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IN LATIN AMERICA



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A new
perspective
on the
carbon
market



THE STRATEGY OF BUYING AND SELLING “CARBON CREDITS” CAN LEAD TO A NEW FORM OF SPECULATION WHICH WOULD NOT HELP REDUCE THE EMISSION OF POLLUTING GASES WORLDWIDE. THIS SYSTEM SEEMS TO PROVIDE A QUICK AND EASY SOLUTION UNDER THE GUISE OF A CERTAIN COMMITMENT TO THE ENVIRONMENT, BUT IN NO WAY DOES IT ALLOW FOR THE RADICAL CHANGE WHICH PRESENT CIRCUMSTANCES REQUIRE.

Laudato Si'

Axel Michaelowa
University of Zurich and
Perspectives Climate Research¹



LAUDATO SI' IS A LANDMARK PIECE OF ENVIRONMENTAL WRITING, BASED ESSENTIALLY ON TRANSCENDENTAL ETHICAL AND MORAL ISSUES. IN PARALLEL TO THESE DIMENSIONS, MARKET MECHANISMS TO ADDRESS CLIMATE CHANGE HAVE EMERGED IN RECENT YEARS, ALTHOUGH THESE MAY STILL NEED TO BE PERFECTED. THIS ARTICLE REVIEWS THE PROGRESS ON THESE MECHANISMS AND EXPLORES HOW THEY NEED TO CONTRIBUTE TO THE DEVELOPMENT AND SPREAD OF EMISSIONS-REDUCING TECHNOLOGY. IT POINTS TO THE IMPORTANCE OF CORRECTING ONE OF THE MAIN FLAWS IN MARKET MECHANISMS: THEIR INABILITY TO MAINTAIN AN APPROPRIATE PRICE FOR EMISSIONS PERMITS.

Pope Francis's encyclical *Laudato Si'* (2015) is the first high-level document of the Catholic Church entirely dedicated to environmental issues. It has garnered worldwide recognition and has been credited as one of the key elements that led to a successful outcome of the Paris Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC) in December 2015 in form of the Paris Agreement (Bodansky, 2015). Even observers from NGOs that have traditionally been critical of the Catholic Church's stance on environmental and social issues have acclaimed *Laudato Si'* in glowing terms, like arguing that it serves as a "Magna Carta of integral ecology" (Bals, 2016).

Pope Francis stresses the common good that an intact environment and climate represent and calls for cooperative action that acknowledges the inherent value of every creature, human and nonhuman. Its recommendations on climate policy are essentially

grounded in basic ethical and moral considerations.

In the last 15 years of international and national level climate policies, a number of market mechanisms have emerged. Their aim is to achieve greenhouse gas mitigation at the lowest possible cost. Two principal forms stand out. The first is a "cap-and-trade" system where a regulator specifies a maximal emissions level for emitting entities and then allows trade in emissions allowances. Entities that have reduced emissions below their cap can sell allowances while emissions in excess of the cap can be covered through the acquisition of a sufficient quantity of such units. The second form is a "baseline-and-credit" mechanism where activities that reduce emissions below a predefined baseline generate emission credits that can be sold to entities that require mitigation units. The Kyoto Protocol operates as a cap-and-trade system for the group of industrialized countries with emissions com-

A NEW PERSPECTIVE ON THE CARBON MARKET

mitments, while projects in countries without commitments can generate credits under the Clean Development Mechanism (CDM). On the national and subnational levels, various cap-and-trade schemes have been set up, most notably in the EU, California, and various Chinese provinces.

The Paris Agreement introduces an array of new market mechanisms in Article 6 (UN, 2016: 24–25) with "baseline and offset" (Art. 6.4) as well as cap-and-trade characteristics (Art. 6.2).

