DEEP SEAS
DEVELOPING AND EXTENDING EVIDENCE AND PRACTICE FROM THE STANDARD EUROPEAN ALCOHOL SURVEY

FAR SEAS
FETAL ALCOHOL REDUCTION & EU KNOWLEDGE EXCHANGE AFTER SEAS

AlHaMBRA PROJECT
Alcohol Harm Measuring and building Capacity for Policy Response and Action

Background Document for the DEEP SEAS - FAR SEAS – AlHaMBRA Project Thematic Capacity Building Workshop

Alcohol Taxation and Pricing Policies, including Unrecorded Alcohol and Cross-Border issues

Funded by the European Union

Co-hosted by

NTAKD
DRUG, TOBACCO AND ALCOHOL CONTROL DEPARTMENT

LITHUANIAN UNIVERSITY OF HEALTH SCIENCES

NTAK
LITHUANIAN TOBACCO AND ALCOHOL CONTROL COALITION

DEEP SEAS - FAR SEAS – AlHaMBRA Project workshop

Alcohol Taxation and Pricing Policies, including Unrecorded Alcohol and Cross-Border issues

Background paper

ACKNOWLEDGMENTS AND DISCLAIMER

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The workshop is co-hosted and supported technically by the Lithuanian Drug, Tobacco and Alcohol Control Department (NTAKD), the Public Health Faculty of the Lithuanian University of Health Sciences and the Lithuanian Tobacco and Alcohol Control Coalition (NTAKK).

Introduction and background

The DEEP SEAS - FAR SEAS – AlHaMBRA Project workshop *Alcohol Taxation and Pricing Policies, including Unrecorded Alcohol and Cross-Border issues* aims to facilitate discussion and knowledge exchange around effective policy options in these areas to reduce alcohol-related harm.

Held on 8, 11 and 15 June 2021 the workshops are co-hosted by the Lithuanian Drug, Tobacco and Alcohol Control Department (NTAKD), the Lithuanian University of Health Sciences and Lithuanian Tobacco and Alcohol Control Coalition (NTAKK).

These briefing documents provide background to the topic areas of the 3 sessions of the workshop.

8th June 2021 *Alcohol Taxation and Pricing Policies*	11th June 2021 *Cross-border alcohol purchasing, marketing and trade*	15th June 2021 *Unrecorded and illicit Alcohol*

Context of the workshops

The workshops are the third in a series of five, three-session workshops within the frame of the prevention strand of Europe's Beating Cancer Plan. The Beating Cancer Plan specifically recognises the intrinsic carcinogenic nature of alcohol and pledges the following under *3.3 Reducing harmful alcohol consumption*:

- support to Member States and stakeholders implementing best practices towards the aim of reducing harmful alcohol consumption by 10% by 2025
- to review EU legislation on alcohol taxation and cross-border alcohol purchases by private individuals
- to monitor implementation of the Audiovisual Media Services Directive and effective measures to reduce the exposure of young people to alcohol marketing
- to propose mandatory indication of ingredients and a nutrition declaration on alcoholic beverage labels before the end of 2022 and health warnings on labels before the end 2023
- support to Member States to implement evidence-based brief interventions in different settings.

The first workshop in the series, *Alcohol Advertising and Sponsorship in Traditional and Digital Media* was held in December 2020, hosted by Charles University Prague and the Government of the Czech Republic.

The second workshop *Alcohol and its relation to Cancer, Socioeconomic Inequalities, and Nutrition & obesity* was held in March 2021 co-hosted by General Directorate for Intervention on Addictive Behaviours and Dependencies (SICAD), of the Portuguese Ministry of Health.

Background

Europe has the highest level of alcohol consumption and alcohol-related harm in the world (1, 2). Overall, alcohol consumption in Europe has fallen in the past 20 years, however it remains the highest in the world, and the recent decline is expected to slow in coming years (3). In the EU there are both opportunities and challenges for implementing effective policy aimed at reducing alcohol-related harm. This third workshop in the series looks at interlinked issues around pricing and taxation, unrecorded alcohol consumption and cross-border purchases.

Pricing and taxation

There is an overwhelming body of research evidence which demonstrates that increasing the price of alcohol is an effective means of reducing alcohol consumption (4-8).

The umbrella term of 'pricing policies' covers a broad range of specific policy interventions aimed at effecting changes in the price of alcoholic beverages. Taxation is the most commonly recognised measure, however other policies such as Minimum Unit Pricing (MUP) have been recently implemented and evaluated in some European countries or regions. In spite of the evidence for the effectiveness of pricing policies such as taxation, alcohol duties remain comparatively low in many Member States and there is substantial variation in levels and structures of alcohol taxation, with a significant number of countries levying no duties at all on wine.

A further important consideration for policy makers is how the impacts of different pricing policies are distributed across the population, and their effect on specific groups of drinkers, for example heavy drinkers versus low to moderate drinkers. There is also a recognised 'alcohol harm paradox' which shows that the burden of alcohol-related harm falls disproportionately on lower socioeconomic groups despite overall lower levels of drinking, and this raises questions related to the impact of policies on health inequalities.

Cross-border purchases

Within the EU, the treatment of alcohol as an "ordinary" commodity and the concept of a single internal market means that there are very few restrictions on cross-border alcohol purchases (9). Marked differences in the price of alcohol between neighbouring countries, due to variations in pricing and taxation policies, is the main motivation for cross-border purchases of alcohol, although other factors also play a part. In a number of EU countries cross-border purchases make up a large proportion of unrecorded alcohol, particularly in the northern countries, and recently, in the Baltic countries. A lack of coordinated response to cross-border issues, and differences in how taxation and pricing policy is structured and implemented in EU countries, can undermine efforts by individual Member States to reduce consumption and alcohol-related harm.

Unrecorded alcohol

Currently, about 25% of worldwide alcohol consumption is unrecorded (1.7L per adult of pure alcohol *per capita* out of 6.5L in 2017 (5)). That is, alcohol which is consumed but not registered in official sales (e.g., for taxation), production, or trade statistics (1, 2). Unrecorded alcohol includes a number of categories: Legal but unrecorded alcohol products; Alcohol products recorded, but not in the jurisdiction where consumed; Surrogate alcohol (i.e., non-beverage products not officially intended for human consumption); Illegal homemade artisanal production; and Illegal production or smuggling on a

commercial (industrial) scale. Most of the health harm from unrecorded alcohol products is caused by the alcohol itself rather than by other factors (such as contamination), and thus, indirectly, by their lower price. These kinds of harm are at times reinforced by the higher alcohol concentration in unrecorded alcohol, which has been found to be consistently higher in unrecorded alcohol in the European Union.

Despite the common assertion that measures which increase the price of recorded alcohol (such as taxation) would lead to increases in consumption of unrecorded alcohol, this is not borne out by the available evidence; and there are other factors which influence the impact of price changes on the purchase and consumption of unrecorded alcohol.

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Workshop agenda

Session 1: Tuesday 8th June

Alcohol Taxation and Pricing Policies – Game changers to reduce harm

Organized under the DEEP SEAS Contract

Time (CET)	Topic (and format)	Chair/Speaker
13:50	*Participants admitted to the meeting*	
14:00	**Welcome and setting the scene**	Toni Gual (chair)
	- Welcome from hosting Member State Lithuania	Arūnas Dulkys, Minister of Health, Lithuania
	- Frame of EU Beating Cancer Plan	EC hosts (DG SANTE)
	- Introduction to the workshop sessions and the session topic	Hughes de la Motte, DG TAXUD
14:20	**Evidence update** *Topic 1: Alcohol Taxation and Pricing Policies: recent scientific developments and key messages for policy*	Video presenter - Colin Angus (Sheffield, UK)
14:45	**Stakeholder perspectives**	Video presenters
	Finland: Different perspectives on pricing options	- Ismo Tuominen (FI)
	Scotland: Minimum Unit Price 3 Years On: expectations & outcomes	- Peter Rice (Scotland, UK)
	WHO-EU: Initiatives on alcohol control through taxation	- Carina Ferreira Borges (WHO-EU)
15:10	*10-minute break*	
15:20	**Summary by sub-topic expert** + introducing discussions (live)	Toni Gual + Colin Angus
15:25	**Breakout discussions** (small parallel groups of 8-10 people) Discussion question: *We have ample evidence for strong taxation and pricing policies but still weak policies in Europe? What are the barriers and how to overcome them? (3 main barriers and solutions)*	Moderators and rapporteurs pre-assigned to each group
16:00	**Feedback to whole group** - Brief summaries by rapporteurs/moderators + Round of comments	Rapporteurs and Moderators
16:45	**Wrap up** by hosts and sub-topic expert	Toni Gual + Colin Angus
17:00	**End of afternoon 1**	

Session 2: Friday 11th June
Cross-border alcohol purchasing, marketing and trade
Organized under the FAR SEAS Contract

Time (CET)	Topic (and format)	Chair/Speaker
13:50	*Participants admitted to the meeting*	
14:00	**Welcome back and order of the day /messages from previous day**	Toni Gual (chair)
	- Cross-border alcohol trade in the hosting Member State, Lithuania	Gražina Belian (LT), Director NATKD
	- Introduction to the session topic	EC Hosts, DG SANTE Hughes de la Motte, DG TAXUD
14:20	**Evidence update** *Topic 2: Key scientific messages on Cross-border alcohol purchasing, marketing and trade – scope of the European problem*	Presenters - Nijole Goštautaitė (LT) - Thomas Karlsson (FI)
14:45	**Stakeholder perspectives**	Video presenters
	Estonia Policy to tackle cross-border alcohol problems in the Baltics	- Triinu Taht (EE)
	Sweden Pandemic experiences of cross-border alcohol trade	- Håkan Leifman (SE)
	A **global perspective** on cross-border marketing	- Sally Casswell (NZ)
15:10	*10-minute break*	
15:20	Summary by sub-topic expert + introducing discussions (live)	Toni Gual + Nijole Goštautaitė + Thomas Karlsson
15:25	**Breakout discussions** (4 small parallel groups of 8-10 active discussants) Discussion question: *How can EU Member States be supported to collaborate across sectors and reduce problems caused by cross-border alcohol purchases and consumption?*	Moderators and rapporteurs pre-assigned to each group.
16:00	**Feedback to whole group** - Brief summaries by rapporteurs/moderators + Round of comments	Rapporteurs and Moderators
16:45	**Wrap up by hosts and topic experts**	Toni Gual + Nijole Goštautaitė + Thomas Karlsson
17:00	**End of afternoon 2**	

Session 3: Tuesday 15th June
Unrecorded and illicit Alcohol
Organized under the AlHaMBRA Project Contract

Time (CET)	Topic (and format)	Chair/Speaker
13:55	*Participants admitted to the meeting*	
14:00	**Welcome back and order of the day /messages from previous day**	Toni Gual (chair)
	- Unrecorded alcohol in the hosting Member State - Lithuania	Ramunė Kaledienė, Dean, Lithuanian University of Health Sciences
	- Introduction to the session topic	EC hosts (DG SANTE) Hughes de la Motte, DG TAXUD
14:20	**Evidence update** Topic 3: Key lessons from recent research on unrecorded alcohol, legal and illegal – Scale and scope of production and harm.	Presenters - Jürgen Rehm (DE/CA) - Dirk Lachenmeier (DE)
14:45	**Stakeholder perspectives**	Video presenters
	Lithuania Effects of unrecorded alcohol on harm and mortality	- Mindaugas Štelemėkas (LT)
	Hungary Experiences and policy to tackle unrecorded alcohol	- Zsusanna Elekes (HU)
	Eastern Europe/Russia Internet sales of unrecorded alcohol	- MariaNeufeld (WHO-EU)
15:10	*10-minute break*	
15:20	**Summary by sub-topic expert** + introducing discussions (live)	Toni Gual + Jürgen Rehm + Dirk Lachenmeier
15:25	**Breakout discussions** Discussion question: *What are the most promising policy measures to reduce harm from unrecorded and illicit alcohol? (3 priorities + 3 process proposals)*	Moderators and rapporteurs pre-assigned to each group
16:00	**Feedback to whole group** - Brief summaries by rapporteurs/moderators + Round of comments	Rapporteurs and Moderators
16:45	**Wrap up by hosts and sub-topic expert**	Toni Gual + Jürgen Rehm
17:00	**End of afternoon 3**	

Session 1 Briefing Paper: Alcohol Taxation and Pricing Policies

Evidence to inform effective alcohol pricing policies in the European Union

Colin Angus, Sheffield Alcohol Research Group, University of Sheffield

Contents

Executive summary

There is an overwhelming body of research evidence which demonstrates that increasing the price of alcohol is an effective means of reducing alcohol consumption. As a result, alcohol pricing is one of the World Health Organization's 'best buy' interventions for reducing alcohol-related harm.

The umbrella term of 'pricing policies' covers a broad range of specific policy approaches, which may have different magnitudes of effect in different countries and contexts; and the extent to which their effects are distributed equally across the population, and their impact on specific target specific groups may also vary.

Whether alcohol pricing policies can effectively target heavier drinkers without having a substantial impact on those who drink within national drinking guidelines has become an important political consideration in many countries. Furthermore, a substantial body of evidence which shows that the burden of alcohol-related harm falls disproportionately on the most deprived parts of society has made the impact of pricing policies on the resulting health inequalities an important area of discussion in alcohol policy in recent years.

It is important to understand how the scientific evidence has moved on in recent years in order to inform the development of more evidence-based alcohol pricing policies across the EU region. With this is mind this review aimed to:

1. Map current alcohol pricing policy across the European Union
2. Identify and review the latest research evidence on alcohol pricing policies in the European Union
3. Consider relevant international research evidence on alcohol pricing policies
4. Synthesise these findings to make recommendations about the potential impacts of different alcohol pricing policies in EU Member States

There is substantial variation in the levels of alcohol taxation across the EU and some variation in the structures of alcohol taxes, although current EU directives limit the ability of Member States to implement more public health-centric alcohol duty systems. In spite of overwhelming evidence that increasing alcohol duty rates is an effective approach to reducing harm, alcohol duties remain comparatively very low in many Member States. Evidence from across Europe makes it clear that when Member States have increased alcohol taxes, they have seen benefits, and in spite of concerns about cross-border impacts moderating the effect of increases in taxation, there is little in the published evidence to support those worries.

The 'best' pricing policy for any individual situation will depend on the specific local context and also the aims of the policy maker. However, there is ample evidence to show that pricing policies can and have worked across EU Member States and they are likely to form a key part of any effective policy approach to reduce alcohol-related harm.

Background

Alcohol consumption places a substantial burden on the health of European society, causing an estimated 584,000 deaths (6% of all deaths) and the loss of 21 million Disability-Adjusted Life Years every year across the WHO European region (1). In addition to this, excessive alcohol consumption is also responsible for increasing crime and public disorder (2), reducing economic productivity (3) and causes significant harms beyond those suffered by the drinkers themselves (4). Overall, alcohol consumption in Europe has fallen in the past 20 years, however it remains the highest in the world and research suggests that the recent decline is expected to slow in coming years (5).

Stakeholders wishing to address high levels of alcohol consumption and associated harm are not without policy tools at their disposal. There is an overwhelming body of research evidence, running to hundreds of individual studies, which have demonstrated that increasing the price of alcohol is an effective means of reducing alcohol consumption (6–9). As a result, alcohol pricing is listed among the World Health Organization's 'best buy' interventions for reducing alcohol-related harm (10).

A previous research project, the AMPHORA study, reviewed the scientific evidence specific to Europe in relation to alcohol pricing policies in 2011 and concluded that "The accumulated knowledge base tells us that restrictions on the physical and economic availability of alcohol have a significant effect on reducing alcohol consumption and related harms" (11).

However, not all alcohol pricing policies are equal. The umbrella term of 'pricing policies' covers a broad range of specific policy ideas, which may have different magnitudes of effect in different countries and contexts. Furthermore, the extent to which the impacts of different pricing policies are distributed equally across the population, or whether they effectively target specific groups of drinkers, may vary. The question of whether alcohol pricing policies can effectively target heavier drinkers without having a substantial impact on those who drink within national drinking guidelines has become an important political consideration in many countries. There is also a substantial body of evidence which shows that the burden of alcohol-related harm falls disproportionately on the most deprived parts of society (12), and thus the question of whether pricing policies can reduce the resulting health inequalities has also featured heavily in many political debates around alcohol policy in recent years.

By far the most common pricing policy in place across the European Union is alcohol taxation, with every Member State levelling some form of duty on alcohol (13). As a result, the studies identified and reviewed in the AMPHORA study were almost exclusively ones that assessed the impact of changes in alcohol taxation on a range of outcomes, including alcohol consumption, alcohol-related hospital admissions and mortality. In more recent years, however, there has also been significant scientific and political interest in another pricing policy – Minimum Unit Pricing (MUP).

MUP sets a floor price below which a fixed volume of alcohol (e.g. a standard drink or 'unit') cannot be sold. Policies similar to MUP have been in place in several Canadian provinces and in parts of Eastern Europe for many years, but the last decade has seen a flurry of research and policy interest in MUP within EU Member States[1]. This has been largely driven by Scotland, which passed legislation to introduce MUP in 2012 and finally brought the policy into force in 2018 following a lengthy legal

[1] The United Kingdom was still part of the EU when this report was commissioned and therefore is included in this report, even though it is no longer a Member State.

challenge from the alcohol industry (14). The past decade has also seen developments in other forms of pricing policies, with Scotland introducing a ban on multi-buy discounts (promotions where consumers pay a cheaper per-unit price for buying larger volumes of a product) for alcohol in 2011. Finally, there has also been an increasing focus on not only the *levels* at which alcohol taxes are set, but also in the *ways* in which they are levied (15,16).

