



Taxation as a tool towards true cost accounting

*Study on the reduction of VAT for organic products
& increased taxes for environmentally unfriendly pesticides*

Final Report

*"If you want to learn on the cultural context of a member state,
look at their tax systems"*

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Executive Summary: Impact and Feasibility

Since 2016 the European Union (EU) has initiated a series of changes in the application of VAT taxes. In the context of this shifting tax landscape, this study analyses the potential in the EU for using indirect taxes to bring the food market in Europe closer to the "polluter pays" principle, and to discourage the use of environmentally-unfriendly plant protection products (PPPs). In this study, the concept of True Cost Accounting (TCA) is used to demonstrate the positive impacts of encouraging a differentiation in taxation of food production methods.

We have identified six potential mechanisms for achieving this goal, as follows:

1. Excise tax on PPPs
2. Standard VAT rates on PPPs / combined with reduced VAT rate for organic pesticides
3. Excise tax on non-organic produce
4. VAT rate differentiation for food products
5. Standard VAT rate for non-organic produce
6. Reduced VAT rate for organic produce

According to our research, indirect taxes on PPPs tend to have a higher chance of being implemented and thus having the intended impact compared to indirect taxes on food. Additionally, we see that single-point taxation aimed at farm inputs is likely to be less problematic than a taxation on specific food & drink products in the retail chain. There are already member state's experiences with rating and indirect taxation of PPPs as well as for synthetic fertilizers. Therefore an excise tax or higher VAT rate on PPPs offers the greatest opportunities and smallest obstacles. By contrast, VAT nudging (influencing) policies regarding the sale of organic vs. conventional products present the least opportunities and most obstacles for positive development of the organic market in Europe. As for the impact on the external (true/environmental) cost of PPPs and synthetic fertilizers, the bigger cost factor lays within the PPP but a lobbying activity could include both. Many factors in- and outside of authorities' control commonly lead to reduced or unintended impacts of taxation. All tax policies will have to be implemented in a member state's specific cultural and political context, being accompanied by awareness-raising or other campaigns to be effective. And their effectivity has to be analyzed in the long-term as in the shorter term, sales and application quota may be falsified due to stockpiling.

Table 1: Ranking of indirect taxation solutions

1. Excise tax on PPPs and/or synthetic fertilizers	2. Standard VAT rates on PPPs/lower on substances allowed in organic farming	3. Excise tax on non-organic produce
<p>The introduction of a non-harmonized excise duty on non-organic PPPs and/or fertilizers would potentially be the most successful option:</p> <p>1. Incentivizes organic production aiming at farmers' behavior rather than at consumers' behavior</p> <p>2. Not offensive to neutrality as the effects of synthetic</p>	<p>While this option would be easily implemented, the effect may be limited:</p> <p>1. Possibly no direct price influence</p> <p>The application of a standard VAT rate could possibly be 'absorbed' by retail</p> <p>2. Counteracting price subsidies</p> <p>In case that organic pesticides</p>	<p>Using VAT rate differentiation (in one of the three proposed sub options) is not preferred, as it fails to meet the main objectives:</p> <p>1. Offensive to the principle of neutrality, as the health impact of organic produce has not (yet) been scientifically established and applying different VAT treatments to otherwise</p>

<p>pesticides and fertilizers have been scientifically confirmed</p> <p>3. State revenue boost that could be used to finance e.g. the costs for organic certification of produce, multiplying the impact</p> <p>4. Single stage taxation, leaving less leniency to consolidate the tax in other prices than those aimed at.</p> <p>Weakness: Complex rating system(s) of the substances harmfulness; cross-border shopping, stockpiling and replacement effects; taxation might give cause to social injustice</p>	<p>receive a lower VAT rate, this measure would remove the effective price subsidy that pesticides and non-organic fertilizers receive from reduced VAT rates in some Member States</p> <p>3. EU preference The EU Commission is generally in favour of the application of the standard rate. Applying the standard VAT rate to products that are currently taxed at lower rates would have a positive impact on VAT revenues.</p> <p>Weakness: Limited effectiveness because most countries already apply it; no influence on farm level as farmers can reclaim VAT</p>	<p>identical products may be difficult to justify.</p> <p>2. May increase level of complexity and administrative burden, especially for SMEs</p> <p>3. Limited effect if not truly reflected in the price</p> <p>In addition, the introduction of reduced VAT rates for countries currently applying a standard VAT rate leads to EU revenue loss and may only be temporarily effective.</p>
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Approach: Lobbying per individual member state is recommended. Adoption of reduced harmonization in tax legislation at the EU level has historically proven unlikely to happen. This study therefore emphasizes unharmonized taxes per member state as the most viable way forward.

1. The State of Play: EU VAT Developments

A value-added tax (VAT) is a consumption tax placed on a product whenever value is added at each stage of the supply chain, from production to the point of sale. The amount of VAT that the user pays is on the cost of the product, minus any of the costs of materials used in the product that have already been taxed [4].

Recent and proposed changes in EU indirect tax policy present an opportunity to re-evaluate the role that taxes play in promoting organic foodstuffs and organic farming practices.

On 7 April 2016 the European Commission adopted the Action Plan on VAT. The aim was to establish a single EU VAT area equipped to tackle fraud, support business and help the digital economy and e-commerce.

Further proposals were submitted during the course of 2017 and 2018 that included important directions for tax policy and key principles. These give important insight into the Commission's views on the future of the EU VAT system, and therefore the possibilities and limitations for implementing successful indirect tax policies.

Some proposals have now been adopted, while some are still pending. These are summarized in the following section.

1.1. Adopted and pending proposals

On 8 October 2018, the first proposals in light of the EU VAT Action plan were adopted. In summary, these include:

- Quick fixes, including:
 1. Mandatory simplification for EU cross-border transfers of call-off stock
 2. Automatic assignment of the Intra-EU supply in case of chain transactions
 3. The VAT identification number of the recipient will become a material requirement for exempting EU trade
 4. A common framework for the documentary evidence required to claim an exemption for EU trade
- Measures to allow Member States to align the VAT rates for e-publications with the regime for printed publications
- Rules to exchange more information and boost cooperation on criminal VAT fraud between authorities
- Reinforced rules to control illicit cash flows in and out of the EU

The following proposals are part of the EU VAT action plan but have not been adopted yet:

- SME VAT package
- Digital Single Market strategy

Definitive VAT system for cross-border trade

1.2. Tax harmonization and increased flexibility on VAT rates

Indirect taxes (i.e. taxes paid indirectly via purchasing merchandise or services) within the European Union are mostly harmonized, for example, by way of the EU VAT Directive and the Horizontal Directive for Excise Tax. This and other European legislation create the framework within which Member States are allowed to introduce indirect taxes other than those that are harmonized.

On the 18 January 2018, the European Commission proposed new rules to give Member States more flexibility to set VAT rates. Currently, Member States are allowed to apply:

- A standard VAT rate of minimum 15%
- Either one or two reduced rates which may not be less than 5%
- A wide range of pre-approved historic exceptions to the main rules, specified per Member State

The reduced rates can only apply to supplies of goods or services in the categories set out in a complex list.

According to the proposal, in the future Member States will be able to apply:

- A standard VAT rate of minimum 15%
- Two separate reduced rates between 5% and the standard rate
- One exemption from VAT (zero rate)
- One reduced rate set at between 0% and the reduced rates (super-reduced rate)

The list of goods and services to which reduced rates can be applied will be replaced by a positive list of products (e.g. weapons, alcoholic beverages, gambling, tobacco) to which the standard rate must always be applied. However, to safeguard public revenues and prevent a race to the bottom, Member States must ensure that the weighted average VAT rate is at least 12%.

1.3. The continued EU preference for standard rates

The developments described above indicate a shift towards increased flexibility in the application of VAT rates and across EU member states. However, it is important to note that the general preference amongst EU policy-makers still leans towards application of standardized rates. This can be better understood if recent developments are viewed in context.

The EU VAT Directives were first initiated in 1967. Member States committed to the establishment of a unified VAT system, but did not, however, agree on specific rules regarding reduced VAT rates. Member States were allowed to apply an unlimited number of reduced and increased VAT rates, and no lower or upper limits were imposed.

The abolition of the fiscal frontiers in 1992 required transitional VAT arrangements, since the political and technical conditions were not ripe for a genuine internal market system. This transitional system required rules on VAT rates to avoid distortion in cross-border shopping. Now that the principle of taxation has progressively shifted from origin to destination, it is recognized that Member States should be allowed more flexibility in setting VAT rates, including retention of derogations.

However, a 2011 communication paper from the European Commission to the Parliament, Council and Economic and Social Committee highlighted the benefits of a simpler, more efficient and robust VAT system. Within this, the introduction of a broader tax base, as well as the implementation of standard-rate taxation, would generate more revenue at less cost, and/or alternatively allow the standard rates to be reduced in a revenue-neutral way. Any derogation from those principles would have to be rational and uniformly defined. While such a VAT system would primarily be in the interest of Member States, it would also reduce administrative burdens for businesses.

In the same document, the Commission deems it worth noting that the existing application of reduced rates translates into significant subsidies. The exact proportion differs considerably between Member States, depending on the use made of reduced rates. The economic evaluation calculated that for a sample of 9 Member States, these subsidies represent between 8,2% and 53,3% of the VAT revenues of those Member States. Abolishing the reduced rates would theoretically enable the standard rate to be reduced between 1,9 and 7,5 percentage points.

It is evident, then, that despite current efforts to increase VAT flexibility, the EU retains a preference for the application of standard VAT rates and limiting the use of reduced rates. This is especially pertinent in the current economic and financial context, which demands strong fiscal consolidation.

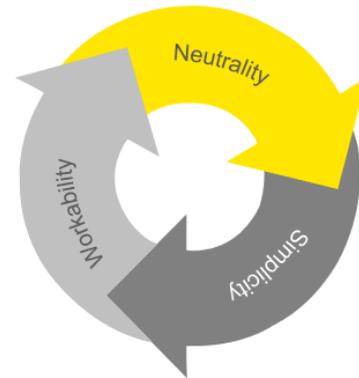
2. Identifying Effective Approaches to Tax Nudging for Developing the European Organic Market

2.1. Core Principles in EU tax policy

While considering the introduction of new or deviating VAT rates, it is important to ensure adherence to three key principles: Neutrality, Simplicity and Workability.

Neutrality

Similar products should be taxed in the same way. For example the reduced VAT rate on books. The application of the reduced VAT rate for e-books is now permitted under EU laws, even though it was resisted by the EU Commission for many years. This ruling has been made on the basis that e-books are effectively the same as printed books. By the same logic, if organic apples, for example, were granted a reduced rate but non-organic apples had a higher rate, producers of non-organic apples could claim that this measure was discriminatory and a breach of neutrality.



