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**GREEN  
FISCAL POLICY  
NETWORK**

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**Issue 2 – March 2015**

**Fiscal Policy and Climate Change**

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**1. Welcome Message from the Green Fiscal Policy Network Secretariat**

Now more than ever, climate change has taken center stage in the global development agenda, as key events in 2014 illustrated. The first, the publication of the Intergovernmental Panel on Climate Change's Fifth Assessment Report in the first half of 2014 provided empirical evidence that climate change was not only inevitable, but was already occurring, and underlined the need for urgent action. Next, the UN Climate Summit in September identified 8 Action Areas - agriculture, cities, energy, financing, pricing carbon, forests, industry, resilience (to climate change-related natural disasters) and transportation - that can focus the global response to climate change. Then in December, the 20th Conference of Parties (COP 20) in Peru resulted in an agreement that individual countries should define intended nationally determined contributions, to be disclosed in the first quarter of 2015. This selection of events is expected to build up to COP 21, to be held at the end of 2015 in Paris, which offers a promising platform for reaching a global agreement on tackling climate change.

This second issue of the Green Fiscal Policy Network newsletter is the first in a series of issues that will focus on fiscal policy for climate change mitigation and adaptation, in the lead up to COP21 later this year. Four thematic newsletters will be issued, addressing fiscal approaches to mitigating and adapting to climate change, starting with this issue's theme on carbon taxes.

We hope you will enjoy the issue and contact us if you would like to contribute to forthcoming issues!

Ian W. H. Parry

Joy Kim (UNEP), Ian Parry (IMF) and Tobias Zeller (GIZ)

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## 2. Guest Article: Time To Tax Carbon

by Ian Parry, Fiscal Affairs Department, International Monetary Fund



*\*Ian Parry is Principal Environmental Fiscal Policy Expert in the Fiscal Affairs Department of the IMF. Parry's research focuses on the development of analytical models to quantify the economic impacts and efficient levels of a wide range of environmental, energy, and transportation policies. His research emphasizes the critical role of fiscal instruments to address externalities and raise revenue.*

Relentless atmospheric accumulation of greenhouse gases, especially carbon dioxide (CO<sub>2</sub>), threatens, in the absence of inadequate emissions mitigation measures, to warm the planet by around 3-4°C by the end of this century, with serious risks of much higher warming and a radically altered global climate system. In the run-up to the UN Framework Convention on Climate Change (UNFCCC) conference in December 2015, countries will be putting forward emission reduction pledges, heightening interest in the efficient design of mitigation policies.

### ***The Need for Fiscal Instruments***

Although there are many different instruments for reducing CO<sub>2</sub> (renewables subsidies, energy efficiency mandates, incentives for alternative fuel vehicles, electricity taxes, and the like), fiscal instruments-emissions taxes and tax-like instruments-are by far and away the most efficient approach. As a price on CO<sub>2</sub> is reflected in the price of fossil fuels, electricity, and so on, this exploits, and strikes the right balance between, the full range of mitigation opportunities: shifting from coal to gas and from these fuels to renewables in power generation, reducing electricity demand, reducing demand for traditional transportation and heating fuels and so on.

### ***Carbon Taxes vs. Emissions Trading***

Carbon pricing can be implemented either through taxation-charging for the CO<sub>2</sub> emissions caused by fuel combustion-or by an emissions trading system (ETS), where the government issues a fixed amount of emissions permits which firms can trade. In principle, either instrument is fine, so long as it is well designed, most importantly by:

- establishing a stable emissions price, in line with environmental damages-around \$35 per ton of CO<sub>2</sub> according to US IAWG (2013)-to balance environmental benefits and economic costs and mobilize clean technology investments;
- exploiting fiscal opportunities, most obviously using revenues from carbon pricing to lower the burden of broader taxes on labor and capital accumulation;
- comprehensively pricing all sources of CO<sub>2</sub> emissions (insofar as practical) and keeping administration simple.