In light of these important developments in alcohol pricing policy, it is important to understand how the scientific evidence has moved on in recent years in order to inform the development of more evidence-based alcohol pricing policies across the EU region.

To this end, we set out to achieve the following aims:

1. To map current alcohol pricing policy across the European Union
2. To identify and review the latest research evidence on alcohol pricing policies in the EU
3. To consider relevant international research evidence on alcohol pricing policies
4. To synthesise these findings to make recommendations about the potential impacts of different alcohol pricing policies in EU Member States

These aims will be achieved through a combination of updates of previous reviews and analyses, a systematic review of published scientific studies and through consultation with leading topic experts.

Mapping current pricing policies across the EU

Methodology

We updated previous analyses of EU alcohol duties (13,16) using the latest available EU-wide data (17) and combined these with wider data on alcohol production (18).

Findings

There are three main approaches to levelling alcohol taxation (15):

1. Duty based on the volume of the product (unitary taxation)
2. Duty based on the volume of alcohol contained in the product (specific taxation)
3. Duty based on the value of the product (ad valorem taxation)

Within the EU, regulations on the harmonisation of alcohol duties require that beer is taxed on a specific basis (except under specific circumstances detailed in (13)), wine is taxed on a unitary basis, with differential rates permitted for products below 8.5% ABV, and spirits are taxed on a specific basis. Member States are permitted to levy additional ad valorem taxes, but in practice these are normally general sales taxes such as VAT, rather than alcohol-specific taxes (19). There are also minimum duty rates for both beer and spirits, but no minimum rate for wine (20). These directives also cover the taxation of sparkling wine, other fermented beverages and 'intermediate products', which includes products such as fortified wine. Notably, Member States are required to tax cider on a unitary, rather than specific basis and there is no minimum duty rate. For more details see references (17) and (13).

In spite of these restrictions, there is substantial variation in both the levels and structures used to tax alcohol in EU Member States, as illustrated in Figure 1. Beer duties are generally lower, per gram of

ethanol, than duties on either wine or spirits and uniquely, the UK has a higher rate of duty for high-strength beer (above 7.5% ABV).

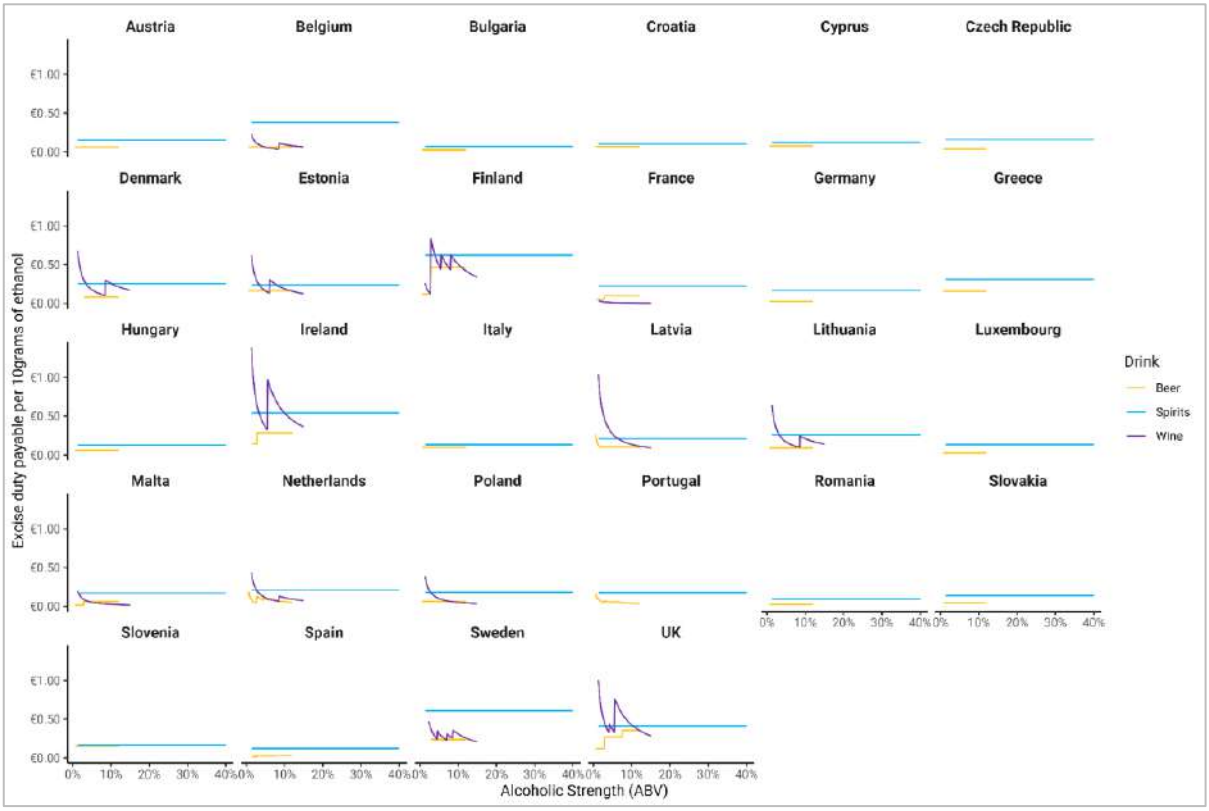

Figure 1. Alcohol duty rates per 10 grams of ethanol by alcoholic strength and beverage type across the EU. Zero duty rates not shown.

The requirement to tax wine on a unitary basis means that the effective duty rate per gram of ethanol falls as strength increases, effectively incentivising consumers to purchase higher strength products. Some Member States have partially addressed this through the use of differential duty bands (particularly Finland and Sweden), although the fact that duty rates must remain fixed between 8.5% and 15% ABV, the range in which most wine products lie, means this is likely to have limited impact.

Taxes on spirits are almost universally higher than on other alcoholic products, perhaps motivated by the fact that spirits are more closely associated with intoxication, as they allow a greater volume of alcohol to be consumed in a shorter time.

For all products there are large differences in alcohol duty rates between countries, with the duty payable on 500ml of 5% ABV beer varying between 5c in Bulgaria, Spain, Luxembourg, and Romania and €0.91 in Finland. The duty levied on a 700ml bottle of 40% ABV spirits ranges from €1.57 in Bulgaria to €13.66 in Finland, while 15 Member States would levy no duty on a 750ml bottle of 12.5% ABV wine compared to €3.19 of duty in Ireland.

If we look at those countries which do not levy duty on wine, there is a striking pattern, shown in Figure 2, when we compare duty rates with data on per capita wine production (18). All major wine producing nations charge no duty on wine, while Member States who produce little or no wine of their own generally have non-zero rates of duty on wine.

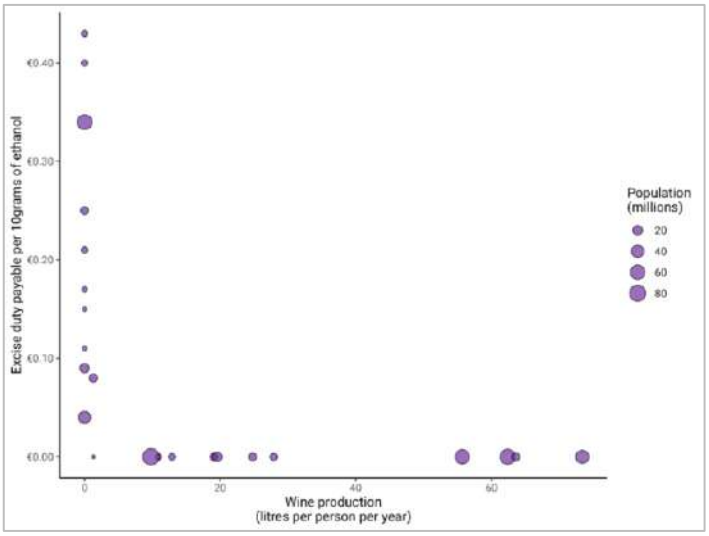

Figure 2. A comparison of per capita wine production and duty rates levied on 12.5% ABV wine for EU Member States

While this pattern may suggest some degree of protectionism, the picture for beer production is very different, with no significant association between per capita beer production and rates of duty levied on beer. This contrast would appear to call into question any argument that low rates of duty are necessary to support a country's own alcohol producers.

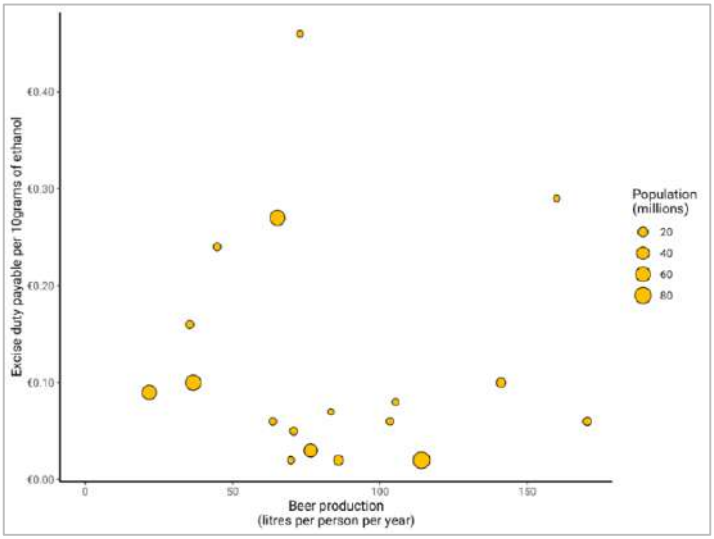

Figure 3. A comparison of per capita beer production and duty rates levied on 5% ABV beer for EU Member States

Beyond alcohol duties, Scotland introduced a MUP of 50p per UK unit (equivalent to €0.73 per 10g of alcohol) in May 2018. Wales followed suit in March 2020 and Ireland have recently confirmed that they will bring in a MUP of €1 per 10g of alcohol at the start of 2022. Scotland introduced a ban on multi-buy discounts in 2011, a policy that Finland and Sweden also have in place. Finally, England and Wales have had a ban on selling alcoholic products for below the cost of the duty levied on the product plus VAT since 2014. Several other EU countries have wider regulations preventing the sales of many common products, not just alcohol, far below the retailers' own purchase costs.

Reviewing published studies on alcohol pricing

Methodology

We sought to identify studies which evaluated or appraised the impact of an alcohol pricing policy on either alcohol consumption or health, in an EU Member State, published since the year 2000.

Studies which assess associations between alcohol prices and outcomes without specifically looking at the impact of a pricing policy (e.g. econometric studies estimating price elasticities) were excluded. We took a three-pronged approach to identify relevant studies:

1) A systematic review of published academic studies
2) A search through grey literature and the references of existing reviews
3) Consultation with topic experts

For the systematic review, we searched the PubMed and Google Scholar databases for any study (including grey literature) which met the inclusion criteria outlined above.

The search strategy was based on: ("Alcohol" OR "Ethanol" OR "Wine" OR "Beer" OR "Spirit*") AND ("Tax" OR "Taxation" OR "Taxes" OR "Price*" OR "Pricing" OR "Economic" OR "Policy" OR "Discount" OR "Promotion*") AND ("Evaluat*" OR "Apprais*" OR "Model*" OR "Cost*" OR "Cost-effectiveness" OR "Cost-utility" OR "Cost-benefit" OR "Budget*" OR "Value for money" OR "Return on investment").

We then hand searched the references of existing published reviews of alcohol pricing policies (21–26) and the references and studies citing key papers identified in the systematic review. We then consulted with key topic experts to ensure we had not missed any important studies.

For all identified studies, we extracted bibliographic details, the country (or countries) under study, the pricing policy in question, study type, intervention period, outcomes being examined (including any non-health outcomes reported alongside consumption or health) and the study findings.

Findings

The initial systematic review identified 11,623 studies, which were reduced to 108 after screening title and abstract and leading to a final total of 41 eligible studies after full text screening. These were supplemented with a further 43 studies identified through the additional searching and expert consultation phases to give a total of 84 studies. These are summarised narratively below

Study types

The identified studies can be grouped into two broad categories:

- **Prospective modelling studies** which use mathematical models to estimate the potential impact of policies which have not yet been introduced
- **Retrospective evaluations** which use a variety of methods such as Interrupted Time Series analysis to evaluate the impact of a single intervention which has already occurred on a specific outcome.

We identified 35 prospective modelling studies and 49 retrospective evaluations. The majority of included studies of both types were published in the last decade, as illustrated in Figure 4.

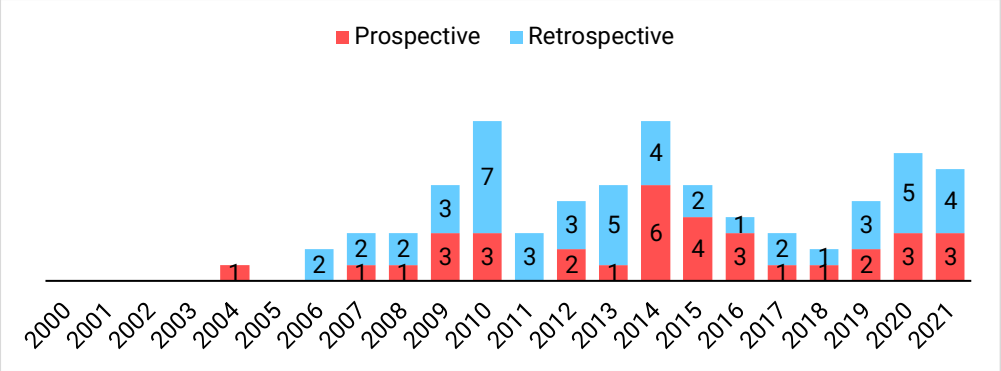

Figure 4. Publication date of included studies

Study location

The country setting for all included studies is shown in Figure 5. A small number of studies reported on multiple countries. There is a heavy bias towards Scandinavian countries and the UK in the settings of the identified studies, with 25 of the prospective studies (71%) and 42 of the retrospective studies (86%) assessing the impact of interventions from these countries. It may be tempting to conclude that this is because these countries have seen more alcohol pricing policies implemented or considered during this period. While that may (or may not) be true, the AMPHORA study identified a large number of unevaluated pricing policy interventions from other parts of Europe (27), suggesting that policies from Southern and Eastern Europe are less likely to be studied than those in the UK or Scandinavia.

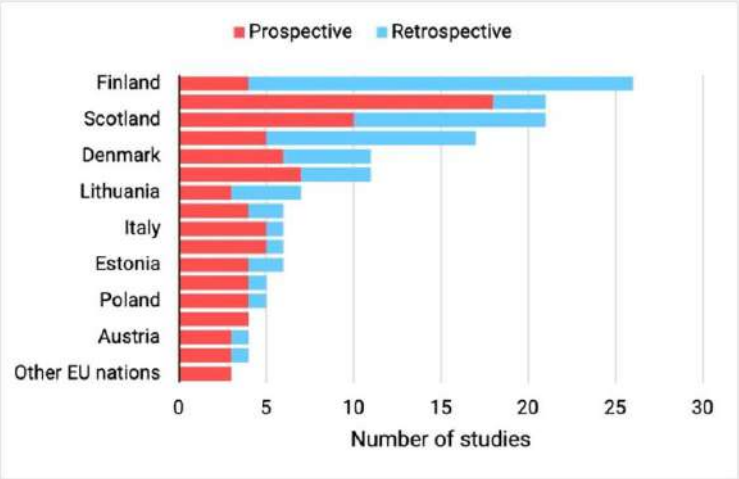

Figure 5. Identified studies by country and study type

Intervention type

The nature of the pricing policies examined in the included studies is presented in

Figure 6. This shows that studies of taxation policies are dominant, but that there are a significant minority of studies around Minimum Unit Pricing. There is also a clear tendency for retrospective studies to look at tax changes, while prospective studies have looked at MUP to a greater extent.

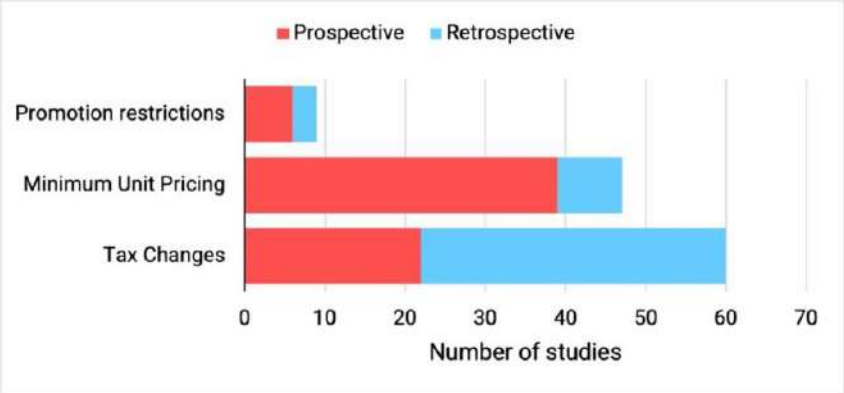

Figure 6. Types of alcohol pricing policy examined in included studies

Prospective modelling studies

The 35 prospective modelling studies identified in the review cover a wide range of methodological approaches. Several studies take a broad approach using aggregate data to estimate the impact of multiple policies across multiple countries or regions (28–32). The remaining studies take a more detailed approach, using low-level individual data on how alcohol consumption and harm vary within the population and modelling the impact of policies on different subgroups in the population, although not all of the studies report the subgroup-level impacts (33–62). The studies include a wide range of outcomes, from alcohol consumption and spending to alcohol-related hospital admissions, deaths, crimes and workplace absence. It is striking that across all of these outcomes in all of the included modelling studies, the findings are clearly positive, showing that alcohol pricing policies are effective, cost-effective and health-improving.

