OECD

International Agency for Research on Cancer

World Health Organization

# Policy Brief

# The impact of the European Code Against Cancer on health, the economy and society

October 2025

## Key messages

- Cancer places a massive and growing burden on European societies. A recent OECD report on cancer showed that, in the EU27+2, four people are diagnosed with cancer every minute, costing health systems nearly EUR 97 billion annually and reducing workforce productivity by about EUR 50 billion each year. With population ageing and rising treatment costs, these pressures are expected to intensify.
- Europe's Beating Cancer Plan highlights prevention as the most powerful strategy to curb this burden. Beyond saving lives, effective prevention policies would reduce healthcare costs, boost productivity, cut greenhouse gas emissions, and strengthen overall societal well-being.
- The 5th edition of the European Code Against Cancer (ECAC-5) provides up-to-date, evidence-based recommendations to help people reduce their cancer risk. This new edition now includes complementary public policies to create environments that enable healthy choices. This approach closely aligns with the OECD's publication "*Tackling the Impact of Cancer on Health, the Economy and Society*", which showed the considerable health and economic potential of policy action on cancer risk factors.
- This Brief presents selected analyses from the OECD report, making the case for policies to address cancer risk factors (smoking, harmful alcohol use, obesity, unhealthy diets, low physical activity and air pollution), across the 27 European Union (EU) member states, Norway and Iceland (EU27+2).
- If all countries were to achieve the best risk factor rates observed across the EU27+2, this would significantly improve lives:
  - It is estimated to prevent 300 000 cases of cancer per year – including 33% of new colorectal cancer cases and 27% of new lung cancer cases.
  - Premature mortality from cancer as well as other non-communicable diseases would decrease, resulting in a total of **300 000 premature deaths avoided** each year.
  - People would live longer and be happier: there would be almost **half a million fewer cases of depression** every year.

- Action on cancer risk factors also has wider societal benefits for policymakers:
  - Annual cancer healthcare costs are estimated to drop by **EUR 20 billion**, while the cost of care for other non-communicable diseases (NCDs) would be **EUR 41 billion** lower – freeing up vast resources that can be reinvested elsewhere.
  - As people get healthier, they are more able to work, and the workforce of the EU27+2 would gain the equivalent of **2.6 million full-time workers**.
  - Countries with higher health expenditure would see high savings from achieving the best risk factor levels, even if they already have a low prevalence of risk factors.
  - Improved diets would reduce carbon dioxide ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_2O$) emissions by the equivalent of 16 million gasoline-powered cars, or the number of cars in Sweden, Austria and Belgium combined.

## From risk to reward

Every minute, four people in the 27 European Union (EU) Member States, plus Iceland and Norway (EU27+2) are diagnosed with cancer, triggering a cascade of consequences for health systems, economies, and societies. According to OECD analyses, cancer is projected to cost EU27+2 health systems a staggering EUR PPP 97 billion annually over the next 21 years (OECD, 2024[1]). This represents a 5% increase in health expenditure compared to a scenario without cancer, an amount comparable to the entire annual health budget of the Netherlands. Beyond the healthcare burden, cancer imposes a heavy toll on society. Workforce productivity is reduced by approximately EUR PPP 50 billion each year, more than the annual GDP of Latvia. Looking ahead, population ageing, rising expectations for improved cancer outcomes, and the growing costs of innovative treatments and technologies are expected increase treatment cost even higher over the next 25 years (OECD, 2024[1]).

