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INSTRUMENT CHOICE AND REPLICATION

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Abstract

In climate law, we have witnessed the establishment of innovative market-based instruments, such as emissions trading, the Clean Development Mechanism, Joint Implementation and REDD+. The aim of these instruments is the increase in cost-effectiveness in climate mitigation. These innovative instruments, while having attracted significant interest from economic actors and stimulated concerted action, have shown some shortcomings in terms of certainty of result and potential for circumvention, misuse and negative side-effects. At the same time, there is ongoing discussion of replicating some of these instruments in the new international climate agreement currently negotiated under Durban Platform for Enhanced Action (ADP). Moreover, the replication of market-based instruments is also being considered to other environmental challenges, most prominent among them biodiversity and ecosystem conservation.

This paper discusses both the possibilities and dangers of replicating market-based climate mitigation instruments in other areas of environmental law. In particular, it identifies lessons that can be learned from climate instruments and ways to avoid some mistakes from being made in other fields. Such lessons include the need for clear rules and the need for robust methodologies and data, the challenges to design market-based instruments in a way which secures that the largest part of available financial resources goes to the environmental project or good and is not captured during the process, and the need for strong legal rules that protect non-financial benefits. The market itself will not naturally deliver non-financial benefits or address non-economic interests. Rather, these interests and benefits have to be “regulated in” the mechanism. Finally, financial transfers should be based on monitored, reported and verified results (both on the primary, but also secondary/indirect market-impacts). Result-based ex-post payments not only reflect the true value of the environmental “good” which is being paid for, they can also keep corruption and fraud at bay.

Still, markets are means – not ends. As means they are just one tool in the toolbox. While for some environmental policies, suitable market-solution can be designed, with care required. For other environmental ends, such as nature conservation and ecosystem protection, traditional command-and-control approaches might lead to more secure, predictable and effective results.

Keywords

Market-based instruments, cost-effectiveness, flexibility, emissions trading, CDM, REDD+, regulatory design, safeguards, environmental integrity, law.

1. Introduction

Climate change has triggered the establishment of a number of innovative market-based instruments, such as emissions trading, the Clean Development Mechanism, Joint Implementation and REDD+. The aim of these instruments is the flexible and cost-effective reduction of greenhouse gases (GHGs). While the establishment of market-based climate change mitigation instruments has been hailed as the “cutting edge”¹ of international environmental law and an innovative approach to solving the biggest challenge of our time, implementation and practice has shown significant shortcomings in terms of certainty and permanence of result as well as a potential for circumvention, misuse and undesired, negative side-effects.

Yet, there is ongoing discussion of replicating some of these instruments in the new international climate agreement currently negotiated under Durban Platform for Enhanced Action (ADP). Moreover, the replication of market-based instruments is also being considered to other environmental challenges, most prominent among them biodiversity and ecosystem conservation, by, e.g. payments for ecosystem services (PES).² The use of market-based approaches is also envisaged to spur renewable energy. Energy+, an initiative to increase access to renewable energy and to drive low-carbon development modeled on the results-based financial support schemes for the protection of tropical forests, is being promoted by Norway.³

This policy brief will discuss both the possibilities and dangers of replicating market-based climate mitigation instruments in other areas of environmental law. It is divided in five parts: After, first, briefly describing market-based climate instruments, we, second, look at the *replicability* of climate instruments. Third, we discuss the *desirability* of a market-approach to other environmental issues, before, fourth, we ask what lessons can be learned from market-based climate instruments and, fifth, how to avoid some mistakes being made in the climate field.

2. Market-based instruments for climate change mitigation

Developed countries - the Parties included in Annex I to the UNFCCC - can make use of so-called ‘flexible mechanisms’ of the Kyoto Protocol. These flexible mechanisms are market-based tools that allow for meeting emissions reduction obligations by means of joint projects among Annex I countries (Joint Implementation – JI, Article 6 Kyoto Protocol), projects in developing countries (Clean Development Mechanism – CDM, Article 12 Kyoto Protocol) and emissions trading among Annex I countries (Article 17 Kyoto Protocol). While CDM and JI are project-based mechanisms, enabling Annex I countries to cooperate on specific greenhouse gas reduction projects with other countries where abatement costs are lower, international emissions trading aims at the establishment of an international market for buying and selling emission credits, which can be used to comply with the specified reduction targets. Tradable emission units can be the assigned amounts units (AAUs)

¹ P. Sands and J. Peel, *Principles of International Environmental Law*, 3rd ed. (Cambridge: Cambridge University Press, 2012) 302.

² For an overview over financing mechanisms for global environmental protection see K. Miles, ‘Innovative Financing: Filling in the Gaps on the Road to Sustainable Environmental Funding’ (2005) 14:3 *RECIEL*, 202–211; see also P.A.U. Ali and K. Yano, *Eco-Finance: The Legal Design and Regulation of Market-Based Environmental Instruments* (The Hague: Kluwer Law International, 2004).