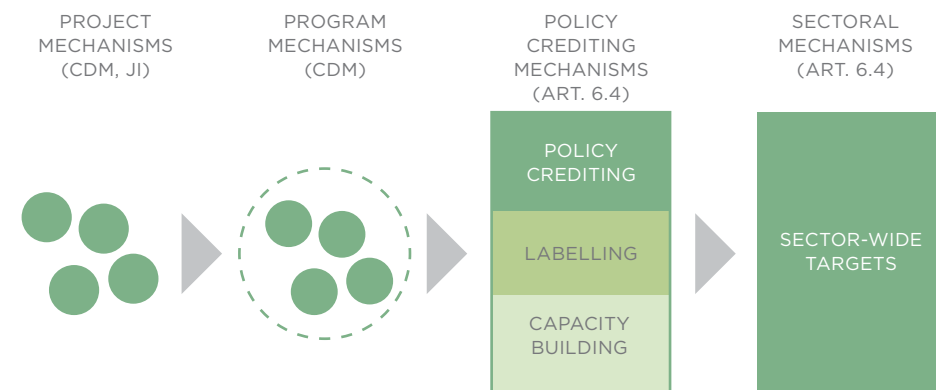
The mechanism under Art. 6.4 envisages upscaling to policy and sectoral approaches. The rules of the Paris mechanisms will be defined in the coming years.

Most comments on *Laudato Si'* have stated that it condemns market mechanisms in climate policy. The famous environmental economist William Nor-

dhaus (2015) explicitly uses this term. Harvard University's Robert Stavins (2015) says "the encyclical rejects outright 'carbon credits'." The eminent environmental law expert Dan Bodansky (2015: 129) talks about the "encyclical's dismissal of emissions trading." Silecchia et al. (2016) stress the moral aspect of the critique.

However, the Pope's statement on market mechanisms is much more nuanced than is commonly acknowledged. Para. 171 of the encyclical (Pope Francis, 2015: 126) reads: "The strategy of buying and selling 'carbon credits' can lead to a new form of speculation which would not help reduce the emission of polluting gases worldwide. This system seems to provide a quick and easy solution under the guise of a certain commitment to the environment, but in no way does it allow for the

FIGURE 1
THE UPSCALING OF BASELINE AND CREDIT MECHANISMS



Source: Perspectives Climate Research.

radical change which present circumstances require. Rather, it may simply become a ploy which permits maintaining the excessive consumption of some countries and sectors” (my italics to highlight “can,” “would,” and “may”).

I therefore want to assess the performance of the market mechanisms with regards to the principles set up in *Laudato Si’*.

WHAT PRINCIPLES SHOULD GUIDE MARKET MECHANISMS?

Dissecting the Pope’s statement on market mechanisms allows us to understand his principles for the implementation of such mechanisms. He calls for the mechanisms to be designed in a way

- that achieves greenhouse gas emission reductions;
- that does not stall the radical change needed for climate change mitigation; and
- that does not lead to a persistence of “excessive consumption.”

The first two principles¹ have been widely discussed by climate policy researchers and practitioners. The first principle, in particular, has led to wide-ranging reforms in market mechanisms over the last decade, and the second principle is currently gaining ground in international discussion. Several important international climate finance vehicles set up in the last five years—notably the Green Climate Fund and the NAMA Facility—require that project proponents describe “transformational impacts” or “paradigm shifts.” The third

principle is less frequently invoked but its supporters are quite vocal.

SUPPORTING THE PRINCIPLES OF LAUDATO SI’

The first of the Pope’s principles—achieving greenhouse gas emissions reductions—can be unequivocally supported. Forms of market mechanisms that have low levels of integrity have no reason to exist. Otherwise, they would dilute the mitigation action achieved by an international or national climate policy instrument. It is akin to bad money driving out the good money and leading to inflation. This is fully acknowledged in the Paris Agreement with Art. 6.2 calling for governments to “ensure environmental integrity,” and any mechanism thus needs to fulfill the principle of additionality. Emissions credits from baseline-and-credit schemes must only accrue through activities that go beyond business-as-usual (Greiner and Michaelowa, 2003). Cap-and-trade systems require caps that are set below the “business-as-usual” level; otherwise “hot air” is created. A strong system of monitoring, reporting, and verification (MRV) needs to underpin any mechanism, and fraud or noncompliance need to be severely punished.