In practice ETSs are a somewhat more convoluted way to achieve these objectives, which could imply a greater risk of design flaws. For one thing, ideally ETSs are accompanied

by tight price collars (i.e., price floors and ceilings) with prices set exogenously in line with environmental damages, which obviates the need for much permit trading whereas stable prices should be automatic under a carbon tax. For another, environment ministries need to auction the allowances in an ETS and remit revenues to the finance ministry if carbon pricing is to be part of a broader (revenue-neutral) fiscal reform. If fiscal opportunities are not exploited, for example when allowances are given away for free or revenues are earmarked for low-value spending, the overall cost of carbon pricing for the economy is substantially higher (Parry and Williams 2012). Also, carbon taxes involve a highly practical extension of what finance ministries in most countries are already doing, namely collecting motor fuel excises, which are among the easiest of all taxes to administer. A carbon charge can be built into these excises and similar charges applied to the supply of other petroleum products, coal, and natural gas. ETSs involve new procedures for monitoring emissions and trading and may be infeasible in countries with weak institutions.

### ***Progress so Far***

Carbon pricing schemes-mostly in the form of ETSs, perhaps in part reflecting insufficient engagement of finance ministries-are rapidly emerging in many regions (see Figure1), though most have some design issues. For example, emissions prices in the European Union ETS have been volatile and recently relatively low (less than \$10 per ton), revenue opportunities were largely forfeited through free allowance allocations, and the system covers only around half of emissions. Examples of carbon taxes are discussed in Box 1, one common problem here being large discrepancies in prices across different emission sources.

#### **Box 1. Examples of Carbon Taxes**

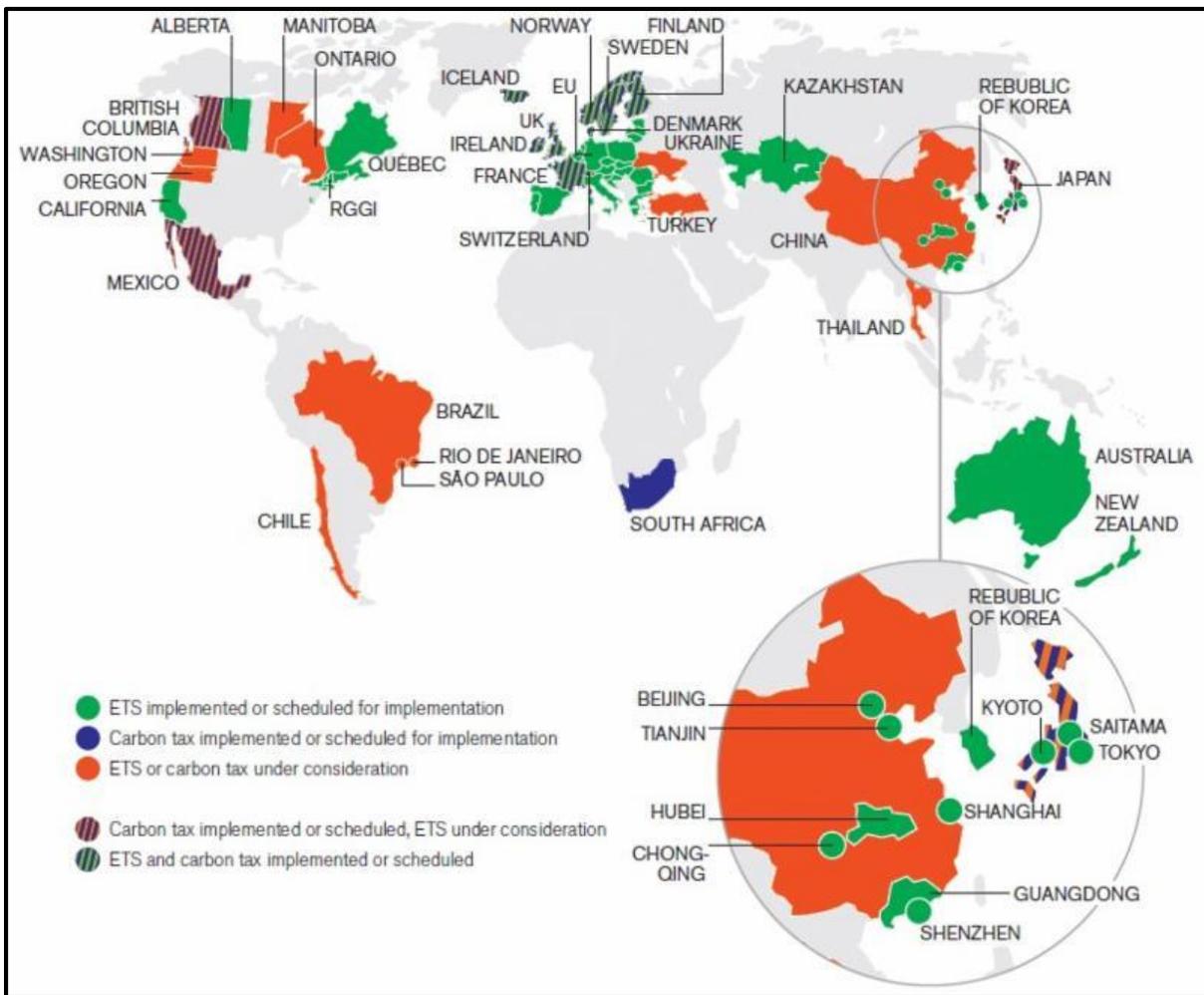
British Columbia provides a 'textbook' example of carbon taxes. The tax (phased in from 2008) is US \$28 per ton, applies comprehensively to fossil fuel CO<sub>2</sub> emissions, and revenues have been used to lower personal and business taxes. Emissions have fallen significantly with little apparent impact on economic growth, though very little of the province's electricity comes from fossil fuels (Metcalf 2015).

