**Substance use and the Sustainable Development Goals:
will development bring greater problems?**

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Abstract

The United Nations has adopted a set of 17 interlocking Sustainable Development Goals for 2015-2030. While alcohol and narcotic drugs are mentioned, there has been little consideration of what effects attaining the goals may have on levels of alcohol and other drug consumption and problems. In cross-sectional comparisons, there are higher average levels of consumption of alcohol and controlled drugs in richer societies, and among richer than poorer individuals. But the harm per unit of use tends to be lower for richer individuals, and in richer societies. We consider how these two contrary trends may apply with socioeconomic development, given that development has often brought increases in substance use, and societal responses to limit the harms are often delayed by a generation or more, often resulting in "long waves" of consumption and associated harms. To take alcohol and other drugs coherently into account in the Sustainable Development Goals, along with recognising that they are marketable and sometimes useful products, and thus involved to some extent in economic development, there needs to be action at national and international levels which recognises their double-sided nature – including market controls on commercial products to channel and limit availability and minimise harm.

Keywords: alcohol, controlled drugs, socioeconomic development, harm per unit of use, Sustainable Development Goals

Introduction

The Sustainable Development Goals 2030 (SDGs; https://www.un.org/sustainabledevelopment/) were adopted by the United Nations (UN) in 2015 as goals for social and economic development globally in the following 15 years. In this paper, we consider how psychoactive substance use relates to the SDGs, a topic on which there have been diverse discussions, but which has not been addressed holistically. Considering the relations of substance use and harms to levels of societal development and of individual affluence, and how economic development has related historically to substance use and harms, we draw some conclusions on needed directions in alcohol and drug policies to keep the development sustainable.

This paper is a commentary seeking to open up its topic for broader consideration. In the absence of a coherent literature relating alcohol and other drugs to the SDGs, we outline the diversity of emphases in a selection of reports from parties with an interest in how alcohol or drugs relate to the SDGs. In considering how psychoactive substance use relates to the SDGs, we draw on the existing epidemiological literature on levels and patterns of use of alcohol and other drugs, and on data on levels of health harms from their use, using studies and compilations on alcohol and drugs as risk factors in global burden of disease studies.

The meaning of development in the Sustainable Development Goals

In the SDGs, "development" has an expanded meaning beyond the common usage of the word to describe a process of growth or change in some particular dimension or entity. It is applied more generally across dimensions: the "transformation of the world's social economic and environmental status towards universally beneficial outcomes". The broad range of meaning is indicated by the six "entry points" listed as aspects where development is sought: "human well-being and capabilities; sustainable and just economies; food systems and nutrition patterns; energy decarbonization and universal access; urban and peri-urban development; [and] global environmental commons" (Independent Group of Scientists, 2019, pp.1, 2).

The SDGs replaced and transcended the Millennium Development Goals (MDGs), which had been the UN policy for the previous 15 years (Forestier & Kim, 2017). There are 17 goals in the SDGs, ranging from ending poverty (SDG1) and hunger (SDG2) to climate action (SDG13) and preserving or restoring the natural world (SDGs 14 and 15). Particularly relevant to psychoactive substances are the goals of good health and wellbeing (SDG3), and peace, justice and strong institutions (SDG16). Attached to each goal are several targets – 169 targets altogether (UN, 2015), with a further UN resolution in July 2017 specifying indicators, reflecting the work of a Statistical Commission to develop "international statistical standards, methods and guidelines" to monitor and evaluate progress on the goals and targets (UN, 2017). By 2020, 231 unique indicators had been identified (https://unstats.un.org/sdgs/indicators/indicators-list/). The growth in the number of goals between the MDGs and the SDGs reflected a broadening of scope in development issues, notably including attention to issues in the global physical environment, and specific attention to gender equality. For the SDGs, however, more than for the Millennium goals, the aim is "coordinated implementation of the Goals", which are seen as "integrated and indivisible" (WHA, 2016). But the growth in the number of goals had the side-effect of further enabling the tendency of governments and other

interested parties to "cherry pick" particular goals to focus on, while the intention had been for them to be viewed and addressed coherently as a whole (Forestier & Kim, 2020).

A substantial superstructure of committees, agencies and meetings have the responsibility of pursuing and advancing progress on the SDGs. Various global intergovernmental agencies have been assigned special responsibility for particular SDGs. In particular, the World Health Organization has assumed primary responsibility for SDG3, "ensure healthy lives and promote well-being for all at all ages" (WHA, 2016).

The one specific mention of alcohol and other drugs among the multiple targets for the 17 SDGs is as one among the nine targets for SDG3:

> Target 3.5: Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.