The second principle—not stalling the radical change needed for climate change mitigation—is also crucial for a successful long-term climate policy. Mechanisms need to contribute to the

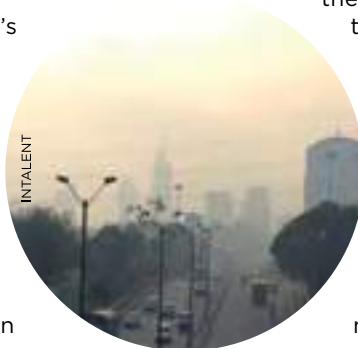
development and diffusion of emission reduction technologies. They also should induce policymakers to adopt more stringent emission reduction targets than they would normally be willing to do. By mobilizing the most efficient mitigation initiatives first, mechanisms would allow a political backlash against climate change mitigation to be prevented by overcoming the perceived “impossibility” of reaching stringent emission reduction commitments. A radical change can also be promoted by spreading the message that mitigation is actually manageable and can be achieved under very different circumstances. Nowhere should mechanisms “ossify” emission-intensive structures.

The third principle is probably the most difficult to accept and has been criticized by economists, legal and political scientists alike (see, for example, Bodansky, 2015: 130). High consumption per se is not a bad. It becomes a bad if it deprives other people of resources of basic necessity and creates public bads like climate change. It also is a bad if it incentivizes unethical behavior like crime, corruption, and exploitation. But these problems can be prevented by appropriate policy instruments—and well-designed market mechanisms are one of these instru-

ments. Eventually, the world’s policymakers should strive to allow sustainable consumption for as many people as possible. This is acknowledged in the preamble of the Paris Agreement that reads “sustainable lifestyles and sustainable patterns of consumption [...] play an important role in addressing climate change” (UN, 2016: 22). Voluntary restraint makes sense and may be on the upswing as people realize that frantic consumption reduces their overall quality of life. But rationing goods and services through government action has never worked in human history for a prolonged time and will not work in the future.

