

The Journal of Environment & Development

<http://jed.sagepub.com/>

Policy Instruments for Sustainable Development at Rio +20

Maria Damon and Thomas Sterner

The Journal of Environment Development 2012 21: 143 originally published online 30

April 2012

DOI: 10.1177/1070496512444735

The online version of this article can be found at:

<http://jed.sagepub.com/content/21/2/143>

Published by:



<http://www.sagepublications.com>

Additional services and information for *The Journal of Environment & Development* can be found at:

Email Alerts: <http://jed.sagepub.com/cgi/alerts>

Subscriptions: <http://jed.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations: <http://jed.sagepub.com/content/21/2/143.refs.html>

>> [Version of Record](#) - May 15, 2012

[OnlineFirst Version of Record](#) - Apr 30, 2012

[What is This?](#)

Policy Instruments for Sustainable Development at Rio +20

Journal of Environment & Development
21(2) 143–151
© 2012 SAGE Publications
Reprints and permission:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1070496512444735
<http://jed.sagepub.com>



Maria Damon¹ and Thomas Sterner²

Abstract

Twenty years ago, governments gathered for the United Nations Conference on Environment and Development in Rio de Janeiro. The “Rio Declaration” laid out several principles of sustainable development, including the central role of policy instruments. In this article, we take stock of where we stand today in implementing sound and effective environmental policy instruments throughout the world, particularly in developing and transitional economies. We argue that, as our experience with market-based environmental policies has deepened over the past two decades, so has the ability to adapt instruments to complicated and heterogeneous contexts—but we are only just beginning, and the need to be further along is dire. One key factor may be that economists have not yet meaningfully accounted for the importance of political feasibility, which often hinges on risks to competitiveness and employment, or on the distribution of costs rather than on considerations of pure efficiency alone.

Keywords

environmental policy, green growth, policy instruments, Rio +20, sustainable development

Twenty years ago, governments from 172 countries gathered for the United Nations Conference on Environment and Development in Rio de Janeiro. The conference became known as the “Earth Summit,” and its goal was nothing less than tackling the

¹New York University, New York, NY, USA

²University of Gothenburg, Sweden

Corresponding Author:

Maria Damon, New York University, 295 Lafayette St., 3rd Floor, New York, NY 10012, USA
Email: maria.damon@nyu.edu

environmental, economic, and social problems facing the world. One hundred eight heads of state showed up, along with thousands of NGO representatives and journalists. It was a moment when an understanding that environmental protection is intricately and intimately tied to economic development was thrust into global consciousness.

The Earth Summit produced ambitious agreements, including the United Nations Framework Convention on Climate Change and the “Rio Declaration,” which laid out fundamental principles for sustainable development. Principle 3 declared that “the right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.” Other principles include capacity building, priority for the least developed, participatory governance, and a “global partnership” for environmental protection. Perhaps of particular interest to those who study the design and implementation of policy instruments was Principle 16:

National authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

The central role of policy instruments in achieving the goals of just and sustainable development was made explicit.

On this anniversary, it is natural to ask where we stand today—and, importantly, if we are moving fast enough. It is worth noting that the first United Nations Conference on the Human Environment was actually held 1972, in Stockholm. The Rio +20 anniversary¹ has thus also been commemorated as Stockholm +40. The 1972 conference led to the establishment of the United Nations Environment Program and marked, for many, a first awakening concerning the environment—an issue with little attention in the international fora at that time. While the term *sustainable development* was launched in Rio, its notion was clearly present in Stockholm, as articulated by Indira Gandhi when she poignantly stated that “poverty is the worst form of pollution.” Today, the *mot du jour* is “green growth.” We ask ourselves if this represents something new, and, perhaps more fundamentally, what we can do that *is* new to progress toward these goals in a meaningful way.

The world will gather again on June 20th to assess our progress and in hopes of renewing commitment to green development and poverty alleviation. The core challenges are all too familiar—how can suffering of the world’s poor be alleviated and the planet we leave future generations not be jeopardized? Some questions are newer: What does the recent global economic slowdown imply for our policy approaches? And what does explosive growth in emerging economies imply for our goals and policies? Hundreds of millions were lifted out of poverty in the past decade, primarily in Asia, and this has raised hopes across the world. The question now is if climate change will threaten these hopes (Stern & Damon, 2011). History has never presented a more important moment to ask these questions, and we must formulate the best possible

answers given what we know. Climate change is indeed a dire threat—particularly to many poor countries, through sea-level rise, storm frequency, increased temperature, changes in rainfall, and glacial melt making rivers more unpredictable. Meanwhile, the financial crisis of the late 2000s has left in its wake prolonged unemployment and economic slowdowns throughout the world. The “green economy” and “green jobs” are primary themes in the Rio +20 rhetoric, and it is easy to understand why.