In the 2017 resolution, two Indicators were attached to this target:

> 3.5.1 Coverage of treatment interventions (pharmacological, psychosocial and rehabilitation and aftercare services) for substance use disorders.
> 3.5.2 Harmful use of alcohol, defined according to the national context as alcohol per capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol. (UN, 2017)

Thus for alcohol, the trend in levels of alcohol consumption is named as an indicator, presumably of the level of harmful use of alcohol. For other psychoactive substances, the only indicator identified is the level of availability of treatment interventions. Even within the boundaries of Target 3.5, these indicators point to a very limited framing of what would constitute progress contributing to sustainable development. And, as commentaries on relations of alcohol or controlled drugs to the SDGs have routinely pointed out, alcohol and drug issues are relevant to a much wider assortment of the SDGs (e.g., WHO Euro, 2020; Dunnbier, 2020; UNDC, 2016; IDPC, 2015). But there is little in the SDGs or in discussions of them about what effects success in reaching the goals by 2030 will likely have on levels of alcohol and other drug consumption and problems.

Discussions of substance use and the SDGs: Many tunes, no symphony

- TABLE 1 ABOUT HERE --

Published discussions of substance use and the SDGs have been limited, and Table 1 outlines the scope of seven such discussions, four on alcohol and three on drugs, which reflect the range found in a rapid scoping review of publications accessible on Google. Of such previous publications, all seem to have been either about alcohol or about drugs -- in particular, the drugs subject to control under the UN drug treaties; we found none that considered psychoactive substances as a whole. Considerations of alcohol and the SDGs have been divided between public health-oriented discussions of harms from drinking, viewing alcohol as an obstacle to development (WHO Euro, 2020; Dünnbier, 2020), and alcohol industry-associated discussions, emphasising workplace and environmental improvements in the realms of production and sale (Carlsberg A/S, 2021; Li, 2020). Considerations of controlled drugs and the SDGs have been divided between international drug control agency discussions focusing on such issues as the adverse environmental effects of illicit drug farming (UNODC, 2016), and drug policy reform groups viewing militarised prohibitionist policies as diverting resources which otherwise could be used for development (IPI, 2018; International Drug

Policy Consortium [IDPC], 2015). In one or another of the seven discussions, all 17 of the goals or their targets have been mentioned, though with differing and often conflicting emphases in the discussions. Looking across the discussions, it is clear that, as one of them noted, there is a need to develop a "framework of coherence between drug policy and sustainable development" (IPI, 2018).

One issue which has not been addressed in the context of the SDGs is what the likely course is for levels of alcohol and other drug use and of use-related harms when there is success with social and economic development. In other words, what happens to consumption patterns and levels, and to rates of problems from substance use, as affluence increases, both at the individual level and for the society as a whole? In this paper, we summarize some broad-ranging evidence on these issues, and consider historical efforts to reduce substance use problems in the course of socioeconomic development.

Cross-sectional comparisons: Consumption and harm from alcohol and drug consumption by level of development

One line of evidence on which there is substantial global evidence is cross-sectional comparisons of levels of consumption and of harms, both at the level of national societies and at the level of individuals in the population. At the societal level, we can draw on compilations of data on national levels of consumption and on studies of the impact of risk factors on national health in international agency reports and global burden of disease studies. Global data on alcohol consumption, problems and policies at the national level is gathered and analysed by the World Health Organization's Global Information System on Alcohol and Health (GISAH; https://www.who.int/data/gho/data/themes/global-information-system-on-alcohol-and-health). WHO also publishes national-level data in connection with Global Status Reports on Alcohol and Health every three years or so (e.g., WHO, 2018). Global data on controlled drugs is published by the UN Office on Drugs and Crime (UNODC) in connection with their Global Drug Reports (e.g., UNODC, 2021a,b). Data and analyses on deaths and disabilities for both drugs and alcohol are also collated and analysed in the risk factor analyses of the Global Burden of Disease studies coordinated by the Institute for Health Metrics and Analysis (IHME; e.g., GBD 2016 Alcohol and Drug Use Collaborators, 2018). In part because of the difficulty of measuring illicit behaviour and markets, the alcohol data is closer to reality and more detailed than the data for controlled drugs. Richie and Roser (2022) remark about the drug data that "there are large differences in the quality and availability of data across the world. While high-quality data in richer countries often exists, data on illicit drug use in poorer countries is often limited. The IHME Global Burden of Disease attempts to fill these gaps, but these estimates come with a high level of uncertainty". Nevertheless, the level of uncertainty in the data is unlikely to be enough to negate the stark differences presented in what follows.

Alcohol. For alcohol consumption, there is clear evidence that there is substantially more alcohol consumption in richer than in poorer societies. Table 2 shows data on total alcohol consumption in 2016, including unrecorded as well as recorded, in terms of amount of consumption of pure alcohol, in whatever form, per person aged 15+ in the population. The four "national income" groups are as defined by the World Bank in terms of the gross national income (GNI) per capita in US dollars, with low-income countries having a GNI per capita of $1,025 or less, lower middle-income countries $1,026-$4,035, upper middle-income countries $4,036-$12,475, and high-income countries $13,476 or more.