³ D. Reed and P. Gutman, *Energy+: Opportunities, Challenges and Options*, 1 March 2010. See also: *Norway launches international energy and climate partnership*, Office of the Prime Minister, Press release 10.10. 2011, <http://www.regjeringen.no/en/dep/smk/press-center/Press-releases/2011/norway-launches-international-energy-and.html?id=660292>. *Norway plans billion-dollar clean energy initiative for poor*, <http://www.reuters.com/article/2011/05/24/us-climate-norway-idUSTRE74N3KO20110524>.

accorded to Annex B countries of the Protocol or the rights derived from project-based activities, i.e. Certified Emission Reductions (CERs) from CDM activities and Emission Reduction Units (ERUs) from JI. Emission units can be traded freely on the market and their price will depend on demand and supply. Each Government can issue as many emission certificates as quantified by its assigned amounts and allocate them to public and private entities according to its national climate change policy. In order to prevent overselling, a country is required to hold a certain minimum of units in its national registry at any time (so called Commitment Period Reserve, CPR).⁴ This system is supposed to stimulate policy changes since polluting entities have to decide whether it is more costly to buy emission certificates or reduce the amount of GHG emissions.

By introducing a quantitative cap on emissions from a number of developed countries together with flexible trading mechanisms, a tradable commodity or currency was created (1 unit= 1 t CO₂ eqv.). In other words, the Kyoto Protocol, as well as the regional implementation in the EU (the European Union's Emissions Trading System- EU ETS⁵) and national emission trading systems *creates* an artificial market – both in terms of supply and demand. Assigned amounts (AU) can be divided up into *units* (Assigned Amount Units – AAUs) allowing Annex I Parties (37 and the EU) to participate in the flexibility mechanisms. The same applies to ERUs (JI) and CERs (CDM), which in sum amounts to a combination of cap&trade and baseline&credit systems.

A more recent development in climate mitigation instruments is the establishment of a mechanism to reduce emissions from deforestation and forest degradation in developing countries, usually referred to as REDD+.⁶ The framework for such mechanism was negotiated under the 15th Conference of the Parties (COP) to the UNFCCC in Copenhagen in 2009 and adopted at the 16th COP in Cancun in 2010.⁷ Under REDD+, tropical developing countries shall be provided with financial incentives to slow, halt and reverse forest cover and carbon loss, in accordance with national circumstances, consistent with the ultimate objective of the Convention, as stated in Article 2 UNFCCC. These incentives are typically financed by more developed countries. REDD+ is an incentive system as payments can be linked to performance. In addition, REDD+ can offer developing countries substantial financial benefits for protecting their forests, and may be more cost-effective than other emission-reduction policies. At the current stage, REDD+ is not linked to a market-approach. The framework for the mechanism, however, allows for the elaboration of a market-link.⁸ Such link, although opposed by a number of forest countries, such as Bolivia and Venezuela, might be an unavoidable requirement for making available and scaling up financial resources necessary for a functioning, results-based REDD+ mechanism.

⁴ The Commitment Period Reserve is set at 90 per cent or above of a Party's assigned amount or 100 per cent of five times its most recently reviewed inventory, whichever is the lowest. (Decision 5/CP.6) This reserve can be composed of any Kyoto units valid for a commitment period. The limit adopted is supposed to protect against non-compliance by overselling without limiting the liquidity of the market. The Marrakesh Accords require that 'a Party shall not make a transfer which would result in these holdings [of AAUs, CERs, ERUs, and/or RMU's] below the required level of the commitment period reserve'. (Decision 18/CP.7, Annex, paragraph 8).

⁵ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

⁶ REDD+ is the acronym for policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

⁷ Decision 1/CP.16. The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention, paras 68-79.

⁸ Decision 1/CP.17, in particular para 65, stating that results-based finance "may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources"; and para 65, which considers that "appropriate market-based approaches could be developed ...to support the results-based actions by developing country Parties".

3. Rationale

The establishment of market-based mechanisms is a political and regulatory choice. Traditionally “command and control” legislation was for a long time the practiced approach to reducing pollution of environmental media. In recent years, a move to incentive-based regulation (“carrot and stick”) could be observed, in particular with respect to climate mitigation policies. Here, market “thinking” in terms of demand and supply are used as a *means* to pursue environmental *ends*, e.g. reduction and limitation of GHG emissions. Carbon markets have the advantage that they harness market power for climate mitigation and create a direct incentive for private sector investment.

The rationale behind market-mechanism is to increase the cost-effectiveness of climate mitigation measures. Market actors have an interest in reducing the cost of regulatory compliance. Therefore, they will search for the least-cost alternative. Cost-effectiveness is a general principle mentioned explicitly in Art. 3.3 UNFCCC: “policies and measures should be cost-effective so as to ensure global benefits at the lowest possible costs”. The use of market-mechanisms purports to reach a certain emission reduction goal at the least possible costs. As a consequence, market-based measures are considered an optimal use of financial *and* environmental resources – corresponding to the adage of “buying more climate for the same (or less) money”.