Simplicity

Adding additional VAT rates adds to the legislative complexity of the VAT system and adds to the compliance burden for retailers and producers, many of which could be small to medium sized enterprises (SMEs). In combination with the third key principle (below), it should be clear as reasonably possible what any additional VAT rate does and does not apply to (i.e. for example linking rates to existing EU organic certification programs).

Workability

Boundary disputes may arise where very similar products are taxed in different ways between neighbouring member states. This is especially true if that differentiation is applied at the retail stage by SMEs, which may lead to fraud and inadvertent non-compliance (e.g. non-organic produce being labelled or sold as organic products – see the “Gatto con gli stivali” example, section 3.2.3). On the other hand, the taxation rate difference needs to be sufficiently large in order to have an influence on behaviour (e.g. in Denmark, low additional rates added to foodstuffs were not effective and the measure was repealed).

These three principles form the core rationale for identifying effective taxation policies for achieving specific goals, as described in the following section.

3. Nudging behaviour through indirect taxes: Country experiences, challenges and limitations

Indirect taxes – in this case specifically VAT and excise taxes - can be used to influence societal behaviour and economic dynamics in a range of ways. The application of such policies can be complex both in terms of execution and the actual effects they have on society.

There are a range of existing policies that can help us understand the possibilities and limitations of different taxation mechanisms for influencing production and consumption of organic foodstuffs.

3.1. VAT nudging

As highlighted above, we see that there is still an EU-level resistance towards application of reduced or differentiated VAT rates in member states. This section describes some previous or existing VAT policies in EU member states, summarizing some of the key debates in the field.

3.11

3.12 The need for simplicity: Optional reduced VAT rates on children's clothing and footwear

Adjustments to VAT are commonly assumed to add unwanted complexity in terms of implementation, especially for small and medium-sized enterprises (SMEs) bearing extra administrative burden and therefore contradicting the principle of simplicity.

For example, in 2003 the European Commission proposed abolishing the optional reduced tax rate on children's clothing and shoes for the following reasons:

1. Limited uptake (only UK & Ireland)
2. Lack of simplicity and clarity
3. Distortion of competition
4. Limited effectiveness (not impacting prices significantly)

The actual effects of the policy on prices have also been called into doubt. A survey showed that in 2003, if the average price of children's shoes was 100, the same shoes were 126 in Luxembourg (3% rate), 119 in Denmark (25% rate) and 116 in the UK (0% rate).

3.1.1. EU resistance to VAT rate differentiation for food products

This European Commission is also resistant to VAT rate differentiation more broadly, and this is evident in the case of food products.

By 2003, the Commission had received many requests from Member states to apply a reduced rate to a.o. organic products or products awarded a European eco-label. The Commission replied that current levels of harmonization across members states through application of standard rates should be maintained as far as possible.

VAT differentiation of organic vs non-organic food and drink products is also likely to be offensive to the principle of neutrality. Certification of the production method or other criteria that do not relate directly to the properties of the actual product (such as an organic apple and a non-organic apple as products apparently identical in nature) as means to distinguish between two products is not sufficient from a VAT perspective. These 'similar goods' are thus in competition with each other and VAT differentiation would therefore violate principles of neutrality.

For example, in 2001 there were disputes between the European Commission and France over the application of a differential rate between "non-reimbursable" and "reimbursable" medical products. In this case the medical products themselves were not significantly distinguishable, and therefore did not qualify for VAT differentiation.

3.1.2. VAT policies with potential: Differentiated VAT policy on selected food items (SK)

As of 2016, Slovakia implemented a policy to apply a reduced VAT rate of 10% (compared to the standard 20%) for selected food items. The measure was one of 15 measures of a proposed social package. The goal was to improve societal welfare by increasing access to certain products by way of lower prices.

Unlike in the case of the Dutch performing arts VAT policy implementation and repeal, the price of targeted goods in Slovakia did change as intended. In advance of the enactment, many retailers had signed a memorandum of understanding with the cabinet saying that they would reflect the lower VAT through their prices, rather than absorbing the change for their own gain.

A 2017 study conducted by the national bank of Slovakia concluded that the VAT policy had indeed produced a modest welfare gain in the country.

The study also concluded that the impact of a tax reduction is lower for either goods that are price-elastic (where demand will change if the price changes), or if goods have several complements in the consumption basket. This indicates that the efficacy of VAT policies can be improved if governments considering a VAT reduction differentiate between commodities and only subject the most suitable to a VAT reduction (i.e. differentiate for tax purposes).

3.2. Excise taxation in the EU

Excise taxes are another form of indirect taxation that can be used to influence the societal and economic dynamics. Just as in the case of VAT policies, excise taxes have both advantages and limitations. An excise tax is an indirect tax on the sale of a particular good or service. Indirect means the tax is not directly paid by an individual consumer - instead, the Internal Revenue Service (IRS) levies the tax on the producer or merchant, who passes it onto the consumer by including it in the product's price [4].

Excise taxes on certain goods - including tobacco, alcohol and energy products (such as mineral oils and electricity) - are harmonized by way of EU legislation. Products subject to harmonized excise taxes have remained unchanged in the past (more than) 25 years and this might be difficult to change. However, the legislation also allows Member States to subject any other goods to taxation as long as 1) those taxes cannot be characterized as turnover taxes and 2) levying those taxes does not give rise to formalities connected with (EU) cross-border trade (for VAT there are EU-wide arrangements, whereas excise tax is not harmonized and the EU can intervene in case that cross-border trade is affected).

3.2.1. Examples of excise taxation from EU Member states

Within the EU, a number of Member States have introduced indirect taxes on specific goods or services. Amongst the most popular taxes directly or indirectly related to food consumption are those directly aimed at the supply of certain foodstuffs, as well as general taxes on waste (e.g. general pollution or carbon dioxide taxes). Worth mentioning is that for taxes aimed directly at certain foodstuffs, the respective subjects are not necessarily exclusively deemed "unhealthy", for example the taxation of all non-alcoholic beverages in Belgium, Croatia, Denmark and the Netherlands.

Taxation of inputs are not necessarily "new" – both Denmark and Sweden have had these taxes in place since 1995 – but they seem to be less popular for Member States to apply. In addition to an indirect tax on pesticides, Sweden also used to have an indirect tax in place aimed at fertilizers (since 1984), but this tax was abolished per 2010 in response to the financial crisis in combination with rising world market prices for fertilizers (15-20%), and a suggested disappointing environmental impact reduction or only 1,500 tonnes of nitrogen annually. The proposal to reintroduce this tax remains a controversy, but currently appears to be stalled due to a parliamentary majority voting against it.



Specific “plastic bag” taxes are reportedly highly effective, for example in Portugal. Since the introduction of the tax in 2015, the results showed a 74% reduction of plastic bag consumption – combined with however a 12% increase of garbage bags consumption, suggesting that previously plastic bags were recycled as garbage bags by consumers. It cannot be excluded however, that the decrease in plastic bag use is not fully owed to the introduction of an indirect tax, but also by international marketing activities, including but not limited to “International Plastic Bag Free Day”.

Figure 1: Summary of existing excise taxes Source: EY

3.2.2. The short story of the world’s first fat tax

In October 2011, Denmark enacted an excise tax on all products containing saturated fats, with the goal of reducing national obesity levels. This quickly transformed into a highly criticised tax that was subsequently abolished after only a year and three months.

All meats, dairy products, animal fats, edible oils and fats, margarine and spreadable blended spreads with a saturated fat content of 2,3% in weight, were subject to the excise tax. The rate was 16 DKK (2,14 EUR) per kg saturated fat in the foodstuffs – arguably not extremely high.

In practice, it quickly became evident that the tax did not achieve its aim. Only 7% of the population reduced the amount of butter, cream and cheese that they bought and over 80% of Danes did not change their shopping behavior at all. Instead, the tax created administrative burden, a significant rise in cross-border shopping and – some argue – an undeniable contribution to the country’s inflation and job losses.

A survey by the Danish Grocer’s Trade Organization (DSK) showed that an impressive 60% of Danish households had shopped groceries in Germany, while 4 years earlier, 60% of households said that they never bought in Germany.

The rather limited price increases combined with the massive hike in cross-border shopping made researchers conclude that the fat tax must have had an unexpected psychological effect on consumers. This is where studies significantly contradict each other; some say the consumer behavior would have worn off in the long-term, while some wholeheartedly disagree. Yet others (Oxford resp. British Medical

Journal) claim that, despite its short life, the tax actually did reduce fat intake by 4%, while simultaneously increasing vegetable consumption by 10-15%.

Unfortunately, due to the rapid dismantling of the policy, the long-term effects that this policy would have had are difficult to see. Nevertheless, excise taxes of this sort clearly do have an impact on consumer behaviour. It is evident, however, that the outcomes excise-taxes implemented at the point of consumption of food products are not necessarily predictable and must therefore be used with some caution.

3.2.3. The complex implications of tax policies: the example of food fraud

The impacts of tax policies can be complex and may often have unintended consequences. Tax policies must therefore be considered in direct relation to other policies across the EU. This can be seen, for example, in the “Gatto con gli stivali” case of food fraud. This related to the labelling and marketing of organic vs non-organic foods and was reportedly one of the largest fraud cases in the EU concerning EU organic products.

Between 2007 and 2011 it was revealed that approximately 703,000 tons of falsely-labelled conventional products were sold as organic in Italy, corresponding with an estimated financial damage of around 220 million EUR.

When linking EU organic labelling to taxation, the interest of fraudsters to manipulate the system may increase accordingly. It is therefore clear that taxation linked to labelling should be combined with an improved cooperation in EU anti-fraud policy. Broadly, this shows the importance of considering the wider implications of any changes in tax policy, and taking appropriate action to counteract negative effects.

3.2.4. Cross-border shopping in The Netherlands

Price differentiations across neighbouring member states caused by excise taxation have the potential to be problematic, because they may encourage cross-border shopping. However, this is not always the case, and studies indicate that there are a number of factors influencing the dynamic.

In 2006, the Dutch Parliament initiated research on the unintended economical effects of increased excise taxes, most particularly in light of market disruption in border areas with neighboring countries Belgium and Germany.

The main purposes was to establish whether the current (rather high) level of taxation could be further increased without significant loss of revenue owing (mainly) to cross-border shopping.

Taking fuel as the case study, the research concluded that price differences in excise goods do not necessarily lead to cross-border shopping by people living in the close vicinity of foreign facilities, as cross-border price differentials were not great enough to offset the extra costs of travelling further, the increased travel time, and the fact that people prefer to buy from someone or somewhere that they know.

