

Science for Environment Policy

Rethinking value-added tax (VAT) to focus on environmental damage and sustainability

Sustainability in the production of goods and services could be encouraged by replacing value-added tax (VAT) with 'DaVAT,' a damage and value-added tax, a new study suggests. This tariff is partly based on a life-cycle assessment (LCA) of goods and services and varies from high (products deemed to seriously harm the environment and human health) to low (those with a lesser impact). The researchers propose a novel way to convert VAT into DaVAT and provide a new policy tool, based on LCA, that can be applied by any country wishing to reform its consumption tax system and move towards a more sustainable future.

Environmental concerns are growing as climate change, chemical pollution, ocean acidification, atmospheric aerosol loading, and modern farming practices take their toll on global ecosystems. Many scientists fear that thresholds will be crossed and uncontrollable effects triggered that will be hard to halt, highlighting the need for policies that are able to address multiple interacting environmental processes simultaneously. The principle of 'the polluter pays' — that those that create environmental damage should pay to manage and mitigate its effects — has been present in EU law for a long time (European Union Law 1992, OECD 1972)^{1,2}, but has not yet been implemented in a cohesive manner due to a number of environmental, legal, and socio-economic sticking points.

In 2008, the EU was asked to examine the possibility of introducing differential VAT rates to promote green products³, but this did not progress due to several concerns — including a lack of consistency in the definition of green criteria, and the risk of public loss of revenue. The creators of DaVAT believe they have overcome such obstacles, and propose a proportionate, non-discriminatory taxation system based on objective criteria. DaVAT adapts the present VAT system for goods and services to include a cost based on LCA — if properly structured, this could reduce the leakage and displacement of pollution, comply with general taxation principles, prevent erosion of the taxation base, protect competitiveness, and meet the requirements of social justice and equity.

DaVAT relies on three essential elements:

- (i) Uniform VAT (UVAT): Implemented by applying VAT — or consumption taxes in general — to all goods and services and reducing multiple rates to a single low rate (e.g. 3%) called UVAT.
- (ii) Global damage tax (GDT): Implemented by adding to UVAT a per-unit tax, GDT, calculated on the basis of environmental impacts assessed by means of specific or generic LCAs. In the case of high-polluting products or industries, a specific LCA will be automatically imposed. High-polluting activities must already be assessed via environmental impact studies in many countries, but these impacts are not necessarily evaluated by LCA.
- (iii) Specific damage tax (SDT): In order to reflect environmental, social, or ethical concerns specific to a country, another damage tax (SDT) is proposed that extends beyond LCA.

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2. OECD (1972). *Recommendation of the council on guiding principles concerning international economic aspects of environmental policies*. Council document no.C(72)128. Paris, France.

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DaVAT is the sum of UVAT, GDT, and SDT. It is conceived as a shift of taxation, as the rate of old consumption taxes can decrease proportionally to the increase of GDT. DaVAT is also designed in such a way that it can evolve — so, as tax revenues lower when pollutants decline, this is offset by the extension of the tax to all goods and services, alongside a gradual annual rising of the GDT. In the eventuality of DaVAT being so successful that the human health, environmental and resource depletion impacts are under control, at this point it is possible to gradually re-increase the UVAT rate to maintain tax revenue. In addition, the environmental impact of goods and services can be adjusted over time, as greater knowledge of LCAs develops alongside increased data collection bought about by the introduction of DaVAT. This would be overseen by a Da VAT regulatory body.

The damage aspect of DaVAT is assessed over three areas of protection: human health, ecosystem diversity, and natural resources. A single score for the LCA is obtained by aggregating and weighting impacts in a variety of areas including climate change, stratospheric ozone depletion, human toxicity, ecotoxicity, ionising radiation, photochemical smog formation, acidification, eutrophication, land use and fossil-energy demand.

The researchers address how the DaVAT system would work in practice — for example, as LCA has not yet been developed for each individual product or service, a number of categories would be assigned a default environmental score. This category LCA score would be updated approximately every five years, based upon a combination of voluntary LCAs, along with classification of sectoral emission inventories by flows of goods and services between different lines of business, and the results of studies looking at category LCAs to fill a knowledge gap. The researchers also propose four steps towards implementing DaVAT: establishing an LCA database, refining the LCA method used, modelling implementation costs, and performing analysis after the database has been created.

The study asserts that DaVAT overcomes the shortcomings of the differential VAT for green products put forward in 2008 and rejected by the European Commission. It draws parallels between DaVAT and the original VAT system proposed in France in 1954 — now used in 161 countries — and suggests that DaVAT would encourage producers and consumers to focus on and take responsibility for the damage linked to their activities.