Among the more aggregate studies, Chisholm et al found that increasing alcohol taxes would improve health across all WHO Europe subregions (30) and Summan et al estimated that a 20% increase in alcohol duties would reduce the number of Years of Life Lost to premature mortality and increase tax revenue for countries at all income levels around the globe (28). Rovira et al found that increasing alcohol taxes would significantly reduce alcohol-attributable cancer cases in Germany, Italy and Sweden (29), while Lai et al estimated that an increase in alcohol taxes would improve population health and be highly cost-effective in Estonia (31). Three other studies looked across multiple countries, concluding that increasing alcohol prices would reduce chronic disease across 11 EU Member States (32), that both increasing taxation and introducing an MUP would reduce alcohol consumption, improve health and reduce healthcare costs in Czechia and Germany (44) and that both increasing taxation and introducing an MUP would improve health, reduce health care costs, reduce unemployment and increase GDP across all European OECD member countries (45).

Two separate studies led by Holm appraised the cost-effectiveness of multiple alcohol policy interventions, including increased taxation, in Denmark and concluded that increasing alcohol taxes would improve health and save costs (33,34). A Dutch study compared the modelled impacts of a small increase in alcohol duties compared to increasing them to the same levels as Sweden (a substantial increase), finding that both policies would improve health and be highly cost-effective, although not cost-saving (35). Two separate studies set in Germany appraised the potential impact of increasing alcohol prices on underage drinking (43) and alcohol-related cancer (42), finding that both would be reduced.

22 of the remaining 23 studies use various iterations of the same modelling approach – the Sheffield Alcohol Policy Model, to estimate the impact of a range of policies including Minimum Unit Pricing, tax increases, changes to the structure of the tax system and restrictions on discounting and promotions in England (36–41,46,50,53–57), Scotland (46–49,52), Wales (51,58,59), Northern Ireland (61) and Ireland (60). Of particular note among these studies are the consistent findings across all of these countries that MUP would effectively target heavy drinkers while having little impact on the drinking of those consuming within official low risk drinking guidelines and that it would effectively target heavier drinkers on lower incomes, leading to a reduction in socioeconomic inequalities in health.

Several of these studies directly compare the impact of MUP and increases in alcohol taxation (37,47,58), estimating that while both policies would be effective at reducing alcohol consumption and harm, MUP is more effectively targeted at heavier drinkers and more effective at reducing inequalities than tax increases. These differences arise because heavier drinkers tend to consume cheaper alcohol. Although increasing taxation on alcohol increases the price of these products, it also increases the prices of other products to a similar extent. On the other hand, MUP increases *only* the prices of the cheapest products. As a consequence of this, another consistent finding across these studies is that higher levels of MUP are estimated to be more effective, but less targeted at the heaviest drinkers, meaning that they have a greater impact on the drinking of moderate consumers. One of these studies looked further at alternative approaches to taxation, finding that a purely specific tax system would be almost as effective as MUP at reducing health inequalities (37).

One study compares the impact of MUP to the impact of introducing a ban on selling alcohol at below the cost of the tax levied on the product, a policy which was subsequently introduced in England and Wales (39). This study concluded that while banning sales below cost was unlikely to be harmful, it was estimated to be 40-50 times less effective than introducing MUP instead. Another study looked at gendered differences in the impact of pricing policies, concluding that both duty increases and MUP are likely to have greater impacts on the drinking and subsequently on the health of men than on women (40).

The final study, conducted by Griffith and Smith, compared the impact of MUP to a reform of the taxation system, which included a switch to a purely specific tax system (i.e. all products being taxed on the basis of their alcohol content) (62). This research estimated that the alternative tax system would be almost as effectively targeted at heavy drinkers as MUP, but would have the benefit that the policy would increase revenue for the government through increased duty receipts, whereas the majority of the increased sales value under MUP is estimated to go to retailers and producers.

Retrospective evaluation studies

As the 49 included evaluation studies include multiple studies evaluating the impact of the same intervention, we will group these studies by country and intervention. Table 1 gives an overview of the characteristics of the studies identified in the review.

Table 1 - Summary of included retrospective evaluation studies

Country	Study	Publication year	Policy	Study period	Outcome(s)
Estonia	Lai and Habicht (63)	2011	Multiple, incl. tax increases	2005-2010	Alcohol consumption
	Saar (64)	2015	Changes in alcohol taxes	1998-2013	Traffic accidents involving alcohol
Finland	Koski et al (65)	2007	Reduction in alcohol taxes	2004	Alcohol-attributable deaths
	Herttua et al (66)	2008	Reduction in alcohol taxes	2004	Alcohol-related mortality
	Herttua et al (67)	2008	Reduction in alcohol taxes	2004	Interpersonal violence
	Mäkelä and Österberg (68)	2009	Reduction in alcohol taxes	2004	Alcohol consumption, alcohol-related crime, hospital admissions and mortality
	Herttua et al (69)	2010	Reduction in alcohol taxes	2004	Alcohol-related hospital admissions
	Helakorpi et al (70)	2010	Reduction in alcohol taxes	2004	Alcohol consumption
	Mäkelä and Huhtanen (71)	2010	Reduction in alcohol taxes	2004	Alcohol-related mortality
	Herttua et al (72)	2011	Reduction in alcohol taxes	2004	Alcohol-related mortality
	Herttua et al (73)	2011	Reduction in alcohol taxes	2004	Alcohol-related mortality
	Vaaramo et al (74)	2012	Reduction in alcohol taxes	2004	All-cause mortality among patients with head trauma
	Puljula et al (75)	2012	Reduction in alcohol taxes	2004	Traumatic brain injury
	Vaaramo et al (76)	2013	Reduction in alcohol taxes	2004	All-cause mortality among patients with alcohol-related seizures
	Puljula et al (77)	2013	Reduction in alcohol taxes	2004	Traumatic brain injury
	Lintonen et al (78)	2013	Multiple, incl. tax increases	1981-2011	Self-reported alcohol consumption among 12-18 year-olds
	Herttua et al (79)	2015	Reduction in alcohol taxes	2004	Alcohol-related hospital admissions
	Kalsi et al (80)	2018	Alcohol price changes	2000-2016	Alcohol-related fatal motor vehicle accidents
Finland & Sweden	Herttua et al (81)	2017	Reduction in alcohol taxes	1988-2008	Alcohol-related mortality
Denmark	Grittner et al (82)	2009	Reduction in alcohol taxes	2003	Self-reported alcohol consumption

Country	Study	Publication year	Policy	Study period	Outcome(s)
Sweden	Gruenewald et al (83)	2006	Changes in alcohol prices	1984-1994	Alcohol sales
	Gustafsson and Ramstedt (84)	2010	Reduction in alcohol taxes in Denmark	2003-2004	Alcohol poisonings, violent assaults and drink drive offences
	Gustafsson (85)	2010	Reduction in alcohol taxes in Denmark	2003	Self-reported alcohol consumption
	Gustafsson (86)	2010	Reduction in alcohol taxes in Denmark	2003	Self-reported alcohol-related problems
	Johansson et al (87)	2014	Reduction in alcohol taxes in Denmark	2004	Alcohol-related hospital admissions and mortality and workplace absence among people in northern Sweden
	Trolldal et al (88)	2020	Changes in alcohol prices	1989-2017	Alcohol consumption in 15-16 year olds
Denmark, Finland and Sweden	Mäkelä et al (89)	2007	Reduction in alcohol taxes	2003-2005	Self-reported alcohol consumption
	Bloomfield et al (90)	2009	Reduction in alcohol taxes	2003-2005	Violent assaults and hospital admissions for acute intoxication
	Bloomfield et al (91)	2010	Reduction in alcohol taxes	2003-2005	Self-reported alcohol consumption and alcohol-related problems
	Room et al (92)	2013	Reduction in alcohol taxes	2003-2004	Alcohol consumption, alcohol-related crime, hospital admissions and mortality
France	Cogordon et al (93)	2014	Increase in beer taxes	1977	Liver disease mortality
Multiple EU countries	Allamani et al (94)	2014	Changes in alcohol taxes	1962-2008	Alcohol consumption
Lithuania	Sauliune et al (95)	2012	Multiple, including tax increases	2008	Alcohol-related injury deaths
	Rehm et al (96)	2019	Multiple, including tax increases	2004-2019	Traffic collisions/crashes, injuries and deaths
	Stumbrys et al (97)	2020	Multiple, including tax increases	2000-2017	Male life expectancy
	Štelemėkas et al (98)	2021	Multiple, including tax increases	2001-2018	All-cause mortality
England & Wales	Sivarajasingam et al (99)	2006	Beer price changes	1995-2000	Violence-related emergency department attendances
	Page et al (100)	2016	Alcohol price changes	2005-2012	Violence-related emergency department attendances
Scotland	Nakamura et al (101)	2013	Ban on multi-buy discounts	2011	Alcohol purchasing
	Robinson et al (102)	2014	Ban on multi-buy discounts	2011	Alcohol sales

Country	Study	Publication year	Policy	Study period	Outcome(s)
	Robinson et al (103)	2017	Ban on multi-buy discounts	2011	Alcohol related deaths and hospital admissions
	O'Donnell et al (104)	2019	Minimum Unit Pricing	2018	Alcohol purchasing
	Giles et al (105)	2019	Minimum Unit Pricing	2018	Off-trade alcohol sales
	Xhurxhi (106)	2020	Minimum Unit Pricing	2018	Alcohol sales
	Kwasnicka et al (107)	2020	Minimum Unit Pricing	2018	Alcohol consumption and contextual factors
	Griffith et al (108)	2020	Minimum Unit Pricing	2018	Off-trade alcohol purchasing
	Robinson et al (109)	2021	Minimum Unit Pricing	2018	Alcohol sales
	Giles et al (110)	2021	Minimum Unit Pricing	2018	Off-trade alcohol sales
Scotland & Wales	Llopis et al (111)	2021	Minimum Unit Pricing	2018-2020	Purchases of beer and cider

Summary of country policies and their impacts

Estonia

Alcohol taxes in Estonia were increased between 2005-2010, alongside a number of other alcohol control policies. One short-term study found an association between the introduction of these policies and a fall in alcohol consumption (63), although this cannot be attributed to any one policy. A second study looked over a longer time frame and found a significant inverse association between alcohol tax rates and the number of traffic accidents recorded as involving alcohol (64).

Finland

In response to neighbouring Estonia joining the EU, Finland cut alcohol taxes by around a third in 2004, fearing significant cross-border shopping. A series of studies have assessed the impact of this tax cut on a wide range of outcomes, finding that it was associated with a significant increase in alcohol-related deaths in the general population (65,71) and that this increase was greater among lower socioeconomic groups (66), those aged 40-70 (72) and those living on their own (73). Other studies found a similar increase in mortality after the tax cuts among patients with head trauma (74) and suffering alcohol-related seizures (76). Other studies found that alcohol consumption, crime and hospital admissions increased (68–70), although there was no evidence of a significant change in rates of interpersonal violence (67) or traumatic brain injury (75,77). Two further studies looked across a longer time frame, with one based on 2000-2016 data finding a significant association between alcohol prices in Finland and alcohol-related fatal motor vehicle accidents (80) and another, which also included data from Sweden, finding weak evidence of a relationship between the affordability of alcohol and alcohol-related mortality (81).

Denmark

At a similar time to the Finnish tax cut, Denmark also cut spirits taxes. Evidence from surveys suggests that there was no significant change in the amount of alcohol that people reported drinking following this cut (82).

Sweden

An analysis of time series data on alcohol prices and sales using Swedish data found that price increases were associated with significant falls in sales, but that these falls were moderated by drinkers switching to buying cheaper products (83). A similar analysis looking at the relationship between alcohol prices and alcohol consumption in 15-16 year-olds found no significant association (88). Several studies have used data from Sweden to assess whether there was any knock-on impact from the tax cuts discussed above in Denmark and Finland. These studies found a significant rise in alcohol poisonings (84) and in sickness absence from work (87), but no evidence of a change in other health harms (84) or in self-reported alcohol consumption (85) or alcohol-related problems (86).

Denmark, Finland and Sweden

Three further studies looked across both the Danish and Finnish tax cuts, alongside Swedish data, to evaluate the impacts of these policies across the whole region. These studies did not find any significant evidence of a change in self-reported alcohol consumption or levels of alcohol-related problems (89,91) and little evidence of an increase in harms, although hospital admissions for acute intoxication among the under-16s did rise significantly (90). A further overview study found modest

evidence that alcohol consumption and harms increased overall when taxes were cut, but that these effects were not seen across all countries, or in all population groups (92).

France/Multiple EU countries

A pair of studies, conducted as part of the AMPHORA project, looked at associations over the period since the 1960s between a wide range of contextual factors, including alcohol policy changes, on liver disease mortality in France (93) and alcohol consumption across a number of EU Member States (94), but did not find any clear evidence on the impacts of pricing policies.

Lithuania

In response to high levels of alcohol consumption and related harm, Lithuania introduced a wide range of alcohol control policies in 2007, including an increase in alcohol taxes. This was followed in 2017 by a further series of measures, including more tax rises. One study from 2012 evaluated the impact of the 2007 policies on alcohol-related injury deaths, finding a significant reduction, although this cannot be specifically attributed to the tax increase (95). Three more recent studies also include the more recent policies in their analysis and find that traffic collisions, injuries and deaths (96), alcohol-related mortality in men (97) and all-cause mortality (98) fell when stricter policies were introduced, although again, these effects cannot be directly attributed to the tax increases.

England & Wales

Two studies set in England & Wales have looked at associations over time between the price of beer (99) and all alcohol (100) with violence-related emergency department attendances. Both found that higher prices were associated with lower attendance rates, with some suggestion that this relationship was stronger for prices of alcohol in the on-trade (i.e. in pubs, bars and restaurants) than the off-trade (i.e. in shops).

Scotland

As part of the 2010 Alcohol Act, from October 2011 the practice of offering multi-buy discounts in retail shops was banned in Scotland. Two studies have evaluated the impact of this policy on alcohol sales, with one finding no evidence of effect (101) and the other finding that sales of wine fell significantly after it was introduced (102). A follow-up study did not find any significant evidence that alcohol-related hospital admissions or deaths changed when the policy was implemented (103).

Subsequently, Scotland introduced a comprehensive MUP policy covering all alcohol sold in all locations in May 2018. This policy has a ‘sunset clause’ whereby it will lapse after 6 years unless the Scottish parliament vote to retain it in law. Linked to this clause, there is a requirement to review the impact of the policy and thus there is a comprehensive evaluation being undertaken of the response to the policy and its impacts, including possible unintended negative consequences (112). There are also a number of independently-funded research studies looking to evaluate other aspects of the impact of MUP. Many aspects of these evaluations are yet to be completed, and will be published in the coming months and years, however to date, 9 studies have been published which meet the eligibility criteria of this review. 7 of these studies have evaluated the impact of MUP on alcohol purchasing or sales and concluded that these have fallen overall since MUP was introduced, in contrast with neighbouring England, where alcohol sales have risen over the same period (104–106,108–111). Two of these studies have looked at how consumption has changed differently across the population, finding that the largest reductions in purchasing have come from the households who consumed the

most alcohol prior to MUP being introduced, and households on lower incomes (104,108). One additional study used an innovative approach to assess the individual-level impact of MUP on drinking behaviour, finding some tentative evidence for reductions in alcohol consumption among some participants, although the reasons for these reductions appeared to vary between individuals (107).

Wales

In addition to looking at evidence from Scotland, one study identified in the review looked simultaneously at alcohol purchases following the introduction of MUP in both Scotland and Wales, with a particular focus on purchases of low and no-alcohol beer and cider. The study found that overall purchasing of alcohol fell in both countries when MUP was introduced and there was some evidence to suggest that consumers had shifted towards lower ABV products at the same time (111).

Other relevant studies

In the course of conducting this review, we identified a number of studies which did not meet the eligibility criteria, but which were nonetheless highly relevant to the question of alcohol pricing policies. We will briefly review these papers here.

Connolly et al addressed the question of whether increasing alcohol taxation would negatively impact the economy through a loss of jobs in the alcohol industry using a prospective modelling approach (113). The study estimated that while there may be a small number of job losses within the alcohol industry these would be more than offset by an increase in employment in other sectors.

Ally et al and Wilson et al looked at the extent to which retailers pass on increases in alcohol taxes to their customers in the off-trade (114) and the on-trade (115). Both studies found that retailers do pass price increases through to consumers, but that they do not do so equally across the price spectrum. The cheapest products are generally increased by less than would be expected, offset by larger than expected increases in price for more expensive products. This means that increasing taxes on alcohol is a less effective means of increasing the price of the cheapest products than it would otherwise be.

Lachenmeier et al reviewed the evidence on unrecorded alcohol and concluded that the best approaches to dealing with issues around unrecorded consumption will be specific to the local context depending on the source of the unrecorded alcohol (116).

Two studies from Griffith et al looked at the design of alcohol tax systems and found that a system which uses specific taxation rather than unitary taxes is more efficient and better targeted at heavier drinkers (117,118).

Finally, there have been a number of additional studies published as part of the evaluation of MUP in Scotland. These include a study on compliance which found high levels of compliance among retailers, with no evidence of illegal activity and little evidence of large-scale cross border purchasing as a means to circumvent MUP (119). Another study looked at the impact of MUP on small retailers, finding some evidence of market adaptations in response to the policy (e.g. some high-strength products reducing their ABV) (120). A study from Frontier Economics looking at the wider economic impacts of MUP on the alcohol industry found limited evidence of any negative impact on revenues of retailers or producers, no reports of job losses or reductions in industry investment and little evidence of a substantial increase in cross-border shopping in response to MUP (121). Finally, a pair of qualitative studies have looked at the impacts of MUP on children and young people, both in terms of their own

drinking and the impact on them of the drinking of others (122,123). These found little evidence of any impact (positive or negative) either directly or indirectly on children and young people.