4. Examples and effectivity of indirect taxation policies on PPPs

4.1. Country experiences regarding pesticide taxation

Several member states have introduced direct and indirect taxes on PPP's using different instruments and scoring systems. This chapter gives an overview of what measures were applied and the effects these measures have/had on farmers' pest management practices and the associated environmental and health risks.

4.1.1. Sweden

In 1985 Sweden became the first country in the world to introduce a special flat tax on pesticides based on the volume sold in 1984 with a stepwise increase. Until 1995, the tax revenues were used for agri-environmental programs aiming to reduce pesticide application and to promote integrated pest management. Since 1995 the revenues have been directly allocated to the state's treasury. The revenues are expected to be about SEK 70 million in 2015 and SEK 75 million in 2016 (~ 7.5 million and ~ 8 million, respectively) assuming that the sales quantity stays constant [1].

Sweden's current National Action Plan (NAP) aims to reduce the environmental risk associated with the application of pesticides. The absolute sales of active substances (AS) in Sweden have been reduced by more than 50% since the 1980s, even though statements about amounts of AS sold must be treated with caution, as the amount of AS does not reveal any information about environmental quality. In the last two decades, however, tax increases have not led to further reductions [1].

Sweden uses environmental risk indicators calculated by a point system and a set of scores. Figures indicate sharp reductions in the human health risk in the beginning of the 1990s and is now relatively constant at a level between 20% and 40% compared to the 1988 level. In contrast, the environmental risk indicator shows a less clear pattern with levels between 50% and 80% compared to 1988. Thus, positive developments coincide with the introduction of the tax. However, it is unlikely that the pesticide tax is the only determinant for the decrease of sales and risk. Other factors also contributed to these reductions [1] which will be discussed further below.

4.1.2. Norway

Norway introduced a tax on pesticides in 1988. First, the tax was defined as a percentage of the import value of a product (*ad valorem*). In 1999, the tax was changed into a differentiated scheme and now consists of a base rate and an additional rate.

Pesticides are sorted into seven different categories. The categories are assessed by two sub-categories: i) risks for human health and ii) environmental risks. All pesticides for professional use are tested according to several criteria and then categorized in a low, medium or high risk. Products allowed in organic farming are exempted from the tax. Producers and importers are obliged to pay the tax to the authorities. The government estimated earnings of about NOK 50 million in 2015 (~ 5.8 million).

Taxation based on this threshold assessment mechanism can be problematic as two similar products may be categorised differently (e.g. medium vs high risk), and therefore subject to disproportionate differences in taxation.

Also, if the underlying assumption is that pesticides with a high application dose are less risky, then taxation on the more risky products could lead to a higher total application of pesticides, while the human health and environmental risk decreases. Also different doses are necessary depending on the type of crop and production system, undermining the credibility of the tax model.

The quantity of pesticides sold reduced slightly following the introduction of the tax. After changing the tax to a differentiated scheme in 1999, the sold quantity stayed constant except for a break shortly

after the change. One reason for the latter might be that the taxation of some low risk products was actually reduced when switching to a differentiated tax scheme before already an *ad valorem* tax on pesticides was established. The greater popularity of no-till cultivation and the accompanied application of glyphosate also contributed to the non-reduction of the sales quantity of pesticides.

A small to medium reduction in human and environmental health risk can be observed. However, there were large increases of pesticides sold in advance of the introduction or of changes in the tax regime, somewhat limiting reductions in use. For this reason, the human health and environmental criteria should only be analyzed in the long-term. There was also a certain replacement effect regarding highly taxed pesticides to lower taxed pesticides [1].

4.1.3. Denmark

In 1996, Denmark introduced an *ad valorem* pesticide tax on the highest existing wholesale price. The tax scheme was changed to a more differentiated according to individual pesticide products in 2013. This is because treatment frequency and the pesticides' load had increased again, driven by increased use of no-till practices and the associated application of glyphosate.

The new differentiated tax for pesticides combines a pesticide use and a pesticide risk indicator, which has a slightly more elaborate scope compared to the Norwegian indicator system. The tax introduction was accompanied with the implementation of measures to compensate farmers. In particular, the property tax on agricultural land was reduced, depending on the county. Moreover, tax revenues were used to support organic farming and for administrative services. According to the current legislation, the tax revenues flow first into the state treasury but are then returned to agricultural and environmental purposes.

Between 2013-2015 the Danish NAP aimed to reduce the total load of pesticides by 40% from 2011 levels. The differentiated tax had a key role in achieving this objective.

As in other countries, users stockpiled supplies of pesticides in 2012 and 2013 resulting in significantly higher sales. In 2014, sales measured in terms of load decreased by 55% compared with the calculated level for 2011. However, this decline in sales was not reflected in the consumption of pesticides, which only declined 18% from 2013-2014. In 2015, the figures for sales and consumption were more closely aligned. In 2015, TFI based on sales figures approached the level prior to the tax restructuring in 2013, indicating that the effect of the stockpiling in 2012 and 2013 had declined. The long-term effect of the pesticide tax cannot be assessed until stocks have been fully used [1].

4.1.4. France

France introduced a volume tax on pesticides in 2000. The first tax was valid until 2009. Pesticides were divided into seven taxation categories (based on the eco-toxicological and toxicological properties) and the tax had to be paid by the pesticide distributors. In 2009, this was replaced by a fee on the non-point agricultural pollution in which only three different pesticide categories are established. Pesticide products being based on mineral AS are charged at the lowest level (€ 0.9/kg AS). Pesticides that are considered to be dangerous to the environment are charged at €2/kg AS. Pesticides that are mutagenic, carcinogenic, or hazardous to reproduction are charged at the highest level, € 5.10/kg AS. The new fee has to be paid at the retail level by the customer. Amongst other activities for awareness-raising, the distributors have to state the fee on the invoice in order to create consciousness for the aim of reducing environmental or health risks of pesticides. The total revenues of the fee amounted up to € 60 million in 2012 and 2013. Half of these revenues are dedicated to water utility and sewage treatment operators

in dependence of the regional pesticide contamination in the water. The remaining tax revenues are invested in other measures of the NAP. However, 50% of the fee's revenues cannot cover the expenses of the water operators for the cleaning of the pesticide contamination, which are estimated to be between 50–100 million per year [1]. Including the cost for removing excess nitrogen from the drinking water the amount is even higher, thus between 1,005 and 1,525 million €/year [2]. Additionally, the OECD proposed to internalize further external costs, e.g., costs for biodiversity loss. Therefore, the OECD evaluates the new fee as too low. Since the introduction of the tax, the sold amounts decreased sharply. Nevertheless, it should be mentioned that the overall pesticide sales in France are quite volatile and that other factors also influence the amount of pesticides applied. Similar to Sweden, the substitution to low dose AS might be relevant, e.g., the market share of copper and sulfur ingredients decreased by 40% from 2001 to 2004. For this reason, pesticide volume reduction targets in the NAPs are criticized because less hazardous, high-dose products are replaced by more hazardous, low dose products. The new NAP *écophyto II* is also of special interest, because a quota system is established and tested (*certificats d'économie de produits phytopharmaceutiques*), which is, to our knowledge, the first one worldwide [1]. France's current political challenges prove again that taxes always have to be embedded into a supporting context.

For further country cases, please see [1], page 13/22.

Table 2: Overview of the different pesticide tax schemes in place in 2016

State	Charge		Imposition Point	Use/Refunding of Revenues	
	Tax Base	Tax Rate		Organization	Target
Sweden	Active substances	fix	Industry, importers/wholesalers	Swedish state	State budget
	All pesticides	low/medium tariff, flat tax			
Norway	Active substances, environmental risk, human health risk	differentiated	Industry, importer/wholesalers	Norwegian state	State budget
	All pesticides	low—medium—high tariffs			
Denmark	Active substances, environmental risk, human health risk	differentiated	Wholesalers/importers	Danish state—different ministries	State budget, agricultural fund, green growth measures, administration
	All pesticides	low—medium—high tariffs			
France	Active substances, human health risk, (environmental risk)	differentiated	Retailers/distributor	Agricultural and environmental sector water utility and sewage treatment operators	Measures of the NAP, cleaning of water
	All pesticides	low—medium tariffs			

Source: [1] : Thomas Böcker and Robert Finger, European Pesticide Tax Schemes in Comparison: An Analysis of Experiences and Developments, Sustainability, MDPI, 16 April 2016

4.1.5. Other influence factors of effectivity of pesticide taxation

In nearly all country cases the effects of taxation were influenced by other factors. It is thus not always easy to distinguish if the behaviour change derived from the tax or from the mixture of events.

Sweden: In addition to the tax on pesticides, there was a consulting policy aiming at integrated pest management, stricter permissions for the registration and application of pesticides, and the introduction of AS with low doses in the 1980s, e.g., by an increased application of seed dressing. Overall, the pesticide tax was only a small part of the bundle of financial burdens that were introduced in the 1980s: a tax on artificial nitrogen fertilizer and cadmium/phosphorus was placed from 1984 until 2010 and later included in other price regulations. Those taxes potentially contributed to a reduction of pesticides sold and their application as high fertilization rates increase pest and disease pressure and vice versa (for example a high-nitrogen fertilization might lead to a higher mildew and weed pressure).

Moreover, the value of the marginal product (the added value of one additional unit of input) decreases by reducing fertilizer input and thus causes lower optimal pesticide application levels. However, since both political instruments were introduced at the same time, it is difficult to identify the major influencing factor.

Norway: The additional purchase of PPP products before changing the tax scheme, the greater popularity of no-till cultivation and the accompanied application of glyphosate also contributed to the non-reduction of the sales quantity of pesticides.

However, the analyses show that many violations already declined before introducing the differentiated tax. Measures that contributed to this are for example stricter application guidelines and better spraying techniques to avoid point source contamination and drift. Additionally, the overall number of detected residues (i.e., not exceeding the threshold) has not decreased and challenges with newer AS appear (e.g., increasing residues of prothioconazole, imidacloprid, and aclonifen). Therefore, no clear pattern is observable whether the tax contributed to these improvements.

Note that integrated pest management is also mandatory for countries in the EU since 2009 due to the Directive 2009/128/EC (to achieve the sustainable use of pesticides) and the Regulation (EC) No. 1107/2009 (concerning the placing of plant protection products on the market) [1].

4.1.6. Summary/conclusion on PPP taxation in the EU [1]

(a) the study indicates that pesticide usage has dropped in the countries that have PPP taxes – so overall they seem to be positive in improving the environment but the effect is not necessarily just down to taxation alone, and the effects seems to tail off over time (maybe because of a lack of alternatives).