The flexible instruments of the Kyoto Protocol are thus intended to serve two goals: first, to significantly lower compliance costs of the Kyoto Annex-I Parties with their emission reduction and limitation obligations. Since 1990 many of the Annex I Parties to the Kyoto Protocol have substantially increased their emissions. The commitment to reduce emissions to 1990 levels by 2012 has therefore become commensurably more rigorous, and the potential economic impact of these obligations unparalleled in international law. The second goal is to provide incentives for sustainable development. It has been warned however that these mechanisms need to be governed by clear rules for emission reduction measurement and compliance procedures to ensure that measures taken by developed countries are accompanied by genuine emission reductions.⁹

The flexibility mechanisms are based on the global geographic availability of mitigation efforts and the theory of ‘marginal abatement costs’. The cost of financing emission reduction is relatively lower in countries with lower levels of industrialization. Because location of abatement measures is climatically irrelevant, global cost-effectiveness prescribes basically that measures should be implemented where they are cheapest.

Key developed countries considered the introduction of flexibility in the way they could implement their commitments as a requirement of *equity*. Part of the argument for flexibility was that marginal costs vary from country to country, from sector to sector and source to source.¹⁰ To require all countries to meet their targets by using a prescriptive list of policies and measures was considered insufficient and ineffective. Equity considerations therefore demanded flexibility in sharing the burden of meeting commitments. This flexibility is premised on the idea that countries with high costs for meeting their environmental obligations and countries that can provide low cost opportunities should benefit by cooperating and thereby exploiting comparative advantages.¹¹

⁹ See X. Wang and G. Wiser, ‘The Implementation and Compliance Regimes under the Climate Change Convention and its Kyoto Protocol’ (2002) 11:2 *RECIEL* 187. Also Ch. Voigt (2009) *The Deadlock of the Clean Development Mechanism: Caught between Sustainability, Environmental Integrity and Economic Efficiency*, in: B. Richardson, S. Wood, H. McLeod-Kilmurray and Y. Le Bouthillier (eds.) ‘Climate Law and Developing Countries: Legal and Policy Challenges for the World Economy’ (Edward Elgar Publishing) 235-261 and Ch. Voigt (2008) *Is the Clean Development Mechanism Sustainable? Some Critical Aspects*, 8 *Sustainable Development Law and Policy (SDLP)* 2, 15-21.

¹⁰ D. Stowell, *Climate Trading – Development of Greenhouse Gas Markets* (Basingstoke: Palgrave Macmillan, 2005) 15.

¹¹ See P. Cullet, ‘Equity and Flexibility Mechanisms in the Climate Change Regime: Conceptual and Practical Issues’ (1999) 8:2 *Review of European Community & International Environmental Law*, 171.

While strong arguments can be made in favour of the use of flexible instruments, their implementation is all but plain sailing. Based on ethical arguments, emissions trading in particular has been characterized as ‘turning pollution into a commodity to be bought and sold’, thereby removing the ‘moral stigma that is properly associated with it ... rendering pollution just another cost of doing business, like wages, benefits and rent.’¹² The ‘legitimacy’ of such criticism depends on whether one considers all emissions of greenhouse gases to be ‘wrong’ by definition or whether to accept some level of pollution. With regard to the emission of greenhouse gases, which also occur naturally, such absolute ethical positions are somewhat difficult to sustain.

Another critical argument concerns the overall focus on economic efficiency and cost-minimization for Annex I Parties which may consolidate the economic dominance of industrialized countries by allowing them to ‘buy their way out of their obligations’. This argument can be met with reference to the ‘price tag’ that is put on emissions by a cap-and-trading system. ‘Buying out’, in fact, entails *internalizing* the costs of emitting greenhouse gases. Furthermore, incentives to circumvent domestic reductions and to avoid necessary technological changes by Annex I Parties would be drastically reduced by a stringent regulatory framework for emissions trading coupled with a strong emission cap, the avoidance of ‘hot air’ as well as robust methodologies for baseline scenarios and additionality, and monitoring and reporting requirements backed up by an effective compliance and enforcement mechanism.

Prior to the Kyoto Protocol, the use of market-based mechanisms as a tool in international agreements to address environmental concerns had not been widely tested. The primary focus of environmental regulation was on traditional command and control or voluntary approaches. Thus, only a very few countries had experience of emissions trading.¹³

The application of economically motivated mechanisms on a global scale is thus unprecedented in international law. Project-based mechanisms that enable countries to carry out projects abroad in order to receive credits that could assist them in meeting their national commitments at the same time as they support development in host countries are absolutely novel. The regulation of these mechanisms therefore has been described as the ‘cutting edge of international environmental law’.¹⁴ It might not be too far off the point to generalize this statement to international law, at least as far as the complex and novel procedural and technical challenges as well as the moral, economic and environmental considerations which these new mechanisms as well as REDD+ raise are concerned. That the far-reaching and speedy developments entailed by the mechanisms have attracted the close attention of States, the scientific community, business and environmental organisations alike is therefore not surprising.

