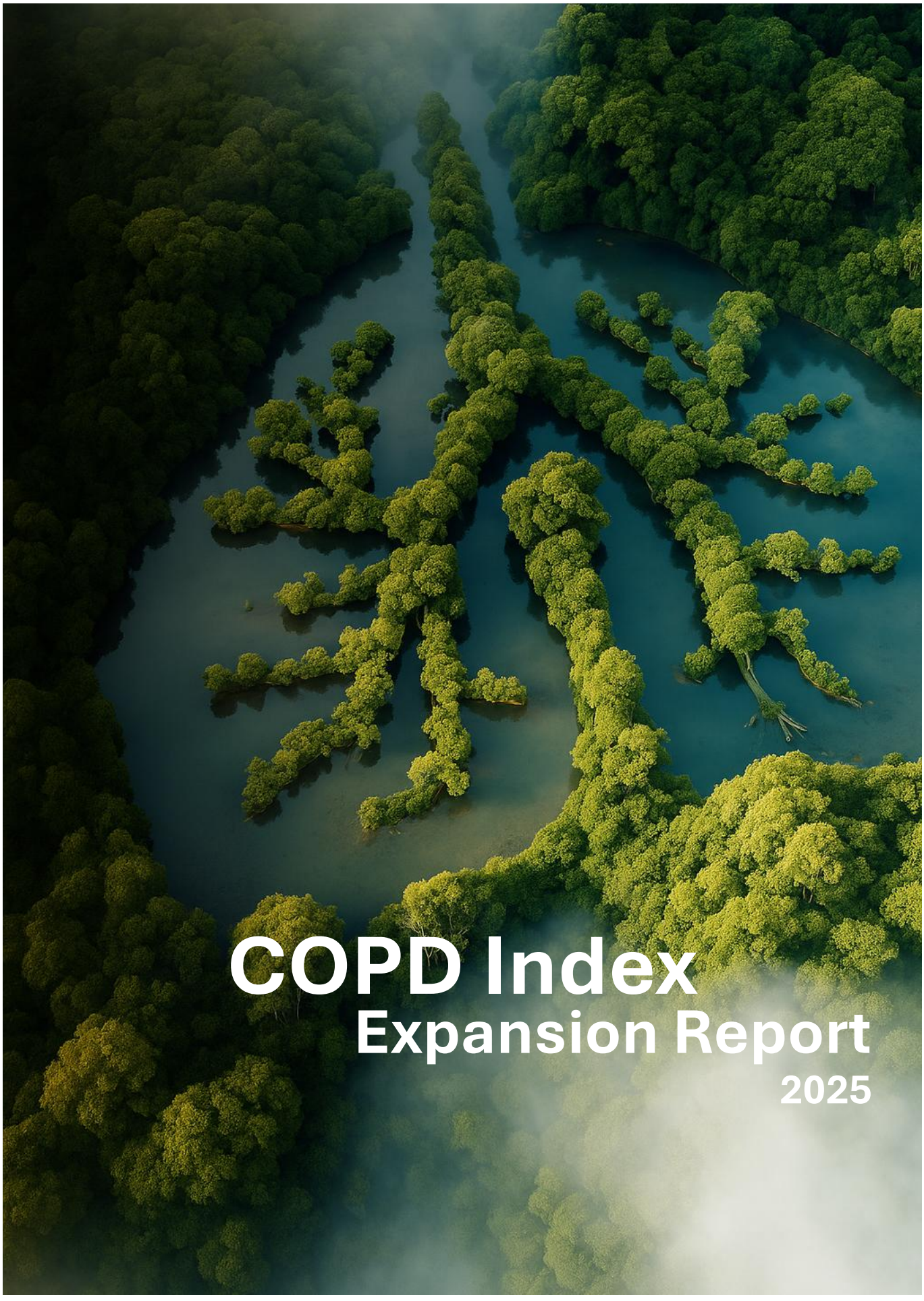

COPD Index
Expansion Report
2025

CHRONIC OBSTRUCTIVE PULMONARY DISEASE INDEX

COPENHAGEN INSTITUTE FOR FUTURES STUDIES

RESPIRATORY HEALTH INITIATIVE

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Executive Summary

The 2025 COPD Index provides an updated and expanded view of global preparedness and capacity to manage chronic obstructive pulmonary disease. Building on the 2024 edition, this version introduces new countries, offering a broader and more representative picture of global COPD policy, access, and outcomes. While average scores remain relatively stable, the inclusion of additional systems has refined benchmarks and highlighted the diversity of national contexts shaping COPD management.

Countries such as Australia, Chile, and Colombia perform strongly, characterised by coherent respiratory strategies, broad access to care, and sustained prevention policies. The United Kingdom, Finland, and Costa Rica also demonstrate balanced performance, supported by data-driven governance and integrated primary care. The newly added countries, including Peru and Egypt, bring valuable perspective, showing both persistent structural challenges and encouraging developments in prevention, environmental policy, and digital health initiatives.

Across all categories, the 2025 results confirm that progress in COPD care depends on policy coherence, equitable access, well-functioning health systems, and sustained investment in prevention and environmental health. Systems that link these components show greater resilience and continuity, regardless of income level or governance model. The Index further reinforces that COPD management must extend beyond the clinical setting, drawing on collaboration between health, social, and environmental sectors to achieve lasting improvement.

Disclosures

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Introduction and Purpose

The COPD Index 2025 builds on the 2024 baseline while maintaining methodological consistency. It expands coverage to additional countries, offering a more global and diverse comparative dataset. The 2025 update preserves all previous data for countries included in 2024 to ensure comparability. Newly added countries broaden the analytical scope, though their results are interpreted as baselines rather than indicators of change.

The expansion slightly shifts aggregate averages and recalibrates normalisation due to the larger dataset. This report, therefore, examines all 2025 countries together, with emphasis on cross-system patterns and contextual examples rather than relative ranking.

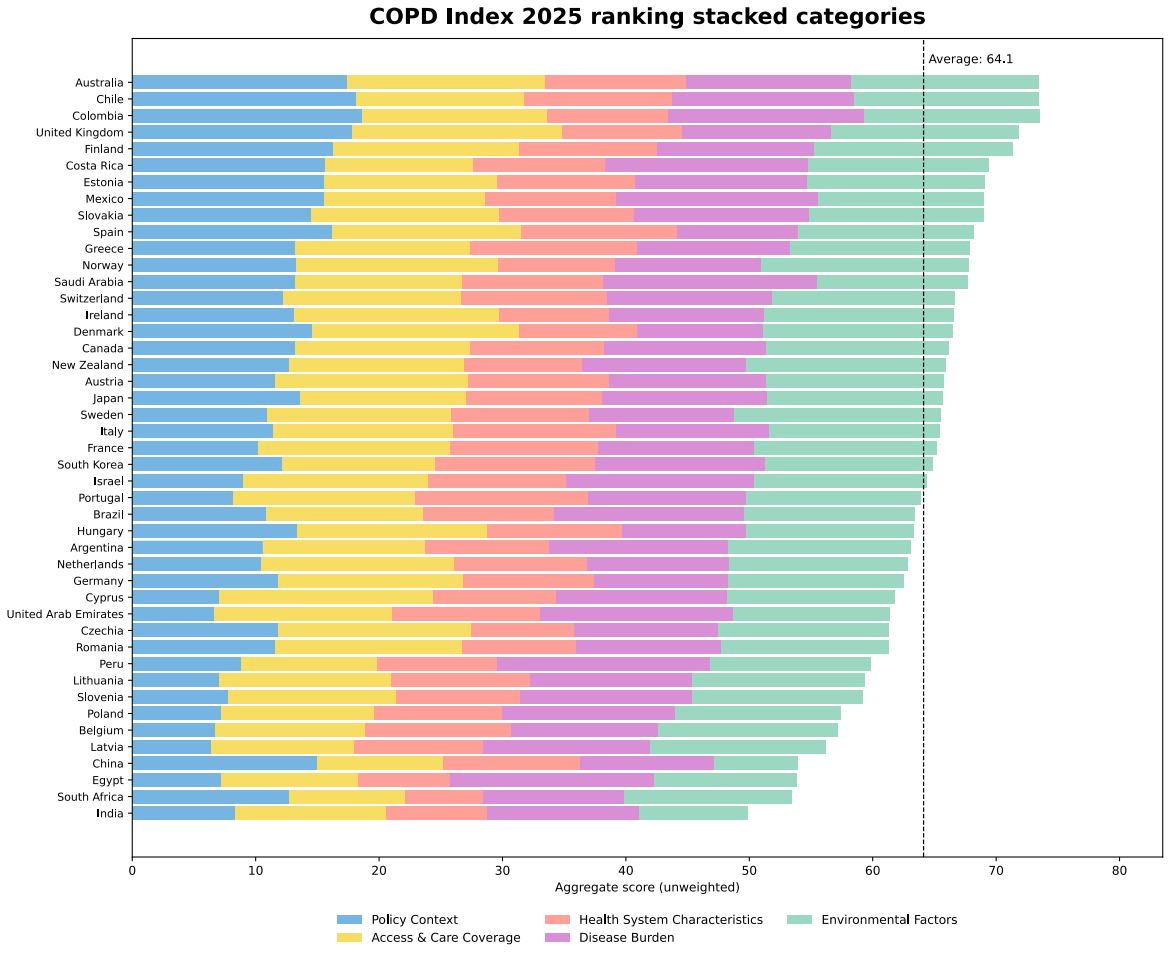
Part 1. COPD 2025 Country and Category Analysis

Overall Performance

Average performance across all countries stands at 64.1, similar to the 2024 Index. The findings confirm stability in COPD-related system performance and reinforce the importance of balanced policy and access mechanisms.

