



Reframing the science and policy of nicotine, illegal drugs and alcohol

Peter Anderson and Toni Gual

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ADDICTIONS AND LIFESTYLES IN CONTEMPORARY EUROPE



Alice Rap

www.alicerap.eu

- REFRAMING ADDICTIONS PROJECT -

- Alice Rap was a 5 year €10 million endeavour to study the place of addictions in contemporary European society, involving more than 120 scientists from more than 40 institutions, with over 30 scientific disciplines ranging from anthropology to toxicology.



Contrasting two powerful pieces of evidence:

- i. the harm done by drugs;
- ii. the existing governance approaches that are poorly designed and structured to manage such harm.



Three bases for re-thinking addiction, leading to better harmonization of strategies:

- i. recognition that there is a biological predisposition for people to seek out and ingest drugs;
- ii. heavy use over time becomes a replacement concept and descriptor for the term substance use disorder;
- iii. quantitative risk assessment can be used to standardize harm across different drugs, based on drug potency and exposure.



Two approaches to unify and harmonize addictions governance:

- i. embedding governance within a well-being frame
- ii. adopting an accountability system, a health footprint that apportions responsibility for who and what causes drug-related harm.



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The harm from addictions

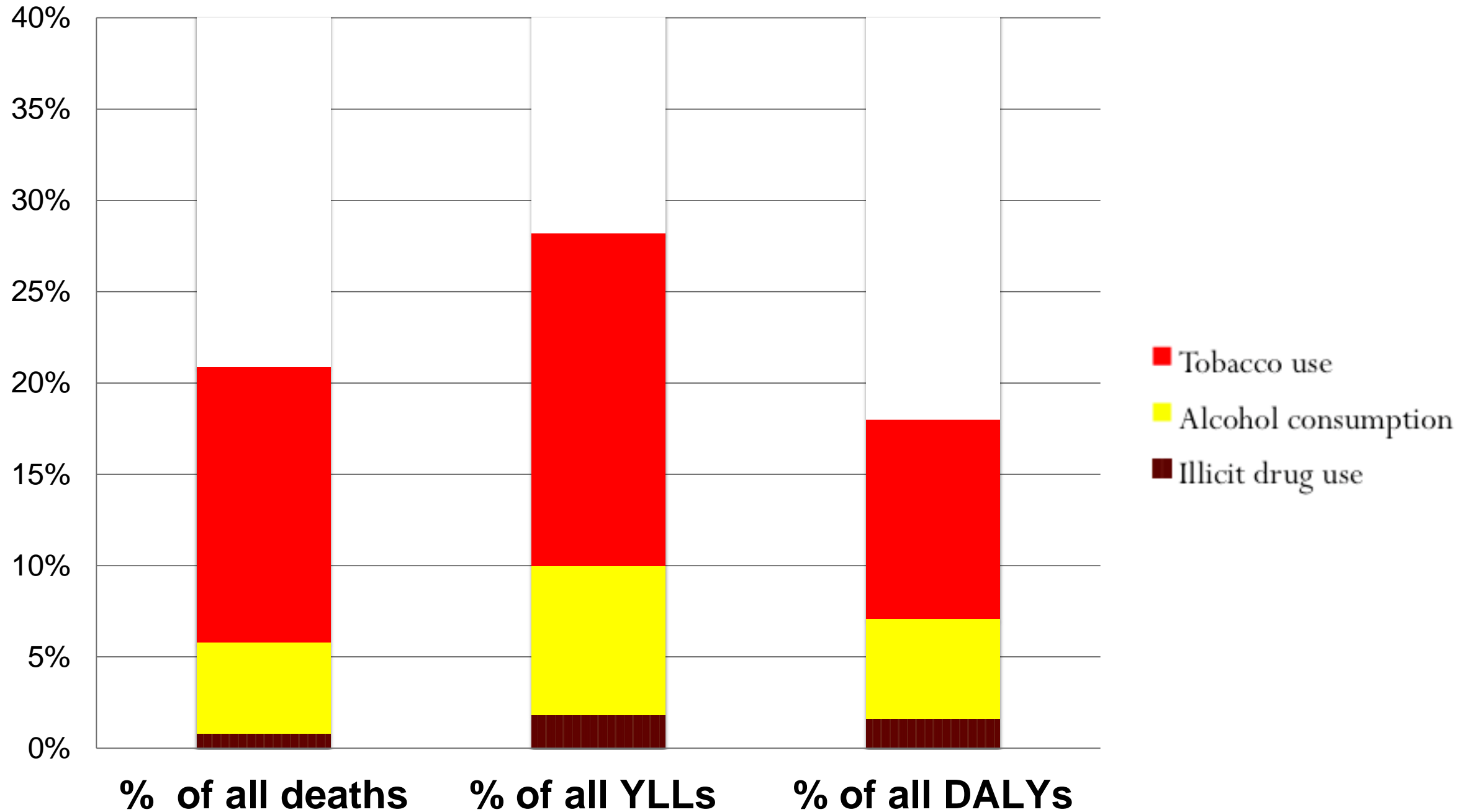
Jürgen Rehm & Kevin Shield

TU Dresden, Germany

The classic Global Burden of Diseases, Injuries and Risk Factors approach has been updated based on new insights in causality (between substance use and health).

Alice Rap contributed to these changes which have been globally implemented in GBD and WHO Global Status Reports.

Proportion of substance-attributable burden of all burden EU 2013 (GBD 2015; own calculations)



