Urgent, Coordinated Global Action on Lung Cancer

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The Lung Ambition Alliance
The Lung Ambition Alliance is a non-profit partnership between AstraZeneca, the International Association for the Study of Lung Cancer (IASLC), Guardant Health and the Global Lung Cancer Coalition (GLCC) aimed at eliminating lung cancer as a cause of death. Our first step towards this ambition will be to double five-year survival rates by 2025.

The Lung Ambition Alliance is intended to be a collaborative, cross-community effort bridging the commercial and non-profit sectors to bend the survival curve in lung cancer faster and improve outcomes for patients globally.

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Urgent, Coordinated Global Action on Lung Cancer
Foreword

For too long, lung cancer has not been given the policy attention it deserves.

Lung cancer kills 1.8 million people a year, more than any other cancer worldwide, but it is survivable if detected and treated early. Without coordinated global action, lung cancer deaths are estimated to increase by around 30% in ten years, making it impossible for countries to meet their 2030 Sustainable Development Goal (SDG) 3.4 target to reduce premature mortality from non-communicable diseases by one third.

Earlier diagnosis of lung cancer significantly increases five-year survival from less than 10% (stage four) to between 68% and 92% (stage one) and has the dual financial benefit of reducing healthcare costs. For example, in 2017, treatment for cancer patients diagnosed early was two to four times less expensive than treating people diagnosed at a more advanced stage.

The World Health Organization’s (WHO) Guide to cancer early diagnosis recommends that these benefits be achieved by coupling public awareness of cancer symptoms with health services and health workers equipped to conduct accurate and timely diagnostics. Symptoms are not present in many lung cancer patients diagnosed with stage one disease, and therefore, further consideration around early detection and screening is required.

Yet, for too long, lung cancer has not been given the policy attention it deserves. Hard-earned improvements in five-year survival rates have stalled compared to some other cancers, signalling that the time is now right for urgent, worldwide action.

This report by the Lung Cancer Collaboration, formed by the Lung Ambition Alliance in partnership with the World Economic Forum, supplements the WHO guidance by providing simple, clear recommendations on how, in addition to tobacco control measures, governments can improve the chances of lung cancer survival through the inclusion of basic and high-impact lung cancer diagnosis and treatment services in their national cancer control plans. Given the clear economic benefits, governments should also commit the necessary funding and resources to unlock these human and financial benefits.
Executive summary

The Lung Cancer Collaboration has combined experts from the World Economic Forum, Lung Ambition Alliance and associated partners to challenge the current state of lung cancer.

Each year, 2.2 million people are diagnosed with lung cancer,¹ and by 2030, lung cancer deaths per year are set to increase drastically² in the absence of urgent, coordinated global action. For instance, in the US only 21.8% of people with lung cancer will survive up to five years.³

This is why, in 2021, the Lung Ambition Alliance held a session at the World Economic Forum’s Sustainable Development Impact Summit on Delivering the Promise of SDG 3.4: Reducing Premature Mortality from Lung Cancer. One of the outcomes of the summit was the establishment of the Lung Cancer Collaboration (LCC), which brings together organizations in healthcare delivery, research, diagnostics, biopharma, patient advocacy and non-governmental organizations behind the overall objective of eliminating lung cancer as a leading cause of death.

Three workstreams have been established within the LCC, focusing on early detection and screening, improving quality of care, and finance and infrastructure. Each workstream has been tasked with developing recommendations that will shape the future of lung cancer.

The LCC has developed this recommendations report, which articulates the need for urgent, coordinated global action to reduce mortality from lung cancer, to ensure countries do not fall short of achieving the United Nations SDG 3.4 target to reduce premature mortality from non-communicable diseases (NCD) by one third.

This report outlines the current and potential future burden of lung cancer and recommends introducing comprehensive cancer control by complementing smoking cessation and other risk-reducing initiatives with measures to improve early diagnosis and screening, treatment, supportive care and survivorship care.