(b) Not all PPP taxes are equally effective – where there is little regard to differentiation, or the rates are too low they are less successful in meeting their aims.

(c) Introducing these taxes can produce unintended consequences (e.g. they can be undermined by stockpiling or they can penalise fairly harmless products too greatly and harmful products not enough)

(d) Ideally, any tax in this area should be at a high enough rate to prove effective, it should target the correct products and behaviours (e.g., it should not favour farmers who use more harmful chemicals because they can be used in smaller amounts than less harmful ones) and it should not be too complex to administer.

(e) The authors do seem to conclude that where they are well designed, PPP taxes are effective and that effect is likely to be increased by using the revenue collected to support alternative production methods etc.

(f) The practical aspects of designing an effective tax may represent significant challenges for countries to overcome (hence the low number of EU countries that currently use these measures).

(g) Taxation may not be the most effective instrument in achieving these environmental aims (indeed, research indicates that success has been achieved in reducing pesticide use in the Netherlands without a pesticides tax).

Table 3: Advantages and disadvantages of existing pesticide taxation schemes

The range of this table is as follows: a “_” is a disadvantage, a “+” is an advantage, and a “_” means that no specific effect can be observed.

Criteria for Analysis (Section 2)	Country's Tax Scheme			
	Sweden fix, SEK 34/kg AS	Norway differentiated, 7 categories	Denmark differentiated, individual tax	France differentiated, 3 categories
Main objective of NAP	NAP 2013–2017 (1) No violations of residue limits (2) Reduce pesticides' input	NAP 2010–2014 (1) 70% of farmers apply integrated pest management (2) No violations of residue limits	NAP 2013–2015 40% load reduction	NAP 2008–2018 50% use reduction from 2008 to 2018 and from 2015 to 2025
Effectiveness	± (1, 2) in principle possible but tax level too low to cause large reductions, no further long-term reductions after the last tax increases	(1) ±/+ farmers use less hazardous pesticides, but same amount (2) ± farmers use same amount or more pesticides	+ very high taxes on high load pesticides (use reduction)	±/+ overall relatively low taxes for all three categories but nevertheless use reduction since implementation of tax
Efficiency	– (1, 2) additional burden for farmers but no reduction in use	(1) ± less hazardous pesticides are relatively cheap (2) – more costs but same amount used	± farmers can choose for low taxed pesticides; some products may disappear—potential resistance problems	±/+ relatively low additional costs for farmers but use reduction is achieved
Feasibility, maintainability and enforceability	+ easy to enforce	–/± for some products complicated tax determination	± rather complicated scheme	+ easy to enforce
Polluter pays principle, ability to differentiate taxation	– fix tax scheme, only choice to not pay is not using pesticides at all	+/± seven different categories; disputes about tax calculation	+ individual taxation, almost no tax for products with low load	–/± only three categories; few choices can be made; revenues for water operators
No economic consequences for farmers, homogeneity	± relatively low tax per ha, especially for low dose products; only few intensive pesticide users in Sweden (few fruit and vegetable farming)	– also when choosing less hazardous pesticides a tax is charged, probably less effective plant protection; no return to the sector	± reduction of property tax on agricultural land; revenues returned to sector; high tax when some products have to be used, maybe production losses or changes otherwise, hereby potential for tax savings compared to old tax scheme	± low tax per ha; tax revenues flow only partly back into the agricultural sector (e.g., via environmental programs)
Support among farmers, acceptability	– despite relatively low tax burden, some cost increases occur; no tax in most other European countries	– tax burden also when choosing for less hazardous pesticides; no tax in most other European countries	– some products may be too expensive to use, e.g., insecticides; no tax in most other European countries	– despite relatively low tax burden, some cost increases occur; few categories; no tax in most other European countries

Source: [1] : Thomas Böcker 1 and Robert Finger, European Pesticide Tax Schemes in Comparison: An Analysis of Experiences and Developments, Sustainability, MDPI, 16 April 2016

5. True Cost Aspects underlying taxation favouring organic products

5.1. True cost principle

The concept of monetizing externalities has already been discussed in the 1980s. But (also) with the public recognition of climate change finally the public and financial sector are recognising the economic risk of not internalizing these externalities in the longer term. Hence, transparency on externalities is becoming more & more critical and especially in the example of France, clearly finds its way into the tax policies.

5.1.1. Approach

There are numerous approaches and organizations dealing with the true cost principle. For the scope of this study, the effects of the most common pesticides and fertilizers on water (grey water footprint), nitrate leaching, and climate (greenhouse gases) have been considered. This has been executed on wheat and potato (see: product fact sheet). The water footprint has been modelled according to the Water Footprint Network grey water footprint guidelines as well as publicly available resources. The greenhouse gas emission calculation is based on the Cool Farm Tool/IPCC.

Monetization factors are taken from www.fao.org/3/a-i3991e.pdf

5.1.2. Results of the product fact sheets

In the case of wheat and potato, a comparison was drawn between organic and conventional production in Germany.

Data sources for conventional are “Raiffeisen Niedersachsen” and farmer interviews. For organic it is <https://www.agrarheute.com/pflanze/einsatz-kupfer-oekolandbau-532988>, farmer interviews and own studies.

Table 4: External cost of fertilizer and Pest and Disease Control (PDC) in Potato and Wheat

			Conventional		Organic	
			€/ha	€/kg	€/ha	€/kg
Potato	Fertilizer	nitrate leaching	135 €	0,003 €	100 €	0,003 €
		ground water pollution				
	PDC		1.298 €	0,027 €	0,4 €	0,000 €
	Climate	GHG emissions	320 €	0,007 €	110 €	0,003 €
		SUM	1.753 €	0,037 €	210 €	0,005 €
Wheat	Fertilizer	nitrate leaching	135 €	0,019 €	100 €	0,022 €
		ground water pollution				
	PDC		686 €	0,098 €	0,8 €	0,000 €
	Climate	GHG emissions	333 €	0,048 €	110 €	0,025 €
		SUM	1.154 €	0,165 €	211 €	0,047 €

The Cost difference per ha shows greatest financial impact by Pest and Disease control (PDC), as this adds significantly to water pollution. Also in organic potato copper is used, but it’s monetary impact is hardly noticeable compared to conventional PDC measures.

In the case of the potato the production and leachate of fertilizers also shows higher costs of the conventional method, but less significant. In the case of the studied product, for approaching the PDC expenses to their true cost, the cost per ha would rise from 400 €/ha (actual farmer’s expense) to 1700 €/ha.

In the case of wheat the GHG emissions of conventional fertilizer and pesticide production are the other noticeable cost factor. Through the lens of true cost, the expense for conventional PDC inputs should rise from 230 €/ha (current product expense) to 916 €/ha.

Translating this into a taxation system based on true cost would require a detailed study of the effects of each pesticide and fertilizer used in specific cultures and production systems. It may be easier to revise and make use of existing rating systems, comparing economic effect of the taxes with true cost calculations.

5.1.3. True cost of food - other calculation factors

There are more calculation models also including expected future earnings and caused health damage.

The first has been developed as a socio-economic factor by EY and is out of scope by this study.

The 2nd, DALYS, has been used in the study “True Cost Accounting for Food, Farming & Finance” [3], but the methodology has not been refined since, for which the approach is described here but not included in the product fact sheet.

The health impacts of the most encountered pesticides were matched using data from the study of Fantke & Jolliet (2016). In their study, the authors estimated the Disability Adjusted Life Years (DALYs) per kg pesticide applied for approximately 875 pesticides. The 10 most encountered pesticide residues which have information on their health impacts were included in that study.

The DALYs/kg produce were subsequently derived by multiplying the amount of pesticides applied with the average DALY/kg of the pesticides most encountered.

Based on CE Delft (2005), the societal cost of a DALY is determined at € 77.000€.

Limitations of that method: So far the quantities applied per pesticide, crop, cropping system and climate zone have not been distinguished but the same average value per pesticide was used. This assumption could on one hand lead to a significant overestimation of the calculated health impacts, which might falsify the results. On the other hand, little is known so far on the health effects of combining different pesticides with each other.

A full description of the approach can be found in [3].

With these limitations, the results, with apple and tomatoes being explicitly mentioned in Fantke & Jolliets' report, were as follows:

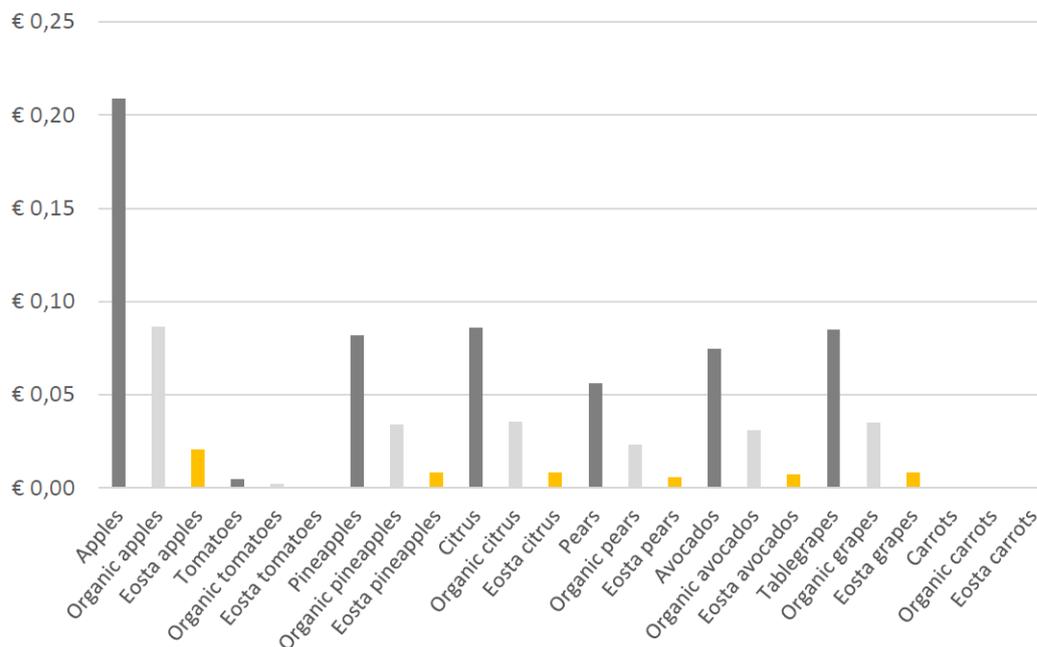


Figure 2: Estimation of pesticide impact to consumer health for different production systems [3]

6. Discussion

We identify five broad mechanisms that could be considered for the promotion of the organic market and reduction of environmentally harmful fertilisers and PPPs in Europe, which are:

VAT influencing

- Reduced rate for organic produce
- Standard rate for non-organic produce
- Differential reduced rates for organic and non-organic produce
- Standard VAT rate for non-organic PPPs and fertilizers

Excise influencing

- Non-harmonised excise tax for non-organic produce
- Non-harmonised excise tax for non-organic pesticides/fertilisers

In order to focus on the most viable options for achieving the goal of bringing the food market in Europe closer to the "polluter pays" principle, and to discourage the use of environmentally-unfriendly plant protection products (PPPs), the following discussion deals briefly with the options that we find to be least viable.