* Assuming no overlap between risk factors

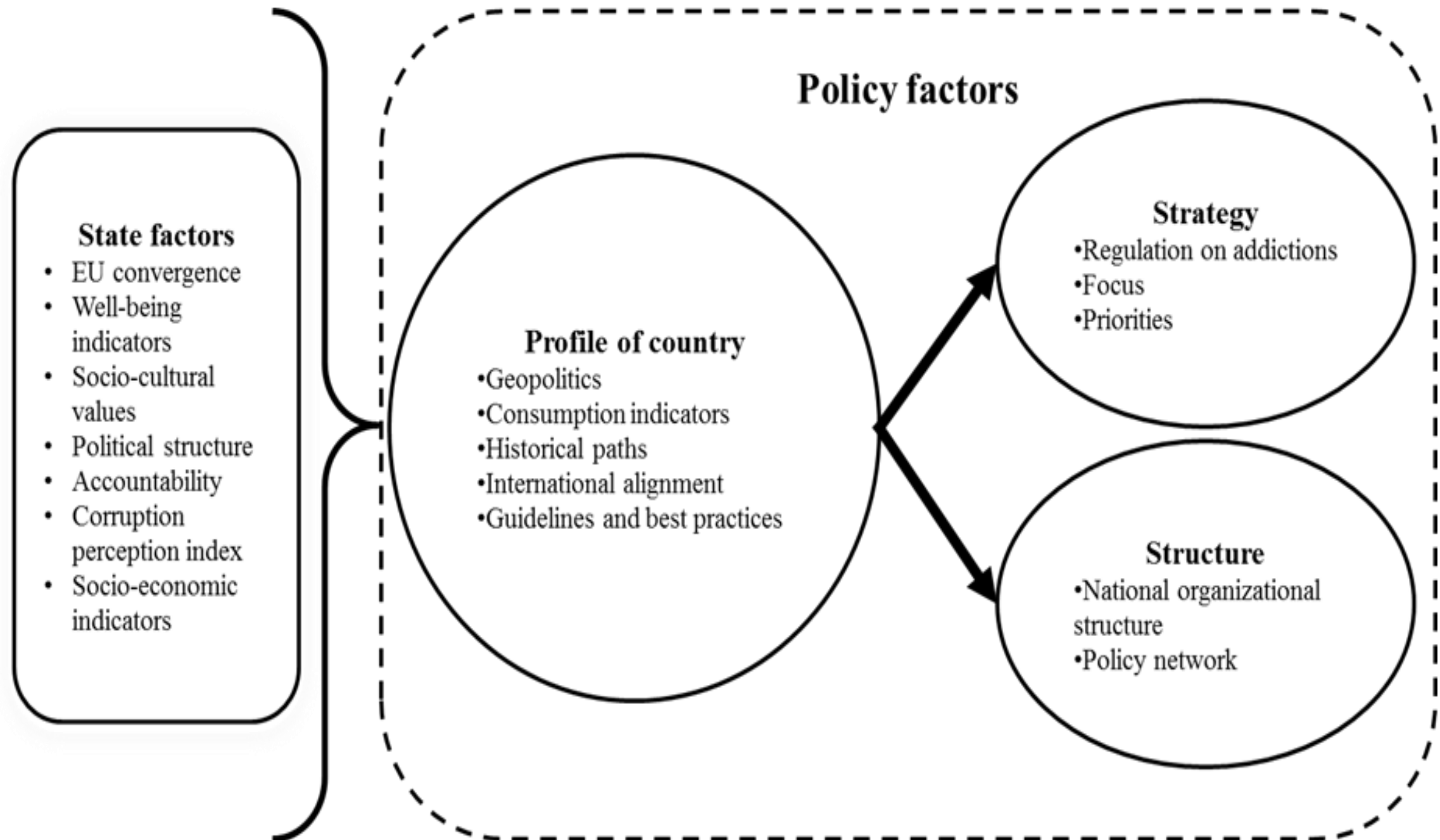
Harm to others: health

- For tobacco, globally second hand smoke amounted to 6% of the deaths, and 7% of DALYs.
- While alcohol has no accepted methodology, the amount of HtO should by far exceed 10% for both mortality and burden (FAS, traffic injury, infectious disease, violence).
- For drugs, HtO has not been calculated but will be more in line with alcohol (traffic injury, violence including systemic violence).

The governance approaches are poorly designed and structured to manage the harm



Europe: model for the analysis



In addiction policies, the **STRUCTURE** of the approach follows the **STRATEGY**

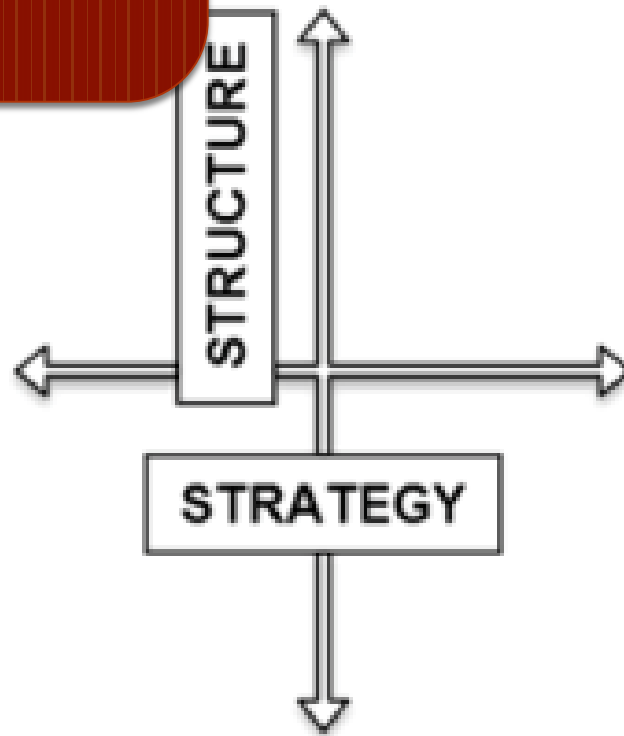
Strategy and structure in addictions policy

Focus on the individual
Ministry of Interior as main body
Criminalization of drug use
Reactive policy-making
Public security approach

Comprehensive policy:
Substances and lifestyles

Legal & Illicit substances together
Long experience
Complex and multilevel structures
Stakeholders involved

Safety and
disease approach



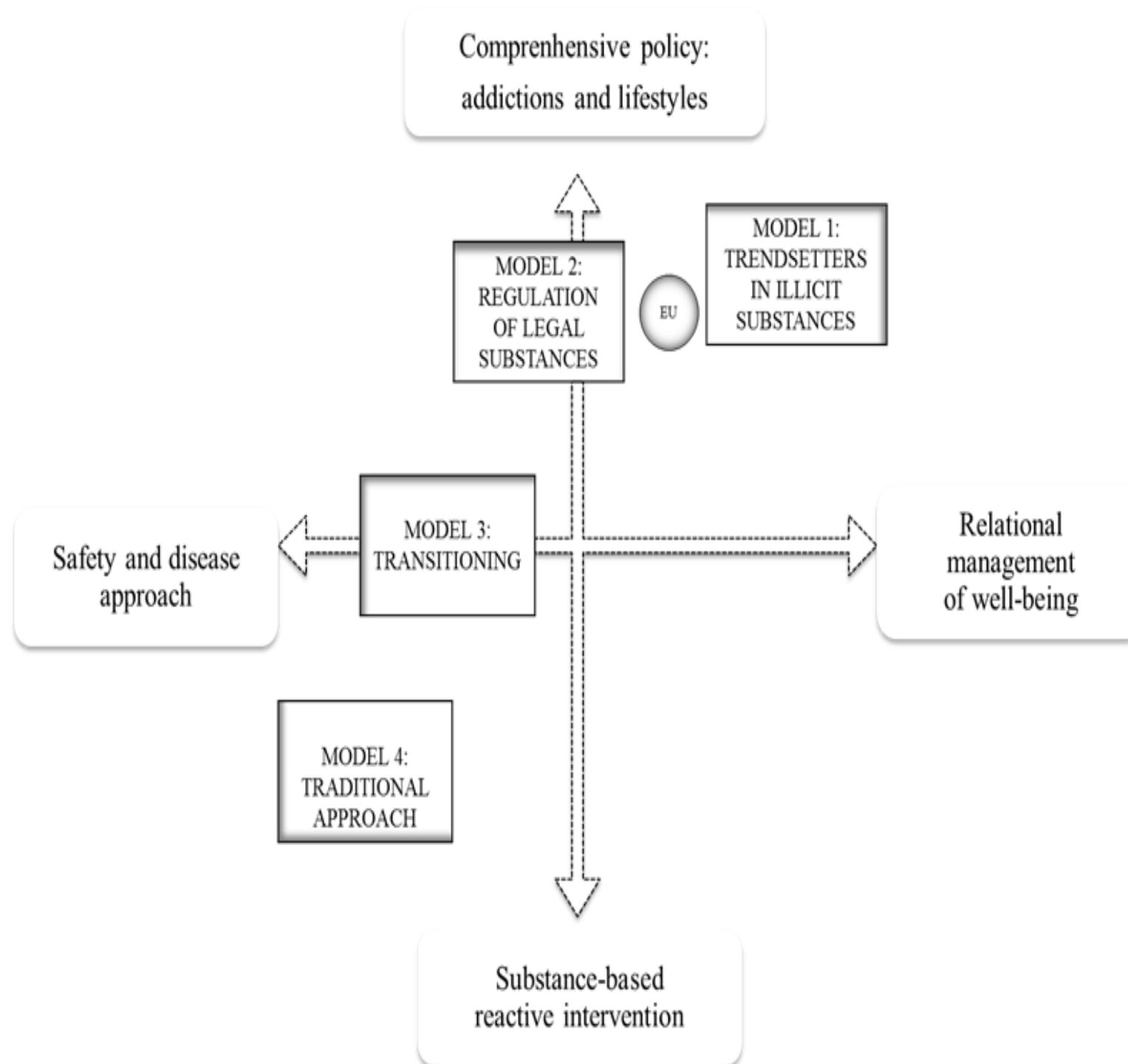
Relational
management of
well-being

Substance-based reactive
intervention

Focus on society
Ministry of Health as main body
Harm reduction. Decriminalization
Proactive policy-making
Health oriented approach

Governance of Addictions.

European models and visions



Three bases for re-thinking addiction, leading to better harmonization of strategies:

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In the story of life over the last 400 million years, one of the main plot lines has been a battle between plants and the animals that eat them.



Of many defense mechanisms, plants produce secondary metabolites, including nicotine, morphine, and cocaine, potent neurotoxins that evolved because they punished and deterred consumption by plant-eating animals.



Animals have evolved to counter-exploit these neurotoxins to inhibit and kill their own parasites, trading off diet quality (and thus growth) for parasite-reduced space.



