The Rationale and Role for Environmental Taxation within a Smart Policy Mix

Fiscal Mechanisms for a Sustainable Forest Sector

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What is an environmental tax?

The definition of an environmental tax:

A tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment

Source: United Nations, European Union, Food and Agriculture Organization of the United Nations, International Monetary Fund, Organisation for Economic Co-operation and Development, The World Bank, 2014, System of Environmental-Economic Accounting 2012 Central Framework , p. 121

→ environmental motivation and/or purpose for implementing a tax is not relevant!

→ a tax is environmental by considering the tax base

Environmental taxation - motivation

- The primary objectives and benefits of environmental taxes are to reduce pollution and resource use; changing behaviour and internalising externalities / external costs, i.e. to correct an inefficient market outcome → rationale for governmental intervention either via *'existing markets'* as compared to '*creating new markets'*

- Several secondary benefits to be considered too: lower health-related costs, trigger eco-innovations that generate wealth and jobs

- A further benefit of environmental taxes is their fiscal function, i.e. generating scarce budgetary sources

BUT policy failure arises from government policies that generate 'perverse' incentives with regard to resource uses and pollution behaviour (i.e., environmentally damaging subsidies)

Environmental taxation - motivation

Taxes encourage both static and dynamic efficiency gains (advantages)

- helping to ensure that environmental goals are achieved at the lowest social cost
- creating ongoing incentives to continually reduce pollution / resource use

Literature: more cost effective than regulation; more effective than voluntary agreements and information

BUT not either regulatory policies or market-based policies as these policies work together – the implementation of a **smart policy mix** is required (example: transport fuel taxes and vehicle emission performance standards; can address rebound effects)

The fiscal function - Environmental Tax Reform

Environmental /ecological/ green tax reform:

- *Environmental tax reform (ETR) is a reform of the national tax system where there is a shift of the burden of taxation from conventional taxes, …, to environmentally damaging activities, such as resource use or pollution. The burden of taxes should fall more on 'bads' than 'goods' so that appropriate signals are given to consumers and producers and the tax burdens across the economy are better distributed from a sustainable development perspective* (EEA, 2005)

ETR – a tool for governments, implemented along side other policy measures, aiming of achieving multiple objectives (environment /economy) simultaneously.

Implemented in different countries: Sweden, Denmark, Norway, Germany, UK, Canada (British Columbia), ..

Environmental Fiscal Reform (EFR)

Environmental fiscal reform (EFR) defined as

… a range of taxation or pricing instruments that can raise revenue, while simultaneously furthering environmental goals. This is achieved by providing economic incentives to correct market failure in the management of natural resources and the control of pollution.

EFR encompasses a wide range of taxation and pricing instruments, which can be used to address country- and sector-specific environmental and resource use issues, including:

Taxes on natural resource use (e.g. forestry and fisheries) - to reduce the inefficient exploitation of publicly owned or controlled natural resources resulting from operators not paying a price that reflects the full value of the resources they extract.

IMF/World Bank, 2005, Environmental Fiscal Reform What Should Be Done and How to Achieve It

Environmental taxes – classification

- **Energy**
  - Energy products for transport purposes; energy products for stationary purposes; CO2 taxes
- **Transport**
  - Motor vehicles import or sale (one off taxes); registration or use of motor vehicles, recurrent (e.g. yearly taxes); road use (e.g. motorway taxes); flights and flight tickets; etc.
- **Pollution**
  - Measured or estimated emissions to air; ozone depleting substances (e.g. CFCs or halons); measured or estimated effluents to water; non-point sources of water pollution (e.g. pesticides); waste management; noise
- **Resources**
  - Water abstraction; extraction of raw materials (minerals, aggregates, sand); forestry

