs. Carbon Taxes. University of Gothenburg. Retrieved from https://gupea.ub.gu.se/bitstream/2077/38073/1/gupea_2077_38073_1.pdf. Accessed 25 February 2015.

71 Ramseur, J. L. and Parker, L. (2009). Carbon tax and greenhouse gas control: options and considerations for Congress. Congressional Research Service of the United States of America. Retrieved from http://fpc.state.gov/documents/organization/120592.pdf. Accessed on 25 February 2015.

72 Metcalf, G.E. and Weisbach, D. (2009). Carbon Taxes. *U of Chicago Law & Economics, Olin Working Paper No. 447*. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1324854. Accessed on 25 February 2015.

Carbon taxes and emissions trading schemes do share many similar costs, but there are additional costs associated with emissions trading. On the public sector side more complex registry systems are required for emissions trading than are needed for a carbon tax. Cap-and-trade requires auction systems and/or systems that support administrative allocations. Integration is needed with spot and futures markets, which also need to be developed but are a cost on the private sector side. Compliance costs for firms covered by a scheme may differ depending on a carbon tax or emissions trading implementation. There is some limited evidence that carbon taxes have lower transaction costs associated with private sector compliance.[70] Emissions trading schemes also need to integrate with clearing houses, and there will be brokerage and other fees associated with trading such as stamp duty.

Carbon taxes do not rule out the possibility of using offsets such as REDD+ credits, but there are also financial consequences for treasuries in allowing liable entities to purchase offsets preferentially instead of paying taxes. If revenue is a priority, quantitative restrictions on offsets will be necessary. Mexico is one such country that has implemented a carbon tax on fossil fuels. The tax is based on estimates of the carbon content of fossil fuels and Mexican Certified Emission Reductions (credits generated under the Kyoto Protocol's Clean Development Mechanism [CDM]) can be used for compliance.[73] At the stage of writing no details are available on the types and limits of CDM offsets including potential use of CERs from afforestation or reforestation projects. The country studies on MBIs – from Brazil, Ghana, and Vietnam – reveal many of the issues likely to be encountered in implementing MBIs in developing countries.

Brazil has set a goal of reducing emissions by 36.1 to 38.9 percent below Business as Usual (BAU) by 2020 as part of a voluntary commitment. Mitigation plans cover forestry, agriculture, energy, iron, and steel, in addition to other industry, transportation, mining, and building sectors. The Brazilian federal government (through the environmental and finance ministries) is currently conducting feasibility studies on emissions trading and carbon taxes. No final decision on policy is expected before 2017. If REDD+ is included as part of an emissions trading scheme or carbon tax, it will create demand for domestic REDD+ projects or programs.[74]

Ghana is not currently evaluating either a carbon tax or emissions trading scheme; however, given Ghana's fiscal constraints, a carbon tax or ETS with an auction could provide much needed revenue. Introducing an ETS in Ghana is likely to be complex, in part due to an immature financial services sector but also due to the regional situation. The region's dominant economic organizations – the Economic Community of West African States (ECOWAS) and the West African Economic and Monetary Union (WAEMU) – are likely to have a stake in any ETS policy development. The only African precedent is South Africa's carbon tax proposal. REDD+ would need to be included in any development if domestic demand for REDD+ is to be created.

Vietnam is currently evaluating MBIs for the steel and solid waste sectors and has indicated that the system could evolve into a cap-and-trade scheme.[75] Vietnam's regional context is complex, with China, Japan, and the Republic of Korea all undertaking different emission reduction actions — the most

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73 Government of Mexico. (2014). Carbon tax presentation to the Partnership for Market Readiness, World Bank.

74 Government of Brazil. (2014). Market Readiness Proposal. Retrieved from https://www.thepmr.org/country/brazil-0. Accessed 21 February 2015.

75 Government of Vietnam. (2014). Final Market Readiness Proposal. Retrieved from https://www.thepmr.org/system/files/documents/20141013_MRP%20Vietnam_FINAL.pdf. Accessed 21 February 2015.

influential scheme developments coming from China. China's 12th Five-Year Plan targets the development of a national carbon market by 2015, but realistically this plan is more likely to be implemented by 2020. Vietnam is expected to move in lock step with China so as not disadvantage the competitiveness of its steel industry.

Vietnam is currently establishing a GHG emissions baseline for the steel industry and could potentially use funding from Japan's Joint Crediting Mechanism (JCM) to achieve emissions reductions by improving energy efficiency and hence competitiveness. Projects and feasibility studies support the deployment of the JCM in this way.[76] The inclusion of offsets in any Vietnamese scheme is a precondition for supporting REDD+. Given that the developments in Korea and China support offsets and keep open the possibility of REDD+, it seems feasible that REDD+ could be part of the cost containment mechanisms afforded to industries covered by any Vietnamese scheme. Therefore, a further important development is the establishment of a timetable to develop rules and procedures for the inclusion of REDD+ credits in the scheme.

4.4 ENVIRONMENTAL IMPACT ASSESSMENT

The use of EIA as a potential policy tool to generate demand for REDD+ by offsetting emissions associated with new projects is different from the other policy tools considered here. This mechanism has the potential to create demand from REDD+ in the absence of economy-wide emissions trading or carbon taxes. So far EIA has not been widely used as a policy tool to reduce GHG emissions. A growing number of countries are embedding narrowly defined environmental offsets in EIA. Environmental offsets are measures that seek to achieve equivalent environmental outcomes to compensate for the residual adverse impacts of an action on the environment. Some issues need to be considered to integrate REDD+ offsets into EIA, including: i) defining the scope – the range or activities that would be subject to a REDD+-linked EIA; ii) coverage – the type of emissions included in an EIA and that would need to be offset; iii) specific triggers used to start an assessment – specific metrics or thresholds; and iv) capacity to assess and manage REDD+ offsets, some of which could be handled by third-party standards and registries. This work may need to be complemented by broader EIA reform. [77]

Competitiveness concerns are likely to surround EIAs requiring mandatory offsetting, as countries will not want to discourage new investment that creates jobs and may have positive environmental benefits through modernizing plant and equipment. Given potential environmental benefits discouraging this investment would be counterproductive. Voluntary offsetting appears to be the most likely course of action, but the volumes of abatement will depend on the costs associated with REDD+. If these costs are significant, then volumes are likely to be low. Voluntary offsetting is more likely to stimulate REDD+ if financial support is available – such as leveraging financial support from the JCM or Australia's emissions reduction fund. Such funds can subsidize the costs of offsetting.

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76 Government of Japan. 2015. Joint Crediting Mechanism. Retrieved from http://www.mmechanisms.org/e/initiatives/vietnam.html. Accessed 21 February 2015.

77 EIAs are often very weak or completely ignored in most developing countries. There is neither the capacity, political will nor constituency to make this viable, at least in its traditional function.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 DIRECT REGULATION

Direct regulation to control land clearing is an essential foundation for countries to conserve and restore forests. Direct regulation can be combined with other policy options to help attract finance and incentivize additional REDD+ efforts. The drivers of deforestation are largely economic; therefore, the key challenges are political in terms of developing policy and garnering community support. Direct regulation policies in a number of countries are moving toward environmental offset mechanisms, which offer a way to conserve the environment and indirectly link to finance mechanisms.

5.2 PAYMENTS FOR RESULTS

The payment for results model works best when recipient governments have demonstrated a commitment to reduce deforestation (e.g., through direct regulation) along with monitoring and enforcement capacity. Payment for results is a useful approach to help support direct regulation and incentivize reductions in residual forest loss. For a payment for results model to work, appropriate REDD+ programmatic and/or project structures supported by direct regulation should be in place to drive emission reductions or removals. The passage of such regulations often depends on the proactive support of civil society groups and other domestic constituencies. The scalability and reliability of funding to support payments for results is one of the biggest challenges to this option.

5.3 MARKET-BASED INSTRUMENTS

MBIs have the potential to direct large amounts of financing to REDD+ but are likely to be limited due to the difficulty of implementing MBIs in a large number of developing countries and the loss of government revenue that results from allowing offsets in some scenarios. Offsets in an administratively allocated cap-and-trade scheme do not affect government revenues, as revenue is foregone. However, including offsets in a majority auction based cap-and-trade scheme or carbon tax reduces government revenues. Revenue considerations, combined with the desire to ensure that meaningful operational emission reductions are achieved within the domestic economy, usually result in offset limits[78] established to ensure that covered entities invest in low-emission technologies and processes and do not rely solely on offsetting. These factors limit the potential volume of REDD+ credits and financing from MBIs. Compared to emissions trading schemes, carbon taxes may be simpler and more applicable to a wider range of countries and could still potentially include REDD+; however, they face similar revenue loss and low-emission investment pressures to cap-and-trade schemes.

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[78] The one exception known to the authors was the unlimited importation of allowable international offsets under Australia's Carbon Pollution Reduction Scheme, which was the predecessor to Australia's Clean Energy Bills that were finally based and subsequently repealed.

5.4 ENVIRONMENTAL IMPACT ASSESSMENTS

Using EIA as a tool to drive GHG abatement offers a different policy approach to be considered alongside MBIs and payments for results. Compliance-based EIA models are likely to suffer from the same competitiveness issues associated with MBIs. As such, governments are likely to be reluctant to implement compulsory schemes that could be perceived as barriers to investment. Where new investment modernizes plant and equipment, discouraging this investment would be counterproductive. For this reason, voluntary offsetting may be more attractive; however, abatement is likely to be lower than with comparable compliance offsetting schemes. The abatement from voluntary schemes is affected by perceived public relations or corporate social responsibility values associated with voluntary offsetting and the cost associated with REDD+. Voluntary offsetting is more likely to occur if financial support is available, as this support can reduce the costs of offsetting by leveraging emissions reduction funds.

5.5 FURTHER RESEARCH

Given the limitations of the mechanisms examined, further research should be considered to evaluate reforms in other areas. The practices of agricultural extension services, the policies of agricultural and forestry ministries, and the credit standards of agricultural development banks were identified in the course of research for this paper as potentially significant contributors to deforestation and therefore worth evaluating in specific country contexts. Additionally, depending on the country, subsidies and other forms of compensation such as land tax relief may promote land clearing and should be re-evaluated. Canvassing a wider range of financial incentives that might be contributing to drivers of deforestation is worthwhile. Policy options that help change agricultural practices are particularly important, as agricultural interests were identified as a leading obstacle to governments passing direct regulation.

APPENDIX I – DIRECT REGULATION TO CONTROL LAND CLEARING

The purpose of this appendix is to examine the use of direct regulation as a tool for reducing land-clearing rates. Laws in Australia and Brazil are examined, as both countries have historically high deforestation rates and dependence on agriculture. They are also both regarded as resource economies, similarly dependent on iron ore and other minerals exports. Additionally, both countries have a history of trying to control land clearing through direct regulation.

1.1 QUEENSLAND AUSTRALIA

1.1.1 Introduction and background

This section analyzes the use of direct regulation in Australia to control land clearing, which is governed by commonwealth and state laws. Planning approval is generally required to remove, destroy, or lop native vegetation; however, responsibility for land management is primarily a state and not federal responsibility, although the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 provides overarching protections on matters of national environmental significance.[79] While the commonwealth's powers are almost plenary in nature, they are rarely exercised.[80] As such, our example focuses on land-clearing laws in the state of Queensland.

Queensland has been chosen for several reasons, but particularly because it has seen some of the highest land-clearing rates globally and has been at the center of political and legislative efforts in Australia to control land clearing and protect biodiversity. It has taken approximately three decades of environmental activism in Queensland to bring down land-clearing rates, which has produced a long and well-documented history. Compared to New South Wales and Victoria, Queensland has significant areas of un-cleared native vegetation. The state spans important biomes including Australia's only lowland tropical rainforest, the Daintree, and coastal forest areas in Queensland are an important buffer between agricultural land and the Great Barrier Reef.

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79 Brazil, P. (1999). "Environment Protection and Biodiversity Conservation Act 1999 (Cth)". AUMPLawJl 48. *Australian Mining and Petroleum Law Journal*, 18(2), 183.

80 Bonyhady, T. (2010). Postscript [to Mills, Mines and Other Controversies: Environmental Impact Assessment in Australia]. In Tim Bonyhady and Andrew Macintosh (ed.). *Mills, Mines and Other Controversies: The Environmental Assessment of Major Projects*, The Federation Press: Sydney.

The 1970s ushered in an era of federal intervention in the environment. The Whitlam Labor Government initiated Australia's first federal legislation on environment and heritage and established the Department of Environment and Conservation and Australian National Parks and Wildlife Service.[81] The Fraser Liberal-National Coalition Government ended sand mining on Fraser Island, proclaimed Kakadu National Park, prohibited exploration and drilling for petroleum on the Great Barrier Reef against the wishes of the Bjelke-Petersen-led, Nationals-dominated, Queensland State Government; and ended whaling.[82]

The 1980s are marked by two galvanizing events that led to widespread civil disobedience and environmental activism entering popular culture. These events were the proposed damming of the Franklin River in Tasmania and the Daintree Forest Blockade in Queensland. These issues achieved celebrity status during the Franklin River and Daintree campaigns, with support from popular music bands including Midnight Oil, whose lead singer, Peter Garret, went on to be President of the Australian Conservation Foundation and Federal Minister for the Environment.[83,84,85]

The Daintree Campaign was at the center of a disturbing phase in Queensland politics, marred by political and police corruption, serious misuse of power, and police violence.

Joh Bjelke-Petersen's ban on public protests (street marches) through legislation was in part responsible for the collapse of the then National-Liberal Coalition.[86,87] Attempts by the Queensland government and property developers to build roads and clear land in the Daintree led to a period of civil disobedience, numerous arrests, and the use of police dogs against protestors.[88] The Daintree blockade ultimately failed, but it led to an extended period of conflict between the state and federal governments.[89] This

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81 Government of Australia. (2015). National Archives of Australia. Retrieved from http://primeministers.naa.gov.au/primeministers/whitlam/in-office.aspx. Accessed 20 January 2015.

82 Government of Australia. (2015). National Archives of Australia. Retrieved from http://primeministers.naa.gov.au/primeministers/fraser/in-office.aspx. Accessed 19 January 2015.

83 Teaching Heritage. (n.d.). Retrieved from http://www.teachingheritage.nsw.edu.au/section03/timeenviron.php. Accessed on 18 January 2015.

84 Garrett, P. (2015). Peter Garret. Retrieved from http://www.petergarrett.com.au/first-speech/. Accessed on 18 January 2015.

85 Australian Conservation Foundation. (2015). About Us. Retrieved from http://www.acfonline.org.au/about-us/our-success-stories. Accessed 20 January 2015.

86 Brennan F. Australian Human Rights Commission. (n.d.). Avoiding Too Much Order With Too Little Law; Reflections on the Queensland Experience. Retrieved from https://www.humanrights.gov.au/sites/default/files/HRC_assembly_Brennan.pdf. Accessed 18 January 2015.

87 The ban on street marches was effected under the Traffic Act, which was amended to allow the appeal against the issuing of a permit for a street march to be dealt with by the Commissioner of Police rather than a magistrate.

88 Australian Broadcasting Commission. (2013). 30th anniversary of the Daintree blockade. Retrieved from http://www.abc.net.au/local/photos/2013/11/29/3901815.htm. Accessed on 18 January 2015.

89 Wilderness Society Daintree Campaign. (n.d.). Daintree. Retrieved from https://www.wilderness.org.au/daintree. Accessed on 18 January 2015.

conflict resulted in the federal government supporting a world heritage listing of the Daintree in 1988 and the Daintree buy-back program.[90,91]

The Daintree symbolizes the fight against rapacious land clearing in Australia. During the 1980s and 1990s, Queensland was among the worst national and international land-clearing offenders.[92] This period coincided with suppression of public protests; widespread corruption; and the use of a gerrymander, colloquially known in Australia as the bjelkemander, to maintain power for the Queensland National Party,[93] until 1989 when Wayne Goss and the Labor party came into power despite the bjelkemander.

The defeat of the National Party ushered in a period of environmental reforms aimed at reducing land clearing. In 1995 the Goss Labor Government developed a draft set of guidelines for management of leasehold land. In 1996 the state National Party subsequently rescinded these guidelines.[94] During the same year the Commonwealth government's 1996 State of the Environment (SOE) report highlighted the impact of land clearing on biodiversity loss, increasing salinity, and climate change.[95]

The SOE and failure to address land clearing at the state level led to a widespread NGO campaign. The then-opposition Beattie-led Labor Party committed to reduce land clearing. On wining the Queensland election, the Beattie Labor government introduced vegetation management legislation in 1999 to regulate land management.[94] The introduction of this legislation ushered in panicked land clearing by farmers with land clearing rates soaring to their highest levels since monitoring commenced (see Figure 3).[94] Urgent action was needed to address this problem, but it took several years for the Beattie Labor government to introduce a moratorium on land clearing.[96] During 2004, legislation was introduced to parliament to phase out broad-scale land clearing of all remnant vegetation by 31 December 2006 (see Figure 3).[97]

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90 Government of Australia. (1995). Interview with the Honorable Paul Keating, Prime Minister of Australia. April 1995. Retrieved from http://pmtranscripts.dpmc.gov.au/transcripts/00009549.pdf. Accessed 18 January 2015.

91 Government of Australia. (2015). World Heritage Places – Wet Tropics Queensland. Retrieved from http://www.environment.gov.au/heritage/places/world/wet-tropics. Accessed 18 January 2015.

92 Australian Broadcasting Commission. (2014). Queensland Government Under Fire Over land Clearing Permits. Retrieved from http://www.abc.net.au/news/2014-04-04/queensland-government-under-fire-over-land-clearing-permits/5367458. Accessed 18 January 2015.

93 Green, A. (2011). A Beginners Guide to Gerrymanders. Australian Broadcasting Commission. Retrieved from http://blogs.abc.net.au/antonygreen/2011/11/a-beginners-guide-to-gerrymandering.html. Accessed 18 January 2015.

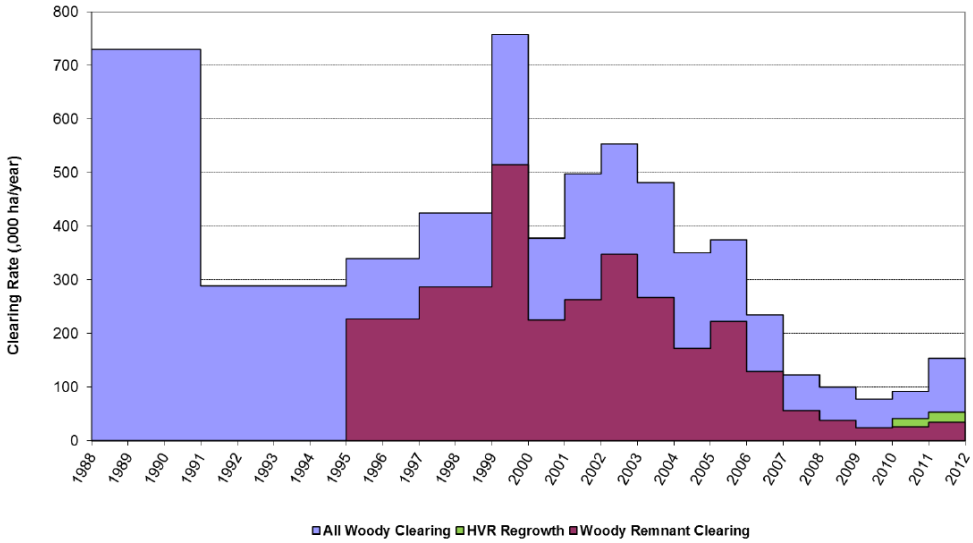
94 Whelan, J. and Lyons, K. (2005). Community Engagement or Community Action: Choosing Not to Play the Game. *Environmental Politics,* 14(5), 596-610.

95 Government of Australia. (1996). State of the Environment 1996. Retrieved from http://www.environment.gov.au/topics/science-and-research/state-environment-reporting/soe-1996/soe-1996-report. Accessed 18 January 2015.

96 Australian Broadcasting Corporation. (2003). Radio National Interview with Peter Beattie. Retrieved from http://www.abc.net.au/pm/content/2003/s857045.htm. Accessed 18 January 2015.

97 Government of Queensland. (2004). An End to Broadscale Clearing by 2006 under the Vegetation Management and Other Legislation Amendment Bill 2004 (Qld). Retrieved from http://www.parliament.qld.gov.au/documents/explore/ResearchPublications/ResearchBriefs/2004/200406.pdf. Accessed 18 January 2015.

FIGURE 3. ANNUAL WOODY VEGETATION CLEARING RATE IN QUEENSLAND (1988–2012)[98]



Subsequently, in 2009, the Queensland Bligh Labor Government imposed a three-to-six-month temporary ban on the clearing of regrowth vegetation.[99] The ban was aimed at stopping land clearing of regrowth vegetation in endangered regional ecosystems, particularly riparian regrowth vegetation in the Burdekin, Mackay Whitsunday, and Wet Tropics catchments. The purpose of the legislation was to allow time for the State to consult with stakeholders about the optimum way to regulate clearing of regrowth vegetation under the Vegetation Management Act.

During 2013 the Newman National-Liberal Coalition Government introduced the Vegetation Management Framework Amendment Act.[100] NGOs have criticized the Act extensively on four grounds: allowing a new category for broad-scale clearing of mature vegetation for high value agriculture; removal of protections of high conservation value regrowth vegetation; removal of requirement for permits to clear native vegetation in riparian zones; and altered provisions in regard to enforcement of illegal clearing.[101]

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98 Government of Queensland. (2014). Land cover change in Queensland 2011–12, Remote Sensing Centre, Science Delivery, Department of Science, Information Technology, Innovation and the Arts. Retrieved from https://publications.qld.gov.au/storage/f/2014-09-11T02%3A11%3A13.856Z/slats-report-2011-12.pdf. Accessed on 18 January 2015.

99 Government of Queensland. (2009). Vegetation Management (Regrowth Clearing Moratorium) Act 2009. Retrieved from https://www.legislation.qld.gov.au/LEGISLTN/ACTS/2009/09AC006.pdf. Accessed 18 January 2015.

100 Government of Queensland. (2013). Vegetation Management Framework Amendment Act 2013. Retrieved from https://www.legislation.qld.gov.au/LEGISLTN/ACTS/2013/13AC024.pdf. Accessed on 18 January 2015.

101 World Wildlife Fund. (2013). Bushland at risk of renewed clearing in Queensland. Retrieved from http://www.wwf.org.au/news_resources/?6800/Bushland-at-risk-of-renewed-clearing-in-Queensland. Accessed on 18 January 2015.

1.1.2 Discussion and analysis

Queensland's dependence on agriculture and relatively high levels of forest cover have engendered an agricultural development ethos that continues to this day. Land clearing in Queensland has largely occurred during the past 50 years and has been driven by demands for agricultural and grazing land.[102] Expansion of cattle grazing is a significant driver of this change. Beef production is now the most common enterprise on Australian farms, with nearly half of all farms having some beef cattle.[103] Since 1988, when satellite monitoring of woody vegetation commenced, clearing has occurred at 300,000 to 700,000 ha/yr until 2006 (see Figure 3). The majority of this clearing has been for improved cattle pastures.[103]

Expansion of land clearing in tropical Queensland galvanized public protests and led to a conflict between the state and federal government. Estimates suggest that 50 percent of Queensland's primary tropical forest (6,700 km^2 of around 13,000 km^2 prior to European settlement) have been cleared for sugarcane, banana, and livestock production.[102] The Daintree Blockade symbolizes the growing conflict between development and conservation interests.[85]

The bjelkemander had effectively entrenched the supremacy of rural interests in Queensland. Its collapse – largely due to the suppression of public protests and widespread police and political corruption – ushered in a period of realignment of agricultural and conservation interests. The electoral imbalance due to the bjelkemander was redressed, but a succession of Labor governments failed to address land clearing until the mid-2000s.

The failure of the Daintree Blockade led to the environmental movement focusing lobbying efforts on the federal government. Partly as a result of these efforts, significant changes in the commonwealth's involvement in land management decisions occurred during the 1980s. The Hawke, Federal Labor government used the instrument of Section 52 of Australia's Constitution, the "external affairs power" to override the state governments of Tasmania and Queensland by moving for world heritage listing of Tasmania's forests and the North Queensland rainforests. This move was made possible by a decision of the High Court in the Franklin Dam case in 1983 that meant that although the states had control over their own land matters, when Australia became party to international agreements for environmental protection, commonwealth laws would override state laws.[104]

In November 1997, the Council of Australian Governments (COAG) agreed in principle to an agreement clarifying commonwealth and state roles and responsibilities for the environment. Subsequently, all heads of governments and the Australian Local Government Association signed the agreement.[105] In 1999 the Howard Liberal-National Coalition Government passed the Commonwealth

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102 Bradshaw, C.J.A. (2012). Little left to lose: deforestation and forest degradation in Australia since European colonization. *Journal of Plant Ecology* 5(1):109-120.