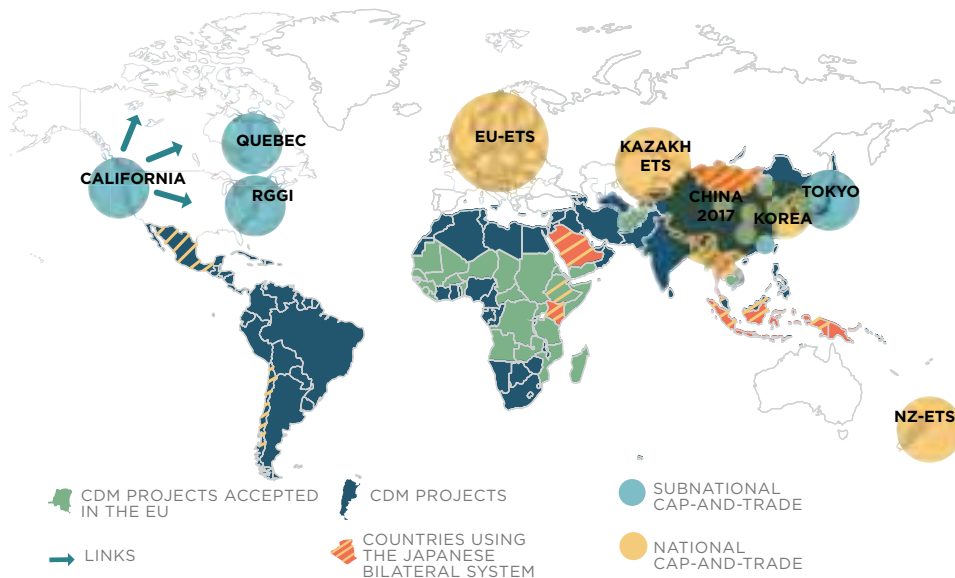
ALTERNATIVE POLICY INSTRUMENTS

We now have over a decade of experience with international and national carbon market mechanisms. The Kyoto Mechanisms CDM and Joint Implementation (JI), covering mitigation projects in industrialized countries, have been used widely. The CDM has mobilized projects in over 90 countries and generated over 1.7 billion emissions credits. Over 850 million JI credits have been issued. National emissions trading systems have proliferated. However, the Kyoto Mechanism, which was initially thought to be highly promising—International Emissions Trading between governments of countries with commitments—languished due to high-profile cases of corruption in countries in transition² and the existence of national emissions budget surpluses in countries in transition, the so-called “hot air.” Western European governments were unwilling to buy emission units which did not really reflect emis-



CAP-AND-TRADE SYSTEMS SET UPPER LIMITS ON GREENHOUSE GAS EMISSIONS

FIGURE 2
STATUS OF MARKET MECHANISMS 2016



Source: Perspectives Climate Research.

sion reductions and involved doubtful governance structures.

I will now assess how the CDM, JI, and national emissions trading mechanisms fared with regard to the three principles set out in *Laudato Si'*.

The first principle has been partially achieved, but serious failures have occurred. In its first years, many nonadditional projects were registered under the CDM (Schneider, 2009). For example, highly profitable waste heat recovery projects in Indian steel mills led to arguments about unspecified barriers to investments. The reasons for this failure were mainly an overburdened regulatory structure at the level of the UNFCCC Secretariat, which had not expected such a large number of project submissions, and the failure of the CDM

auditors to implement stringent audits. The latter shows that it is imperative to strictly control auditors. Subsequently, rules and regulatory practices improved significantly. For example, several auditors were suspended and subsequently carried out much more serious audits. Also, qualitative arguments about barriers were replaced by checking economic indicators for the projects (Michaelowa, 2009). However, there remains a “gray zone” in which it is difficult to judge whether a project is additional. For example, a risk-averse company that enters a new country will require higher profitability of a project than a company that knows the country very well—for example, the former’s annual profit rate may be 20%, the latter’s 10%. At which of these two levels

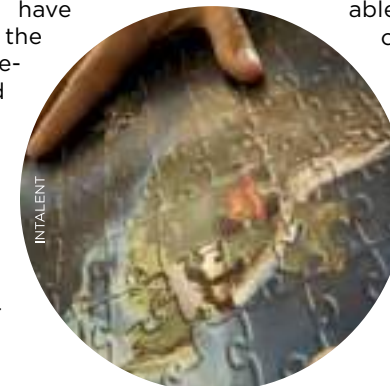
should the regulator now fix the profitability threshold at which a CDM project is no longer seen as additional?

Cap-and-trade systems have suffered from a lax emissions cap³ due to the pressure of emitter interest groups, as shown by Branger, Lecuyer, and Quirion (2015) for the EU and Jotzo and Löschel (2014) for China. If the cap is not stringent, the system does not generate emission reductions. This problem has increased since the eruption of the economic and financial crisis in 2008, which led to significant decreases in industrial activity and emissions that were not reflected in the emissions baseline used for setting the cap. Currently, only a small share of cap-and-trade systems around the world have an emissions cap that is significantly lower than the business-as-usual emissions level, and those systems face strong industry pressure to loosen the cap. Tellingly, the South Korean emission trading system, which had one of the most stringent caps, was recently subject to such strong industry pressure that regulatory responsibility for it was taken away from the environment ministry and given to the industry-friendly presidential administration. The latter promptly loosened the cap. In the EU, while some regulatory improvements regarding cap setting have been achieved over the years, they were immediately overwhelmed by the effects of the economic crisis described above. The consequence has been that in almost all emission trading schemes, prices have started at a rela-

**BASELINE-
AND-CREDIT**
THOSE WHO
REDUCE THEIR
EMISSIONS CAN SELL
CREDITS
TO EMITTERS

tively high level but subsequently fallen as market participants realized that the cap was above business-as-usual emissions levels. Prices only have not fallen to zero because allowances can be banked for future use. This banking, however, is a heavy burden for future policymakers because it requires them to set more stringent mitigation targets than they would normally have done in order to squeeze the accumulated surplus out of the system.