More detailed rationale for our decisions can be found in appendix 10.6, attached.

6.1. VAT nudging

6.1.1. Reduced VAT rate for organic produce

A reduction in VAT rates for organic produce could be popular with politicians and the public in member states and may possibly have some offsetting effect towards subsidies paid for use of non-organic PPPs and fertilizers. However, this option has a number of significant possible downsides. For example, it contradicts the core EU principles of neutrality, simplicity and workability, may have limited influence of prices and lead to EU revenue loss.

With regards to neutrality, even though an increasing number of studies point out the difference between (all kinds of) organic and (all kinds of) non-organic produce, we understand that the scientific justification has not yet been publicly recognized.

Health-related articles do refer to the potential benefits relating to the presence of more nutrients, phytochemicals and omega-3 fatty acids in organic produce and the lower level or absence of toxic metal, pesticide residue and bacteria (particularly meat as subject to antibiotic treatments).

It is debatable whether these alleged differences between organic and non-organic produce would suffice to justify the applicability of different VAT rates. This difficulty applies across all potential mechanisms aimed at food products (as opposed to farm-level inputs).

6.1.2. Standard VAT rate for non-organic produce

Applying a standard VAT rate for all non-organic produce could increase EU revenues, is more likely to be politically viable on an EU level and may have some limited impact on the uptake of organic production. This is a potential improvement compared to reduced VAT rates (above).

However, it also has many significant limitations. It may be politically unpopular measure and could detrimentally affect the welfare of citizens in member states by significantly increasing (fresh) food prices. Moreover, such policy may negatively impact the profit margins of farmers.

6.1.3. Differential reduced VAT rates for organic and non-organic produce

Applying differential reduced VAT rates for organic vs non-organic produce could have some influence on the prices paid by consumers, but without such pronounced negative impacts that would be associated with the blanket application of standard VAT rates for non-organic produce. It could also limit cross-border shopping, incentivize organic production to a limited extent and counteract some of the subsidies currently received for non-organic PPPs and fertilizers.

However, the applicability of this approach is limited by the increased level of complexity implied to apply such policies, paired with potentially limited effectiveness and the need for alignment amongst neighbouring member states.

6.1.4. Standard VAT rates for non-organic PPPs and fertilizers

Applying a standard VAT rate for non-organic PPPs and fertilizers would impact the consumer price and signal governmental support for organic. Simultaneously, such measures could counter-balance current subsidization while raising the price of non-organic farm inputs. This could incentivize switching to organic. Furthermore, the EU has a preference for standard VAT rates, and would benefit from a revenue boost where currently low rates are increased. This could in turn contribute to subsidization of organic farming or other agri-environmental measures. In some member countries VAT on PPPs and fertilizers is differentiated already, with only France giving clear signals to favouring both organic PPPs and fertilizers. In Germany, organic fertilizers are subject to a reduced VAT rate.

This approach would also not be offensive to neutrality as non-organic PPPs and fertilisers are substantially different to organic inputs. However, workability may be a challenge as differentiation amongst similar non-organic pesticides may be complicated. A further potential downside of this approach is that in cases where differences in current VAT rates are large, we may see increases in farmer's financial burden that would be both politically unpopular and ethically debatable due to different needs of the crops (i.e. a vegetable or potato grower will generally need to apply more pesticides than a maize grower and will therefore be taxed higher).

6.2. Excise nudging

Excise taxes are single-stage taxes that can be targeted in the supply chain where it is most feasible and appropriate. This is an advantage over VAT tax policies which, as we have described, can sometimes have unclear impacts on prices and are absorbed in supply chains in different ways than originally intended.

While the excise taxes described below also risk offence to principles of neutrality, these issues are more likely to be overcome compared to the case of VAT, because alike products are already subject to excise taxes in the EU.

6.2.1. Non-harmonized excise tax for non-organic produce

An excise tax on non-organic produce is more likely to be reflected in retail price than VAT tax measures as it is a real cost factor for retail, they might more likely pass it on to the consumer. This approach could also be linked directly to demonstrable externalities associated with certain forms of agricultural production, and could increase state revenues. It is also a mode of taxation that fits with other increasingly popular tax policies that explicitly aim to improve public health and wellbeing. It is likely to be more effective than the VAT policies described above.

Nevertheless, some significant drawbacks include the increased complexity of implementing the policy (especially the increased administrative burdens for SMEs), the potential unpopularity of food price increases and cross-border shopping. It also could be offensive to the principle of neutrality, although this is likely to be less of a challenge than in the case of VAT.

6.2.2. Non-harmonized excise tax for non-organic PPPs/fertilizers

Application of non-harmonized excise taxes on non-organic PPPs and/or fertilisers could significantly influence farmer behaviour in favour of transition to organic by directly influencing the price of non-organic inputs. It could also finally influence the prices paid by consumers for non-organic produce. It could also provide a state revenue boost which could be used to subsidize more sustainable ways of production.

However, changing tax policies towards higher taxation of farm inputs has led to intensive stockpiling in the past, reason for which the effect of the tax can only be observed in the medium to long term. Raising taxes on PPPs are usually accompanied with a differentiated rating system based on the harmfulness of the product. If not properly rated, farmers might switch to a less harmful, cheaper product but combining several products, potentially resulting in a higher application rate altogether. It is possible that excise taxes could significantly raise prices of staple food items, which would have negative repercussions and would be politically unpopular.

7. Recommendations regarding Tax nudging

Based on the above discussion, we have ranked the potential options for indirect tax influencing (nudging). These are organised in ascending order of expected efficacy, with 5 being the most effective and 1 being the least:

Principles & Objectives	VAT nudging Reduced rate	VAT nudging Standard rate	VAT nudging Differential rates	Excise nudging Non-organic produce	Excise nudging Non-organic pesticides
Neutrality	★☆☆☆☆	★☆☆☆☆	★☆☆☆☆	★☆☆☆☆	★★★★★
Simplicity	★★☆☆☆	★★☆☆☆	★★☆☆☆	★★★★★	★★★★★
Workability	★★☆☆☆	★★☆☆☆	★★★☆☆	★★★★★	★★★★★
Enhance subsidiarity	★☆☆☆☆	★☆☆☆☆	★☆☆☆☆	★★★★★	★★★★★
Promote equal treatment	★★★★★	★★★★★	★★★★★	★★☆☆☆	★★☆☆☆
Limit economic distortions	★★★★★	★★★★★	★★★★★	★★☆☆☆	★★★★★
Minimise complexity and cost	★★☆☆☆	★★☆☆☆	★☆☆☆☆	★★★★★	★★☆☆☆
Prevent litigation	★★★★★	★★★★★	★★★★★	★★★★★	★★☆☆☆
Protect revenues	★☆☆☆☆	★★☆☆☆	★★☆☆☆	★★★★★	★★★★★
Total Score	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆	★★★★★

Best	★★★★★
Good	★★★★☆
Feasible	★★★☆☆
Mediocre	★★☆☆☆
None	★☆☆☆☆

Table 5: The efficacy of each taxation approach according to key criteria

The principles and objectives can be explained as follows:

Neutrality by taxing similar products in the same way and not introduce discriminatory measures that are not based on objective characteristics.

Simplicity by not overcomplicating the legislative complexity and keeping the compliance burden as low as reasonably possible.

Workability by limiting boundary disputes due to products being taxed differently by Member States based on the same holistic legislation.

Enhance subsidiarity by providing Member States with greater policy autonomy to design their own tax regimes.

Promote equal treatment by preventing country-specific derogations as much as possible.

Limit economic distortions to prevent movement of economic activity on the mere basis of differences in tax regimes.

Minimize complexity and cost by making the system understandable and easy to enforce.

Prevent litigation between Member States and the EU arising from uncertainty about EU-wide rules.

Protect revenues e.g. from domestic pressures due to e.g. the removal of EU-wide rules (rat race to the bottom).

Ranking as in Table 5

1. Excise taxes on non-organic PPPs
2. Differentiated VAT rate on non-organic PPPs
3. Excise taxes on non-organic produce
4. Differentiated VAT rates for non-organic produce
5. Standard VAT rates for non-organic produce
6. Reduced VAT rates for organic produce

As summarised in Table 5 in the previous section, both a standard and reduced VAT rate for non-organic and organic produce respectively score very low on a number of criteria. We therefore do not advise action for the adoption of such policies. We focus instead on potential of the other three options identified. Of the three remaining options, we recommend an excise tax on harmful fertilizers and PPPs as the most viable and (likely) the most effective option. Our rationale for this selection is summarised in our comparison of options one, two and three, as follows.

7.1. VAT rate differentiation (ranking 4-6)

Using VAT rate differentiation for organic and non-organic food products (in one of the three proposed sub options) is not preferred, as it fails to meet the main objectives:

1. It is offensive to the principle of neutrality, as the health impact of organic produce has not (yet) been scientifically established and applying different VAT treatments to otherwise identical products may be difficult to justify.
2. It may increase level of complexity and administrative burden, especially for SMEs
3. It will have limited effect if not truly reflected in the price

In addition, the introduction of reduced VAT rates for countries currently applying a standard VAT rate leads to EU revenue loss and may only be temporarily effective.

7.2. Excise tax on non-organic produce (ranking 3)

While the introduction of a non-harmonized excise duty on non-organic produce would be expected to have at least some impact, it fails to meet most of the main objectives.

1. It is offensive to the principle of neutrality, as the health impact of organic produce has not (yet) been scientifically established and applying different VAT treatments to otherwise identical products may be difficult to justify.
2. It may increase the level of tax complexity and administrative burden, especially for small and medium-sized enterprises (SMEs)
3. It may lead to social injustice/unrest in areas where organic products are not sufficiently available

4. Would have limited effect if not truly reflected in the price, yet could add too greatly to the cost of essential foodstuffs for consumers

7.3. Standard VAT rate on non-organic PPPs/fertilizers (ranking 2)

VAT nudging on certain food categories as well as agricultural inputs, in or without combination with excise taxation, is already happening in the EU. Steering these mechanisms to a more sustainable use of agricultural inputs would mean to turn around some of the current member state's policies, but would certainly find support at the level of the European Commission.