One thing that is new and important to take stock of is what we have learned about the use of environmental policy instruments in developing and transitional countries. Green growth is the goal, and it cannot be achieved without sound policies that are both effective and politically realistic.

In this special issue, we have a snapshot of these issues as they stand going into Rio +20. What have we learned by now, 20 years since the first Earth Summit, from our experience with environmental instruments throughout the world? One natural theme emerges—that political realities and contextual nuances are of primary importance when considering the appropriate choice and design of policy instruments. As experience with analyzing and employing market-based environmental policies has deepened over the past two decades, so has the ability to better adapt instruments to complicated and heterogeneous contexts—but we are only just scratching the surface. Another theme that emerges, perhaps less explicitly but no less acutely, is that we should be further along. Well-designed economic instruments for environmental protection are still not nearly as prevalent as we need them to be to meaningfully start achieving the goals of the Earth Summit. One key factor may be that economists have not yet meaningfully accounted for the importance of political feasibility, which often hinges on risks to competitiveness and employment or on the distribution of costs rather than on considerations of pure efficiency alone (Sterner & Coria, 2012).

We can learn from this experience over the past two decades—and this knowledge, combined with an emerging understanding of the interaction between policy instruments and the political landscapes in which they must be adopted, should be harnessed to drive the next stage of green development. This special issue starts with a review, by Joseph Aldy and Robert Stavins, that synthesizes and draws lessons from the world’s overall experience thus far with market-based instruments. The authors highlight the importance of political factors in driving the adoption of environmental policies and also note the possibility that the sizeable budget deficits faced by many governments could present political opportunities for revenue-raising instruments. Due to the importance of climate change and of greenhouse gases in most economies, and the significant heterogeneity of abatement costs, the authors focus largely on market-based instruments that imply some form of carbon-pricing: carbon taxes, cap-and-trade, emission reduction credits, clean energy standards, and, as a minimum, subsidy reductions. This tour de force provides an overview of theory and a survey of experiences mainly in developed countries, which also provides “lessons learned” that will be relevant in the context of developing or transitional economies. In “Internalization of External Costs of Energy Generation in Central and Eastern European Countries,” Vojtěch Máca, Jan Melichar, and Milan Ščasný, present a detailed analysis of the extent to which air

pollution externalities from electricity and heat generation in fossil-fuelled power plants have been internalized by market-based instruments in six Central and Eastern European countries—and they find that the answer is, thus far, very little. Specifically, they found that the rate of internalization covers a range between 3% for coal- and lignite-fuelled plants to 31% for gas-fuelled plants in six analyzed countries. The technology used matters; electricity generation from natural gas is associated with four to six times lower damage than other fossil-based power plants. The rate of internalization increases if a cross-subsidy for renewable electricity is also accounted for but the internalization level is still well below air pollution related external costs, between 9% and 55% for coal- and oil-fired power plants. Although all six CEE countries reduced air pollution substantially in their race for EU membership (mainly through command-and-control regulation), they still rely heavily on dirty and carbon-intensive domestic fuel sources. As climate change impacts are comparable in magnitude with those due to air pollution—considered in this paper—more stringent regulation would really be very desirable. However, the political will to adopt and employ instruments is held back by concerns over competitiveness and GDP growth.