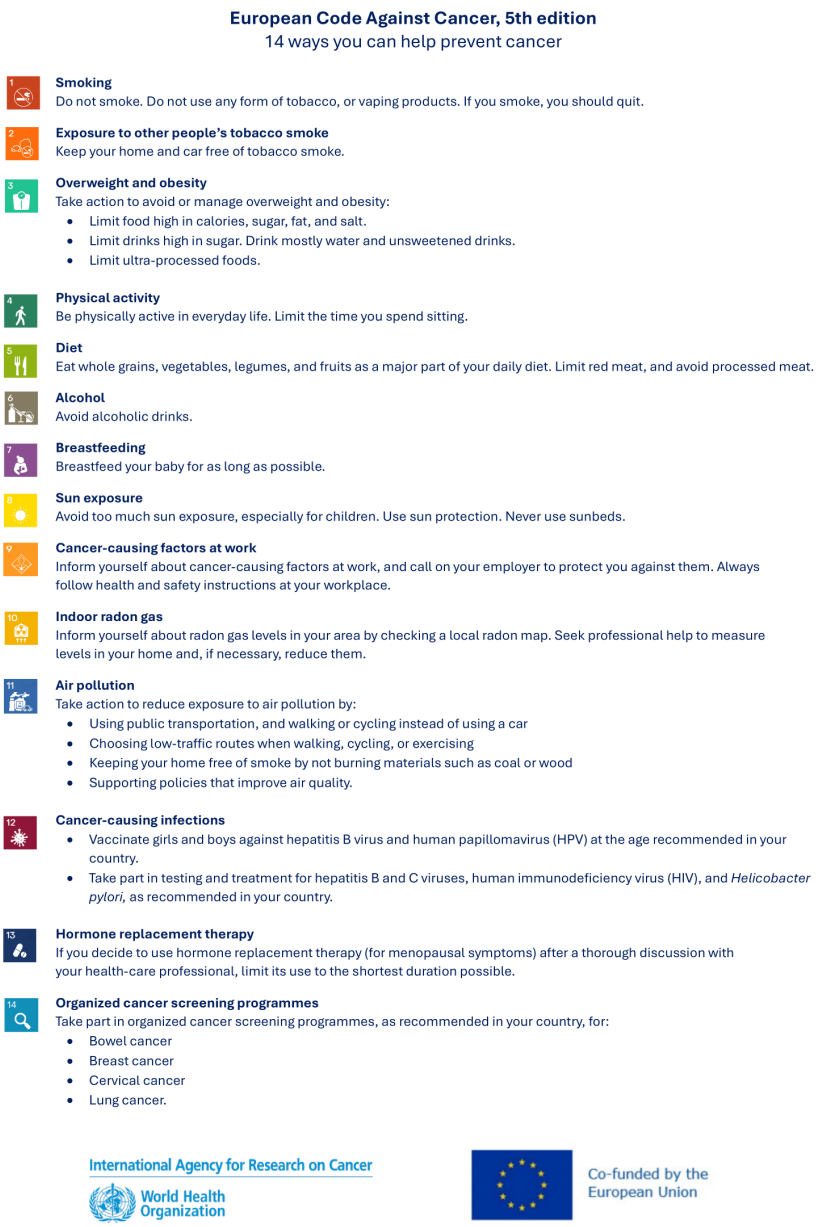
To address the escalating health and economic burden of cancer, the EU launched the ambitious Europe's Beating Cancer Plan in 2021 (European Commission, 2021[2]). At the heart of this strategy lies prevention, the most effective tool currently available to reduce the unsustainable impact of cancer across the continent. Around 40% of cancer cases in Europe are considered avoidable through changes in major behavioural risk factors such as smoking, harmful alcohol consumption, unhealthy diets, and low physical activity. The 5th edition of the European Code Against Cancer (ECAC-5) plays a pivotal role in this effort by offering clear, evidence-based, recommendations that empower people to make informed lifestyle choices that can significantly lower their cancer risk (Figure 1).

ECAC-5 builds on its previous versions with the most up-to-date advice for the public. It also recognises that prevention requires systemic support and places a strong emphasis on the role of public policy in shaping healthy environments, acknowledging that individuals' ability to follow recommendations is often influenced by broader social and economic factors. Practical guidance for policymakers is also provided, showing how targeted regulations, investments, and public health measures can create conditions in which healthier choices are easier and more accessible.

This approach closely aligns with the OECD's publication *Tackling the Impact of Cancer on Health, the Economy and Society*, which outlines a series of concrete, actionable steps in prevention, diagnosis, and treatment that countries can adopt to save lives and reduce costs (OECD, 2024[1]). For instance, in addressing tobacco, the leading risk factor for cancer, the report examines the potential impact of reaching the internationally agreed target of a 30% reduction in tobacco use by 2025 compared to 2010 levels, as an intermediate milestone toward virtually eliminating smoking by 2040 (i.e. reducing smoking prevalence to below 5%).