JI was used to launder “hot air” in Ukraine and Russia due to the absence of an international oversight for its “Track 1.” Essentially, the governments of those two countries invented “Potemkin village”-style projects or submitted projects that were blatantly nonadditional, and thereby were able to convert the surplus of their national emissions budget that nobody wanted to buy into valuable, project-specific credits for which significant demand existed. In the last weeks of 2012, over 400 million credits were created in that manner (Koll-





muss, Schneider, and Zhezherin, 2015). This shows how important it is to have international rules preventing unscrupulous governments from trying to exploit the system.

On the success side, compliance with cap-and-trade systems has generally been high due to significant penalties slapped on emitters that did not have sufficient emission allowances. MRV systems have become highly differentiated. Over 200 methodologies for baseline and monitoring have been specified under the CDM; they cover all key greenhouse gas mitigation technologies. Due to the CDM, for the first time, transparency about performance parameters for renewable energy projects in key countries like China and India has been achieved. Previously, such information was notoriously unreliable. This transparency has led to significant pressure to improve technology performance, and may partially explain the strong success of Chinese and In-

dian wind turbine manufacturers in the recent years.

Regarding the second principle, the CDM has achieved an unprecedented diffusion of technologies. Abatement of industrial gases that was unknown outside a very small circle of technical specialists was implemented within three years around the world leading to CO₂ reductions of several hundred million tonnes (Michaelowa and Buen, 2012). Wind power technologies were rapidly scaled up in many countries through the CDM, as has been the case in China (Lewis, 2010) and India (Benecke, 2009). Awareness of entrepreneurs that mitigation is not a crazy idea but a business opportunity was mobilized in an astonishing manner—during the mid-2000s, Indian business newspapers ran daily stories about the CDM. By 2006, any respectable Indian entrepreneur would have known that CDM credits were an important new commodity for export and

VOLUNTARY RESTRICTIONS

PEOPLE ARE REALIZING THAT RELENTLESS CONSUMPTION REDUCES THEIR QUALITY OF LIFE

would have checked his or her company operations for mitigation opportunities. Moreover, a whole ecosystem of consultants and mitigation specialists sprang up around the world which has become very useful in the context of the development of national mitigation policies in developing countries. With regards to the development of new technologies, however, the prices achieved on emissions markets were too low to really mobilize such technologies (Grubb, 2014). Evidence of an increased willingness among policymakers to adopt stringent emission targets is less clear. However, industry pressure for a weak climate policy has been less in countries with access to market mechanisms; this could be seen in Switzerland, Norway, and the EU. Interestingly, since the EU limited imports of CDM credits, EU industry pressure against stringent EU emission targets has increased.

With respect to the principle of excessive consumption, market mechanisms have probably reduced consumption by increasing the price of consumer goods by transferring the price of emissions allowances and credits to them, as compared to a “do nothing” situation. This increase was higher in places that have an above-average consumption level. Overconsumption of greenhouse gas-intensive goods has certainly been curbed, but it would have probably been reduced more had regulation prohibited certain goods or had other costlier instruments been introduced that thus lead to a stronger increase in goods and service prices.