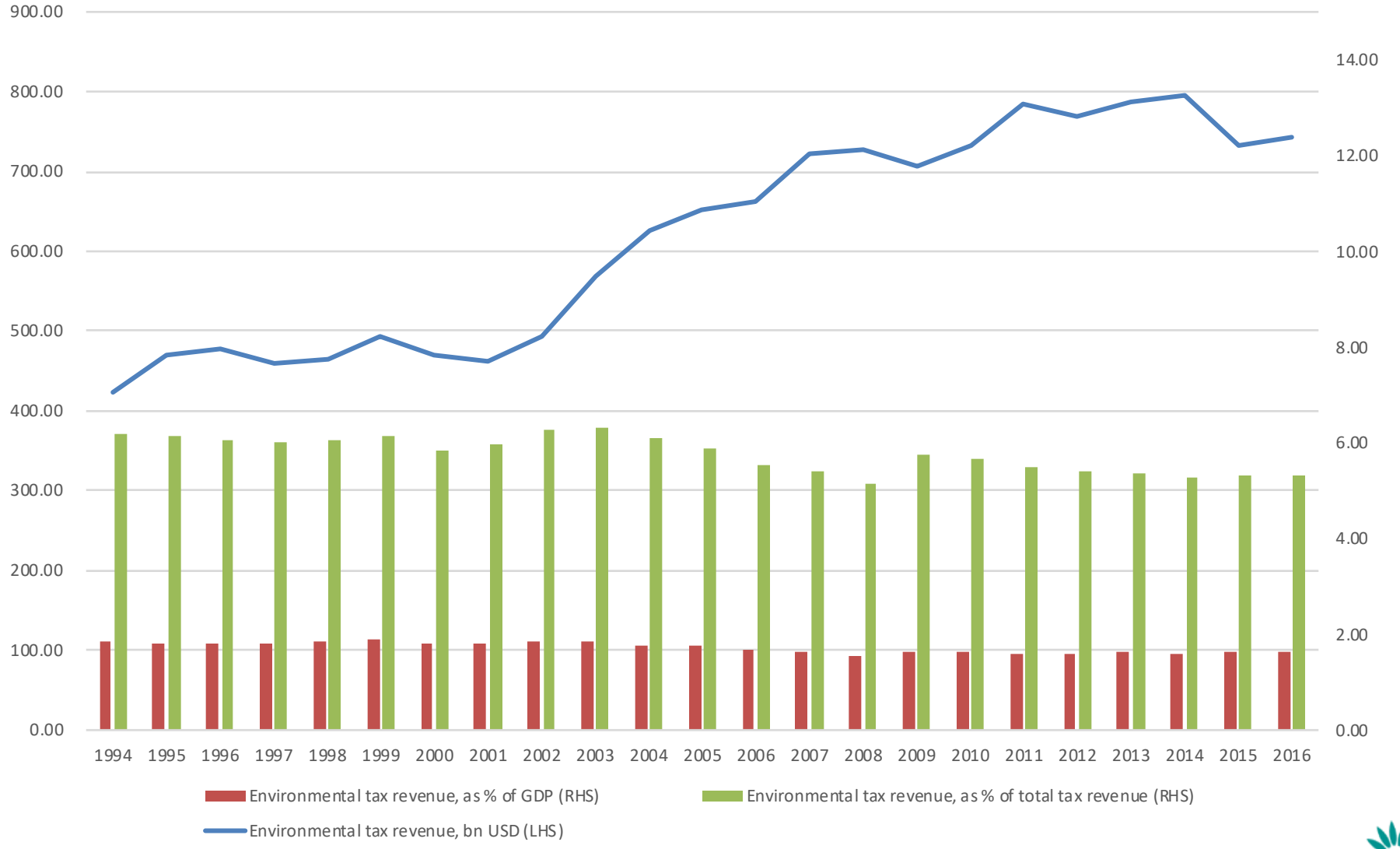
In national accounts, the payments for emission permits are recorded as 'other taxes on production' (i.e. revenues included under environmental taxes)

Foresty taxation scheme

Examples reported in OECD – Database on policy Instruments for Environment https://pinedatabase.oecd.org/