-- TABLE 2 ABOUT HERE --

Table 2 shows that being a current drinker of alcohol is much more common in high-income than low-income countries, while there is relatively little variation between the national income categories in the annual volume of drinking per drinker. There is not that much variation, either, in the proportion of drinkers who drink heavily (at least 5 drinks on an occasion) at least once a month, though this is more common among drinkers in low-income than in high-income countries. The overall net result, in terms of alcohol consumed per person aged 15+, is that alcohol consumption is 2.58 times as much in high-income as in low-income countries.

-- TABLE 3 ABOUT HERE --

However, Table 3 shows that the pattern by country's income is reversed for the rates of health harm from alcohol, calculated for the *WHO Global Status Report on Alcohol and Health -- 2018* in terms of disability-adjusted life-years (DALYs per 100,000 population) in 2016 attributable to alcohol consumption. The rate of alcohol-attributable DALYs per 100,000 population is highest in low-income and lowest in high-income countries. The combined result of more drinking with higher country income, but more alcohol-related harm with lower income, is that the rate of "harm per litre" of pure alcohol in low-income countries is estimated to be 3.7 times the rate in high-income countries. Looking at the rates of DALYs for specific categories of disorder, which alcohol-related disorders are predominant vary considerably by country income. Alcohol-involved tuberculosis and other infectious diseases are important in low-income countries, but relatively uncommon in high-income countries, while the pattern is reversed (though less dramatically) for cancers.

These results can be compared with a parallel analysis of data from 2016 by Shield and Rehm (2021) using Human Development Index [HDI] scores from the UN Development Programme (UNDP, 2017). The HDI score for a country combines three measures: life expectancy at birth; years of schooling; and GNI per capita. The HDI is thus closer than the income measure used in Tables 2 and 3 to the ideals of the SDGs, by combining other dimensions of development with the national income measure. The results on "harm per litre" from this analysis show a similar pattern of greater harm per litre with each step upwards in the national development index, although the discrepancy between the highest and the lowest categories is not so wide. Thus, comparing the ratios for the other three HDI categories with that for the "very high" HDI category, the "high" category is 1.10 times higher, the "middle" category is 1.84, and the "low" category is 2.47 (calculated from p. 2328 and Supplementary Table S5 in Shield & Rehm, 2021).

The higher health "harm per litre" in poorer countries presumably reflects the interaction with alcohol of a variety of other factors related to societal wealth, ranging from the general health status of drinkers in the society to factors in the physical environment such as the extent of safety guardrails and other protective features on roads and vehicles. As shown in Table 3, infectious diseases and accidental injuries tend to be less prominent among health harms in more affluent countries. As Shield and Rehm (2021) comment, the results suggest that "as nations progress on the HDI scale, alcohol causes less harm per litre consumed, and even though the overall level of consumption tends to increase in this transition, the rates of alcohol-attributable deaths and the disease burden may decrease".

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Controlled drugs. A parallel analysis for drugs to these analyses for alcohol cannot easily be constructed. Using several data sources, Tables 4 and 5 provide an approximation to an equivalent

analysis, showing roughly global results that could be brought together for four "continents" (treating North and South America as a single continent). As the results for Gross Domestic Product (GDP) make clear, this is only an approximation to dividing the world according to per-capita wealth or an index of human development. "Drugs" is an inexact category: papers on risk factors for the Global Burden of Disease tend to mention only opioids, cocaine, amphetamines and cannabis, and to focus primarily on the use pattern itself as a disorder (e.g., "dependence"), with some allocation also for drug-attributed HIV/AIDS, hepatitis, cirrhosis and self-harm (e.g., Degenhardt et al., 2018 -- Supplementary Appendix, p. 50). The results are probably primarily for nonmedical use of the drugs, although the boundary between medical and nonmedical use is permeable and often unclear. For the measure of use rates, we have used and added together percentages using opioids, cocaine and amphetamines (Peacock et al., 2018), as a rough estimate of the proportion of problematic drug users in a population. The estimated percentage of injecting drug users is also used as an alternative measure of problematic use.

-- TABLE 5 ABOUT HERE –

The results in Table 4 suggest that, as with alcohol, drug use is more common in more affluent than in poorer parts of the world. Estimates of the prevalences of use of different drugs in the general population at a more detailed level – for instance, in Table 1.1 in the Statistical Annex to the UNODC's Global Drug Report for 2021 (UNODC, 2021b) – find that use of controlled drugs is in fact overwhelmingly concentrated in richer areas of the world – North America, Western and Central Europe, and Australia and New Zealand – with varying other areas of the world showing up for particular drug classes – e.g., West and Central Africa for cannabis, Southern Asia and the Middle East for opioids, South America for cocaine (UNODC, 2021a, 2021b). However, there is little evidence from the two ratio calculations in Table 5 that the harm for a given measure of drug use is greater in poorer than in richer regions of the world, and the range of variation in ratios is less than was found for alcohol. Although the data measurement and estimates of harm for drugs are more approximate than those for alcohol, cross-sectional data on variation in rates of use and of harm by level of development suggest that drug use rates, like alcohol consumption rates, are likely to go up with increases in societal wealth. But, unlike for alcohol, there is little assurance in the current data for drugs that there will be any substantial reduction in rates of harm per unit of drug use with rising levels of development.