¹² See generally, M. Sagoff, *Controlling Global Climate: The Debate over Pollution Trading*, Report from the Institute for Philosophy and Public Policy, 1999, available at: <http://www.puaf.umd.edu/IPPP/winter99/controlling_global_climate.htm>. See also C.D.Stone, *The Gnat is Older than Man: Global Environment and Human Agenda* (Princeton, N.J.: Princeton University Press, 1993) 141–149. Also: C. Blumm, ‘The Fallacies of Free Market Environmentalism’ (1992) 15 *Harvard Journal of Law and Public Policy*, 371, and G. Torres, ‘Who Owns the Sky? Seventh Annual Lloyd K Garrison Lecture on Environmental Law’ (2001) 18:2 *Pace Env'tl. L. Rev.*, 227. Torres argues that the ‘privatization of the atmosphere results in an abuse of the global commons, for which States have the responsibility to protect, not to give away’. By treating the atmosphere as though it were a common resource of no substantial public interest other than the protection of its quality and by dividing it in little pieces that get distributed to States and industries, governments have taken too narrow a view and neglected their duty as trustees towards public resources by transferring significant public resources to private hands, especially where this happens free of charge. See also G. Winter, *Climate is no Commodity: Taking Stock of the Emissions Trading System*, *J Environmental Law* (2010) 22 (1): 1-25.

¹³ Examples include the Ontario SO_x and NO_x Trading Scheme under the Environmental Protection Act, entered into force 31 December 2001 and the UK Emissions Trading Scheme (see <http://www.defra.gov.uk/environment/climatechange/trading/ukets.htm#rules>>).

¹⁴ Sands, fn.1.

The clear advantage of flexibility mechanisms, such as emissions trading and joint implementation, is the finite number of emission units, clearly defining the environmental goal. This ‘absolute cap’, if combined with a strong compliance mechanism,¹⁵ ensures that it will become unattractive for States to emit more than they are allowed to under the Kyoto Protocol.

The climate regime must – and the flexibility mechanisms make it more likely to – progressively convince a wide range of currently hesitant or resistant actors to reframe climate protection as the (only) sustainable way forward. This shift in conviction, however, involves not only legal measures, but complex and dynamic social processes. Still, as *Mitchell* supposed, ‘the flexibility mechanisms ... may, over time, initiate social processes that lead to deep seated normative changes that, in turn, may produce the dramatic, long-term changes in human behaviour that are necessary to avert climate change.’¹⁶

The use of economic flexibility instruments, in particular the JI and CDM, can promote the development and distribution of new technologies, generating capital flows and transfer of technologies into regions with cheaper, older technologies or limited financial means and capacities to implement climate friendly technologies, promoting not only emission reductions at reduced costs but also positive feedback across the whole, global economy.¹⁷

4. Replicability

The main justification for these instruments in the field of climate change mitigation is the climatic irrelevance of the location of emissions cuts as well as the increased cost-effectiveness of a flexible approach. This approach may not necessarily be applicable to other environmental threats such as biodiversity loss or accumulating chemical and other pollution, which can create so-called “hot spots”. A market-approach based on tradable quotas can be particularly problematic for:

4.1 Non-accumulative environmental problems: Some environmental challenges are the accumulative effect of a wealth of different contributions. Climate change is a prime example, where the accumulated greenhouse gases in the atmosphere are caused by a myriad of anthropogenic and non-anthropogenic sources, spread over the entire globe and covering decades, if not centuries, of activities. A global market system of emission reductions thus mirrors the fragmented and wide-spread nature of emission sources. Some environmental challenges, however, occur locally, caused by local drivers. For these environmental challenges it is important to address the cause of the problem where it is located, not where it is cheapest to mitigate, e.g. endangered species only exist in a particular area.

4.2 Accumulative environmental problems with local effects: Emissions of GHGs do not have local climate effects (as such), although they can contribute to local air pollution. In terms of climate change mitigation, actions can be dispersed globally. In other words, the creation of “local hotspots” of greenhouse gas emissions as a result of the concentration of mitigation measures in some places and the absence of such measures as well as high levels of emissions in others do not create ‘local climate change’. Other pollutants (sometimes by-products of GHGs) can create local pollution, which needs to be remedied at the location of release, e.g. emissions of sulfur dioxide, nitrogen oxides, carbon monoxide, fine particulate matter, organic compounds like benzene, toluene and poly-aromatic hydrocarbons (PAH), and heavy metals in particulate matter (lead, cadmium) can cause local concentrations to reach levels which are harmful to human health and the environment.

¹⁵ See for a comprehensive overview of the compliance system under the Kyoto Protocol: J. Werksman, ‘The Negotiation of a Kyoto Compliance System’ in O. Schram Stokke, J. Hovi and G. Ulfstein (eds.) *Implementing the Climate Regime: International Compliance* (London: Earthscan, 2005) 17–37.

¹⁶ R.B. Mitchell, ‘Flexibility, Compliance and Norm Development in the Climate Regime’ in Stokke, Hovi and Ulfstein (eds.) 2005, 81.

¹⁷ See J. Lefevre, ‘The EU Greenhouse Gas Emission Allowance Trading Scheme’ in Yamin (ed.) 2005, 92.