Australia, Chile, and Colombia perform strongly across multiple dimensions, combining coherent policy frameworks with robust prevention and access structures. The United Kingdom, Finland, and Costa Rica continue to demonstrate integrated service delivery and investment in chronic disease management.

Among newly added countries, several show emerging strengths in specific areas. Egypt and Peru report stronger results in disease burden and environmental factors, while South Africa highlights the dual challenge of high exposure risk and limited diagnostic reach. The results illustrate that systemic alignment, not income level alone, underpins progress.

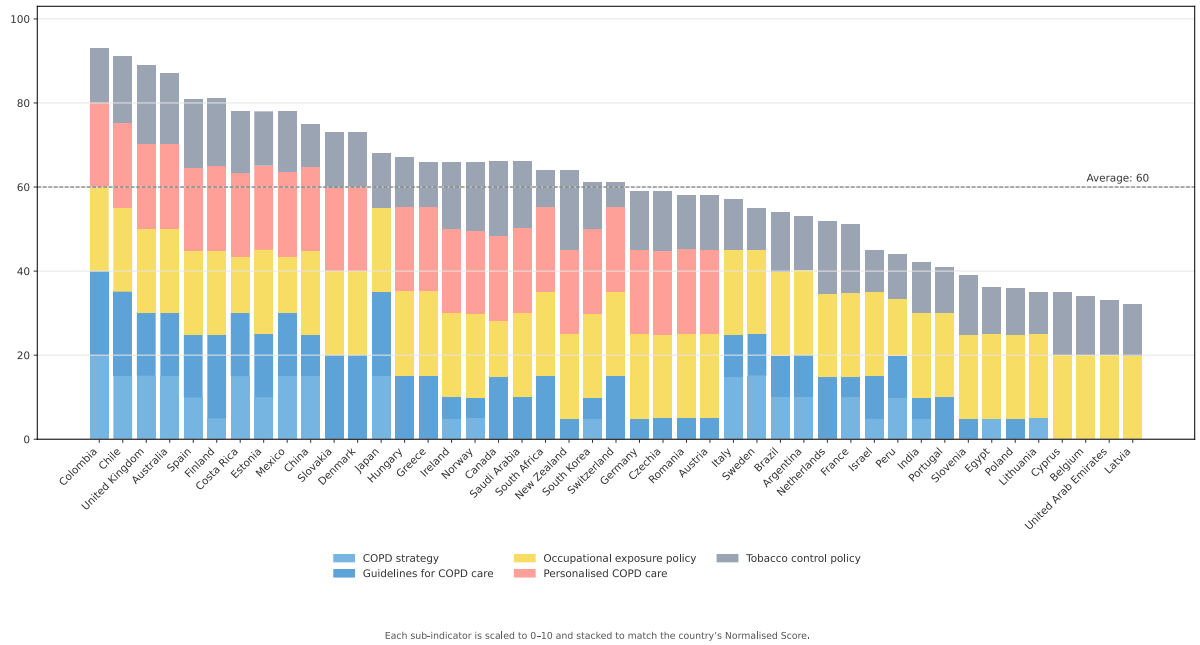


Policy Context

The Policy Context category has an average of 60, showing clear differentiation between countries with comprehensive COPD frameworks and those with generalised NCD strategies.

Colombia, Chile, and Australia score highly due to established COPD-specific policies, tobacco control, and multi-sectoral coordination. The United Kingdom and Spain sustain long-standing respiratory policy integration. Newly added countries demonstrate emerging strategies and stronger tobacco legislation, but face implementation and funding challenges, especially demonstrated in LATAM regions.

Countries with dedicated COPD frameworks consistently achieve better results across the other categories, confirming that policy coherence and continuity are central to progress.

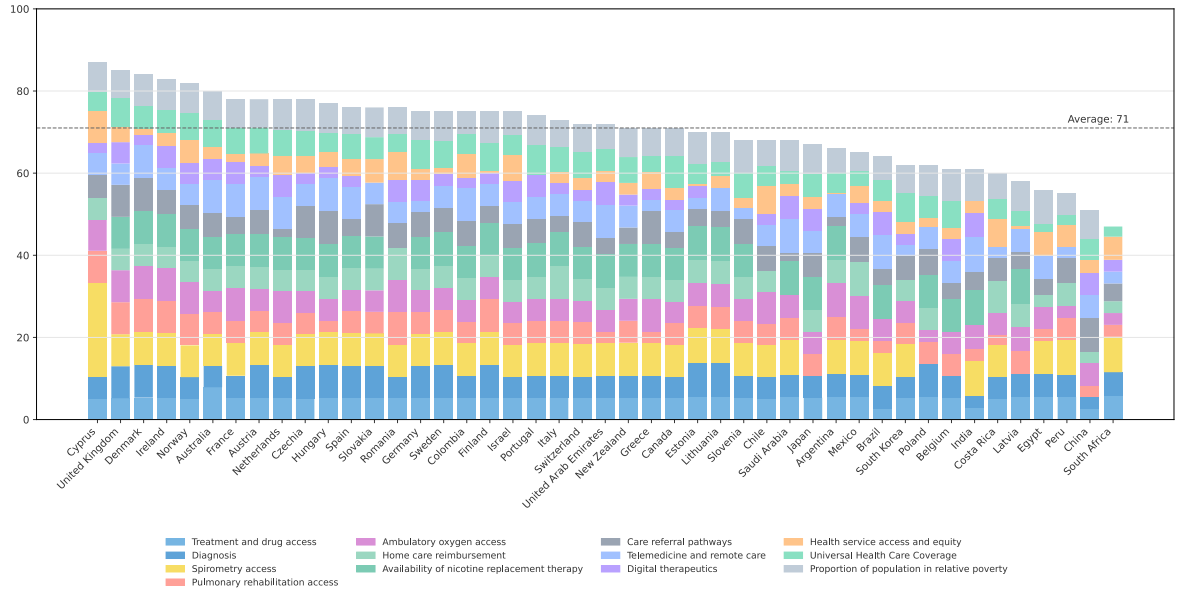


Access and Care Coverage

The category Access and Care Coverage remains the strongest dimension, averaging 71.

The United Kingdom, Denmark, and Ireland report comprehensive reimbursement and access to diagnostics, rehabilitation, and follow-up care. Australia and France maintain wide coverage through national schemes and prevention programmes.

Among newly added countries, Chile and Costa Rica perform well for accessible primary-level care and telemedicine adoption. South Africa experiences inequalities in access but is expanding community and digital services. The results show that equitable access is closely tied to consistent funding models and clear referral pathways.