International research evidence

The findings of the review align closely with existing studies published in other countries. In particular, the emerging evidence from Scotland on the effects of MUP align with existing studies from Canada which show that increasing the levels of existing minimum prices has led to reduced alcohol consumption (124), hospital admissions (125), mortality (126) and crime (127) and that the largest impacts in terms of reduced harm have been seen in the most deprived areas (128). Although it should be noted that the form of minimum pricing in place in Canada, sometimes referred to as 'Social Reference Pricing', is slightly different from MUP – see (129) for details. Initial evidence from Australia's Northern Territory, which introduced MUP in October 2018 are also looking similarly positive (130,131). There is also an international body of prospective modelling research, which similarly aligns with the studies identified in the review, for example in concluding that MUP policies are likely to reduce health inequalities (132).

Topics recommended for discussion

- What are the barriers to implementation of effective pricing policies: do we need more evidence? (and if so, what?)
- What should be the role of the EU in setting alcohol taxes: how involved should it get?
- The exceptionalism of wine taxes: why is wine untaxed in so many EU countries and why does the EU prevent wine from being taxed on the basis of its alcohol content? (and what, if anything, should we do about it?)

Summary and conclusions

There is substantial variation in levels and structures of alcohol taxation across EU Member States. In spite of overwhelming evidence that increasing alcohol duty rates is an effective approach to reducing harm, alcohol duties remain comparatively very low in many Member States. Evidence from across Europe makes it clear that when Member States have increased alcohol taxes, they have seen benefits, and in spite of concerns about cross-border impacts moderating the effect of increases in taxation, there is little in the published evidence to support those worries.

Current alcohol taxation in the EU is not as effective as it could be, with the requirement to tax wine only on a unitary, rather than specific basis running contrary to public health goals and making it harder for Member States to use alcohol taxation as effectively as possible to reduce levels of alcohol-related harm.

Taxation is not the only alcohol pricing policy. There is limited evidence to suggest that restricting promotions or discounts on alcohol is effective, although it is unlikely to be harmful. There is considerably stronger evidence that Minimum Unit Pricing is an effective, well-targeted policy approach. By changing the price of only the cheapest alcohol MUP can achieve similar overall

reductions in consumption and harm to large tax increases while having relatively limited impacts on moderate drinkers. The evidence also suggests that MUP is likely to be more effective at reducing health inequalities. However, MUP is not a silver bullet and the evidence is still emerging, particularly around its real-world effectiveness at reducing alcohol-related harm. Some may also be concerned about the fact that a substantial proportion of the revenue from MUP goes to retailers and producers, rather than government. It may be possible to address this with additional measures introduced alongside MUP, such as a windfall tax on profits, or through a combination of MUP and alcohol tax increases alongside each other.

Ultimately there is no one alcohol pricing policy to rule them all. The 'best' pricing policy for any individual situation will depend on the specific local context and also the aims of the policy maker. However, there is ample evidence to show that pricing policies can and have worked across EU Member States and they are likely to form a key part of any effective policy approach to reduce alcohol-related harm.

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Session 2 Briefing Paper: Cross-border alcohol purchasing, marketing and trade

Cross-border alcohol purchasing, marketing and trade

Nijole Goštautaitė Midttun, Lithuanian Tobacco and Alcohol Control Coalition, Mental Health Initiative

Contents

Key messages

- An EU single market in which alcohol is just an “ordinary” commodity, with little restriction on cross-border trade, impacts the effectiveness of the national public revenue and health policies
- Cross-border purchases in a EU, significantly affect alcohol related harm in many Member States, and contribute to EU level public revenue distortion, excise fraud and organized crime
- The current AVMSD does not adequately address cross border issues, mostly by insufficient regulation of digital media and the "country of origin provision" allowing circumventing national restrictions on alcohol marketing
- Addressing issues of cross-border alcohol requires coordinated, collaborative action at the EU level

Executive summary

It is well established that the price of alcohol, which is heavily influenced by taxation, affects levels and patterns of drinking, as well as alcohol-related harm. Cross-border purchases, marketing and regulation can affect alcohol price in a country, thus increasing consumption and harm, undermining state efforts to protect public health through taxation policies. This paper discusses the impact of cross-border purchases on alcohol-related harm in Europe and the policies which influence cross-border purchases and trade.

Unrecorded consumption represented an estimated 18% of all alcohol consumption in Europe in 2016. Most Member States experience significant cross-border trade with at least one other Member State. The composition of unrecorded alcohol differs between countries, but in many countries a large proportion of unrecorded consumption is cross-border purchases.

In the EU alcohol is treated as an "ordinary" commodity with little restriction on cross-border trade which reduces the effectiveness of national pricing and taxation policies in reducing consumption. Numerous policy initiatives at EU and Member State level include commitments to and targets for reducing alcohol-related harm. However, a lack of coordinated response to cross-border issues and differences in how taxation and pricing policy is structured and implemented in different Member States can undermine efforts by individual Member States to reduce consumption and alcohol related harm.

Cross-border sales of alcohol involves multiple sectors and addressing the issues around it requires a coordinated multisectoral response. Sectors which interact with cross-border sales include not only taxation but also customs, transport, hospitality, employment, agriculture, and media and communications.

Background

Alcohol use is a leading risk factor for disease, death and disability. Europe has the highest level of alcohol consumption and alcohol-related harm in the world (1, 2). Latest research confirms that alcohol control policies worldwide should refocus on efforts to lower overall population-level consumption (3). It should be remembered that alcohol producers and allied industries are international, their profits are mobile, while health and social burdens are borne locally in the country where alcohol is consumed.

In February 2021 the European Commission launched *Europe's Beating Cancer Plan (4)*, which is the most recent policy commitment on behalf of the European Commission to implement measures contributing to reducing alcohol consumption. The specific actions provided in the Plan include review of the EU legislation on the taxation of alcohol and on cross-border purchases of alcohol by private individuals (4), ensuring that it remains fit for purpose to balance the objectives of public revenue and health protection. Measures proposed in the *Beating Cancer Plan*, which have a cross-border dimension include:

- Support to Member States and stakeholders implementing best practices towards the aim of reducing harmful alcohol consumption by 10% by 2025
- Proposal of mandatory labelling of ingredients and nutrient content, along with health warnings on alcoholic beverages in 2021-2023
- Closely monitor the implementation of the Audiovisual Media Service Directive provisions on commercial communications for alcoholic beverages, including on online video-sharing platforms to reduce the exposure of young people to alcohol marketing
- EC will work with Member States and the European Regulators Group for Audiovisual Media Services (ERGA) and stakeholders to encourage self and co-regulatory initiatives.

The document commits to strengthening EU-level regulatory instruments to achieve one of the public health goals – prevention of cancer mediated by reduction of alcohol consumption. At the same time, the document uses vague language, such as “harmful use” and includes proposal of ineffective measures such as self-regulation and co-regulation with industry.

Affordability determines much of the consumption, while tax increases are among cost-effective control policy measures recommended by WHO (5). However, increasing taxes in one country incentivizes cross-border shopping and diminishes the effectiveness and attractiveness of such policy. The price differential between countries is the main driver for cross-border and distance purchases.

National policy efforts to lower alcohol-related harm to public health can be hindered by differences in taxation and alcohol price in neighbouring countries. Adoption of uniform EU regulation can have a detrimental effect if it increases alcohol consumption (6). Cross-border alcohol trade is one of the mechanisms that can affect implementation of planned national alcohol control policies due to reduced collection of excise taxes. Most Member States experience significant cross-border trade with at least one other Member State. Cross-border purchasing and marketing is therefore of significance to countries in the EU, since it can potentially undermine the best intended public health policy.

Methodology

This was a scoping review examining available EU commissioned studies pertaining to cross-border alcohol policy, and legislative and policy initiatives, including a review of literature focusing on assessing cross-border purchases of alcohol in the EU. The following databases were searched: PubMed, Sseriga, Oxford Academic, Google search engine, WHO database, ScienceDirect, BMC Public Health, Sage journals, Wiley Online Library, Addiction, BMJ Open, SpringerLink, ResearchGate, Europe PMC. Only reports and articles in English and those with relevance to the workshop theme and presence of a European perspective were included. The following key words were used: alcohol, alcohol cross border purchases, cross-border trade, affordability, excise duty, unrecorded alcohol, alcohol control policy, Europe, and their combinations.

A search was done for grey literature related to cross border and unrecorded alcohol sales and alcohol policy. Searches were done in Google, using alcohol, alcohol cross border purchases, cross-border trade, affordability, excise duty, unrecorded alcohol, alcohol control policy, Europe, and their combinations.

Cross-border purchases and unrecorded consumption

Unrecorded consumption makes up a significant share of total alcohol consumption: an estimated 25% globally and 18% for Europe in 2016 (2). The composition of unrecorded alcohol differs between countries, but in many countries a large proportion of unrecorded consumption is cross-border purchases. In the northern EU countries cross-border purchases make up the largest proportion of unrecorded alcohol (7). In the EU alcohol is treated as an “ordinary” commodity with little restriction on cross-border trade which complicates the issue of cross-border sales (8) and impacts on the effectiveness of national pricing and taxation policies in reducing consumption.

Unrecorded alcohol is generally cheaper than recorded alcohol and this is clearly evident with regard to cross-border alcohol purchases where there can be a marked difference in the price of alcohol between neighbouring countries due to how alcohol related policy and legislation is implemented in each country. However, not only specific alcohol policy related measures can affect cross-border purchases, but also the price of other consumer goods; for example, if the price of petrol rises it becomes less attractive to cross the border to shop for alcohol for consumers living close to the border (9). In 2020, the final report of the Study *assessing articles 32 and 36 of Council Directive 2008/118/EC concerning the general arrangements for excise duty* commissioned by the EC Directorate-General Taxation and Customs Union (DG TAXUD) and the Directorate-General for Health and Food Safety (DG SANTE) (10), estimated cross-border shopping as a proportion of total consumption at 5.4% in "hotspots" and 4.32% in "non-hotspots". "Hotspots" were defined as Member States whose residents cross-border shop relatively frequently for excise products. This estimate is significantly lower than the 2018 estimates by the WHO (2) and there seems to be no available methodology for comparative analysis of cross-border trade volume.

There are several hotspots for cross-border alcohol trade in the EU: between France and neighbouring countries, between Belgium and Luxembourg, between Germany and Denmark, between Sweden and neighbouring countries, and in the Baltic region between Finland and Estonia, Estonia and Latvia, Greece and Bulgaria.

Citizens living in higher taxing Member States tend to engage in the highest volume of cross border shopping for alcohol, since the price differences create an economic incentive. PWC Study, based on consumer survey, produced estimates that around 14% of the total adult EU population purchased alcohol products in another Member State over the previous 12 months, which amounts to around 1.4 billion litres of alcoholic beverages (204 million litres of pure alcohol). (11)

In March 2004, just before Estonia joined the EU in May, Finland reduced taxes on alcohol (spirits 44%, fortified wine 40%, table wine 10%, beer 32%) anticipating harmonized traveller quotas in the EU. This resulted in a 10% rise in alcohol consumption: recorded consumption rose by 6.5%, while unrecorded consumption rose by approximately 25% (11). Significant rises in alcohol-related harm were seen in Finland following these tax changes (12, 13); and this impact was greater on lower socioeconomic groups (14).

It is estimated that in Sweden in 2018 18.5% of total consumption was unrecorded, with the largest category of unrecorded alcohol being travellers' import (cross-border shopping) - 10.4% of total consumption (15). The newest data from Norway show increases of 20% in recorded alcohol sales in 2020 during the pandemic travel ban and border lockdown with Sweden compared with 2019, signalling that prior to the travel restrictions there were significant cross-border sales (16).

The issues around cross-border alcohol are complex, and encompass not only measuring the problem, monitoring and reporting, and the multi-sectoral nature of the issue, but also political pressures and priorities. Despite the strong evidence that increasing price is an effective measure for reducing alcohol consumption and related harms, there are other concerns that influence implementation of these policies. Politicians and decision makers frequently cite concerns about increased production of illegal alcohol, reduced tax collection due to cross-border shopping, and reduced local consumption, as well as the impact of increased prices on local producers. One example is the case of Estonia, where unilateral excise duty increases resulted in a two-fold alcohol price difference between Estonia and Latvia, causing an unintended increase in cross-border trade between the two countries, and significant loss of revenues for Estonia. This reduced popular support for tax increases and prompted the Estonian government to halve a further planned tax increase (17).

Mapping current policy

The EU single market refers to the EU as one territory without any internal borders or other regulatory obstacles to the free movement of goods and services. A functioning single market stimulates competition and trade, improves efficiency, raises quality, and helps to cut prices. However it also weakens Member States attempts to increase alcohol prices by unilaterally raising excise taxes as part of national alcohol control policy. As noted earlier, the treatment of alcohol as an "ordinary" commodity and the concept of a single internal market places very few restrictions on cross-border alcohol purchases (8).

Alcohol taxes are not harmonized throughout the EU, but several EU Directives set minimum requirements for the taxation of alcohol. Each country may determine their own rates of excise duties above the minimum, according to national policies. As a result, there are significant differences in the excise duty rates applied in Member States. As described in more detail in the background paper for Session 1: Alcohol Taxation and Pricing Policies (18), beer and spirits are taxed on a specific basis (duty based on volume of alcohol in the product), and wine is taxed on a unitary basis (duty based on volume of the product). There are minimum duty rates for beer and spirits but no minimum rate for wine (20).

For all products there are large differences in alcohol duty rates between countries. The duty payable on 500ml of 5% ABV beer ranges from €0.05 in Bulgaria, Spain, Luxembourg, and Romania to €0.91 in Finland. The duty levied on a 700ml bottle of 40% ABV spirits ranges from €1.57 in Bulgaria to €13.66 in Finland. A 750ml bottle of 12.5% ABV wine would attract no duty in 15 Member States but €3.19 of duty in Ireland (18).

The minimum rates of excise duty are set out in *Council Directive 92/84/EEC of 19 October 1992 on the approximation of the rates of excise duty on alcohol and alcoholic beverages* (19). The minimum rates of excise duties for alcohol and alcoholic beverages are as follows: 550 EUR per hectolitre of pure alcohol for spirits, 45 EUR per hectolitre of product for intermediate products (e.g. dessert wines, liquors), zero rate for wine and sparkling wine, 0.748 EUR per hectolitre of finished product per degree Plato or 1.87 EUR per hectolitre of finished product per degree for beer (20).

EC *Directive 92/83/EEC on the harmonisation of the structures of excise duties on alcohol and alcoholic beverages* (21), classifies alcoholic beverages into five different fiscal categories, defines structures of excise duties applicable to these categories and lists the exemptions and reduced rates for certain products. On 29 July 2020, the Council adopted Council Directive 2020/1151 amending Directive 92/83/EEC (22), which might impact on cross-border purchases, which will be applicable from 1 January 2022. These changes include details such as increased alignment between the EU's customs and excise procedures to ensure consistency across the two regimes for excise goods imported into the EU from non-EU countries.

Policy related to cross-border purchases

Cross-border purchases are governed at EU level by *Council Directive 2008/118/EC of 16 December 2008 concerning the general arrangements for excise duty* (23). While the country of destination principle applies to EU excise duty taxation, article 32 of the Directive provides an exception when excise goods are purchased and moved by a private individual for personal use. In such cases duty is charged in the country of purchase, rather than the destination country, thus exporting alcohol related public health harms, but keeping the taxes.

Directive 2008/118/EC was evaluated in 2017 which led to the initiative *Cross-border acquisitions of excise goods by private individuals – revision of Article 32 of Directive 2008/118/EC (from 13 February 2023 Directive (EU) 2020/262* which included an impact assessment, a study assessing articles 32 and 36 of Council Directive 2008/118/EC concerning the general arrangements for excise duty commissioned by DG TAXUD and DG SANCO, and stakeholder and public consultation.

The study was undertaken by a multidisciplinary team of excise, customs, economics, health, and social research experts, acknowledging the cross-sectoral nature of the issue. The study looked specifically at:

- Acquisition by private individuals (cross-border): the purchase of excise goods by a private individual for their own use and personally transported from one Member State to another.
- Distance selling (B2C): the sale of excise goods by businesses in one Member State (or non-EU country) directly to consumers in another Member State, where the business making the sale and the consumer are not physically present simultaneously.
- Wholesale to retail (B2B): the commercial sale of excise goods by a business in one Member State to a business in another.

The final report released in 2020 identified four problem areas (10):

1. Current guide levels and lack of uniform concept of "own use" results in difficulties enforcing guide levels in cross-border purchases and prevention of fraud
2. Excise revenues are diverted from the Member State responsible for providing public health services to the consumers of these products to the Member State of purchase
3. Current regulation potentially undermines policy of the Member States using higher excise duty rates as part of a strategy to reduce consumption, and also disproportionately affects young people, heavy drinkers and smokers and people from lower socioeconomic groups.
4. Current regulation provides incentive for individuals and organised criminal organisations to engage in fraud with minimal risks.

Public consultations were carried out in early 2021, with a number of NGOs and industry representatives providing feedback (24).

Bilateral and multilateral action

There is no standardized indicator or method for measuring the volume of cross-border alcohol trade, even though meaningful attempts have been made to accurately estimate and control it, sometimes with involved member states cooperating on the issue.

One example of bilateral practice is systematic monitoring of cross–border alcohol consumption between Estonia and Finland, which has resulted in improved alcohol consumption statistics, and better understanding of alcohol trade patterns across borders. Ultimately this cooperation has contributed to higher tax revenues and drawing attention to the issue at EU level.