Policies to promote healthier lifestyles have the potential not only to prevent cancer but also to reduce the burden of other major noncommunicable diseases (NCDs) such as cardiovascular disease (CVD), chronic obstructive pulmonary disease (COPD), diabetes, and dementia. However, the impact goes beyond physical health. By putting in place policies to support the recommendations of the ECAC-5, EU Member States can achieve far-reaching individual, economic and societal benefits. They can improve mental health, strengthen the economy through increased productivity and reduced healthcare costs and reduce greenhouse gas emissions. This policy brief explores the potential rewards of policies to reduce cancer risk factors, presenting a strong case for action.

## Figure 1. The European Code Against Cancer, 5th edition – recommendations for individuals




Source: International Agency for Research on Cancer (2025).

## Imagining a Europe where all countries achieve the best in cancer prevention

Some countries have shown what is possible in terms of risk reduction. For example, in Sweden only 9% of people smoked daily in 2022 – half the 18% average observed across the EU (OECD/European Commission, 2024[3]). In the Netherlands, 61% of adults meet the recommended levels of physical activity, compared to only 32% across the EU on average.

This Brief makes the economic case for implementing the ECAC-5, focussing on lifestyle-related recommendations (i.e. recommendations 1 to 6) and those addressing exposure to pollution (i.e. recommendation 11). It presents results from the OECD Strategic Public Health Planning for Non-Communicable Diseases (SPHeP-NCD) model, comparing the current situation to a scenario in which all countries have reduced their risk factors to match the best levels achieved in the European region (Box 1). The analysis covers six major cancer risk factors: smoking, harmful alcohol use, low physical activity, obesity, unhealthy diets (including diets too low in whole grains, vegetables and fruit, and too high in red and processed meat, and salt) and air pollution.

### Box 1. The OECD SPHeP NCDs model

The OECD Strategic Public Health Planning for Non-Communicable Diseases (SPHeP-NCD) model is an advanced systems modelling tool for public health policy and strategic planning. The model is used to predict the health and economic outcomes of the population of a country up to 2050. The model produces a comprehensive set of key risk factors (e.g. obesity, harmful alcohol use, tobacco smoking, unhealthy diets, pollution, low physical activity) and their associated NCDs. The model covers all the EU/EEA countries.

The model uses country-specific demographic and risk factor characteristics by age- and sex-specific population groups. These inputs are used to generate synthetic populations, in which each individual has a certain risk of developing a disease each year. The model uses population predictions to adjust the size and demographic profile of country populations in the future but maintains current (age- and gender-specific) rates for risk factors. In other words, it does not predict any future trends in risk factor prevalence, other than those caused by changes in demographics. Based on this information, the model calculates indicators such as life expectancy, disease prevalence, mortality, healthcare cost, labour market and other well-being outputs.

This policy brief focusses on the ECAC-5 recommendations targeting unhealthy lifestyles and air pollution. The baseline scenario was compared to a scenario in which cancer risk factor prevalence rates were aligned to the best rates observed across the 27 European Union Member States, plus Norway and Iceland (EU27+2), for each age and sex group. A full implementation of the ECAC-5 recommendations would generate even greater benefits than those estimated in this analysis. This is primarily because the ECAC-5 encompasses a broader set of recommendations than those explicitly modelled in this brief. Moreover, even within the scope of promoting healthier lifestyles and reducing air pollution, the analysis adopts a conservative yet realistic approach, reflecting progress already achieved by some EU Member States.

For more information on the OECD SPHeP-NCDs model, see the SPHeP-NCDs Technical Documentation, available at: http://oecdpublichealthexplorer.org/ncd-doc.

For more information on the scenarios modelled, see the OECD report *Tackling the Impact of Cancer on Health, the Economy and Society* (OECD, 2024[1]).