Worm burden

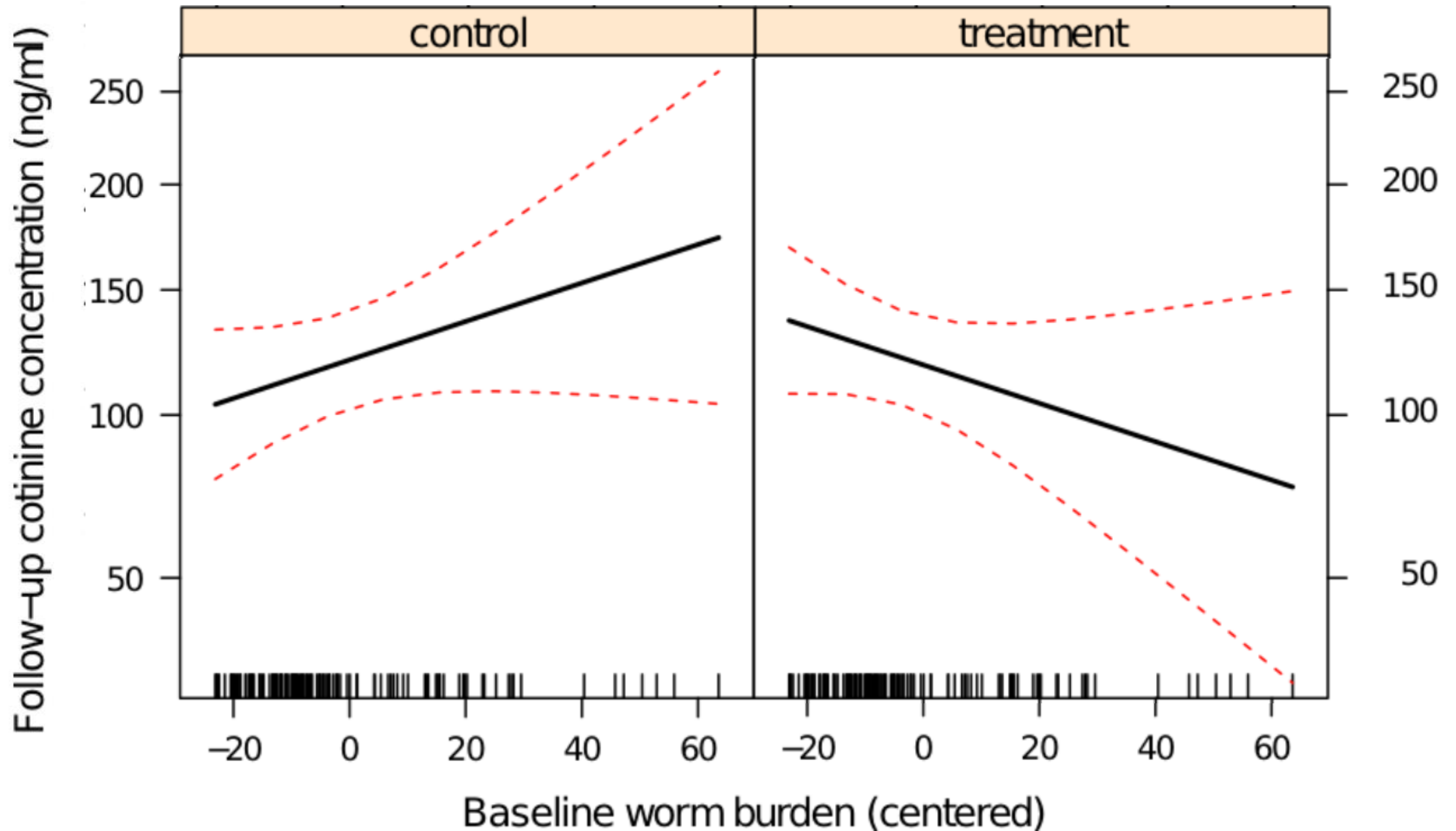
Nicotine treatment for helminth worms in humans

0.5
0.0
-0.5
-1.0
-1.5
-2.0

Cotinine concentration by worm burden (log scale) in Congo basin male hunter gatherers

0 200 400 600
Cotinine (ng/ml)





Impact of albendazole on cotinine concentration by baseline worm burden in Congo basin male hunter gatherers





Thus, human evolution would suggest that we are

“active and functional”

in relation to the drugs that we take, including alcohol and nicotine

At least two implications follow:



First:

Prohibition of drugs is likely to fail – drug use does not result from biological frailty.



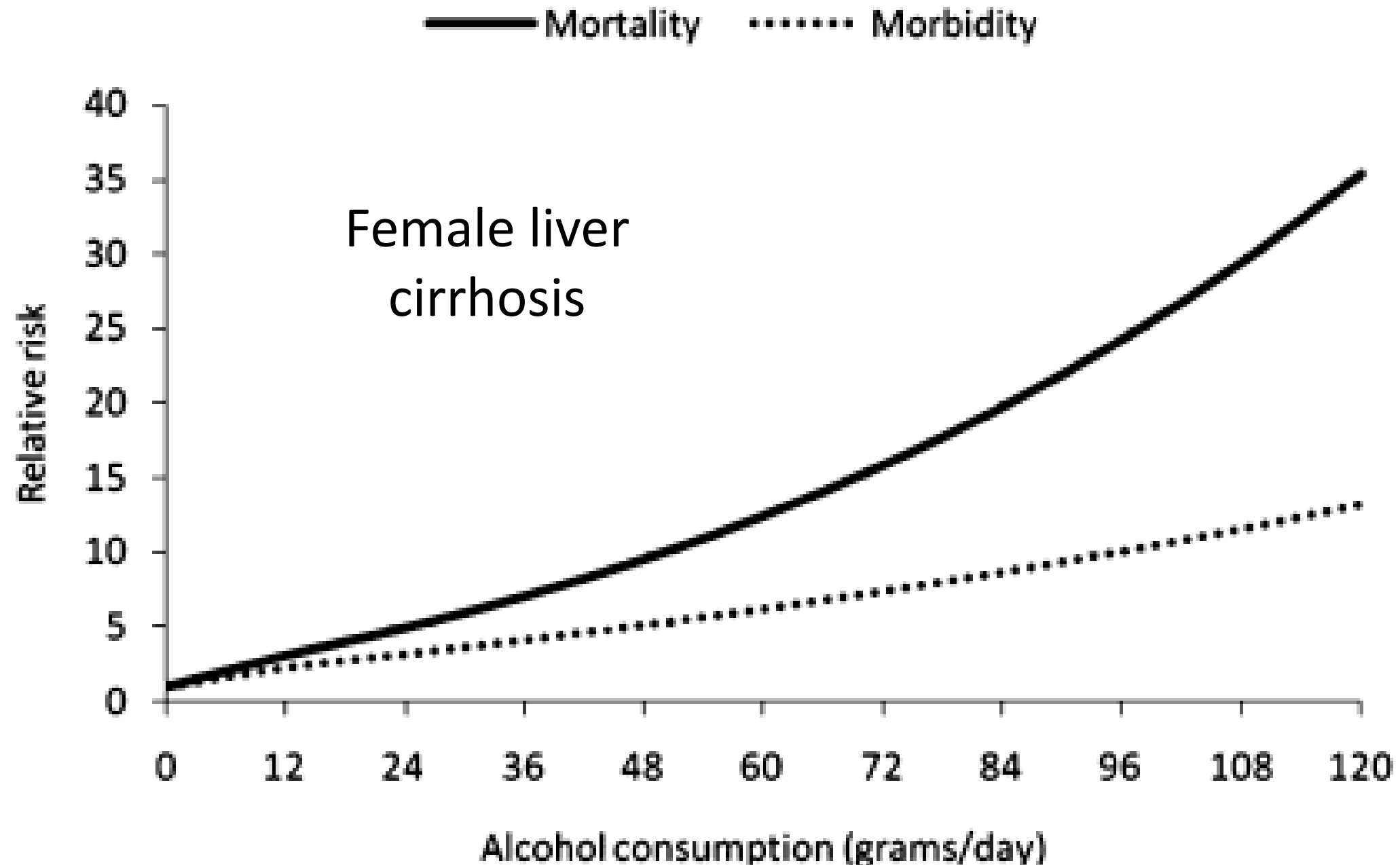
Second:

“Active and Functional” speak to **potency and quantity** as being primary drivers of drug use and related harm.