103 McAlpine, C.A., Etter, A., Fearnside, P.M., Seabrook, L., and Laurance, W.F. (2009). *Global Environmental Change,* 19, 21-33.

104 Government of Australia. (2015). National Archives of Australia. Retrieved from http://primeministers.naa.gov.au/primeministers/hawke/in-office.aspx#section5. Accessed 19 January 2015.

105 Council of Australian Governments. (1997). Heads of agreement on Commonwealth and State roles and responsibilities for the Environment. Retrieved from http://www.environment.gov.au/resource/heads-agreement-commonwealth-and-state-roles-and-responsibilities-environment. Accessed 20 January 2015.

Environment Protection and Biodiversity Conservation (EPBC) Act, 1999, which is the Commonwealth governments' principle piece of environmental legislation. The Act is designed to protect national environmental assets, known as matters of national environmental significance, and other protected matters.

Matters protected under the EPBC Act ('protected matters') are: world heritage properties; national heritage places; wetlands of international importance (listed under the Ramsar Convention); listed threatened species and ecological communities; migratory species protected under international agreements, Commonwealth marine areas; the Great Barrier Reef Marine Park; the environment, where nuclear actions are involved; the environment, where actions proposed are on or will affect Commonwealth land and the environment; and the environment, where Commonwealth agencies are proposing to take an action.

While codifying the role of the commonwealth, the EPBC Act leaves open how states will behave on land management issues under their jurisdictions. This opening has both positive and negative consequences from a conservation perspective, as seen in the case of Queensland, where the Newman National-Liberal Coalition Government's Vegetation Management Framework Amendment Act has fallen foul of environmentalists. Despite environmental NGOs' criticisms, some important environmental safeguards remain in the Act. The Act specifically continues controls on clearing native vegetation in an endangered regional ecosystem or in an "of concern" regional ecosystem.[106] The EPBC Act also will be triggered when such matters affect listed threatened species and ecological communities.

Land management in Queensland will continue to be a contested area as governments of different persuasions try to balance economic and conservation interests. Across Australia, there is a trend toward implementing policies, legislation, and regulation that uses biodiversity offsets as a mechanism to balance conservation and economic interests. The Queensland Vegetation Management Framework Amendment Act 2013 appears to open the possibility of biodiversity offsets; section 22DAC(1)(e) allows adverse impacts of clearing to be minimized or mitigated. The extent to which offsets may or may not be used is unclear, as are the full environmental consequences of the amendments to the Vegetation Management Framework.

1.2 BRAZIL

1.2.1 Introduction and background

In Brazil, direct regulation is used to combat deforestation and to regulate rural land use at the federal, state, and municipal levels. The main legislation at the federal level to control land clearing on private land is the Forest Code, initially agreed upon in 1965, amended by a series of presidential decrees during the 1990s, and then revised in 2012. In the National Congress, the revision of the Code has been subject to years of debate between environmental groups and the "agrarian caucus" ("*bancada ruralista*").[107] Areas of contention included the amount and types of land set aside for conservation and the instruments and mechanism to promote the recovery of areas illegally deforested or cleared prior

[106] Government of Queensland. (2013). Vegetation Management Framework Amendment Act 2013. Retrieved from https://www.legislation.qld.gov.au/LEGISLTN/ACTS/2013/13AC024.pdf. Accessed 20 January 2015.

[107] Group of deputies from several political parties that have direct connections with landowners and farmers.

to 2008. Agribusiness uses the persistent argument that forest restoration conflicts with agricultural production.[108] Similar agribusiness views persist in Queensland, Australia.

The Forest Code requires that a minimum portion of privately owned rural land be maintained for the conservation of native vegetation.[108] The Code divides privately held rural land into four main categories for the purpose of land clearing and establishes minimum reserve requirements for the conservation of native vegetation. In the forested Amazon, 80 percent of a property must be set aside for conservation purposes. In the "cerrado" (savanna) Amazon, this amount is reduced to 65 percent. In other biomes, including "campo gerais" (natural grassland) in the Amazon, this requirement is further relaxed to 20 percent.[108,109,110] Some proportion of the set-aside may be established as permanent preservation areas, which cover riparian zones that protect riverside forest buffers, hilltops, high elevations, and steep slopes.[108]

Historically, land clearing rates in Brazil have been high and of significant global and national concern. In 1995 deforestation rates in Brazil soared to their highest levels, mainly because of the economic recovery promoted by "Plano Real." To try to reduce the deforestation rates, in 1996 changes in reserve requirements in the Amazon region were made, increasing reserves from 50 to 80 percent. While deforestation rates did decline, in 1996 enforcement was hampered due to several reasons, including the lack of a rural property cadastral database.[111] During this period protected areas and indigenous reserves were established at a slow rate, far from the active agricultural frontier.[109] Land clearing rates fell again in 1997 and then picked up and leveled out for the remainder of the 1990s, starting to rise in the early 2000s, peaking in 2004, and subsequently falling (Figure 4). The revisions to the code alone do not account for the significant reductions in land clearing that have occurred since 2004.

During the early 2000s the relatively high and increasing rates of land clearing is attributable to the rapid globalization of soy commodity markets combined with technological changes and high soy prices driving a rapid expansion of the soy crop. More than half of the area cleared up to 2004 took place in the southeastern Amazon state of Mato Grosso, Brazil's largest agricultural producer. Cattle production also expanded and intensified during this period, with yields increasing fivefold.[109]

The reduction in land clearing since 2004 is largely attributed to a period of intense political action, championed by the Ministry of the Environment and resulting in enhanced enforcement capability due to the 2004 introduction of the "Action Plan for Prevention and Control of the Legal Amazon Deforestation" and the Detection of Deforestation in real time system for detecting and responding to deforestation events. During this period Brazilian civil society exerted pressure on the government and the soy and beef industries. This pressure resulted in the 2006 soy and 2009 beef moratoria, partly made possible because declining commodity prices and a strengthening currency reduced demand for new land.[110] These changes all occurred prior to the establishment of the Amazon Fund in late 2008.

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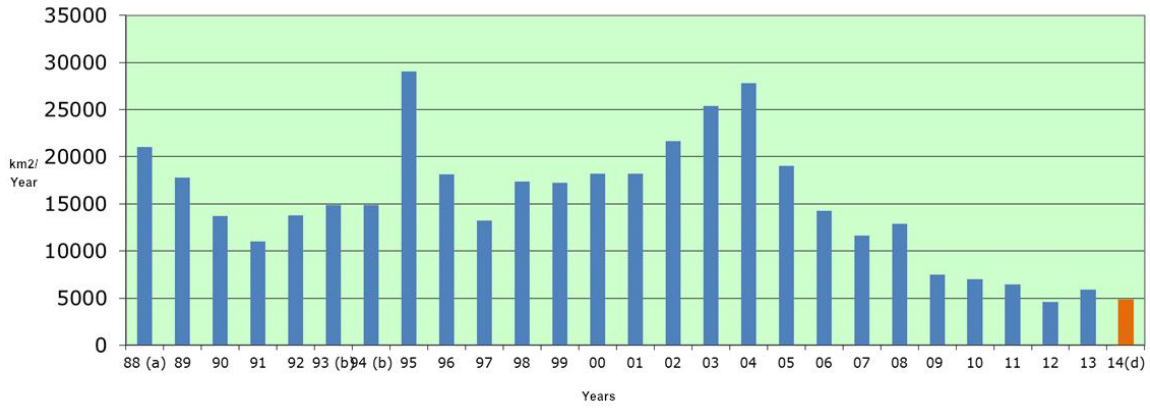
108 Soares-Filho, B. et al. (2014). "Cracking Brazil's Forest Code". *Science,* 344, 363-364.

109 Nepstad, D., McGrath, D., Stickler, C. et al. (2014). "Slowing Amazon deforestation through public policy and interventions in beef and soy supply chains". *Scienc*e, 344(6188), 1118-1123.

110 Boucher, D., Roquemore, S., and Fitzhugh, E. (2013). "Brazil's Success in Reducing Deforestation. *Tropical Conservation Science,* 6(3), 426-445. Retrieved from http://tropicalconservationscience.mongabay.com/content/v6/TCS-2013_Vol_6%283%29_426-445-Boucher_et_al.pdf. Accessed 29 January 2015.

111 A comprehensive register of property ownership.

FIGURE 4. BRAZIL'S DEFORESTATION RATES IN THE AMAZON.[112]



The revised Forest Code 2012 weakens restoration requirements on land illegally deforested before 2008. Landowners are no longer required to restore illegally deforested land at their own expense. It is estimated that under the new rules, 90 percent of Brazilian rural properties qualify for amnesty. However, key implementation details are still being negotiated.[108]

A new feature of the Code is a mechanism called Environmental Reserve Quota (or in Portuguese CRA). This system has strong analogies with the environmental offset system used in Australia (for example, BushBroker in Victoria).[113] The CRA is a tradable legal title to an area with intact or regenerating native vegetation exceeding Forest Code requirements.

A CRA surplus on one property may be used to offset a legal reserve requirement on another property within the same biome and, preferably, state.[99] These transfers or transactions will be tracked through the Rural Environmental Registry (known as the CAR, but henceforth referred to as the Registry) [114], a mandatory electronic registry applicable to all rural properties, to be implemented at the state and/or municipality level, with the purpose of integrating the environmental information of the rural properties.

1.2.2 Discussion and analysis

Historically Brazil has found it difficult to enforce environmental laws, even when there has been political will to do so. Local governments in Brazil have considerable discretionary power, which has led to concerns over corruption in addition to questions regarding the quality of laws, procedures, and enforcement capabilities. Most concerning are issues around corruption. If the CRA scheme suffer from governance failures and be plagued by corruption, this failure will likely discredit the scheme and compromise any potential environmental benefits. Governance of the scheme is likely to prove

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112 INPE. (2015). Annual Deforestation Rates in the Legal Amazon. Retrieved from http://www.obt.inpe.br/prodes/prodes_1988_2014.htm. Accessed 31 January 2015.

113 Government of Victoria. (2015). BushBroker Program. Retrieved from http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/native-vegetation/native-vegetation-permitted-clearing-regulations/native-vegetation-offsets/bushbroker. Accessed 7 February 2015.

114 For more information (in Portuguese) visit: http://www.car.gov.br.

challenging. The CRA and Registry implementation involves multiple layers of government — federal, state, and municipal — in an environment plagued by heterogeneous capacity and afflicted by unclear land tenure. Therefore, there is a need to strengthen coordination and local capacity, and to establish clear land tenure. To ensure the veracity of the scheme, Brazil will need to continue to invest in and upgrade its enforcement capacity.[108]

The CRA scheme does not deal with habitat fragmentation, nor does it guarantee that specific types of habitats will be protected for biodiversity or other attributes such as carbon stocks or water catchments.[108] Experience in similar schemes in Australia (e.g., BushBroker) suggests that habitat fragmentation and the pace of uptake can be problematic.

It is argued that the amnesty itself could lead to the perception that illegal deforestation will not be prosecuted and may even be exempted in future reforms.[99] Land owners may be tempted to take a "wait and see" approach. Evidence from the Registry appears to support this. The Registry commenced operations in May 2014, but landowners have been slow to register. By October 2014 only 10 percent of Brazilian rural properties (i.e., 500,113) were registered, most with fewer than 50 hectares. Even fewer properties needing offsets had joined the scheme.

Leakage may be another problem with the scheme. Gains in reducing land clearing are not yet secure across all biomes. Recently, deforestation rates ceased to decline in the Amazon and Atlantic Forest while surging in the Cerrado. This kind of leakage may negate much of the progress achieved with the scheme. While speculative, it is also conceivable that significant reductions in land-clearing rates may result in higher clearing rates elsewhere in the region.

Finally, the Forest Code is primarily about land clearing and does not stipulate any carbon sequestration. However, preserving and restoring habitat does have sequestration potential. The Forest Code could indirectly create demand for REDD+ projects or programs, provided these meet the requirement of the code. The possibility exists for stacking carbon rights and biodiversity offset rights, but the separability, transfer, and ownership are unclear. Further details are provided in the FRAC analysis (Table 8).

TABLE 8. FRAC ANALYSIS APPLIED TO BRAZIL.

Brazil		
Fitness	Legal Context	Revised Forest Code (Law 12.651/2012). Article 29 creates the Rural Environmental Registry (CAR), a mandatory electronic registry ("Registry") applicable to all rural properties, to be implemented at the state and/or municipality level, with the purpose of integrating the environmental information of the rural properties. Article 44 creates the Environmental Reserve Quota (CRA), a "tradable legal title to areas with intact or regenerating native vegetation exceeding the legal requirements." The CRA (surplus) on one property may be used to offset a "legal reserve" debt on another property within the same biome and, preferably, the same state.
	Social and political acceptability	The revised Forest Code is highly contested. Environmentalists are concerned that the amnesty the Forest Code affords will result in increasing rates of land clearing. Agribusiness is skeptical that the system will support expanded agricultural production due to the costs and complexity of the system. Federal government intervention, in particular by the Ministry of Environment and Ministry of Agriculture, supported the revisions.
	Institutional capacity	The Registry and CRA are implemented at the state and/or municipality level, and institutional capacity is heterogeneous among states and municipalities. A national web-based system exists to facilitate the implementation of the Registry, but rural properties must use states' and municipalities' systems, if they exist. Expanded monitoring and enforcement capacity is likely to be needed.[108]
	Transparency	Despite Brazil's demonstrated strong commitment to open and transparent government and its participation in the Open Government Partnership, local governments have considerable discretionary power, which has led to concerns over corruption, the quality of laws, procedures, and enforcement capacity.[115] The robustness of the Registry and CRA system depends on the veracity of the system documenting more than 5 million rural properties. If not implemented transparently, corrupt practices may permeate and discredit the system.

[115] Transparency International. (2014). Corruption Challenges. Retrieved from http://www.transparency.org/country#BRA. Accessed 31 January 2015.

	Governance	Registry/CRA implementation involves multiple layers of government – federal, state, and municipal – in an environment plagued by heterogeneous capacity and unclear land tenure. Therefore, there is a need to strengthen coordination and local capacity, and to establish clear land tenure. It is argued that the Amnesty could lead to the perception that illegal deforestation will not be prosecuted and may even be exempted in future reforms.
	Implementation	The Registry commenced operations in May 2014 (Decree 8235/2014),[116] but landowners have been slow to register. By October 2014 only 10 percent of Brazilian rural properties (i.e., 500,113) were registered, most with less than 50 hectares; even fewer properties needing offsets had joined the scheme. The federal government has set a deadline of May 2015 for all landowners to register, with the possibility of 1 year extension. Is very likely that this extra year will be needed for all Brazilian rural properties to register. To date there is no publicly available volume and price information on CRA trading, but according to BVRio, volumes are insufficient to support a spot market.[117]
Risks	Environmental	Should the scheme suffer from governance failures and be plagued by corruption, these breakdowns will further discredit the scheme and any potential environmental benefits. Habitat fragmentation and "Biome Leakage" can occur, as the scheme does not guarantee that specific types of habitats will be protected for biodiversity or other attributes such as carbon stocks or water catchments. The revised Forest Code 2012 also weakens restoration requirements on illegally deforested land before 2008. Landowners are no longer required to restore illegally deforested land at their own expense. It is estimated that under the new rules, 90 percent of Brazilian rural properties qualify for amnesty; however, key implementation details are still being negotiated.
	Durability	A large restoration effort is needed for approximately 21 Mha, almost a quarter of which affects permanent preservation areas. This effort will take many years to implement through the CRA market, and there is a risk that rules might change, further delaying participation and activity. Rule changes could increase the legal percentage requirements and/or reduce the scope of the amnesty.

116 Government of Brazil. (2014). Decree 8235 on the establishment of the Rural Environmental Registry (CAR). Retrieved (in Portuguese) from http://www.car.gov.br/leis/DECRETO8235.pdf. Accessed 2 February 2015.

117 BVRio. (2015). Environmental Reserve Quota. Retrieved (in Portuguese) from http://www.bvrio.org/site/index.php/mercados/florestal/cotas-de-reserva-ambiental. Accessed 2 February 2015.

	Economic	The scheme may prove to be expensive given the high costs of forest restoration (e.g., around R$ 8,500/ha or US$3,000/ha) and opportunity costs (e.g., up to R$ 1,500/ha or US$540/h), limiting participation and environmental benefits.[118]
Abatement potential		Estimates suggest that the Forest Code could sequester up to 9 ± 2 $GtCO_2e$. [99]
Cost		Registering land on the Registry costs R$ 0,30 to R$ 1 per hectare, depending on the size of the rural property.[119] CRA costs will depend on the forest restoration (e.g., around R$ 8,500/ha or US$3,000/ha) and the land opportunity costs (e.g., up to R$ 1,500/ha or US$540/ha).

118 CEPEA - ESALQ/USP (Center for Advanced Studies on Applied Economics at "Luiz de Queiroz College of Agriculture" of University of São Paulo). (2015). Personal communication. 2 February 2015.

119 TNC. (2010). Environmental Reserve Quota. Retrieved (in Portuguese) from http://memoria.ebc.com.br/agenciabrasil/noticia/2010-08-30/cinco-municipios-comecam-fazer-cadastro-ambiental-no-para-e-em-mato-grosso. Accessed 2 February 2015.

1.3 CONCLUSIONS

Some significant parallels can be drawn between Australia and Brazil. Politically powerful agricultural interests influence the politics of both countries. In Brazil it is the agrarian caucus, and in Australia it is the National Farmers Federation. The agricultural constituencies in both countries generally oppose restoration efforts on cleared land and argue in support of expanding agricultural production. In Queensland, legal amendments in the form of Vegetation Management Framework Amendments Act have introduced a new land-clearing category for broad-scale clearing of mature vegetation for high value agriculture. In Brazil the revised Forest Code 2012 weakens restoration requirements on land illegally deforested before 2008.

In both countries governance and democratic reforms, while important, may not immediately result in reducing land-clearance rates. Despite improvements in governance, it has taken decades for land-clearing rates to reduce in both examples. Powerful economic interests have continued damaging practices irrespective of the longer-term consequences. In both cases growing public awareness and concern about forest and biodiversity loss are important for providing a political climate for reform and the emergence of constituencies to balance land-clearing interests. As in Australia the political process in Brazil has not always moved forward in a linear trajectory; however, at times it is subject to significant policy reversals.

The political process in both countries has attempted to balance different groups' (e.g., agribusiness and conservation) interests using innovative policies, such as payments for results and environmental offsets, in the hope that such policies will bring about needed structural changes in land management practices to protect forest and biodiversity. In both counties the political processes have settled on the use of biodiversity offsets as a mechanism for balancing conservation and economic interests. Both countries are developing fledgling environmental offset markets — in Brazil this market is the CRA and in Australia it is programs like BushBroker. However, in both countries the use of environmental offset markets may not be the solution to land clearing for which politicians hope.

APPENDIX II – PAYMENT FOR RESULTS

In this appendix we discuss the payment for results model as implemented by Norway's International Climate and Forest Initiative (NICFI) in collaboration with Brazil's Amazon Fund. We provide some lessons learned from Brazil's experience, illustrated using the FRAC framework. Norway also has pledged US$1 billion to Indonesia through the NICFI initiative, but so far no performance payments have been made. We discuss the case of Indonesia and examine some reasons that may help to explain why Indonesia has failed to meet its performance benchmarks.

2.1 BRAZIL

2.1.1 Background and introduction

In the REDD+ context NICFI is the most prominent example of payment for results. The NICFI funds several bilateral and multilateral efforts aimed at reducing deforestation and testing results-based payments.[120] The initiative is not currently designed to involve tradable credits, and there is no indication that this situation will change in the immediate future.

The Amazon Fund, established in 2008, is one of the first large-scale efforts to deliver performance-based-payment for forest carbon emission reductions.[121] The Amazon Fund aims to raise donations for non-reimbursable investments in efforts to prevent, monitor, and combat deforestation, as well as to promote the preservation and sustainable use of forests in the Amazon Biome.[122]

The Amazon Fund grew out of an initiative between government and civil society for coordinated action between federal, state, and municipal governments to tackle deforestation in the Brazilian Amazon. In 2006 Brazil presented a proposal at COP 12 to reduce emissions from deforestation, based on a payment for results model rather than on tradable credits.[123] In 2007 a group of nine environmental NGOs launched the 'zero-deforestation pact' proposal in the Brazilian Congress. The pact included the

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120 Government of Norway. (2014). The Government of Norway's International Climate and Forest Initiative. Retrieved from http://www.norad.no/en/thematic-areas/climate-change-and-the-environment/norways-international-climate-and-forest-initiative. Accessed 20 February, 2015.

121 Government of Brazil. (2013). Amazon Fund Annual Report. Retrieved from http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en. Accessed 30 January 2015.

122 Government of Brazil. (2008). Decree N° 6,527 Provides for the establishment of the Amazon Fund by the National Bank for Economic and Social Development – BNDES (in Portuguese). Retrieved from http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2008/Decreto/D6527.htm. Accessed 30 January 2015.

123 UNFCCC. (2006). UNFCCC Submission from Brazil. Retrieved from https://unfccc.int/files/meetings/dialogue/application/pdf/wp_21_braz.pdf. Accessed 6 February 2015.

establishment of a Fund for Donations for Amazon Forest Conservation ("Amazon Fund for Governance") to help meet the estimated US$555 million costs (in 2007) associated with tackling deforestation. The National Bank for Economic and Social Development (BNDES) was proposed as the fund manager. [124]

As a result of this proposal and the willingness of the federal government to raise international finance for the fund, the Amazon Fund became operational in August 2008. The Fund channels monies to projects that contribute to the "National Plan on Climate Change" and to the "Action Plan for Prevention and Control of the Legal Amazon Deforestation" (PPCDAM). The Fund provides non-reimbursable loans, which are effectively grants. Norway became the first investor in the fund, with a US$1 billion pledge from its NICFI.[125] The fund also received contributions from national sources; Petrobrás has donated approximately US$5.6 million.

As the first contributor to the fund, Norway commenced payments in 2009 and pledged support through 2015, depending upon Brazil achieving the agreed reference emission levels. Should emissions in a given year exceed the reference emissions level, no payment will be made to the fund in the subsequent year. As of the end of 2014, payments totaling about US$901 million have been made.[126] As of January 2015, the Amazon Fund is supporting projects worth US$406 million.[127] Key issues in implementing the fund were governance structures, establishing the reference emissions rate (RER; see figure 5 below), and setting disbursement guidelines.

The Amazon Fund Steering Committee (COFA) determines guidelines and criteria for the Fund's operation. This committee is composed of representatives from the federal government, the states in the Legal Amazon area, and civil society. The Ministry of Environment estimates emission reductions, which is certified by the Amazon Fund Technical Committee (CTFA) (a committee of six experts appointed by the ministry). The Brazilian Development Bank (BNDES) is in charge of the Fund's operations, including fundraising and managing disbursements according to the guidelines set down by the COFA. This work includes project selection,[128] contracting, monitoring, and ex-post evaluation. [129]

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124 BNDES is a financial institution fully owned and controlled by the federal government.

125 Forstater, M., Nakhooda, S., and Watson, C. (2013). The effectiveness of climate finance: a review of the Amazon Fund. Overseas Development Institute: London, UK. Retrieved from http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8340.pdf. Accessed 30 January 2015.

126 Government of Brazil. (2015). The Amazon Fund. Retrieved from http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en. Accessed 17 February 2015.

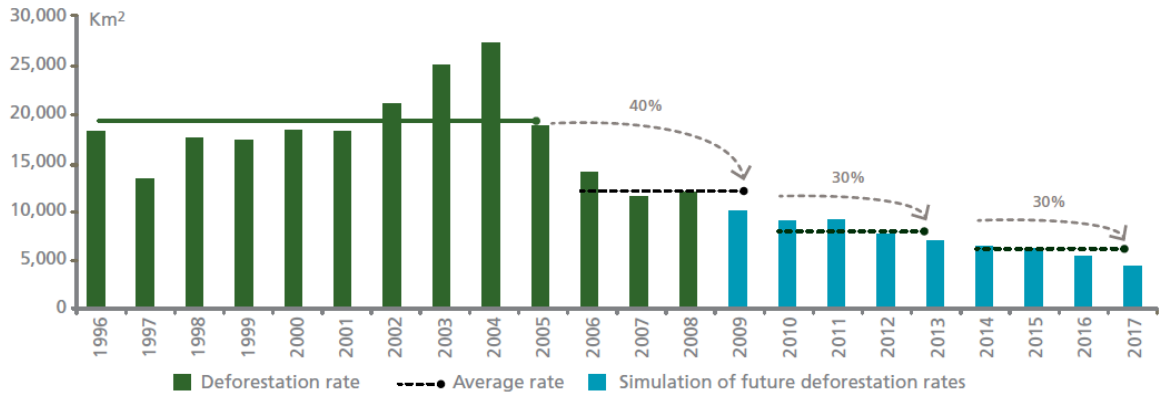
127 Government of Brazil. (2015). Amazon Fund Portfolio Report. Retrieved from http://www.amazonfund.gov.br/FundoAmazonia/export/sites/default/site_en/Galerias/Arquivos/Informes/2015_01_informe_31jan15_engl.pdf. Accessed 15 March 2015.