The Pro's are the same as for 7.4 but the administrative burden on SME's may be higher, as VAT is taxed at every stage of the supply chain.

Also, if VAT differentiation is a lot higher this might lead to a significant financial disadvantage for certain crop farmers.

7.4. Excise tax on non-organic PPPs/fertilizers (ranking 1)

The introduction of a non-harmonized excise duty on non-organic pesticides and/or fertilizers is likely to be the most successful option.

1. It incentivizes more sustainable production and therefore aims at farmers' behavior rather than at consumers' behavior.
2. It is not offensive to neutrality as the effects of non-organic pesticides and fertilizers have been scientifically confirmed.
3. The state revenue boost could be used to finance e.g. the costs for organic certification of produce, multiplying the impact.
4. It is a single-stage taxation, leaving less leeway to consolidate the tax in other prices than those targeted.

8. Extending taxation on PPPs and fertilizers

Our core recommendation is that a non-harmonised excise taxes on non-organic farm inputs are the most viable and likely highest-impact option for promoting the organic market and organic farming practice in the EU. It can also be mixed with a standard VAT rate, as already practiced in some member states. The current state fiscal policy landscape regarding pesticides is summarized in the graph below.

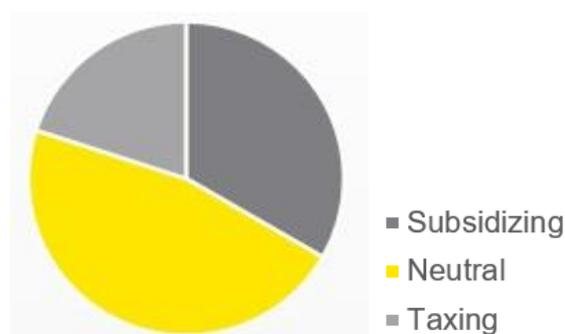


Figure 3: Total revenue/number of policies divided according to the type of policy

There are already a number of existing taxes on both chemical and organic PPPs and fertilizers within the EU (including Norway and Switzerland), as listed below.

Countries applying a VAT reduced rate on PPPs and/or fertilizers, but no excise tax:

Austria	Luxembourg	Slovenia
Belgium*	Poland	Spain
Cyprus	Portugal	
Ireland	Romania	

*Belgium applies a reduced VAT rate to organic pesticides and to all fertilizers

Countries applying an excise tax:

Denmark	Germany**	Sweden
France	Italy	Norway

**Germany is not applying an excise tax but applies a reduced VAT rate to only organic fertilizers.

These countries do not apply reduced rates to pesticides or fertilizers, and do not apply an excise tax:

Bulgaria	Greece	Netherlands
Croatia	Hungary	Slovakia
Czech Republic	Latvia	United Kingdom
Estonia	Lithuania	Switzerland
Finland	Malta	

Non-organic plant protection products can have a range of negative environmental impacts. These impacts in turn represent a significant cost to society, as in the example of France, where internalizing the costs for cleaning water from the residues of agriculture would double the food prices [2] or in the UK, where the food cost would also be double when internalizing the externalities [5]. Yet these costs are not adequately reflected in the actual prices charged for products at farm gate or retail level. Based on the conclusion that an excise tax on pesticides or fertilisers would be the most effective policy mechanism for promoting organic agriculture in the EU, we have evaluated in the product fact sheets what potentially does the biggest damage and to what extent that would raise the costs per hectare for the farmer. If an excise tax on PPPs/synthetic fertilizers is the target, the actual effects on the cost of the final (food) product is hard to predict due to the retail's own market dynamics. But based on the farmer's expense only for PPPs/ha the prices for PPPs should at least double, if not quadruple for certain crops. See the product fact sheets and section 5.1.2 for further details.

9. Conclusions

Due to the valid VAT rules of the EU (see 2.1) and social welfare issues, a tax differentiation between certified organic end products and conventionally produced end products may be not easily enforceable. What's more, due to retail's dynamics, the price difference may not necessarily be mirrored correctly in the end consumer price.

By political and administrative feasibility, there is evidence that raising an excise tax on potentially PPPs is the most feasible option due to the single-stage taxation. There are decades of experiences in member states to build on.

These experiences also show that any tax measure more likely be effective if accompanied by additional measures, such as awareness-raising campaigns, stricter policies and promoting feasible alternatives to farmers. Otherwise PPPs may have too low price-elasticity or be replaced by other, cheaper PPPs depending on the pesticide rating system.

The external cost of synthetic (non-organic) fertilizer use was also touched in this study. The true cost for N fertilization is easy to calculate, but the actual damage depends, amongst others, on the product, soil, and application technology. In our study the external costs for PPPs resulted in comparably higher damage than the use of synthetic fertilizers. However, fertilizers are also often subsidized and sometimes taxed in the member states, so there is a possible point for influence.

The other important factor underlining the effectiveness of the measure is the use of the tax revenues. A good example is France, where tax revenues from PPP use are used 50% for water cleaning - even if those 50% do not fully cover the external cost of water cleaning but 100% of those tax revenues should be used.

And again, the devil lies in the detail. Practice shows that it is really complex to find a suitable rating approach for active substances – on a scientific but also on an administrative level. This accounts for true cost accounting on health effects as well as for risk rating, e.g. assuming the effect that one more toxic substance applied in lower quantities may have compared to several less toxic substances applied in greater quantities.

Country experiences show that the different tax designs usually had unintended consequences such as stock purchasing or changing to other substances. In this light it may be important to mention that some countries also induced behaviour change by "just" implementing a better legislation. For example the Netherlands have reduced pesticide sales by almost 50% since the 1980s mainly due to a stricter obligation for soil fumigants [1]. Legislation on agricultural inputs, if accompanied by taxes or not, should target the stage of the supply chain which is polluter but able to comply with it (not so much the food consumer). Taxation is thus one possible instrument towards true cost accounting, but will be useless without legislation change and without considering the country's specific context.

10. Appendices

10.1. List of terms/definitions

AS – Active substances

NAP – National Action Plan

PPPs - Environmentally unfriendly plant protection products

TCA – True cost accounting

10.2. Lists of countries applying indirect taxes on non-alcoholic beverages

Country	Standard VAT rate	VAT on non-alcoholic beverages	Differentiated level of VAT (sugar/fruit)	Excise Tax on non-alcoholic beverages	Differentiated level of excise (sugar/fruit)	Level
Belgium	21%	6%	No	Yes	No	Combining
France	20%	5,5%	No	Yes	No	Combining
Netherlands	21%	6%	No	Yes	No	Combining
Norway	25%	15%	No	Yes	Differentiated	Combining

Austria	20%	20%	N/A	No	N/A	Neutral
Bulgaria	20%	20%	N/A	No	N/A	Neutral
Estonia	20%	20%	N/A	No	N/A	Neutral
Italy	22%	22%	N/A	No	N/A	Neutral
Latvia	21%	21%	N/A	No	N/A	Neutral
Lithuania	21%	21%	N/A	No	N/A	Neutral
Malta	18%	18%	N/A	No	N/A	Neutral
Slovakia	20%	20%	N/A	No	N/A	Neutral
Cyprus	19%	5%	No	No	N/A	Subsidizing
Czech Republic	21%	15%	No	No	N/A	Subsidizing
Finland	24%	14%	No	No	N/A	Subsidizing
Greece	24%	13% / 24%	Water only	No	N/A	Subsidizing
Luxembourg	17%	3%	No	No	N/A	Subsidizing
Poland	23%	5% / 23%	Fruit juices only	No	N/A	Subsidizing
Portugal	23%	6% / 13 / 23%	Yes	No	N/A	Subsidizing
Romania	19%	9%	No	No	N/A	Subsidizing
Slovenia	22%	9,5%	No	No	N/A	Subsidizing
Spain	21%	10%	No	No	N/A	Subsidizing
Sweden	25%	12%	No	No	N/A	Subsidizing
Switzerland	7,7%	2,5%	No	No	N/A	Subsidizing
Croatia	25%	25%	N/A	Yes	No	Taxing
Denmark	25%	25%	N/A	Yes	Coffee/Tea only	Taxing
Germany	19%	19%	N/A	Yes	Coffee only	Taxing
Hungary	27%	27%	N/A	Yes	Differentiated	Taxing
Ireland	23%	23%	N/A	Yes	Specific	Taxing
United Kindom	20%	20%	No	Yes	Specific	Taxing

10.3. List of countries applying indirect taxes on pesticides and/or fertilizers

Country	Standard VAT rate	VAT on pesticides	Differentiated level of VAT (bio or low risk)	VAT on fertilizers	Differentiated level of VAT (bio or low risk)	Excise Tax	Level
Bulgaria	20%	20%	N/A	20%	N/A	None	Neutral
Croatia	25%	25%	N/A	25%	N/A	None	Neutral
Czech Republic	21%	21%	N/A	21%	N/A	None	Neutral
Estonia	20%	20%	N/A	20%	N/A	None	Neutral
Finland	24%	24%	N/A	24%	N/A	None	Neutral
Greece	24%	24%	N/A	24%	N/A	None	Neutral
Hungary	27%	27%	N/A	27%	N/A	None	Neutral
Latvia	21%	21%	N/A	21%	N/A	None	Neutral
Lithuania	21%	21%	N/A	21%	N/A	None	Neutral

Malta	18%	18%	N/A	18%	N/A	None	Neutral
Netherlands	21%	21%	N/A	21%	N/A	None	Neutral
Slovakia	20%	20%	No	20%	N/A	None	Neutral
United Kingdom	20%	20%	N/A	20%	N/A	None	Neutral
Switzerland	7.7%	7.7%	N/A	7.7%	N/A	None	Neutral
Austria	20%	20%	N/A	13% or 20%	No	None	Subsidizing
Belgium	21%	12%, 21%, 6%	Yes	12% or 21%	No	None	Subsidizing
Cyprus	19%	5%	No	5%	No	None	Subsidizing
Ireland	23%	23%	N/A	0% or 23%	No	None	Subsidizing
Luxembourg	17%	17%	N/A	3%	No	None	Subsidizing
Poland	23%	8%	No	8%	No	None	Subsidizing
Portugal	23%	6%	No	6%	No	None	Subsidizing
Romania	19%	9%	No	9%	No	None	Subsidizing
Slovenia	22%	9.5%	No	9.5%	No	None	Subsidizing
Spain	21%	10%	No	10%	No	None	Subsidizing
Denmark	25%	25%	N/A	25%	N/A	Ad valorem	Taxing
France	20%	10 or 20%	Yes	10 or 20%	Yes	Differentiated	Taxing
Germany	19%	19%	N/A	7% or 19%	Yes	None	Taxing
Italy	22%	22%	N/A	4%	Yes	Ad valorem	Taxing
Sweden	25%	25%	N/A	25%	N/A	Specific	Taxing
Norway	25%	25%	N/A	25%	N/A	Differentiated	Taxing