- Canada (Quebec) – charge: Cubic metre of wood: 1.03 CAD per m^3
- Colombia – forestry fee: Volume of wood extracted from natural forests: 10% of the value of the extracted wood
- Hungary – forestry fund tax: The felling of trees: rate depending on tree species and region
- Montenegro - Use of forests - sold timber: 5% of market value
- US (Alabama) - Timber severance: Pulpwood chips: 0.10 US per ton
- US (Alabama) - Timber severance – Stumpwood: 0.125 USD per ton
- US (California) - Harvested timber: 2.9% of the value
- US (Washington) – Timber: 5% of stumpage value of timber

Environmental tax revenues in OECD countries: 1994-2016



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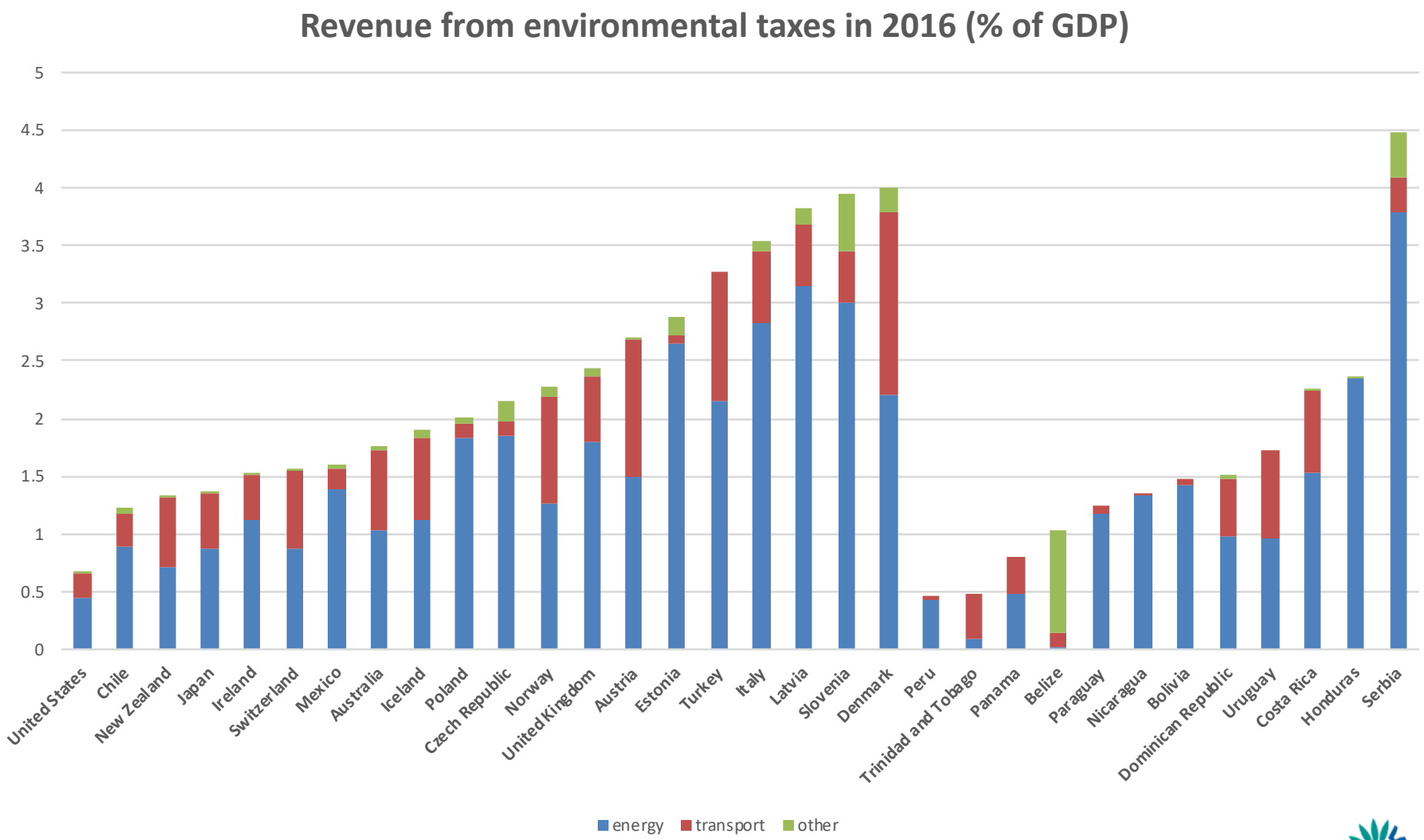
Source: OECD database https://stats.oecd.org/Index.aspx?DataSetCode=ENV_ENVPOLICY