128 Project types include: management of public forests and protected areas; environmental control, monitoring, and inspection; sustainable forest management; economic activities created with sustainable use of forests; ecological and economic zoning, territorial arrangement, and agricultural regulation; preservation and sustainable use of biodiversity; and recovery of deforested areas.

129 Government of Brazil. (2015). The Amazon Fund. Retrieved from http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en/Esquerdo/Fundo/ctfa.html. Accessed on 6 February 2015.

The Amazon Fund uses a standard price of US$ 5.00/tCO_2 and a conservative carbon stock estimate of 132.2 tC/ha. These values are used to guide the Amazon Fund's fundraising rather than payments per project funded. [130]

FIGURE 5. BRAZIL'S FOUR-YEAR TARGET FOR REDUCING DEFORESTATION IN THE AMAZON.[131]



2.1.2 Discussion and analysis

Forest protection in Brazil is still a contested issue in national life, with economic interests and conservationists continuing to oppose each other. In many respects the issues around deforestation in the Amazon are analogous to those of land clearing in Australia, which is also contested. In Appendix I we discuss the experience of using direct regulation and drivers of land clearing and deforestation in Queensland Australia and in Brazil respectively, but some similarities between Australia and Brazil are considered in the following discussion.

One of the political advantages of the Amazon Fund is its ability to bridge the gap between conservationists, farmers, and ranchers. The analysis highlights the broad community support the Fund enjoys but also emphasizes implementation issues. During the initial learning phase, while BNDES was building capacity, project developers encountered specific implementation issues such as the lengthy proposal assessment, the disbursement process, and excessive documentation requirements (see Table 9). The benefits of the Amazon Fund may well be confounded by other actions at the local and national levels.

The 2006 soy and 2009 beef moratoria and improved enforcement are all likely to be concurrent drivers reducing deforestation in the post-2009 period. Research suggests that the contribution of the soy and beef moratoria is hard to assess, and the increase in protected areas and credit restrictions implemented through the Critical Counties program are likely to be significant drivers reducing the rate

130 In November 2013, the sixth meeting of the CTFA established the estimated amount of reduced emissions related to forest year 2013, corresponding to 580.2 million tons of CO_2, and the maximum value for the Amazon Fund fundraising efforts related to this period, US$ 2,900,898,000.00.

131 Government of Brazil. (2014). Activity Report 2013 Amazon Fund. Retrieved from http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en. Accessed 25 August 2014.

of deforestation.[132] Any confounding effects from the 2006 soy and 2009 beef moratoria do not reduce the value of the Amazon Fund. One of the benefits of the Amazon Fund is the establishment of agreed, reducing, reference emission levels that represent a governance accountability benchmark. The Amazon Fund also provides financing to assist the Government of Brazil achieve these benchmarks going forward.

Arguably as deforestation rates decline it becomes more complex, costly, and difficult to reduce the remaining deforestation due to commodity price incentives.[132] The Amazon Fund has played an important role in further reducing deforestation in Brazil. The payment for results model is not necessarily universally applicable, as initial financing and implementation risks need to be carried by the implementing country or organization. A large country or organization with significant capacity and robust processes may be able to more easily use this financing without additional support, as compared to a small less-developed country or organization.

Despite the limitations of payment for results, development agencies continue to support expanded use of this strategy with innovative financing such as Development Impact Bonds[133], which share the risks between implementers and investors who put money into a development intervention and are repaid by a funder based upon results achieved. However, the model remains dependent on ongoing financial support from international and domestic sources; in the case of the Amazon Fund, no financial support appears to be forthcoming after 2015. This situation may be due in part to the current global economic situation and donors choosing to direct their financial support to other initiatives, such as through the Green Climate Fund, which is also adopting a result-based payment model.[134]

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132 Nepstad, D. et al. (2014). "Slowing Amazon deforestation through public policy and interventions in beef and soy supply chains". *Science,* 344(6188),1118-1123.

133 Center for Global Development. (2015). Development Impact Bonds. Retrieved from http://www.cgdev.org/working-group/development-impact-bond-working-group. Accessed 6 February 2015.

134 The GCF has established an initial logic model and performance measurement framework for ex-post REDD+ results-based payments, which follows the Warsaw Framework for REDD+. For additional information on the GCF see Green Climate Fund. (2014). Initial Logic Model and Performance Measurement Framework for REDD+ Results-based Payments. Retrieved from http://www.gcfund.org/fileadmin/00_customer/documents/MOB201410-8th/GCF_B.08_08_Rev.01_Initial_Logic_Model_fin_20141022.pdf Accessed 2 February 2015. For the complete set of Decisions of the Warsaw Framework for REDD+ visit: http://unfccc.int/land_use_and_climate_change/redd/items/8180.php. Accessed 7 February 2015.

TABLE 9. FRAC ANALYSIS APPLIED TO BRAZIL (AMAZON FUND).

Amazon Fund (Brazil)		
Fitness	Legal Context	Decree No. 6527, August 1, 2008, provides the legal framework for the establishment of the Amazon Fund.
	Social and political acceptability	Deforestation is a contested area, with economic interests (e.g., farmers and cattle ranchers) and conservationists opposing each other. In 2007 a group of nine environmental NGOs launched the 'zero-deforestation pact' proposal in the Brazilian Congress. This proposal attracted strong support. The 2006 soy and 2009 beef moratoria also demonstrate the extent of concern over deforestation in the Brazilian Amazon. The Brazilian Federal Government viewed the Amazon Fund as a way to bridge the gap between different groups (e.g., conservationists, farmers, and ranchers). Consequently the government did not encounter strong social and political opposition when creating the Amazon Fund in 2008, in particular due to high expectations of significant financial support (i.e., R$21 billion [US$ 8 billion] by 2021). The fund is important to the Brazilian government, as Brazil favors a payment for results model within the UNFCCC negotiations instead of the international market approach that some Brazilian states support (e.g., Acre and Amazonas). There were some concerns regarding sovereignty risks.[135]
	Institutional capacity	BNDES has a long and successful history in managing funds and projects but is criticized for excessive bureaucracy. Specific capacity gaps were filled with support from the Ministry of Environment as well as the establishment of a Steering Committee (COFA) and a Technical Committee (CTFA). COFA and CTFA are criticized for meeting infrequently, and concerns have been raised about the limited support they give to BNDES.
	Transparency	The Amazon Fund operates with a high degree of transparency on operational decisions but lacks information at the project level. All information related to the "Conditions for Granting Financial Support" and "Projects Supported" are publicly available on the Fund website. The federal

[135] Marcovitch, J. et al. (2013). Fundo Amazônia: Evolução Recente e Perspectivas (in Portuguese). Retrieved from http://www.usp.br/mudarfuturo/cms/wp-content/uploads/Fundo_Amazonia_Evolucao_Recente_e_Perspectivas_Final.pdf. Accessed 2 February 2015.

		government is developing the Safeguards Information System (SIS)[136], which may play an important role in increasing the transparency of the Amazon Fund.
	Governance	BNDES and the Ministry of Environment oversee the governance of the Fund, with support from COFA and CTFA. One concern is the fact that Fund's initial approach was too focused on projects and not programs and was not sufficiently strategic. There was also initial concern that the Fund's resources could be used inappropriately to subsidize inadequate state government support, but in practice this did not happen.
	Implementation	During the initial learning phase, while BNDES was building capacity, project developers encountered implementation issues including the lengthy proposal assessment, the disbursement process, and excessive documentation requirements.[126]
Risks	Environmental	Initially stakeholder concerns existed over the capacity of the Fund to meet its environmental objectives. Due to capacity gaps, local and indigenous communities have not effectively accessed the Fund, thus reducing its potential environmental benefits. In order to reduce environmental risks the Amazon Fund considers a set of "Principles and Socio-environmental Criteria for REDD+", developed by civil society in 2010 as a guide to direct its investments. These criteria applie to resource allocation, including legal compliance; the promotion of a sustainable economy and poverty relief; and participation, monitoring, transparency, and governance. Similar principles may be developed in other countries according to national circumstances.
	Durability	The model depends on ongoing financial support from international and domestic sources; no support appears to be forthcoming after 2015. This situation may be due in part to competition with other initiatives. For instance the Green Climate Fund has already established the initial logic model and performance measurement framework (PMF) for ex-post REDD+ results-based

136 The SIS's role is to aggregate information on the implementation of safeguards and provide them to society, using available databases. The goal of the system is to inform, in a transparent and accessible manner, how the safeguards are promoted and respected, providing information with quality, periodicity, transparency, accountability, efficiency, and simplicity, starting from the implementation of the National Strategy for REDD+. The SIS should be a participatory and interactive system, coordinated with other relevant, adaptive systems (revised and updated constantly), and accessible to stakeholders. The SIS should organize information and facilitate national and international communities' access to this information (decision 12 / CP.17). Potential users are participants and beneficiaries of REDD+ programs, initiatives at the state and regional level, stakeholders (NGOs, private sector), civil society, governments (collaborations and agencies), investors / donors, and the international community.

		payments (RBPs). Donors may prefer to use the Green Climate Fund instead of national initiatives like the Amazon Fund. Nevertheless, due to the experience gained in the operationalization of the Amazon Fund, BNDES could act as the National Designated Authority (NDA) or focal point for the Green Climate Fund and continue to use the Amazon Fund for the disbursement of resources received through the Green Climate Fund for REDD+ performance-based payments.
	Economic	Global economic conditions affect donor willingness to support initiatives like the Amazon Fund. If deforestation rates increase, even for a short period, this increase can undermine fundraising efforts.
Abatement potential		The BNDES reports that during 2006-2012 a total of 2.7GtCO_2 was abated through government policies (e.g., "Action Plan for Prevention and Control of the Legal Amazon Deforestation" [PPCDAM]). Since the commencement of the fund (2009-2012) 1.98 GtCO_2 has been abated.[137] Some estimates place the potential future abatement as high as 3.2 GtCO_2, but this figure will depend on the future deforestation rates coming and remaining down.
Cost		A standard price of US$ 5.00/tCO_2 is used to guide the fundraising of the Fund, which does not necessarily represent the real cost of the emission reduction in the Amazon region. There is limited public information to assess the cost effectiveness of the Fund.

[137] BNDES. (2014). Amazon Fund Activity Report. Retrieved from http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en. Accessed 2 February 2015.

2.2 MEXICO

Mexico has about 64 million hectares of forests, with official rates of national deforestation around 0.25 percent annually and forest degradation estimated at 0.45 percent annually. Direct drivers of deforestation vary by region but primarily include forest conversion to pasture and, to a lesser extent, agriculture. Between 1993 and 2002 about 512,500 ha/year of forest were converted to non-forest land-use types. Causes of degradation include unsustainable logging, forest grazing, fuel wood collection, fires, and pests and diseases.[138,139] So far Mexico's attempts to reduce land clearing have focused on land tenure reform. Community-based tenure is now the dominant form of land tenure in Mexico, with between 65 percent and 80 percent of the 64 million hectares of forests belonging to approximately 9,000 agrarian communities, including indigenous peoples and ejidos. Ejidos is a legally recognized collective land ownership system modeled after a mixture of soviet-style collectives and pre-colonial indigenous social structures in which land is communally owned and parcels are individually managed.[138,140]

Mexico has some experience with Payment for Results models having implemented a Payment for Environmental Services (PES) program. Between 2003 and 2009 about 2.3 million ha of land were entered into Mexico's PES program, making it one of the largest PES programs in the world next to the U.S. Conservation Reserve Program. Mexico's program focuses on the conservation of existing forest.[141] Under the program, five-year renewable contracts were signed with individual and communal landowners. These contracts cover a portion of the property where existing forest cover must be maintained, but landowners can make changes to land use in other parts of the property. Payment rates were fixed in pesos per hectare.[141,142]

Responsibilities for management are disbursed across various agencies. The Comisión Nacional Forestal (CONAFOR; National Forest Commission) implements forest monitoring and forest inventories at the national level. Procuraduría Federal de Protección al Ambiente (PROFEPA) – Federal Agency for Environmental Protection – is responsible for forest law enforcement. The Ministry of Environment and Natural Resources (SEMARNAT) is responsible for environment and forest regulation. The National Commission of Natural Protected Areas (CONANP) is responsible for conservation of forests and their biodiversity inside natural protected areas. SEMARNAT is responsible for coordination across agencies.

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138 Government of Mexico. (2008). FCPF R-PIN. Retrieved from https://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/Mexico_FCPF_R-PIN.pdf. Accessed on 20 February 2015.

139 Government of Mexico. (2014). FCPF Project Information Document (PID). Retrieved from http://forestcarbonpartnership.org/sites/fcp/files/Mexico%20PID.pdf. Accessed 20 February 2015.

140 World Bank. (2001). Mexico: Land Policy a Decade after the Ejido Reforms. Retrieved from http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2002/02/02/000094946_02011904004560/Rendered/PDF/multi0page.pdf. Accessed 20 February 2015.

141 Alix-Garcia J. M., Shapiro E. N., and K. R. E. Sims. (2012). "Forest Conservation and Slippage: Evidence from Mexico's National Payments for Ecosystem Services Program". *Land Economics* 88 (4), 613-638.

142 PSAH funds originate from an earmarked share of the water use fees charged by the municipalities and channeled to the Comision Nacional del Agua (CAN). Retrieved from http://www.watershedmarkets.org/casestudies/Mexico_National_PSAH_eng.html. Accessed 24 February 2015.

Mexico is participating in the World Bank's REDD+ readiness program (FCPF-R) and carbon fund (FCPF-C) and receives financial support from the Forest Investment Program (FIP) and is a UN-REDD partner country. Mexico is focusing on a wide variety of REDD+ activities, including preparation of the National REDD+ Strategy (known as ENAREDD+) and stakeholder consultations, establishing a multi-stakeholder advisory committee in 2010, known as the REDD+ National Technical Advisory Council (CTC-REDD+). The national REDD+ strategy, ENAREDD+, continues to be refined through various stakeholder consultations processes including national (CTC-REDD+) and various state equivalents.[143]

Given Mexico's experience with PES, a possible financing mechanism for REDD+ is payments for results. The FRAC analysis (Table 10) highlights some key elements and findings from applying a payment for results mechanism similar to the Amazon Fund in Mexico.

[143] World Bank. (2014). Mexico: REDD+ Annual Country Progress Reporting. Retrieved from http://forestcarbonpartnership.org/sites/fcp/files/2014/october/FCPF%20REDD%20Country%20Progress%20_MEXICO.pdf. Accessed on 20 February 2015.

TABLE 10. PAYMENTS FOR RESULTS FRAC ANALYSIS APPLIED TO MEXICO.

Mexico		
Fitness	Legal Context	Some legal precedent exists. The General Law on Climate Change (2102)[144] created the Mexican Climate Change Fund (MCCF)[145] with the aim to raise and distribute public and private national and international financial resources to support the implementation of actions to tackle climate change (Article 80). MCCF resources focus on projects that simultaneously contribute to mitigation and adaptation (Article 82, II). In theory, MCCF can invest in REDD+ activities and also buy certified emission reductions ("credits"). Aside from the MCCF, federal entities can manage local funds to implement climate change actions (Article 8 XVII). CONAFOR[146] is responsible for the Mexican Forestry Fund (MFF), an instrument to promote the conservation, increment, sustainable management, and restoration of forest resources. It facilitates access to financial services and development of payment mechanisms for environmental services (Article 142 of the General Law on Forest Sustainable Development, 2003)[147]
	Social and political acceptability	Both MCCF and MFF have a good political and social acceptability in Mexico; nevertheless, some concerns exist around their operationalization (see details in the subsequent sections of the FRAC). In 2009 Mexico (with Norway) supported a "Green Fund" that contributed for the creation, in 2010, of the Green Climate Fund. In the initial proposal, funding for mitigation actions including REDD+ should be delivered primarily through result-based mechanisms. Is not clear what will be the preference of Mexico in terms of using the national initiatives (i.e., MCCF and/or MFF) or the GCF to finance REDD+. During COP 20 (Lima) the Government of Mexico

144 The full version of this article is available (in Spanish) at: http://www.inecc.gob.mx/descargas/2012_lgcc.pdf

145 More information on SEMNARAT (in Spanish) is Retrieved from http://www.semarnat.gob.mx/fondo-cambio-climatico

146 More information on CONAFOR (in Spanish) is Retrieved from http://www.conafor.gob.mx/web/

147 The full version of this article is available (in Spanish) at: http://www.diputados.gob.mx/LeyesBiblio/pdf/259.pdf

		announced the contribution of US$ 10 million to GCF based on the assumption that developed countries shall contribute more.
	Institutional capacity	Whether or not Mexico has the capacity to manage a large payment for results mechanism was not assessed in detail. According to the Mexican Forest Strategy Program 2025[148], capacity development is one of the pillars to achieve an effective diffusion process and wide participation, in particular of communities, in forestry activities. Mexico may need to build and enhance its monitoring capacity and develop verification mechanisms to measure the results and impacts of finance in relation to national priorities. Experience on MRV of mitigation and adaptation climate change policies (including REDD+) could be enhanced and connected with financial MRV.[149]
	Transparency	To build a communication process with relevant stakeholders, a REDD+ Advisory Technical Committee was created (CTC-REDD+) at the national level; at the state level (Chiapas, Campeche, Quintana Roo, Oaxaca, and Yucatán); and also at the level of all of the Yucatán Peninsula. These committees are composed of social organizations, land owners, universities, and governmental institutions and could be applied to a payment for results mechanism.
	Governance	According to Transparency Mexico, aside from the existing institutional structure and coordination related to climate change, it is still necessary to enhance capacity to plan and implement national and international resources in a more efficient manner. Monitoring international climate finance is complex and in many cases non-existent. Many actors intervene in the process, with different (and sometimes conflicting) priorities, demands, and criteria. In relation to the national REDD+ strategy (ENREDD+) the current Mexican territorial framework will require the promotion and implementation of institutional arrangements well-coordinated among the federation, the municipalities, and the forest users.
	Implementation	The ENAREDD+ is still being finalized, but in terms of financing it proposes to develop and implement a flexible, multiple, diverse, gradual, and efficient financial system to facilitate the implementation of policies,

148 More information (in Spanish) is Retrieved from http://www.conafor.gob.mx/portal/index.php/acerca-de-conafor/programa-estrategico-forestal-2025

149 Transparencia Mexicana. (2013). Financiamiento Internacional para Cambio Climático en México 2009-2012: Programa de Integridad en el Financiamiento Climático. Retrieved (in Spanish) from http://www.tm.org.mx/wp-content/uploads/2013/10/PolicyPaper_TM_Financiamiento-Internacional-para-Cambio-Climático-en-México.pdf.

		actions, and REDD+ activities in order to guarantee the long-term benefits of environmental and socioeconomic goods and services from forestry ecosystem. "Early actions" (*acciones tempranas)* [150] are located in the states of Jalisco, Chiapas, and in the Yucatan Peninsula (in the states of Yucatan, Campeche, and Quintana Roo). These early action activities are not full REDD+ demonstration projects but rather aim to assess various environmental, social, and cultural conditions under which institutional arrangements, governance structures, and monitoring and financial mechanisms can be tested. Mexico receives significant international support for REDD+ and climate. According to Transparency Mexico between 2009 and 2012, Mexico received US$770,985,692 for forest, climate change, and REDD+ activities (12.53 percent of the total climate change finance received).[151]
Risks	Environmental	Mexico is developing a Safeguards National System (SNS) and a Safeguards Information System (SIS) to implement, report on, and guarantee the compliance of all the safeguards established by the Cancun Agreements (decision 1/CP.17) and subsequent decisions (12/CP.17).
	Durability	Durability depends on the amount of funding received, the number of projects approved, and the financial resources granted by project. Similar concerns over long-term financial durability as raised for Brazil in Table 9 above will apply in this context.
	Economic	With economic crises, the amount of donations tends to reduce and/or cease. An increase in deforestation rates will undermine and/or cease the opportunities for fundraising. Competition with other initiatives may create more difficulties for fundraising. For instance, the Green Climate Fund already has established the initial logic model and PMF for ex-post REDD+ results-based payments. Donors (including Mexico) may prefer to use the GFC instead of national initiatives. As of 16 January 2015, Mexico has not yet nominated the National Designated Authority (NDA) or focal point for the GCF. [152]

150 More information (in Spanish) is Retrieved from http://www.conafor.gob.mx/web/temas-forestales/bycc/redd-en-mexico/acciones-tempranas-redd/

151 More information is Retrieved from http://www.tm.org.mx/wp-content/uploads/2014/03/Where-does-international-funding-to-address-climate-change-in-Mexico-go-to.jpg

152 More information is Retrieved from http://www.gcfund.org/fileadmin/00_customer/documents/Readiness/2015-1-16_NDA_and_Focal_Point_nominations_for_the_Green_Climate_Fund.pdf

Abatement potential		Mexico has presented its proposal for a national forest reference emission level[153] for the gross deforestation activities, including forest fires: 45,073 $GgCO_2e$ / year for the 2011-2015 period (based on the average value of the 2000-2010 period). This proposal will be subject to a technical assessment during 2015. The National Institute of Ecology and Climate Change has identified the mitigation potential of the Mexican forest sector at around 48 million tCO_2e for 2020 and 96 million tCO_2e for 2030.[154]
Cost		When funding for payments comes from external sources, the bulk of costs shifts internationally. The National Institute of Ecology and Climate Change has estimated that around €2 billion is necessary to fulfill the 2020 mitigation potential of the Mexican forest sector.[155]

153 Available (in Spanish) at: http://unfccc.int/files/methods/redd/application/pdf/nivel_de_referencia_de_las_emisiones_forestales_de_mexico.pdf

154 Available (in Spanish) at: http://www2.inecc.gob.mx/descargas/cclimatico/Potencial_mitigacion_GEI_Mexico_2020_COP.pdf

155 Ibid.

2.3 INDONESIA

2.3.1 Background and introduction

After the United States and China, Indonesia is the third-highest emitter of greenhouse gasses, with an estimated 37 percent of GHG coming from deforestation and another 27 percent from the burning of carbon-rich peatlands.[156] With the third-largest expanse of tropical forest on the planet and deforestation rates of more than 1 million hectares per year,[157] REDD in Indonesia has evolved as a potentially powerful tool for both conservation as well as reducing domestic carbon and methane emissions.

A major driver of land use change in Indonesia during the past 20 years has been commercial agricultural expansion, in particular for palm oil plantations. Palm oil has emerged as a key ingredient in consumer products such as cosmetics and processed foods, and global demand for the commodity is expected to rise by 32 percent by 2020.[158] Indonesia is the world's leading producer and exporter of palm oil, Indonesia's top export commodity, resulting in powerful industry leaders who oppose top-down government REDD initiatives that might threaten future expansion. Additional industry-side deforestation drivers include legal and illegal logging, with the total export value of forest products rising by 33 percent from 2005 to 2010, reaching US$9.7 billion.[159]

Indonesia has been highly active in the REDD arena since COP 13 in Bali, participating in the FCPF Readiness Fund, the UN-REDD Program, the Forest Investment Program, as well as the Indonesia Forest Climate Alliance. In 2010 Indonesia signed a landmark bilateral agreement with Norway entitled "Cooperation on Reducing GHG Emissions from Deforestation and Forest Degradation", with a commitment of up to $1 billion. The "Oslo Pact," as it is known, included a 2-year moratorium of the conversion of peatlands and natural forests for timber or conversion to palm oil.

In 2011, a REDD Task Force was launched for the establishment of a new finance mechanism, preparation of MRV institutions, and implementation of the moratorium[160], and in 2012 a National REDD+ Strategy was outlined that would result in the establishment of a REDD+ Agency, with the stated goal of ensuring that forests are a net carbon sink by 2030 (ER-PIN 2014). Also in 2012, the National Forest Monitoring System was launched, and in mid-2013 the REDD+ Agency was established by the president's office.

Indonesia leads the world with largest number of project-level REDD initiatives and has made substantial progress in developing subnational programs. REDD "Strategy and Action Plans" are being developed for

156 National Council on Climate Change. (2010). Setting a Course for Indonesia's Green Growth.

157 UNREDD. (2015). Indonesia. Retrieved from http://www.un-redd.org/UNREDDProgramme/CountryActions/Indonesia/tabid/987/language/en-US/Default.aspx. Accessed February 2015.

158 WRI. (2015). Forests and Landscapes in Indonesia, Project Potico. Retrieved from http://wri.org/project/potico. Accessed February 2015.