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Health harm from alcohol and controlled drugs in the IHME estimates. Another set of comparisons for the health harm both from alcohol and from controlled drugs can be drawn from the risk factors analyses of the Global Burden of Disease (GBD) studies of the Institute of Health Metrics and Evaluation (IHME). These studies look at patterns of death and of years of life lost through disability or death (Disability-Adjusted Life-Years, DALYs) for a variety of risk factors, two of which are alcohol and "drugs", with the latter referring primarily to nonmedical use of the substances included in the international drug control system. Table 6 shows results for 2019 by the World Bank's four National Income groupings, as in Tables 2 and 3. According to these estimations, rates of DALYs lost due to drug use are unambiguously highest in the high-income countries. The rate of DALYs lost in this grouping is more than six times the rate in the low-income countries. For all national income categories, rates are higher for males than for females, reflecting the general pattern of substantially higher levels of alcohol and drug use by males. In absolute terms, the gender difference is highest in

the high-income countries, but in terms of a ratio of the rates, the gender difference is strongest in the upper-middle country group. Comparing the results for alcohol with those for drugs, the rates for alcohol are higher everywhere, reflecting the overall consistent finding in GBD studies that alcohol ranks considerably higher than drugs among risk factors. Females in the lower-middle income countries are the population segment in which the rates are closest: among them, the DALYs lost due to alcohol are estimated to be only 6% more than the DALYs lost due to drugs. The variation between the national income categories in estimated DALYs lost is proportionally less for alcohol: the greatest ratio is a little less than two for alcohol, while it is over six times for drugs. In all national income categories, the ratio of the male to female rate is greater for alcohol than for drugs. While for females, the rate of DALYs lost rises consistently as the national income gets higher, among males the highest rate of DALYs lost is estimated for the higher-middle category.

Variation in harm per unit of use by socioeconomic status within a society

Cross-sectional comparisons within a society have also consistently shown greater harm per litre or unit of use for lower-status than for higher-status users within a given society. Concerning alcohol, this has become known as the "alcohol harm paradox" (Bellis et al., 2016), with a growing literature proposing and examining potential causal mechanisms (Boyd et al., 2021). The differential harm by income is often quite high. For instance, in Scotland, hospitalisations and deaths attributable to alcohol were 4.4 times as common in the lowest than in the highest income quintile, and similarly disparate for other measures of socioeconomic status; these findings were not substantially changed when adjusted for the person's alcohol consumption and binge drinking (Katikireddi et al., 2017; see WHO, 2018, p. 17). A recent systematic review-based analysis of the relation of alcohol-attributed mortality rate with socio-economic status (Probst et al., 2021) drew on the results of 25 studies, mostly from high-income countries, comparing results from three measures of "socio-economic deprivation": income (4 studies), occupational status (10 studies) and educational level (13 studies). Both for men and for women, alcohol-attributable mortality was found to be considerably higher for the more deprived, i.e., those at a lower level of education, of income or of occupational status, though the gap was generally higher in relative-risk terms for men than for women. Overall, results such as these provide dramatic evidence that social and economic status modifies the effect of alcohol consumption on harm to health. As the authors of the Scottish study put it, "our findings highlight the need for policy to prioritise the tackling of inequalities in alcohol-attributable harms" (Katikireddi et al., 2017).

Quantitative studies such as this primarily come from high-income societies, but there is also evidence from other parts of the world of ways in which poverty and lack of resources can intensify the alcohol-related harms to the drinker and to others around the drinker. For instance, studies in India have illustrated the harms from drinking – usually a man's drinking -- for poor families. In India, over two-thirds of women are lifetime abstainers from alcohol, while a little over one-half of men are current drinkers. Among men who are current drinkers, a little over one-half (55%) are heavy episodic drinkers (WHO, 2018, p. 304). In poor families, the man's heavy drinking often adversely affects the economic status of the family and the prospects for the family and its children moving ahead in the world, as documented in a study of families in a poor neighbourhood in Delhi, North India (Saxena et al., 2003). The study compared 98 families where the man of the house had been drinking alcohol at least three times a week in the preceding month with 99 families where no-

one in the household drank alcohol in that period. In the families with a drinker, 55 of the men drank at least one bottle of spirits per day, and 90 were at least "sometimes" drunk when they were drinking (42 of them "always"). Being significantly in debt was reported by 54 of the families with a drinker, versus 29 of the other families, with the average debt of indebted families twice as large in the families with a drinker. A major illness or injury in the family within the last year was reported by 38 of the families with a drinker, versus 15 of the other families. The researchers conclude that the expenditure on alcohol in families with a drinker meant there were "fewer resources for food and education of children", and "for purchasing daily living consumables" (Saxena et al., 2003). Another study of 36 families in Goa, India where the adult male had a high score on the AUDIT screening questionnaire test for problematic drinking found that much of the family's scanty means were spent on alcohol, while on the other hand the drinking interfered with the ability to sustain employment. So the household as a whole was caught in a "poverty trap characterised by excessive spending, low income, low saving, debt and poor opportunities for breaking the cycle through treatment" (Schess et al., 2020).