Cancer is one of the leading causes of NCD premature mortality across the globe, with lung cancer, the leading cause of cancer deaths, accounting for 1.8 million deaths per year.⁴,⁵,⁶ This means there is an urgent need for appropriate attention and funding to support the implementation of the recommendations outlined in this report, which aim to improve earlier detection and screening, treatment and care for lung cancer patients. This collaborative approach must be taken to reduce the burden of lung cancer on patients, healthcare systems and society as a whole.

Global action to address the burden of lung cancer

Lung cancer is survivable if detected⁷ and treated early⁸,⁹. Without coordinated global action, lung cancer deaths are estimated to increase by around 30% in just ten years,¹⁰ making it impossible for countries to meet their 2030 SDG 3.4 target.

Worldwide action is needed to improve the chances of lung cancer survival by ensuring that health services can focus on diagnosing and treating the disease earlier. A shift in diagnosis from late-stage to early-stage lung cancer is an effective way to decrease cancer mortality.¹¹ Action should also be taken to ensure equitable and timely access to early diagnosis and screening, as well as curative intent treatments such as surgery and radiotherapy.

Governments can achieve this by committing the necessary funding and resources to adopt a comprehensive approach, integrating efforts to strengthen anti-tobacco policies, early detection and the underlying provision of care and treatment in their national cancer control plans.
Achieving SDG 3.4

By 2030, lung cancer deaths are estimated to increase by a staggering 30%.¹²

Globally, in 2020, lung cancer was the second most commonly diagnosed cancer and the leading cause of cancer deaths.¹³

1.1 The burden of lung cancer

Globally, in 2020, lung cancer was the second most commonly diagnosed cancer and the leading cause of cancer deaths.¹³

**FIGURE 1** Lung cancer incidence and mortality by region

<table>
<thead>
<tr>
<th>Region*</th>
<th>Europe</th>
<th>North America</th>
<th>South America and Caribbean</th>
<th>Africa</th>
<th>Oceania</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>New lung cancer cases per year</td>
<td>477,534</td>
<td>253,537</td>
<td>97,601</td>
<td>45,988</td>
<td>16,975</td>
<td>1,315,136</td>
</tr>
<tr>
<td>New cases as % of total regional cancer cases</td>
<td>10.9%</td>
<td>9.9%</td>
<td>6.6%</td>
<td>4.1%</td>
<td>6.7%</td>
<td>13.8%</td>
</tr>
<tr>
<td>Lung cancer deaths per year</td>
<td>384,176</td>
<td>159,641</td>
<td>86,627</td>
<td>41,171</td>
<td>12,012</td>
<td>1,112,517</td>
</tr>
<tr>
<td>Deaths as % of total regional cancer deaths</td>
<td>19.6%</td>
<td>22.8%</td>
<td>12.1%</td>
<td>5.8%</td>
<td>17.3%</td>
<td>19.2%</td>
</tr>
</tbody>
</table>

* Continental regional data reported by the World Health Organization Global Cancer Observatory (2020)

**Source:** Adapted from the WHO Cancer Regional Profile (2020)¹⁴
More recently, the COVID-19 pandemic has threatened to increase the lung cancer mortality burden, with over 40% of countries reporting a complete or partial disruption to lung cancer services.\(^\text{16}\) One study undertaken in England estimates that this disruption could lead to an increase of between 4.8% and 5.3% in avoidable lung cancer deaths over the next five years.\(^\text{17}\)

### 1.2 Impact of inaction

It is hoped that through the learnt experiences of the pandemic, improvements to access and outcomes for lung cancer patients can be implemented, regardless of geographic location or economic ability.