10.4. List of members of EU VAT expert group

10.4.1. List of the organisations appointed as members of the VAT Expert Group

1. Alma Mater Studiorum - University of Bologna, European School of Advanced Fiscal Studies
2. Amazon Europe Core SARL
3. American Chamber of Commerce to the European Union
4. Association of Chartered Certified Accountants
5. Association of European VAT Practitioners (APTE)
6. BUSINESSEUROPE
7. CMS Bureau Francis Lefebvre
8. Confédération Fiscale Européenne (CFE)
9. Confederation of Finnish Industries FK
10. Confederation of Swedish Enterprise
11. CONFINDUSTRIA

12. Deloitte
13. Ernst & Young Europe
14. EUROCHAMBRES – Association of European Chambers of Commerce and Industry
15. EuroCommerce
16. European Association of Craft, Small and Medium-sized Enterprises (UEAPME)
17. European VAT Club
18. Federation of European Accountants (FEE)
19. Federation of German Industries (BDI) & Association of German Chambers of Industry and Commerce (DIHK)
20. General Electric Company
21. German Federal Chamber of Tax Advisers (Bundessteuerberaterkammer)
22. International VAT Association
23. Irish Tax Institute
24. KPMG

10.4.2. List of members of the VAT Expert Group and their alternates

- | | |
|---------------------------|---------------------------|
| 1. Centore Paolo | Galleani d'Agliano Nicola |
| 2. Englisch Joachim | Ehrke-Rabel Tina |
| 3. Lamensch Marie | Traversa Edoardo |
| 4. Parolini Andrea | Arginelli Paolo |
| 5. Ramsdahl Jensen Dennis | Steensgaard Henrik |
| 6. Santacroce Benedetto | Mantovani Matteo |
| 7. Trenta Cristina | Westberg Bjorn |

10.4.3. List of the organisations granted observer status in the VAT Expert Group

1. Altagamma Foundation
2. Association for Financial Markets in Europe
3. Community of European Railway and Infrastructure Companies
4. Cruise Lines International Association Europe
5. European Banking Federation
6. European Community Shipowners Association
7. European Express Association
8. European Telecommunications Network Operators' Association & GSMA Europe

9. Group of European Travel Agents' and Tour Operators' Associations within the EU

10. Insurance Europe

11. Swedish National Coach Organisation

12. Transport & Environment

10.5. Tax policy profiles in full

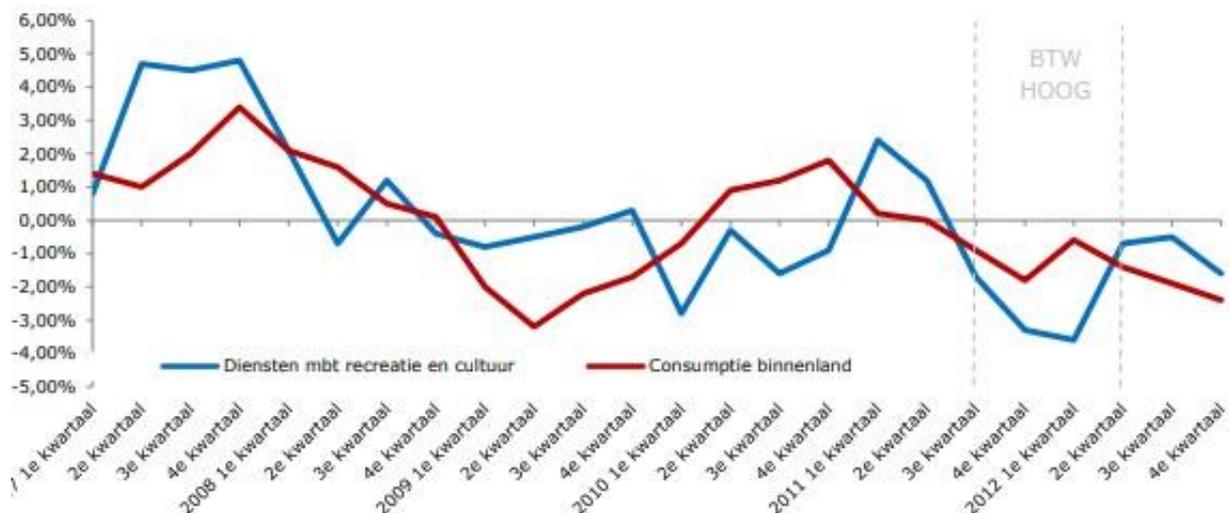
9.51 The Dutch VAT hike on performing arts tickets

On the 1st of July, 2011, the Dutch government abolished the application of the reduced VAT rates to “performing arts”. This included, for example, theatre tickets, music or dance tickets, festival entrance tickets and so on. The reduction was then re-introduced exactly a year later on the 1st July 2012.

The abolishment was initiated by the Liberal Party under Prime Minister Rutte, who argued that they wanted to provide more opportunities to society and individual initiatives in the area of culture and limit the amount of governmental meddling in the market. It was also argued that the reduced rate contradicted the EU principle of tax neutrality, because the reduced rate was applied to performing arts, while “substitute” cultural events such as museums, cinemas, carnivals, theme parks and circuses remained subject to the standard VAT rate (which 19% at the time). Furthermore, research conducted in 2008 proved that the VAT benefit did not always end up with the performing artists, but with the theatre owner or subsidizing municipality.

There were fears that theatre ticket prices would increase and theatre attendance numbers would decline. However, the initial logic for implementing the reduced rate for in 1998 was to compensate for costs to the sector generated by other legislative changes. Lowering the entrance prices never actually served as an argument to introduce the VAT reduction.

The initial increase in VAT rates in 2011 was indeed reflected in ticket prices. Theatres almost universally adopted higher prices in response to the change, and theatre attendance dropped during the period of July 2011-July 2012. However, these reductions in attendance were broadly in line with the trend of decreasing attendance both before and after the reduction period (as shown in figure 1). Furthermore, statistics from the Dutch Central Bureau of Statistics show that, while theatres were happy to respond to the initial increase with a correspondent hike in prices, they did not reduce prices again once the VAT reduction was reintroduced.



9.52 The United Kingdom's 0% VAT on Children's footwear and clothing

In the UK, clothing and footwear intended for young children benefits from a 0% VAT rate. This has been applied since VAT was introduced in the UK on the 1st of April, 1973. The criteria for applying the zero-rate are relatively complex and have created "borderline" disputes in the past. Furthermore, they may do so again in the future as items of clothing and footwear designed for children evolve (hypothetically, given the current political uncertainty over the UK's exit from the EU).

It is assumed that these factors add to the complexity of the UK VAT system for suppliers (especially small businesses) and may lead to erosion of the VAT base if the measure is applied incorrectly. However, the measure is politically popular and the UK tax authorities provide clear, publicly available, detailed guidance for retailers, wholesalers and manufacturers (including online sellers) to try to reduce the compliance burden.

In 2003, the EU Commission proposed abolishing the optional reduced VAT rate on children's clothing and shoes. Their reasons were as follows:

1. Limited uptake (only UK & Ireland)
2. Lack of simplicity and clarity
3. Distortion of competition
4. Limited effectiveness (not impacting prices significantly)

A survey of prices showed that in 2003, if the average price of children's shoes was 100, the same shoes were 126 in Luxemburg (3% rate), 119 in Denmark (25% rate) and 116 in the UK (0% rate).

Nevertheless, the UK continues to zero-rate children's clothing and footwear, as it has been argued by UK policy-makers to be a matter of fairness that the costs of children's clothing is reduced as much as possible, which is seen as an 'essential good'.

10.5.1. 9.53 Fat tax in Denmark

In October 2011, Denmark enacted an excise tax on all products containing saturated fats. This was the world's first so-called "fat tax" and was the leading example of anti-obesity policy experiments. This quickly transformed into a highly criticised tax that was subsequently abolished after only a year and three months.

At the time of the introduction of the fat tax, 13% of the Danish population was reportedly obese (and 47% overweight), which was seen as the driving factor behind the introduction of the tax.

All meats, dairy products, animal fats, edible oils and fats, margarine and spreadable blended spreads with a saturated fat content of 2,3% in weight, were subject to the excise tax. The rate was 16 DKK (2,14 EUR) per kg saturated fat in the foodstuffs – arguably not extremely high.

In practice, it quickly became evident that the tax did not achieve its aim. Only 7% of the population reduced the amount of butter, cream and cheese that they bought and over 80% of Danes did not change their shopping behavior at all. Instead, the tax created administrative burden, a significant rise in cross-border shopping and – some argue – an undeniable contribution to the country's inflation and job losses.

A survey by the Danish Grocer's Trade Organization (DSK) showed that an impressive 60% of Danish households had shopped groceries in Germany, while 4 years earlier, 60% of households said that they never bought in Germany.

The rather limited price increases combined with the massive hike in cross-border shopping made researchers conclude that the fat tax must have had an unexpected psychological effect on consumers. This is where studies significantly contradict each other; some say the consumer behavior would have worn off in the long-term, while some wholeheartedly disagree. Yet others (Oxford resp. British Medical Journal) claim that, despite its short life, the tax actually did reduce fat intake by 4%, while simultaneously increasing vegetable consumption by 10-15%.

Unfortunately, due to the rapid dismantling of the policy, the long-term effects that this policy would have had are difficult to see. Nevertheless, excise taxes of this sort clearly do have an impact on consumer behaviour. It is evident, however, that the outcomes excise-taxes implemented at the point of consumption of food products are not necessarily predictable, and must therefore be used with some caution.