Sweden's carbon tax (introduced in 1991) is a striking \$168 per ton of CO<sub>2</sub>, but the full rate is applied only to household heating and transport fuels. Full exemptions are provided for firms covered under the EU ETS and partial exemptions for other industry.

Ireland's carbon tax (US \$28 per ton and introduced in 2010) applies to all non-ETS sources of CO<sub>2</sub>. As with Sweden however, there are large differences in CO<sub>2</sub> prices between ETS and non-ETS sectors.

South Africa is planning to introduce a carbon tax to comprehensively cover fossil fuel emissions, although proposed-emissions free thresholds would lower the effective tax to about \$4 per ton of CO<sub>2</sub>.

**Figure 1. Existing, Emerging, and Potential Carbon Pricing Schemes**



Source. WBG (2014), pp. 16.

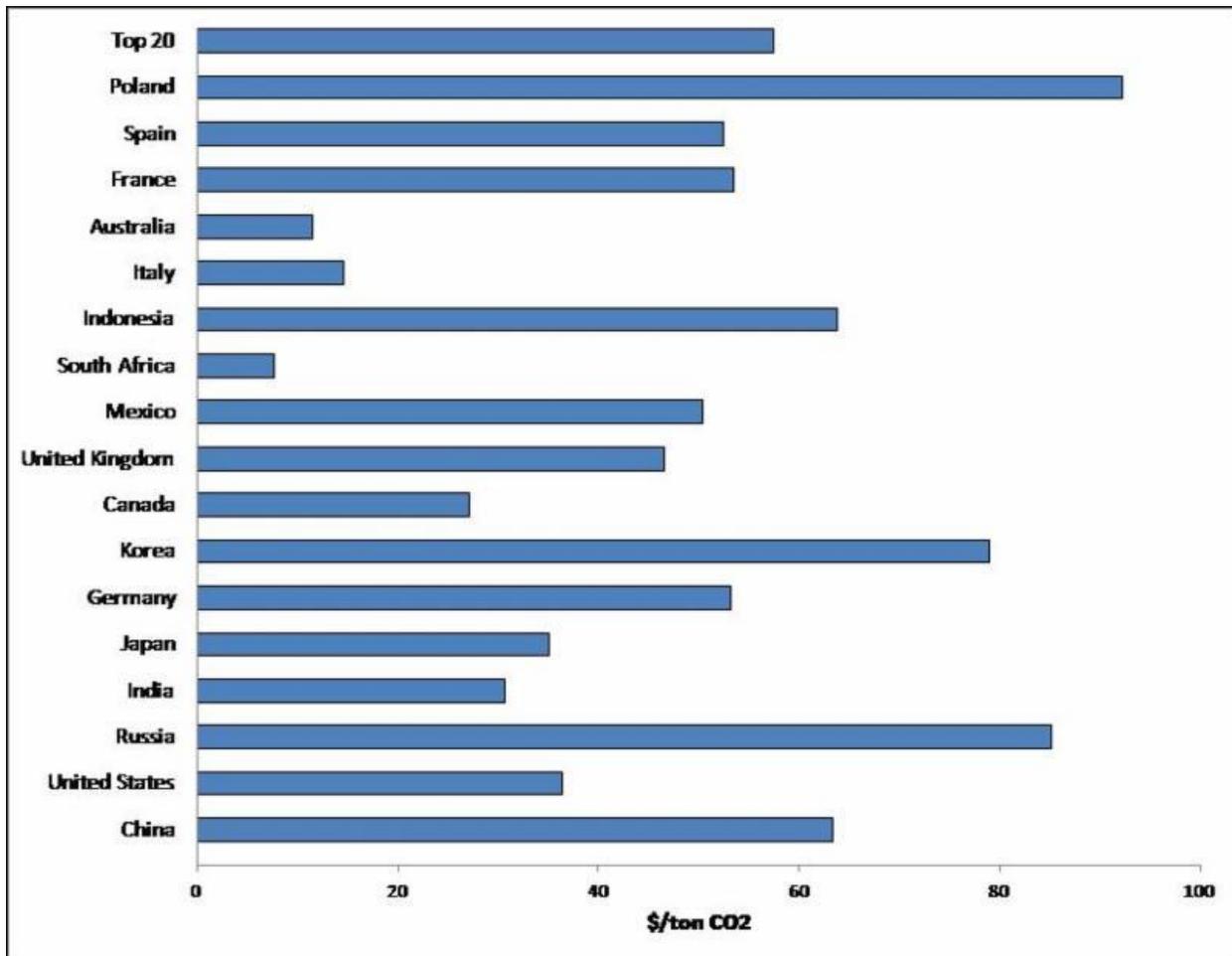
### ***Moving Ahead at the National and International Level***

Higher energy prices harm vulnerable households and firms. However, holding down energy prices below levels warranted by production and environmental costs is a highly inefficient way to help low-income households as typically 90 percent or more of the benefits leak away to higher income groups. More targeted fiscal and spending instruments are a better way to protect the poor (Clements et al. 2013). Over the longer term, proper pricing of energy- covering supply and environmental costs- is required to efficiently allocate productive resources across different sectors of the economy (even if other countries continue to subsidize energy). But in the near term, concerns about competitiveness and displaced workers need to be addressed.