If this does not happen, by 2030 lung cancer deaths are estimated to increase by a staggering 30%. This equates to approximately 550,000 additional people per year dying from the disease compared to 2020.\(^\text{18}\)

#### FIGURE 2

Estimated number of **new cases** in 2020, worldwide, both sexes, all ages

- **Breast**: 2,261,419 (11.7%)
- **Lung**: 2,206,771 (11.4%)
- **Colorectal**: 1,931,590 (10%)
- **Prostate**: 1,414,259 (7.3%)
- **Stomach**: 1,089,103 (5.6%)
- **Liver**: 905,677 (4.7%)
- **Other cancers**: 8,879,843 (46%)
- **Cervical**: 604,127 (3.1%)

**Total**: 19,292,789

*Source: Adapted from GLOBOCAN (2020)*\(^\text{15}\)

#### FIGURE 3

Estimated number of **deaths** in 2020, worldwide, both sexes, all ages

- **Lung**: 1,796,144 (18%)
- **Colorectal**: 935,173 (9.4%)
- **Liver**: 830,180 (8.3%)
- **Stomach**: 768,793 (7.7%)
- **Breast**: 684,996 (6.9%)
- **Prostate**: 614,259 (7.3%)
- **Pancreatic**: 466,003 (4.7%)
- **Oesophageal**: 544,076 (5.5%)
- **Other cancers**: 3,932,768 (39.5%)

**Total**: 9,958,133

*Source: Adapted from GLOBOCAN (2020)*\(^\text{15}\)

#### FIGURE 4

**Estimated number of lung cancer deaths from 2020-2030**

- **2020**: 1.80 million
- **2030**: 2.38 million

*Source: Adapted from the International Agency for Research on Cancer, WHO (2020)*\(^\text{19}\)
According to the WHO, the biggest percentage increases in lung cancer deaths will be experienced by countries with a low human development index. This increase in mortality will be felt globally across health systems and economies, adding to the already considerable impact lung cancer has.

**FIGURE 4** Estimated number of lung cancer deaths from 2020-2030 by WHO region

<table>
<thead>
<tr>
<th>Region</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>1,112,517</td>
<td>407,785</td>
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<tr>
<td>Europe</td>
<td>384,176</td>
<td>438,692</td>
</tr>
<tr>
<td>North America</td>
<td>199,536</td>
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<tr>
<td>Latin America and Caribbean</td>
<td>119,130</td>
<td></td>
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<tr>
<td>Africa</td>
<td>58,180</td>
<td></td>
</tr>
<tr>
<td>Oceania</td>
<td>15,771</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted from the International Agency for Research on Cancer, WHO (n.d.)

**FIGURE 5** The impact of lung cancer: key facts and figures

Globally, lung cancer is responsible for:

- **2.21 million new cases per year (2020)**
- **11.4% of all new cancer cases (2020)**
- **45.9 million disability-adjusted life years (2019)**

- **1.8 million deaths per year (2020)**
- **18% of all cancer deaths (2020)**
- **45.3 million years of lost life (2019)**

Lung cancer accounts for nearly a quarter of productivity losses due to premature mortality in Europe, more than for any other cancer type. This equates to a €17 billion loss in a year.
Overcoming the burden of lung cancer

Lung cancer can be preventable and is survivable if detected and treated early.\textsuperscript{30,31,32,33}

Lung cancer can be prevented

Smoking remains a major risk factor for lung cancer.\textsuperscript{34} Despite some success from anti-smoking campaigns in reducing the number of smokers, smoking prevalence remains high in low- and middle-income countries, where it is estimated more than 80\% of smokers live.\textsuperscript{35} Furthermore, even with successful smoking cessation programmes, there remain millions of former smokers with a high risk of lung disease, including cancer.\textsuperscript{36} Smoking cessation is a critical component of lung cancer control. However, lung cancer is not just a smoker’s and former smoker’s disease, with air pollution, occupational exposure and genetic predisposition also significant risk factors.\textsuperscript{37} For comprehensive cancer control, the WHO recommends combining smoking cessation and other risk-reducing initiatives with early diagnosis and screening, treatment, palliative care and survivorship care.\textsuperscript{38} The recommendations in this report highlight the need for a comprehensive, combined approach.