Studies of variation by socioeconomic status in the nonmedical use of drugs have also most often been carried out in high-income countries. For one form of harm from drugs, arrest and prosecution for illegal selling or possession, there is much evidence, again primarily from high-income countries, that the poor are more likely to get the blame, with arrest rates often being especially high for visible minority populations. For example, a study of cannabis arrests prior to legalisation of cannabis in five Canadian cities found that, while cannabis use rates were generally similar in youth of different ethnicities, Black and Indigenous youth were generally overrepresented in the arrest rates (Owusu-Benpah & Luscombe, 2021).

There is also clear evidence that low socioeconomic status predicts more adverse health outcomes among drug users. For example, a systematic review found 37 studies of the relationship between opioid overdose and "socioeconomic marginalisation" (SEM), defined broadly to include "labour market exclusion; informal or prohibited income generation;" housing or other "material insecurity; … inadequate income; incarceration; social stigma or isolation; and low socioeconomic status or poverty". In 34 of the 37 studies, "increased SEM was associated with a higher rate or increased likelihood" of opioid overdose (van Draanen et al., 2020). A study of "social determinants of drug-related mortality" in Finland found that such deaths were more common among the "socially disadvantaged", such as those who had lower education or were unemployed (Rönka et al., 2017).

The general finding from cross-sectional studies in today's world is thus that the harm per unit of use is greater for lower-status than for higher-status individuals, and for the user in lower-income than in higher-income societies. For alcohol, at least, where the measurements are more reliable, the risk of trouble for a poor user in a low-income society is at least ten times higher than the risk for a rich user in a high-income society.

Historical patterns: As development occurs, what happens with substance use and harms?

These cross-sectional results both for alcohol and for drugs pose important questions in the context of the SDGs: to the extent that there is success in global development in accordance with the SDGs,

what is likely to happen to rates of consumption and of harm from alcohol and other drugs? How much will the success be undercut by increases in rates of disability due to harms from drug and alcohol use? We turn now to these questions.

Alcohol and other drugs as drivers of economic development. Psychoactive substances such as alcohol and opium have often been seen as attractive commodities which were readily marketable, and which as habit-forming consumables tended to perpetuate demand. The economic benefits from their sale and use are relatively quick and apparent, while many of the drawbacks and harms resulting from their use are hidden and often delayed. As an attractive item of consumption, the industrialisation of alcohol production, for instance, got under way early in the industrial revolution, and opium and other psychoactive substances became "the economic glue of empires" in the period of European colonial expansion until the late 19th century (Room, 1985; Courtwright, 2001). The economic benefit from sale of the substances was not only to private interests: psychoactive substances became a favourite commodity from which to extract revenues for the state. The Venice tobacco monopoly established in 1659 became a model for the rest of Europe (Austin, 1978). The Russian *kabak* system of officially-sponsored taverns became a major source of revenue for the Czars (Herlihy, 2003). Britain's Indian empire was financed with opium sales, notably in China (Trocki, 1999), and Britain fought two wars with China to keep open its opium market there. Until the advent of income tax and general sales taxes in the 20th century, taxes on psychoactive substances – alcohol, tea, tobacco, etc. – were an important part of government revenue in most modern states.

There are many instances historically of governments doing little or nothing to impede the economic gain, at least in the shorter run, from encouraging or at least permitting as much production, sale and use of a substance as possible. With regard to alcohol, for instance, this was the case in Britain during the gin epidemic in the 18th century (Clark, 1988), or in the U.S. during its first years as a republic (Rorabaugh, 1979). In our era, an example of a similar period of peak alcohol availability happened in the years around the dissolution of the Soviet Union – in part as a reaction against the top-down controls of the Gorbachev era, and in part reflecting a deluge of cross-border and other unofficial alcohol as the Soviet Union broke apart – which resulted in the already-high alcohol consumption levels rising to a new peak in 1994 (Nemtsov, 2002).

Delayed societal reactions against high consumption and problems. But while markets for alcohol and other drugs contribute to economic development, at least in the short term, on the other side of the ledger there are many social and health harms from alcohol and other drug use – both in the short term, such as overdoses, traffic crashes and violence, and in the medium and longer run, such as the foetal alcohol syndrome, various cancers and failure in career or family roles. The harms occur not only to the user, but also to those around him or her (Laslett et al., 2020; Room et al., 2019), and to social institutions such as the workplace, and impose response costs on society (Jiang et al., 2022). As we have seen, the harms tend to be greater for poorer than for more well-off users, and in less developed than in more developed societies.