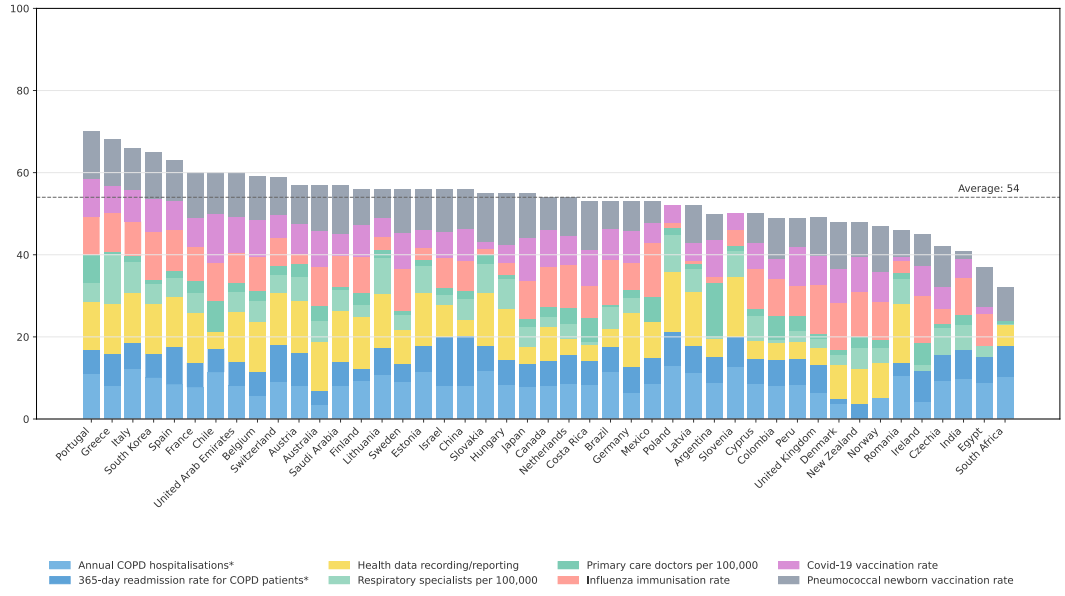


Note: Indicators marked as negative direction are inverted for comparability. All sub-indicators are scaled to 0–10 (fixed denominators or min–max for %); stack heights are proportional to each country's Normalised Score.

Health System Characteristics

This dimension, averaging 54, reflects variation in hospitalisation rates, vaccination, data quality, and workforce capacity.

Portugal and Greece show strong performance supported by data transparency and vaccination coverage, while Chile is among top scorers in this category due to high scores in many categories. Italy, South Korea, and the United Arab Emirates also perform well with structured preventive systems. Lower scores are often result of workforce shortages and limited surveillance rather than policy gaps. However, Egypt demonstrates early progress in vaccination and monitoring infrastructure. Health system capacity and data quality remain fundamental to the continuity of care and effective COPD management.

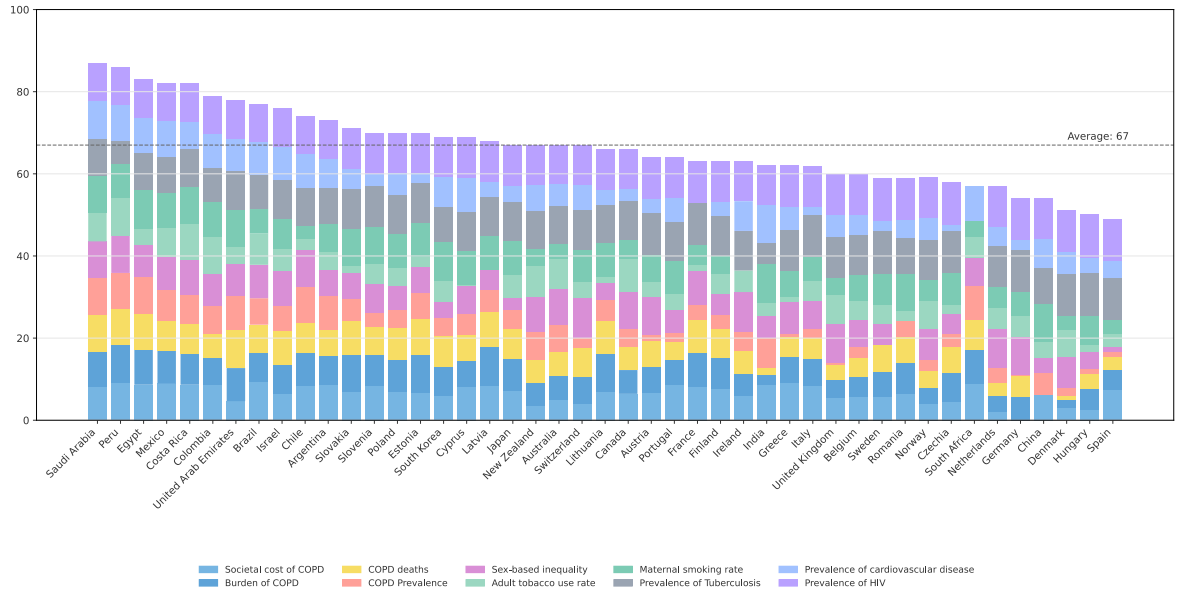


* Negative direction indicators are inverted for comparability. All sub-indicators are min–max scaled to 0–10 within this dataset; stack heights are proportional to each country's total (Normalised Score).

Disease Burden

The Disease Burden dimension averages 67, with substantial variation. Countries such as Saudi Arabia, Peru, and Egypt record comparatively lower disease burden, reflecting more favourable health outcomes within their current datasets, though these represent baseline rather than trend data. Australia, Switzerland, and Finland also show lower burden through prevention and vaccination.

Countries with high smoking prevalence or occupational exposure, including China, Romania, and Hungary, continue to experience heavier disease burden. COPD outcomes remain strongly influenced by social determinants such as poverty, education, and exposure, highlighting the importance of prevention and public health investment.



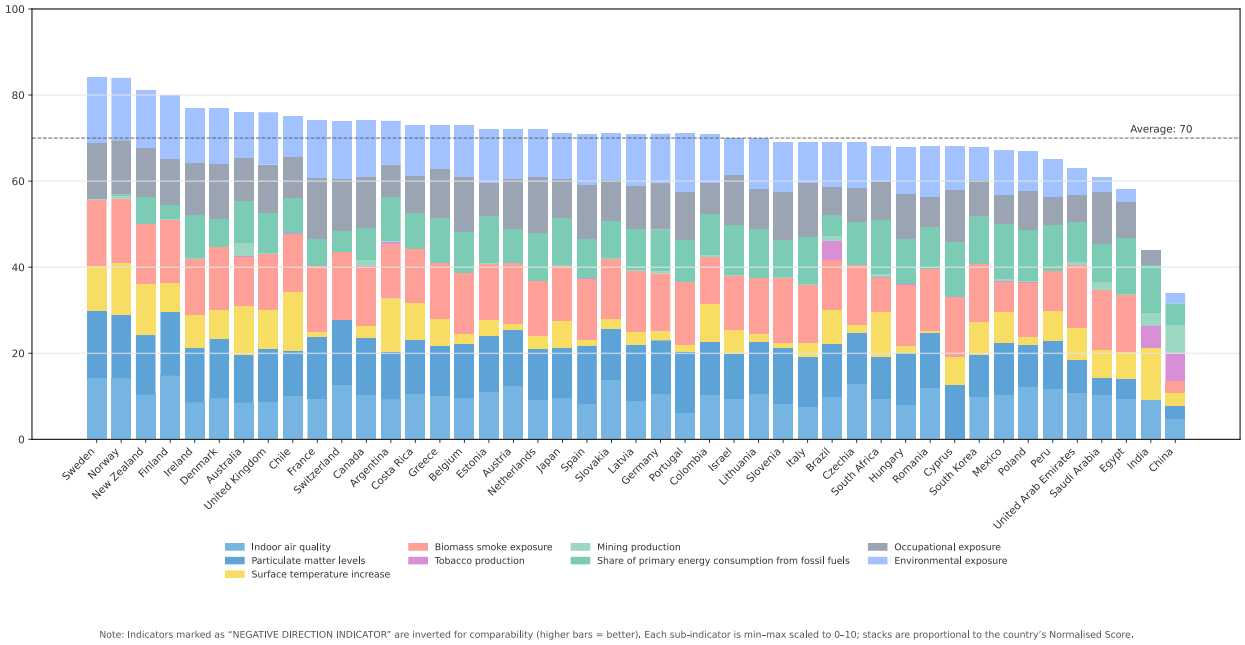
Note: All disease-burden indicators are negative direction and are inverted for comparability (higher bars = better). Each sub-indicator is min–max scaled to 0–10; stacks are proportional to the country's Normalised Score.

Environmental Factors

Environmental performance averages 70 and remains a decisive determinant of COPD risk.

Sweden, Norway, and New Zealand perform well through strong environmental governance and clean energy policies. Conversely, industrialised and high-population countries such as China and India face high particulate pollution and biomass fuel use. Both have introduced national clean air initiatives and renewable energy measures, indicating growing environmental commitment.