Lung cancer is detectable

As with many cancers, people with lung cancer have a high chance of survival when diagnosed early and treated appropriately, with just a 0\% to 10\% chance of surviving five years when diagnosed at stage four compared to 68\% to 92\% if detected at stage one.\textsuperscript{39} However, approximately 75\% of people diagnosed have advanced disease at the time of diagnosis (stages three and four) and despite significant developments in the oncological management of late-stage lung cancer over recent years, survival remains poor.\textsuperscript{40} Early detection programmes are therefore essential for increasing lung cancer survival. Targeted lung cancer screening has a strong scientific basis for early detection in current and ex-smokers.\textsuperscript{41} Other early detection initiatives, like lung nodule detection and evaluation, can play a critical role in detecting lung cancer early in people who have never smoked.\textsuperscript{42}

To ensure early lung cancer detection among all at-risk populations, initiatives to improve early diagnosis across the breadth of lung cancer risk factors should be built into health systems.

Lung cancer is treatable and survivable

Lung cancer survival is alarmingly low in most countries, where only 10\% to 20\% of patients will survive beyond five years.\textsuperscript{44} However, in recent years, the impact of screening on stage shift in lung cancer is becoming prevalent, and the use of low dose computed tomography (LDCT) screening is reducing mortality rates in the US.\textsuperscript{45} For those with lung cancer identified at an early stage, surgery provides a favourable prognosis, with several studies reporting five-year survival rates of 68\% to 92\% for small, localized tumours (stage one).\textsuperscript{46,47} This treatment is generally more effective, less complex and less expensive than treatments for advanced disease.\textsuperscript{48} Research undertaken in high-income countries has shown that in 2017, treatment for cancer patients diagnosed early was two to four times less expensive than treating people diagnosed with cancer at a more advanced stage.\textsuperscript{49} However, treatment effectiveness for early-stage lung cancer relies on availability and timely access to treatments. For example, delaying surgery by more than 12 weeks from the date of diagnosis has been associated with an increased risk of recurrence and worse overall survival\textsuperscript{50} in lung cancer patients with early-stage disease.

To increase survival from lung cancer, countries must make timely access to lung cancer treatments a key factor in their national cancer control plans.
FIGURE 6  Five-year survival by lung cancer stage at diagnosis

Source: Adapted from: Sands, J et al., Journal of Thoracic Oncology, 16(1), November 2020, pp. 37–53

*The TNM staging system is one of the most widely used systems for cancer staging. It is based on the extent of the tumour (T), the extent of spread to the lymph nodes (N) and the presence of distant metastasis (M). The TNM staging system consists of stages one to four.
Opportunity for improvement

Working together to improve the future of lung cancer.

Strengthening lung cancer care is a key challenge for health systems. The Lung Cancer Collaboration aims to drive urgent, coordinated global action to improve survival by recommending and supporting the implementation of lung cancer early detection and management. The following sections outline its recommendations across three areas:

1. Early detection and screening
2. Quality of care
3. Finance and infrastructure

These recommendations are supported by best practice case studies from around the globe.

Recommendations

3.1 Overarching recommendation

All countries should add the early detection and treatment of lung cancer to their national cancer control plans and primary prevention efforts:

- Global commitments to international goals and targets for cancer have been translated into national action through national cancer control plans. These are crucial to effectively address the burden of cancer and support the prioritization and coordination of specific disease programmes.

- A recent analysis of available national cancer control plans showed that a key area of unmet need is the lack of allocation of appropriate budgets, along with the monitoring and evaluation of plan implementation.
To demonstrate a compelling case for the adoption of targeted lung cancer screening and early diagnosis, countries should:

1. Prioritize and promote lung cancer early detection as the most effective, implementable method to save lives

   - Lung cancer survivability differs dramatically by lung cancer stage. For lung cancers identified at an early stage, surgery provides a favourable prognosis, with several studies reporting five-year survival rates of 68% to 92% for small, localized tumours (stage one).55

   - Early detection is critically important to lung cancer’s overall treatment and survivability. Large clinical trials have shown a significant relative reduction in lung cancer-specific mortality of 20% to 39% for those in the screening group compared to the control group, aligning with the essential need to ensure that earlier detection and screening reduce national levels of cancer mortality.56,57,58,59