Governments and global intergovernmental agencies are thus faced with conflicting interests in setting policies on the availability and marketing of psychoactive substances (Mäkelä & Viikari, 1977; Room & Jernigan, 2000). Historically, periods of ready free-market availability and promotion for

psychoactive substances have usually been succeeded by moves, whether from above or from below, to place limits on the market, and sometimes indeed to abolish it. A century-long social movement, the temperance movement of the 19th and early 20th centuries, brought an end to the "alcoholic republic" of the early United States (Rumbarger, 1989). Alcohol consumption in the Russian Federation has been substantially reduced since the turn of the millennium as the government has moved in diverse ways to bring the market back under control (Neufeld et al., 2021). In response to the promotion of opium by the 19th-century European empires in Asia, international moves to constrain the market in the interests of public health and welfare got under way with meetings in Shanghai in 1909, leading to the Hague Convention of 1912, an initial intergovernmental agreement which developed over the course of the 20th century into today's international drug control system (Bruun et al., 1975). In 20th century China, the campaign against opium became a symbolic crusade of nation-building and identity formation (Yongming, 2000).

These reactions against high rates of consumption and harm generally occur a considerable time after the increase. In part this reflects that many of the harms from increased alcohol or other drug use occur with a considerable delay. It also reflects that there are considerable vested economic interests in maintaining the larger market for the substance, and that substantial political organising and will is needed for the market to be subjected to controls and limitation. Examining trends in alcohol consumption in Western European countries in the second half of the 20th century, Simpura remarked that "the natural time frame for changes in drinking patterns is a generation, rather than a decade or any shorter period" (Simpura, 2001), and studies of the longer-term patterning of alcohol consumption in a group of developed countries with a temperance tradition have remarked on "long waves of alcohol consumption", with a periodicity of about 70 years (Room, 1991). For the history of opium in China, to cite another example, the periodicity would be longer still (Brook & Wakabayashi, 2000).

The lessons of the "long waves". There is ample evidence that, in the absence of restraints or controls on availability and marketing, consumption of alcohol and other psychoactive substances is likely to increase with increasing prosperity, pushed on by economic interests, whether private or public. Without substantial controls, socioeconomic development is likely to bring more consumption and harm. While the harm per unit of use may eventually go down with a society's increase in prosperity, even in the longer term the burden of harm is likely to increase. And the many factors contributing to the decline in harm per unit will take time to emerge, so that the decrease in harm per unit lags considerably behind the rise in consumption. So, at least in the medium term, the overall burden of harm from a psychoactive substance is very likely to increase with increased prosperity. Thus a coherent overall goal of sustainable development efforts requires that the production, marketing and use of psychoactive substances, however economically advantageous, needs to be limited and controlled.

Fitting psychoactive substance policies into sustainable development

In the context of the SDGs, there needs to be a clear recognition that policies on alcohol and other drugs are not simply a matter for health ministries and the "health sector", but require "unprecedented inter-sectoral and intra-governmental coordination", including "addressing the

commercial and other interests which stand to gain" from increased consumption (Buse & Hawkes, 2015). Concrete goals for reductions in harms need to be set, and evidence-based processes and measures specified for reaching the goals, along with procedures and means for monitoring and evaluation.

For drugs subject to international control, an effort by civil society organisations is already under way to assess national drug strategies in a broader frame of "human rights, health and development". The Global Drug Policy Index rates countries on five dimensions:

- The absence of extreme sentencing and response to drugs, such as the death penalty
- The proportionality of the criminal justice response to drugs
- Funding, availability, and coverage of harm reduction interventions
- Availability of international controlled substances for pain relief
- Development (Nougier & Fernandez, 2021)

But, though this assessment stretches well outside traditional health sector framing, it does not fully address the wider concerns of the SDGs. For instance, the assessment's primary attention in the "development" dimension is on "alternative development", which in the context of the international drug control system had taken on the narrow meaning of a "process to prevent and eliminate the illicit cultivation of plants containing narcotic drugs and psychoactive substances" (UN, 1998). Thus the "development" rating in the Index measures how much the country's drug policy is moving away from this model of "alternative development", which "remains entrenched in an interdiction and eradication approach to illegal crop cultivation" (Nougier & Fernandez, 2021). The Index does not take account of the issues of harm from a commercialised and entrepreneurial legal market which are familiar from the promotion of legal products such as alcohol or breast-milk substitutes (WHO, UNICEF, IBFAN, 2020), and are rapidly becoming evident also in the legal market for cannabis in many US states (Kilmer, 2019; Hall, 2022).

With regard to the SDGs, in the interests of public health and welfare, market controls on commercially available psychoactive products are needed, both within societies and internationally. But since the balance between positive economic effects and negative health and welfare effects differs substantially between different psychoactive substances, and often also differs in different sociocultural circumstances, the optimum policies will vary between substances and to some extent between societies.

Besides the need for policies to be set and acted on at national and subnational levels, there is also the need for policies and agreement at the international level – particularly in the present era of the increasingly cross-border nature of marketing and sales with the rise of digital media and transnational production and marketing (WHO, 2022).

