This version December 2014

Methodological Note
Domestic Environmental Taxes Database
General information on construction and classification[1]

Over the last decades, various economic policy instruments have played an increasing role in environmental policies and natural resources management of OECD countries. The range of instruments includes environmental taxes, fees and charges, tradable permits, deposit-refund systems and subsidies for environmental protection. In this context, we have worked on the data from the original OECD database[2]. Since the data and information in the original database are more complete for taxes than for other instruments, we have focused on statistics on taxes that can be very useful for comparisons between countries. The original data as provided by the OECD files is based on a country classification system and contains all the different types of environmentally related taxes implemented by each country, as well as their relevant rates.

This note accompanies our data collection and provides explanation on the levels of data classification that we have adopted in order to develop our database regarding the most important environmental taxes implemented by the 34 OECD countries i.e. Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States.

Having found that the original data format was not "user friendly" enough nor easily amenable to further processing, we took the necessary steps to "correct" this incompatibility.[3] Moreover, in order to group the diverse tax instruments employed by different national authorities, we firstly employed a broad data classification, where taxes are bundled according to the "general tax-base" category under which they fall[4].

For illustrative purposes, in our classification we have divided environmental taxes, organizing them into four main groups:

- **Pollution taxes**

This group includes taxes on measured or estimated emissions to air, measured or estimated effluents to water, ozone depleting substances, hazardous chemicals and management of waste.

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[1] This research has benefitted from support under the EC Seventh Framework Program for research, technological development and demonstration under grant agreement no 613504: PRONTO (productivity, non-tariff barriers, and openness).

[2] The original OECD data link is: *http://www2.oecd.org/ecoinst/queries/*

[3] In particular, the tax rate, currency and unit of measurement are merged (as text/strings) within a single cell in the spread-sheets provided by the OECD.

[4] The original OECD database is also attached in a separate sheet within the same excel file (data sorted by the general tax base and not by country).

CO2 taxes are one of the policies available to governments to reduce greenhouse gas emissions. In the original data provided by the OECD, a "tax on CO2" is considered on source-specific basis, regarding only the source from which CO2 is produced (eg. fuels, greenhouse gases etc.). As a result CO2 taxes are levied and shown on several tax bases. However, for comparison and research purposes and due to the importance of this environmental policy instrument, we identified all the relevant taxes and reported them as a separate category[5] under pollution taxes.

A CO2 tax is assumed to be a pollution tax[6] rather than an energy tax. Energy taxes which are described below increase the price of energy uniformly, regardless of the emissions produced by the energy source. An ad valorem energy tax which is levied according to the energy content of fuels or the value of energy products may not be consistent with the emitted amounts of greenhouse gases. [7]

- **Energy taxes**

This group includes taxes on fuels, used either for transport or to produce other forms of energy (stationary applications). The most important fuels for transport purposes are petrol and diesel. Fuels for stationary use include fuel oils, natural gas, coal, coke and electricity.

- **Transport taxes**

This group mainly includes taxes related to the registration, ownership and use of motor vehicles. "One-off" taxes related to imports or sales of the equipment are not included in our database; however they are available in the original OECD database (also included as a different spread-sheet). Taxes on petrol, diesel and other transport fuels are included under ***energy taxes*** as discussed above. These taxes are not imposed on a per weight/volume basis, but rather they are fixed on a time basis, usually on an annual basis.

- **Natural resource taxes**

Taxes on natural resources include a tax on water abstraction as well as a land tax based on the management of land, soil and forest resources. More specifically, the land tax includes taxes on extracted minerals such as phosphate, copper and silver, mining profits and rights, withdrawal of land from forestry, natural gravel and hydraulic structures. Land taxes from mining activities are commonly measured either by kg/tonne of extraction or per hectare. Land taxes from forestry are calculated using a formula which depends on the annual wood production.

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[5] In order to avoid duplication effects, we do not report CO2 taxes in the general category under which they appear, but rather we present these separately as a new tax category.

6 Groosman, B. "2500 Pollution Tax"in Encyclopedia of law and economics, Edward Elgar and the University of Ghent (Retrieved 2 February 2014).

7 Fisher et al., (1996), "An Economic Assessment of Policy Instruments for Combating Climate Change" in Climate Change 1995: Economic and Social Dimensions of Climate Change, Cambridge University Press.

For the categories discussed above, we provide all the environmentally related tax rates which are expressed in each country's national currency. Euro area member countries' rates are expressed in euros. The relationship between taxes and tax rates is sometimes one-to-one, but there are countries that use multiple tax rates rather than a single one. In such cases, we provide not only all the relevant taxes and/or tax-rates, but in order to cope with this diversity we provide the minimum, the maximum and the median of all available values. Whenever the measuring units were identical, we have also moved on to further grouping of the tax rates.

In certain cases, the tax rates vary across communities or across states within a country. For example, electricity consumption excise taxes differ significantly across USA states; Delaware, Columbia, Illinois, New Hampshire, Pennsylvania and Vermont. Similarly, such lack of data homogeneity takes place in Australia, Belgium, Canada, Spain and Switzerland. Our database contains only the commonly used tax rates across communities or states, or the federal tax rates if the country's political system is based on federalism.

Furthermore, we separately report the basic tradable permits, their type and whether or not their trading is allowed. Whenever the type of permits system is a quota system, the initial allocation method is also given. Finally, the tables with all the abbreviations used in the database regarding the national currencies, units of measurements and chemical terms are also provided.

The specific categories of environmentally relevant tax bases included in our database are the following:

- **Measured or estimated emissions to air**
  Tax on NOx emissions (e.g. € per tonne emitted)
  Tax on sulphur (e.g. SEK per kg sulphur)
  Tax on other emissions to air (measured or estimated) (e.g. € per tonne)
  Tax on CO2 (e.g. € per tonne, per litre, per GJ etc)

- **Ozone depleting substances (e.g. CFC, HFC, PFC or halons)** (e.g. DKK per kg)

- **Hazardous chemicals (certain chlorinated solvents, pesticides, antibiotics and growth promoters)** (e.g. € per kg)

- **Measured or estimated effluents to water**
  Tax on effluents of oxydizeable matters (BOD6, COD7) (measured or estimated) (e.g. CZK per kg)
  Water pollution tax (e.g. SKK per m^3 or per tonne etc)

- **Waste management**
  Tax on waste (general) (e.g. € per tonne)
  Tax on waste (individual products e.g. packaging, beverage containers etc) (e.g. € per tonne or per item such as battery, plastic bag, tyre etc)

- **Fuels** (e.g. € per litre or per kg)
  <u>Fuels used for transport purposes:</u>
  Unleaded petrol
  Leaded petrol
  Diesel
  Other energy products for transport purposes (e.g. LPG8 or natural gas)

Fuels used for stationary purposes:

Light fuel oil
Heavy fuel oil
Natural gas
Coal
Coke
Other fuels for stationary use
Electricity consumption (e.g. € per MWh)
Electricity production (e.g. per MWh, per year, per kg etc)

- **Transport**
  Registration or use of motor vehicles, recurrent (e.g. yearly) taxes (e.g. € per year)

- **Natural resources**
  Tax on water abstraction (e.g. € per m^3)
  Land tax (mainly from mining and forestry activities) (e.g. per hectare, per tonne)