Besides dealing with these sensitivities, the benefits of carbon pricing must be communicated to legislators and the public. In this regard, recent IMF work suggests some good news: carbon pricing is actually in many countries' own national interest due to domestic environmental co-benefits e.g., fewer air pollution deaths as less coal is burned, outweighing CO<sub>2</sub> mitigation costs. As indicated in Figure 2, assuming these co-benefits are not immediately addressed through other pricing policies, they warrant a substantial amount of near-term carbon pricing before even counting global warming benefits. This suggests that the free rider problem (why should one country, especially a developing country not responsible for historical emissions, take costly mitigation measures when the future climate benefits largely accrue to other countries?),

which has been a key stumbling block at the international level, may be somewhat overblown. Still, it is difficult to see how an international agreement among 190 plus countries can be effectively enforced, beyond peer pressure.

**Figure 2. CO2 Prices Warranted by Domestic Environmental Benefits, Excluding Climate Benefits, 2010**



Source. Parry et al. (2014).

Note. Figure shows, for large CO2 emitters, CO2 prices that would be needed to maximize domestic co-benefits (reduced local air pollution, traffic congestion, etc. as carbon pricing reduces fossil fuel use, and accounting for any internalization of these externalities through existing fuel taxes) less climate mitigation costs. "Top 20" shows the price averaged across the twenty largest emitters (the above countries plus Brazil, Saudi Arabia, and Iran), weighting country prices by their emissions shares. Calculations are based on 2010 data.