159 The REDD Desk. (2015). Retrieved from http://theredddesk.org/countries/indonesia. Accessed February 2015.

160 CIFOR. (2011b). Indonesian President forms new REDD+ task force. September 13, 2011. Retrieved from http://blog.cifor.org/4144/indonesian-president-forms-new-redd-task-force#.VOjx4BZbw3Q. Accessed February 2015.

11 priority provinces, five of which already signed a memorandum of understanding (MOU) with the REDD+ Agency (ER-PIN 2014). Six Indonesian provinces are members of the Governors' Forest and Climate Task Force (GCF).

The Oslo Pact, modeled after the Amazon Fund, was designed as a three-phase agreement, with $100 million up-front for preparatory and readiness phases and the remaining $900 million to be disbursed during the payment-for-results phase, which was expected to begin in 2014 but has experienced delays.[161]

2.3.2 REDD+ challenges

Despite an increased stated commitment to REDD from the highest levels of government, Indonesia doubled its forest carbon emissions from 2000 to 2010 as compared with the 1990s. Progress in both slowing deforestation and preparing for national-scale REDD+ has been mixed at best. The most commonly cited obstacles, including in Indonesia's own ER-PIN to the FCPF, include weak forest governance and unclear land tenure, both of which have been highlighted for remedying as part of Indonesia's bilateral and multilateral pledges of developing institutional capacity.[162]

Additional challenges include a historically centralized forest-ownership structure (the government administers 98 percent of public land), and ambiguous and often conflicting land use policies.[163] In a high-level study comparing tenure issues in five dominant REDD countries (Brazil, Cameroon, Tanzania, Vietnam, and Indonesia), Indonesia was found to have the most problematic tenure insecurity, and all five study sites within Indonesia had industry claims on at least part of the lands planned for REDD.[164] Although a Basic Agrarian Law was designed in part to protect community forest resources and recognizes customary land rights, the Forestry Law recognizes "customary forest" as a subset of state forest and therefore under the authority of the Ministry of Forestry (MoF). The MoF is responsible for issuing the same land concessions that have had a pattern of overlapping with customary community forests, and along with industry groups has lobbied against Indonesia's REDD Task Force from changing the status quo.[165]

A high-profile ban on expansion of palm-oil plantations onto peatlands before the Bali COP13 in 2007 was repealed two years later to allow an additional 2 million ha of carbon-rich peatlands to be cleared. In the same year a promise to reduce forest fires was largely acknowledged to have failed.[166] Indonesia's Reforestation Fund (reaching more than $5 billion from 1989 to 2010) also has proved tremendously unsuccessful due both to corruption and a lack of payment-for-results form of accountability (*ibid*). Environmentalists highly criticized the moratorium inspired by the Oslo Pact as "protecting" unthreatened and remote dryland forests, while excluding the more accessible selectively-logged forests

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161 FCPF Carbon Fund. Indonesia ER-PIN. 5 September, 2014.

162 FCPF Carbon Fund. Indonesia ER-PIN. 5 September, 2014.

163 Larson, et al. (2013). Land tenure and REDD+: The good, the bad and the ugly. *Global Environmental Change,* 23, 678.

164 Sunderlin, et al. (2014). How are REDD+ Proponents Addressing Tenure Problems? Evidence from Brazil, Cameroon, Tanzania, Indonesia, and Vietnam. *World Development*, 55, 37–52.

165 Larson, et al. (2013). Land tenure and REDD+: The good, the bad and the ugly. *Global Environmental Change* 23, 678.

166 Conservation Biology. (2010). Cautious Optimism over Norway-Indonesia REDD Pact. *Conservation Biology,* 24(6).

that were most likely to face conversion pressures".[167] Powerful interests, particularly from the oil-palm, timber, and wood-pulp industries, have actively opposed a carbon market future (*ibid*).

2.3.3 Diverging factors in Indonesia and Brazil

As with the Amazon Fund, the Norwegian Climate and Forest Initiative has promised payments of up to $1 billion for stemming deforestation in Indonesia's carbon-rich forests. With $100 million up-front for preparatory and readiness phases, the remaining $900 million is to be disbursed during the payment-for-results phase, originally expected to begin in 2014 although as yet not begun. [168]

Indonesia has had some successes in readiness planning, yet Norway's own funding body acknowledges that "changes in government and weaknesses in the legal basis for REDD+ constitute a serious threat to the results attained."[169] While governance issues are certainly at the core of the differences between Brazil's and Indonesia's effectiveness at combatting deforestation, the role of civil society, a pre-existing trend in reduction of the rate of deforestation, and the effectiveness of Brazil's soy and beef moratoria all help explain Brazil's success with REDD Readiness and ensuing payment for results as compared to Indonesia's relatively slow start in the Readiness stage.

Powerful agricultural interest groups exert pressure for continued development in both countries; however, an engaged civil society, a powerful environmental lobby, and the democratic process of Brazil all contribute to a significant countervailing voice. In Brazil, REDD+ development has enjoyed the benefits of pre-existing tenure reform and environmental compliance regulations from a national policy framework that is largely in place, with REDD funds being made to bolster these efforts rather than develop them.[170] Similarly, REDD proponents in Brazil enjoy a strong working relationship with the government, including in applying policy leverage and financial resources to tackle tenure issues.[171]

In Indonesia, fledgling attempts by civil society groups to enshrine tenure or exclusion rights have been met by fierce resistance from the state. This resistance is due in large part to the state being the *de-jure* owner of customary village forests, allowing the Indonesian government to benefit from issuing land concessions on land that *de-facto* belongs to villagers.[172] Indonesia suffers from various government agencies at cross-purposes with regard to REDD, a dilemma that will only be heightened by the February 2015 dissolution of Indonesia's own cabinet-level ministry (the world's first such ministry) dedicated to implementing REDD+. The recent government restructuring will make it increasingly

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167 Edwards, et al. (2012). "Indonesia's REDD+ pact: Saving imperilled forests or business as usual?". *Biological Conservation,* 151, 41-44.

168 WRI. (2010). What's Next for Indonesia-Norway Cooperation on Forests? [Online]. Accessed February 2015.

169 NORAD. (2014). Considerable progress for Norway's International Climate and Forest Initiative (NICFI). Retrieved from http://www.norad.no/en/evaluation/news/considerable-progress-for-norways-international-climate-and-forest-initiative-nicfi. Accessed February 2015.

170 Larson, et al. 2013. "Land tenure and REDD+: The good, the bad and the ugly". *Global Environmental Change*, 23, 678–689.

171 Sunderlin, et al. (2014). "How are REDD+ Proponents Addressing Tenure Problems? Evidence from Brazil, Cameroon, Tanzania, Indonesia, and Vietnam". *World Development*, 55, 37–52.

172 Larson, et al. (2013). "Land tenure and REDD+: The good, the bad and the ugly". *Global Environmental Change*, 23, 678–689.

difficult for the newly formed Ministry of Environment and Forestry to engage with the agriculture or local governments, adding yet another obstacle in REDD+ development.[173]

In Brazil, although the Amazon Fund has been widely credited with helping to drive down deforestation rates, net deforestation rates have been in decline since 2004[174]. The impact of the soy and beef moratoria, enacted in 2006 and 2009, has been a major contributing factor in recent years, as global demand for responsibly sourced commodities has risen. In Brazil, the soy moratorium in particular was found to be much more effective at driving down deforestation rates than policy alone, reducing deforestation associated with soy expansion by 30 percent to 1 percent over an eight-year period[175]. Interestingly, soy farmers over the same period were much more likely to flout the Forest Code (a conservation-minded regulation with relatively weak enforcement) than the moratorium, owing to the effectiveness of commodity-driven conservation.

Indonesia's parallel participation in the roundtable on sustainable palm oil (RSPO) has been criticized widely, with the certification itself coming under fire from major conservation organizations.[176]. Relatively weak demand for the RSPO, fueled both by a skepticism of the RSPO's effectiveness in the developed world as well as developing world apathy, have made it difficult for a sustainable palm oil movement in Indonesia to gain traction.

While Brazil and Indonesia suffer from similar commodity-driven agricultural expansion, Brazil has the institutional capacity to enact real reform. Indonesia, by contrast, is still mired in governance issues, with a control of corruption indicator hovering around 23 percent from 1996 to 2013, as compared to Brazil's 57 percent.[177] Although payment for results still holds significant potential for curbing the loss of Indonesia's biodiverse and carbon-rich rainforests, an institutional reprioritizing of REDD+ development along with a commitment to improving forest governance will be necessary for replicating Brazil's successes.

2.4 CONCLUSIONS

The payment for results model works best when recipient governments have demonstrated a commitment to reduce deforestation (e.g., through direct regulation) along with monitoring and enforcement capacity. Payment for results is a useful approach to help support direct regulation and incentivize reductions in residual forest loss. Appropriate REDD+ programmatic and/or project structures supported by direct regulation should be in place to drive emission reductions or removals for a payment for results model to work. The passage of such regulations often depends on the proactive support of civil society groups and other domestic constituencies. The scalability and reliability of funding to support payments for results is one of the biggest challenges to this option.

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173 Bell, L. (2015). Indonesia dissolves agency charged with forestry reform. Retrieved from http://news.mongabay.com/2015/0211-lbell-indonesia-bp-redd.html. Accessed February 2015.

174 Government of Brazil. (2014). Activity Report 2013 Amazon Fund. Retrieved from http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en. Accessed 25 August 2014.

175 Gibbs, et al. (2015). "Brazil's Soy Moratorium". *Science*, 347(6220), 377-378.

176 WWF. (2013). WWF Statement on the Review of the RSPO Principles & Criteria.

177 World Bank. (n.d.). Worldwide Governance Indicators. Retrieved from http://info.worldbank.org/governance/wgi/index.aspx#countryReports. Accessed February 2015.

APPENDIX III – MARKET-BASED APPROACHES: CAP-AND-TRADE, BASELINE AND CREDIT, AND CARBON TAXES

This appendix examines the potential implementation of cap-and-trade emissions trading schemes and carbon taxes in Brazil, Ghana, and Vietnam.

3.1 BACKGROUND AND INTRODUCTION

Carbon taxes and emissions trading provide market-based approaches to the problem of climate change. Under both policies, industries choose which abatement opportunities to exploit given the price signal that comes from either an emissions trading scheme or carbon tax. Both policies are preferable to direct regulation (non-market) approaches, which work by prescribing (that is, requiring) or proscribing (that is, banning) particular technologies or production processes. Compared to MBIs, direct regulation is potentially inefficient in achieving environmental outcomes and likely to impose significant costs on the economy.[178] Carbon taxes and emissions trading schemes can deliver similar economic and environmental outcomes. [179]

Emissions trading involves issuing allowances to achieve a measurable emissions reduction task. The number of allowances issued by either auction or administrative allocation must be less than the amount required under normal 'business as usual' conditions. The scarcity of allowances gives them a value. Entities covered by an emissions trading scheme periodically surrender allowances to the regulator equal to their emissions. Where entities have surplus emissions allowances, these can be traded to entities that have a deficit of emissions allowances.[178] Using emissions trading, governments set the emissions reduction task, and the market response determines the price of each unit of emissions.

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178 Government of Australia. (2006). Prime Ministerial Task Group on Emissions Trading. Retrieved from http://pandora.nla.gov.au/pan/72614/200706010000/www.pmc.gov.au/publications/emissions/index.html#viewing. Accessed 3 February 2015.

179 Ibid.

Carbon taxes work differently, by fixing the price for each unit of emission and allowing the quantity of abatement to emerge from the market.

Because of the cost effectiveness of market approaches, several countries and provinces have chosen to implement either cap-and-trade emissions trading schemes,[180] baseline and credit schemes[181] — another market based approach — or carbon taxes.[182] Cap and trade has been adopted by a number of countries, most notably those in the European Union,[180] but also by the state of California[183] and South Korea.[184] A cap-and-trade emissions trading scheme establishes a 'cap,' or limit, on the total amount of certain greenhouse gases that can be emitted by covered entities — factories, power plants, and other installations — in the system. The cap is chosen to achieve a desired environmental outcome and is reduced over time so that total emissions fall. Covered entities may receive allowances freely by administrative allocations and/or by purchasing them through public auction.[185] These allowances can be traded between the scheme participants as needed.[180]

Many countries favor cap-and-trade or emissions trading schemes over carbon taxes, because emissions trading facilitates linkages with other national schemes, allowing for cross-border trade in allowances. This dynamic is viewed as important in helping shape a global solution and was the basis of the Kyoto Protocol Flexibility Mechanisms: the clean development mechanism, for offset projects in developing countries; the joint implementation, for offset projects in developed countries; and international emissions trading, which allows trade in developed countries' emissions allocations as well as the units from the two project-based mechanisms.

An important consideration in the choice of emissions trading or carbon tax is the state of development of the financial services sector. A traditional proxy measure for the development of a financial sector is the ratio of money (M2) to gross domestic product (GDP), also known as financial deepening.[186] The use of a small set of statistical indicators (e.g., M2) to measure financial development may not represent the true situation. Such indicators do not capture specific financial sector developments, nor do they take

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180 European Union Emissions Trading Scheme. (n.d.). Retrieved from http://ec.europa.eu/clima/policies/ets/index_en.htm. Accessed 3 February 2015.

181 Alberta's Greenhouse Gas Reduction Program. (n.d.). Retrieved from http://esrd.alberta.ca/focus/alberta-and-climate-change/regulating-greenhouse-gas-emissions/default.aspx. Accessed 29 January 2015.

182 Partnership for Market Readiness, World Bank. (2014). Carbon Tax in Mexico. Retrieved from https://www.thepmr.org/system/files/documents/Carbon%20Tax%20in%20Mexico.pdf. Accessed 3 February 2015.

183 Government of California. (2015). Cap and trade program. Retrieved from http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm. Accessed 3 February 2015.

184 IETA. (2013). South Korea–A Case Study Guide to Emissions Trading. Retrieved from http://www.ieta.org/assets/Reports/EmissionsTradingAroundTheWorld/edf_ieta_korea_case_study_may_2013.pdf. Accessed 28 August 2014.

185 Baseline and credit and administrative allocations also impose costs on the economy. Abatement is not free and must come from investment in emissions reduction projects and technologies. An administrative allocation does not reduce this cost, which is born by consumers.

186 World Bank. (2014). Money and quasi money (M2) as % of GDP. Retrieved from http://data.worldbank.org/indicator/FM.LBL.MQMY.GD.ZS. Accessed 5 February 2015.

into account the variety of markets and institutions comprising the financial sector.[187] Despite these limitations, M2 is used in this analysis, along with other indicators, as a proxy for the development of the financial system and the likelihood of being able to implement an emissions trading scheme.

An important cost containment mechanism in cap-and-trade schemes is the use of carbon reduction and/or removals projects ("credits" or "offsets") suitable for trading outside the covered entities' operations. The offset market is based on the principle that the benefit to the climate of reducing greenhouse gas emissions is the same regardless of where the greenhouse emissions are reduced. Therefore, countries with high marginal abatement costs may choose to import some of their emissions reductions (abatement) from low marginal abatement cost countries in the form of carbon credits or offsets. Such projects are measured, verified, and reported to ensure that emission reduction and/or removals are real. Once the credits (offsets) are issued, they are tracked via independent registries to avoid potential "double counting" among different programs.

If the rules allow, entities regulated under the emissions trading scheme may purchase credits and emit a volume of GHG emissions equivalent to the credits purchased, hence the oft-used term "offset." This approach provides a net-zero emission. Most national and regional GHG abatement schemes that allow offset mechanisms restrict the use of credits to ensure that scheme participants take meaningful operational emission reduction actions within their operational boundaries to meet emission reduction targets and do not rely solely on credits. Many offset project types are based around industrial emission reductions, but REDD+ offsets also can be included. Use of REDD+ offsets needs to address the risk of non-permanence and leakage, and a number of accounting and legal solutions exist for both of these issues.

Carbon taxes do not rule out the possibility of using offsets such as REDD+ credits to avoid carbon tax liabilities. However, there is a loss of government revenue if liable entities are allowed to purchase offsets preferentially instead of paying taxes. This revenue impact also applies for cap-and-trade schemes where the majority of allowances are auctioned, but it does not apply to schemes with administrative allocations or baseline and credit schemes. Revenue impacts depend on the proportion of offsets from international and domestic sources; each case needs to be considered separately. Carbon taxes do not readily facilitate the emergence of an international price on carbon, which can be achieved through international linking of emissions trading schemes. A carbon tax is likely to be the best policy instrument if the policy objective is to fix the cost of emissions reductions, with less focus on the quantity of emissions reductions to be achieved.[178]

In a developing country context, a carbon tax may be preferable to cap-and-trade with allocation or baseline and credit – essentially very similar instruments. A carbon tax importantly allows for revenue collection, usually within established structures. Cap-and-trade with allowance auctions also provides revenue, and a mixed model is often used, as in California and Phase II and III of the EU ETS. However, developing countries choosing between carbon taxes and cap-and-trade with auctions should consider the costs and regulatory complexity associated with developing the trading architecture embedded in cap-and-trade. Allowance auctions may be feasible via similar systems used to issue government debt to the market; however, there are additional costs and complexity associated with carbon trading, which may make cap-and-trade a less attractive policy instrument for developing countries with immature financial services sectors.

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187 Creane, S., et. al. (2007). Measuring Financial Development in the Middle East and North Africa: A New Database. *IMF Staff Papers,* 53(3), 479-511.

The following sections discuss the application of emissions trading and carbon taxes to Brazil, Ghana, and Vietnam with a view to supporting demand for local REDD+.

3.2 BRAZIL–WEIGHING ITS OPTIONS

Brazil has set a goal of reducing emissions by 36.1 to 38.9 percent below BAU by 2020 as part of voluntary emissions reduction commitments. Mitigation plans cover forestry, agriculture, energy, iron, steel, and other industry, transportation, mining, and building sectors. The National Climate Change Policy Law (12.187/2009)[188] has created the provision for a Brazilian Emission Reduction Market (MBRE). The MBRE is on hold while the Brazilian federal governmental (through the Ministries of Environment and Finance) evaluates possible MBIs that could be used to achieve its emissions reduction goals. No final decision on policy is expected before 2017.

A Brazilian decision to implement either an emissions trading or carbon tax may influence the evolution of emissions reduction policies in the region, including the use of REDD+. So far in the region, Mexico has implemented a carbon tax, and Chile plans to do so also.

In 2014 Mexico implemented a carbon tax on fossil fuel. The tax is based on estimates of the carbon content of fossil fuels, with the carbon tax rate for natural gas being set to zero. Mexican CDM offsets can be used for compliance.[189] At this stage of writing no details are available on the types and limits of CDM offsets including potential use of forest-based CERs from afforestation/reforestation projects (l-CERs and t-CERs). The tax covers approximately 40 percent of the total GHG emissions.[190] However, *Secretaría del Medio Ambiente y Recursos Naturales* (SEMARNAT) has flagged further changes to the law. While it is still speculative, the recently signed MOU between California and Mexico combined with the Climate Action Reserve trialing of a REDD+ methodology increases the likelihood that forest credits (REDD+) will eventually find their way into the Mexican scheme.[191]

Chile is implementing a carbon tax, which is expected to come into force during the 2016–2017 period.[192] Revenue estimates are US$247-265 million per year with US$5 per tCO_2. An additional US$0.10 charge applies per ton for local pollutants, including particulate matter, sulfur dioxide, and nitrous oxides. The CO_2 tax applies to emissions from imported diesel vehicles and stationary sources with generation capacity higher than 50MW.[193] The revenue estimates apply to the electricity generation sector only. Offsets are expected to be allowed in the scheme of between 5 and 10 percent with the

188 Government of Brazil (2009). National Climate Change Law. Retrieved from http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/lei/l12187.htm (in Portuguese). Accessed 30 January 2015.

189 Government of Mexico. (2014). Carbon tax presentation to the Partnership for Market Readiness, World Bank.

190 World Bank. (2014). State and Trends of Carbon Pricing 2014. Retrieved from http://www.worldbank.org/en/news/feature/2014/05/28/state-trends-report-tracks-global-growth-carbon-pricing. Accessed 27 August 2014.

191 Government of California. (2014). MOU between California and Mexico. Retrieved from http://gov.ca.gov/docs/7.28_Climate_MOU_Eng.pdf. Accessed 30 July 2014.

192 Pers. Comm. Tassara, P., and Noguer, L., VCS Chile.

193 Government of Chile. (2014). Presentation at a technical committee meeting in Cologne Germany.

possibility of some REDD+. These details are to be confirmed as offsets policy remains under consideration.

Based on the information contained in Brazil's PMR proposal, Brazil is also considering a carbon tax.[194] Should Brazil choose to implement a carbon tax it may have elements in common with other schemes in the region. Various issues are highlighted in the carbon tax FRAC analysis (Table 11).

Choices made around the level of offsets and REDD+ are likely to influence the evolution of other schemes that are either current or evolving in the region. If Brazil chooses to implement a national emissions trading scheme, it is likely that the scheme will be based on lessons learned in the development of the subnational emissions trading schemes in Rio de Janeiro and Sao Paulo. Both of the subnational emissions trading schemes are currently on hold while the federal government explores various MBIs. Given the possibility that an emissions trading system will evolve, we examine Rio de Janeiro.

Rio de Janeiro has a Climate Law (5690/2010), which supports the development of a state carbon market. Further elaboration of the law (Decree Nr. 43216/2011) and State Climate Change Plan (2012) outlines the steps to be taken toward the creation of an ETS (e.g., development of targets for sectors, definition of rules around allocation, use of offsets including REDD+, and linkages). The ETS was announced during the Rio+20 conference in 2012 and was expected to start early 2013, but was later delayed until further notice due to resistance from the Federation of Industries of the State of Rio de Janeiro (FIRJAN).[195]

If the Rio de Janeiro ETS is implemented before 2017 (i.e., before any decision from the federal government) it will work based on BVRio (an environmental stock exchange initiative hosted in Rio de Janeiro city). If a federal decision is taken in favor of MBRE, Rio de Janeiro will probably advocate for the recognition of early transactions and the use of BVRio experience as the basis for the national market. The case of Rio de Janeiro state, operating as a subnational carbon market, is discussed in more detail in the FRAC analysis (Table 12).

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194 Government of Brazil. (2014). Market Readiness Proposal. Retrieved from https://www.thepmr.org/country/brazil-0. Accessed 18 February 2015.

195 ICAP. (2014). Emissions Trading Worldwide - International Carbon Action Partnership (ICAP) Status Report 2014. Retrieved from https://icapcarbonaction.com/component/attach/?task=download&id=152 page 41. Accessed 30 January 2015.

TABLE 11. CARBON TAX FRAC FOR BRAZIL.

Brazil		
Fitness	Legal Context	Article 6 of Brazil's National Climate Change Law mentions "fiscal measures and taxes to stimulate the emissions reductions and removal of GHG, tax rate, exemptions, compensations and incentives, to be established by specific laws."[196] No specific laws have been developed and implemented for a carbon tax. There are no specific legal provisions to devote part of the revenues of a potential carbon tax to REDD+ and/or to create any fiscal incentive for REDD+ via offset provisions.
	Social and political acceptability	At this early stage of policy development, it is unclear if community support will coalesce around a carbon tax or emissions trading scheme. As part of Brazil's PMR proposal, further stakeholder engagement is envisioned on MBIs, with the Ministry of Finance tasked with developing a white paper on MBIs to be submitted for approval by the Executive Group of the Inter-Ministerial Climate Change Committee (GEx/CIM).[197] The white paper will present recommendations related to the selection of an MBI and its design. Brazil has been a leader in advocating for REDD+ with well-documented social and political buy-in to address emissions from deforestation, but stakeholder outreach is needed to build support for the inclusion of REDD+ in a carbon tax. REDD+ projects are widely accepted by the general public in Brazil. Most of the projects have been developed for the voluntary carbon market and/or for the Amazon Fund. The use of REDD+ projects as offsets in any domestic carbon tax policy may be met with differing opinions. Industry may favor the inclusion due to perceived benefits (e.g., relative low cost and environmental co-benefits); however, some environmental groups are likely to oppose the inclusion due to perceived risks (e.g., non-permanence) or due to opinions on use of offsets in general. Both

196 Government of Brazil. (2009). National Climate Change Law. Retrieved from http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/lei/l12187.htm (in Portuguese). Accessed 30 January 2015.