Environmental inequalities remain the largest cross-country variation, with direct implications for long-term COPD prevalence and system sustainability.



Note: Indicators marked as "NEGATIVE DIRECTION INDICATOR" are inverted for comparability (higher bars = better). Each sub-indicator is min–max scaled to 0–10; stacks are proportional to the country's Normalised Score.

Part 2. Reflection on 2024 Calls to Action

The 2024 Calls to Action remain highly relevant and continue to provide a strong foundation for addressing COPD globally. The 2025 findings confirm that these principles hold across both established and newly added systems, though implementation pathways differ depending on national context.

Unite for COPD

Countries with defined respiratory strategies such as Australia, Chile, and the United Kingdom show that collaboration across government, healthcare, and patient groups delivers consistent results. Newly participating countries can strengthen coordination by linking ministries, research institutions, and civil society organisations.

Prevent COPD

Prevention remains the most effective mechanism for reducing long-term burden. Countries with strong tobacco control and environmental regulation, such as Finland and Chile, achieve lower disease burden. In newer participants, enforcement of air-quality, stronger tobacco control, and occupational safety standards is the next step toward progress.

Recognise COPD

Early recognition remains uneven. High-income systems have widespread spirometry coverage, while emerging systems are beginning to expand diagnostic capacity. Chile and Costa Rica illustrate effective primary care and telemedicine models that could be adapted to similar settings.

Understand COPD

Data systems continue to vary significantly. Countries such as Egypt have initiated registry and reporting frameworks but require standardisation and interoperability. Reliable data are central to evaluating policy success and targeting interventions.

Empower COPD Patients

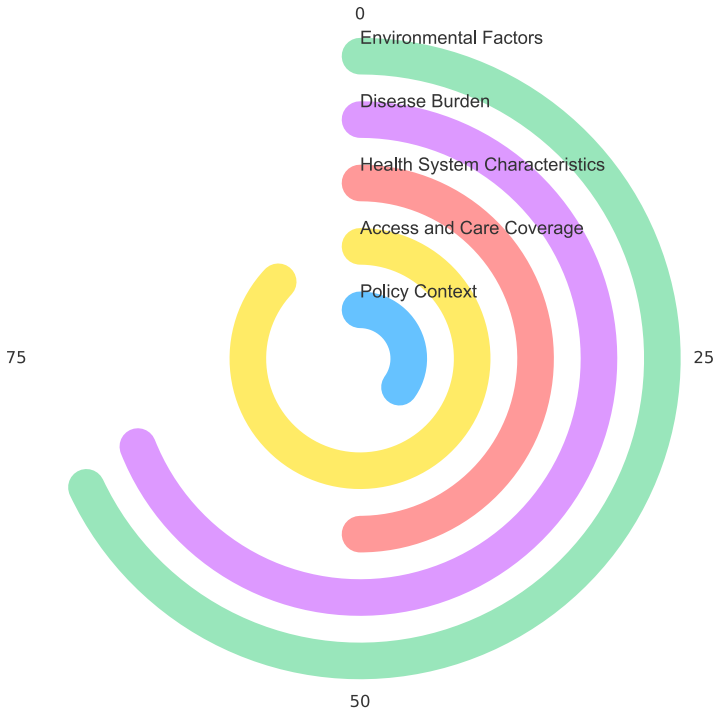
Countries with mature patient support systems, including Australia, the United Kingdom, and Denmark, show better outcomes and adherence. Newly added countries highlight the need to expand education and community-based awareness to reduce stigma and promote self-management.

Overall, these Calls to Action remain globally applicable, but their implementation must reflect local governance, resources, and environmental realities.

Annex: Country Profiles

Cyprus - COPD Country Profile

🌐 Aggregate Score (Unweighted): 61.8 /100



Country Overview

Cyprus performs **very strongly** in **Access and Care Coverage**. The introduction of GeSY (General Healthcare System) in 2019 has established universal coverage and a structured referral pathway through a gate-keeping model, ensuring access to advanced care. According to the national COPD patient-journey overview, GeSY covers diagnostics, specialist pulmonology visits, medications, nursing care and rehabilitation for COPD patients. Moreover, Cyprus reports one of the lowest levels of unmet healthcare needs in the EU, reinforcing strong access and coverage.

Cyprus has a **low score in Policy Context** as it currently lacks a formal, publicly documented national COPD strategy and dedicated COPD-specific clinical guidelines. The country is, however, in the process of contextualising international guidelines, particularly from NICE, to develop local protocols and indicators for chronic conditions. Occupational exposure policy is relatively strong, supported by the transposition of EU directives on occupational safety and health and their implementation at the national level.

The country scores **below average** in **Health System Characteristics.** While coverage under GeSY is broad and explicitly includes COPD care, there is a lack of publicly available data on COPD-specific hospitalisation, readmission, or rehabilitation uptake, which limits performance monitoring. However, the country benefits from a comparatively high number of respiratory specialists.

In the **Disease Burden category**, Cyprus performs **moderately**, slightly above average. COPD contributes to a significant but relatively low societal cost, with disease burden

reflected in elevated COPD-related DALYs, and one of the highest adult tobacco use rates.

In the **Environmental Factors** category, performance is **mixed.** Access to clean household fuels is universal, reducing one major risk factor. However, challenges persist with ambient air quality, particularly from particulate matter and recurrent desert dust events, which can exacerbate COPD.

Key Takeaways

- **Strong access and coverage, but policy foundations still consolidating**

Cyprus benefits from universal coverage under GeSY, with broad availability of diagnostics, specialist services, medications and rehabilitation for COPD. However, the absence of a published COPD-specific national strategy or guidelines means that referral pathways, treatment standardisation and follow-up remain less formally structured.

- **Broad entitlements (including PR) but thin COPD performance data**

The GHS patient pathway lists COPD with access to diagnostics, medicines, nursing care and rehabilitation. Public statistical releases track day-care and inpatient volumes overall, yet COPD-specific indicators are not routinely published, limiting quality improvement.

- **Risk factors amplify burden, tobacco and dust dominate**

Adult smoking prevalence remains high, and WHO MPOWER shows scope to strengthen taxation, cessation and enforcement. Meanwhile, Saharan dust events and PM2.5 levels above guidelines elevate exposure risk.

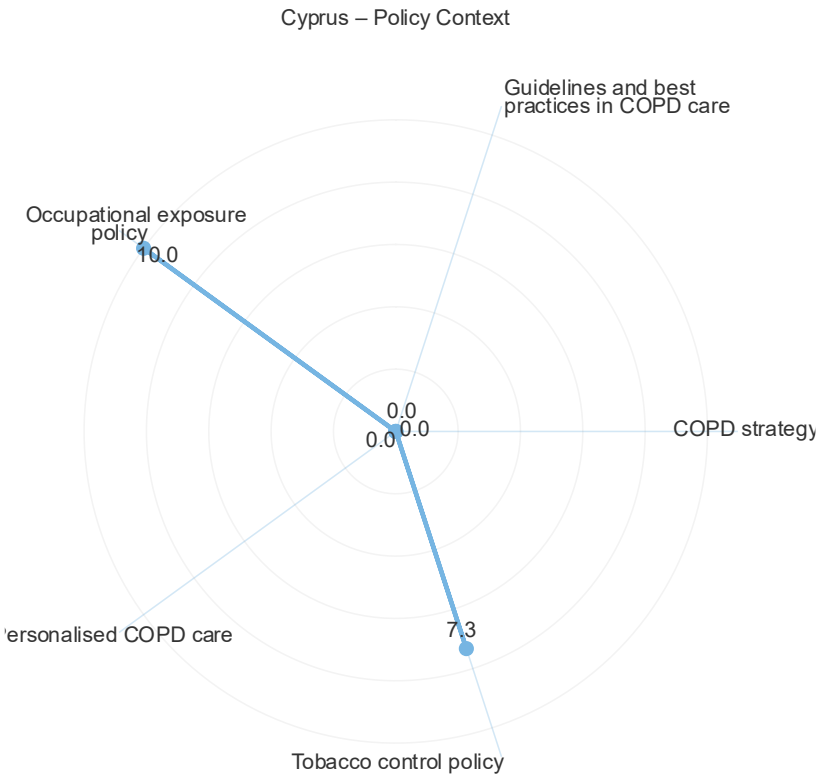
Best practices

- Universal coverage with very low unmet needs and falling OOP share under GeSY; specialist access via gatekeeping and broad contracted networks.
- Formal coverage of COPD care across diagnostics, medicines, nursing and rehabilitation within GHS (patient journey).
- Occupational and chemical safety regulatory framework is relatively mature (transposition of EU directives) and offers a strong platform for COPD prevention related to workplace exposures.
- A relatively efficient inpatient system (in general) supports the infrastructure for COPD care.