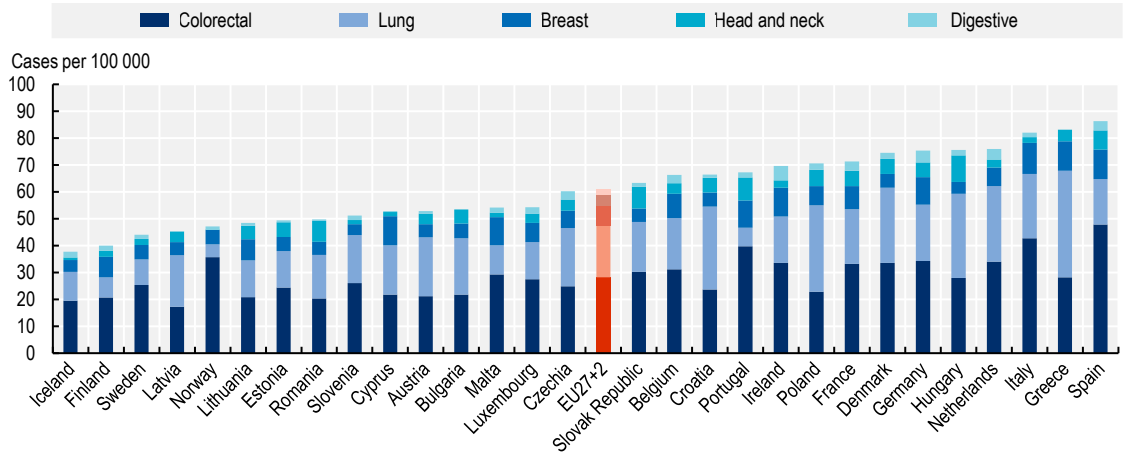
## Longer, healthier, and happier lives

In a healthier Europe where all countries achieve the best risk factor rates observed across the EU27+2, fewer people would get cancer. It is estimated that there would be nearly **300 000 fewer new cases of cancer** per year. Improvements in diet alone would prevent up to 107 000 cases of cancer per year, while achieving the best smoking rates in Europe would prevent another 71 000 cases.

In most countries, the largest impact would be seen on colorectal cancer, with lung cancer a close second (Figure 2). Across the EU27+2 countries, **33% of new colorectal cancer cases** would be avoided, and **27% of new lung cancer cases**, if all countries achieved the best risk factor rates.

### Figure 2. Reducing risk factors could prevent nearly 300 000 cases of cancers, especially in the colorectum and lungs

Cancer cases prevented (cases per 100 000 per year) if all countries achieved the best risk factor rates observed across the EU27+2, average over 2023-50

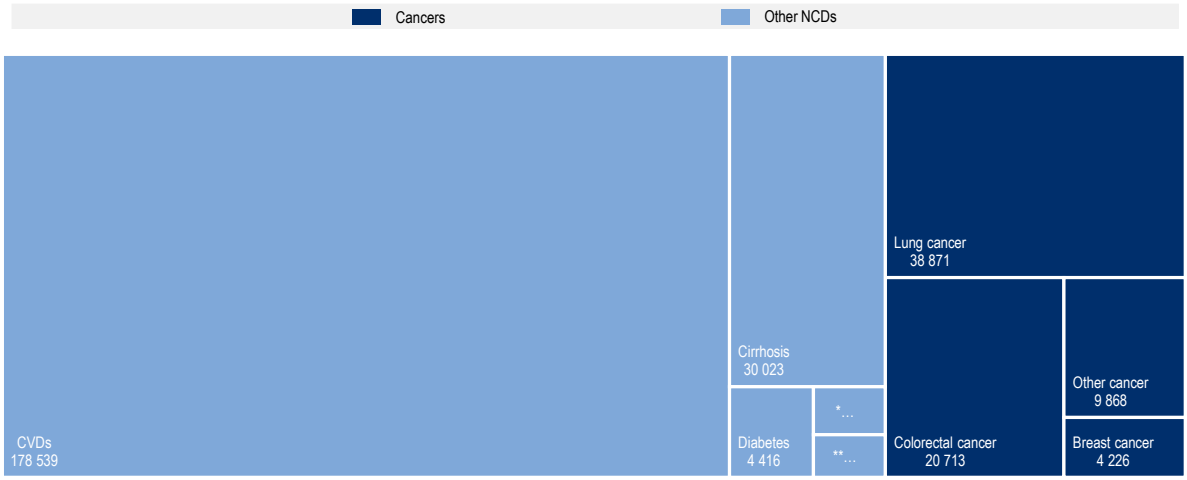



Note: Digestive includes liver, oesophageal, pancreatic, and stomach cancer; head and neck includes lip and oral cavity, larynx, other pharynx, and nasopharynx cancer.
Source: OECD SPHeP NCDs model, 2024.

Premature mortality from cancer would also decrease, by a total of nearly **75 000 premature cancer deaths** per year. But the impact is also felt in other diseases: premature mortality from CVDs would reduce by nearly 180 000 per year, and there would be 30 000 fewer premature cirrhosis deaths. In total, almost **300 000 premature deaths (i.e. deaths in people under the age of 75) from NCDs** would be prevented if all countries achieved the best risk factor rates observed in Europe (Figure 3).