4.3 MRV-ability: In order for market-instruments to be effective in terms of reaching the environmental end they are supposed to support, it is important that they function with a high degree of accuracy.¹⁸ In other words, the environmental ‘good’ which corresponds to the tradable unit needs to be reliably measured and verified. Arguably, ‘end of the pipe’ industrial emissions of GHG can be accurately measured, reported and verified (“MRV-ability”). However, this situation already becomes much more difficult when it comes to baseline and crediting systems like the CDM. Here, emission reductions need to be measured and verified against hypothetical baselines (of what would have happened in the absence of the project). Such counterfactuals can never be proven with certainty and thereby create a challenge to the measurability of emissions reductions and the accuracy of the quota. The same applies to systems with intensity targets, e.g. CO₂ emissions per kwh or carbon intensity per dollar of GDP.¹⁹ Intensity targets lack the quantifiability of the overall emission reduction goal. Translating them into tradable quotas comprises of inherent calculation and measurement challenges, which can affect the effectiveness of the market instrument. This situation becomes even more difficult when it comes to measuring the functioning of complex natural systems (ecosystems), as required for a “payment for ecosystem services (PES)”-system. In REDD, which in a sense is a specific PES for “forest carbon services”, this problem is attempted being solved by a complicated combination of remote sensing (by satellite) and on the ground checks of anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes.²⁰ Extending payment systems for ecological services to, for example, water or air filtration might hold insurmountable technological challenges in terms of strict monitoring and verification of such services. Moreover, attempts to extend the REDD+ system to cover all terrestrial carbon, including agricultural activities, might still find their limit in technologies suited for capturing and measuring comprehensive carbon (stock) changes.

5. Desirability of replicating market-based instruments

This part discusses the desirability of replicating a market approach to addressing other environmental challenges than climate change. In a non-exhaustive manner, some critical arguments launched against a market-based approach on the basis of experiences made with climate instruments will be discussed.

5.1 No market without rules: As said above, market mechanisms are means to an environmental end, not an end in themselves. Therefore, it is important that the legal framework for market instruments ensures the capacity of the mechanism to reach the desired environmental end, or in other words, safeguard the market instrument’s environmental integrity. As a strategy for revenue maximisation, market actors will always strive to find the least-costly way for complying with regulatory requirements. Law therefore has an important role in “staking the field” for market players. This applies, in particular to clear definition for eligibility and possible conditionality criteria for participation, clear rules for acquisition and transfers of tradable quotas, requirements of robust measurement, monitoring, reporting and independent verification systems as well as transparency in all stages of market transactions. Moreover, legal rules need to be in place for addressing and protecting the interests and rights of *all* relevant stakeholders, whether they are market-actors or not. Protecting interests of stakeholders requires not only ensuring procedural rights, such as public participation and civil involvement. It also demands the respect of substantial rights, such as land

¹⁸ See David Driesen, *Trading and its Limits*, 14 *Penn St. Envtl. L. Rev.* 2006, 169ff.

¹⁹ For a criticism of intensity targets see: Tim Herzog, *China's Carbon Intensity Target*, World Resources Institute, available at: <http://www.wri.org/stories/2007/04/chinas-carbon-intensity-target#>.

²⁰ Decision 4/CP.15 requests forest countries to “To establish...robust and transparent national forest monitoring systems...that: (i) Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes”.

tenure and property rights.²¹ Finally, the system needs to be safeguarded against misuse by control, review and enforcement measures as well as sanctions for violations and circumventions.

5.2 Cap-and trade markets and innovation: Emissions trading has been criticised for not stimulating technological innovation.²² As we identified above, the purpose of the “trade” is to minimize the costs of reducing emissions. Emission reduction is not achieved by the trading; it is achieved by capping emissions at a certain level. However, experiences with the early EU ETS have shown that the cap has been set too high, giving in to the demands of affected industries. As a result, surplus allowances partly due to faulty baseline data and partly to lack of political will, watered out the environmental effectiveness of the early regime. Insufficient targets, carve-outs for particularly exposed, competitive industries and ‘low-hanging fruit’ solutions which required no technological changes lead to unexpectedly low prices and created no or very limited stimulus for innovation. Moreover, the notion of flexibility inherent in a cap-and-trade approach lead, for instance, the Norwegian regulator to abstain from setting technology requirements (for example the use of best available technology) for those installations which are covered by the Norwegian emissions trading scheme, when granting them pollution licenses under the Norwegian Pollution Control Act. Innovation is spurred by high carbon prices and by regulation (or - in the absence thereof - incentives) for innovation. But if the cap is too weak (set too high), prices of emission allowances will be low. Low prices coupled with no regulatory requirements for technological standards will lock-in the technological status quo.