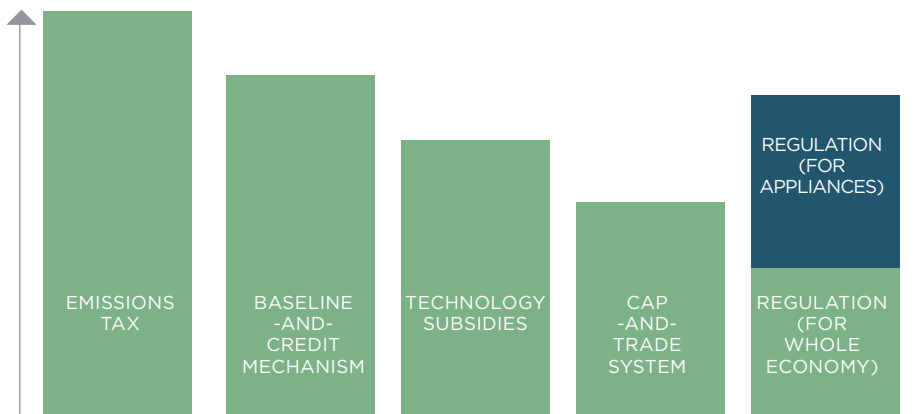
How have alternatives to market mechanisms performed with regards to the Pope’s principles? Alternative policy approaches can be broadly classified into regulatory and fiscal instruments. The former prescribe or prohibit specific technologies, or require minimum performance of a technology. The latter provide subsidies (in various forms, ranging from direct transfers to tax credits) for low-emissions technologies or tax greenhouse gas emissions.

Generally speaking, regulatory instruments are better than market mechanisms at achieving emissions reductions in situations where emissions are widely spread and emitters lack information or suffer from split incentives. This is the case for consumer appliances or vehicles (Grubb, 2014). However, due to the political economy of regulation, where emitters have an informational advantage and thus can prevent overly strict regulation, a radical change through regulation is relatively unlikely. For the same reasons, regulations cannot address overconsumption.

Subsidies for low carbon technologies, such as through feed-in tariffs for renewable energy, suffer from the problem that their level needs to be carefully chosen. A subsidy which is too low will not generate any mitigation benefit, whereas an overly high subsidy will lead to windfall profits

FIGURE 3
THE PERFORMANCE OF MITIGATION POLICIES TO DATE

PERFORMANCE ON EMISSIONS MITIGATION AND INNOVATION



Source: Perspectives Climate Research.



pliances but scores lowest with regards to mitigation effectiveness and innovation benefits for other sectors.

HOW TO DESIGN MARKET MECHANISMS IN THE FUTURE

and an unnecessary pressure on public budgets. The latter has been experienced with feed-in tariffs for renewable electricity in Spain and Germany. Carbon taxes seem to be quite good in mobilizing mitigation (see Brännlund, Lundgren, and Marklund, 2014, for the Swedish case) as well as innovation. Both OECD (2010) and Martin, de Preux, and Wagner (2014) find a clear innovation effect for the English climate change levy. If set high enough, carbon taxes can clearly contribute to curbing excessive consumption. However, the levels applied to date have not been sufficient to achieve this aim, even though they are still significantly higher than the prices achieved by market mechanisms.

Comparing all mechanisms, a carbon tax would probably perform best with regard to Pope Francis's criteria for the design of policy instruments. Well-designed baseline-and-credit mechanisms would rank second. The assessment of mitigation technology subsidies depends on their design; empirically they rank between baseline-and-credit and cap-and-trade systems. The latter suffer from too lenient cap setting. Pure regulation fares well for consumer ap-

The Paris Agreement provides the opportunity to develop rules for an array of new market mechanisms that respect the first two principles on market mechanisms specified in *Laudato Si'*. Stringent additionality rules and a minimum price for transactions, as well as strong international oversight of the principal rules and MRV systems are crucial to making market mechanisms a long-term success. To determine the additionality of projects, clear thresholds for internal rate of return need to be set that reflect the business decisions of risk-taking companies. The mechanisms cannot be tasked to cater for the risk aversion of certain businesses. Projects that entail efficiency improvement need to be judged according to their payback period; a threshold of four years seems appropriate. One key weakness of market mechanisms needs to be rectified—their inability to sustain a relevant price for emission credits/allowances. The crash of prices for CDM credits from 2011 onwards tarnished the reputation of the market mechanisms in developing countries. This was compounded by the widespread failure of credit buyers to honor the terms of the credit purchase agreements. Thus in the future, minimum prices should be introduced in all national and sub-national cap-and-trade schemes (see Wood and Jotzo, 2011). To rebuild trust, a minimum price of at least 10 €/t CO₂ needs to be set on the international