## Figure 3. Reducing risk factors could prevent nearly 300 000 premature deaths per year from cancer and other NCDs

Reduction in premature mortality (deaths in people under the age of 75) in the EU27+2 countries if all achieved the best risk factor rates observed across the EU27+2, total number of premature deaths avoided per year, average over 2023-50

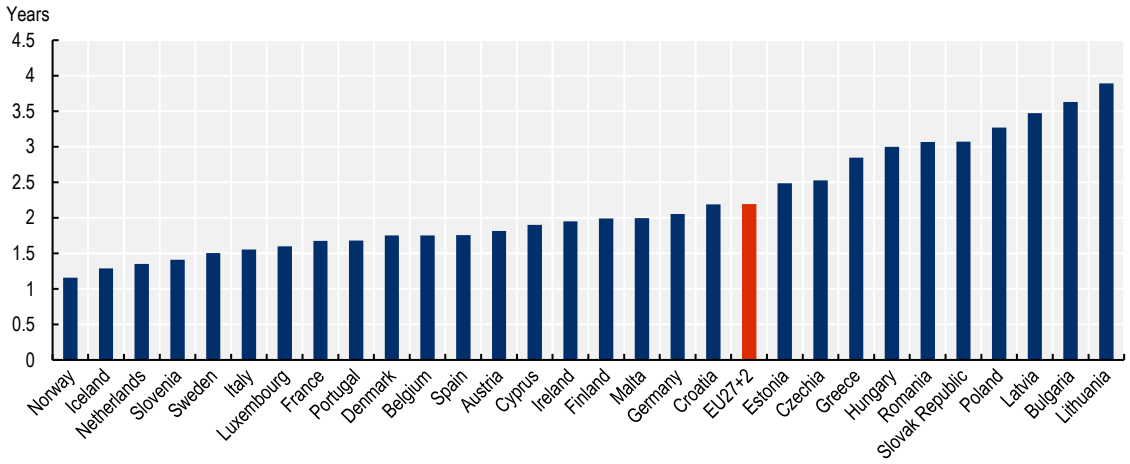



Note: *… = COPD : 1 998 ; **… = Dementia: 1 775.
Source: OECD SPHeP NCDs model, 2024.

As a result of reduced premature mortality, people in Europe would be living longer – the average **life expectancy would increase by more than two years** (Figure 4). People would also be living happier: there would be almost **half a million fewer cases of depression** every year. While the size of the impact varies across countries, all stand to gain from addressing cancer risk factors.

## Figure 4. Reducing risk factors would improve life expectancy by an average of more than 2 life years across EU27+2 countries

The impact of achieving the best risk factor rates observed across the EU27+2 on the average population life expectancy in years, average over 2023-2050




Source: OECD SPHeP NCDs model, 2024.