At the international level, relevant policy regimes already exist in the form of the Framework Convention on Tobacco Control and the UN drug treaties. The tobacco convention offers a good example of an international agreement which seeks to limit promotion and discourage use of an attractive but harmful substance, encouraging continuing users to switch to less harmful modes of nicotine ingestion. However, its success in controlling international trade in tobacco has not yet been tested, since the Protocol on this does not come into effect till 2023 (WHO, 2013). Alcohol is not presently covered by any international public health-oriented treaty. While a detailed

Framework Convention drawing on the experience with the tobacco convention has been put forward (Room & Cisneros Örnberg, 2021), there is no present movement in this direction (Burci, 2021). And WHO has recognised the lack of progress so far with its Global Strategy on alcohol (WHO, 2020). And for cannabis, in the light of substantial movements towards legal commercialisation in recent years, there is a good argument for a separate cannabis treaty, to replace its present inclusion in the UN drug treaties (Room et al., 2010).

The UN drug treaties, covering a wide assortment of psychoactive substances, need a substantial re-examination and some reformulation. The basic formulation of the "war on drugs", where use of the drugs is forbidden except under medical supervision, has proved problematic and difficult to enforce. On the other hand, there is plenty of historical experience of the problems with a free and open commercialised market for such attractive but problematic commodities. The UN drug treaties need reconsideration in the light of the SDGs, not only in terms of remedying the problems in the present system (IDPC, 2015; IPI, 2018), but also in terms of how to limit increases in consumption and reduce drug-related harms in the course of economic development.

Conclusion

The framing of the United Nations 15-year socioeconomic development goals in terms of being "sustainable" was an explicit recognition that there were potential complications and indeed harmful factors that tended to come with economic development, including harm – potentially at an existential level – to mankind's physical environment, and increasing social inequalities. In the case of psychoactive substances, attractive and habit-forming but potentially harmful to the user and others around the user, the economic gain to some from an increase in the market as part of the economic development will be at least partly neutralised and may be outweighed by diverse losses in welfare as well as to health, and to others as well as to substance users. So the aim of sustainable development requires recognition of the double-sidedness of increased substance use, and the implementation of market control measures which limit promotion and availability and otherwise act to minimise the harms. The wide framing of SDGs reminds us also that limiting the harms from alcohol and drug use will require building such harm-prevention measures as social protections and universal health care into the implementation of the SDGs. Historical experience with the role of psychoactive substances in economic development shows a repeated pattern of focus on the economic gains of building a market in the substances, with a delayed policy reaction as experience and realisation grows of the burden of consequent harms. In defining the place of psychoactive substances in the pursuit of the SDGs, we need to take to heart the lessons from history of "long waves" of consumption and of consequent harms, and put effort and resources into regulatory policies to prevent and limit the harms.

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Table 1. Seven reports discussing specific relations of alcohol or drugs to the SDGs

	Role of actor	SDGs linked in	Main emphasis of the report
Alcohol			
WHO-Euro (WHO Euro, 2020)	Regional office, intergovern-mental public health agency	1,2,3,4,5,6,8, 10,16	Links of alcohol with ill-health, and with inequality, women's issues, violence, poverty, lost productivity and food insecurity
Movendi (Dünnbier, 2020)	International neotemperance NGO	3,5,6,7,8,10, 12,13,16,17	Alcohol as obstacle to social and economic development
Carlsberg (Carlsberg A/S, 2021)	Transnational brewer	3,5,6,7,8,10, 12,13,16,17	Links of Carlsberg's "4 zeros" goals with the SDGs; only one of these is about effects of the product
Chinese bars (Li, 2020)	Owners/mana-gers of urban drinking bars	5,6,7,8,11,12, 17*	Workplace conditions primary, preventing alcohol harms a minor issue
Drugs			
UNODC (UNODC, 2016)	Intergovern-mental drug control agency	1,(2),3,4,5,(6), 8,(10),(11), (14), (15),(16),17	Adverse environment effects of growing illicit drugs; drug use leads to stigma and disease
International Peace Institute (IPI, 2018)	UN-oriented security think-tank	1,3,5,16,17	Drug policy frames need to have coherence with SDG frames; need a focus on outcomes, not process
International Drug Policy Consortium (IDPC, 2015)	International harm-reduction drug policy NGO	1,2,3,5,15,16, 17	Drug policy reform needed; militarised prohibitionist drug policies divert resources needed for SDGs

Notes: *SDGs deemed highly relevant for a Chinese sustainable drinking bar, among 321 bar staff.
() means a target for that goal is referenced, but not the goal.
SDGs: 1-No poverty; 2-Zero hunger; 3-Good health & well-being; 4-Quality education; 5-Gender equality; 6-Clean water & sanitation; 7-Affordable & clean energy; 8-Decent work & economic growth; 10-Reduced inequalities; 11-Sustainable cities & communities; 12-Sustainable consumption & production; 13-Climate action; 15-Conservation of land ecosystems; 16-Peace, justice & strong institutions; 17-Partnerships for the goals.