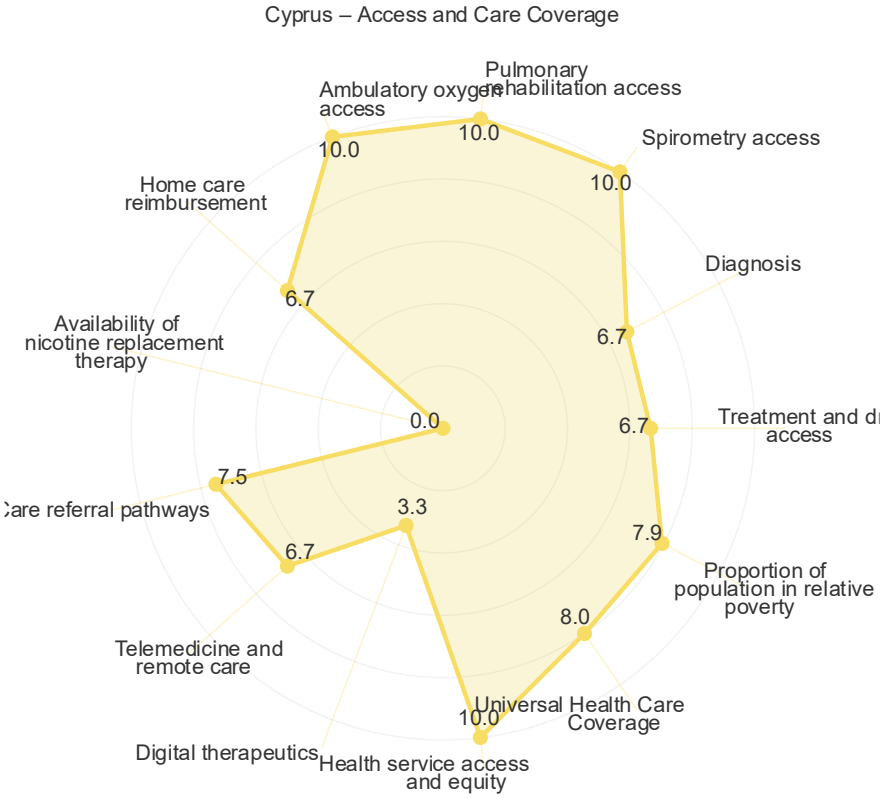
Challenges

- Lack of a national COPD strategy and COPD-specific clinical guidelines limits systematic, coordinated care pathways but contextualisation is underway
- Limited COPD-segmented performance data (admissions, readmissions, rehabilitation uptake/completion) and routine monitoring are not easily accessible, making it hard to benchmark performance and drive quality improvement.
- High adult tobacco use rate remains a persistent risk factor driving COPD incidence and progression.
- Environmental exposures persist: recurrent dust events, particulate matter exposures, and indoor air-quality issues (damp/leaks) remain under-addressed, heightening COPD risk.