Heavy use over time - alcohol

Disease risk is a continuous (often exponential) relationship

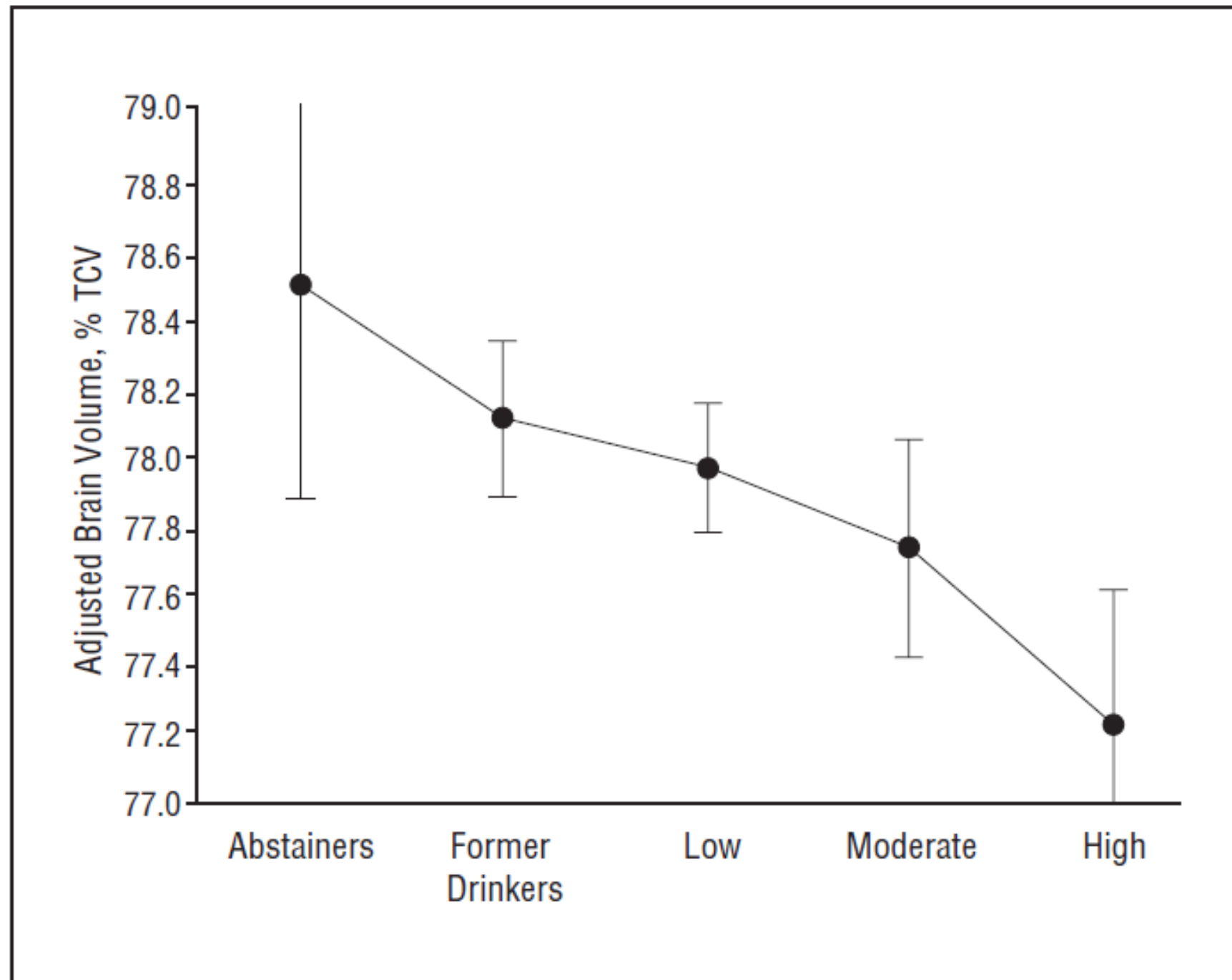


Unmanaged heavy drinking can be associated with even further heavy drinking, often leading to a more difficult to manage state due to associated brain damage.

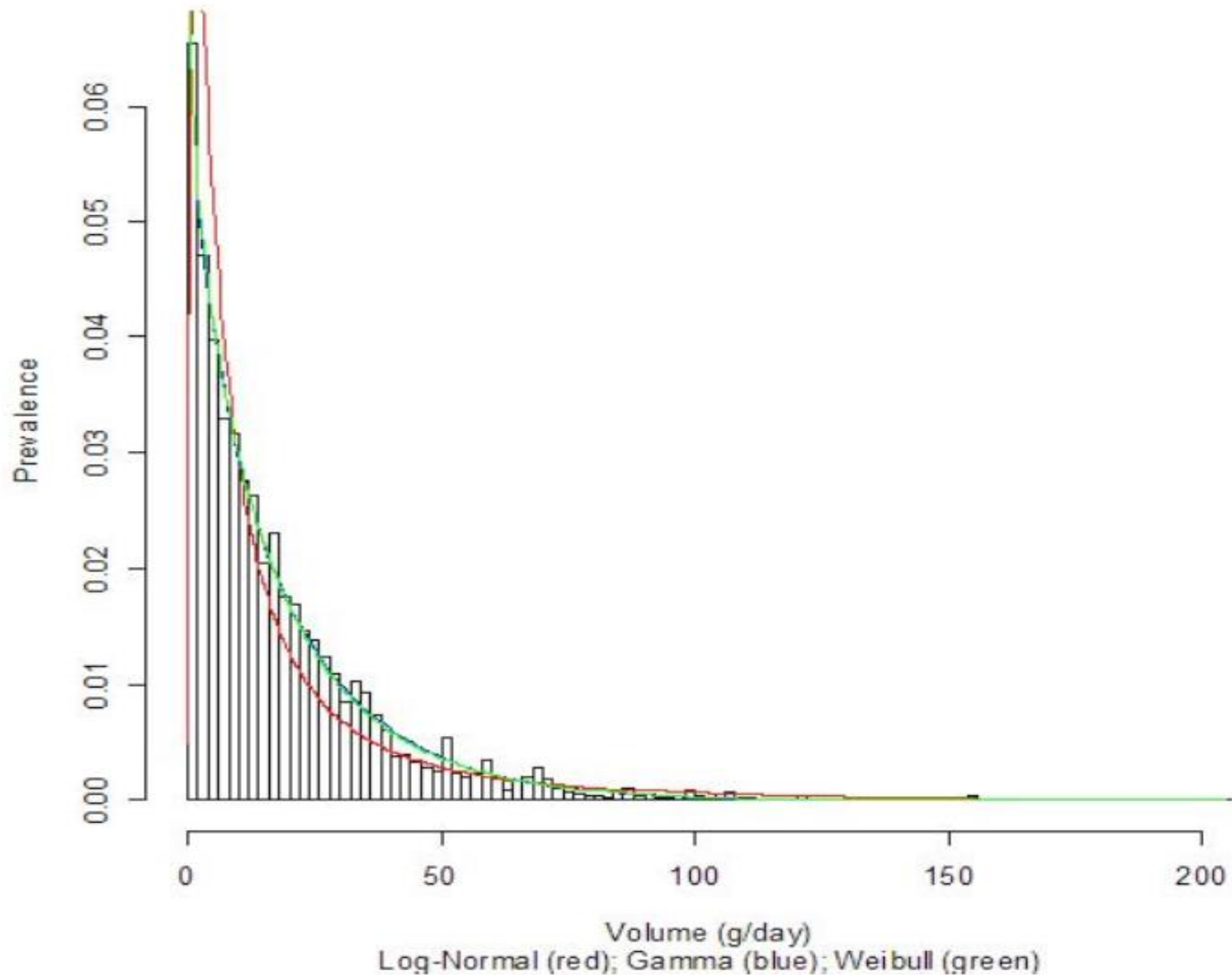
The brain damage, though, is a consequence of the heavy drinking.



Relationship between drinking levels and brain volume from Framingham study



Alcohol consumption is close to log-normally distributed in populations, skewed towards heavy drinking. There is no natural cut-point above which "alcohol dependence" definitively exists and below which, it does not.