A recent example of a multilateral agreement with a less positive result was signed in 2017 by the Estonian, Lithuanian and Latvian Ministers of Health - a Memorandum of Intent on cooperation in the reduction of alcohol and tobacco consumption and tackle morbidity trends related to nutrition in Baltic States. Weak implementation meant that it actually developed into beer excise tax war between Estonia and Latvia in 2019, which had an impact of increasing alcohol consumption in Latvia. After a significant Estonian alcohol price increase there was a strong growth of cross-border alcohol shopping. As a compensatory measure Estonian government decided to slash alcohol tax by 25%. Latvians

reacted by cutting alcohol taxes. However, in the border town Valka-Valga the reduced taxes have had no impact on business. According to the alcohol industry itself, the Estonian tax cuts did not have any negative impact on the Latvian alcohol sales even before Latvia also reduced their taxes (25).

Another systematic example of bilateral policy implementation is a special clearing system on VAT and excises for alcohol between Belgium and Luxembourg, based on which Luxembourg returns some of the excise tax collected for cross-border shopping of alcohol. This is a unique system and not used by other MS, despite similarity of the problem (26).

The 2018 "Nordic–Baltic workshop on EU cross–border alcohol purchases: Building a common understanding" identified significant challenges to tackling alcohol-related harm and informing better policies. Following major obstacles were identified in the workshop: lack of reliable and internationally comparable statistics regarding cross-border alcohol trade volume. Difference in statistics collection, reporting procedures and discrepancy between documented and real-life practices in implementing alcohol trade cross-border were mentioned in the summary of the conference. The need to include more countries in best practice exchange, multidisciplinary and cross-sector cooperation were identified as processes for facilitating better public health outcomes. Health, finance and law enforcement sectors were identified as essential for such cooperation. Organized crime, illegal markets, sales to underage, distant sales was mentioned as issues of concern for different Nordic and Baltic countries (27).

The Audiovisual media services directive (AVMSD)

The Audiovisual media services directive (AVMSD) governs EU-wide coordination of national legislation on all audiovisual media, traditional TV broadcasts and on-demand services, and has provisions for alcohol marketing control measures (28). The latest review of the AVMSD was carried out in 2018, and by September 2020 the renewed directive should have been transposed into national legislation. In November 2020 the European Commission launched infringement procedures against 23 Member States and the United Kingdom for failing to enact the new rules governing EU-wide coordination of all audiovisual media.

The AVMSD states that it, "*harmonises national legislation on audiovisual media: traditional TV broadcasts, on-demand services as well as video-sharing platforms. The aim of the AVMSD is to facilitate the cross-border circulation of audiovisual services while ensuring a minimum level of harmonised rules in areas of general public interest.*" (29). It includes an article allowing EU member states to adopt stricter regulation in the field of alcohol advertising; however it also includes country-of-origin rules meaning broadcasters are subject solely to the rules of the Member State where they are established, including when they broadcast to other EU countries. This limits Member States' ability to limit advertising from other countries as occurred in 2018 when the European Commission decided that the Swedish intention to impose their ban on alcohol advertising on two UK based broadcasters who were broadcasting in Sweden was not compatible with EU law (30).

Alcohol marketing and advertising has changed including the use of online and digital media and the current legal framework is outdated and not sufficient to tackle current issues, with the AVMSD delegating responsibility for regulating advertising to Member States when EU level action and coordination is needed to address it (31). This leaves young people particularly vulnerable to being exposed to alcohol advertising and marketing and the associated harmful effects.

In addition, the current version of the AVMDS specifically includes measures that have been proven ineffective, also uses non-binding language: "*Member States should be encouraged to ensure that self- and co-regulatory codes of conduct are used to effectively reduce the exposure of children and minors to audiovisual commercial communications for alcoholic beverages*". The directive specifically refers to audiovisual commercial communications for alcoholic beverages "*not aiming specifically at minors*" and "*not encouraging immoderate consumption*". It has been established by an EC commissioned study that these provisions did not protect minors from exposure to alcohol advertising. The EC commissioned analysis revealed that despite the fact that the majority of the advertisements in the sample contained at least one element appealing to minors, this does not indicate that minors were specifically targeted. The 2013 study established that 7.3% of the total number of alcohol impacts on TV services in 2013 was seen by persons under age 18. On average, a minor in the EU saw 200 alcohol images during one year (as compared to over 450 by an adult), 1.8% of all advertising seen by minors (<18 yrs) in 2013 was for alcoholic beverages (compared to 2.2%. for adults). Under these provisions one of the stated goals of AVMDS "protecting children and consumers" cannot be achieved.

The European single market is one of the EU's greatest achievements, which has fuelled economic growth and has a positive effect on public health, yet over time has not achieved rapid price convergence for the products that affect public health, such as alcohol. Price differentials produce unfavourable side effects, increasing alcohol consumption and eventually alcohol related harm due to cross-border effects, which include unrecorded consumption, tax fraud and organized crime.

Recommendations for policy

Cross-border alcohol purchase and marketing issues are not confined to a small number of Member States, since there are real and significant differences in alcohol price, legal age and national regulation. Although some concerns are more prevalent in the Nordic and Baltic states, most Member States experience significant trade with at least one other Member State (either as the place of purchase or consumption) via cross-border personal acquisition. The previously mentioned study commissioned by DG TAXUD and DG SANTE concluded that these issues are difficult for individual countries to resolve unilaterally, and that to maximise overall social benefits across the EU there is a strong justification for coordinated action at the EU-level (10).

Policy options

- Reducing guide levels, making them mandatory (quantitative limits) and/or combining with the criterion purchase frequency
- Introducing a more specific definition of "own use" for personal cross-border purchases
- The establishment of a VAT One Stop Shop (OSS) for distance selling, which would help reduce administrative burden, strengthened revenue collection for MS and reduce fraud
- The establishment of the virtual consignee, to be implemented with or without an OSS mechanism for wholesale to retail sales
- Use of the mechanism of quantitative limits already in place for cross-border purchase of fuels, which appears proportional, generally well-functioning and easy for citizens to understand
- Seek upward convergence of prices, removing the strongest incentive for cross border shopping tax induced price differentials

- Strengthen the AVMSD by adding evidence-based measures for protecting minors from alcohol advertising
- Making the AVMSD responsible for action at the EU level rather than delegating responsibility to Member States
- Combinations of the identified policy options should be considered.

Enforcement costs and complexity should be taken into account when assessing proportionality of policy options (less expensive and easier to enforce rules contribute to adherence, therefore broader restrictive rules might be more proportional than complex and expensive targeted rules).

The VAT One Stop Shop (OSS)

The VAT One Stop Shop (OSS) is a system by which business to consumer (B2C) sellers are only required to register in the country in which they are based (the State of Identification). That is they are not required to also register for VAT in the countries in which the good is consumed.

The seller electronically submits VAT returns along with the VAT due. The Member State in which the business is registered forwards the taxes on to the appropriate countries. Participation in the scheme is optional (32).

Areas of policy overlap: Cross-sectoral issues

When considering the effects of cross-border purchases of alcohol, the public health perspective should be imperative. As noted earlier, the EU singles market provides benefits and challenges to implementing policy which benefits health while considering other interests. As stated in the DG TAXUD and DG SANCO commissioned report, coordinated action at the EU level is needed to maximise the overall social benefits of policy actions.

This applies not only in the area of pricing and taxation of alcohol but across all relevant sectors. Several policy areas relate to cross-border alcohol purchases and related harms; the intersection between policy areas highlights again the need for a Health in All Policies (HiAP) approach which "takes into account the health implications of decisions, seeks synergies, and avoids harmful health impacts in order to improve population health and health equity" (33).

Both the Global Strategy to reduce the harmful use of alcohol (34) and the WHO European action plan to reduce the harmful use of alcohol 2012-2020 (35) highlight the need to adopt a comprehensive approach and to appropriately engage sectors such as development, transport, justice, social welfare, fiscal policy, trade, agriculture, consumer policy, education and employment, as well as civil society and economic operators in efforts to reduce the harmful use of alcohol.

In October 2017, the conference *Cross-Border Aspects in Alcohol Policy –Tackling Harmful Use of Alcohol* was held in Tallinn under the Estonian presidency of the European Union (31). Following the conference, in December of 2017 the *Council conclusions on cross-border alcohol policy aspects* were adopted by ministers at the meeting of the Employment, Social Policy, Health and Consumer Affairs Council (36) in which Member States were invited to continue to integrate the objective of reducing

alcohol related harm into all relevant national policies (37). The conference report notes a number of domains which relate to cross-border issues such as trade, competition, agriculture and media.

In particular, the report notes the risks to young people posed by marketing as Member States efforts to protect health can be undermined by advertising, including online advertising and cross-border trade including online sales. The report further notes that as alcohol marketing has changed including the use of digital media the current legal framework is outdated and not sufficient to tackle it (31).

Other overlapping policy areas include customs and fraud. Fraud related to cross border shopping is relatively common across all Member States. According to Europol, in the single EU market excise tax fraud is driven by legislative differences and varying excise tax rates applied by different Member States and includes illegal importation of excise goods and diverting goods without paying excise duty. Consumer surveys have also identified, that especially in the Nordic countries, it is common for individuals to purchase excise goods on behalf of others such as clients, friends or family (24). Addressing these issues requires action from multiple sectors including customs, law enforcement and taxation.

In Europe's *Beating Cancer Plan* the European Commission commits to "*increase support for Member States and stakeholders to implement best practices and capacity-building activities to reduce harmful alcohol consumption in line with the targets of the UN Sustainable Development Goals*." (4). Alcohol undermines efforts to achieve 13 of the 17 Sustainable Development Goals and a total of 52 targets (38) and can hinder future prosperity of Europe.

Despite the stated public health goals and current focus on health outcomes, using policy instruments such as the Cancer Plan – Europe is still the region with the highest alcohol consumption and the most alcohol related harm. It is also evident that overall progress on reducing alcohol consumption has been stalling in Europe, and in the older Member States consumption is mostly stable. This is strong evidence of the need for new policy approaches, which might be different from purely alcohol policy instruments.

Current policies also include many ineffective regulations that are not based on evidence and reflect lobbying, economic, political and institutional integration and the associated political influence. This is especially evident in the language used. While the scientific community refrains from discussing only harmful alcohol consumption but acknowledges the established evidence that there is no safe limit for consumption, particularly in relation to cancer risk, EU policy, including the Cancer Plan, frequently specifically targets only "harmful use".

There is an urgent need for transparency regarding how the alcohol industry influences important policy in the EU and at national level. Currently, there are many grey areas, exemptions that are historical or reflect purely profit interest of a relatively small group of recipients that are more and more difficult to defend. For example, there is no good scientific reason for a zero excise duty for wine as opposed to other types of alcoholic beverages.

Major changes have been implemented in the EU wine policy, including those related to the revision of the Common Agricultural Policy (CAP) in 2013, but it is still complex and non-transparent and has been named by Gaeta and Corsinovi (39) in their book about EU wine policy as "a tentacled monster". Wine policy from 2014-2020 includes measures related to "promotion" intended to support the presence of EU wine in the global market. The Directorate General for Health and Consumer Protection of the European Commission (DG SANCO) raised concerns regarding policies that could result in

increased alcohol consumption in the EU, leading to different rules for regarding marketing and promotion inside and outside EU (40). This raises ethical questions if the EU can be seen as funding potentially health harming practices in other countries while restricting these within the EU.

The EUs agri-food promotion policy aims to promote and boost competitiveness of European products by helping to finance information and promotion campaigns. Currently wine, beer and spirits can be promoted within the internal market in the following ways (i) informing consumers of the EU quality scheme in its main message (illustrated by one or several products) or (ii) informing consumers of the responsible consumption of those beverages, or (iii) both (41).

Another issue is EU subsidies to the agricultural sector. Estimates of government support for European wine producers is impressive: support per hectare of vineyard in 2011 and 2012 exceeded 700 euro in the EU in aggregate and more than 1,000 euro in Austria, Cyprus, France, and Germany. That almost certainly exceeds the support provided by governments in any other major wine-producing country. It is equivalent to an average of 0.15 euro per litre of wine produced and more than 0.25 euro in Cyprus, Austria, and Slovakia (42).

Topics recommended for discussion in the workshop

- Which entities in Member States are best equipped to collect data and information for estimating cross-border trade and movement of alcohol?
- How can we improve common understanding and cooperation between public health, economic, financial sector and also enforcement sectors?
- Potential solutions to opposition from the countries that benefit from cross-border trade?
- Protection of minors from alcohol advertising?
- How can Member States be supported to collaborate and reduce the problems caused by cross-border alcohol purchases and consumption?

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Session 3 Briefing Paper: Unrecorded and illicit alcohol

The health impact of unrecorded alcohol use and its policy implications

Dirk W. Lachenmeier, Chemisches und Veterinäruntersuchungsamt (CVUA) Karlsruhe, Germany

Maria Neufeld, Centre for Addiction and Mental Health, Toronto, Canada, Technische Universität Dresden, Germany, WHO European Office for Prevention and Control of Noncommunicable Diseases, Moscow, Russian Federation

Artyom Gil, I.M. Sechenov First Moscow Medical University (Sechenov University), Moscow, Russian Federation

Carolin Kilian, Technische Universität Dresden, Germany

Robin Room, Centre for Alcohol Policy Research, La Trobe University, Victoria, Australia, Centre for Social Research on Alcohol and Drugs, Stockholm University, Sweden

Bundit Sornpaisarn, Centre for Addiction and Mental Health, Toronto, Canada, Dalla Lana School of Public Health, University of Toronto, Canada, Faculty of Public Health, Mahidol University, Thailand

Mindaugas Štelemėkas, Health Research Institute, Lithuanian University of Health Sciences, Lithuania, Department of Preventive Medicine, Faculty of Public Health, Lithuanian University of Health Sciences, Lithuania

Monica H. Swahn, Department of Health Promotion and Physical Education, Wellstar College of Health and Human Services, Kennesaw State University, USA

Jürgen Rehm, Technische Universität Dresden, Germany, Centre for Addiction and Mental Health, Toronto, Canada

About this workshop report: An extended version of this document with several appendices can be obtained from Jürgen Rehm at jtrehm@gmail.com.

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Executive Summary

Roughly one quarter of all alcohol consumed is unrecorded, a term used to identify alcohol which is not registered as an alcoholic beverage in the country where it is consumed. This formal definition includes several subcategories:

I. legal but unrecorded (and thus untaxed) alcohol products

II. alcohol products recorded, but not in the jurisdiction where consumed

III. legal and illegal surrogate alcohol, i.e., non-beverage products not officially intended for human consumption including their counterfeits

IV. illegal homemade artisanal production

V. illegal production or smuggling on a commercial (industrial) scale, including counterfeiting (brand fraud).

Almost all unrecorded alcohol is cheaper than its commercial equivalents. Unrecorded alcohol is often consumed by people of low socio-economic status and/or with alcohol use disorders.

Given the lower price of unrecorded alcohol, potential implications of raising prices of recorded alcohol via taxation increases should be considered. However, consumption of unrecorded alcohol does not necessarily increase when taxation on recorded alcohol is increased. Even if the level of unrecorded alcohol consumption increases, there are alcohol control measures available to decrease unrecorded consumption.

Background: definition of unrecorded consumption

Currently, about 25% of worldwide alcohol consumption is unrecorded (1.7L per adult of pure alcohol out of 6.5L *per capita* in 2017 [1]). This alcohol is consumed but is not registered in official sales (e.g., for taxation purposes), production, or trade statistics [2, 3]).

The alcohol industry refers to unregistered alcohol as either "non-commercial" or "non-beverage" alcohol [4], while WHO uses the term "unrecorded alcohol" [5] which is also used in this review. Unrecorded alcohol is considered by experts to be a public health, social, and financial problem [6, 7], but its implications reach far beyond health, as the legal, agricultural, and financial sectors, as well as trade and international relations, are substantially involved (see section on cross-sectoral issues).

Unrecorded alcohol is composed of various sub-groups (see Fig. 1), and the relative importance of these varies widely between, and sometimes even within, countries. The major sub-categories of unrecorded alcohol are:

I. Legal but unrecorded alcohol products

II. Alcohol products recorded, but not in the jurisdiction where consumed

III. Legal and illegal surrogate alcohol (i.e., non-beverage products not officially intended for human consumption including their counterfeits)

IV. Illegal homemade artisanal production

V. Illegal production or smuggling on a commercial (industrial) scale, including counterfeiting (brand fraud).

The last category is typically a form of organized crime and includes alcohol that is produced in licensed facilities but diverted from legal production in order to evade taxes (e.g., "third-shift vodka" in various ex-Soviet countries refers to a part of the production process which is not officially declared). The Internet may be a source where different forms of unrecorded alcohol are sold, including to minors [8, 9]. At this point, it should be pointed out that the distinction between (iv) and (v) are somewhat fluid. It seems—just to give one example—that in Eastern Africa some smaller unregistered artisanal spirits producers have grown into full-fledged business enterprises, with the products likely to be commercially packaged in the future [10].