Other multilateral approaches should be explored in parallel with the UNFCCC process, particularly the possibility of a carbon tax floor agreement among high emitters, as the top twenty emitters account for 80 percent of global CO2 emissions. A tax floor provides some degree of protection against tax competition for all participants, while allowing individual countries the flexibility to go beyond the floor for domestic environmental, fiscal, or other reasons. While there are practicalities such as monitoring and penalties for violations to work out, there are precedents for this type of agreement, notably floors for value added taxes and excises on alcohol, tobacco, and energy products in the European Union.

### **The Time is Right**

While numerous countries are considering carbon pricing, the fact is that at present with only 12 percent of global emissions formally priced and typically at levels below \$10

per ton (WBG 2014)-we are a long way from where we need to be. The 60 percent decline in oil prices over the last three years, continuing fiscal pressures from the 2008 crisis, and the need for countries to make emissions pledges, suggest that now is the right time to tax carbon.

### **Further Reading**

Clements, Benedict, David Coady, Stefania Fabrizio, Sanjeev Gupta, Trevor Alleyene, and Carlo Sdravovich (eds.), 2013. *Energy Subsidy Reform: Lessons and Implications*. International Monetary Fund, Washington, DC.

Metcalf, Gilbert, 2015. "A Conceptual Framework for Assessing the Effectiveness of Green Fiscal Reforms." Paper prepared for the Green growth Knowledge Platform, available at: [www.greengrowthknowledge.org/sites/default/files/Metcalf\\_A\\_Conceptual\\_Framework\\_f\\_or\\_Measuring\\_the\\_Effectiveness\\_of\\_Green\\_Fiscal.pdf](http://www.greengrowthknowledge.org/sites/default/files/Metcalf_A_Conceptual_Framework_f_or_Measuring_the_Effectiveness_of_Green_Fiscal.pdf).

Nordhaus, William D, 2013. *The Climate Casino: Risk, Uncertainty, and Economics for a Warming World*. Yale University Press, New Haven, Connecticut.

Parry, Ian W.H., Chandara Veung, and Dirk Heine, 2014b. "How Much Carbon Pricing is in Countries' Own Interests? The Critical Role of Co-Benefits." Working paper 14174, International Monetary Fund, Washington, DC.

Parry, Ian W.H. and Robertson C. Williams, 2012. "Moving US Climate Policy Forward: Are Carbon Tax Shifts the Only Good Alternative?" In Robert Hahn and Alistair Ulph (eds.), *Climate Change and Common Sense: Essays in Honor of Tom Schelling*, Oxford University Press, 173-202.

Parry, Ian W.H., Ruud de Mooij and Michael Keen (eds.), 2012. *Fiscal Policy to Mitigate Climate Change: A Guide for Policymakers*. International Monetary Fund, Washington, DC.

US IAWG, 2013. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*. Interagency Working Group on Social Cost of Carbon, United States Government, Washington, DC.

US IAWG, 2013. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*. Interagency Working Group on Social Cost of Carbon, United States Government, Washington, DC.

Wagner, Gernot and Martin L. Weitzman, 2015. *Climate Shock: The Economic Consequences of a Hotter Planet*. Princeton University Press, Princeton, New Jersey.

WBG, 2014. *State and Trends of Carbon Pricing 2014*. World Bank Group, Washington, DC.

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### 3. Quick Links

- [Green Fiscal Policy Network website](#)
  - [IMF Environment Page](#)
  - [United Nations Environment Programme \(UNEP\) Green Economy Initiative](#)
  - [GIZ Environment and Climate Change](#)
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### 4. What's New On The Network