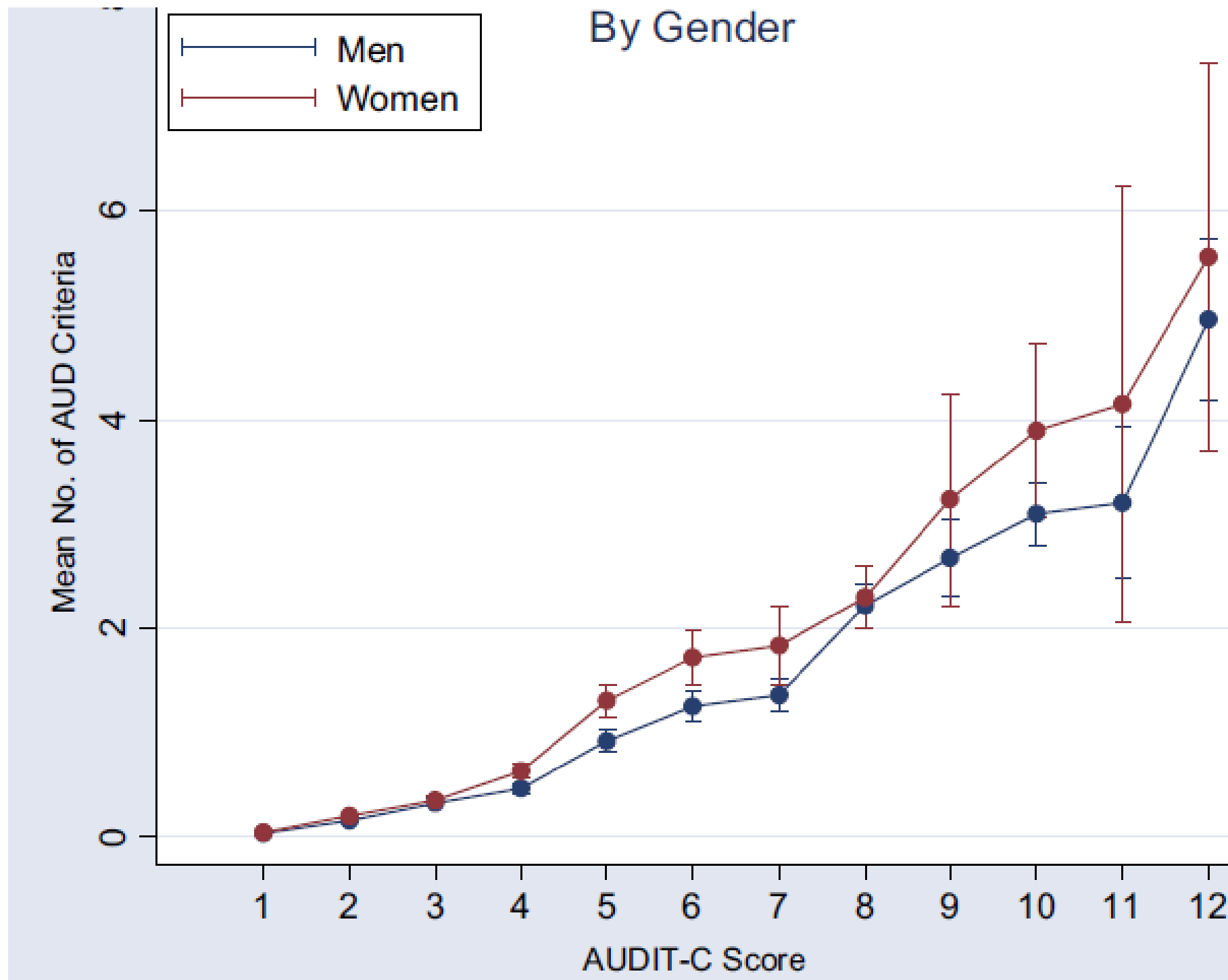


Alcohol dependence/alcohol use disorder: simply defined as a score on a checklist of symptoms

DSM-IV		DSM-5	
In the past year, have you:		In the past year, have you:	
Any 1 = ALCOHOL ABUSE	Found that drinking—or being sick from drinking—often interfered with taking care of your home or family? Or caused job troubles? Or school problems?	1	Had times when you ended up drinking more, or longer, than you intended?
	More than once gotten into situations while or after drinking that increased your chances of getting hurt (such as driving, swimming, using machinery, walking in a dangerous area, or having unsafe sex)?	2	More than once wanted to cut down or stop drinking, or tried to, but couldn't?
	More than once gotten arrested, been held at a police station, or had other legal problems because of your drinking? **This is not included in DSM-5**	3	Spent a lot of time drinking? Or being sick or getting over other aftereffects?
	Continued to drink even though it was causing trouble with your family or friends?	4	Wanted a drink so badly you couldn't think of anything else? **This is new to DSM-5**
Any 3 = ALCOHOL DEPENDENCE	Had to drink much more than you once did to get the effect you want? Or found that your usual number of drinks had much less effect than before?	5	Found that drinking—or being sick from drinking—often interfered with taking care of your home or family? Or caused job troubles? Or school problems?
	Found that when the effects of alcohol were wearing off, you had withdrawal symptoms, such as trouble sleeping, shakiness, restlessness, nausea, sweating, a racing heart, or a seizure? Or sensed things that were not there?	6	Continued to drink even though it was causing trouble with your family or friends?
	Had times when you ended up drinking more, or longer, than you intended?	7	Given up or cut back on activities that were important or interesting to you, or gave you pleasure, in order to drink?
	More than once wanted to cut down or stop drinking, or tried to, but couldn't?	8	More than once gotten into situations while or after drinking that increased your chances of getting hurt (such as driving, swimming, using machinery, walking in a dangerous area, or having unsafe sex)?
	Spent a lot of time drinking? Or being sick or getting over other aftereffects?	9	Continued to drink even though it was making you feel depressed or anxious or adding to another health problem? Or after having had a memory blackout?
	Given up or cut back on activities that were important or interesting to you, or gave you pleasure, in order to drink?	10	Had to drink much more than you once did to get the effect you want? Or found that your usual number of drinks had much less effect than before?
	Continued to drink even though it was making you feel depressed or anxious or adding to another health problem? Or after having had a memory blackout?	11	Found that when the effects of alcohol were wearing off, you had withdrawal symptoms, such as trouble sleeping, shakiness, restlessness, nausea, sweating, a racing heart, or a seizure? Or sensed things that were not there?



Alcohol: There is a smooth line relationship between levels of alcohol consumption and the score on the checklist.



- The signs and symptoms that have been attributed to alcohol use disorder are actually the consequences of heavy drinking.
- Thus, the term “alcohol use disorder” is redundant and the term “heavy use over time” is all that is needed.
- The redefinition to HUOT is likely to reduce the stigma associated with dichotomous labelling, enhancing the scope for more heavy drinking patients to receive advice and treatment.

Quantitative Risk Assessment

In our daily life, we are exposed to a whole range of chemicals that are potentially toxic or carcinogenic – through what we eat, drink, inhale, or place on our skin.





Toxicology is the science and practice to advise on exposure levels that are not too risky.



The EFSA Journal (2005) 282, 1-31

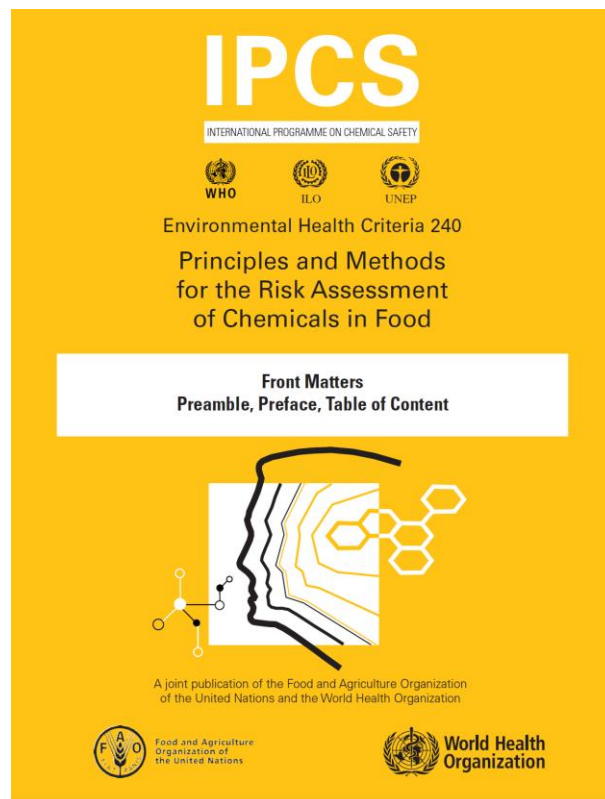
Opinion of the Scientific Committee on a request from EFSA related to

A Harmonised Approach for Risk Assessment of

Substances Which are both Genotoxic and Carcinogenic



Margin of Exposure is the tool that is used.



A MOE of 100 means that one is consuming $1/100^{\text{th}}$ of the toxic benchmark dose (commonly the lowest dose which is 95% certain to cause no more than a 10% incidence of a negative health outcome in animals or humans).