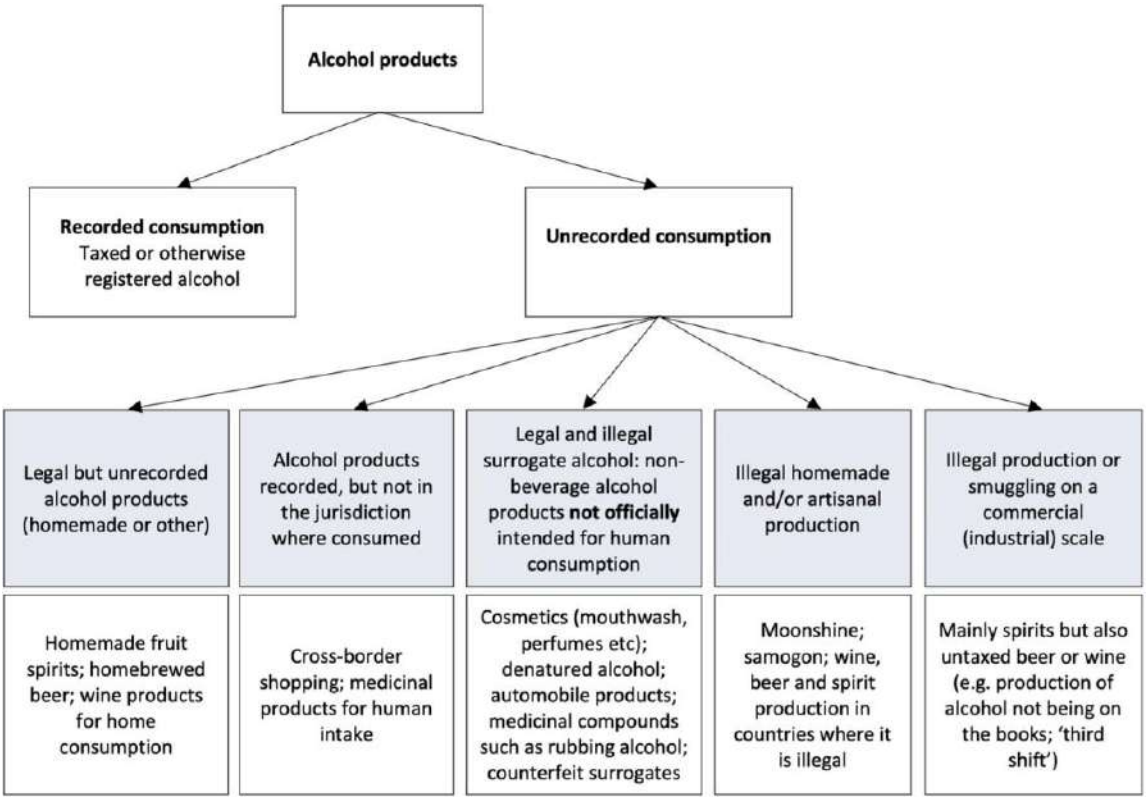

Figure 1: Categories of unrecorded consumption (adapted from [2, 7])

While recorded alcohol consumption can be measured via sales and taxation records, or via production, export and import records and registers, the monitoring and surveillance of unrecorded alcohol consumption is not well developed [11]. The figures on unrecorded consumption in the WHO monitoring system are currently modelled based on expert judgements [11], survey data available only for a limited number of countries [6], and extrapolations from single-country studies. The newest WHO estimates for the WHO European Region for 2019 are shown in Figures 2 and 3 (taken from the upcoming Word Health Statistics report [12]). For various reasons (especially insufficient sampling frames and potential underreporting in surveys), these estimates are conservative [13].

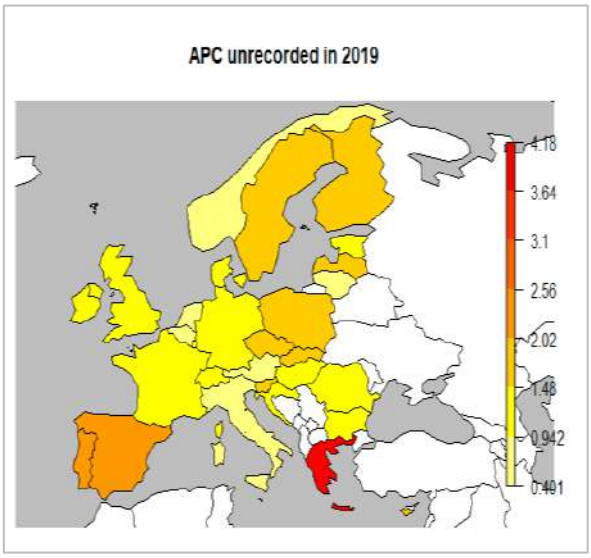

Figure 2. Country-specific volume of unrecorded alcohol consumed *per capita* in 2019 plus Norway and Switzerland (L of pure alcohol = ethanol; data from World Health Statistics 2021 [12]).

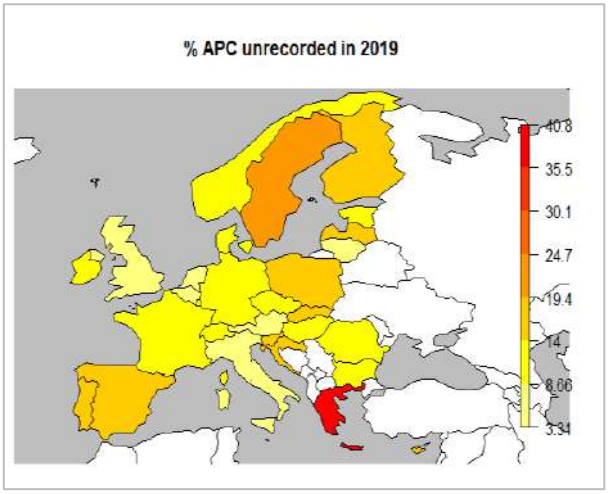

Figure 3. Proportion of unrecorded to total alcohol consumed *per capita* in 2019 for the EU plus Norway and Switzerland (L of pure alcohol = ethanol; data from World Health Statistics 2021 [12]).

Several reviews on unrecorded alcohol have been published over the past decade. An initial review in 2007 focused on surrogate alcohol, specifically summarizing the earlier literature on methanol and lead poisonings [14]. This was followed in 2010 by a systematic review on the literature regarding the health consequences [15] of unrecorded consumption. Policy options were reviewed in 2011 [16], and some general narrative reviews are also available [17, 18]. So far, the largest systematic review based on PRISMA guidelines was published in 2014 [7] and the latest narrative review in 2019, based on literature up to 2015 [3]. However, as detailed below, several new studies have appeared since then.

The aim of this review is therefore to update the evidence on unrecorded alcohol consumption published worldwide since 2016, with a focus on health harms and potential policy options to reduce this harm.

Methodology

This review summarises the findings of a number of reviews looking at unrecorded alcohol and health, unrecorded alcohol and youth, and taxation and unrecorded consumption.

For the review on unrecorded alcohol and health (1), a literature search in PubMed was conducted on January 14, 2020 and repeated on July 22, 2020 using the following search terms: "illicit alcohol" OR “moonshine” OR "illegal alcohol" OR "non-beverage alcohol" OR "surrogate alcohol" OR “unrecorded alcohol” AND (("2016/01/01"[PDat] : "3000/12/31"[PDat])). An additional search in Russian-language electronic bibliographic databases was carried out between May 6 and May 9, 2020 [19, 20]. Abstracts were hand-searched for relevance regarding information on health harms related to unrecorded alcohol consumption. Additionally, Google Scholar, ResearchGate, as well as the comprehensive archives of the authors, and the reference lists of the articles were screened for further literature. The identified references were combined into a qualitative narrative synthesis.

For the section on youth, the same search strategy as for the main part of the review was carried out on January 26, 2021 for English-language items, and on April 26, 2021 for Russian-language items. Search terms were identical, with the addition of a target group identifier: (youth OR adolescents).

Titles and abstracts were screened first, followed by a full-text screening of potential reports in order to identify publications providing information on health harms related to unrecorded alcohol consumption in youth, as defined by people aged 10 to 19 years [21]. In some cases, young adults up to the age of 25 were also included. Additionally, the identified reports of the main part of the review were screened for relevant information. Relevant information related to youth was summarised in terms of content.

For the section on taxation and unrecorded consumption, a narrative review methodology was used, based on systematic and narrative reviews on unrecorded alcohol consumption [2, 3, 7, 18], including reviews by the alcohol industry or by researchers supported by the alcohol industry [22-25] and reviews on taxation strategies [26], as well as on country case studies.

Finally, the alcohol control measures which could be used against the use of unrecorded alcohol were based on prior narrative reviews [2, 3, 16, 27].

Please note that we did not limit our searches to the EU and their member states, as EU countries can learn from countries outside of the EU in terms of unrecorded alcohol use and health, and regarding policy implications.

This is a review of published materials and did not require any specific research ethics review.

Review findings

Impact of unrecorded consumption on health – an overview

In total, Lachenmeier and colleagues [2] identified 100 relevant studies for the search period. This review corroborated the prior reviews on the theme [2, 7, 15]. These reviews concluded that while unrecorded consumption (maybe with the exception of cross-border shopping) does not allow for quality control in its manufacture, in most cases it poses a threat to health over and above the effects of alcohol alone (i.e., ethanol; for reviews, see [2, 7, 15]). A risk of potential interactions of ingredients found in unrecorded alcohol with preconditions existing in marginalized groups has been identified, which will be discussed below.

Overall, the key exceptions for health concerns are the addition of methanol (3), and, to a lesser degree, aflatoxin contamination [28]. The presence of methanol levels toxic to humans in alcohol products (i.e., > 2% [29]) suggests that chemically pure methanol (or an industrial product containing methanol) has been added to the product (including artisanal alcohol). Concentrations of methanol at a level toxic to the consumer cannot be produced by negligent behaviour during small-scale artisanal alcohol fermentation or distillation [13, 30]. Aflatoxin contamination, however, can result from the production process (e.g., from the use of mouldy grains due to a grain shortage (30)). While aflatoxin contamination constitutes a risk over and above the risk of alcohol, it still poses a lower risk than that posed by alcohol, and it seems confined to poor districts in tropical countries (most of the samples with high aflatoxin contamination were from slums [28]) and as such is much less common in Europe.

The consumption of methanol is clearly more toxic than ethanol, and methanol poisoning outbreaks continue to be reported every year, and seemingly with higher prevalence during COVID (e.g., in Iran, due to a false belief that consuming alcohol prevents the infection, but also in Azerbaijan and Turkey [31-33]). While such occurrences are likely underreported in the scientific literature, the relative impact of methanol-attributable morbidity and mortality is certainly minimal compared to the impact of

ethanol (alcohol) use on health. Consider the following calculation: if we assume that unrecorded alcohol has the same health consequences as recorded alcohol, then ethanol as a component of unrecorded alcohol would be responsible for about 750,000 to 800,000 deaths per year (based on [34]. Reported methanol deaths, on the other hand, seem to amount to several thousand deaths per year at most, and, while there is likely underreporting of smaller outbreaks, even a substantial underestimate would not push the numbers above 5% of total ethanol deaths. Thus, while any death caused by methanol is a human tragedy and preventable, public health efforts should be mainly directed at reducing the intake of alcohol *per se*, both recorded and unrecorded.

There is also a possibility that marginalized people with compromised health may have lower thresholds for the impact of different ingredients of alcoholic beverages, such as formic acid in windshield wiper fluid [35]. However, we identified no literature which would allow for a proper risk assessment to be made.

Most of the health harm from unrecorded consumption, therefore, is caused by the alcohol in unrecorded alcohol products, and thus, indirectly by their lower price, and in some cases, higher availability. Due to their lower price, unrecorded alcohol is associated with higher consumption levels and more episodic heavy drinking occasions[2] (for an overview on dimensions of alcohol consumption and harm, see [36]). These kinds of harm are at times reinforced by the higher alcohol concentration in unrecorded alcohol (16); for instance, Lang and colleagues found 67% pure alcohol in medicinal products in Estonia (39). Similarly, the majority of surrogate alcohol in Russia contained 60% or more ethanol [37, 38]. Other more recent studies from Africa corroborated these results [28, 39]). However, there are also unrecorded alcohols with lower alcohol content than their commercial counterparts, for instance in traditional spirits and beers in Africa, described in another study [40]. In the European region, alcoholic strength was found to be consistently higher in unrecorded alcohol.

From a public health perspective, therefore, the goal of any alcohol control intervention should be to reduce alcohol-attributable harm, which is overall best linked to total *per capita* consumption [41, 42], composed of the sum of recorded and unrecorded consumption. This strongly indicates that the public health objective, via the implementation of taxation increases or other alcohol control policy measures, should be a net decrease in total *per capita* consumption.

Unrecorded alcohol and youth

The brief literature review on unrecorded alcohol in youth indicates that there is limited research in this area. A total of five studies were identified, of which more than the half were conducted in Russia. Studies involving youth populations from other parts of Europe are lacking.

Based on the limited evidence, two key points can be outlined: First, if one considers the general youth population, unrecorded alcohol does not seem to play a major role in drinking by youth in Russia and Ukraine at the moment. However, in some population groups of youth, the prevalence of unrecorded alcohol consumption can be high: in Russia, for example, up to 25% of youth aged 25 or younger, who are registered with narcology health services and undergoing treatment for alcohol use disorders,

[2] This is not to say that unrecorded alcohol necessarily causes higher consumption and/or more episodic heavy drinking. The association may be caused by consumers with low socioeconomic status and this pattern of drinking choosing unrecorded products, as they cannot afford commercial alternatives to sustain their volume of consumption (maybe suggesting the presence of an alcohol use disorder which is characterized by the inability to control drinking).

consumed non-beverage alcohol [43]. Second, unrecorded alcohol does not appear to be as prevalent among younger cohorts as it is among adults, however its trade, particularly over the Internet, poses a major challenge. The evasion of age controls as well as the large proportion of counterfeit alcohol in online trade put youths, in particular, at risk of accessing it (10). While counterfeit, and often surrogate, alcohol may not be dangerous *per se*, there is the possibility of toxic compounds being added due to the absence of controls [2, 9, 44]. However, far more research is needed, including among minors, in order to obtain more comprehensive evidence.

The results underpin the necessity of protecting young people from the consequences of unrecorded alcohol. In particular, alcohol sales via the Internet, where the required legal minimum age is often easily circumvented, and which has been associated with a high proportion of counterfeit alcohol in Russia, is a critical factor in this context. Similar to this, the minimum age of the customer is never checked when a non-beverage alcohol is being purchased in Russia. In line with the recommendations of Lachenmeier and colleagues [2], the following policies targeting young people in particular should be considered: stricter controls, particularly for methanol, and the improvement of monitoring systems for local and online sales restrictions, with a particular focus on compliance with age restrictions, stricter control over and enforcement of existing regulations, as well as implementation of new regulations specifically targeting surrogate alcohol.

Unrecorded alcohol and taxation: Why does unrecorded alcohol matter for tax implementation strategies?

All categories of unrecorded alcohol matter for the implementation of excise taxation on alcohol, as unrecorded alcohol in general is considerably cheaper than recorded alcohol. This is self-evident for the category of cross-border shopping: the main reason people travel to another country to buy alcohol is due to the price differential between countries. Also, when returning to one's own country, shopping for alcohol in airports may be attractive because the alcohol sold in them is often tax-free.

However, the price differential is not limited to the unrecorded category of cross-border shopping. Almost all other categories of unrecorded alcohol—with the possible exception of some boutique artisanal production of speciality wines, spirits or craft beers—have been found to be considerably cheaper than regular recorded alcohol (for instance: [38, 45-55]). The price differential between recorded and unrecorded alcohol means that policies which increase taxes on alcohol can only reach their full potential if a majority of alcohol users continue to drink only recorded alcohol (i.e., they cannot or will not switch to unrecorded alcohol).

A price differential, *ceteris paribus*, would also suggest that any substantial change in taxation should be accompanied by changes in unrecorded consumption *in the same direction*; that is, an increase in taxation should be associated with an increase in unrecorded consumption, and a decrease in taxation should be associated with a decrease in unrecorded consumption.

In fact, reducing alcohol taxes has even been proposed by some economic operators as being a good means by which to reduce unrecorded alcohol consumption [23]. Zimbabwe ([56], p. 169; see also [57]), where a taxation increase led to an increase in unrecorded alcohol use and a decrease in recorded alcohol use and government revenue, is often cited as an example of this. Anecdotal evidence in other countries such as Kenya, which recently increased excise taxes on alcohol products, seems to suggest an increase in consumption of unrecorded alcohol. However, given the scarcity of data on

unrecorded alcohol or on alcohol-related harm more broadly, it is difficult to confirm or validate any of these speculations.

Overall, there is a dearth of actual evidence that taxation increases lead to substantial increases in unrecorded consumption. We therefore conducted a number of case studies.

These studies clearly indicate that taxation increases do not automatically lead to an increase in unrecorded consumption. It depends on:

a) The level and price of unrecorded consumption in the particular society; and on the people who are currently consuming it or those who may consider consuming it. There is, of course, a difference if consumption of unrecorded alcohol in a society is legal and/or normalized behaviour (e.g., cross-border shopping in the EU, which depends on the overall costs of alcohol including the price of gasoline to cross the border [58]), or if the behaviour is restricted to marginalized groups in specific situations (e.g. drinking windshield wiper fluid by homeless people with alcohol dependence in the Russian Federation). To give one example: in Thailand, an increase in spirits taxation resulted in only slight increases in illegally distilled spirits, and only in communities where such distilling was common before the taxation change; the overall impact on unrecorded consumption was negligible (58).

b) The availability of unrecorded alcohol products for the people most affected, (i.e., people of low income). If the only unrecorded alcohol available is via cross-border shopping, people living some distance from the border or people who cannot afford a car or the gasoline to make the trip will not be buying or consuming this type of alcohol.

c) The particular government's countermeasures against unrecorded consumption when it increases excise taxes for recorded alcohol (see last point below).

d) The presence of large-scale producers of certain types of unrecorded alcohol, and a legislative framework that leaves room for tax evasion and the production of counterfeit alcohol, surrogates, pseudo-surrogates (products officially declared non-beverage alcohols but deliberately produced by the industry or by illegal producers to target heavy drinkers e.g. fragrance-free colognes, ethanol-based not denatured hand sanitizers and antiseptics in Russia) and other products which are not taxed or regulated.