Case studies:

   - United States: National Lung Cancer Screening Policy
   - United States: Medicare, Screening for lung cancer with low-dose computed tomography (LDCT)
   - Cancer Research UK: Evaluation of Be Clear on Cancer, lung cancer awareness campaign regional pilot, East and West Midlands
   - NHS: Targeted screening for lung cancer with low radiation dose computed tomography
   - Korea: National Lung Cancer Screening Programme

2. Recognize the high-risk populations for lung cancer screening60 and create standards for uniform screening protocols, lung nodule management – including incidental nodule detection61 – and treatment referrals

   - The National Comprehensive Cancer Network Clinical Practice Guidelines in Oncology (NCCN Guidelines) for Lung Cancer Screening identify the high-risk group as individuals aged 50 years or older with a 20 or more pack-year history of smoking tobacco (category 1).62

   - NCCN Guidelines provide systematic algorithms for the management of screen-detected lung nodules.63

   - Guidelines from the NCCN and the European Society for Medical Oncology provide recommendations for lung cancer treatment and enable standards for uniform practice.64,65

   - The purpose of the guidelines is to improve the quality of care for patients and clinical effectiveness by implementing evidence-based care in daily practice.

   - Guidance for uniform lung nodule management is also available.63 Incidental lung nodule programmes identified lung cancer in a higher proportion of eligible patients for lung cancer screening. Those diagnosed had similar stage redistribution, curative-intent treatment and survival rates, as seen in patients that received lung cancer screening.67

Case studies:

   - Aidence and Veye: Supporting clinicians through Artificial Intelligence (AI) to detect and report incidental pulmonary lung nodules
   - Technological solutions for the management of incidental lung nodules
   - Surveillance of incidentally detected nodules and CT screening
   - Lung Cancer Diagnosed Through Screening, Lung Nodule, and Neither Program

3. Recognize and remove barriers to early lung cancer detection for marginalized, vulnerable and historically underserved populations

   - Barriers to access and reduced cancer screening uptake have been seen among deprived populations and ethnic minority groups, and yet these groups are often those at the highest risk of lung cancer.68,69,70,71

   - High-risk individuals who are older, female smokers and those from a lower socioeconomic group or with a higher affective risk perception are less likely to be screened.73

   - Studies have found travel to be an important barrier to participation in cancer screening.74,76

   - AI tools are being developed in Rwanda, a low- and middle-income country, to digitally enable health centres to better triage patients and connect them to clinicians via digital consultations. The aim is to alleviate the heavy burden on healthcare staff and help underserved populations access diagnostic services.76
### Case studies:

- **An AI-powered solution for early lung cancer detection in Asia, Latin America, Turkey, the Philippines and Malaysia**
- **Lung cancer screening: targeting the hard to reach – a review**
- **Participation in lung cancer screening**

#### 4. Deploy new technologies for early detection and treatment that increase accuracy and reduce cost

- New technologies, including liquid biopsies, AI-supported imaging and synthetic biopsies, have emerged as promising diagnostic approaches in oncology.\(^{77,78,79,80}\)

- Liquid biopsies help detect lung cancer by identifying cancerous DNA fragments or methylation patterns in a blood sample and also support disease monitoring to help with management decisions in selected patients.\(^{81,82}\)

- AI-supported imaging software helps to analyse lung nodules in LDCT scans, not only reducing the burden on radiologists but also matching or outperforming experienced radiologists.\(^{83,84}\)

- Synthetic biopsies are a unique technology that can help detect and localize lung cancer by causing tumours to release synthetic biomarkers revealing their location.\(^{85}\)

- Mobile LDCT image screening units help make initial screening easier, improving screening rates among underserved groups and better-anticipated outcomes at a lower cost.\(^{86}\) The broader deployment of position emission tomography imaging technology allows for better and an earlier classification of malignant versus benign tumours,\(^{87}\) especially in combination with the aforementioned new technologies (e.g. AI, synthetic biopsies).