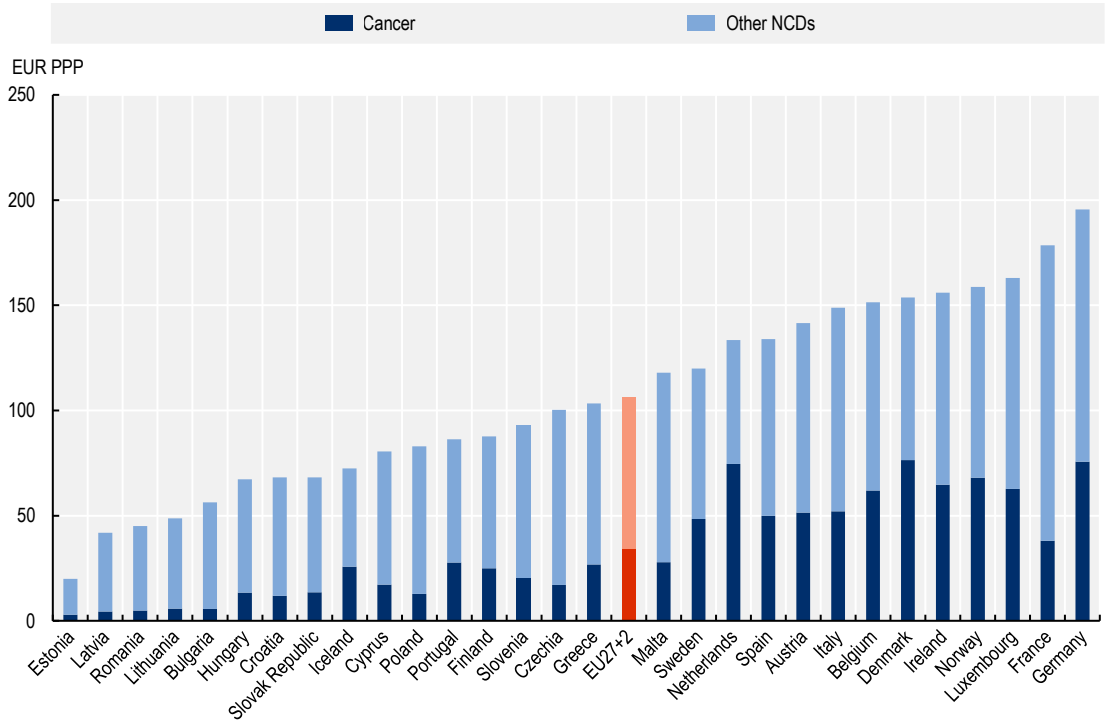
## A stronger and resilient economy

With better health comes lower strain on our health systems. If all countries were to achieve the best risk factor prevalence levels observed across the EU27+2, annual cancer healthcare costs would drop by **EUR 20 billion**, while the cost of care for other NCDs would be **EUR 41 billion** lower – freeing up vast resources that can be reinvested in schools, innovation, green energy, or anywhere else society needs them most.

Countries with higher health expenditure see high savings from achieving the best risk factor levels, even if they already have a low prevalence of risk factors (Figure 5). On average per year, EU27+2 countries would **save EUR PPP 34 per capita on cancer healthcar**e, and another **EUR PPP 72 per capita on care for other NCDs**, by aligning to the best risk factor rates in Europe. However, some European countries with high healthcare cost stand to gain more than EUR PPP 150 per capita, per year, in healthcare expenditure.

### Figure 5. All countries can achieve cost savings from addressing cancer risk factors

Health expenditure saved (EUR PPP per capita, per year) if the best risk factor prevalence observed across the EU27+2 was achieved, average over 2023-2050