197 Government of Brazil. (2014). Brazil proposal for the PMR. Retrieved from https://www.thepmr.org/system/files/documents/Final%20MRP%20Brazil_Presentation_29-08-2014.pdf. Accessed 30 January 2015.

		public and political awareness raising and communication are likely needed to increase understanding of how REDD+ could be integrated into a domestic carbon tax policy.
	Institutional capacity	Brazil is building some capacity through the PMR. Brazil has a strong and well-established fiscal system and framework that, in theory, could easily incorporate a domestic carbon tax policy. Further research and analysis on how REDD+ could be integrated into domestic carbon tax policy could support Brazil policy formation during its design phases leading to 2020. Brazil has extensive experience in the development of REDD+ projects for voluntary carbon markets meeting both local and international standards.
	Transparency	Some transparency measures are already in place including national monitoring of forestry, use of local and international standards for REDD+ project/program development, registries, and enhanced capacity building (e.g., the Amazon Fund).
	Governance	Receita Federal – the Brazilian Internal Revenue Service – is the agency responsible for tax collection and tax law enforcement. The collection and enforcement of a carbon tax policy will be probably fall under its responsibility as well. At the current stage REDD+ projects and initiatives are under the Ministry of Environment and BNDES (through the Amazon Fund) and/or subnational governments (i.e., states like Acre and Amazonas). Depending on how carbon tax revenues are allocated to REDD+ and/or how the fiscal incentive for REDD+ is created, governance may be at the national and/or subnational level.
	Implementation	Over the next two and a half years, the Ministry of Finance will work on design options for carbon pricing. Depending on the impact assessment, recommendations for a carbon pricing instrument for Brazil are to be submitted to the Inter-ministerial Committee on Climate Change in 2017 with implementation at a later date. REDD+ activities, projects, programs, and capacity building can continue alongside progress toward a carbon tax through support of current financing options (e.g., the Amazon Fund).
Risks	Environmental	If the price signals and the compensation triggers are not well defined, the shift to lower carbon technologies and practices may not occur. If the carbon tax is only domestic or even developed sub-jurisdictionally, there may be leakage (i.e., industries/activities may move to other countries or geographies where there are no GHG targets). Robust MRV systems are essential otherwise the risk of jeopardizing the environmental integrity of the system increases (e.g., non-permanence risks, double counting, etc.). Forestry and land use may pose challenges for inclusion in the scheme, and baseline emissions may need to be estimated.

	Durability	Carbon tax policy is subject to durability issues through political risk. It is likely that longer-term approaches to GHG emissions management will be adopted. A carbon tax could be part of the package of actions for countries under an international agreement, which could lower durability risk.
	Economic	A carbon tax may raise competitiveness concerns. However, a carbon tax could offer new economic opportunities in green-growth industries. Opportunity could be present in forest and land use sectors through the inclusion of offsets or application of tax revenues from carbon tax.
Abatement potential		Abatement potential will be determined by the white paper to be developed by the Ministry of Finance with support from the PMR. Abatement potential for REDD+ projects under a domestic carbon tax policy will depend on any limitations on the use of offsets.
Cost		To be determined by the white paper to be developed by the Ministry of Finance; low-cost emissions reductions are available in Brazil.

TABLE 12. EMISSIONS TRADING FRAC ANALYSIS APPLIED TO BRAZIL (RIO DE JANEIRO STATE).

Rio de Janeiro State (Brazil)		
Fitness	Legal Context	Rio de Janeiro has a specific target to reduce carbon intensity below 2005 levels by 2030 (Decree Nr. 43216/2011)[198] and a provision for a state carbon market (ETS) (Law Nr. 5690/2010).[199] A state plan on climate change published in 2012 listed directives toward the creation of the Rio de Janeiro ETS (e.g., development of specific sectoral targets based on marginal abetment costs *vis a vis* sector competitiveness, allocation studies, use of offsets, linkages with other markets, and other issues).[200] Rio de Janeiro State Climate Change Plan (2012) explicitly listed the possibility of using credits from Brazilian REDD+ projects to achieve the sectoral targets (yet to be defined).
	Social and political acceptability	In 2012 FIRJAN requested more studies before the implementation of the ETS. Since then the implementation of the ETS have being postponed. Nevertheless, other stakeholders continue to advocate for the implementation of the state carbon market, in particular BVRio (an environmental stock exchange initiative hosted in Rio de Janeiro city).[201] The general public in Brazil (including Rio de Janeiro) widely accepts REDD+ projects. Most of the projects have being developed for the voluntary carbon market and/or for the Amazon Fund. Use of REDD+ projects as offsets in any domestic ETS policy may be met with differing opinion. Industry may favor this usage due to perceived benefits (e.g., relative low cost and environmental co-benefits). There

198 Government of Rio de Janeiro. (2011). Decree 43216 on the RJ State Climate Change Law. Retrieved from http://download.rj.gov.br/documentos/10112/1403799/DLFE-59683.pdf/DOERJ_43216_Clima.pdf (in Portuguese). Accessed 30 January 2015.

199 Government of Rio de Janeiro. (2010). Law 5690 - RJ State Climate Change Law. Retrieved from http://alerjln1.alerj.rj.gov.br/contlei.nsf/f25571cac4a61011032564fe0052c89c/a9593961f9d00ab28325770a005bd6a4?OpenDocument (in Portuguese). Accessed 30 January 2015.

200 Government of Rio de Janeiro. (2010). RJ State Climate Change Plan. Retrieved from http://download.rj.gov.br/documentos/10112/1312221/DLFE-56319.pdf/planoEstadualmudclima.pdf (in Portuguese). Accessed 30 January 2015.

201 To learn more about BVRio visit: http://www.bvrio.org/site/

		will likely be minor opposing viewpoints due to concerns regarding perceived risks (e.g., non-permanence) or due to opinion on the use of offsets in general.
	Institutional capacity	The state of Rio already has infrastructure in place (e.g., BVRio, which will serve as a registry for emission credits when the ETS is implemented).[202] Since BVRio initiated its activities recently and only a pilot voluntary emission trading simulation has been implemented, BVRio has not yet demonstrated if it has the technical and management capacity needed for full operationalization of the ETS. In 2013 Rio de Janeiro, Acre, and BNDES (the Brazilian Development Bank) signed a technical agreement to advance the carbon market in Brazil, with particular emphasis in REDD+. To date, no significant results from such an agreement have been disclosed. One of the objectives of the technical agreement between Rio de Janeiro, Acre, and BNDES was to enhance the necessary institutional capacity for the use of REDD+ credits. Special requirements would focus on the design and implementation of an MRV system able to work between two or more states (depending on how many states will host REDD+).
	Transparency	The main instrument of transparency will be the registry system of BVRio (yet to be implemented and tested within the full operationalization of the Rio de Janeiro ETS). Once REDD+ credits start to be used in the Rio de Janeiro ETS, they will be subject to the same registry procedure (i.e., BVRio procedures). Additional measures and partnerships may be necessary, since the project probably will be located outside Rio de Janeiro State.
	Governance	The main government entity involved in the design of the ETS is the Rio de Janeiro State Environment Institute (Instituto Estadual do Ambiente or INEA), which probably will be responsible for the allocation. Other organization, BVRio, is responsible for the registry. Since Rio de Janeiro ETS is not operational, it is not possible to assess the proposed governance structure. In theory they have the necessary arrangements and capacity to perform the minimum

202 German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. (2013). Towards a Global Carbon Market – Prospects for Emissions Trading April 11 & 12, 2013 – Documentation and Summary. Retrieved from http://www.adelphi.de/files/uploads/andere/pdf/application/pdf/ets_documentation_web.pdf p.13. Accessed 30 January 2015.

		requirements established by the law. The same organizations could provide governance for REDD+ credits (with additional support from other organization in REDD+ host states, e.g., Acre).
	Implementation	The scheme was originally set to start with a three-year pilot phase in 2013. However, the start of the scheme has been delayed until further notice. The initial timeline was as follows: Phase I: 2013–2015; Phase II: 2016–2020; Phase III: 2021–2025; and Phase IV: 2026–2030. No revised implementation schedule has been published so far.[203] The scheme is expected to cover the cement, steel, chemical, petrochemical, and ceramics sectors.[204] A voluntary emission trading simulation is already in place through BVRio. Results are expected to be published in the near future. REDD projects may be allowed in the future. The amount of credits to be accepted into the system and the proportion of credits from offset projects implemented in Rio de Janeiro will be set at a future time. The amount will depend on the amount of distributed allowances, the compliance costs *vis a vis* the price of the REDD+ credits, and MRV requirements, among other items.
Risks	Environmental	ETS relies on suitable cap and allowance setting to ensure that carbon abatement requirements are met. There are many international examples in which over-allocation or weak caps have caused system failure. Lessons from other schemes can be studied to ensure correct cap and allocation setting. If the ETS is domestic only or even developed sub-jurisdictionally, there may be leakage (i.e., industries/activities may move to other countries or geographies where there are no GHG targets). Robust MRV systems are essential; poor MRV systems pose environmental integrity risks. Robust MRV, social and environmental safeguarding, and transparency are required to ensure integrity of REDD+ within an ETS system. The use of international standards or reviewed local standards and registries can reduce the environmental risk of including REDD+ in an ETS. A variety of tools such as buffers, and policy setting can reduce the risk for issues such as permanence.
	Durability	The longevity of ETS depends on policy making processes; therefore, it is subject to durability risks through party politics.

203 Ibid. p.41. Accessed 30 January 2015.

204 Ibid. p.41. Accessed 30 January 2015.

	Economic	Industry fears regarding loss of competition and increasing costs can impede the policy making process. The ETS scheme would need to ensure the timely and transparent transfer of financing and allocations to reduce the economic risks of using REDD+ in the system.
Abatement potential		A study from Rio's Federal University indicated a total abatement of 42 MtCO2e by 2030 only with measures adopted within the energy-intensive sectors of Rio de Janeiro.[205] The abatement potential for REDD+ projects will depend on the jurisdiction (e.g., Acre or Amazonas) chosen for project implementation.
Cost		The same study has indicated that the main abatement potential is between US$50 and US$100 per tonne of CO_2. The cost for REDD+ projects will depend on the jurisdiction chosen for project implementation and type of project.

205 UFRJ. (2012). Impactos da adocao de metas de reducao de emissao de gases de efeito estufa sobre setores energointensivos do estado do Rio de Janeiro, alternativas e custos de mitigacao. Retrieved from http://download.rj.gov.br/documentos/10112/1312228/DLFE-56350.pdf/03_reducao_emissoesde_gees.pdf (in Portuguese). Accessed 30 January 2015.

3.3 GHANA: EMISSIONS TRADING OR CARBON TAX?

Since 2010 Ghana has developed a comprehensive national climate change policy – the National Climate Change Policy Framework (NCCPF) aimed at ensuring a climate resilient economy while seeking economic and low-carbon growth for the country. Ghana is a relatively low emitter of GHGs and, until the mid-1990s, was a net sink due to its forest carbon[206]. Excluding Land Use, Land Use Change, and Forestry (LULUCF), emissions in 2006 were a modest 7.85MtCO_2e compared to Australia, which has a similar population base and 398 MtCO_2e in 2012.[207,208]

The reversal of emissions in Ghana is attributable to a growing population and economy coupled with unsustainable use of forest resources.[206] Ghana depends on exports from three commodities: gold, cocoa, and oil. Oil production is rising and contributing to GDP growth. However, the outlook is clouded, with Brent oil prices falling from more than US$100 per barrel in September 2014 to $US50 per barrel in January 2015. If sustained over the short to medium term, this situation will likely lead to further budget deterioration. Ghana's currency has fallen as the oil price has collapsed, leading to increased inflationary pressure.[209]

Policy options for limiting the rise in GHG emissions include the development of a cap-and-trade emissions trading scheme[210], baseline and credit scheme[211], or carbon tax[212]. Given Ghana's fiscal constraints, introducing a baseline and credit scheme or ETS with pure administrative allocations will not support government revenues.[213] For that reason, this discussion focuses on the merits of implementing a carbon tax or ETS with an auction. Introducing an ETS in Ghana is likely to be complex — in part due to the domestic situation, but also due to the regional situation.

The region's dominant economic organizations – the Economic Community of West African States (ECOWAS) and the West African Economic and Monetary Union (WAEMU) – are likely to have a stake in any ETS policy development. The African Union (AU) through New Partnership for Africa's

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206 Retrieved from http://theredddesk.org/countries/ghana

207 UNFCCC. (2015). GHG Emissions Data for Australia. Retrieved from https://unfccc.int/files/ghg_emissions_data/application/pdf/aus_ghg_profile.pdf. Accessed 5 February 2015.

208 UNFCCC. (2015). GHG Emissions Data for Australia. Retrieved from https://unfccc.int/files/ghg_data/ghg_data_unfccc/ghg_profiles/application/pdf/gha_ghg_profile.pdf. Accessed 5 February 2015.

209 International Monetary Fund. (2014). IMF Country Report No. 14/129. Retrieved from http://www.imf.org/external/pubs/ft/scr/2014/cr14129.pdf. Accessed 30 January 2015.

210 European Union Emissions Trading Scheme. (n.d.). Retrieved from http://ec.europa.eu/clima/policies/ets/index_en.htm. Accessed 3 February 2015.

211 Alberta's Greenhouse Gas Reduction Program. (n.d.). Retrieved from http://esrd.alberta.ca/focus/alberta-and-climate-change/regulating-greenhouse-gas-emissions/default.aspx. Accessed 29 January 2015.

212 Carbon Tax in Mexico 2014. (n.d.). Partnership for Market Readiness, World Bank. Retrieved from https://www.thepmr.org/system/files/documents/Carbon%20Tax%20in%20Mexico.pdf. Accessed 3 February 2015.

213 Baseline and credit and administrative allocations also impose costs on the economy. Abatement is not free and must come from investment in emissions reduction projects and technologies. An administrative allocation does not reduce this cost, which is borne by consumers.

Development (NEPAD) may also play a role.[214] On the domestic side, a number of agencies and committees appear likely to be involved, including: the Ministry of Environment, Science, Technology and Innovation (MESTI), the Ministry of Lands and Natural Resources (MLNR), the Environmental Protection Agency (EPA), the National Climate Change Committee (NCCC)[215], the Natural Resources Advisory Council (ENRAC), the Natural Resources, Environmental Governance (NREG) Steering Committee and Technical Coordination Committee[216], and the Carbon Credit Policy Committee (under MESTI).

Ghana does have a fledgling financial services industry and stock exchange (GSE); however, the traditional measure of financial deepening, the ratio of money (M2) to GDP,[217] does not suggest a deep and liquid market capable of supporting the levels of financial sophistication needed to develop and support an ETS.[218] Ghana's financial service sector remains relatively undeveloped by comparison to countries that have undertaken emissions trading policy reforms (e.g., Europe, Australia, California, and South Korea). Further evidence of the immaturity of the financial service can be gleaned from the operations of the GSE, which is small and illiquid with discontinuous trading. The total value traded is less than 1 percent of GDP, and turnover is below 4 percent, which further supports the proposition that Ghana requires further financial services development before it undertakes an ETS development.[217,219]

The only other African precedent is South Africa's carbon tax proposal of R120 per tCO_2e, to be introduced in 2015. The tax rate of a R120 per tCO_2e will be increased at a rate of 10 percent per annum until the end of 2019 to provide a clear long-term price signal. In 2019 the rate of increase will be reviewed for 2020. The carbon tax will apply to all direct, stationary sources of emissions, including process emissions. The tax provides a tax-free threshold and offset percentage for each covered industrial sector.[220] Given the precedent in South Africa, the state of development of the financial service sector in Ghana, the relative low – but growing – emissions, and the need for stable and increasing government revenues, in Ghana it seems that a carbon tax would be a more appropriate option than an ETS with an auction. The FRAC analysis for this situation is presented in Table 13.

In Ghana there are relevant domestic laws and policies relating to climate change, including the National Climate Change Policy Framework – NCCPF (2011), a Renewable Energy Act (2011), and a National

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214 NEPAD. (2012). Climate Change. Retrieved from http://www.nepad.org/climatechangeandsustainabledevelopment. Accessed 5 February 2015.

215 Government of Ghana. (2010). Readiness Preparation Proposal to the World Bank's Forest Carbon Partnership Facility (FCPF). Retrieved from http://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/Documents/PDF/Jan2011/Revised_Ghana_R-PP_2_Dec-2010.pdf. Accessed 25 November 2014.

216 Retrieved from http://ec.europa.eu/europeaid/documents/aap/2009/af_aap_2009_gha.pdf. Accessed 5 February 2015.

217 International Monetary Fund (IMF). 2008. Ghana's Reforms Transform Its Financial Sector. Retrieved from http://www.imf.org/external/pubs/ft/survey/so/2008/CAR052208A.htm. Accessed 5 February 2015.

218 World Bank. (2014). Money and quasi money (M2) as % of GDP. Retrieved from http://data.worldbank.org/indicator/FM.LBL.MQMY.GD.ZS. Accessed 5 February 2015.

219 We were unable to find data more current than 2008 on the GSE.

220 Government of South Africa. (2013). Treasury. Carbon Tax Policy Paper. Retrieved from http://www.treasury.gov.za/public%20comments/Carbon%20Tax%20Policy%20Paper%202013.pdf. Accessed 28 August 2014.

Energy Policy (2010).[221] There are also various resource taxation precedents: a tax for mining companies (35 percent) and provisions to taxing mining windfall profits.[222] Ghana also has a petroleum tax[223] but no specific provision for a carbon tax. Based on the South African experience, it may be more acceptable to implement carbon tax as a tax on fossil fuels by broadening the coverage of the petroleum tax as opposed to introducing a new tax specifically targeting GHG emissions. Tax rates could be estimated based on the carbon content of various fossil fuels and applied accordingly.

As discussed in the Brazil example above, Mexico could provide an example of how offsets could be used in a carbon tax scheme. In the case of Ghana there are limited domestic CDM opportunities, and REDD+ could prove to be an attractive offset type.[224] For this change to happen, further development of REDD+ must occur in Ghana.

Ghana has designated bodies and policies supporting forest management and development. Significant reforms have taken place for efficient land administration in Ghana. The Natural Resources and Environmental Governance Programme (NREG) and the National Forest Plantation Development Programme are national programmes set up by the government to address deforestation and sustainable land practices including the Forest Plantation Development Fund (FPDF) Act, 2000, and the Forest Plantation Development Fund (Amendment) Act, 2002.[225] Work has been undertaken also to specifically prepare for REDD+, including the development of a national REDD+ strategy, policies, and capacity building activities. Ghana is in the Implementation Phase of its Readiness Preparation Proposal (R-PP) as a Participant Country of the Forest Carbon Partnership Facility (FCPF). It is also a Pilot Country to the Forest Investment Programme (FIP). In 2011 Ghana joined the UN REDD programme as a Partner Country. In addition, Ghana holds a voluntary agreement with the EU to tackle illegal logging under the FLEGT initiative.[226] Under the agreement all Ghanaian timber entering the EU market is to be certified to ensure it is from legal sources.

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221 Nachmany, M., Fankhauser, S., Townshend, T., Collins, M. Landesman, T., Matthews, A., Pavese, C., Rietig, K., Schleifer, P. and Setzer, J. (2014). The GLOBE Climate Legislation Study: A Review of Climate Change Legislation in 66 Countries. Fourth Edition. London: GLOBE International and the Grantham Research Institute, London School of Economics.

222 IHK. 2012. Retrieved from http://www.ihk-krefeld.de/de/media/pdf/international/laenderschwerpunkt-ghana/ghana_2012.pdf. Accessed 1 April 2015.

223 KPMG. 2014. Retrieved from: https://www.kpmg.com/Africa/en/KPMG-in-Africa/Documents/2014%20Fiscal%20Guides/Fiscal%20Guide%20Ghana.pdf. Accessed 1 April 2015.

224 Allowing offsets will reduce tax revenues and therefore may encounter political resistance from the Finance Ministry.

225 Retrieved from http://www.fcghana.org/page.php?page=303&section=28&typ=1. Accessed 5 February 2015.

226 EU FLEGT. (2011). Retrieved from http://www.euflegt.efi.int/ghana. Accessed 5 February 2015.

TABLE 13. FRAC ANALYSIS APPLIED TO GHANA

Ghana		
Fitness	Legal Context	Currently in Ghana there is no specific provision for a carbon tax, but there is a domestic National Climate Change Policy Framework – NCCPF (2011), a Renewable Energy Act (2011), and a National Energy Policy (2010).[221] Various precedents also exist: a tax for mining companies (35 percent); a petroleum income tax,[223] and provisions to tax windfall profits from mining companies.[222] There are various policies relevant to REDD+: the Forest Plantation Development Fund (FPDF) Act, 2000, and the Forest Plantation Development Fund (Amendment) Act, 2002.[225] The Land Administration Project was established to make reforms necessary for efficient land administration such as REDD+. Ghana national programs for addressing deforestation include the Natural Resources and Environmental Governance Programme (NREG) and the National Forest Plantation Development Programme.[225] There is voluntary agreement with the EU to tackle illegal logging under the FLEGT initiative.[226]
	Social and political acceptability	Taxation of resources appears to be acceptable; however, the likely acceptability of a broad-based carbon tax is less clear. Given the South African experience with the deferral of the carbon tax, it is likely that the combination of opposition from affected economic interests and concern over price impacts could delay any proposal. Support exists for REDD+ at the national level with the establishment of various REDD+ working groups, REDD+ strategy, and REDD+ in national policy. The government continues to raise REDD+ awareness among civil society.
	Institutional capacity	The Ministry of Finance is in charge of Ghana's taxation system experience of implementing corporation and environmental taxes. Ghana is developing REDD+ readiness through the FCPF-R. It is also running pilot projects and setting up working groups to develop capacity. Gaps exist on emissions reporting, and a system would be required for liability acquittal. Both areas represent significant capacity gaps.
	Transparency	Ghana has ratified international treaties regarding financial transparency. It has further action points to develop on corporate finance disclosure. It is stated to hold appropriate tools for administering tax in country. The Forestry Commission introduced a measure to enhance transparency in the disbursement of forest proceeds through the quarterly publication of the disbursement of stumpage fees, published since 2003. There are cases

		where this measure has empowered communities to hold authorities more accountable for the use of the transferred funds.[227]
	Governance	Governance is likely to be complicated. The Ministry of Finance is the leading government agency responsible for Ghana's taxation system. Companies can be audited and penalties incurred if companies are not in compliance.[228] The Ministry of Lands and Natural Resources (MLNR) has the overall responsibility for forest sector planning and policy direction of the national goals on forestry.[229] NREG programme has set objectives to address governance issues with regard to natural resources and the environment. The Carbon Credit Policy Committee, under the Ministry of Environment, Science, Technology and Innovation (MESTI), was set up to clearly define rules and procedures for carrying out carbon credit generating activities, allocation of carbon rights, and participation in subnational activities.[230]
	Implementation	Existing experience with natural resource taxes should make implementation of a carbon tax simpler than implementing other MBIs. However, there is potential for implementation challenges including GHG reporting and monitoring needed to levy the tax along with the development of a register for tracking and acquitting liabilities. As with many countries, there have been identified barriers to implementation of forest policy in Ghana,[231] but there is experience with REDD+ offset generation. REDD+ initiatives and carbon projects are being implemented in Ghana, including seven REDD+ pilot schemes coordinated by the Climate Change Unit of the Forestry Commission and the REDD+ secretariat of the National REDD+ Technical Working Group.[232]

227 World Bank. (2006). Ghana Country Environmental Analysis. Retrieved from http://siteresources.worldbank.org/INTRANETENVIRONMENT/3635842-1175696087492/21919456/Ghana_CEA.pdf. Accessed 10 February 2015.

228 Price Waterhouse Coppers (PWC). (2012). Charting Tax Trends in Ghana. Retrieved from http://www.pwc.com/en_GH/gh/pdf/ghana-tax-guide-with-facts-and-figures.pdf. Accessed 10 February 2015.

229 The Red Desk. (n.d.). Ghana. http://theredddesk.org/countries/ghana

230 The Red Desk. (n.d.). MESTI. Retrieved from http://theredddesk.org/countries/actors/ministry-environment-science-technology-and-innovation

231 World Bank. (n.d.). Retrieved from http://siteresources.worldbank.org/INTRANETENVIRONMENT/3635842-1175696087492/21919456/Ghana_CEA.pdf

232 The Red Desk. (n.d.). Ghana. Retrieved from http://theredddesk.org/countries/ghana

		There are also some private sector led and NGO experiences of REDD+ project development to generate carbon credits in Ghana.
Risks	Environmental	There are risks to environmental effectiveness of a carbon tax system built without the appropriate capacity to enforce and govern the carbon tax. Appropriate MRV, rules, and safeguards would need to be fully designed by Ghana prior to inclusion of domestic offsets in a carbon tax regime to ensure desired environmental outcomes.
	Durability	Carbon tax policy is subject to durability risk as it relies on political decision making.
	Economic	Price impacts could lead to leakage, i.e., industries crossing borders to avoid tax coverage.
Abatement potential	This depends on business as usual projections and emissions reduction ambition.	
Cost	The tax burden is placed on domestic entities subject to the tax. This burden may include some international investment in covered sectors. The government's cost of managing the tax is unclear but it will be less costly than an MBI such as cap-and-trade, because less infrastructure is required.	