And so we find a theme as we take stock of where we stand today: when singularly production- and employment-focused gains to GDP seem to predominantly drive political will, understanding the interaction of environmental policy instruments and other, sometimes narrowly defined, political objectives, is of paramount importance to increasing the large-scale adoption and effectiveness of our environmental policies. This takes us back to the core relationship between economic progress and environmental concern that underlies the whole international dialogues starting with the conferences Stockholm 1972 and Rio 1992. Already in Stockholm, several developing countries expressed distrust at what they saw as an attempt to “ratify and even enhance existing unequal economic relations and technical dependence, miring them in poverty forever” (Hecht & Cockburn, 1992). A symbol of this attitude was epitomized in a statement from the Ivory Coast, saying it would prefer pollution problems to poverty problems, “in so far as they are evidence of industrialization” (Rowland, 1973). One start at analyzing this problem is to say that if development is measured correctly (including the costs of resource degradation), and if we take a long-run view, then there is no real conflict between development or economic progress on one hand and environmental protection on the other. However, to stop there would be unhumane at best, as the short run can indeed present pressing conflicts between livelihoods based on production in a polluting or stock-depleting industry and long-run development. For years, economists’ rhetoric has focused on the notion that, if the long-run welfare gains are sufficiently important, it should be possible to compensate those who bear the short-run costs for the sake of the long-run benefits. One crucial challenge of policy making is to make sure such compensation really is paid in an equitable and efficient manner. At the same time, the fast and large-scale adoption of environmental instruments throughout the world that is so critically needed will require more than the international rhetoric around compensation. It will also require a more nuanced understanding of political context.

As Joshua Graff Zivin and Maria Damon emphasize in “Environmental Policy and Political Realities: Fisheries Management & Job Creation in the Pacific Islands,” policy making does not happen “in a vacuum,” and the study of environmental policy choices must start to *holistically* incorporate the ways that instruments interact with other political goals—if there is hope of these instruments being adopted widely and designed effectively. In this article, the authors analyze job-growth development strategies in the Pacific Islands and find that investments in sustainable fisheries management presents long-term employment advantages over other strategies such as direct investments in fish-processing capacity (which is widely viewed as a pro-employment strategy). This article poignantly illustrates both synergies and the potential conflict between employment and sustainability goals. Naturally, these small island states are critically dependent on healthy fish stocks. Food, employment, and such industries as tourism depend thereon. In the long run, the idea of employment based on fish processing is severely misguided if it leads to stock depletion. In the short run, policy makers must manage the joint weights of labor, political, and business interests vested in resource extraction and processing.

In “Environmental Fiscal Reform in Namibia—A Potential Approach to Reduce Poverty?” authors Linda Sahlén and Jesper Stage specifically investigate ways that fiscal reform in Namibia can help address these concurrent and sometimes competing issues of environmental protection and short-term job growth. For example, taxes on fish resources, water, and energy can be directly recycled and put toward employment objectives and income distribution. They find that using fiscal reform revenue to subsidize employment of unskilled labor not only leads to the largest GDP gains of the scenarios they analyze but also leads to the least attractive environmental outcomes. Interestingly, directing revenue toward the poorest households in the form of transfers, rather than in the form of employment subsidies, has the most favorable environmental effects. Again, we can see the need for policy instruments to be thoughtfully designed if we are to balance and achieve sustainable development goals in a way that is mindful of particular contexts. Reena Badiani, Katrina Jessoe, and Suzanne Plant expose similar nuances in their article, “Development and the Environment: The Implications of Agricultural Electricity Subsidies in India.” They present a careful analysis of agricultural electricity subsidies in India, showing that these subsidies indeed have the intended effect of helping with groundwater irrigation and positively affecting agricultural yields and food security—but the authors also suggest that the subsidies come at costs to environmental quality by increasing groundwater extraction and greenhouse gas emissions. It is also well known that subsidies have a pervasive property of creating strong lobbies for status quo. The few who gain from subsidies have a strong interest in their preservation and will fight hard to preserve them. The many—large majority of citizens—who would benefit from good budgetary discipline have a more diluted interest and find it harder to organize for reform. This is also an area that is particularly important because it is often thought to illustrate the conflicting interests of economic growth and equity. This is, however, often objectively false. Subsidies to one particular

sector are typically not good for growth in general but only for the growth of the special interests concerned. These are typically not the poorest. Many studies show that it is the rich and middle classes that benefit the most from commercial energy and many countries such as Nigeria find themselves mired in conflicts concerning subsidies for energy. In the case of Nigeria, around a third of the budget is used to subsidize fuels like gasoline that in African countries benefit mainly the urban upper-middle class while the poor lack many essentials ranging from good infrastructure to education or public health that could have been subsidized instead (Sterner, 2012). The subsidies and the regulation of artificially low prices for consumers also tends to make it unprofitable for refineries and electricity or water companies to supply the poor and sometimes to make it very profitable to encourage smuggling to neighboring countries with market prices.