A MOE of 1 means that one is consuming the toxic benchmark dose.

MOE < 1 Extreme Risk

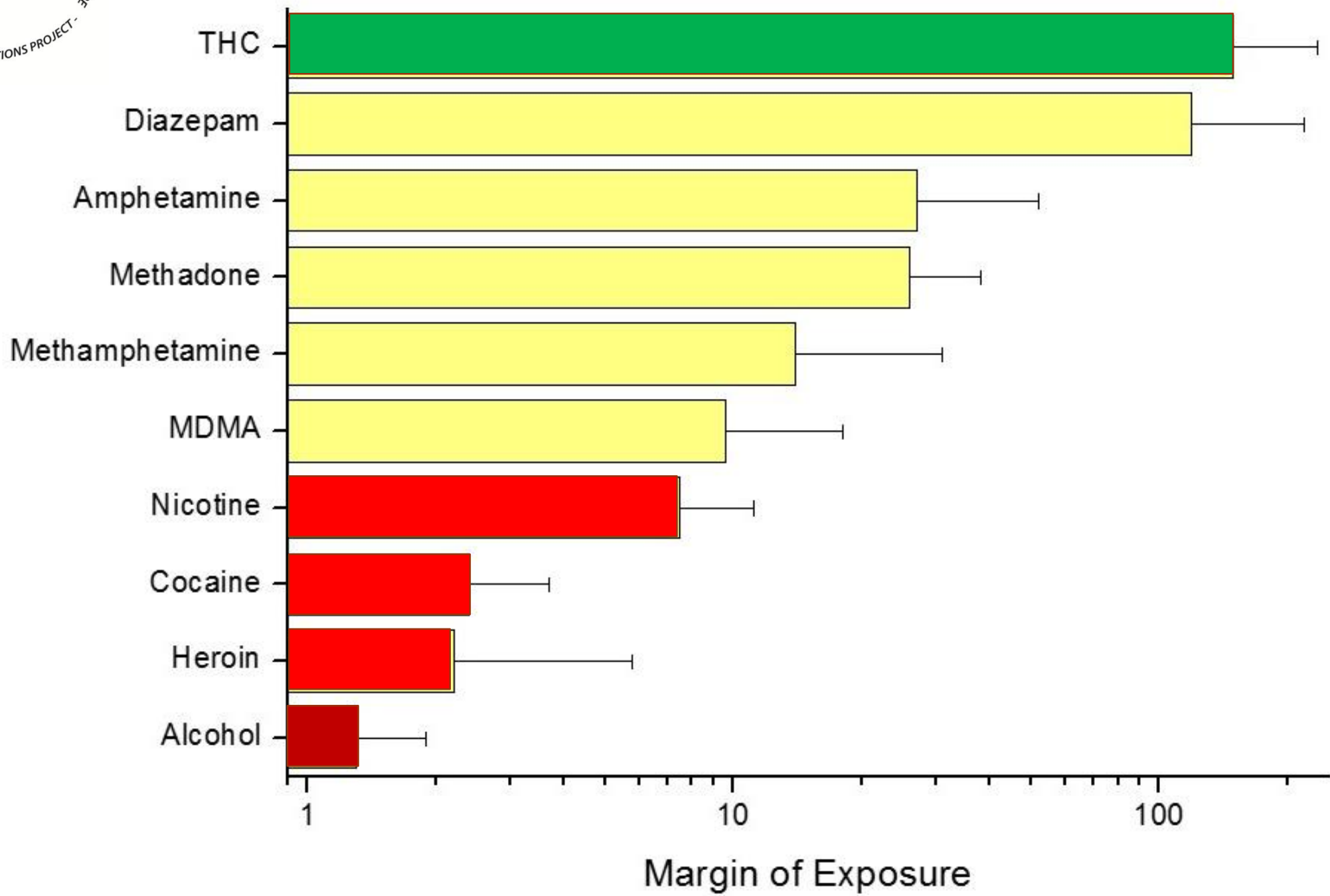
MOE < 10 High Risk

MOE < 100 Risk

MOE > 100 Low Risk for Non-Carcinogens

MOE > 10,000 Low Risk for Carcinogens





Two approaches to unify and harmonize addictions governance:

- i. embedding governance within a well-being frame
- ii. adopting an accountability system, a health footprint that apportions responsibility for who and what causes drug-related harm.



Is the GDP enough?

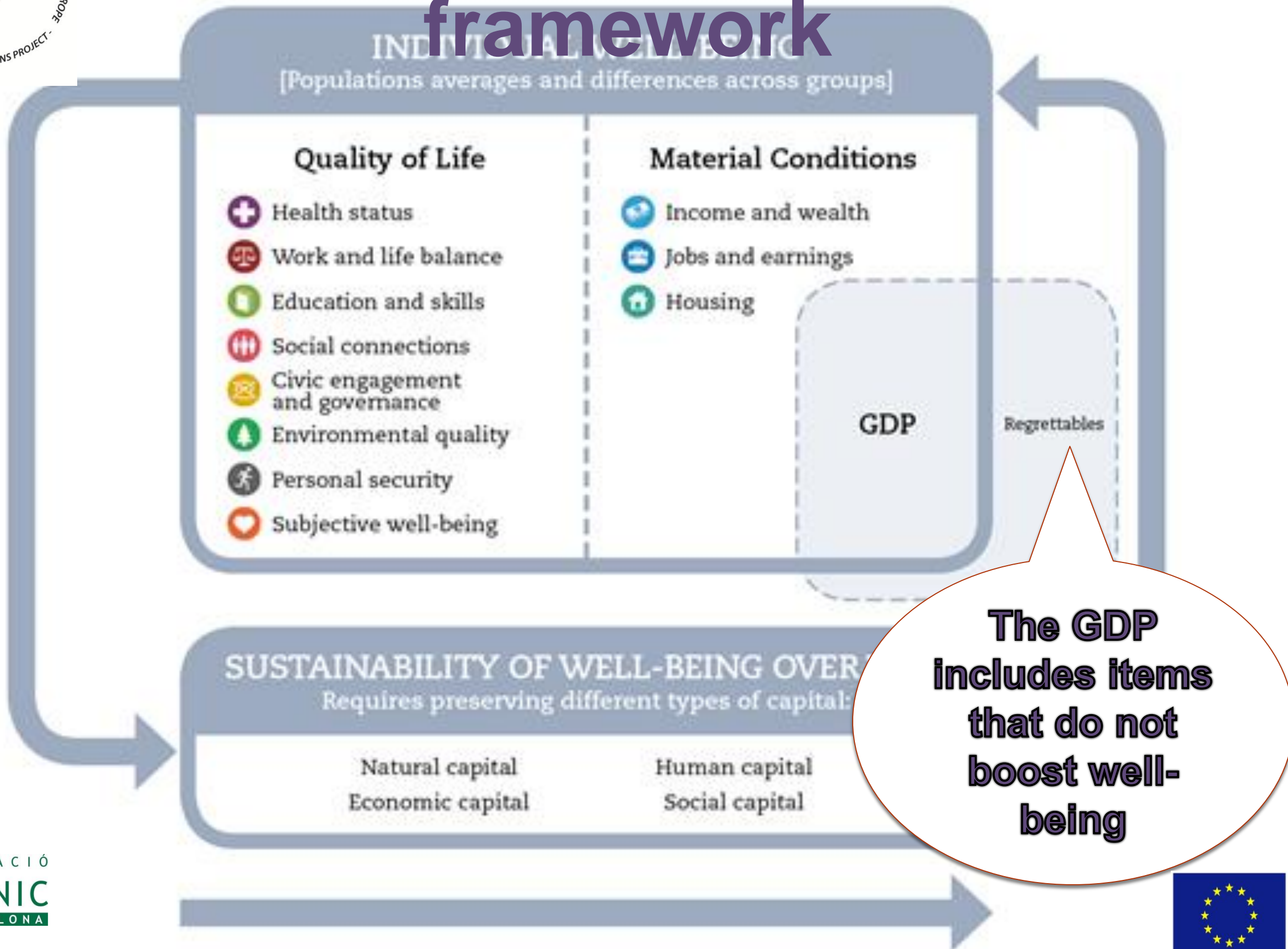
- The reliance on GDP as measure of progress for societies is neither comprehensive or ethically valid
- It places too much emphasis on the material wealth
- It underestimates important aspects of the societal impact of drugs:
 - Intangible costs
 - Most of the harm to others
 - The damaging effects of inequalities
- Well-being has been proposed as an alternative indicator