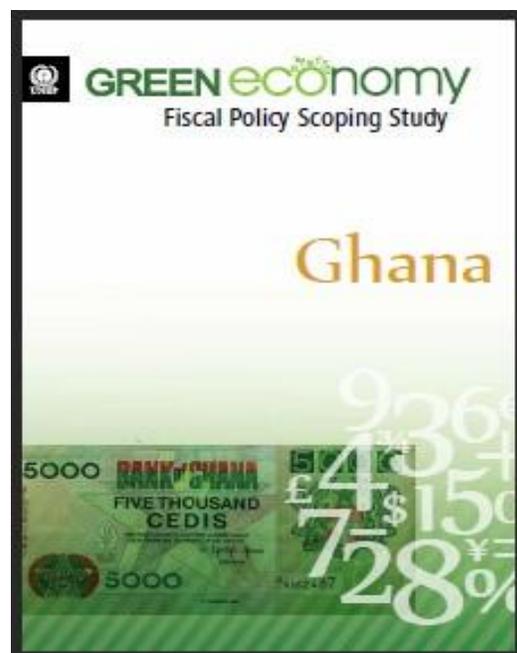
#### **Publications**

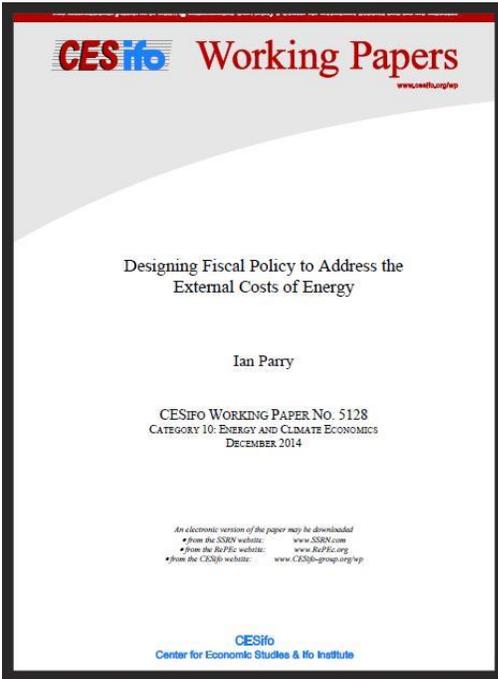
The following reports are available for download on the website.



This [GIZ publication](#) (July 2014) covers publications, articles etc from 2001 to 2014 on fuel price policies, taxation and subsidies. It provides a good starting point to reflect on what has already been done in this field and how the debate has evolved.

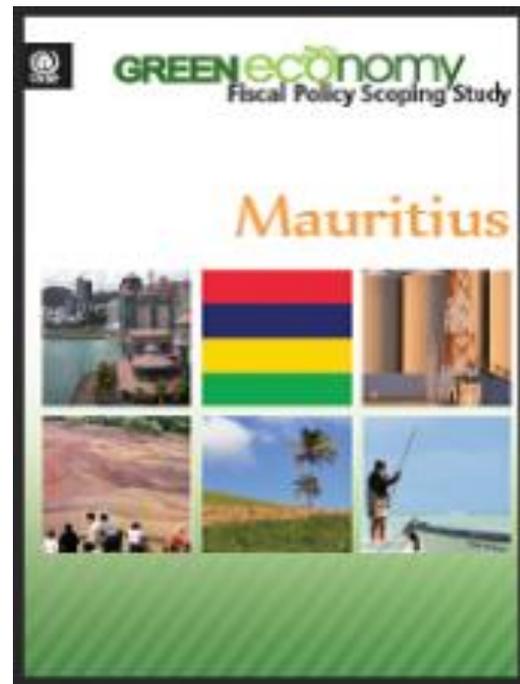
This [UNEP study](#) explains and analyzes Ghana's efforts at greening its economy through a number of environmental fiscal measures, including a sector-by-sector overview of some of the initiatives implemented to date. The study also provides some policy options that could strengthen the use of fiscal policy in achieving a green economy transformation.





This [IMF working paper](#) reviews the conceptual case for, and appropriate design of, fiscal policies to address major externalities associated with energy use (global warming, local air pollution, congestion etc) from motor vehicles. It describes techniques for (roughly) estimating the magnitude of these externalities, and provides corrective energy taxes, on a country-by-country basis. Finally, it discusses the implications for reforming energy taxes, and the potential environmental, health, and fiscal benefits from reform.

This [UNEP publication](#) (December 2014) explains and analyzes Mauritius' efforts at greening its economy through a number of environmental fiscal measures, including a sector-by-sector overview of some of the initiatives implemented to date. The study also provides some policy options that could strengthen the use of fiscal policy in achieving a green economy transformation.



## Country Profiles

The following country profiles are now available on the website. These profiles provide an overview of the fiscal, social and environmental situation in each country and provides information on green fiscal measures currently in place.