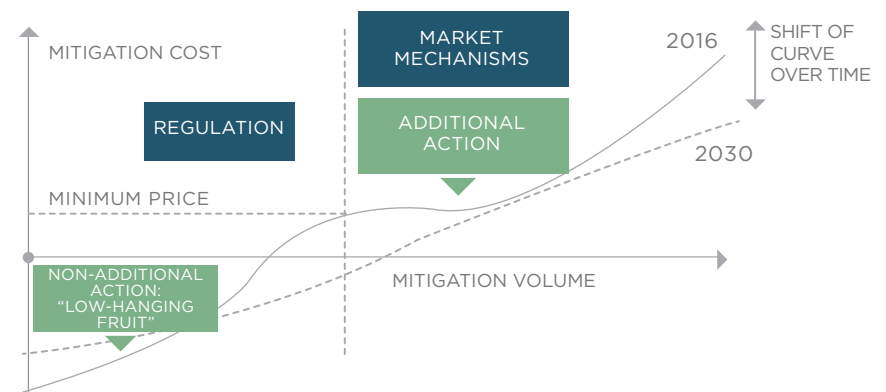
level for all the market mechanisms under the Paris Agreement.

Methodologically, a lot of work remains to be done. As market mechanisms are expanded to cover policy instruments and entire sectors, a careful specification of the baseline emissions is required. The definition of national and sectoral “business-as-usual” policy paths needs to be made through internationally agreed, transparent methodologies. This entails a clear understanding about the non-climate-related benefits of policy instruments. Principally, a policy instrument should only be deemed additional if the costs that it causes exceed the nonclimate benefits. In the context of a feed-in tariff for renewable energy, for example, the cost differential between conventional and renewable energy provision would have to exceed the health benefits from the reduction of local air pollutants to classify the policy as additional. The challenge here is that

many policymakers actually do not believe in the cobenefits of the policy or their valuation. So a shortcut solution may be to define a policy as additional if it generates a carbon price exceeding a certain threshold, for example, the minimum price discussed above. Regulation could be deemed additional if it induces activities whose payback period exceeds the value at which individuals and entities would cease to invest.

At the same time, governments need to become serious regarding their mitigation action. The ambitious long-term mitigation target of the Paris Agreement—reaching a balance of emissions and sinks in the second half of this century—can only be reached if national mitigation contributions are scaled up significantly, including through the acquisition of credits from market mechanisms. Countries and country groups that portray themselves as champions of mitigation policy, such as the EU, especially need to

FIGURE 4
ADDITIONALITY OF POLICY INSTRUMENTS AND MINIMUM PRICE



Source: Perspectives Climate Research.

90
COUNTRIES ARE
CARRYING OUT
MITIGATION PROJECTS
LIKE THOSE PROPOSED
IN KYOTO

ECONOMIC CRISIS

RIISING UNEMPLOYMENT
PREVENTED
IMPROVEMENTS
FROM BEING MADE
TO REGULATIONS

move quickly in this direction. All countries that joined the “High Ambition Coalition” at the Paris Conference need to

show that they are serious and do not just make nice statements on momentous occasions.

So there is a full workload for policymakers, economists, lawyers, and political scientists alike to improve the operation of market mechanisms. *Laudato Si'* has been a wake-up call for policymakers that reinforces many messages sent by researchers in the last years, but that were ignored on the political level. If they policymakers do not engage in the reforms outlined above, the Pope's uneasiness would rightly transform into rejection and condemnation of market mechanisms. 🌱

NOTES

¹It should be noted that the Pope does not criticize the mechanisms for not contributing to sustainable development, as has many NGOs have. I will therefore not discuss this aspect in this article.

²For example, in Slovakia, three ministers of the envi-

ronment had to resign in a short period due to a sale of emission units which clearly had been underpriced compared to the prevailing market price.

³This is also called “overallocation” of emissions allowances.

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Information System on Trade and Integration

Statistics and indicators



Market access



Legal frameworks



Visualizations



New website
www.intradebid.org