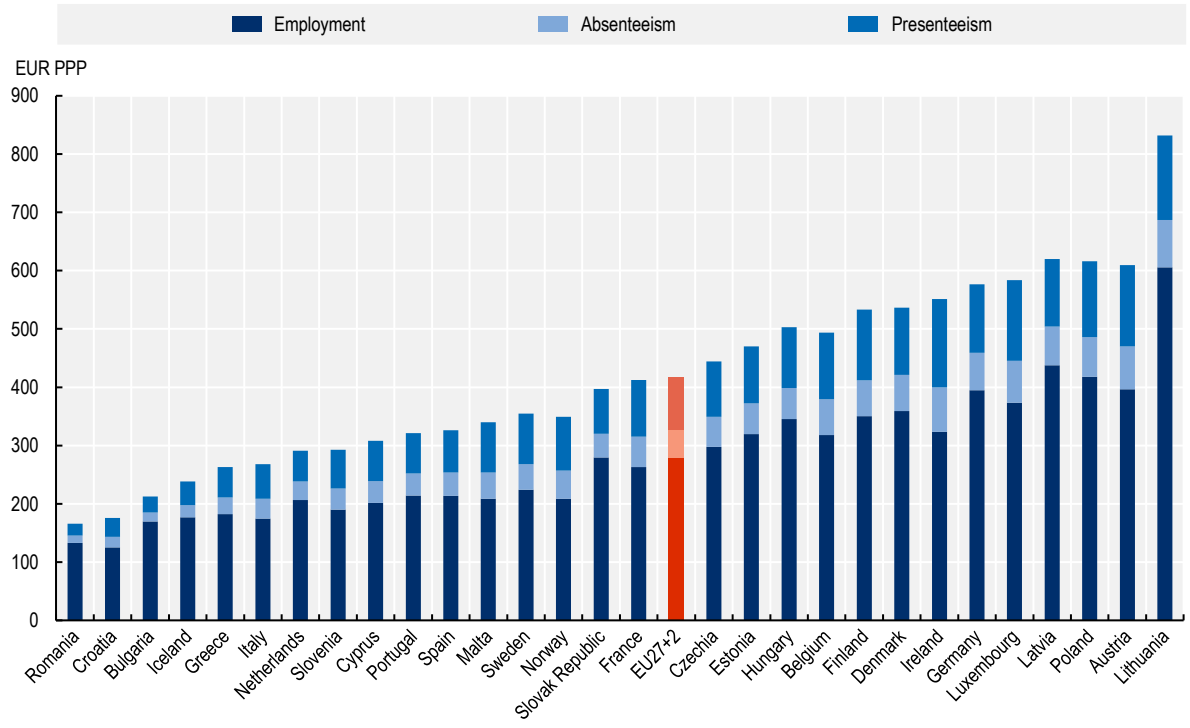

Note: Other NCDs include CVDs, diabetes, dementia, COPD and cirrhosis.
Source: OECD SPHeP NCDs model, 2024.

Evidence shows that people with cancer are significantly less likely to be employed and to work part-time. Cancer patients also often require time off work for treatment, recovery, and medical appointments, leading to absenteeism. Moreover, individuals may experience fatigue, cognitive difficulties, and other side effects that can affect their ability to perform at their usual level (presenteeism). All these effects have an impact on the output of the workforce.

If all countries were to achieve the best risk factor prevalence levels observed across the EU27+2, this would reduce the burden of cancer and other NCDs, and the workforce of the EU27+2 would gain the equivalent of **2.6 million full-time workers** through reduced absenteeism and increase labour market participation. This translates into an annual **workforce output of EUR PPP 110 billion** – roughly equivalent to the entire GDP of the Slovak Republic. On a per capita basis, EU27+2 countries gain on average EUR PPP 415 per year (Figure 6).

## Figure 6. Reducing risk factors would increase workforce output by EUR PPP 415 per capita on average across EU27+2 countries

The impact of achieving the best risk factor rates observed across the EU27+2 on the annual workforce output through employment (combining unemployment and part-time work), absenteeism and presenteeism, EUR PPP per capita (working age), average over 2023-2050




Source: OECD SPHeP NCDs model, 2024.

Reducing cancer and other NCDs has profound societal benefits. It eases the burden on healthcare systems and strengthens economies through a healthier and more productive workforce. Healthier populations also foster stronger, more resilient communities, supporting social stability and long-term sustainable development. Policies to improve diet in particular can contribute to lowering greenhouse gas emissions (Box 2).

### Box 2. Diets that lower cancer risk also reduce emissions

There are strong links between diets and emissions of carbon dioxide ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_2O$). About one-third of all anthropogenic (human-caused) emissions are linked to food systems (Crippa et al., 2021[4]). This includes land-use, production (farming and harvesting), processing, transporting and distribution, packaging, cooking and disposing of waste. To reflect the relationship between diet and emissions, the OECD SPHeP NCDs model links dietary risk factors to emissions using data from the WHO Diet Impact Assessment model (WHO, 2023[5]).

If the lowest meat consumption rates in the EU27+2, and the highest consumption rates of fruit, vegetable and whole grain, were attained by all countries, this is estimated to reduce emissions by **69 Mt of $CO_2$-equivalent per year**. This is the amount of emissions associated with more than **16 million gasoline-powered passenger vehicles** (US EPA, 2023[6]) or the number of **cars in Sweden, Austria and Belgium combined.**

## Turning the ECAC-5 recommendations into real-world impact for better health and stronger economies

Preventing cancer requires co-ordinated policy action and systemic support. To maximise the impact of the ECAC, three key priorities should be pursued – each equally important:

1. Empowering individuals through evidence-based information. People need to understand the risks associated with unhealthy lifestyles, air pollution and other cancer-related factors to make informed choices. The ECAC-5 offers clear and accessible evidence-based recommendations designed for the general public. Broad dissemination of these messages can enhance visibility and encourage adoption across the population.
2. Mobilising the health system. A strong and responsive health system, encompassing both care providers and public health authorities, is essential for the effective implementation of many ECAC-5 recommendations. Health professionals are among the most trusted sources of health advice. Similarly, the involvement of health authorities is crucial in implementing many ECAC-5 recommendations, including cancer screening, vaccination and other cancer-causing infections-related interventions, and workplace safety.
3. Creating supportive environments. Even well-informed individuals need environments that make healthy choices the easy choice. Policies should aim to shape settings that facilitate healthier lifestyles, with special attention to vulnerable groups such as children. ECAC-5 now includes guidance for policymakers, for example, ensuring access to nutritious food in schools, protecting minors from exposure to advertising for unhealthy products and the provision of smoking cessation services are vital steps to ensure an effective implementation of ECAC-5 recommendations.