- All countries should support these new technologies in their development and their widespread deployment across clinics to realize their substantial impact potential on lung cancer.

### 3.3 Quality of care recommendations

**Increase the number of people receiving appropriate treatment and care, at the right time, by equipping countries to be able to provide treatment and care that improves outcomes.**

#### 1. Substantially reduce the time from the first patient interaction to diagnosis and treatment initiation to improve outcomes

- Delays in diagnosis and access to the treatment pathway may adversely affect survival.\(^{88}\)

- Variations in time to diagnosis and treatment are prevalent. A recent study scoping health system delays across various countries shows an interval of zero to 33 days from GP to lung cancer specialist and a range from 6 to 80 days across treatment.\(^{89}\)

- Responding to a higher cancer mortality rate than comparable countries, Denmark introduced the Cancer Patient Pathways programme to increase diagnostic processes, resulting in the waiting period for a cancer diagnosis decreasing from 49 to 32 days.\(^{90}\) These improvements have significantly impacted lung cancer patients, with a three-year relative survival increasing from 11% to 20%.\(^{91}\)

- In England, the 62-day pathway is based on the current National Health Service wait times, where the aim is a maximum two-month (62-day) wait from urgent referral to the first definitive treatment for all cancers.\(^{92}\) Achieving an expediated lung cancer pathway is paramount to improving survivability and a baseline-timed pathway should be adopted across countries to support this.

**Case studies:**

- **Royal College of Physicians: Improving care for patients: a collaborative approach**

- **NHS England: Implementing a timed lung cancer diagnostic pathway**

- **Denmark: Cancer Patient Pathways**

- **Australia: Optimal care pathways**

#### 2. Implement multidisciplinary care through care providers and technology to reduce variations in the quality of lung cancer care

- Lung cancer is complex and care models vary across medical specialities and institutions depending on resource availability.\(^{93}\) To reduce variations, a multidisciplinary team (MDT) approach can be beneficial and is a requirement for lung cancer centres in the EU, Australia and the US.\(^{94,95,96}\) MDT and promptly coordinated care improve overall patient survival and quality of life.\(^{97}\)
Utilization of multidisciplinary treatment and care is identified as optimal care by associations including the American Society of Clinical Oncology, the European Society for Medical Oncology, the American Society of Radiation Oncology, the European Society of Radiation Oncology and the Australian National Service Improvement Framework for Cancers. It is recommended for the diagnosis and treatment of lung cancer by the NCCN.

Shared decision-making tools and objectives work to support individuals in making decisions through a collaborative approach and in England, shared decision-making is part of universal personalized care.98

Case studies:
- NCCN: Non-Small Cell Lung Cancer Guidelines
- UC Davis Cancer Centre: Creating synergy across Californian community-based care through hub-and-spoke MDT
- NHS England: Shared decision-making – lung cancer
- Roy Castle Lung Foundation: Patient decision aids – guidance for healthcare professionals

3. Invest in affordable and accessible lung cancer care technologies – including telehealth – to decrease the disparity in care standards and set minimum standards for data collection to improve the standards over time

Telemedicine has significantly improved timeliness, access and cost of care for patients as they navigate the cancer pathway.99 Following the global impact of the COVID-19 pandemic, there has been a significant increase in the use of virtual MDTs, enabling greater access to services from varying locations and alleviating workforce pressures.100

Half of lung cancer cases are now occurring in lower- and middle-income countries101 and when comparing service availability across areas of differing economic resourcing, the results are staggering: 70% of the world’s radiotherapy hubs are currently available in high-income countries, while 30 countries across the globe are without access to radiotherapy.102

Data collection and information sharing empower the improvement in the continuous quality of care. Across Europe, the use of cancer registries has increased exponentially since the 1970s, with EUROCARE-5 including the data of ~22 million patients from 29 countries who had a cancer diagnosis between 1978 and 2007.103 In the US, the National Cancer Database is used for benchmarking cancer outcomes to correct disparities in health outcomes and allow the sharing of practices.104

Access to streamlined, relevant and feasible data collection strategies may improve MDT decision-making, improve team performance audits and facilitate benchmarking.105

Case studies:
- Babylonhealth
- European Network of Cancer Registries

There is an urgent need for evidence-based and resource-stratified guidelines that support the phased implementation of lung cancer early detection and treatment into real-world practice.