### [Colombia](#)



### [Ivory Coast](#)



### [Mozambique](#)



### [Rwanda](#)



## ***Flyer***

A new flyer on the Green Fiscal Policy Network is now available on the website. Click [here](#) to download it.

## ***Policy Brief on Fossil Fuel Subsidies***

A policy brief on fossil fuel subsidies provides some key facts and messages on measuring fossil fuel subsidies, obstacles to reform and how to successfully reform these subsidies. Click [here](#) to download it.

## ***Survey***

Please help us improve our website by responding to a short, 5 minute survey on our website. Your answers will help us provide resources best suited to your interests and needs. Click [here](#) to complete the survey now.

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## **5. Recent and Forthcoming Events**

### ***January 28-29, 2015. Green Growth Knowledge Platform 3rd Annual Conference***

The GGKP held its third annual conference on the theme of "Fiscal Policies and the Green Economy Transition: Generating Knowledge - Creating Impact" in Venice, Italy, from 29 through 30 January 2015. The conference was hosted by UNEP in partnership with Ca' Foscari University of Venice and The Energy and Resources Institute (TERI). 247 researchers, experts and policy makers engaged in lively exchanges in more than 20 panel sessions where they examined newly developed research on the most effective means of introducing and reforming fiscal measures in support of green growth, across various national contexts. This research represents the top 25 per cent of 200 abstracts received and reviewed by the Conference Review Committee. Over 50 papers were discussed, including 6 in-depth scoping studies developed through the GGKP's Fiscal Instruments Research Committee. More details about the conference are available on its website: <http://www.greengrowthknowledge.org/event/conference2015>

### ***January 1, 2015. Green Budget Europe founded in Brussels***

Green Budget Europe (GBE) is a Europe-wide initiative established to stimulate discussion and encourage progress on environmental fiscal reform (EFR) internationally, at EU level, and in individual European states. It was established on 1st January 2015. GBE will conduct research, disseminate information, and develop and propose fiscal and budgetary policies that take climate, environment and sustainability issues into account. A wide range of policy instruments from taxes and trading through to deposit-refund schemes and extended producer responsibility will come under the GBE lens.

Some of the new organisation's specific focus areas will be subsidy reform and full cost pricing in Europe's energy sector; environmental taxes such as taxes on NOx and SO2 emissions, on pesticides and on single-use batteries; EFR measures to boost resource efficiency and the circular economy; and social equity considerations

that ensure that price increases resulting from EFR are accompanied by adjustments for income levels and the ability to pay. Both organizations and individuals can join GBE, support its work and be part of its growing network of experts on EFR.

Visit the GBE website: <http://www.foes.de/internationales/green-budget-europe/?lang=en/>

### ***November 13, 2014. Conference on Energy Tax and Regulatory Policy in Europe: Reform Priorities and Research Needs***

25 participants from academia, the European Commission, and various government agencies and international organizations attended this workshop at the Ifo institute in Munich on November 13-14, 2014. The purpose of the workshop was to provide feedback to authors of draft papers on a diverse range of timely energy tax and regulatory issues of interest to policymakers in the European Union. Issues covered included reform of the EU Emissions Trading System; proposed changes to the EU Energy Tax Directive; the reform of electricity markets; technology policy in the European Union; policies for shale gas; renewable and energy efficiency policies; the reform of transportation taxes; and overcoming obstacles to policy reform. Ottmar Edenhofer gave the keynote address on climate change policy. The papers will be collected in a conference volume to be published by MIT Press. Presentation are available on the conference web page: <http://www.cesifo-group.de/ifoHome/events/individual-events/Archive/2014/20141113-Pittel-eme14.html#Thursday, 13 November 2014>

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## Contact us

We invite readers to take part in the Network:

- Visit our website
- Subscribe to our newsletter
- Forward this newsletter to interested people
- Send us information about recent and forthcoming events related to green fiscal policy
- Submit up-to-date information on initiatives and projects related to green fiscal policy in different countries
- Contribute a guest article to be featured in this newsletter

## Email us at:

[contact@greenfiscalpolicy.org](mailto:contact@greenfiscalpolicy.org)  
[greenfiscalpolicy@gmail.com](mailto:greenfiscalpolicy@gmail.com)