Externalities and public goods are the classical mainstay of environmental economics but lately interest has turned also to other more subtle market failures such as failures in information or credit and insurance markets. Sonia Akter addresses the latter in her article "The Role of Microinsurance as a Safety Net Against Environmental Risks in Bangladesh." Bangladesh is one of the poorest and most natural disaster-prone countries in the world. The International Panel of Climate Change (IPCC) identifies Bangladesh as one of the countries that will be hardest hit by the anticipated effects of climate change. The poorest people are the most vulnerable as they do not have sufficient means to cope with environmental risks. In the absence of effective safety nets, poor people become trapped in chronic poverty due to the recurrent damage caused by natural disasters. Recently, there has been growing optimism among policy makers and practitioners about the role of microinsurance as a safety net against weather risks for the poorest and most vulnerable people of Bangladesh. This article sheds light on this issue by analyzing the findings of half a decade of research on the prospects of weather microinsurance in Bangladesh. The article has three main objectives: (a) It synthesizes the key findings and recommendations of the Bangladesh-specific empirical research on weather microinsurance; (b) It discusses their implications for the role of microinsurance as a safety net for the poor and ultrapoor households of Bangladesh; and (c) It identifies a number of issues that need to be addressed in future research.

The summary of half-a-decade of research results suggests that the market for a standard, standalone weather microinsurance in Bangladesh is characterized by low demand, poor governance and lack of prospects for commercial viability. Microinsurance's role as a safety net against environmental risks for the poor does not bode well either. Unless microinsurance products are designed specifically to address the needs of the poorest population groups through market segmentation to allow cross-subsidization, there is very little hope that the most vulnerable people of Bangladesh can be brought under microinsurance coverage. The current (un)regulatory arrangement of microinsurance supply in Bangladesh is not suitable for introducing weather microinsurance contracts. Without a properly functioning regulatory environment that guarantees accountability and protects clients' rights, weather microinsurance services are likely to increase rather than decrease poor people's vulnerability. Regulatory reforms are necessary to

ensure good governance and to foster market efficiency through low-cost delivery and product innovation.

The ultimate message of this article is not a glossy and happy one. Insuring the poor is extremely difficult and though good institutions such as microfinance and microinsurance may do a better job than large-scale standard institutions, it may still be too difficult a task. The failure of appropriate insurance underlines the gravity of the tragedies likely to befall Bangladesh with climate change and should bring home the message that the international community (in particular the heavy emitters) have a serious moral responsibility to minimize emissions and to compensate for the damage that still caused.

One area where rich and low-income country policies meet and interact in a particularly complex way is when it comes to trade policies for biofuels, as explored by Håkan Eggert and Mads Greker. Rich industrialized countries in the EU and the United States have subsidies for domestic biofuel production but apply tariffs for imports. The developing countries that produce biofuel, however, do not have binding restrictions on carbon emissions and thus increasing trade may be problematic. The risk is that the rich countries pursue carbon reductions, through imports for biofuel substitution that are largely illusory if the increased emissions in the exporting country are not properly accounted for. However, there is also the risk that the biofuel producers in the industrialized countries will overemphasize this argument to gain protection for their (inefficient) domestic production. The purpose of this article is to consider optimal trade policies, taking into account the potential for carbon leakage and the complex set of policies in place for biofuels. A central result from the earlier literature on trade policies and carbon leakage is that border carbon adjustment for import from unregulated GHG emission countries is efficiency enhancing. In this article, the authors extend the analysis and include the possibility for GHG emissions abatement, which allows analysis of biofuel import standards. First, the authors consider the case of optimal trade policies, and find that the combination of an import standard and a border carbon adjustment welfare dominates a border carbon adjustment. The import standard should be set so that the emissions intensity is as it would be if the foreign biofuels industry were subject to a global tax. The second major result of the article is in the context of a blending mandate and trade policies. A blending mandate corresponds to a subsidy to biofuels and a tax of fossil fuels and significantly alters the way the market works. Given the suboptimal implementation of a blending mandate, the optimal border carbon adjustment depends on the domestic subsidy to biofuels production. High levels of subsidies may in fact imply a negative border carbon adjustment so that the optimal policy would be an import subsidy.