Effective policy implementation must be grounded in evidence and best practices. EU Member States have access to a robust knowledge base, including the European Commission's public health portal, which showcases proven interventions from across Europe. Joint Actions like Prevent NCDs, https://preventncd.eu/, and JACARDI, https://jacardi.eu/, are expanding this evidence base and supporting the transfer of successful practices. The OECD, together with member countries, has also co-developed tools to help countries identify, transfer and implement best practices in public health, including comprehensive assessments of policies that promote healthier lifestyles (OECD, 2022[7]; OECD, 2022[8]).

## Further information

### *The European Code Against Cancer, 5th edition*

The ECAC is a long-established, multi-risk factor evidence based tool for cancer prevention that now incorporates an essential new dimension: policy recommendations to support the public in adopting its recommendations, while aligning with messages for the prevention of other NCDs.

The 5th edition of the ECAC contains 14 evidence based recommendations on behavioural, environmental, occupational, and infectious cancer risk factors, as well as preventive medical interventions, aimed at the EU population (Figure 1). ECAC 5 also targets policymakers by including 14 complementary recommendations on population-level policies that can reinforce the recommendations for individuals. ECAC5 brings together Europe's scientists and civil society in a joint effort to tackle the growing cancer burden across the EU. By sharing clear, evidence based messages and practical policy advice, it aims to lay the groundwork for stronger and more effective cancer prevention.

For more information, visit: www.cancer-code-europe.iarc.who.int.

### *Tackling the Impact of Cancer on Health, the Economy and Society*

Cancer is a major public health issue in OECD countries, causing one in four premature deaths. It also damages people's quality of life, increases health expenditure and harms the economy through reduced labour force participation and productivity. The economic and social costs of cancer will grow as populations age and cancer treatment costs increase.

This report demonstrates the strong economic and societal case for investing in cancer policies. Microsimulation modelling for 51 countries (including OECD, European Union and G20 countries), shows that stronger action on cancer would yield broad benefits.

If all countries did as well as the best performing country in cancer care, a quarter of premature cancer deaths would be prevented. Addressing key cancer risk factors – including tobacco, harmful alcohol use, unhealthy diets, air pollution, overweight and low physical activity – would lower cancer rates and health expenditure, while also increasing workforce productivity. Co benefits of such policies include improving road safety and reducing greenhouse gas emissions. The report also shows how vaccination for human papillomavirus will protect future generations from cervical cancer.

For more information, visit https://doi.org/10.1787/2074319x.

## References


Crippa, M. et al. (2021), "Food systems are responsible for a third of global anthropogenic GHG emissions", *Nature Food*, Vol. 2/3, pp. 198-209, https://doi.org/10.1038/s43016-021-00225-9. [4]

European Commission (2021), *Europe's Beating Cancer Plan*, https://ec.europa.eu/commission/presscorner/detail/en/ip_21_342 (accessed on 10 March 2022). [2]

OECD (2024), *Tackling the Impact of Cancer on Health, the Economy and Society*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/85e7c3ba-en. [1]

OECD (2022), *Guidebook on Best Practices in Public Health*, OECD Publishing, Paris, https://doi.org/10.1787/4f4913dd-en. [7]

OECD (2022), *Healthy Eating and Active Lifestyles: Best Practices in Public Health*, OECD Publishing, Paris, https://doi.org/10.1787/40f65568-en. [8]

OECD/European Commission (2024), *Health at a Glance: Europe 2024: State of Health in the EU Cycle*, OECD Publishing, Paris, https://doi.org/10.1787/b3704e14-en. [3]

US EPA (2023), *Greenhouse Gas Equivalencies Calculator*, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results (accessed on 30 November 2023). [6]

WHO (2023), *The Diet Impact Assessment model: a tool for analyzing the health, environmental and affordability implications of dietary change*, WHO Regional Office for Europe, Copenhagen. [5]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