Mapping of policy and best practices

What policy options are available to reduce unrecorded alcohol consumption, and what is the evidence for each?

Suggested policy options and evidence. Previous reviews have identified some policy measures that more strictly control the production and use of unrecorded alcohol ([2, 16, 27]; **Table 1**).

Table 1. Overview of policy measures suggested to reduce the harm of unrecorded alcohol

- Implementing actions which limit illegal trade and counterfeiting and take more control over the alcohol market, including the introduction of tax stamps, electronic surveillance systems, and increased enforcement against illegal activities [2, 16].
- Integrating some types of the unrecorded alcohol, such as traditional alcoholic beverages, into the commercial sector [59, 60] (e.g., by offering financial incentives to home and small-scale artisanal producers for registration and quality control, or by establishing a government monopoly which buys their products or replaces them in the market [61]). Potential measures could also include providing alternative employment for those engaged in illegal alcohol production and distribution [50].
- Banning sale to the general public of toxic compounds that could be admixed to alcohol (e.g., methanol) and prohibiting the use of toxic compounds to denature non-beverage alcohol.
- Reducing cross-border shopping by either limiting imports via quotas, narrowing the tax and price differences, eliminating tax-free sales, or enforcing stricter controls on sales of unrecorded alcohol in places where such shopping is limited or illegal.
- Lowering recorded alcohol prices to remove the economic incentive for buying unrecorded alcohol.

Monitoring and surveillance systems

The broadest measure applied to limit unrecorded consumption is likely the establishment of a monitoring and surveillance system for alcohol, such as the Unified State Automated Information System (EGAIS) system described in the Russian case study undertaken by WHO Europe (62). Such systems, including, but not limited to, the use of proper tax stamps, allow for the detection of unrecorded alcohol in the distribution system and give customers some control over what they are buying. For tobacco, similar systems are already in place in many countries and regions and are considered to be standard practice. For instance, the EU Tobacco Products Directive 2014/40/EU [62] and its implementation legislation have established the first regional tobacco tracking and tracing system to control the supply chain of tobacco products legally manufactured or imported on the EU's internal market [62, 63]. The success of a similar system adopted in the Russian Federation points to the need for an equivalent system for alcohol at the EU level, which would also allow for more comprehensive monitoring and surveillance of cross-border alcohol trade between EU countries. Of course, any system can be manipulated, but any such efforts by members of organized crime come at a cost, requiring them to purchase alternative technology. And, as with almost all forms of alcohol

control policy, a lot of the success of monitoring and surveillance systems will depend on the strength of enforcement [64, 65].

The integration of some forms of unrecorded alcohol into the legal market has been suggested by WHO as part of their global strategy [60]. Thamarangsi [59] identified the following forms of unrecorded consumption which could be integrated: any illegally produced or smuggled alcohol, including traditional home or small-scale artisanal production, which in some regions (e.g., Africa, is often linked to traditional alcoholic beverages and income for women ([53, 66, 67]). In this case, because these women rely upon sales for subsistence, policies should be designed so as to avoid limiting women's economic opportunities while protecting community health.

Financial incentives and government monopolies

One of the more promising options may be to offer financial incentives to the producers of unrecorded alcohol to register and participate in quality control. For instance, the government could establish a monopoly to buy unrecorded spirits at market prices and initiate quality control monitoring, as the German government did after World War I to limit unrecorded consumption ([61]; see also [68] for a similar rationale for establishing a monopoly in Switzerland). In this case, the spirits purchased by the government were then converted into industrial alcohol.

The implications of a monopoly with this function in low- and middle-income countries (LMIC) need to be considered carefully, with special attention paid to whether or not the revenues generated by a monopoly outweigh the cost to the government of running it. Of course, different functions may be integrated into such a monopoly (for general considerations, see [69]). Alternatively, a process that increases recorded product share by offering cheaper recorded products with a more traditional content (e.g., maize or sorghum beer in Africa) might prove effective (see ([70]) for an example in Kenya; for sorghum, see [71]). Recent globalization and economic growth has resulted in a decrease in traditional beverages and an increase in beer and other globalized beverages when the economic wealth of a country increases (e.g., pulque versus industrial beer in Mexico [72]). However, overall unrecorded consumption has remained more or less constant over the past 20 years, so it is doubtful that globalization and economic growth will result in a substantive decrease in the proportion of unrecorded products globally [5, 73-75]; retrospective analyses between 2000 and 2019, based on current estimates for World Health Statistics 2021 and best sources, are consistent, and even closer to each other than the historic numbers, varying between 22% in 2007 and 25% in 2019).

Restricting the availability of toxic additives

As identified in the sections above, one major problem with unrecorded alcohol, apart from the alcohol itself, appears to be the addition of toxic compounds such as methanol, and potential contamination during production (especially in low- and lower-middle income countries, and countries where methanol is cheaper due to the higher prices and taxation of ethanol). Potential policy options therefore include restricting access to methanol (e.g., through higher taxation) (53).

Most of the risks regarding the contamination of alcohol by methanol could be avoided by strictly enforced methanol monitoring or its prohibition in retail outlets. Especially in countries with higher proportions of surrogate alcohol consumption, measures mitigating methanol poisoning, including the strict enforcement of regulations for medicinal, cosmetic, and industrial alcohol, are needed [2, 16]. In Russia, the introduction of new obligatory additives for the denaturing of non-beverage alcohol in 2006 may have decreased unrecorded consumption, along with other important measures such as

introducing new excise stamps and increasing tax on raw ethanol, which has eliminated the financial incentive to produce cheap surrogates [76]. However, the denaturation of non-beverage alcohol in Russia still needs to be better monitored and enforced, since a significant share of the surrogate alcohol market is still represented by undenatured, hence illegal, non-beverage spirituous products. Due to the difficulties in implementing policy measures against unrecorded alcohol and its contamination in Kenya and similar settings, the development of low-cost methanol detection systems has been suggested, to allow both producers and consumers the opportunity to avoid lethally contaminated alcohol [77].

Cross-border sales

Cross-border sales are not a major problem from a global perspective, but constitute the main source of unrecorded alcohol in some regions, such as northern Europe (3) or Russian regions bordering with Kazakhstan [78]. In northern Europe, the problem is complicated by the fact that the EU considers alcohol to be an "ordinary" commodity, with almost no restrictions on cross-border trade (66). Two obvious solutions at the EU level could be to: 1) stipulate that alcohol is no ordinary economic commodity and impose limitations on cross-border trade, possibly by following the example of the Customs Code of the Eurasian Economic Union (which limits the duty-free import of alcoholic beverages to only three litres of any product per person [79]); or 2) harmonize taxation (e.g. by increasing minimal taxation for all EU-member states).

Another solution would be to institute bilateral or multilateral harmonization of taxes by the neighbouring countries affected. For instance, the current provisions of the Eurasian Economic Union require a harmonization process of excise rates on alcohol and tobacco products across all the Member States (Armenia, Belarus, Kazakhstan, Kyrgyzstan, and the Russian Federation) every five years to ensure that alcohol prices remain somewhat similar and to prevent cross-borders issues) (80). Taxation does not need to be at exactly the same level, however, since the real costs for cross-border trading include the costs associated with crossing the border, including gasoline [80].

Lowering taxation

The last "solution" in the list involves lowering taxes to make recorded (tax-paid) alternatives more attractive and thereby lower unrecorded consumption. However, it must be emphasized that in this case, the overall harm caused by alcohol (recorded and not) is not likely to change and might even increase, because recorded consumption will naturally increase because of the higher affordability of alcohol. As in the examples discussed above, this measure has not always been successful. In the next section, this will be discussed in more detail.

This background makes it clear that countermeasures against unrecorded consumption for any country will depend on its unique characteristics, in terms of the type of unrecorded consumption, drinking culture and policy environment. To give one case example: the effectiveness of policy changes to reduce harm from unrecorded alcohol in Russia was reviewed by Neufeld and Rehm ([81]; see also [82]). One of the most important measures in terms of reducing unrecorded consumption was the introduction of taxes on any ethanol-containing liquids in the form of an excise tax, and the adoption of new, more effective (less toxic and more odorous) denaturizing additives for industrial alcohol [81]). Overall, the evidence suggests that levels of consumption of unrecorded and recorded alcohol, as well as of alcohol-attributable harms, have been declining in Russia since about 2005, coinciding with the introduction and enforcement of alcohol control measures for both forms of alcohol [81, 83, 84]. Thus,

Russia provides an example which suggests that it may be possible to increase taxation, reduce availability, and reduce unrecorded consumption simultaneously.

Unintended consequences of policy measures to reduce unrecorded alcohol consumption

Since the level of ethanol use has been identified as the best indicator for alcohol-attributable harm (and its reduction is one of the United Nations' Sustainable Development Goals [42, 85]), alcohol policies should avoid the imposition of "solutions" for unrecorded consumption which ultimately result in an increase in overall consumption.

For example, in Belarus, in 1997 the introduction of a new cheap alternative alcohol in the form of fruit wines, combined with increased penalties for homebrewing, contributed to the reduction in, and, in more recent years, the almost complete eradication of, home production of alcohol, which in the 1990s made up a significant share of unrecorded alcohol. Total alcohol consumption in Belarus, however, actually grew rapidly over the same time period, thanks in part to the consumption of cheap fruit wines (85).

Nevertheless, and with little evidence to back their claims, the large global alcohol producers typically suggest targeting unrecorded alcohol alone in order to reduce alcohol problems [22]. For example, using arguments that illicit production may result in toxic consequences such as methanol poisoning as evidence that taxes on the licit production should be limited, ignoring the orders-of-magnitude difference between the number of methanol poisonings per year and the morbidity and mortality associated with the ethanol itself.

The industry also uses political pressure to gain advantage by suppressing informal production. Arguments against informal production have often included referring to the "loss of billions of dollars in government revenues" due to transnational criminal networks illicitly trading in alcohol (86). Moreover, the presence of unrecorded alcoholic products and various illegal and semi-legal alcohol markets in a country like Russia is often used as an argument to lower alcohol taxes and loosen alcohol policy in general, instead of making a stronger case for enforcement and anti-corruption measures [78]. However, while some ingredients in some unrecorded alcohol may pose a health risk over and above the risk of ethanol, particularly for individuals living with chronic diseases and mental impairment resulted from long-term heavy alcohol drinking, the major public health threat is clearly related to ethanol [86], and any measure against unrecorded consumption should be weighed against the overall impact on health if it could potentially result in increasing overall alcohol consumption.

A case study of unrecorded alcohol use in East Africa has also stressed the importance of considering the unintended consequences of policies on unrecorded alcohol regarding issues of gender, empowerment of women, and economic opportunities for women, since women tend to comprise the majority of those making homebrew in this region [10, 53, 87]. Another unintended consequence of the disruption of the making of traditional beers or homebrewing, particularly in African countries, involves industry moving in and competing with lower prices—leading to a situation of increased per capita consumption (90).

Areas of policy overlap: Cross-sectoral issues

The above discussions highlighted the fact that many different sectors of government and civil society are involved in issues of unrecorded alcohol [88, 89], and particularly in the complex relationship between unrecorded alcohol and taxation. More specifically:

- Border control and customs deals with cross-border shopping and smuggling.
- Law enforcement deals with all aspects of illegal production of unrecorded alcohol; as well as with enforcement of rules and regulations for production, sale, and service of recorded alcohol.
- The finance sector deals with taxation and revenue, including issues of price harmonization between different jurisdictions.
- The economic development sector, such as the Ministry of Trade, Ministry of Gender or government social services, deal with the consequences of policy measures, such as women losing their income when traditional production of unrecorded alcohol is forbidden, and a prohibition is enforced. In some cases, these ministries also deal with the overall economic costs and benefits of alcohol production and use [90, 91].
- The Ministry of Health deals with the health consequences of all alcohol consumption, including the impact of unrecorded alcohol.
- The agricultural sector deals with issues resulting from the fact that many alcoholic beverages are plant-based.
- Legislative institutions, including supra-national institutions like that of the EU, deal with all aspects of legislative frameworks that regulate alcohol production, distribution, and sale, including issues of taxation and denaturing of non-beverage alcohol not intended for human consumption.
- The alcohol industry which may not only impact on policy making including taxation, but may also, in some countries, be involved in production of unrecorded alcohol.

From the examples given, it is easy to see that different sectors have different and often contradicting interests. Finding ways to reconcile these interests will be key to any successful substance use control policy [89]. In this circumstance, “multisectoral actions” are often recommended, involving all interested parties sitting around the policy table. However, such a process often results in a stalemate and no action, particularly when alcohol industry is involved in the dialogue or its interests are on the table (e.g., [92]). In terms of public health and other public interests, it would be more productive to have a health or welfare agency leading the cross-sectoral consultation and action, as has been the case, for instance, in Thailand [93]. This would be in line with the Health in All Policy framework developed by WHO [94].

Topics recommended for discussion

Obviously, unrecorded consumption needs to be analysed from various perspectives, as it potentially affects health, finance, agriculture, legislation, and law enforcement.

How can we improve the intersectoral discussion and collaboration between these sectors, avoiding some of the bad experiences in the past?

An interesting example is Germany which had to give up its spirits monopoly which was specifically intended to control unrecorded artisanal alcohol because of EU laws relating to illegal subsidies for small agricultural enterprises. On the other hand, the EU is indirectly subsidizing alcohol production, and establishing tax-free quotas for small enterprises, without considering any public health consequences.

What is the best way to prevent farmers and others from producing "unrecorded" alcohol? Or should everyone be allowed to produce enough for their own consumption, for family, friends, and neighbours?

Unrecorded consumption is cited in all parliamentary debates in the EU on taxation and other fiscal policies. These debates are rarely informed by evidence, and slogans such as "unrecorded consumption will increase and cause more harm and reduction of governmental revenue" are accepted without question.

How can we ensure more evidence is cited in such debates and used to inform subsequent policy?

Why do so few EU countries try to quantify unrecorded consumption (for systematic efforts, including some tools, see [95, 96])? How can we change this (or should we)?

The EU treats alcohol as an ordinary commodity despite its public health consequences, and "punishes" governments who try to reduce availability of alcohol, resulting in substantial cross-border trade.

How can we establish alcohol as a non-ordinary commodity, which should be dealt with differently in economic trade?

Conclusions

Overall, this review concludes the following: if unrecorded alcohol is linked to more health harms than industrial alcohol, it is mainly because it is: (i) often of higher alcoholic strength, unknown to the consumer due to a lack of labelling; (ii) typically consumed in a pattern of irregular heavy drinking leading to intoxication which is possible as it is usually cheaper than recorded alcohol; (iii) typically preferred by people from lower socio-economic groups, from rural areas, and by individuals with alcohol use disorders, and those who have other risk factors which interact with alcohol consumption (e.g., [97-99]). However, more research needs to be conducted in this arena, particularly in low-

resource settings such as sub-Saharan Africa where emerging evidence seems to indicate potential contamination of unrecorded alcohol.

In summary, unrecorded alcohol contributes markedly to the alcohol-attributable burden of disease and injury, mainly via ethanol. Alcohol control policies must strive to reduce overall ethanol intake. and must incorporate solutions for reducing the consumption of unrecorded alcohol which do not lead to increases in overall alcohol use.

As unrecorded alcohol is usually cheaper, it is often argued that it may affect taxation and other fiscal policies adversely by substituting the decreases of recorded consumption due to taxation increases with an increase in the consumption of unrecorded alcohol. However, the evidence for such substitution effects is scarce; there is no good evidence even for normalized forms of unrecorded alcohol, such as cross-border shopping, that taxation changes had been associated with changes of unrecorded consumption in the same direction. Other forms of unrecorded alcohol are often associated with distinct groups of consumers, and while substitution may happen within these groups [100], there is little evidence that other groups will start to use unrecorded alcohol when taxes on recorded alcohol are increased, in which case the overall effect of taxation increases will be driven by the decrease in recorded consumption.

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Annex 1. Peer-Review Report Paper 1

Evidence to inform effective alcohol pricing policies in the European Union - Background Document to the Thematic Workshop

This report is intended to compliment and complete the information provided in the briefing documents and executive summary; which have the aim of giving relevant background information to the participants of the DEEP SEAS-FAR SEAS-AlHaMBRA Workshop: *Alcohol Taxation and Pricing Policies, including Unrecorded Alcohol and Cross-Border issues.*

The workshop objective is to facilitate clear communication and exchange of perspectives and priorities, and to establish sustainable connections which can endure after the events to enhance and promote health in all policy initiatives. To achieve this, participants need a grounding in the topic which enables them to join in discussions and address the most relevant overlapping cross-sectoral concerns.

Reviewer: Clare Beeston **Title of document: *Evidence to inform effective alcohol pricing policies in the European Union***
Short biography – Position, institution and background in the field: Public Health Intelligence Principal, Evaluation Team, Public Health Scotland. I have been working on the evaluation of alcohol policy for over 10 years, leading the monitoring and evaluation of alcohol strategy in Scotland, most recently leading the evaluation of minimum unit pricing for alcohol
Global evaluation of the briefing document: This is an interesting, comprehensive and well written review of pricing policies and the evidence for them. It provides the reader with an easily accessible 'all in one place' description of pricing policies, and the anomalies, as well as summaries of the evidence that will be useful to policy makers.
Specific areas or messages to add or amend: Pg 12. Does the SAPM provide evidence that MUP targets the heaviest drinkers or heavy drinkers? Appreciate the distinction is nuanced but heavy (harmful) drinking covers a range of different types of drinking that may be variously impacted by MUP. E.g., those with dependency likely to be under-represented in the population studies used in modelling, and empirical evidence not available yet. Pg 19 "There is limited evidence to suggest that restricting promotions or discounts on alcohol is effective, although it is unlikely to be harmful". Depends what interventions you mean and what you mean by 'effective'? The evidence on multi-buy discount ban could be described as mixed in terms of impact on sales/purchases.
Specific areas or messages to highlight as important: The importance of context, pricing policies not a silver bullet, and no one 'best' The potential to impact on health inequalities The anomalies in taxation policy between drink types, limited use of specific taxation, and exclusion of wine from taxation in many countries!
Further references or information of interest in this area:

[None noted]

Annex 2: Peer-Review Report Paper 2

Cross-border alcohol purchasing, marketing and trade - Background Document to the Thematic Workshop

This report is intended to compliment and complete the information provided in the briefing documents and executive summary; which have the aim of giving relevant background information to the participants of the DEEP SEAS-FAR SEAS-AlHaMBRA Workshop: *Alcohol Taxation and Pricing Policies, including Unrecorded Alcohol and Cross-Border issues.*

The workshop objective is to facilitate clear communication and exchange of perspectives and priorities, and to establish sustainable connections which can endure after the events to enhance and promote health in all policy initiatives. To achieve this, participants need a grounding in the topic which enables them to join in discussions and address the most relevant overlapping cross-sectoral concerns.