3.4 VIETNAM – CHOOSING A MARKET-BASED INSTRUMENT (MBI)

Vietnam is working collaboratively with the United Nations Development Programme (UNDP) and World Bank's Partnership for Market Readiness (PMR) to develop Market Based Instruments (MBIs) for the steel and solid waste sectors.[233] Vietnam has indicated that the system could evolve into a cap-and-trade emissions trading scheme.[234] Currently Vietnam is in the analysis and design phase with technical support provided by the PMR. Provisional data on GHG emissions excluding LULUCF in 2005 were around 205 $MtCO_2e$. Energy use accounts for approximately 50 percent of the total (102 $MtCO_2e$) and agriculture accounted for 40 percent of emissions (81 $MtCO_2e$).[233] Vietnam has a national emissions intensity target to reduce GHG emissions intensity by 8-10 percent by 2020 over 2010 levels.

State-owned enterprises (SOEs) in Vietnam account for 40-50 percent of tax revenues and represent a significant part of the economic reform agenda.[235] The International Monetary Fund economic outlook for Vietnam is generally positive. Growth is improving, supported by robust exports and foreign direct investment (FDI); however, domestic activity remains weak (in part constrained by inefficient SOEs), and inflation has declined to mid-single digits. The external current account remains in large surplus, and international reserves have increased.[236] Reform of the SOEs will continue to be a priority for Vietnam, but with implications for the tax base. In this context Vietnam may employ various policy options for limiting the rise in GHG emissions. These options include the development of a cap-and-trade emissions trading scheme,[237] a baseline and credit scheme,[238] or a carbon tax[239].

Given Vietnam's fiscal constraints, introducing a baseline and credit scheme or ETS with pure administrative allocations will not support government tax revenues. Therefore, this discussion focuses on the merits of implementing a carbon tax or ETS with an auction. However, a baseline and credit scheme or administrative ETS cannot unequivocally be ruled out. [240] It is possible for Vietnam to use administrative allocations to overcompensate the SOEs and undercompensate the private sector. While

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233 Government of Vietnam. (2014). Final Market Readiness Proposal. Retrieved from https://www.thepmr.org/system/files/documents/20141013_MRP%20Vietnam_FINAL.pdf. Accessed 10 February 2015.

234 Government of Vietnam. (2014). Presentation to the World Bank's PMR. Retrieved from https://www.thepmr.org/system/files/documents/20141030_MRP_Final%20for%20PA10_Santiago%20Presentation%20Ver%203.pdf. Accessed 10 February 2015.

235 Matheson, T. (2013). Reform of State Owned Enterprises. IMF Conference. Retrieved from http://www.imf.org/external/np/seminars/eng/2013/vietnam/pdf/tm.pdf. Accessed 10 February 2015.

236 International Monetary Fund. (2014). IMF Country Report No. 14/311. Retrieved from http://www.imf.org/external/pubs/ft/scr/2014/cr14311.pdf. Accessed 1 February 2015.

237 European Union Emissions Trading Scheme. (n.d.). Retrieved from http://ec.europa.eu/clima/policies/ets/index_en.htm. Accessed 3 February 2015.

238 Alberta's Greenhouse Gas Reduction Program. (n.d.). Retrieved from http://esrd.alberta.ca/focus/alberta-and-climate-change/regulating-greenhouse-gas-emissions/default.aspx. Accessed 29 January 2015.

239 Carbon Tax in Mexico 2014. (n.d.). Partnership for Market Readiness, World Bank. Retrieved from https://www.thepmr.org/system/files/documents/Carbon%20Tax%20in%20Mexico.pdf. Accessed 3 February 2015.

240 Baseline and credit and administrative allocations also impose costs on the economy. Abatement is not free and must come from investment in emissions reduction projects and technologies. An administrative allocation does not reduce this cost, which is born by consumers.

highly undesirable, such an approach could be used as source of SOE trading profit through the sale of excess allowances.

The regional context is complex, with China, Japan, and the Republic of Korea all undertaking different emission reduction actions, with the most likely influential scheme development coming from China. China's 12th Five-Year Plan also targets development of a national carbon market by 2015. On this basis, the National Development and Reform Commission's (NDRC) Climate Change Department announced in 2011 that emissions trading programs would be piloted in seven cities and provinces, with a goal of launching by 2013. These pilots are now operating and are expected continue until there is a national scheme in place. Should it move forward, the national scheme is estimated to be developed by around 2020.[241] Experiences from the pilot initiatives will be incorporated into the design of a national system. There are also proposals to test carbon trading on a sectoral basis in China, such as for nonresidential buildings or distributed heating facilities.[242]

With Vietnam's focus on establishing a baseline for the steel industry it is plausible that Vietnam will want to move in lock step with China so as to not disadvantage the competitiveness of its steel industry. Vietnam could potentially utilize funding from Japan's Joint Crediting Mechanism (JCM) to achieve emissions reductions by improving energy efficiency and hence competitiveness. There are projects and feasibility studies that support the deployment of the JCM in this way.[243]

Vietnam has experience in setting environmental taxes on sectors and with some MBIs, including the Clean Development Mechanism (CDM), Verified Carbon Standard (VCS),[244] Payment for Environmental Services, and Japan's Joint Crediting Mechanism (JCM). Institutional capacity for a carbon tax or ETS and to a lesser extent REDD+ is lacking in Vietnam both in its experiences of regulating the private sector and through the collection of data relevant to a carbon tax or emissions trading and REDD+. Vietnam has gained regulatory experience in the area mainly through the CDM.

Regardless of the chosen MBI, Vietnam will need to improve the robustness of GHG emissions inventories; address enforcement capacity, which is identified as a current risk/gap in existing regulations; and encourage greater industry awareness and support.[245] The Ministry of Natural Resources and Environment (MONRE) is the leading government agency in climate change response. For the future ETS, the Ministry of Industry and Trade will implement emission trading activities in the steel sector, and the Ministry of Construction will implement activities in the waste sector. Industry engagement alongside government support will be key to the success of any future scheme. If a sectoral ETS is chosen for the steel industry, consideration must be given to competitiveness and carbon leakage issues. The solid waste sector is less likely to be trade-exposed and subject to competitive pressures.

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241 Pers. Comm. Ranping Song, WRI, China.

242 Han, G. et al. (2012). China's Carbon Emission Trading: An Overview of Current Development. FORES and Stockholm Environment Institute. [Online]. Available at http://www.sei-international.org/mediamanager/documents/Publications/china-cluster/SEI-FORES-2012-China-Carbon-Emissions.pdf. Accessed 27 August 2014.

243 Government of Japan. (2015). Joint Crediting Mechanism. Retrieved from http://www.mmechanisms.org/e/initiatives/vietnam.html. Accessed 3 February 2015.

244 Verified Carbon Standard (VCS). (n.d.). Retrieved from http://www.v-c-s.org/. Accessed 3 February 2015.

245 Making carbon markets work for the poor, Vietnam. Forum for the future.

Vietnam's commitment to move toward emissions trading and its level of financial development as measured by the ratio of money (M2) to GDP[246] suggests that there is likely to be sufficient financial sophistication needed to develop and support an ETS.[247] Because of these reasons the FRAC analysis assumes that an ETS is more likely than a carbon tax over the medium term (see Table 14). The inclusion of offsets in the scheme is a precondition for supporting REDD+. Given that the developments in Korea and China support offsets and keep open the possibility of REDD+ – and that the ICM also supports REDD+ – it seems feasible that this approach could be part of the cost containment mechanisms afforded to industries the scheme covers. A further important development, therefore, is the establishment of rules and procedures for the inclusion of REDD+ credits in the scheme, though support to integrate REDD+ is unknown.[233]

If REDD+ is an integral part of the scheme, the Ministry of Agriculture and Rural Development (MARD) will be involved because it is the lead national institution responsible for REDD+. Within MARD the Forest Inventory and Planning Institute (FIPI) is the lead national institution in resources assessment and monitoring. The Forest Protection Department (FPD) and the Department of Forestry (DOF) are also involved in planning and carrying out forest assessments.[248] Vietnam is continuing to build capacity through the FCPF-R[249] and has least two current JCM REDD+ feasibility studies underway.[243] A special task force within the FPD leads enforcement. Other agencies play important roles — including the Environmental Police Force under the Ministry of Public Security (MPS), which works with local police forces and other agencies to investigate and prosecute environmental crimes. The Ministry of Defense is responsible for preventing deforestation in border areas, and the Department of Customs enforces the law on imports and exports of timber and forest products.

246 International Monetary Fund (IMF). (2008). Ghana's Reforms Transform Its Financial Sector. Retrieved from http://www.imf.org/external/pubs/ft/survey/so/2008/CAR052208A.htm. Accessed 5 February 2015.

247 World Bank. (2014). Money and quasi money (M2) as % of GDP. Retrieved from http://data.worldbank.org/indicator/FM.LBL.MQMY.GD.ZS. Accessed 5 February 2015.

248 Government of Vietnam. (2014). World Bank FCPF R-PIN. Retrieved from https://forestcarbonpartnership.org/vietnam Accessed 2 January 2015.

249 World Bank. (2012). FCPF-R Readiness Preparation Proposal Assessment Note Vietnam. Retrieved from http://www.forestcarbonpartnership.org. Accessed on 3 February 2015.

TABLE 14. FRAC ANALYSIS FOR AN EMISSIONS TRADING SCHEME APPLIED TO VIETNAM.

Vietnam		
Fitness	Legal Context	Vietnam is currently evaluating MBIs and may move toward an ETS. Some MBIs are recognized in laws including the CDM and Payment for Environmental Services. Vietnam does not have a binding emissions reduction target but has set national climate change mitigation priorities in its national Green Growth Strategy.[250] The government has established a Cross-Ministerial REDD+ Steering Committee and a National REDD+ Office to lead on REDD+. There are subnational technical working groups for REDD+ Vietnam.[251] An MBI in the steel sector is expected from 2018 to 2020, potentially followed by a legislated ETS after 2020.
	Social and political acceptability	Decision-making in Vietnam tends to be highly centralized and lacks public participation. For this reason, a significant economic reform such as an ETS is likely to be decided at the government level. Vietnam is likely to move in-lock step with China so as to not disadvantage its competitiveness. There is government support for REDD+ at the national level. Work to raise awareness and understanding at a public level has been conducted under the UN REDD program.
	Institutional capacity	Vietnam is part of the World Bank's PMR Program, which is supporting the development of technical capacity and infrastructure, including a GHG database, MRV system, and registry system that would be needed for an ETS. Vietnam is developing REDD+ readiness capacity through the FCPF-R. The National REDD+ Office has endorsed an MRV framework document for national coordination of REDD.
	Transparency	As assessed by Transparency International, government processes in Vietnam lack transparency, openness, and inclusivity.[252] The revised Law on Environment Protection 2005 has requirements for public consultation. Decree 80 and Circular 05 provide further guidance on public participation,

250 World Bank. (2015). Partnership for Market Readiness (PMR) Vietnam. Retrieved from https://www.thepmr.org/country/vietnam-0. Accessed 4 February 2015.

251 World Bank. (2014). FCPF-R ERPIN Vietnam. Retrieved from https://www.forestcarbonpartnership.org/. Accessed 4 February 2015.

252 Transparency International. (2014). Retrieved from http://www.transparency.org/country#VNM_DataResearch_SurveysIndices. Accessed 21 November 2014.

		including a legal requirement for the involvement of local communities. An important technical aspect of the ETS that the PMR supports is the establishment of data management infrastructure that transparently accounts for program activities, achieved emission reductions, and any transfer/use of credits. Vietnam has an ETS stakeholder engagement strategy that includes a communication strategy and stakeholder meetings, workshops, and seminars with industry and government participants as well as the general public.
	Governance	Stronger institutional structures are needed to enforce and control the operation of a future ETS scheme with offset mechanism, and more technical expertise is required to ensure an effective system. Monitoring and enforcement present a potential issue for consideration in a future ETS scheme. Vietnam is reported to follow few investigations into forest violations.
	Implementation	The Ministry of Natural Resources and Environment leads climate policy for the country and is the main implementing agency. The following areas will need to be further developed to implement an ETS that allows REDD+ offsets: changes to national laws; emissions budget and caps; compensation mechanisms for emissions-intensive, trade-exposed industries to prevent leakage; an allocation mechanism and any associated auction; a national registry that integrates with energy reporting and liability rules; and REDD+ methodologies, offset rules, and project- or program-based assessment mechanisms. Additional work may also be needed on a nationwide forest inventory, because provincial forestry department officials claim that the available data is insufficient to delineate forest areas or to assess forest quality.
Risks	Environmental	The ambition of the scheme, coverage, and exemptions will determine its environmental effectiveness, assuming that robust GHG accounting/MRV systems are implemented. Carbon leakage also affects the environmental integrity of the scheme. For REDD+ offset projects, leakage can also be a problem. To help to address international leakage, the Government of Vietnam signed an MOU with Cambodia on cooperation in the forestry sector and agreed on a FLEGT Action Plan with Laos in 2012. Further actions will be required to reduce risk of leakage in any REDD+ system inclusion under a domestic ETS.
	Durability	The EU ETS has persisted for years, but the Australian scheme only survived two years. It is likely that any scheme in Vietnam will be linked to the actions of its neighbors, particularly China.

	Economic	Over time, rapid increases in market prices for emissions allowances will increase costs to households via inflation and negatively affect growth. Adverse impacts on households are generally handled by compensation to offset increased costs. Emissions-intensive and trade-exposed industries will also need compensation, as rapid price increases may affect competitiveness. Price caps and floors provide an effective means to deal with rapid price inflation and rapid price declines that might threaten investments in abatement. There are potentially significant costs associated with inaction on mitigation.
Abatement potential		This depends on business as usual projections and Vietnamese emissions reduction ambition.
Cost		The costs of an ETS are borne by the Vietnam economy. The potential to reduce industry costs of an ETS via REDD+ offsets will depend on the local costs of REDD+. The cost of managing an ETS can be substantial.

3.5 CONCLUSIONS

MBIs have the potential to direct large amounts of financing to REDD+ but are likely to be limited due the difficulty of implementing MBIs in a large number of developing countries and losses of government revenue that flows from allowing offsets in some scenarios. Offsets in an administratively allocated cap-and-trade scheme do not affect government revenues, as revenue is foregone; however, including offsets in a majority auction-based cap-and-trade scheme or carbon tax reduces government revenues. Combined with the desire to ensure that meaningful operational emissions reductions are achieved within the domestic economy, offset limits are normally established to ensure that covered entities invest in low-emission technologies and processes and do not rely solely on offsetting. These factors limit the potential volume of REDD+ credits and financing from MBIs.

Compared to an ETS, a carbon tax may be simpler and more applicable to a wider range of countries and could still potentially include REDD+, but this approach involves revenue-loss and low-emission investment pressures similar to those of cap-and-trade schemes.

APPENDIX IV – ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND ENVIRONMENTAL OFFSETS CASE STUDIES

This appendix focuses on the potential for using EIA as a policy tool to support REDD+. Australia, Brazil, Ghana, Gabon, and Vietnam are examined using the FRAC framework.

4.1 BACKGROUND

To date EIA has not been widely used as a policy tool to reduce GHG emissions, but in a number of countries EIA use environmental offsets, which are measures that seek to achieve equivalent environmental outcomes to compensate for the residual adverse impacts of an action on the environment. Globally there is growing interest in the use of environmental offsets as a way to protect the environment and allow growth and development. Table 15 provides a summary of some developments in Australia, Brazil, the EU, and the United States.[253]

TABLE 15. ENVIRONMENTAL OFFSETS POLICIES IN AUSTRALIA, BRAZIL, THE EU, AND THE UNITED STATES.

Region	Policy
USA	• U.S. Wetlands Mitigation, founded in the section 404 amendments to the Clean Water Act (33 U.S.C. § 1344), aims to avoid and minimize impacts, and then to offset residual impacts through compensatory mitigation that replaces wetland functions and values. • U.S. Conservation Banks are modeled after wetland mitigation, except that the objective is to offset adverse impacts to species rather than to replace wetland functions and values.

253 McKenney B.A., and Kiesecker, J.M. (2010). "Policy Development for Biodiversity Offsets: A Review of Offset Frameworks". *Environmental Management,* 45, 165–176.

EU	• EU Natura 2000: The Birds Directive of 1979 (Council of the European Communities 1979) and the Habitats Directive of 1992 (Council of the European Communities 1992) underpin the effort to establish a network of Natura 2000 conservation sites throughout the EU.
Australia	• Under commonwealth and state laws in Australia environmental offsets are imbedded within EIA as part of project-based approval processes or within strategic assessment as part of broader development approval processes.
Brazil	• Brazilian Industrial and Forest Offsets: Brazilian federal legislation requires industrial developments to offset their environmental impacts through payments to the National Protected Areas System (Brazil Fed. Law 9985, Decree 4340).

As developing countries seek ways to support economic growth and decarbonize their economies, EIA's that include GHG emissions combined with environmental/GHG offsets may provide a useful interim and complimentary tool to achieve cost-effective emissions reductions. The EIA processes already exist in most countries and can be a simpler policy tool that requires less capacity to implement than economy wide GHG abatement policies such as emissions trading.

As EIAs do not currently deal with climate change mitigation directly, to implement such as system capacity development within agencies administering EIA would be required. In many cases, technical capacity for carbon accounting also exists within private sector organizations to assess the emissions profile of activities.[254] However, it is likely that professionals will need clear guidance on integrating EIA and GHG offsetting. This step is likely to require the development of specific regulations that trigger EIA/GHG operations and provide a clear basis for enforcement.[255]

For many countries looking at piloting such schemes, given the sensitivity and power of vested interests, a voluntary process that relies on the Equator Principles and corporate social responsibility may be the most appropriate way to drive emissions reductions.[256] The following analysis and discussion explore issues related to integrating EIA and GHG offsetting by examining examples from Australia, Brazil, Gabon, Ghana, and Vietnam.

4.2 AUSTRALIA

Recently Australia changed its approach to achieving emissions reductions. On 17 July 2014 the Clean Energy Legislation (Carbon Tax Repeal) Bill 2014 obtained Royal Assent.[257] Despite the repeal, Australia

254 Greenhouse Gas Protocol. A Corporate Accounting and Reporting Standard. (n.d.). World Business Council for Sustainable Development and the World Resources Institute. Retrieved from http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf. Accessed 31 January 2015.

255 Sok, V., Boruff, B., and Morrison-Sanders, A. (2011). "Addressing climate change through environmental impact assessment: international perspectives from a survey of IAIA members". *Impact Assessment and Project Appraisal*, 29(4), 317-326.

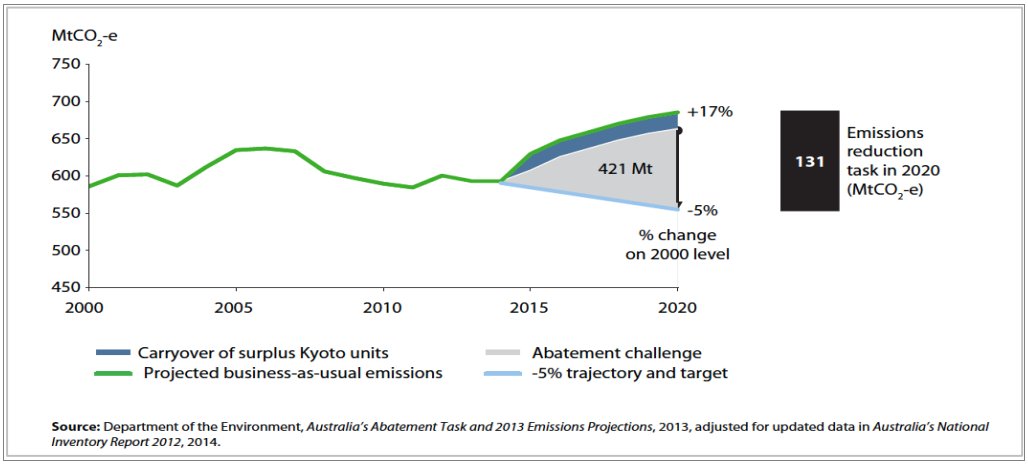
256 Equator Principles. (2015). Retrieved from http://www.equator-principles.com/. Accessed 29 January 2015.

257 Parliament of Australia. (2014). Clean Energy Legislation (Carbon Tax Repeal) Bill 2014. Retrieved from http://www.comlaw.gov.au/Details/C2014A00083. Accessed 2 February 2015.

will continue to have a domestic offsets law, renewable energy standard, and fund to invest in clean energy. Australia also remains committed to reducing emissions to 5 percent below 2000 levels by 2020. The latest estimate of Australia's future greenhouse gas emissions is that Australia faces a cumulative emissions reduction task of around 421 $MtCO_2e$ in the period to 2020 (see Figure 6); however, with its current policies Australia may not be able to meet this target.[258]

The Australian government's domestic offsets policy variously known as the direct action policy or Carbon Farming Amendment Bill is designed to help address this gap.[259] The direct action policy passed the parliament in November 2014.[260] Australia does not currently intend to purchase international offsets, but any shortfall could be made up using a mix of international offsets including REDD+.

FIGURE 6. AUSTRALIA'S EMISSIONS REDUCTION CHALLENGE



Source: Department of the Environment, *Australia's Abatement Task and 2013 Emissions Projections*, 2013, adjusted for updated data in *Australia's National Inventory Report 2012*, 2014.

Under commonwealth and state laws in Australia, environmental offsets are imbedded within EIA as part of project-based approval processes or within strategic assessment as part of broader development approval processes.[261]

Figure 7 illustrates the decision process used in Australia, which leads to the inclusion of environmental offsets as part of a major project approval. At the referral stage of an EIA, any beneficial impacts of offsets cannot be considered. As such, offsets do not mean that proposals with unacceptable impacts will

258 Australian Climate Change Authority. (2014) "Based on its current configuration and funding, the Authority considers that the Emissions Reduction Fund is unlikely to deliver sufficient emissions reductions to reach Australia's minimum 2020 target of 5 per cent below 2000 levels. A range of complementary actions will be required, now and beyond 2020". Retrieved from http://www.climatechangeauthority.gov.au/news/article/climate-change-authority-releases-carbon-farming-initiative-and-renewable-energy-target. Accessed 27 December 2014.

259 Government of Australia. (2014). Emissions Reduction Fund White Paper. Canberra. Retrieved from http://www.environment.gov.au/climate-change/publications/emissions-reduction-fund-white-paper. Accessed on 22 August 2014.

260 Parliament of Australia. (2014). Carbon Farming Amendment Bill. Retrieved from http://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/Bills_Search_Results/Result?bId=r5280. Accessed on: 22 August 2014.

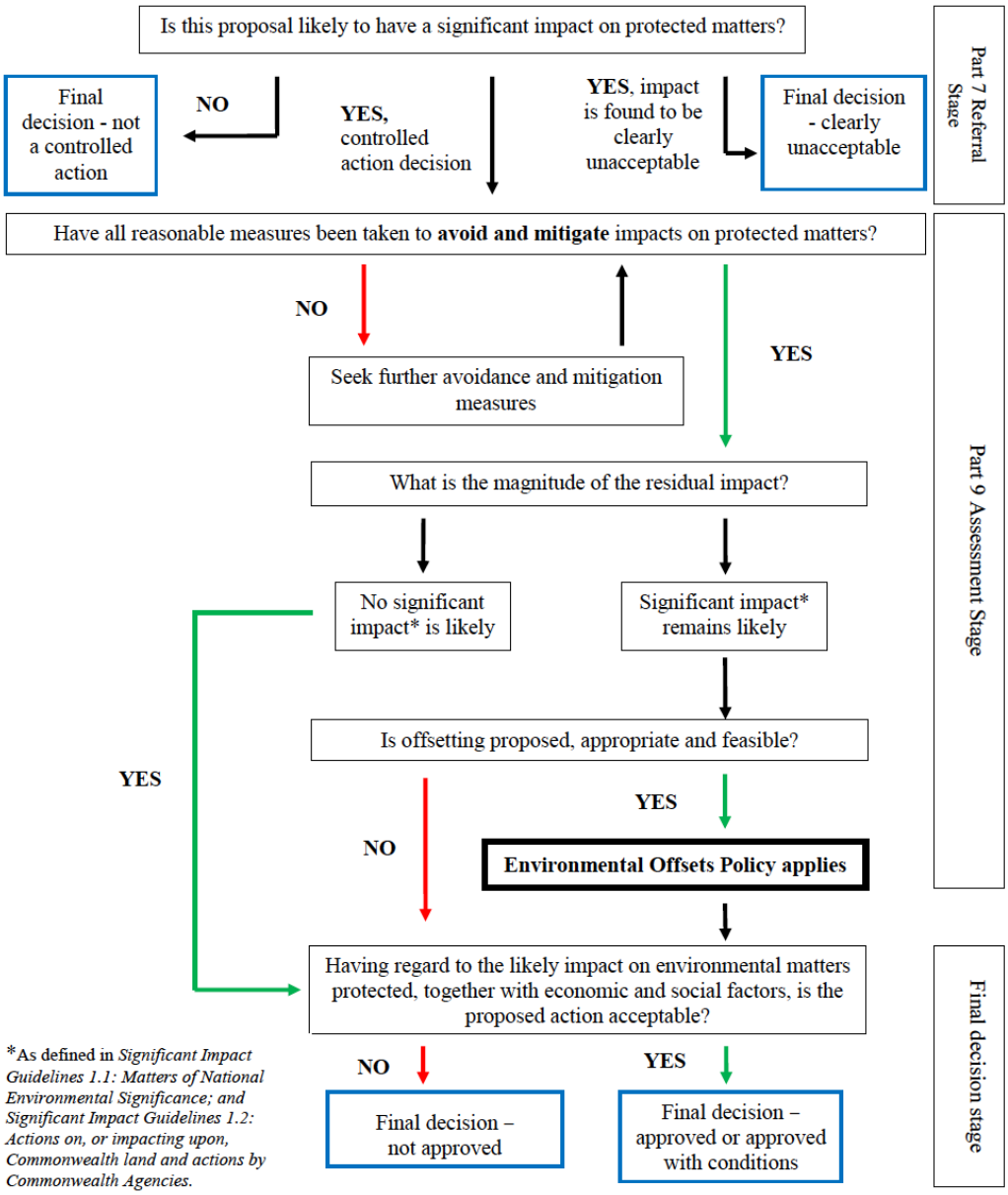
261 The Melbourne urban growth boundary provides an example of the use of environmental offsets within strategic assessment.

be approved. Offsets simply provide another tool that can be considered during the EIA assessment stage to gain approval in the decision stage. Across all jurisdictions offsets are designed to compensate for the residual adverse impacts of an action. Before environmental offsets are used all reasonable steps should be taken to avoid and then mitigate adverse impacts on the environment.