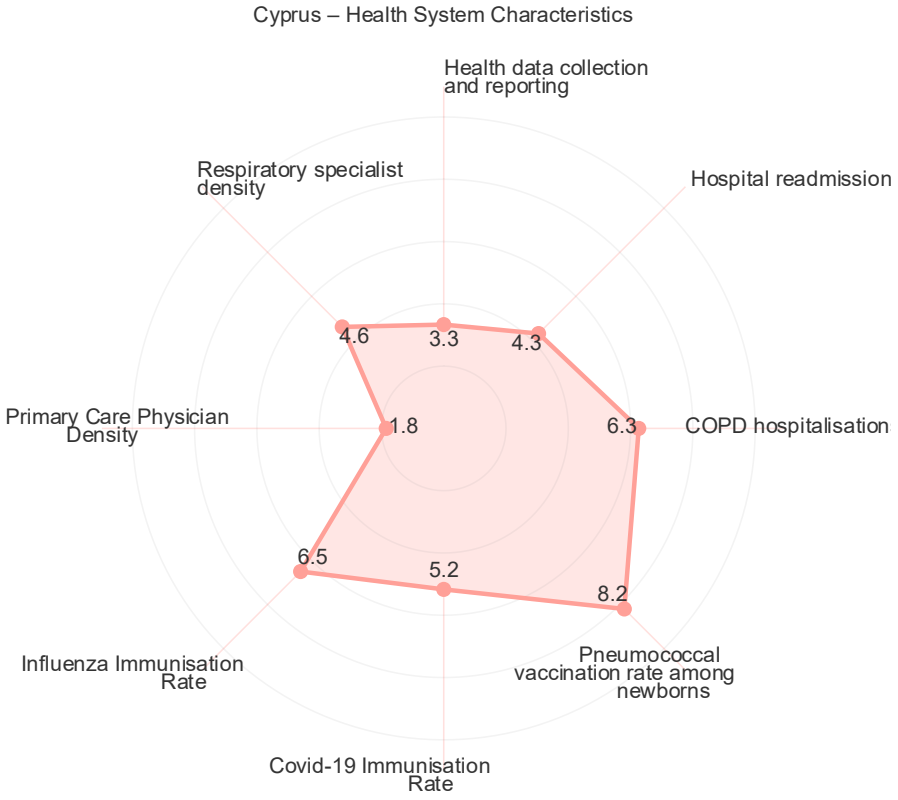
Policy Context – Score: 35/100



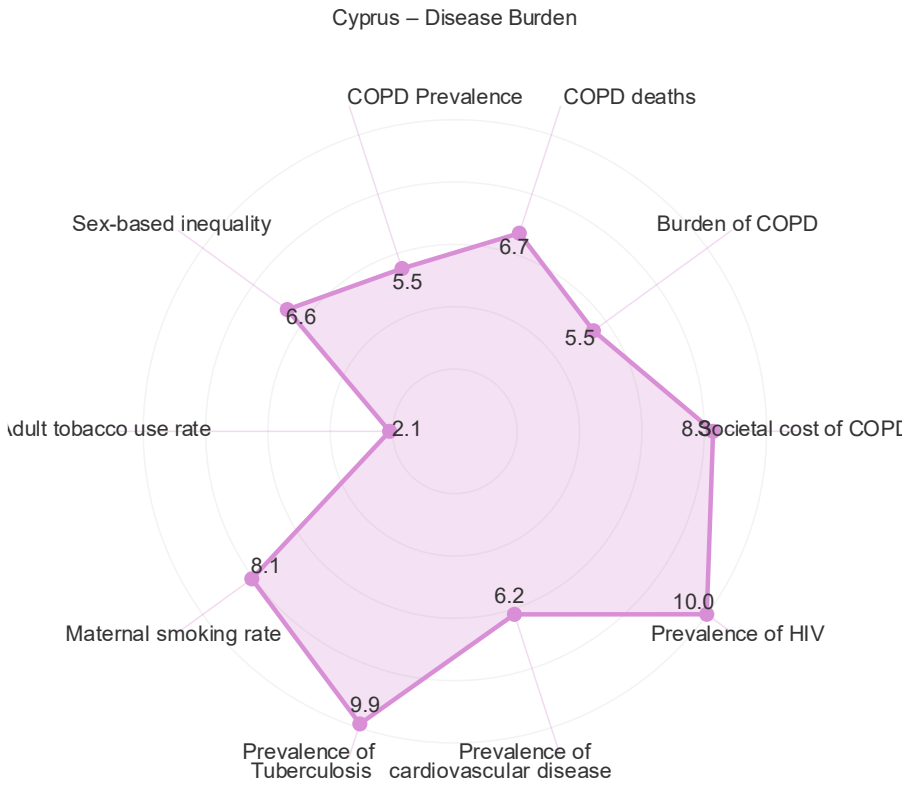
Access and Coverage – Score: 87/100



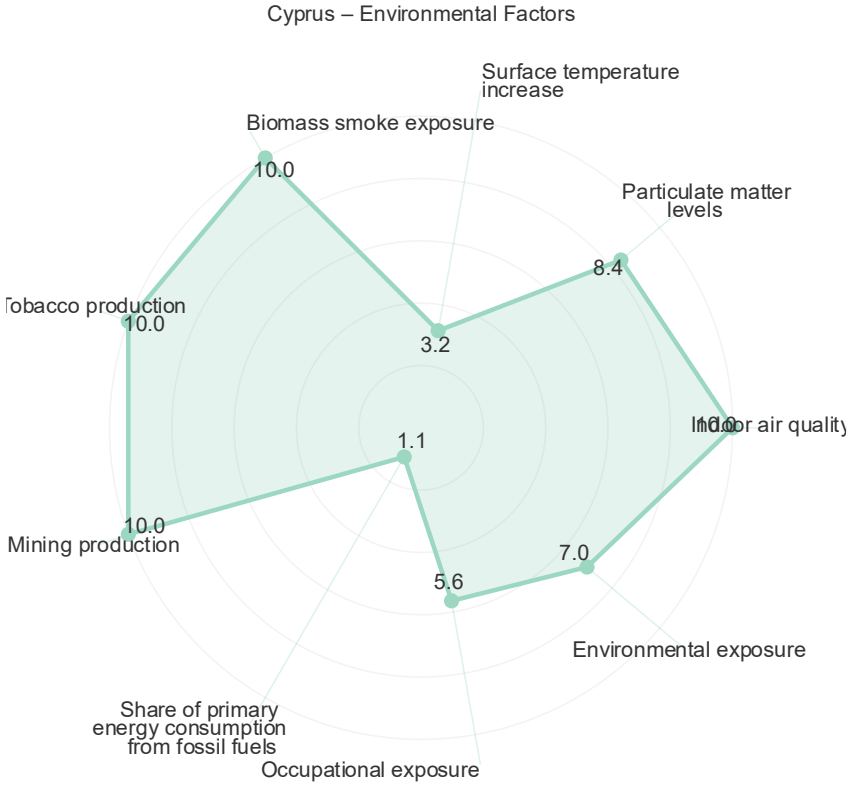
Health System Characteristics – Score: 50/100



Disease Burden – Score: 69/100

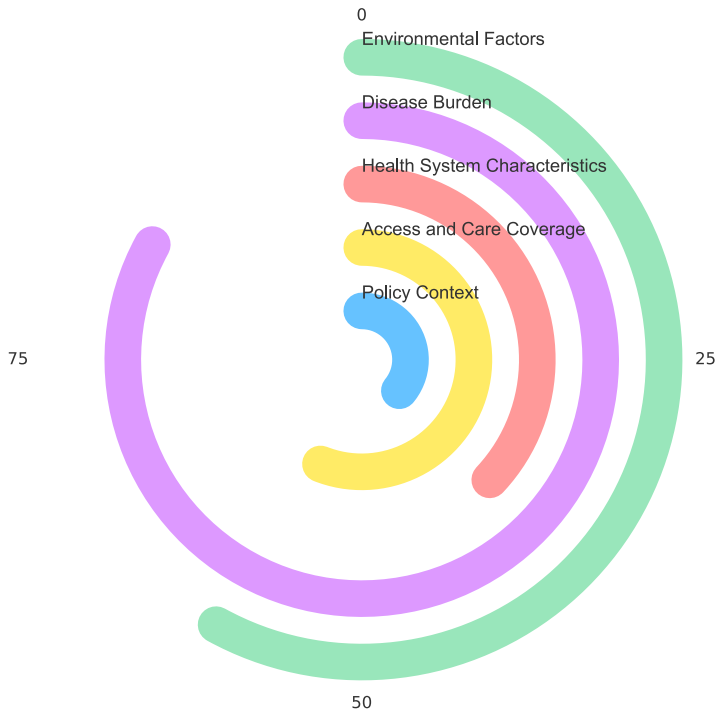


Environmental Factors – Score: 68/100



Egypt – COPD Country Profile

Aggregate Score (Unweighted): 53.9/100



Country Overview

In the **Disease Burden** category, Egypt **performs well**, ranking among the top-scoring countries due to its comparatively low COPD prevalence, DALY and mortality burden. Despite this, the country faces persistent risk factors, particularly a high adult tobacco use rate, which remains a leading contributor to COPD incidence and progression. However, Egypt's above-average score on disease burden may partly reflect gaps in classification, reporting, and access to care, rather than an accurate picture of COPD severity, suggesting that the true burden may be underestimated in current data sources.

In the **Policy Context** category, Egypt scores **low**, as it lacks a formal national COPD strategy and publicly available treatment guidelines. While COPD is mentioned in Egypt's earlier National NCD Action Plan (2018–2022) as a priority condition to develop treatment guidance, no formal COPD strategy has been identified to date. However, since 2022, the Ministry of Health has run the "Lung Health" campaign, aimed at raising awareness of COPD, promoting smoking cessation, and detecting chronic lung disease among smokers using spirometry and other basic diagnostic tools. The initiative marks a modest but positive step toward policy implementation and public engagement. Despite this progress, tobacco control remains weak, with limited compliance with smoke-free laws and with advertising restrictions.

In **Access and Care Coverage**, Egypt performs **one of the weakest**. Pulmonary rehabilitation remains largely unavailable or is not routinely reimbursed. Access to nicotine replacement therapy and structured cessation services is also very limited.

Egypt, however, offers relatively good access to core COPD treatments, diagnostic services, and ambulatory oxygen therapy, provided with co-payments.

In **Health System Characteristics**, Egypt scores **among the lowest**, facing. COPD-related hospitalisation and readmission data are not publicly reported, making system-level performance difficult to assess. The country faces a shortage of both primary care physicians and respiratory specialists, and there is little integration of COPD within national chronic disease registries or digital health platforms.

In the **Environmental Factors** domain, Egypt ranks **low**, reflecting severe and persistent air-quality challenges. The country experiences very high levels of particulate matter (PM2.5) and remains dependent on fossil fuels for energy production contributes significantly to population exposure. Indoor air pollution and poor ventilation further exacerbate exposure risks, particularly in low-income households.

Key Takeaways

- **Growing national awareness and promising public health initiatives**

Egypt's "Lung Health" campaign represents a valuable entry point for broader COPD detection and prevention, combining awareness, screening, and smoking cessation messaging. Building on this initiative, Egypt could develop a formal national COPD strategy to institutionalise early detection and care pathways.

- **Core diagnostic and treatment access exists, but gaps remain in rehabilitation and rural care**

Urban tertiary centres provide solid access to COPD medication and diagnostics, but pulmonary rehabilitation and cessation support remain underdeveloped and unevenly distributed. Expanding these services, particularly through community-level delivery and primary care, could improve equity and outcomes.

- **Workforce shortages and data gaps hinder comprehensive care**

While disease outcomes are comparatively good, limited reporting and workforce shortages restrict national oversight and continuity of care. Creating a COPD registry and strengthening training for general practitioners could improve diagnosis, monitoring, and quality improvement.

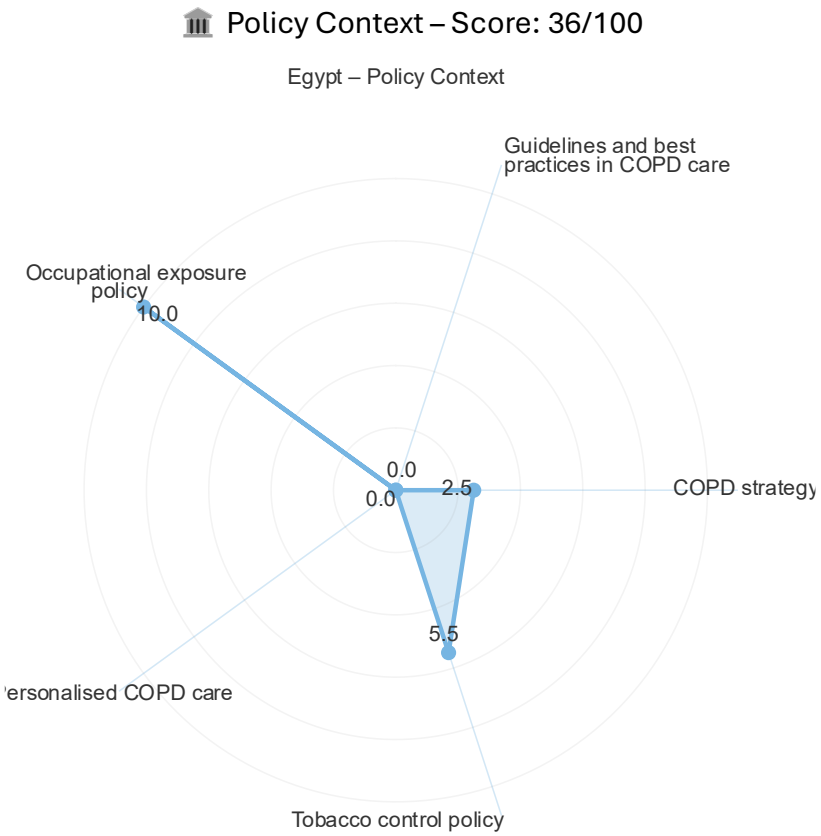
Best practices

- Public awareness and early detection: The *Lung Health campaign* promotes spirometry screening among those who smoke and awareness of COPD risks.