Reviewer: Thomas Karlsson **Title of background document: Cross-border alcohol purchasing, marketing and trade**
Short biography – Position, institution and background in the field: Chief Specialist, Team Leader of the Alcohol, Drugs and Tobacco team and Vice Head of the Unit of Health and Well-Being Promotion at the Finnish Institute of Health and Welfare, THL. During the past twenty years Karlsson has been involved in many international comparative research projects and EU co-financed research projects. Examples of these projects are the European Comparative Alcohol Study (ECAS), the Bridging the Gap -study, led by Eurocare as well as the EU co-financed research projects SMART, AMPHORA and Alice Rap (FP7 and DG Sanco). In his role as a Chief Specialist he has been active in the work of the WHO Collaborating Centre on alcohol policy Implementation and Evaluation based in THL. In December 2016 Karlsson was appointed as Head of the Collaborating Centre. Karlsson's main research topics include international and national level alcohol policy studies, studies on alcohol consumption, especially unrecorded consumption and cross-border trade and studies on public opinions on alcohol policy.
Global evaluation of the briefing document: The report serves quite well as a background document for the Thematic workshop on "Alcohol Taxation and Pricing Policies, including Unrecorded Alcohol and Cross-Border issues." The report addresses the most important aspects on and around the issue of cross-border trade with alcohol and highlights several other issues that are not directly connected to cross-border trade with alcohol itself, like the AVMSD, but that has an important bearing for the problem at hand. As a general comment, I think that the readability of the report would gain, if the structure of the report could be made clearer, especially regarding the headings of the different subchapters and maybe also the sequence in which they are presented. When reading the report it was at times difficult to follow the logic when there is a subheading with the name "Cross-border purchases and unrecorded consumption" that then is followed by the "Mapping current policy" header that also contains a subheading named "Cross-border purchases". As I see it one possible way to solve this could be to move the "Mapping current policy" -chapter after "Methodology". This way for instance the Council Directive 2008/118/EC and other directives

that regulate cross-border trade would be presented before empirical data is presented in the "cross-border purchases and unrecorded consumption" -section.

Also the significance of the AVMSD for cross-border trade issues could be explained in more detail and clarify what its significance is for cross-border trade with alcohol and also elaborate a bit more on why the directive in the case of alcohol could be perceived as problematic.

However, the text highlights many key elements in what makes cross-border trade issues with alcohol problematic and serves also as food for thought in preparation for the workshop at hand.

Specific areas or messages to add or amend:

In the last paragraph of the executive summary, where sectors that interact with cross-border sales are listed, the HoReCa and tourism sectors are completely missing. This is the case also in the text at large. I am not suggesting that this should be handled in the text at any length, but in many countries, as for instance in the Nordic countries and in the traffic between Finland and Estonia, tourism is highly involved and interacts with these other sectors and acts as an important pull factor for cross-border trade. This could just be mentioned briefly here and in the text.

On the Methodology section on page 6 I would have added as a key word in the search made also travelers alcohol imports, which is the term that is often used as a synonym to cross-border trade in many countries. This might have generated some more hits. It is also used as a term on page 7 on the situation in Sweden regarding unrecorded alcohol.

On the Cross-border purchases and unrecorded consumption -section and mentioning of the hotspot areas, I would have mentioned here absolutely also Luxembourg and the surrounding countries (which are mentioned also later in the text) and perhaps also Switzerland, where there is cross-border trade from the surrounding countries into Switzerland. I am also unsure now, how the cross-border trade between Ireland and Northern-Ireland has reacted to Brexit, but before this has been a lively border for cross-border trade of many commodities, also sensitive to changes in the exchange rates on the sterling and euro.

On "Mapping current policy" on page 8. Could it be possible to get some further information on what possible changes might occur with the amendments in Directive 92/83/EEC that are applicable from the beginning of 2022?

Specific areas or messages to highlight as important:

Not to treat alcohol as an ordinary commodity has its right place as the first key message and this cannot be emphasized enough. As commented previously, one could, however, consider a shorter list of key messages.

As said previously, I think the inclusion of the AVMSD chapter here is a valuable addition, showing that cross-border trade does not simply concern bringing alcohol over the border, but has also a deeper and more unconventional dimension that many have not thought of. This is absolutely a thing that is worthy to highlight here, but its connection to cross-border trade issues could perhaps be explained clearer.

It is true that price differential between countries is the main driver for especially cross-border purchases, but also other factors, as for instance:

- geographic circumstances at the borders,

- existence of import quotas (indicative or legally binding),

- strictness of border controls,

- traffic infrastructure,
- and the amount of population residing near the border, and
- travelers' motives for crossing the border.
- One could also consider adding the obvious fact that paying taxes and yielding revenues in one country and creating harms and costs in another is a problem inherent with cross-border trade with alcohol.
- From the Nordic experience we have also learned that harmonizing tax levels downwards is not a viable solution to solve the problem. Although a tax reduction could reduce alcohol, it could also increase overall alcohol consumption, increase alcohol-related harms and costs, and reduce alcohol tax revenues.

Further references or information of interest in this area:

The author has covered the research and information quite comprehensively as the research literature, especially in English is quite scarce.

Annex 3: Peer-Review Report Paper 3

The health impact of unrecorded alcohol use and its policy implications - Background Document to the Thematic Workshop

This report is intended to compliment and complete the information provided in the briefing documents and executive summary; which have the aim of giving full and succinct, relevant background information to the participants of the DEEP SEAS-FAR SEAS Workshop 2: Alcohol and its relation to Socioeconomic inequalities, Nutrition & Obesity and Cancer.

The workshop objective is to facilitate clear communication and exchange of perspectives and priorities, and to establish sustainable connections which can endure after the events to enhance and promote health in all policy initiatives. To achieve this, participants need a grounding in the topic which enables them to join in discussions and address the most relevant overlapping cross-sectoral concerns.

Reviewer: Artyom Gil **Title of background document: The health impact of unrecorded alcohol use and its policy implications**
Short biography – Position, institution and background in the field: 2001 – 2004, Clinical Resident, Department of Internal Medicine, Urals Medical Academy for Advanced Studies, Chelyabinsk, Russia 2006-2010, Clinical Research Fellow, Faculty of Epidemiology and Population Health, Department of Non-communicable Disease Epidemiology, London School of Hygiene and Tropical Medicine, London, UK 2006 – present time, Associate Professor, I.M.Sechenov First Moscow Medical University (Sechenov University), Moscow, Russia 2016 – present time, Consultant, Division of Country Health Program, WHO Regional Office for Europe, WHO European Office for the Prevention and Control of Noncommunicable Diseases, Moscow, Russia My work in the field of alcohol research began in 2006, when I took part in the prospective cohort study named “Izhevsk Family Study II”, organized by the London School of Hygiene and Tropical Medicine, UK in cooperation with the Izhevsk State Medical Academy, Russia. This study was aimed at identifying the leading factors of premature mortality in the working-age population. My task was to supervise the collection of health check data in the field. According to the results of the study, alcohol was one of the leading factors of ill health and premature mortality among working age males. After completing my assignment in this project, I continued my own research work in the field of alcohol, devoted to the study of alcohol policy, the assessment of the alcohol affordability and physical availability of surrogate alcohol, to the organization of the narcological service in Russia.

Global evaluation of the briefing document:

This briefing document contains a thorough analysis of the latest published research on unrecorded alcohol published over the past 5 years. The report provides a comprehensive overview of the impact of unrecorded consumption on health, current situation in the field of unrecorded alcohol and youth, analysis of tax implementation strategies and their effects on unrecorded alcohol consumption. The document provides results of the mapping of policy and best practices related to control of unrecorded alcohol, overviews policy options available to reduce unrecorded alcohol consumption, and summarizes evidence for each option, and recommend topics for discussion. Overall, the document provides a detailed understanding of the current state of unrecorded alcohol control globally and identifies areas of priority focus for alcohol control policies that will help reduce the harm caused by unrecorded alcohol consumption in European Region and globally.

Specific areas or messages to add or amend:

In the document authors provide a comprehensive overview of high-quality research on the chemical composition of unrecorded alcohol. Conclusions about health harms associated with unrecorded alcohol are drawn from this research based on exciding/not exciding lethal doses/acceptable daily intake levels of identified in unrecorded alcohol several toxic compounds. In fact, the lethal doses, and acceptable daily intake levels have been established mainly for initially healthy individuals with overall satisfactory somatic health profile. However, very often, the main consumers of unrecorded alcohol are individuals with initially very poor health living with multiple chronic diseases caused by long-term chronic alcohol consumption. For these individuals any levels of toxic admixtures present in unrecorded alcohol can be fatal, with lethal outcome being realized via different from direct toxic effect pathogenetic mechanisms (e.g. fatal gastrointestinal bleeding from stomach and intestinal ulcers, caused by the damaging effects of formic acid to the intestinal and gastric mucosa, when, for example, Formic Spirit is consumed, in which formic acid is identified in the subtoxic/not lethal amounts). Probably, some words could be said in the report about other pathogenetic pathways/mechanisms of harmful effects of unrecorded alcohol on health, as indicated above, beside referring to a simpler approach of just reaching or not reaching lethal doses/ acceptable daily intake levels of identified toxic compounds. Various substances found in colognes and some other surrogate alcohols present in not lethal amounts may actually significantly add to harmful effects of ethanol among heavy alcohol drinkers with pre-existing multiple organ damage caused by the chronic alcohol abuse (e.g. may increase arrhythmogenic effect of ethanol with the development of the fatal cardiac arrhythmia), which so far hasn't been yet sufficiently studied. More information on this issue is given in the comment in the document itself.

The view of the Russian alcohol control policy in the document is very salutary. Perhaps, some words of the criticism could be said about insufficient enforcement of the implemented control policies, and the need for more active policy actions to control unrecorded alcohol in times of crisis, especially such as the COVID-19 pandemic, which, through a number of mechanisms, can contribute to an increase in alcohol consumption by the most vulnerable segments of the population (poor, homeless, unemployed, heavy drinking populations).

Specific areas or messages to highlight as important:

The given briefing document is being released at the time of the COVID-19 pandemic. Perhaps, few words or a paragraph shall be written about the importance of a stricter control over unrecorded alcohol during the pandemic, which, by its nature, can be characterized as the socio-economic crisis significantly affecting key determinants of alcohol consumption and drinking behavior particularly among specific population groups (from lower socio-economic and education strata), whose mortality rates significantly affect total mortality fluctuations, which is especially relevant for the Eastern European countries like Russia, Ukraine, Belarus, and Kazakhstan.

Further references or information of interest in this area:

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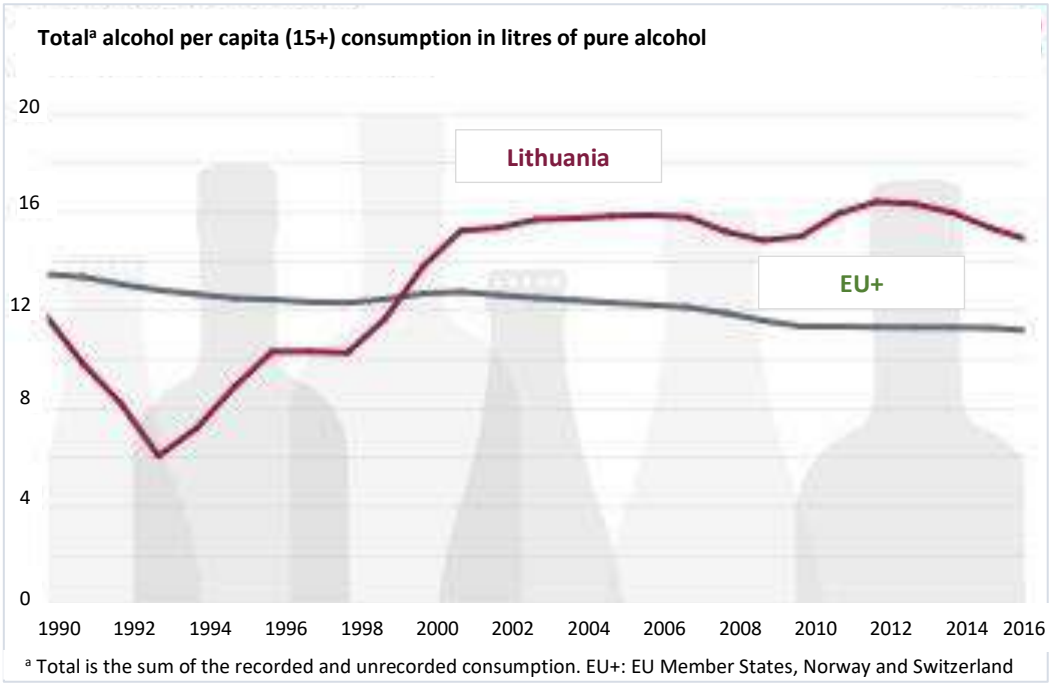
Annex 4: The situation in the hosting Member State — Lithuania

Lithuania has among the highest levels of alcohol consumption and related harm in Europe, despite declines in recent years; in 2020 consumption among those over 15 years of age was 11.4L per person (1). It is estimated that 10% of all deaths in Lithuania in 2017 were alcohol-related, compared to 6% in the EU (2). Binge or heavy episodic drinking (>6 drinks on one occasion) is also of serious concern, with close to 50% of the population reporting an occasion of heavy episodic drinking in the past month in 2016 (3).

In terms of overall health Lithuanians can expect to live shorter lives than the EU average, and more than 50% of all deaths can be attributed to behavioural risk factors: poor diet, tobacco smoking, alcohol use and low physical activity. Mental health and some infectious diseases also pose a serious public health challenge. However, measures to address these risk factors and challenges are bringing some positive results (2).

Alcohol policy in Lithuania has undergone several cycles of stricter control and liberalisation in recent decades; but most recently, policy changes including taxation have been credited with the noticeable decline in consumption (3-5). Along with Estonia and Bulgaria, Lithuania has seen the greatest decline in alcohol consumption over the past decade (6) although it still remains high.



Source: Alcohol country fact sheet - Lithuania (2019), World Health Organization Regional Officer for Europe
https://www.euro.who.int/en/countries/lithuania/data-and-statistics/alcohol-country-fact-sheet-lithuania-2019

Unrecorded and cross-border alcohol

Consumption of unrecorded alcohol has followed a similar trend to recorded consumption in Lithuania with a decrease from 5L per person over 15 years in 2001 to in 1.2L in 2016 (3). Unrecorded alcohol, that is alcohol which is not registered in the country in which it is consumed, includes: (7, 8)

I. Legal but unrecorded alcohol products
II. Alcohol products recorded, but not in the jurisdiction where it is consumed
III. Surrogate alcohol, i.e. non-beverage products not officially intended for human consumption
IV. Illegal homemade artisanal production
V. Illegal production or smuggling on a commercial (industrial) scale, including counterfeiting (brand fraud).

Alcohol policy in Lithuania

The current National Health Strategy 2014-25 includes a target to reduce annual alcohol consumption to 8.5L per adult by 2025 (9). The overall strategy has a cross-sectoral framework involving nearly all ministries and takes a life-course approach which emphasises the importance of tackling health determinants and reducing inequalities (2).

From the mid 1990s Lithuania enacted a number of alcohol control policies. The Law on Alcohol Control (1995) set the foundation for regulating availability, production, control and sales; in 1996 a State Agency for Tobacco and Alcohol Control was established; and in 1998 the Lithuanian Health Strategy was launched which included targets for reduced alcohol consumption and indicators for alcohol-related morbidity and mortality. Changes were also introduced regarding judicial measures related to alcohol-related offences such as drink-driving from 2000 (4). These actions were variously amended over the years, both tightened and liberalised.

During 2007 and 2008 there were further increases in alcohol control measures with a ban on alcohol advertising on daytime TV, restricting night-time sales, increased excise taxation and stricter drink-driving legislation and significant declines in alcohol-related morbidity and mortality were seen over the next two years, although this could not be directly related to the policy changes (10).

Changes in Lithuanian alcohol control policy in 2016-2018 reflected the implementation of all three WHO best buys as well as other policies (10). That is, increasing excise taxes, banning or restricting advertising, and restricting availability.

Specific actions were the allocation of a funding stream for community action toward prevention of alcohol harm and promoting public health in 2016 and the 2018-2027 National Program for Drug, Tobacco and Alcohol Control Prevention in 2018 (4).

Regarding taxation, the Resolution on Excise Duties (1994) granted the government responsibility for determining excise tariffs with various changes to both the level and structure of alcohol taxation in the coming years, including changes prior to joining the EU. The most significant excise tax increase was in 2017. This increase was associated with reduced mortality amounting to 1452 deaths avoided in the following year (11).

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