1. Prioritize investments in lung cancer innovations through cost-benefit and social impact analysis

Non-communicable diseases are a burden on health systems, with global costs estimated at $47 trillion from 2011 to 2025, there is an urgent need for greater investment to address the gaps.106

Lung cancer has the highest economic toll of all cancers,107 higher than breast, colorectal or prostate cancer,108 representing 15% of the total economic costs of cancer.109 Lung cancer accounts for nearly a quarter of productivity losses due to premature mortality from cancer in Europe, a higher proportion than for any other cancer and significantly outweighing direct health costs.110,111,112

When governments consider prioritizing investments in any aspect of healthcare, several distinct components need to be considered to understand the full value of the investment. These include direct funding or investment for the operational costs of the system (the cost-benefit), alongside the socioeconomic outcomes and the savings associated with preventing the onset and progression of disease113 (e.g. productivity and social benefit).
Due to their broad socioeconomic impact, investments in reducing lung cancer mortality could support the fiscal goals of finance ministries.

2. Use country-specific financial and healthcare metrics for efficient funding allocation, such as the size of the care workforce, (digital) infrastructure level and per capita spending.

Lung cancer’s current and future burden on healthcare systems, individuals and society is significant. Lung cancer was responsible for 45.3 million years of life lost and 45.9 million disability-adjusted life years globally in 2019.

Generally, metrics in lung cancer are relatively unexplored. The introduction of different interventions in lung cancer has not been calculated, which can make it difficult for targeted investment.

Healthcare systems need to ensure that when investments are made, they are targeted at areas of greatest need. Defining financial and healthcare metrics is imperative for evaluating healthcare system performance in specific diseases.

Financial metrics for lung cancer, such as direct investment levels or cost per averted death, when incorporated with well-known healthcare metrics (such as experiences of care, improvements in health and well-being, and use of resources), can lead to better insights for future resource allocation.

Identification of resource stratification strategies for lung cancer can be modelled from other cancer programmes, such as for breast cancer.

Evidence supports the identification of lung cancer using existing infrastructure, such as the use of AI in X-rays for tuberculosis or lung health programmes, such as those in the United Kingdom.

Case studies:
- Resource-Stratified Guideline-Based Cancer Care
- NHS Targeted Screening for Lung Cancer with Low Radiation Dose Computed Tomography

3. Consider increasing domestic tobacco taxes to fund direct investment in lung cancer innovations or accessing external funding sources such as the Sustainable Development Fund.

Countries have a unique opportunity to improve the way they detect and treat lung cancer. However, in order to do this, they need to identify how much funding is needed to make the recommendations in this report a reality.

Countries need to look holistically at all the possible health funding sources available, with the aim of increasing the current levels of funding for lung cancer. They should explore and realise the potential of alternative funding sources.

There are many examples of innovative funding models, including public-private partnerships, social impact bonds, health mutual funds or top-up insurance schemes, payroll-based consumer loans, screening-based insurance and charitable funds.

There is evidence that these different funding models have been applied to financing numerous health interventions, including cancer treatment and care around the world.

Case studies:
- The Faraja Medical Support Fund (FMSF)
- Inter Aide and ATIA Health Mutual Fund
- ManuSilver Care
# Contributors

This report was developed by the Lung Ambition Alliance in partnership with the World Economic Forum. The report was funded by AstraZeneca as a founding member of the Alliance.

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<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
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Urgent, Coordinated Global Action on Lung Cancer
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<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
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<td>Mike McKevitt</td>
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<td>Megan Yuan</td>
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</tbody>
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Endnotes

15. Ibid.
19. Ibid.
20. Ibid.
21. Ibid.
24. Ibid.
25. Ibid.
26. Ibid.
28. Ibid.
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