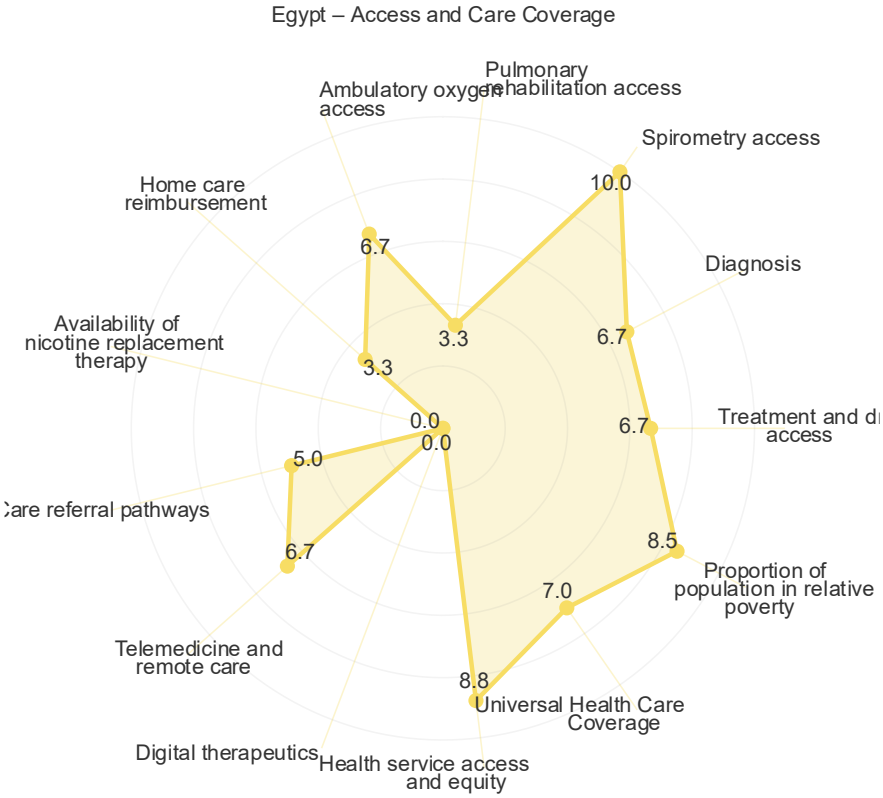
- Relatively good access to core COPD treatments, diagnostic services, and ambulatory oxygen therapy
- University hospitals and Scientific Societies

Challenges

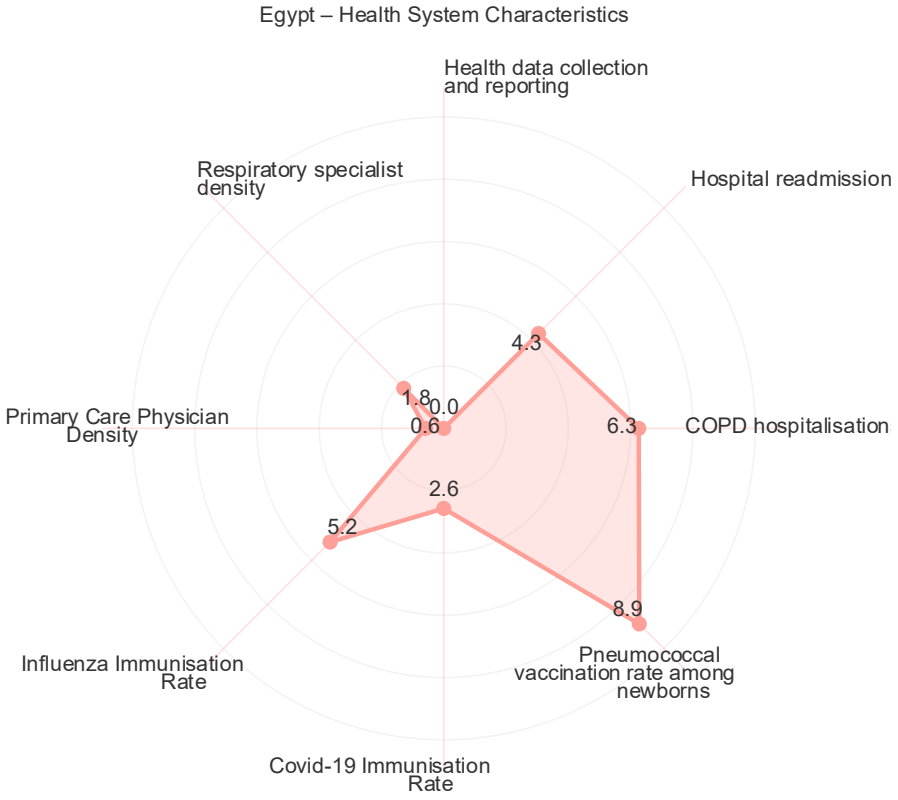
- Absence of a national COPD strategy and publicly available treatment guidelines.
- Weak tobacco control policy and low enforcement of advertising restrictions.
- Unequal access to care, especially in rural areas, and lack of reimbursement for pulmonary rehabilitation and cessation support.
- Limited COPD-specific health data and insufficient respiratory specialist capacity.
- High environmental exposure from PM2.5, fossil-fuel dependence, and indoor air pollution.



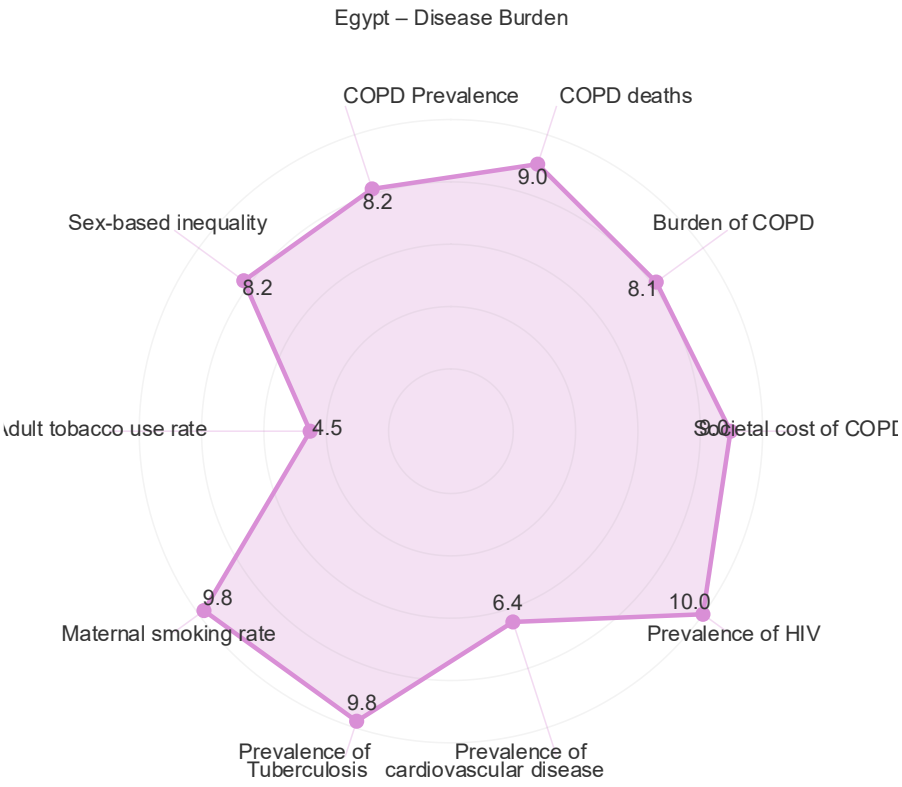
Access and Care Coverage – Score: 56/100