Table 2. Alcohol drinking rates and levels, health harm rates from alcohol-attributable diseases, and "harm per litre", by World Bank national income group

	World Bank national income group			
	Low-income	Lower middle-income	Upper middle-income	High-income
% Current drinkers among aged 15+	26.8	30.1	47.4	67.3
Grams of ethanol/day among drinkers	31.3	32.5	34.3	30.9
% Heavy Episodic Drinkers among drinkers (60+ gm ethanol monthly)	45.4	37.7	40.7	38.7
Alcohol per capita among aged 15+ (litres of ethanol per year)	3.8	4.7	7.0	9.8

Note. The highest value in each row is shaded.

Source: WHO, 2018: p. 57. For national income groups: World Bank, 2016.

Table 3. Health harm rates (DALYs) from alcohol-attributable diseases, and "harm per litre", by World Bank national income group

	World Bank national income group			
	Low-income	Lower middle-income	Upper middle-income	High-income
Infectious diseases	441.5	362.0	93.8	27.0
Unintentional injuries	639.8	517.5	553.1	388.3
Intentional injuries	134.9	135.3	201.4	195.7
Digestive diseases	309.7	444.2	220.2	222.6
Alcohol use disorders	252.3	212.9	270.4	266.8
Cardiovascular, diabetes, epilepsy	111.3	197.8	239.4	66.1
Cancers	88.8	89.4	137.6	181.0
Total (DALYs/100,000)	1978.5	1959.0	1719.9	1375.5
Relative "harm per litre" (ratio to High-Income Countries)	3.7	3.0	1.8	1.0

Note. The highest value in each row is shaded.

Source: WHO, 2018: p. 83 for DALYs lost from alcohol-attributable diseases, p. 57 for alcohol consumption.

Table 4. Drug use rates for three illicit drug classes, for four "continents"

	Africa	Asia	Europe	Americas
Level of wealth: GDP per capita	$1,860	$7,850	$31,020	$31,491
Percentage using a drug –				
Opioids	0.30%	0.37%	0.57%	0.27%
Cocaine	0.43%	0.04%	0.74%	1.29%
Amphetamines	0.40%	0.70%	0.45%	1.13%
Total of 3 prevalences	1.63%	1.11%	1.76%	2.69%
Percentage: injecting drug users	0.10%	0.16%	0.65%	0.42%

Sources: Gross Domestic Product (GDP) per capita from Wikipedia, https://en.wikipedia.org/wiki/List_of_continents_by_GDP_(nominal) (accessed 14 September, 2021), derived from International Monetary Fund 2021 estimate, with north and south America combined on a population-proportional basis. Prevalences of drug and injection use from Peacock et al., 2018, p. 1913.

Table 5. Health harm rates (DALYs) attributed to drugs, and "harm per user", for four "continents"

	Africa	Asia	Europe	Americas
Level of wealth: GDP per capita	$1,860	$7,850	$31,020	$31,491
DALYs from drugs, 2019	221.69	311.09	529.94	922.62
Ratio compared to Americas as 1.0, DALYs/total of prevalences	0.40	0.81	0.87	1.0
Ratio compared to Americas as 1.0, DALYs/injecting drug users	1.01	0.89	0.37	1.0

Sources: Gross Domestic Product (GDP) per capita from Wikipedia, https://en.wikipedia.org/wiki/List_of_continents_by_GDP_(nominal) (accessed 14 September, 2021), derived from International Monetary Fund 2021 estimate, with north and south America combined on a population-proportional basis. DALYs for drugs from Global Burden of Disease risk factors, 2019, taken from https://vizhub.healthdata.org/gbd-compare/ (accessed 14 September, 2021). Prevalences of drug and injection use from Peacock et al., 2018, p. 1913.

Table 6. DALYs lost (per 100,000) due to drug use and to alcohol, by World Bank national income group, among males, females and total population; Global Burden of Disease study, 2019

Drug Use	Males	Females	Total
National income group:			
Low	168 (136-204)	101 (80-126)	134 (109-163)
Lower-middle	347 (299-402)	205 (167-252)	277 (235-322)
Higher-middle	548 (472-635)	243 (196-299)	396 (355-466)
High	1155 (1013-1303)	630 (526-737)	891 (771-1020)
Alcohol			
National income group:			
Low	1451 (1163-1760)	334 (254-424)	888 (706-1076)
Lower-middle	1699 (1427-1990)	217 (180-258)	965 (816-1122)
Higher-middle	2501 (2150-2883)	348 (288-419)	1427 (1232-1638)
High	2311 (2052-2608)	736 (604-875)	1519 (1344-1727)

Source: https://vizhub.healthdata.org/gbd-compare (accessed 20 September, 2021). The national income groups are as defined by the World Bank, on the basis of gross national income per capita of countries. The cell is shaded for the national income category with the highest DALY loss rate.