5.3. The three E’s: There is an inherent difficulty to avoid balancing what we can call the “three E’s”: Environmental integrity, Equity, Effectiveness. Focus on one element often goes to the detriment of one or both the other. The difficult relationship of equity and effectiveness lies in the inherent trade-off that those measures that are effective may not be equitable or those that are equitable may not lead to significant emissions reductions. In other words, creating an equitable system by taking account of differences, e.g. compensating the burden of highly emitting, competitive industries or exempting certain sectors from the scope of emissions trading, in order to protect competitiveness of certain industries can take away the incentive to reduce GHGs and thereby affects the effectiveness of the regime. The same applies to grandfathering, i.e. benefitting of polluting industries by allocating allowances free of charge. Such free allocation reduces the stringency of the trading system and the ability of the mechanism to fulfill its environmental objective.²³ From 2013 onwards the EU ETS foresees auctioning of allowances. This change in allocation modality is intended to remedy the before-mentioned concerns. However, also the new trading system will provide certain exemptions for competitive industries. Moreover, the focus on economics and equitable allocation of emission rights can divert attention from the environmental integrity of the measures and possible negative side effects on the environment. Environmental integrity depends on (i) stringency of the target (political decision), (ii) MRV (accurate and verifiable data), (iii) ensuring that regulation is not circumvented, i.e. robust and credible national laws and institutions, and enforcement possibilities, and (iv) avoiding of negative side-effects and enhancing positive co-benefits. Environmental integrity, however, may reduce cost-effectiveness because it requires accurate data and strong regulation, which may lead to longer lead times, additional checks and balances, as well as verification of the outcome.

5.4 Clear policy objective: Regulations for carbon markets need a clear policy objective. The reality of flexibility instrument, in particular the CDM, but also the new REDD+ mechanism,

²¹ For a discussion of control mechanisms with regard to REDD see: Simon West, *Command Without Control: Are Market Mechanisms Capable of delivering Ecological Integrity to REDD?* 6 *Law, Environment and Development Journal* 3, 2010, 298 ff. Stephen M. Johnson, *Economics v. Equity: Do Market-Based Environmental reforms Exacerbate Environmental Injustice?* 56 *Wash & Lee L. Rev.*, 1999, 111 ff.

²² For a critical discussion see: David Roberts, *Does cap-and-trade produce technological innovation?*, available at: <http://grist.org/climate-policy/does-cap-and-trade-produce-technological-innovation>.

²³ See Johnson, 1999, 111 ff.

however, is very different. Here, a multitude in objectives is sought pursued, with the effect that none is effectively safeguarded. The CDM example is meant to illustrate this point: At the heart of the CDM lies a tridimensional problem: the pursuit of at least three different and often competing policy objectives: environmental integrity, sustainable development and economic efficiency.

First, the CDM is supposed to deliver real, measurable and lasting climate benefits; this capacity is often referred to as its environmental integrity. So far, the environmental integrity of the CDM rests largely on the ‘integrity of the process’ carried out by the UN institutions and organs involved in the CDM and corresponds to the technical and administrative capacity of the EB to develop and apply methodologies that validate projects and certify emissions that are additional to those which would have occurred in the absence of the CDM. The integrity of the CDM thus depends on applying conservative methods on accuracy and transparency (allowing for a safe margin of error). Moreover, it depends on the confidence of the EB to not certify registered projects that fail to meet agreed criteria. It also requires decision making that is not politically biased or influenced or under the threat of legal claims for compensation of financial losses of project participants.²⁴

Second, in addition to environmental integrity, the CDM must promote the sustainable development of host countries. As mentioned above, a number of uncertainties exist in this respect. Yet, the requirement of additionality is intricately related to the sustainable development goal. In practice, projects that are clearly additional have proven to contribute very little to the sustainable development of host countries. Projects that are undoubtedly additional are those that would not be economically feasible without the CDM, such as HFC23 and projects involving other industrial gases. Yet these projects use end-of-pipe technology that does not bring about any technological changes in terms of avoiding the generation of GHGs or any other sustainable benefits. Some of those projects even give incentives for producing more GHG gases. On the other hand, projects that do contribute to sustainable development (e.g., renewable energy projects, fuel-switch projects) are often not additional. The CDM does not play any, or only an insignificant, role in the investment decision. Investment in these kinds of projects is often based on ‘business as usual’ economic calculations.

Third, the CDM needs to be economically interesting. In order for the CDM to play a role in the climate market while being a significant response to climate change, it must succeed in attracting a ‘critical mass’ of participants, especially project developers and investors, which are willing to participate in ‘good’ CDM projects, namely projects that are both additional and contribute to sustainable development. This will require transparency, consistency, certainty and predictability of the process, reduction of lead times (especially the duration of review) and transaction and administrative costs, and increased overall efficiency and cost-effectiveness.²⁵

The dilemma, however, is that projects that both are additional and contribute to sustainable development are extremely rare and often have to go through a long, opaque and very bureaucratic process before registration, which affects their economic efficiency. In this context, Werksman²⁶ noted that ‘[a]t issue is the tension between the care required to ensure the environmental quality of projects, and the bureaucratic efficiency and technocratic precision required by the demands of the market’. The crisis described above indicates an imbalance of interests tilting towards market demands and surrendering to market imperatives. It also indicates that the care required to ensure environmental integrity and to deliver on all three objectives of the CDM is not systematically built into its design.

²⁴ J. Werksman, Werksman, J. (2008), ‘The “Legitimate Expectations” of Investors and the CDM: Balancing Public Goods and Private Rights under the Climate Change Regime’, *Carbon and Climate Law Review* 1, 95. 2008, 95–104; Flues, F., A. Michaelowa and K. Michaelowa (2008), *UN Approval of Greenhouse Gas Emissions Reduction Projects in Developing Countries: The Political Economy of the CDM Executive Board*, CIS Working Paper No. 35 (Center for Comparative and International Studies).