Key issues in adapting the Australian environmental offsets regime for GHG abatement include: i) defining the scope: the range or activities that would be subject to an assessment; ii) coverage: the type of emissions and gases to be covered; and iii) specific triggers used to start an assessment: specific metrics or thresholds. For example, scope would cover activities such as major infrastructure developments including power stations, airports, ports, and roads, and major mining or agricultural developments. Coverage includes the range of GHG covered and scope 1 and scope 2 emissions[262] associated with the project development but might extend to emissions over the lifetime of the project. Specific metrics used to trigger an assessment might include absolute emissions or emissions per unit of production or sales.

[262] Scope 1: All direct GHG emissions. Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat, or steam. Direct GHG emissions are emissions from sources that the reporting entity owns or controls. Indirect GHG emissions are a consequence of the activities of the reporting entity but occur at sources that another entity owns or controls.

FIGURE 7. DECISION PROCESS LEADING TO THE USE OF ENVIRONMENTAL OFFSETS.



Projects could be rejected based on their GHG emissions impacts, but it is more likely that measures would be established to avoid or mitigate the GHG impact of the development. This could include the project adopting best practice environmental or technology standards. Assuming that significant emissions remain above the threshold then offsets might be considered. If these offsets come from domestic REDD+ projects or programs, local demand for REDD+ credits is created. Other GHG abatement sectors can also be included if there is additional desire to support those.

Legislative changes would most likely be required to broaden the role of environmental offsets to include GHG abatement offsets. Table 16 provides a summary of the situation using the FRAC framework. Australia does have the capacity to implement such a system, but questions exist over this

strategy. Given Australia's current policy settings, investment profile, economic status, and per capita emissions it is unlikely that EIA and GHG offsetting, irrespective of the merits, would be viewed internationally as an acceptable policy response on its own.[263,264] On the other hand, in a country like Australia, piloting such a scheme that developing countries could follow has merit.

The commodities price slump further complicates the situation. A deteriorating resource investment environment in Australia creates additional barriers, perceived or real, to imposing such a scheme on investment in the resources sector, making such a scheme unlikely to be politically acceptable.[265] EIA mixed with GHG offsetting, as a regulated model, is therefore unlikely in the current Australian context.

In an environment of contracting investment and a significant curtailing of new project approvals, such as scheme may also have limited environmental benefits in terms of potential abatement opportunities. Nevertheless the Australian Government's Emission Reduction Fund opens up significant possibilities for new projects seeking approvals to apply for funding to support the development of emission reduction projects. Corporate social responsibility, civil society, and Equator Principles are all likely to be drivers of this voluntary action with the additional inducement of financial assistance from the Emissions Reduction Fund.[266]

263 Guardian Newspaper. (2014). Interview with Lord Deben. Retrieved from http://www.theguardian.com/world/2014/jul/09/abbott-climate-stance-reckless-shaming. Accessed 30 January 2015

264 European Union. (2014). Press Release on Australia's repeal of the carbon pricing mechanism. Retrieved from http://ec.europa.eu/archives/commission_2010-2014/hedegaard/headlines/news/2014-07-17_01_en.htm. Accessed 30 January 2015.

265 Heath, A. (2014). The Domestic Outlook and the Role of Mining, Reserve Bank of Australia. Retrieved from http://www.rba.gov.au/speeches/2014/index.html. Accessed 30 January 2015.

266 Government of Australia. (2015). Emissions Reduction Fund. Retrieved from http://www.environment.gov.au/climate-change/emissions-reduction-fund. Accessed 30 January 2015.

TABLE 16. FRAC ANALYSIS APPLIED TO AUSTRALIA.

Australia		
Fitness	Legal Context	Legal context already established through existing legislation, though amendments would be needed to tailor this context to support REDD+. The Commonwealth Environment Protection and Biodiversity Conservation Act, 1999; Environment Protection and Biodiversity Conservation Regulations, 2000; and Commonwealth Environmental Offsets Policy are administered by the Department of Environment. Also of note are the Australian National Registry of Emissions Units Act 2011 (ANREU Act); the Australian National Registry of Emissions Units Regulations 2011 (ANREU Regulations); and the National Greenhouse Energy and Reporting Act 2007 (NGER Act), administered by the Clean Energy Regulator. The Carbon Farming Amendment Bill is administered by the Department of Environment. While not specifically targeting REDD+ a domestic forest carbon offset standard exists, as administered by the Department of Environment.
	Social and political acceptability	Climate change policy has been a highly contested area in Australia, as evidenced by the passage of the Clean Energy Act 2011 and its subsequent repeal in 2014.
	Institutional capacity	Given the extended period of development of climate change policy, approximately 10 years, Australia has developed capacity within the public and private sector. Institutional capacity can be demonstrated through the establishment and management of the ANREU, which manages emission units issued under the Kyoto Protocol, Australian Carbon Credits issued under the Carbon Farming Initiative, and units issued under the carbon pricing mechanism. Europe recognized Australian capacity, with potential international linkages between the schemes.[267]
	Transparency	Extensive open public consultation occurred, variously with the Prime Ministerial Task Group on Emissions Trading (2007) supported by the Howard Liberal Government; the Garnaut Climate Change Review (2008)

267 European Commission. (2012). International Carbon Market. Retrieved from http://ec.europa.eu/clima/policies/ets/linking/index_en.htm. Accessed 31 January 2015.

		supported by the Rudd Labor Opposition; a Green Paper on the Carbon Pollution Reduction Scheme (2008); a White Paper on the Carbon Pollution Reduction Scheme (2008); a Clean Energy Futures Paper (2011); a Carbon Pollution Reduction Scheme Bill 2009 and associated public consultation; and Clean Energy Bills 2011 and associated public comment.
	Governance	Australia scores well across a range of governance indicators[268], but some see climate politics and the repeal of the Clean Energy Act 2011 as a governance failure.[269] Others argue that political risk is inherent in early-stage development of emissions reduction schemes.[270]
	Implementation	Introducing GHG offsets/REDD+ into an EIA process is a political decision that may require some legislative amendments, but this change unlikely to require significant capacity development.
Risks	Environmental	Only applies to new projects that trigger EIA assessments
	Economic	Mandatory offset requirements may be a disincentive to new investment and provide a competitive cost advantage to operations established before the introduction of the environmental offset process.
Abatement potential		Depends on the rules, scale, and number of projects triggering the use of GHG offsets. If the process is voluntary, then it is possible that some projects will opt out of the system, thus reducing the abatement potential of the scheme. With significant curtailment of resource investment, the benefits of using an EIA/REDD+ offset scheme are reduced.
Cost		Costs are borne by entities subject to mandatory offsetting as part of EIA. It is expected that mandatory offsetting would increase the cost, to some extent, of doing business in Australia. There may also be costs associated with regulatory uncertainty as numerous agencies and committees grapple to clarify responsibility and resolve policy issues around any proposed scheme. The cost of running the scheme was not assessed but is expected to be lower than that of MBIs or direct regulation.

268 World Bank. (2014). Country Data Report for Australia, 1996-2013. Retrieved from http://info.worldbank.org/governance/wgi/index.aspx#countryReports. Accessed 31 January 2015.

269 Beeson M., and McDonald, M. (2013). The Politics of Climate Change in Australia. *Australian Journal of Politics and History,* 59(3), 331-348.

270 Linacre, N. (2012). "No Easy Answers–What is the Risk of Investing in Australia's Clean Energy Future?" *Actuaries Magazine,* 170. Retrieved from http://www.actuaries.asn.au/Library/AA/2012/Actuaries-JUN2012-WEB-R1.pdf. Accessed 31 January 2015.

4.3 BRAZIL

Federal Law 6938 implements the Brazilian National Environmental Policy (BNEP) and creates the legal authority to consider the impacts of human activities on the environment. BNEP establishes environmental licensing as a requirement for activities or operations that affect the environment and/or use natural resources. Subsequent directives establish project-EIA and the Environmental Licensing (EL) system for minimizing the adverse effects that new projects have on the environment. As part of the EIA, a project-level Environmental Impact Study (EIS) has been one of the most important processes used for environmental licensing in Brazil.[271] However, the EL system could be used to support REDD+.

At the national level Brazil has laws, decrees, and ordinances that deal with environmental offsets (Table 17). Generally projects subject to EL must offset their impacts through support payments to a national system of protected areas.[272]

TABLE 17. ENVIRONMENTAL OFFSETS LEGAL FRAMEWORK IN BRAZIL BETWEEN 2000-2011.

Year	Document reference	What it regulates
2000	Law 9985	Sets the obligation for projects subject to environmental licensing of offsetting impacts by making payments to support the National System of Protected Areas
2002	Decree 4340	Regulates calculation of offset payments, sets the need of an Offsets Chamber, and establishes how to use offset funds
2004	Direct action of unconstitutionality 3378	Partially modifies Art.36 § 1° of Law 9985 (original one declared partially unconstitutional)
2006	CONAMA Resolution 371/06	Sets guidelines for the environmental authority to calculate, collect, use, approve and manage offset funds related to Law 9985
2006	Decree 5746	Regulates offsets for impacts to Natural Heritage Reserves
2009	Decree 6848	Modifies Decree 4340
2010	Ordinance 416	Creates the Environmental Offsets Federal Chamber (CFCA)
2010	Ordinance 458	Designates the representatives of each organization that compound the Environmental Offsets Federal Chamber (CFCA)
2011	Ordinance 10	Regulates the selection of environmental non-governmental organizations that will be part of the Environmental Offsets Federal Chamber (CFCA)
2011	Ordinance 225	Creates the Environmental Offsets Federal Committee (CCAF)
2011	Normative Instruction 8	Regulates the Environmental Offsets procedure set in Decree 4340 and modified by Decree 6848
2011	Normative Instruction 20	Regulates the administrative procedures for setting the terms of commitment regarding offsets
2011	IBAMA Ordinance 16	Sets the bylaws of the Environmental Offsets Federal Committee (CCAF)

State laws mirror Brazilian federal law, but some differences in responsibilities exist. The national environmental agency (IBAMA) assesses projects with trans-boundary state impacts. IBAMA also issues environmental licenses. The relevant state and municipality environmental agencies assess and license

271 Kirchhoff, D., Montano, M., Lima Ranieri, V.E., Dutra de Oliveira, I.S., Doberstein, B., and Pereira de Souza, M. (2007). "Limitations and drawbacks of using Preliminary Environmental Reports as an input to Environmental Licensing in Sao Paulo State: A case study on natural gas pipeline routing". *Environmental Impact Assessment Review*, 27, 301-318.

272 Government of Brazil. (2000). Law 9985 National System of Protected Areas. Retrieved from http://www.planalto.gov.br/ccivil_03/leis/l9985.htm (In Portuguse). Accessed on 1 February 2015.

projects with impacts confined within state boundaries.[273] States and municipalities may mandate more stringent environmental requirements than under federal law to deal with specific environmental issues related to their circumstances. In some instances state environmental laws may progress ahead of federal law. São Paulo State's Climate Change Law is an example that implements state policy on climate change. São Paulo's goal is to reduce CO_2 emissions to 20 percent below 2005 levels by 2020. [274]

To help achieve this emissions reduction goal, the Climate Change Law has provisions for new and existing large projects or projects with high-energy consumption to account for and potentially offset GHG emissions.[275] This work will be accomplished through the environmental licensing process, but the way in which new project proposals incorporate GHG emissions in an EIA/EIS is yet to be decided. At this stage the Climate Change Law's environmental licensing provisions remain unimplemented. Ultimately GHG emissions limits or baselines could be established at the entity or activity level, but there is no indication of how these limits will be established. São Paulo's Environmental State Agency (CETESB) has indicated that compliance entities that exceed the limits may eventually be required to offset some of their emissions above the limits.[276] This offsetting requirement, if implemented in a way that included REDD+ credits, could generate demand for REDD+ credits.

Despite the lack of clarity around setting limits and developing offset rules, progress has been made on other aspects of the Climate Change Law. CETESB has established a voluntary GHG emission reporting public registry open to every industry and serving as an obligation for GHG inventory reporting for certain types of industries (that could also opt to disclose the information in the public registry)[277]. As yet participation is low, with compliance reporters successfully arguing for delays over lack of internal capacity to produce the GHG estimates. The Sao Paulo Climate Law is also likely to remain in hiatus until uncertainty around Brazil's commitment under a future UNFCCC is resolved and any consequential impact on Sao Paulo state becomes clear.

Incorporating REDD+ also involves challenges. Some environmental NGOs continue to oppose the inclusion of REDD+ due to perceived non-permanence risks or due to ideological opposition to environmental markets. This opposition may lead to the exclusion of REDD+ or to limits being placed on the proportion of REDD+ credits allowed in the scheme, thus reducing demand and incentives to develop and scale up REDD+ activities.

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273 Government of Brazil. (2011). Details of the different responsibilities between national and sub-national EIA/EL are described in Complementary Law 140 (in Portuguese). Retrieved from http://www.planalto.gov.br/ccivil_03/leis/lcp/Lcp140.htm. Accessed 1 February 2015.

274 Government of São Paulo State (2009). Climate Change Law. Retrieved from http://www.cetesb.sp.gov.br/tecnologia/draft_climate.pdf. Accessed 15 January 2015.

275 Other States are also implementing similar policies (e.g., Rio de Janeiro with: i) Energy Compensation Mechanism for Fossil Fuel Thermal Plants (Decree 41.318/ 2008), with the aim of renewable energy compensation rather than REDD+ projects; and ii) Mitigation Plans as part of EL (INEA Resolution 65/2012)).

276 Government of São Paulo. (2014). CETESB Board Decision 068/2014/V/I; March, 25 2014 [Online]. Retrieved (in Portuguese) from http://www.cetesb.sp.gov.br/userfiles/file/dd/DD-068-2014.pdf. Accessed 15 January 2015

277 Government of São Paulo State. (2012). GHG Corporate Inventories. Retrieved (in Portuguese) from http://www.cetesb.sp.gov.br/mudancas-climaticas/proclima/Inventário%20de%20GEE%20Empreendimentos/384-Inventário%20de%20GEE%20Empreendimentos. Accessed 15 January 2015.

The supply of REDD+ credits could also be affected by limiting the sourcing of REDD+ projects and programs to Sao Paulo state. Should other states (e.g., Acre and/or Amazonas) be allowed to supply credits, then CETESB will have to assess and accept the MRV systems in those states. This process may take time and create some technical and political discord. The development of robust MRV systems across Brazil will be important for expanding supply.[278] Double counting of credits also has emerged as an issue. As CETESB has indicated, "Projects developed in other carbon markets will only be accepted if credits are not used for compensation in other programs." It is not clear how avoidance of double counting will be guaranteed in the absence of a national registry system.[279]

The São Paulo Climate Law has potential to offer a way forward in integrating EL/EIA and GHG offsets, but many details need to be resolved – in particular, details around changes to the EIA process, limits, and the acceptance and use of REDD+ credits. Establishing emissions limits is also likely to prove challenging. Table 18 provides a summary of the situation using the FRAC framework. The state process is also subsumed in a broader national process, and at this stage it is unclear how rapidly CETESB will move forward on regulations for integrating EL/EIA and REDD+.

278 Government of São Paulo. (2010). Paragraph 3 of Article 32 of Decree 55.947/2010 on the São Paulo Climate Change Law. Retrieved (in Portuguese) from http://www.al.sp.gov.br/repositorio/legislacao/decreto/2010/decreto-55947-24.06.2010.html. Accessed 15 January 2015

279 Government of São Paulo. (2014). CETESB Board Decision 068/2014/V/I; March, 25 2014. Retrieved (in Portuguese) from http://www.cetesb.sp.gov.br/userfiles/file/dd/DD-068-2014.pdf. Accessed 15 January 2015.

TABLE 18. FRAC ANALYSIS APPLIED TO BRAZIL (SÃO PAULO STATE).

São Paulo State (Brazil)		
Fitness	Legal Context	Some legal context already exists with São Paulo State Climate Change Law (PEMC-SP) – 13.798/2009[280] and Decree 55.947/2010. The climate change law has provisions for assessing the "effects and consequence of climate change" and possibly using a compensation mechanism such as offsets with the EL process. These provisions are not fully implemented. EL is the responsibility of CETESB.
	Social and political acceptability	Industries in São Paulo State widely accept EL and GHG reporting, but the private sector contests the establishment of specific GHG emission limits. Specific limits are also contested politically due to concerns over potential economic consequences. REDD+ projects are widely accepted by the general public, with projects being developed for the voluntary carbon market or for the Amazon Fund. The use of REDD+ projects from outside São Paulo State to offset GHG emissions under the Climate Law is contested; some stakeholders favor the inclusion to reduce costs, and others oppose the inclusion due to concerns regarding perceived risks (e.g., non-permanence) or due to ideological positions (against environmental markets).
	Institutional capacity	CETESB has demonstrated that it has full capacity to implement EL processes (aside from some criticism in relation to "over-technicism" in some cases). In the case of REDD+ projects outside São Paulo, other environmental agencies will need to be involved in the process. Some states (e.g., Acre and Amazonas) have a strong institutional capacity for REDD+ projects as compared to the capacity of other states. The deadline for reporting GHG inventories has being postponed on several occasions, indicating difficulties and specifically the lack of capacity that the private sector faces in estimating emissions.
	Transparency	Brazil is a founding member of the Open Government Partnership and has demonstrated a strong commitment to open and transparent governance. CETESB provides easily accessible public

280 Government of São Paulo State. (2009). State Policy on Climate Change. Retrieved from http://www.cetesb.sp.gov.br/userfiles/file/mudancasclimaticas/proclima/file/legislacao/estado_sp/lei/lei_13798_09nov_09_ingles.pdf. Accessed 1 February 2015.

		information related to the EL including EIS, results of public consultations, licenses granted, and any additional compliance requirement. The information can be accessed via the CETESB public website or upon request.
	Governance	CETESB is in charge of the EL in the State of São Paulo. Because there was no full application of the provisions for EL/compensation for GHG emissions, the governance structures have not yet been tested. Once implemented they will be subject to the same scrutiny as the EL process. In cases where the REDD+ project is outside São Paulo State, it can be assumed that governance will have to be shared with other institutions with the supervision and/or collaboration of CETESB. In these cases, political and technical divergences may occur due to the need to deal with more than one governance structure.
	Implementation	As yet the proposed system does not have a clear implementation plan or timetable. Compliance reporting of GHG emissions by covered entities remains problematic, and development of a clear plan and time table for compliance would likely lead to better corporate behavior. To date there is no definition on how the target will be divided among different sectors, what sectors can compensate their emissions, and the maximum volumes to be compensated. In the absence of a national registry system, double counting of credits is an issue for including REDD+ credits as part of any offset arrangements.
Risks	Environmental	If the GHG reduction targets and the compensation triggers are not well defined, the benefit for the atmosphere may be limited. Without a robust MRV system, the system's environmental integrity risks (e.g., non-permanence risks, double counting, etc.) will increase. Carbon leakage could result in zero-net environmental gains, because industries/activities may move to states where there are no GHG limits. To date there is no definition of fines to be applied in industries/activities that do not comply with the GHG reduction limits. If the value is too low, then there may be an economic incentive for non-compliance and a reduction in the environmental efficacy of the scheme.
	Durability	The durability of the system heavily depends on national developments.
	Economic	One of the main economic risks associated with REDD+ projects is the opportunity cost of land. Prices of rural land for cattle production in São Paulo state increased by 260 percent between 2007

		and 2013[281]. This situation may threaten the viability of state-based REDD+ offsets and limit their use in the scheme due to cost. Carbon leakage due to investment shifting out-of-state poses a risk to economic growth.
Abatement potential		The amount of abatement will depend on final implementation details, but São Paulo's goal is to reduce CO_2 emissions by 20 percent below 2005 levels by 2020. According to the first São Paulo state GHG inventory[282] the CO_2 emissions in 2005 were 93 $GtCO_2$, implying a total abatement potential of 18.6 $GtCO_2$. The potential to support REDD+ would depend on REDD+ eligibility plus any quantitative limits on its use.
Cost		Costs are borne by sectors subject to the EL process, including domestic and any international investment. Costs to implement the EL are unknown and will reflect the final details of the scheme. Costs are borne by entities subject to EIA and are expected to increase the cost of doing business in São Paulo. There may also be costs associated with regulatory uncertainty, as numerous agencies and committees grapple to clarify responsibility and resolve policy issues around any proposed scheme. Costs of running the scheme were not assessed but are expected to be lower than those of MBIs or direct regulation.

281 CEPEA–ESALQ/USP (Center for Advanced Studies on Applied Economics at "Luiz de Queiroz College of Agriculture" of University of São Paulo). (2015). Personal communication. 2 February 2015.

282 Government of São Paulo. (2010). São Paulo State GHG Inventory. Retrieved from http://www.cetesb.sp.gov.br/userfiles/file/mudancasclimaticas/geesp/file/docs/publicacao/inventario_estadual/sao_paulo/inventario_sp/Emissões_CO2_São%20Paulo%20em%202005a.pdf (In Portuguese). Accessed 1 February 2015.

4.4 GABON

Gabon is an important oil producer — the fifth-largest in sub-Saharan Africa. Gabon's economy heavily depends on its oil production and revenues. Oil revenues accounted for nearly 56 percent of total government revenues, and hydrocarbon exports accounted for nearly 90 percent of total export revenue in 2011. Gabon is a mature oil producer that has been facing declining output for more than a decade.[283,284] Gabon is the lowest ranking country in this study according to World Bank governance indicators (WGI) and does not score well on the Natural Resource Governance Institutes' rankings.[284] Gabon is participating in the FCPF-R through the Ministry of Environment, Sustainable Development and Nature Protection, Prevention and Management of Natural Disasters. Responsibility for REDD+ lies with MEFEPA (Ministry of Forestry Economy, Waters, Fisheries and Aquaculture) and ANPN (National Agency for National Parks).

There is little published academic work on either EIA or REDD+ for Gabon. However, Gabon does receive support from the FCPF-R, and the dominance of major oil producers ensures that EIA is used in Gabon. Total, the French oil company, and Royal Dutch Shell are the largest oil producers in Gabon. Other significant oil producers include the Paris based-Perenco, the Sinopec-owned Addax Petroleum, and the Houston-based Vaalco Energy. In 2011, the government created a national oil company, the Gabon Oil Company, to increase the government's involvement in oil production by taking equity stakes in future awards.[283]

Gabon is currently updating its environmental laws and in August 2014 enacted a law on sustainable development (Law No. 002/2014 relating to Sustainable Development in the Republic of Gabon).[285] Among other things the law introduces the concept of "Sustainable Development Credits", which "constitute immaterial goods able to be the subject of securities and which can be valued and negotiated pursuant to the applicable regulation." The new law creates financial mechanisms and instruments and a system of institutions ensuring the reliability of sustainable development credit trading.