10.6. Identifying viable tax nudging policies: Full rationale

10.6.1. Reduced rate for organic produce

Possible factors in favour	
Potential direct price influence	The application of a reduced VAT rate could directly influence the price paid by consumers and would signal government support for organic production.
Counteracting price subsidies	Nearly half of all Member States currently apply a reduced rate to fertilizers. Only a minority also distinguishes between non-organic and organic or phytopharmaceutical agricultural industry. Introducing a reduced VAT rate for organic produce would help to counteract the price subsidy that pesticides receive from these measures.
Popular with public & politicians	Reduced VAT rates are popular with politicians and the public in member countries.
More flexibility on VAT rates	While the EU Commission has historically resisted the extension of reduced rates, this policy is likely to be relaxed under the EU VAT reform, which is likely to give Member States far more freedom to act unilaterally.
Possible factors against	
Neutrality, simplicity and workability.	The EU Commission has historically resisted the extension of reduced rates. While the EU Commission's attitude is softening in this respect, and individual Member States may have more freedom to set their own rates in the future, this measure could offend the EU VAT principles that the Commission adheres to for the single market.
EU resistance	The EU Commission has previously rejected calls to apply differential VAT rates for organic products. In countries that do not apply reduced VAT rates currently to foodstuffs there might be strong resistance to doing so.
Existing or future reduced VAT rate policies	Many EU Member States already apply a reduced rate to many or most foodstuffs, so a reduced rate for organic foods would have no or little practical effect in these countries. If the Commission adopts the EU VAT reform option that prohibits some products from benefitting from a reduced rate, some organic products could be on the restricted list in any case
No influence on prices	The price reduction for organic produce may not be passed on to the consumer or the benefit may be eroded over time if retailers perceive consumers are willing to pay higher prices for organic produce in any case. This has been shown to be the case, for example, for children's shoes, which are taxed at 0% in the UK, as well as for Dutch theatre tickets, around the abolishment and re-introduction of the reduced VAT rate.

Unavailability of proper organic alternatives	Organic alternatives may not be readily available for all products or in all areas, therefore the measure may only benefit consumers with access to organic produce.
EU revenue loss	If this measure was introduced in Member States that currently apply the standard VAT rate to foodstuffs, it could reduce the amount of VAT collected by the Member States which in turn forms part of the EU's own resources.

10.6.2. Standard VAT rate for non-organic produce

Possible factors in favour	
Direct price influence	The application of a standard VAT rate would directly influence the price paid by consumers and would signal government support for organic production
Counteracting price subsidies	This measure would help to counteract the price subsidy that pesticides and non-organic fertilizers receive from reduced VAT rates.
EU preference	The EU Commission is generally in favour of the application of the standard rate. Some Member States only apply – and seem to prefer – a standard VAT rate.
Incentivizing organic production	The addition of standard-rate VAT to non-organic products could incentivize producers to switch to organic production.
EU revenue boost	Applying the standard rate VAT to products that are currently taxed at lower rates would have a positive impact on VAT revenues in Member States where a reduced rate applies.
Possible factors against	
Neutrality, simplicity and workability.	This measure could offend the EU VAT principles that the Commission adheres to for the single market.
Limited efficacy	Many EU Member States already apply a standard rate to many or most foodstuffs, so this measure would have no or little practical effect in these countries.
Significant price increases	In some countries, there are very wide differences between the current reduced rate and the standard rate. The addition of VAT at the standard rate would, therefore, greatly increase the price of non-organic products.
Unpopular measure	The price increase could make this measure very unpopular with the public as it could greatly add to the price of food for the average consumer, especially where organic produce is not widely available.
Risk of increased cross-border shopping	If some Member States introduced this measure but others did not, it could lead to an increase in cross border shopping where this is practical for consumers.
Margin erosion	If any price rises cannot be passed on in full to the consumer, the addition of VAT would erode retailers' profit margins. This could also have a negative impact on the prices paid to agricultural producers.

10.6.3. Differential reduced VAT rates

Possible factors in favour	
Direct price influence	The application of a different VAT rate to non-organic produce would directly influence the price paid by consumers.

Counteracting price subsidies	This measure would help to counteract the subsidies that pesticides and non-organic fertilizers receive from reduced VAT rates.
More flexibility on VAT rates	While the EU Commission has historically resisted the extension of reduced rates, this policy is more likely to be relaxed under the EU VAT reform, which is likely to give Member States far more freedom to act unilaterally.
Less impact on consumer prices	The application of differential reduced VAT rates would help to counteract the impact on consumer prices of applying the standard rate VAT to non-organic produce.
Incentivizing organic production	The application of a higher reduced rate of VAT to non-organic products could incentivize producers to switch to organic production.
Reduced cross-border shopping risk	This measure would be less likely to encourage cross-border shopping than applying the standard VAT rate as the price differential would not be so great.
Possible factors against	
Neutrality, simplicity and workability	This measure could offend the EU VAT principles that the Commission adheres to for the single market.
Risk of increased cross-border shopping	If some Member States introduced this measure but others did not, it could lead to an increase in cross-border shopping in areas where this is practical for consumers.
Increased level of complexity	Applying multiple VAT rates to similar products would greatly complicate the VAT system and add to the administrative burden for businesses, including SMEs.
Significant price increases	The application of VAT at a higher rate to non-organic products might greatly increase their price, thus adding to the price of the weekly shopping basket for consumers, especially where organic produce is not widely available. Therefore, this measure could prove very unpopular with the public.
Limited efficacy	If the rates are not very different, it may prove ineffective. Further to this, the VAT rate differential for organic produce could also prove ineffective if it was not truly reflected in the price (because organic produce continued to be priced higher in stores).
Margin erosion	If any price rises cannot be passed on in full to the consumer, the addition of VAT would erode retailers' profit margins. This could also have a negative impact on the prices paid to agricultural producers.

10.6.4. Standard VAT rates for non-organic PPPs and fertilizers

Possible factors in favour	
Potential direct price influence	The application of a standard VAT rate would directly influence the price paid by consumers and would signal government support for organic production.
Counteracting price subsidies	This measure would remove the effective price subsidy that pesticides and non-organic fertilizers receive from reduced VAT rates in some Member States
EU preference	The EU Commission is generally in favour of the application of the standard rate. Some Member States only apply – and seem to prefer – a standard VAT rate.

Incentivizing organic production	The addition of standard rate VAT to pesticides could incentivize users to switch to organic production.
EU revenue boost	Applying the standard rate VAT to products that are currently taxed at lower rates would have a positive impact on VAT revenues in Member States where a reduced rate applies.
Possible factors against	
Neutrality, simplicity and workability.	This measure would likely not offend these principles as it would not discriminate between like products. However differential VAT rates between different types of pesticide could be complex and could create “boundary” disputes between very similar products.
Limited effectiveness	Many EU Member States already apply the standard VAT rate pesticides, so this measure would have no or little practical effect in these countries. Also, as most farmers recover VAT paid, the overall impact on them may be low – which would limit the effectiveness of the measure overall. In addition, EU Member States have little scope to apply multiple VAT rates, therefore they would have little scope to apply differentiated rates to different classes of product (e.g. to reflect the different levels of harm).
Price increases	In some countries, there are very wide differences between the current reduced rate and the standard rate. The addition of VAT at the standard rate to farming inputs could, therefore, increase the and the price paid by end consumers for food produced with pesticides. However, this impact would be far lower than applying VAT to food items. That said, significant price increases in pesticides could lead to stockpiling prior to introduction, limiting the effectiveness of any policy objective (i.e, reducing pesticide use) for a period following the change.

9.65 Non-harmonized excise tax for non-organic produce

Possible factors in favour	
Direct price influence	The application of an excise tax would directly influence the price paid by consumers.
Counteracting price subsidies	This measure would help to counteract the price subsidy that pesticides and non-organic fertilizers receive from reduced VAT rates.
Lifestyle taxation as a growing trend	A number of EU Member States and other countries around the world have introduced non-harmonized excise taxes to influence consumer behaviour to favour human health and the environment and this is a growing trend.
Incentivizing organic production	The addition of an excise tax to non-organic products could incentivize producers to switch to organic production.
Financial compensation for the cost of pollution	The excise tax rate could be linked to demonstrable externalities such as the cost to society of pesticides pollution.
Single stage taxation	The tax could be applied at a single stage, targeting the step in the supply chain where that was most feasible.
State revenue boost	Applying an excise tax to products that are currently taxed at lower VAT rates would have a positive impact on government revenues in Member States where a reduced rate applies.
Possible factors against	

Neutrality, simplicity and workability	This measure could offend the EU principles that the Commission adheres to for the single market. However, these objections are more easily overcome than for the use of VAT rates, as like-products already are subject to single stage excise taxes.
Unpopular measure Risk of increased cross-border shopping	Applying excise taxes rates to staple products could be very unpopular, especially if these goods are not currently taxed at all or benefit from very low VAT rates. This would be especially true if organic versions of popular products were not readily available to most consumers.
Increased level of complexity / administrative burden	If some Member States introduced an excise tax on non-organic products but other did not, the measure could lead to an increase in cross-border shopping in areas where this is practical for consumers.
Limited efficacy	The excise tax rate differential for organic produce could prove ineffective if it was not truly reflected in the price (e.g. if organic products maintain a higher shelf price in any case). Further to this, the excise tax could prove ineffective if it is not set at a rate sufficient to make a difference.
Margin erosion	If the price rise could not be passed on in full to the consumer, the application of an excise tax to non-organic produce would erode retailers' profit margins.

10.6.5. Non-harmonized excise tax on non-organic PPPs/fertilizers

Possible factors in favour	
Price impact	The application of an excise tax would directly influence the price paid by farmers for non-organic agricultural inputs and ultimately the price paid by consumers for non-organic produce.
Counteracting price subsidies	This measure would help to counteract the price subsidy that pesticides and non-organic fertilizers receive from reduced VAT rates.
Lifestyle taxation as a growing trend	A number of EU Member States and other countries around the world have introduced non-harmonized excise taxes to influence consumer behaviour to favour human health and the environment and this is a growing trend.
Incentivizing organic production	The addition of an excise tax to non-organic products could incentivize producers to switch to organic production.
Financial compensation for the cost of pollution	The excise tax rate could be linked to demonstrable externalities such as the cost to society of pesticide-related pollution.
Single stage taxation	The tax could be applied at a single stage, targeting the step in the supply chain where that was most feasible.
State revenue boost	Applying an excise tax to products that are currently taxed at lower VAT rates would have a positive impact on government revenues in Member States where a reduced rate applies.
Possible factors against	
Neutrality, simplicity and workability	This measure could offend the EU principles that the Commission adheres to for the single market. However, these objections are more easily overcome than for the use of VAT rates, as similar products already are subject to single stage excise taxes.
Social impact	A high excise tax rate on non-organic agricultural inputs could lead to high food price increases that would likely be very unpopular, and could run contrary to social policies for low-income families.

Limited efficacy	Applying excise tax to agricultural input may prove to be an ineffective way of influencing consumer prices sufficiently to alter behaviour.
Margin erosion	If the price rise could not be passed on in full to the consumer, the application of an excise tax to non-organic produce would erode retailers' profit margins.
Agricultural organic products only	This measure aims only at the non-organic production of agricultural crops and not at (the production of) non-organic meat, furniture, etc. However, this imbalance could be minimized in future by implementation of further excise tax on harmful practices (e.g. the excessive use of antibiotics in animals).

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10.8. Bibliography

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