²⁵ C. Streck (2007), ‘The Governance of the Clean Development Mechanism: The Case for Strength and Stability’, *Environmental Liability* 15(2), 91.

²⁶ Werksman, 2008, 99,

“If it is feasible to establish a market to implement a policy, no policy-maker can afford to do without”. If J.H. Dales was right in this statement, then a market-mechanism needs to correlate to “a policy” as in “one” – not many. However, given the complex regulatory landscape in which modern market-mechanisms are established, the identification of just one policy objective might not only be impossible, it might in fact be ignorant of the many crossing objectives inherent in climate and other environmental policies, which pay tribute to legitimate expectations of different stakeholders, both market and non-market, private and public.

5.5. Limited regulatory capture: Non-market/indirect causes of environmental destruction: With cap-and-trade systems for climate gases, the regulatory capture reaches no further than stationary emission sources, largely industrial installations, and lately some mobile sources, i.e. air carriers. In other words, emissions trading is an “end of pipe” mechanism. Industrial installations responsible for emissions need to account for their pollution by measuring their “smoke stack emissions” and by having an equivalent number of quotas. However, GHG emissions outside the regulatory scope of an emissions trading system, indirect drivers of emissions or global drivers are not captured. Moreover, other environmental problems, such as deforestation or the destruction of ecological systems and functions can have diverse actors and causes which may not be captured by a trading scheme.

6. Lessons learned

What lessons can be learned from climate instruments and how to avoid some mistakes made in the climate field from being made in other fields?

6.1. Clear rules and the need for robust methodologies and data: If market mechanisms are introduced, the market has a tendency “to grab the ball and run with it”. The creation of market-based solutions to environmental problems and the introduction of flexibility and cost-effectiveness does not mean a “lawless” space. Markets are means – no ends. Rather, care and foresight must be exercised in the drafting of the legal framework, including binding rules, which define the legitimate scope for activities. These include, for example, rules that safeguard against perverse policy incentives, against violations of various human rights, but also against high transaction costs and logistic and administrative bottlenecks. While the rules must be strong and clear, they should not be too complex or lead to lengthy, bureaucratic processes. The challenge is that monitoring, reporting and validation (MRV) of GHG emissions – while necessary - already is difficult. MRV of avoided emissions (REDD+) is yet on the limit of technological feasibility, and even more so when it comes to create a robust accounting system for ecosystem services. In fact, for reasons of technical difficulties of how to measure avoided deforestation, this issue was not included in the Kyoto Protocol. The functioning and effectiveness of any market-based mechanism and its capacity to deliver the expected outcome depends on careful design, implementation and control.

6.2 Bureaucracy and Overall efficiency: Pioneering research has suggested that an average of approximately 30% of the money spent on the open market buying CDM credits goes directly to project operating and capital expenditure costs.²⁷ The largest part goes to broker's premiums (about 30%, understood to represent the risk of a project not delivering) and the project shareholders' dividend (another 30%). The researchers noted that the sample of projects studied was small, the range of figures was wide and that their methodology of estimating values slightly overstated the average broker's premium. The challenge, therefore, is to design market-based instruments in a way which secures that the largest part of available financial resources goes to the environmental project or good and is not captured during the process.

6.3 Avoiding negative side effects – enhancing co-benefits: Market-instruments pursue the goal they are designed for and accord to least-cost demands. This can lead to situations where unintended

²⁷ Kahya, Damian, *30% of carbon offsets' spent on reducing emissions*, BBC News, 2009-12-07.

side-effects occur, which may be harmful to non-market interests. As we discussed above in the context of the CDM, projects might be successful in terms of emission reductions. Whether they also provide sustainable development benefits or are harmful to the environment or people affected by a project, remains (largely) outside the scope of UN-based registration and verification of projects.

Different from the CDM, in the framework for REDD+, a number of safeguards exist which are meant to ensure that REDD+ activities do not harm, but enhance positive impacts on the conservation of biological diversity, human rights, in particular indigenous peoples, forest governance.²⁸ While these safeguards have been negotiated with great care and controversy, it still remains somewhat unclear how they are supposed to work, how they are financed, and how they are monitored and reported. So far, a system for providing information on how the safeguards are being addressed and respected is all that is in place for ensuring their implementation. In the latest negotiation rounds, however, it became clear that when market-approaches are considered, safeguard compliance must become conditionality for financial transfers. In this context, the evolving financing framework for REDD+ notes that “in the light of the experience gained from current and future demonstration activities, appropriate market-based approaches could be developed..., ensuring that environmental integrity is preserved, that the provisions of decisions 1/CP.16, appendix I and II are fully respected and should be consistent with the relevant provisions of decision 1/CP.16.”²⁹

In order to have a market-based instrument delivering on non-market benefits requires strong legal rules that protect such benefits. As the market itself will not naturally provide for such non-financial issues, they have to be “regulated in” the mechanism. Moreover, transparency in these issues by robust MRV systems also for safeguard compliance increases the possibility for extra-market players, e.g. NGOs, to keep track of market impacts on people and the environment. In addition, where safeguard compliance occurs as a conditionality or eligibility requirement for financial transfers – as we may see in the development of REDD+ - the internalization of non-market values would be based both on legal as well as economic rationales – making compliance with non-market requirements all the more likely.