The law allows offsetting "negative impacts" using sustainable development credits, which can include "carbon, biodiversity, eco-system services and community capital credits". Much of the details of the new scheme, including implementation regulations, are still unclear. That said, there does appear to be the potential to use REDD+ credits (as a carbon sustainable development credit) as an offset in the new scheme.

No specific law on environmental offsets within the EIA framework appears to exist, and it is unclear how the new sustainable development law will work with the existing EIA requirements. The new law contains one reference to using EIAs and seems to operate in the same vein as an EIA approach, whereby impacts of a project are assessed and then negative impacts are reduced and/or offset using sustainability offsets. How offsetting could be triggered as part of EIA or the new law, or the exchange rate between sustainability and GHG abatement offsets, is not specified.

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283 U.S. Energy Information Administration. (n.d.). Country Data. Retrieved from http://www.eia.gov/countries/country-data.cfm?fips=gb. Accessed 5 January 2015.

284 Natural Resource Governance Institute. (n.d.). Overview. Retrieved from http://www.resourcegovernance.org/countries/africa/gabon/overview. Accessed 5 January 2015.

285 Pers. Comm. Marjtin Wilder. (2014). Baker McKenzie. Gabon draft law on sustainability.

Some offsetting is likely to occur due to size and nature of the international companies involved in oil extraction in Gabon. However, the collapse in oil prices – Brent oil prices fell from more than US$100 per barrel in September 2014 to $US50 per barrel in January 2015 – makes the near term prospects for the sustainable development law unclear.[286] There has been a global collapse in new investment in oil, [287] and oil and manganese account for about 90 percent of exports of goods and 45 percent of nominal GDP on average during the past decade. This situation makes Gabon highly susceptible to the downturn in global commodity prices. Combined with plans to further increase investment spending in 2015, this susceptibility would be pro-cyclical and increases the risks of a sudden reversal in policies if low commodity prices are sustained.[286]

286 International Monetary Fund. (2014). Statement at the Conclusion of the 2014 Article IV Consultation Mission to Gabon. Retrieved from https://www.imf.org/external/np/sec/pr/2014/pr14499.htm. Accessed 30 January 2015.

287 Adams, C. (2015). ConocoPhillips and Shell outline billions of dollars in cuts. Financial Times. Retrieved from http://www.ft.com/cms/s/0/8b5e9278-a7b9-11e4-be63-00144feab7de.html. Accessed on 30 January 2015.

TABLE 19. FRAC ANALYSIS APPLIED TO GABON.

Gabon		
Fitness	Legal context	The legal context already exists; the law on sustainability has the concept of sustainability offsets. Additional regulations may be needed to operationalize the law.
	Social and political acceptability	Due to a lack of transparency and stakeholder engagement it is difficult to assess the likely acceptability of the Sustainability Law.
	Institutional capacity	Capacity is needed to manage the new sustainable offsetting law, including assessing projects and their impact to determine if offsetting is required; assessing projects that generate sustainability offsets; and issuing, registering, and tracking offsets. Capacity is also needed to develop implementation regulations and manage a credit registry. It is unclear whether or not Gabon has this capacity, but some REDD+ readiness capacity is being supported through the FCPF-R.
	Transparency	The sustainability legislation does not contain transparency provisions. Gabon does not rank well in the World Bank's Governance Indicators for voice, and accountability and press freedom appear to be limited. According to Transparency International activists, whistle blowers and journalists who speak out against corruption often face great risk.[288,289]
	Governance	Gabon has made efforts to improve governance and ratified the United Nations Convention against Corruption in 2007 and the African Union Convention on Preventing and Combating Corruption in 2009.[289] Given the potential complexity and lack of clarity over the Sustainability Law and Gabon's general

288 World Bank. (2014). Country Data Report for Gabon, 1996-2013. Retrieved from http://info.worldbank.org/governance/wgi/index.aspx#countryReports. Accessed 1 February 2015.

289 Transparency International. (2013). Gabon structural reforms must lead to a more engaged civil society. Retrieved from http://www.transparency.org/news/pressrelease/gabon_structural_reforms_must_lead_to_a_more_engaged_civil_society. Accessed 1 February 2015.

		low governance scores[288] significant questions exist over the government's ability to implement a transparent and participative law that achieves meaningful environmental outcomes.
	Implementation	A lack of clarity over definitions in the law is likely to lead to considerable implementation complexities, but as yet there are no details to evaluate.
Risks	Environmental	The processes for assessing sustainable development projects that generate offsets are not yet defined, which makes assessing environmental risks difficult. Tenure insecurity, ambiguity, and contestation may be an issue for some REDD+ activities in Gabon.
	Economic	This work may be a disincentive to new investment and provide a pollution cost advantage to operations established before the introduction of the environmental offset process.
	Implementation	The potential complexity of sustainability offsets is likely to create implementation risk, but there a no details to assess.
Abatement potential		Abatement potential depends on the rules, scale, and number of projects triggering the use of sustainability offsets that support REDD+ activities.
Cost		The cost is borne by projects triggering the sustainable development law. To the extent that these are foreign oil companies, these costs will be transferred to international investors. Implementation costs of the new law have not been assessed. There may also be costs associated with regulatory uncertainty, as numerous agencies and committees grapple to clarify responsibility and resolve policy issues around any proposed scheme. Costs of running the scheme were not assessed but are expected to be lower than those of MBIs or direct regulation.

4.5 GHANA

Compared to other counties in this study Ghana ranked highly in terms of World Bank governance indicators. Despite impressive progress made, local idiosyncrasies paint a complicated picture for the likely success of integrating offsetting of GHG emissions using REDD+ within the EIA framework. Given the current state of policy and legislative development of EIA and REDD+ in Ghana, it is conceivable that voluntary or compliance offsetting of GHG emissions using REDD+ within the EIA process is plausible. However, introducing GHG offsets/REDD+ into EIA in Ghana is likely to be complex, with several agencies and committees potentially involved in any given process.

The integration of offsets/REDD+ within EIA is likely to involve committees and government agencies, including the Ministry of Environment, Science, Technology and Innovation (MESTI); the Ministry of Lands and Natural Resources (MLNR); the Environmental Protection Agency (EPA); the National Climate Change Committee; the Natural Resources Advisory Council (ENRAC); the Natural Resources, Environmental Governance (NREG) Steering Committee and Technical Coordination Committee; and the Carbon Credit Policy Committee (under MESTI).

The NCCC with support from MESTI is developing national strategies on Climate Change Mitigation and Adaptation for forestry, agriculture, and energy sectors. The NCCC is a multi-stakeholder committee composed of government, civil society (NGOs), and development partner representatives.[290] ENRAC is a high-level body that advises the parliament on environmental and natural resource issues.

The NREG Steering Committee meets at the ministerial level – the Ministry of Finance, MLNR, and MESTI – to take policy and strategic decisions needed to implement the NREG program.[291]

MLNR has overall responsibility for forest sector planning and policy and for monitoring sector programs to achieve national forestry goals, including REDD+.[292] It is also responsible for Ghana's Forest Investment Program; Forest and Wildlife Policy (1994); and the Forest Development Master Plan (1996). Ghana is developing REDD+ readiness capacity through the FCPF-R. At the ministerial level, a National REDD+ multi-stakeholder steering committee also has been established to advise the MLNR on REDD+ issues.

The EPA[293] of Ghana, established in 1994, is the competent authority for all consent decisions in the EIA process. The EPA approves EIA reports and issues environmental permits. EIA guidelines were issued for the forestry and wood sector in 2002, and in 2012 specific environmental assessment guidelines were issued for the conduct of EIAs for the following sectors: tourism, energy, health, manufacturing,

290 Government of Ghana. (2010). Readiness Preparation Proposal to the World Bank's Forest Carbon Partnership Facility (FCPF). http://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/Documents/PDF/Jan2011/Revised_Ghana_R-PP_2_Dec-2010.pdf. Accessed 25 November 2014.

291 European Commission. 2009. Retrieved from: http://ec.europa.eu/europeaid/documents/aap/2009/af_aap_2009_gha.pdf. . Accessed 1 April 1, 2015.

292 REED Desk. 2015. Retrieved from: http://theredddesk.org/countries/ghana. . Accessed 1 April 1, 2015.

293 Ghana Environmental Protection Agency. 2015. Retrieved from: http://www.epa.gov.gh/web/index.php. Accessed 1 April 1, 2015.

transportation, agriculture, and general construction. EIA guidelines have been drafted for the mining sector but are subject to public consultation.[294]

Development of the EIA and REDD+ capacity would need to be brought together in existing or new processes. This approach could lead to interdepartmental tensions due to demarcation issues. Clear ownership of the process and division of responsibilities is likely to be important to avoid conflict. Affected industries or investment categories, especially mining interests, may block such a process. Therefore, involving departments with responsibility for mining approvals and foreign direct investment is also likely to be important.

While legal frameworks and processes exist for both EIA and REDD+ in Ghana, the EPA does not currently administer an environmental offsets policy. For Ghana to integrate REDD+ offsets into EIA, Ghana would first need to develop an environmental offsets assessment process for GHG abatement and associated regulatory package for proponents. The work being undertaken in São Paulo state may provide a useful example. Additional technical capacity is also likely to be required within both the public and parts of the private sector. Academics have criticized the Ghana EIA process for having unclear regulatory responsibilities and involving multiple agencies in decision-making. As a result, in practice it may be a long process to implement GHG offsets within EIA.

Ghana depends on exports from three commodities: gold, cocoa, and oil. Oil production is rising and contributing to GDP growth; however, the outlook is clouded, with Brent oil prices falling from more than US$100 per barrel in September 2014 to less than $US50 per barrel in January 2015. If this situation is sustained over the short to medium term it will likely lead to further budget deterioration. Ghana's currency has fallen, because oil prices have collapsed, which led to increased inflationary pressure. In the current economic environment it seems unlikely that proposals that could be perceived as increasing costs for extractive industries will garner political support.

294 The Netherlands Commission for Environmental Assessment. 2015. Retrieved from: http://www.eia.nl/en/countries/af/ghana/eia. Accessed 1 April 1, 2015.

TABLE 20. FRAC ANALYSIS APPLIED TO GHANA.

Ghana		
Fitness	Legal context	EIA falls under the EPA. Currently Ghana has no Environmental Offsets laws, regulations, or polices. MLNR has the overall responsibility for forest sector planning and policy direction and for monitoring sector programs toward the attainment of the national goals on forestry, including REDD+.
	Social and political acceptability	The current EIA process is contested by NGOs and has been criticized on the grounds that it favors project proponents. Civil society participation occurs, but there is no standard for participation. REDD+, including REDD+ projects, is generally accepted as beneficial. The National REDD + Technical Working Group (NRTWG) is a multi-stakeholder body within MLNR consisting of government, private sector, and civil society representatives, as well as those from other relevant institutions.
	Institutional capacity	EIA is not currently used to regulate GHG emissions. The EPA has limited technical capacity to implement a GHG abatement scheme. Ghana is not currently part of the World Bank's Partnership for Market Readiness but is developing REDD+ readiness capacity through the FCPF-R.
	Transparency	Ghana has achieved significant progress over the past few years in terms of government effectiveness, transparency of the regulatory framework, and control of corruption. Challenges remain in natural resource sector management. Illegal logging continues to be problematic.[295] The NRTWG could be used to help promote transparency within an EIA process linked to REDD+.
	Governance	Some criticism has been leveled at the Ghana EIA process on the grounds that it suffers from unclear regulatory responsibilities and involves multiple agencies in decision-making. Adding REDD+ offsets into the EIA process may exacerbate this situation unless accompanied by additional reforms to the EIA process. The NRTWG is responsible for the overall management and coordination of REDD+ in Ghana. Other governmental bodies in Ghana that are integral to coordinating elements of REDD+ include

295 Transparency International. (2011). Retrieved from http://www.u4.no/publications/overview-of-corruption-and-anti-corruption-in-ghana/. Accessed 4 January 2015.

		the Natural Resources Advisory Council (ENRAC); the Natural Resources and Environmental Governance Technical Coordination Committee (NREG TCC+); and the Carbon Credit Policy Committee, under MESTI.
	Implementation	Introducing GHG offsets/REDD+ into EIA in Ghana is likely to be complex with several agencies and committees potentially involved in any given process.
Risks	Environmental	Offsetting only applies to new projects that trigger EIA assessments and therefore does address existing pollution problems. Tenure insecurity, ambiguity, and contestation may be an issue for some REDD+ activities in Ghana.
	Economic	May be a disincentive to new investment and provide a pollution cost advantage to operations established before the introduction of the environmental offset process.
	Implementation	Implementation may pose a risk due to the plethora of agencies and committees likely to be involved in any process, leading to potential regulatory uncertainty.
Abatement potential		Abatement potential depends on the rules, scale, and number of projects triggering the use of GHG offsets. If the process is voluntary then some projects will possibly opt out of the system, reducing the abatement potential of the scheme.
Cost		Costs are borne by entities subject to EIA and would be expected to increase the cost of doing business in Ghana. There may also be costs associated with regulatory uncertainty as numerous agencies and committees grapple to clarify responsibility and resolve policy issues around any proposed scheme. The cost of running the scheme was not assessed but is expected to be lower than that of MBIs or direct regulation.

4.6 VIETNAM

Vietnam does not fare well on the World Bank governance indicators when compared to other countries in this study. Despite this Vietnam does appear to have in place many of the legal requirements needed to effectively integrate GHG offsetting, using REDD+, within EIA. Vietnam is also proactively addressing capacity gaps through the World Bank's PMR. This makes Vietnam highly promising as a target country, yet challenges remain.

Currently no specific environmental offset policy that can be extended to offset GHG emissions associated with activities subject to EIA exists. Having hosted CDM projects, Vietnam has experience with GHG offsetting and is participating in Japan's Joint Crediting Mechanism (JCM).[296] The legal and instructional situation in Vietnam is complex. Some instructional actors in Vietnam would need to be involved in the development of an integrated policy.

The Ministry of Agriculture and Rural Development (MARD) is the lead national institution having responsibility for REDD+. Within MARD the Forest Inventory and Planning Institute is the lead national institution in resource assessment and monitoring. The Forest Protection Department and the Department of Forestry are also involved in planning and carrying out forest assessments.[297]

Enforcement is led by a special task force within the FPD. Other agencies play important roles, including the Environmental Police Force under the Ministry of Public Security, which works with local police forces and other agencies to investigate and prosecute environmental crimes. The Ministry of Defense is responsible for preventing deforestation in border areas, and the Department of Customs is responsible for enforcing the law on imports and exports of timber and forest products.[297]

Vietnam has a Law on Environment Protection (LEP), which is administered by the Ministry of Natural Resources and Environment (MONRE) and covers EIA. Experience with EIA dates back to 1993, when the first Vietnamese legislation to address EIA was adopted by the National Assembly of Vietnam. A major revision was undertaken in the early 2000s. This revision culminated in the 2005 LEP, which sets out the current EIA framework in Vietnam, adopted by the National Assembly and in force as of 1 July 2006.[298]

Vietnam is also participating in the World Bank's PMR program and is designing and planning to pilot market instruments in the steel, solid waste, and power sectors. The country also plans to establish a GHG registry and MRV system.[299] These goals build on and extend existing institutional capacity to manage GHG emissions. The range of activities Vietnam is undertaking demonstrate the continuing development of technical capacity. Despite impressive progress in this area, gaps remain.

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296 Governments of Japan and Vietnam. (2014). Joint Crediting Mechanism. Retrieved from http://www.mmechanisms.org/e/initiatives/vietnam.html. Accessed 2 January 2015.

297 Government of Vietnam. (2014). World Bank FCPF R-PIN. Retrieved from https://forestcarbonpartnership.org/vietnam Accessed 2 January 2015.

298 Clausen A., Hoang Hoa Vu, Pedrono, M. (2011). "An evaluation of the environmental impact assessment system in Vietnam: The gap between theory and practice". *Environmental Impact Assessment Review,* 31, 136–143.

299 Government of Vietnam. (2014). Market Readiness Proposal. World Bank. Retrieved from https://www.thepmr.org/country/vietnam-0. Accessed 2 January 2015.

Some REDD+ analysts continue to highlight weaknesses in Vietnam, focusing on the challenge of providing tenure security. The main concern appears to be government agencies' lack of initiative to address community-level forest tenure issues.[300]

Academic criticisms have been expressed over the lack of transparency in EIAs due to little or no stakeholder participation, confining EIA decision-making to government. To some extent these issues are addressed in the LEP 2005, but questions remain on the genuine extent of public participation in environmental decision-making.[301] MONRE itself has identified gaps in enforcement as a challenge in the EIA process, with project proponents failing to implement licensing requirements fully, because resource and capacity gaps on the regulatory side limit follow-up and enforcement activities.[302]

Despite the institutional challenges, Vietnam has important building blocks for deploying REDD+ offsets within the EIA framework. The Australian environmental offsets regime scheme may provide a useful case study for Vietnam for incorporating offsets within the LEP 2005. Key issues include defining i) the scope i.e., range of activities that would be subject to an assessment; ii) coverage, i.e., type of emissions and gases to be covered; and iii) specific triggers used to start an assessment, such as specific metrics or thresholds.

The capacity development currently occurring through the PMR and FCPF-R is likely to address capacity gaps on REDD+ and GHG emissions reporting. The challenge, then, is to update the LEP 2006 to include environmental offsets with flexibility to use GHG offsets to address GHG emissions. The broader concept of sustainability offsets embedded in the Gabon law may also have appeal in this context.

The LEP 2006 would need amendments to integrated environmental offsets with an assessment process and triggers that specifically address GHG emissions from projects. Such a process may provide a catalyst for and synergies with Vietnam's participation in the JCM. Specific project opportunities that trigger EIA-based GHG abatement requirements may also be attractive for JCM investment. However, dovetailing with the JCM would not necessarily create REDD+ demand.

An interesting model of offsets being used to pay for a conservation program is the Western Grasslands Reserve Program in Victoria, Australia.[303] The program compulsorily acquires land of high conservation value for incorporation within a nationally recognized grasslands reserve. Developers wanting to clear

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300 Sunderlin W.D, Larson A.M., Duchelle A.E., Thu Ba Huynh, Awono A., and Dokken T. (2014). "How are REDD+ Proponents Addressing Tenure Problems? Evidence from Brazil, Cameroon, Tanzania, Indonesia, and Vietnam". *World Development*, 55, 37–52.

301 Clausen, A., Hoang Hoa Vu, and Pedrono, M. (2011). "An evaluation of the environmental impact assessment system in Vietnam: The gap between theory and practice". *Environmental Impact Assessment Review,* 31, 136–143.

302 Government of Vietnam. (2010). Development of EIA Systems in Vietnam 1993-2010. Retrieved from http://www.unece.org/fileadmin/DAM/env/eia/documents/WG14_MOS3_nov2010/Presentation_EIA_in_VietNam.pdf. Accessed 2 January 2015.

303 Government of Victoria. (2013). Retrieved from http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/melbourne-strategic-assessment/protection-and-management-of-conservation-areas. Accessed 2 January 2015.

native grasslands will have to pay habitat compensation fees to the Department of Environment and Primary Industries.[304]

Vietnam may consider a similar structure for wrapping some of its conservation reserve programs within programmatic REDD+, with revenues for conservation activities realized through payments coming from EIA GHG offset obligations.

Initial feedback from field consultations suggests that it may be difficult to integrate EIA and GHG abatement offsets using REDD+ due to institutional issues.[305] Alternative policies are considered more likely to be drivers of REDD+, including UN REDD Phase II, which is meant to lead to a US$70 million fund for payment to Vietnam. Other domestic payments through the existing payment for ecosystem services policy provide domestic funds for forest protection.

The International Monetary Fund economic outlook for Vietnam is generally positive. Unlike other countries in this study, Vietnam depends the least on the current commodities and oil price outlook. Vietnamese growth is improving and is supported by robust exports and foreign direct investment; however, domestic activity remains weak, and inflation has declined to mid-single digits. The external current account remains in large surplus, and international reserves have increased.[306]

304 Government of Victoria. (2013). Retrieved from http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/melbourne-strategic-assessment/habitat-compensation. Accessed 2 January 2015.

305 Pers. Comms. Richard McNally, SNV Netherlands Development Organisation.

306 International Monetary Fund. (2014). IMF Country Report No. 14/311. Retrieved from http://www.imf.org/external/pubs/ft/scr/2014/cr14311.pdf. Accessed 1 February 2015.

TABLE 21. FRAC ANALYSIS FOR VIETNAM

Vietnam		
Fitness	Legal context	Vietnam has a Law on Environment Protection, administered by the MONRE and covering EIA.[307] Currently Vietnam has no environmental offsets laws, regulations, or polices. The MARD has responsibility for REDD+. The Forest Protection and Development Law provides a legal framework relating to deforestation and forest degradation.[308] The Ministry of Planning and Investment is coordinating Vietnam's climate change response through the World Bank's Partnership for Market Readiness, including the National Forest Development Strategy 2006-2020, which aims to increase forest cover to 42 percent of land area and to improve forest quality.[309]
	Social and political acceptability	Restricted public participation in environmental decision-making and low awareness of environmental issues among the general public means that EIA policy is confined to government, but the revised Law on Environment Protection has requirements for public consultation.[307] There is an established consultation process through the Forest Sector Support Partnership (FSSP), which is an official forum for discussion of forest policies and programs and comprises 26 institutions drawn from various government ministries, donor agencies, and NGOs. Membership in the FSSP is open to all interested parties including the private sector and national NGOs and civil society organizations.[308]
	Institutional capacity	EIA is not currently used to regulate GHG emissions via environmental offsets, but Vietnam is developing REDD+ readiness capacity through the FCPF-R.[308] Vietnam is currently designing and planning to pilot market instruments in the steel, solid waste, and power sectors and to establish a GHG registry and MRV system.

307 Clausen A., Hoang Hoa Vu, and Pedrono, M. (2011). "An evaluation of the environmental impact assessment system in Vietnam: The gap between theory and practice". *Environmental Impact Assessment Review,* 31, 136–143.

308 World Bank. (2008). The Forest Carbon Partnership Facility (FCPF) Readiness Plan Idea Note (R-PIN). Retrieved from https://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/Vietnam_FCPF_R-PIN_0.pdf. Accessed 24 November 2014.

309 Government of Vietnam. (2012). Organizing Framework for Scoping of PMR activities. Retrieved from https://www.thepmr.org/system/files/documents/PMR_PA3_Vietnam_OrganizingFramework.pdf. Accessed on 21 November 2014.

		While not explicitly recognized, these plans include important building blocks for deploying REDD+ offsets within the EIA framework.[309]
	Transparency	As assessed by Transparency International, government processes in Vietnam lack transparency, openness, and inclusivity.[310] These issues extend to EIA, where public participation has been restricted. The revised Law on Environment Protection 2005 has requirements for public consultation. Decree 80 and Circular 05 offer further guidance on public participation, providing a legal requirement for the involvement of local communities.[310]
	Governance	Stronger institutional structures are needed to enforce and control the operation of the EIA process, and more technical expertise is required among EIA practitioners and government officials to make the system effective.[307] Monitoring and enforcement are a problem. Forest violations have numbered 30,000 - 50,000 per annum, very few of which are ever investigated and only a tiny proportion of which result in criminal prosecution.[308]
	Implementation	Implementing the use of GHG offsets through the EIA process requires developing both EIA and REDD+. Legal changes are needed on the EIA side to include environmental offsets, and technical capacity is needed to assess and emissions and offset requirements.
Risks	Environmental	Offsetting only applies to new projects that trigger EIA assessments and therefore does not address existing pollution problems. Tenure insecurity, ambiguity, and contestation may be an issue from some REDD+ activities in Vietnam. The country's national agencies have been criticized for showing insufficient initiative to address community-level forest tenure issues.
	Economic	Offsetting may be a disincentive to new investment and provide a pollution cost advantage to operations established before the introduction of the environmental offset process.
Abatement potential		Abatement potential depends on the rules, scale, and number of projects triggering the use of GHG offsets.

310 Transparency International. (2014). Retrieved from http://www.transparency.org/country#VNM_DataResearch_SurveysIndices. Accessed 21 November 2014.

Cost		Costs are borne by entities subject to EIA and are expected to increase the cost of doing business in Vietnam. There may also be costs associated with regulatory uncertainty, as numerous agencies and committees grapple to clarify responsibilities and to resolve policy issues around any proposed scheme. Costs of running the scheme were not assessed but are expected to be lower than those associated with MBIs or direct regulation.

4.7 CONCLUSIONS

Using EIA as a tool to drive GHG abatement offers a different policy approach to be considered alongside MBIs and payment for results. Compliance-based EIA models are likely to suffer from the same competitiveness issues associated with MBI. Perceived public relations or corporate social responsibility values associated with voluntary offsetting and the cost associated with REDD+ affect the abatement from voluntary systems. Voluntary offsetting is more likely to occur if financial support is available as this support can reduce the costs of offsetting by leveraging emissions reduction funds.

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