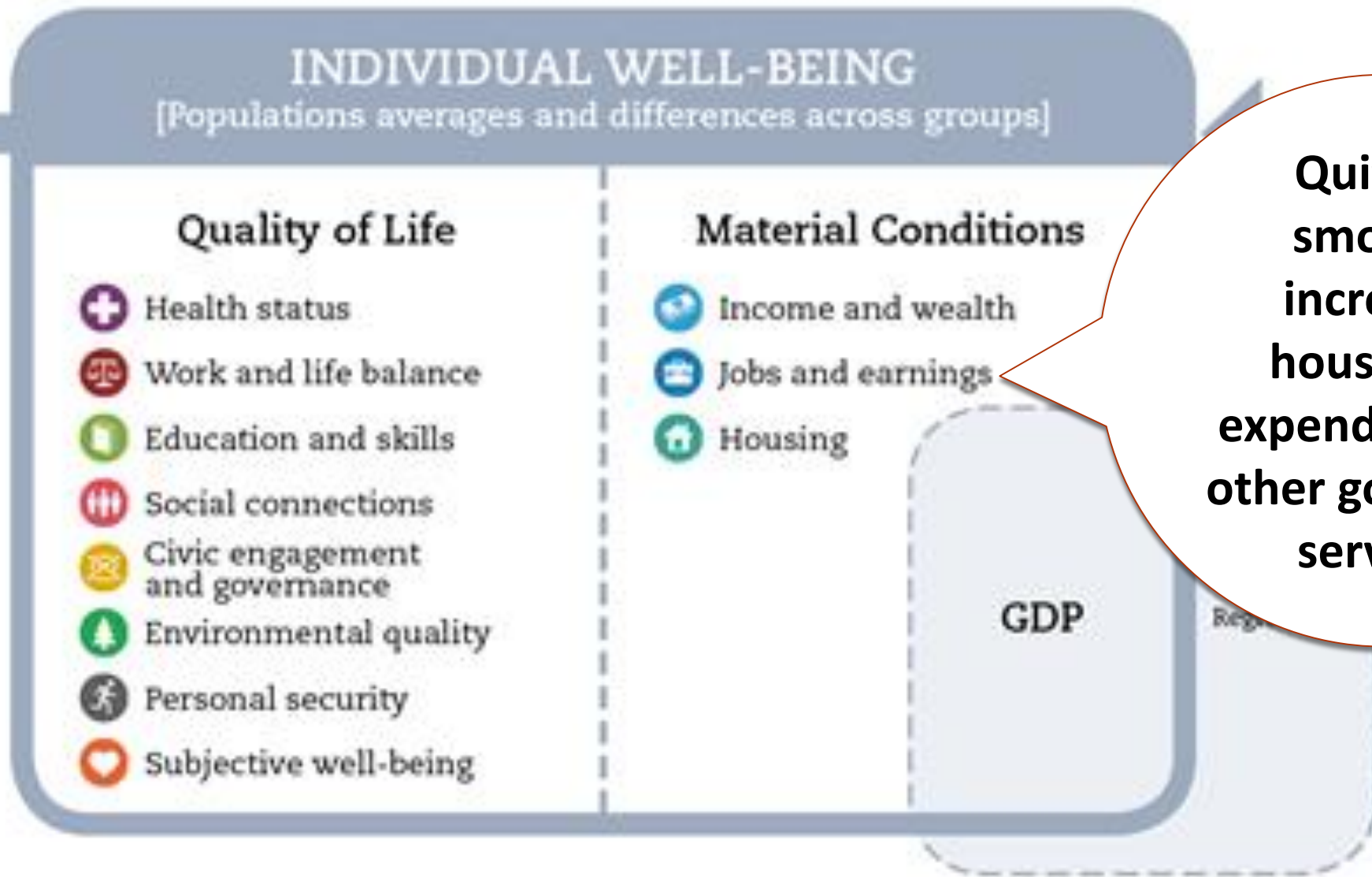
A well-being frame helps to change perspective

- Well-being analyses find that, whilst some policies may reduce health harms, they often come at the expense of:
 - criminalization
 - social stigma
 - social exclusion
- Those unwanted collateral effects detract from individual and societal well-being, and may outweigh the initial benefits