Environmental tax revenue of selected countries



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Source: OECD database https://stats.oecd.org/Index.aspx?DataSetCode=ENV_ENVPOLICY

Forestry sector export earning - forest-related revenues

	Benin	Central African Republic (CAR)	Democratic Republic of Congo (DRC)	Republic of Congo	Mali	Malaysia	Ecuador	Nicaragua
in % of export earnings	0.2	48.7	0.4	11	25	4.2	0.83	
forest-related revenue (% of total govt. revenue)	0.03	9	0.4	0.9	0.7	1.54	0.0003	0.13

Note: Benin: export 2002 – revenue 2000; CAR: export 2003 – revenue 2003; DRC: export 2002 – revenue 2002; Republic of Congo: export 2003 – revenue 2002; Mali: export no year given – revenue 1999/2000; Malaysia: export 2002 – revenue 2002; Ecuador: export 2002 – revenue 2004 (est.); Nicaragua: revenue 2003;

Source: GTZ, 2005, Environmental Fiscal Reform and National Forest Policies An overview of forest fiscal revenue systems in 18 countries

Reported revenues forest taxation schemes: Alabama:5.8 mill USD (2015); Oregon: 9.4 mill USD (2010)

source: https://pinedatabase.oecd.org/

Environmental taxation and internalising externalities

'*A well-designed carbon price is an indispensable part of a strategy for reducing emissions in an efficient way*'

(High-Level Commission on Carbon Prices, 2017)

Economic theory for having a cost-effective and efficient carbon taxation scheme: all sources would be covered and the tax rate '*would be set equal to the marginal benefits of emission reduction, represented by estimates of the social cost of carbon*'

(Aldy and Stevens, 2012)

→ going back to Pigou, *The Economics of Welfare* (1920), i.e. internalising external costs; also called '*corrective taxes*'

Standard price approach – example: Swiss CO2 levy

'Standard price approach' - tax rate is set and can be increased so that tax is sufficient to reach a given environmental reduction target – going back to Baumol and Oates (1971); a pragmatic approach combining pricing/taxing tool with quantitative policy target!

Example: The Swiss CO2 levy on thermal fuels was introduced in 2008 and rate increased from CHF 12/t CO2 (12 USD) to its current amount of CHF 96 CHF/t CO2 (96 USD), as the interim targets for fossil thermal fuels set by the Federal Council had not been reached.

Impact assessment: the CO2 levy has led to noticeable emission reductions (Federal Office for the Environment, 2018)

How to set future carbon prices – corrective tax or standard-price approach?

Concerning the valuation of carbon damages, the standard approach in the economics literature has been to use the social cost of carbon (SCC). …

However, countries may instead prefer to use CO2 values that are in line with their mitigation pledges under the 2015 Paris Agreement, which can differ substantially from the SCC.

A combination of fiscal policy measure with regulatory policies → **a smart policy mix**!

Coady, D., Parry, I.W.H. and Shang, B., 2018, Energy Price Reform: Lessons for Policymakers, *Review of Environmental Economics and Policy*, volume 12, issue 2, Summer 2018, pp. 197–219

Thank you for your attention!

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