Looking ahead, we face daunting challenges in several different respects. Let us mention just three: (a) We need to consider not only efficiency but feasibility and in particular distributional concerns in policy selection; (b) We need to deal with *combinations* of goals. Environmental problems are urgent but so are many other pressing goals such as dramatically urgent needs for poverty alleviation, employment creation, or conflict resolution; (c) We need to deal with policies that require action at the local,

national, and international levels—and sound *realistic* policy making must deal with ways these policies interact. In the area of global climate change, Ostrom (2009) speaks of polycentric governance as a way to structure our thinking on policy making that has numerous goals and numerous geographical scales simultaneously.

An important and historically contentious issue is whether developing countries have the administrative capacity to deal with complex environmental policy instruments. Coria and Sterner (2010, 2011) explore such issues, particular the case of tradable permits in Chile, where in fact the program has had rather mixed results. However, many articles in this issue testify that developing countries do manage to implement policy instruments (see also, for instance, Newell, 2009 and other articles in the December 2009 issue of JED on CDM governance in developing countries). We do not attempt to generalize here, but we note that many developing countries still need to develop many basic government functions such as tax systems, public expenditure, social security, and so forth. Seen in this perspective, it seems, to us, strange to say that they are simply incapable of sensible environmental policies. Of course, striving for instruments that are simple and transparent, such as taxes on fossil fuels, is of first-order importance. At the same time, in many cases such instruments are incomplete, and when there are multiple goals, they may be insufficient as when pollutants create hotspots that taxes and simple permit schemes cannot take into account. The tradeoffs between better governance with environmental instruments and the risk that such instruments may pose in terms of sophisticated management, as well as risks posed by rent seeking, need to be managed cautiously from case to case. One conclusion we may take to heart is that many countries need more capacity building in the area of environmental management. Another might be that we cannot look at simultaneous goals and conclude that, if they compete, one must simply be somehow “prioritized” over the other. The issues are too urgent. We have been speaking for at least forty years about sustainable development, and it is time to get very serious about pragmatic instruments that can be adopted in the face of many deeply connected goals, complications, and political realities.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors gratefully acknowledge support from the Swedish Research Council FORMAS program COMMONS.

Note

1. To celebrate this somewhat emblematic anniversary, a number of special issues, events, and books will be written. To mention but one, this journal recently published another special issue with several interesting perspectives including the role of trade and technology, equity

and fairness, capacity building, negotiations, governance, and research. See Cléménçon (2012) for an overview.

References

- Cléménçon, R. (2012, March 21). From Rio 1992 to Rio 2012 and beyond: Revisiting the role of trade rules and financial transfers for sustainable development. *Journal of Environment & Development*, 21 (1), 5-14. doi:10.1177/1070496512436890
- Coria, J., & Sterner, T. (2010). Tradable permits in developing countries: Evidence from air pollution in Chile. *Journal of Environment and Development*, 19, 145-170.
- Coria, J., & Sterner, T. (2011). Natural resource management: Challenges and policy options. *Annual Review Resource Economics*, 3, 14.1-14.28.
- Hecht, S., & Cockburn, A. (1992). Rhetoric and reality in Rio. *Nation*, 254, 848-854.
- Newell, P. (2009). Varieties of CDM governance: Some reflections. *Journal of Environment & Development*, 18, 425-435.
- Ostrom, E. (2009, October 1). *A polycentric approach for coping with climate change* (World Bank Policy Research Working Paper Series No. WPS 5095). Retrieved from http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2009/10/26/000158349_20091026142624/Rendered/PDF/WPS5095.pdf
- Rowland, W. (1973). *The plot to save the world*. Toronto, Ontario, Canada: Clarke, Irwin.
- Sterner, T. (Ed.). (2012). *Fuel taxes and the poor: The distributional consequences of gasoline taxation and their implications for climate policy*. New York, NY: RFF Press, Routledge.
- Sterner, T., & Coria, J. (2012). *Policy instruments for environmental and natural resource management*. New York, NY: RFF Press, Routledge.
- Sterner, T., & Damon, M. (2011). Green growth in the post-Copenhagen Climate Energy Policy. *Energy Policy*, 39, 7165-7173. Retrieved from <http://dx.doi.org/10.1016/j.enpol.2011.08.036>

Bios

Maria Damon is an Assistant Professor of Public Policy and Assistant Professor of Environmental Studies at New York University.

Thomas Sterner is a Professor of Environmental Economics at the University of Gothenburg and a University Fellow at Resources for the Future.