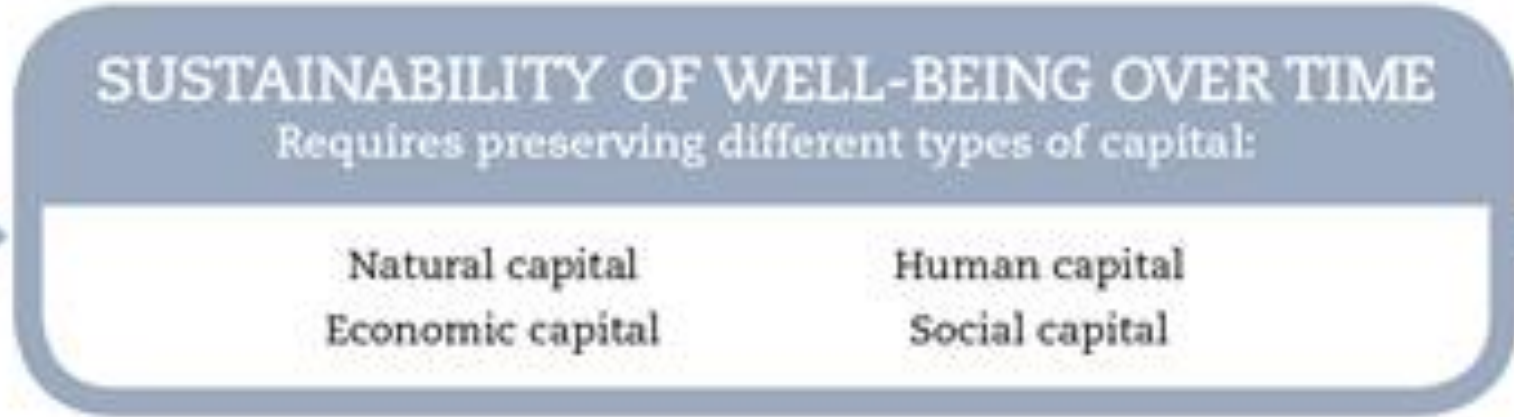
OECD well-being framework



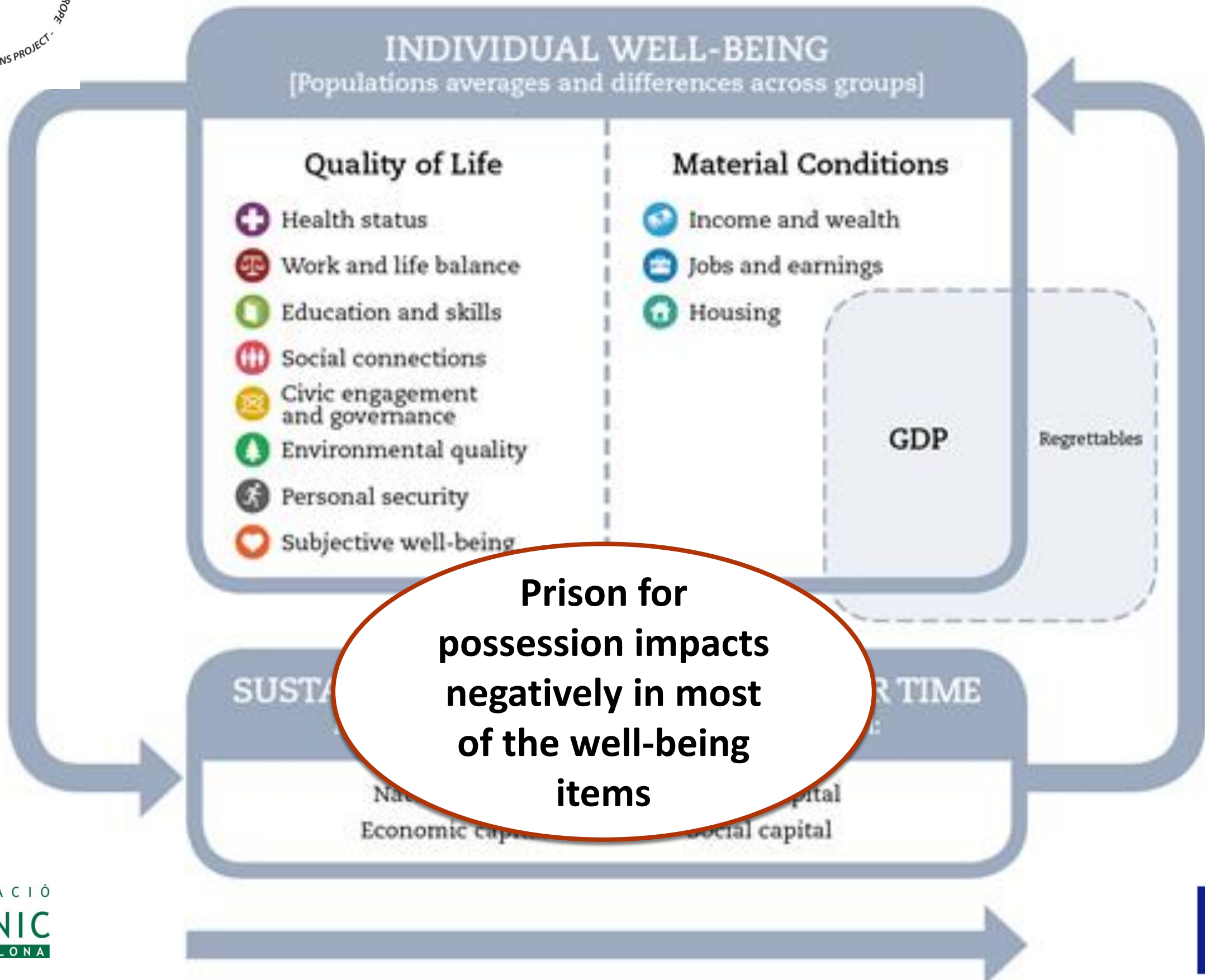
Co-benefits



Quitting smoking increases household expenditure on other goods and services



Adverse side effects



Well-being perspective

Societal and individual Well-being



The need for accountability

The **rules of the game** for stakeholder engagement in the policy cycle is through **accountability for health**

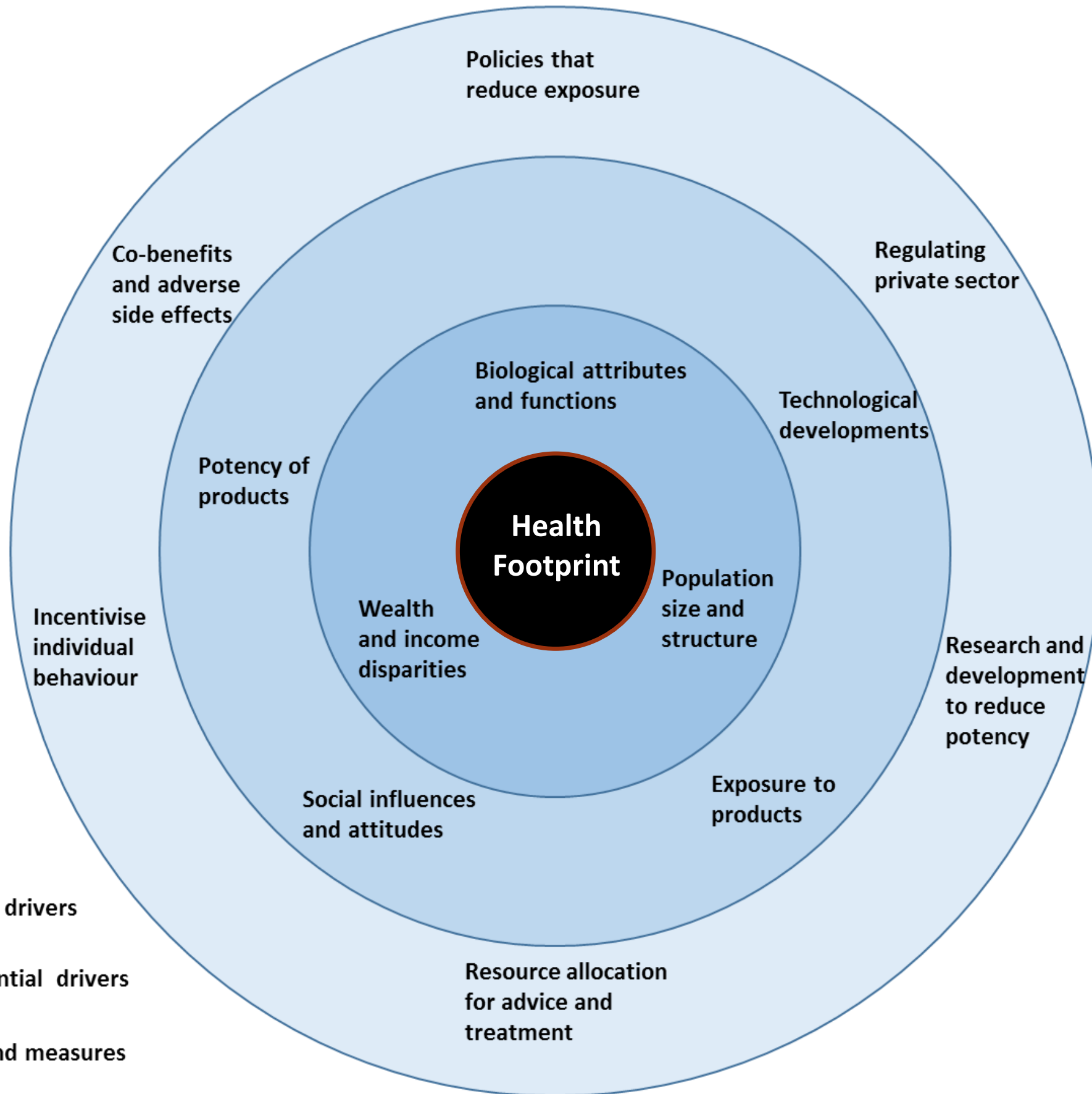
Smart government policy can steer producer companies into reducing harm through smart tax structures that incentivize reduced toxicity of products.



A tool for addictions governance: The health footprint

Modelled on a carbon footprint, a drug-related health footprint is proposed as a measure of drug-related disability adjusted life years (DALYs) produced by actions of an entity.





- Structural drivers
- Circumstantial drivers
- Policies and measures



A tool for addictions governance: The health footprint

The central reason for measuring a drug-related health footprint is to drive and monitor change in reducing drug-related DALYs through enabling targeted actions.



A tool for addictions governance

A health footprint:

- Apportions drug-related DALYs across drivers
- Promotes accountability



A tool for addictions governance

Health footprints:

- Countries, regions and cities
- Sectors and organizations
- Products and services
- Individuals



A tool for addictions governance

Regions	Production in 2012 in thousand hectolitres	attributable DALYs
North America	125,129	749,338
Latin America North	126,189	1,645,115
Latin America South	34,292	428,060
Western Europe	2,931	15,113
Central and Eastern Europe	2,278	48,776
Asia Pacific	57,667	411,601
Global export and holding	7,030	41,869
Global beer company	402,631	3,339,873
	0.13 % of all DALYs, 3.4% of all alcohol-attributable DALYs	



A tool for addictions governance

Governments and Producers should report their health footprint in their annual reports and indicate measures to be adopted to reduce it.



Conclusions:

1. That humans have a biological pre-disposition to seek out a range of drugs would suggest that prohibitionist policies are likely to run into difficulty - and, they have.
2. Legalization does not imply that drug governance is left to market forces alone - the experience of nicotine and alcohol demonstrate that this is not possible.
3. Instead, drug governance requires whole-of-society comprehensive regulation, with adequate and transparent rules of the game for stakeholder involvement, and appropriate international regulatory frameworks.



Conclusions:

4. With a health footprint, who, in the public and private sectors, causes what harm from nicotine, illegal drugs and alcohol can be documented.
5. Public bodies and private companies should be required to publish their health footprints due to drugs on an annual basis, and indicate their monitored plans for reducing the health footprint.



OXFORD

The New Governance of Addictive Substances and Behaviours

Peter Anderson, Fleur Braddick, Patricia Conrod, Antoni Gual, Matilda Hellman, Silvia Matrai, David Miller, David Nutt, Jürgen Rehm, Jillian Reynolds, and Tamyko Ysa



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