Finally, financial transfers should be based on monitored, reported and verified results (both on the primary, but also secondary/indirect market-impacts). Such ex-post payments not only reflect the true value of the “good” which is being paid for. A results-based-approach can also keep corruption and fraud at bay.³⁰

²⁸ Decision 1/CP.16, Annex I: “When undertaking REDD+ activities, the following safeguards should be promoted and supported: (a) Actions complement or are consistent with the objectives of national forest programmes and relevant international conventions and agreements; (b) Transparent and effective national forest governance structures, taking into account national legislation and sovereignty; (c) Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the UN General Assembly has adopted the UN Declaration on the Rights of Indigenous Peoples; (d) The full and effective participation of relevant stakeholders, in particular, indigenous peoples and local communities, in actions referred to in paragraphs 70 and 72 of the decision; (e) Actions are consistent with the conservation of natural forests and biological diversity, ensuring that actions referred to in paragraph 70 of the decision are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits; (c) Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the UN General Assembly has adopted the UN Declaration on the Rights of Indigenous Peoples.”

²⁹ Decision 2/CP.17, para 66.

³⁰ Payment for result is an approach which has been discussed with regard to development aid. See, for example, World Bank, *A New Instrument to Advance Development Effectiveness: program-For-Results Financing*, 29. November 2011, available at: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/01/01/000333037_20120101223631/Rendered/PDF/661930BR0R201100282.pdf.

7. Conclusions

Market-based climate instruments are an unprecedented experiment; a game that the world cannot afford losing. Given the severity of the challenge, it must be asked whether this is the right way to go.

Regulatory ecosystem service markets³¹ are established through *legislation* that creates demand for a particular ecosystem service by setting a ‘cap’ on the damage to, or investment focused on, an ecosystem service. The users of the service, or at least the people who are responsible for diminishing that service, respond either by complying directly or by trading with others who are able to meet the regulation at lower cost. Buyers are defined by the legislation, but are usually private-sector companies or other institutions. Sellers may also be companies or other entities that the legislation allows to be sellers and who are going beyond regulatory requirements.

Carbon markets have the advantage that they harness market power for climate mitigation and create a direct incentive for private sector investment. But it is an artificial market; it must *create* demand *and* supply. Functioning markets depend on sustained demand. Demand depends on regulation and ambitious (climate) targets. Targets must also be dynamic and react to changing economic realities. Recent experiences with the EU ETS show that even in the context of comparatively ambitious and strong rules and institutions, incentives for investments can vanish as the broader economic context changes. In order to guard against vanishing demand, transactions had to be backed by funds or minimum price guarantees. In a market where supply is artificially created, there is the danger of oversupply by over-allocation (grandfathering), or of economic downsizing which lead to threatening the market of flooding with quotas and falling prices. The mobilization of large amounts of private sector funding depends on sustained demand for credits and hence ambitious, long-term targets and effective links to national compliance markets.

Here lies the problem for REDD+. Price levels must be high enough to create incentives for alternative land use (e.g. conservation). Large drivers of deforestation and destruction of ecosystems, by, e.g., infrastructure and housing developments, palm oil plantations, beef soy, mineral extraction etc., drive up prices for REDD+ and other ecosystem services. A functioning market-instrument would need to address destructive policies and drivers and enhance the market-value of those policies which protect the environmental objective pursued by the mechanism.

However, in order to establish market-based instruments which pursue environmental goals, the demand side of the market has to be created. With regard to REDD+, the overarching question of who would buy REDD+ credits or units (if they were to be issued) still remains unanswered. There is, as of today, no compliance market and the voluntary market for REDD+ credits has minimal volume. What remains is investment into REDD+ policies for reasons of Corporate Social Responsibility (CSR) or pure altruism and philanthropy. While the latter are “nice to have” – their volume will never sum up to the financial flows necessary for successfully fighting tropical deforestation (and resulting GHGs emissions).

Coming back to the Dale’s adage “If it is feasible to establish a market to implement a policy, no policy-maker can afford to do without”, we can conclude that the feasibility may be the problem with environmental market-based instruments. While good arguments can be made in favour of such instruments, experiences made so far with climate related market instruments show significant shortcomings. If markets are to work for the environment, then strong regulation has to be in place ensuring both the environmental end and guarding against negative side-effects. Markets are means – not ends. As means they are *a* tool in the toolbox, but not the only one. While for some environmental

³¹ Examples include: Tradable wetland mitigation credits (credits from wetland conservation or restoration that can be used to offset obligations of developers to maintain a minimum area of natural wetlands in a defined region), tradable development rights (rights allocated to develop only a limited total area of natural habitat within a defined region) or tradable biodiversity credits (credits representing areas of biodiversity protection or enhancement, which can be purchased by developers to ensure they meet a minimum standard of biodiversity protection).

policies, suitable market-solution can be designed, with care required. For other environmental ends, such as nature conservation and ecosystem protection, traditional command-and-control approaches might lead to more secure, predictable and effective results.

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