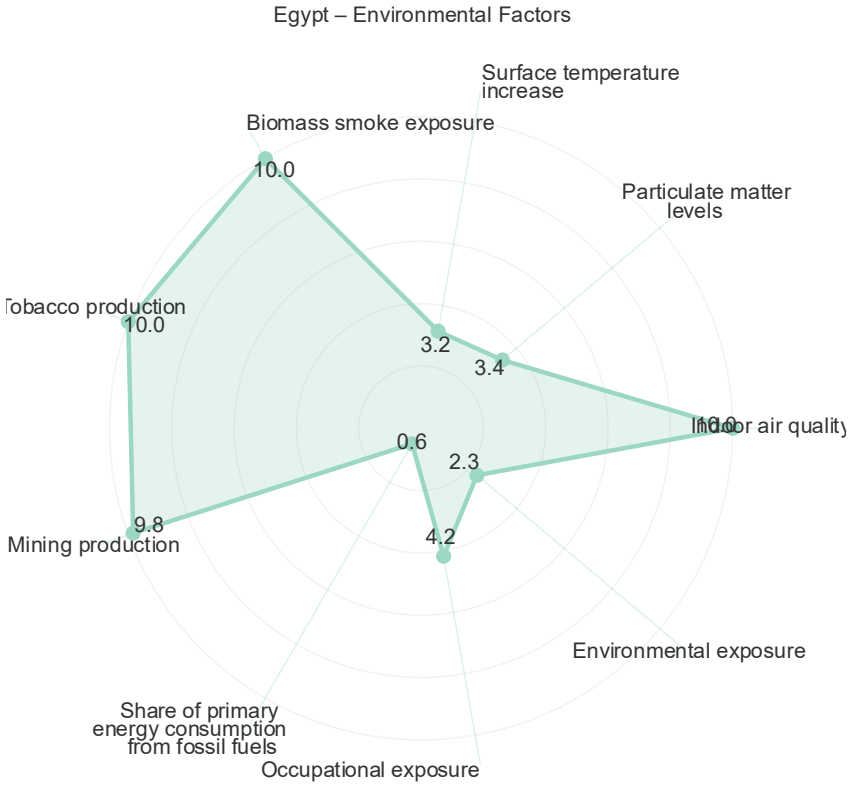
Health System Characteristics – Score: 37/100



Disease Burden – Score: 83/100

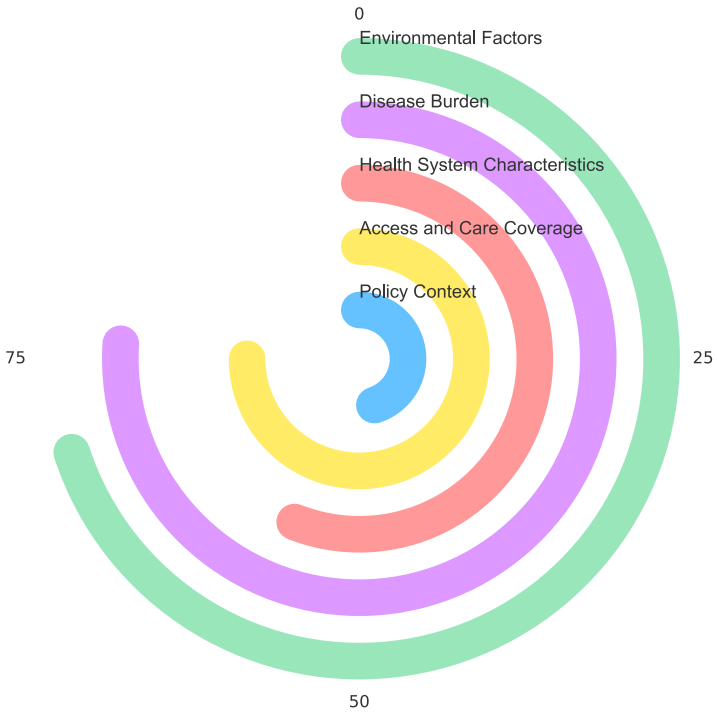


Environmental Factors – Score: 58/100



Israel – COPD Country Profile

🌐 Aggregate Score (Unweighted): 64.4/100



Country Overview

Israel performs **above average** in **Access and Care Coverage**, with publicly funded access to core COPD services including diagnostics, pharmacological treatment, pulmonary rehabilitation, ambulatory oxygen, and home care, most available with co-payments. Nicotine replacement therapy is accessible, and overall unmet healthcare needs remain low.

Israel scores **weakly** in **Policy Context** due to the absence of a formal national COPD strategy, although it has recently formed a national respiratory coalition to elevate lung health on the policy agenda. A national clinical position paper on COPD diagnosis and treatment provides guidance, and GOLD guidelines are reported to be referenced in most hospitals and respiratory clinics. However, implementation remains inconsistent, with studies showing low adherence to pharmacological standards on guideline recommendations. A national quality indicator programme tracks spirometry use in COPD patients, representing a positive step toward structured monitoring. Tobacco control remains weak despite some progress.

Health System Characteristics are **mixed**. Israel reports slightly below-average COPD hospitalisation rates and very low readmission rates, but workforce shortages persist. The number of pulmonologists and primary care doctors is low, leading to long waiting times for specialist appointments and capacity constraints, particularly in peripheral areas.

In the **Disease Burden** category, Israel performs **well**, with low COPD-related deaths, DALYs, and prevalence. However, adult tobacco use remains a key risk factor.

Under **Environmental Factors**, performance is **moderate**. While household access to clean fuels is nearly universal, PM2.5 levels exceed WHO guidelines, and over 90% of primary energy still comes from fossil fuels. Approximately one-quarter of COPD burden is attributable to air pollution.

Key Takeaways

- **Strong coverage, moderate implementation**

Israel's universal health system ensures broad COPD coverage, yet co-payment and limited rehabilitation capacity restrict full access. Implementation of both GOLD and national guidelines is inconsistent, and treatment adherence varies across settings.

- **Policy awareness growing but fragmented**

Although no national COPD strategy exists, Israel has a COPD treatment guideline, and the national respiratory coalition reflects increasing policy focus. The inclusion of spirometry in national quality indicators marks progress toward structured monitoring.

- **Efficient hospital care, but workforce limits**

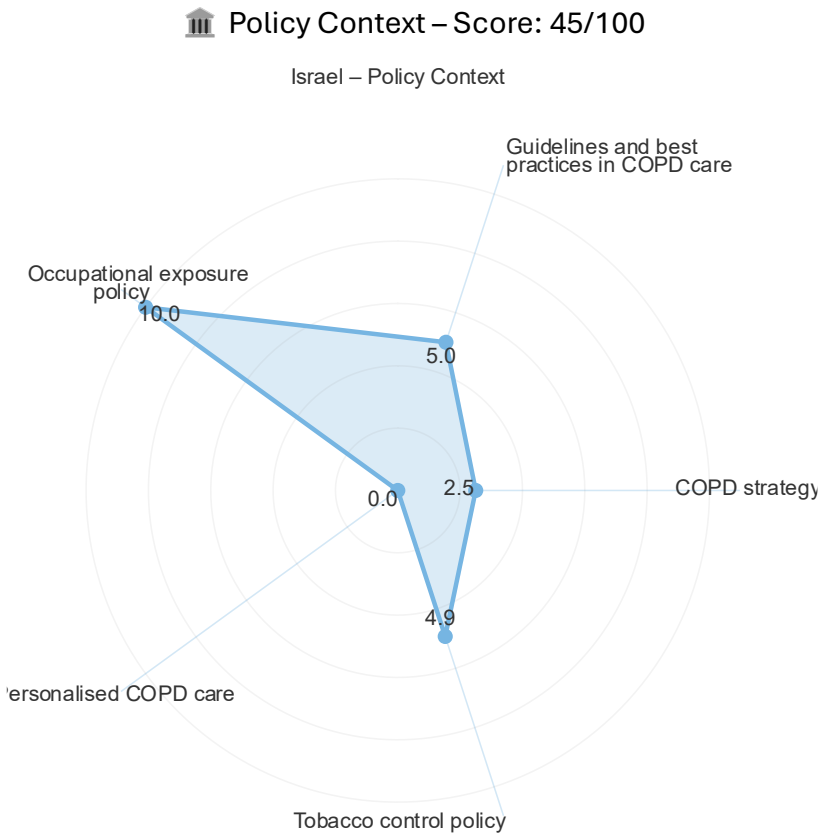
Hospital outcomes for COPD are strong, with low readmission and mortality rates, yet the country faces a shortage of pulmonologists and primary care doctors, especially outside major cities, constraining access and continuity of care. Referral rates to rehabilitation are limited, and long wait times persist in several regions due to capacity constraints.

Best Practices

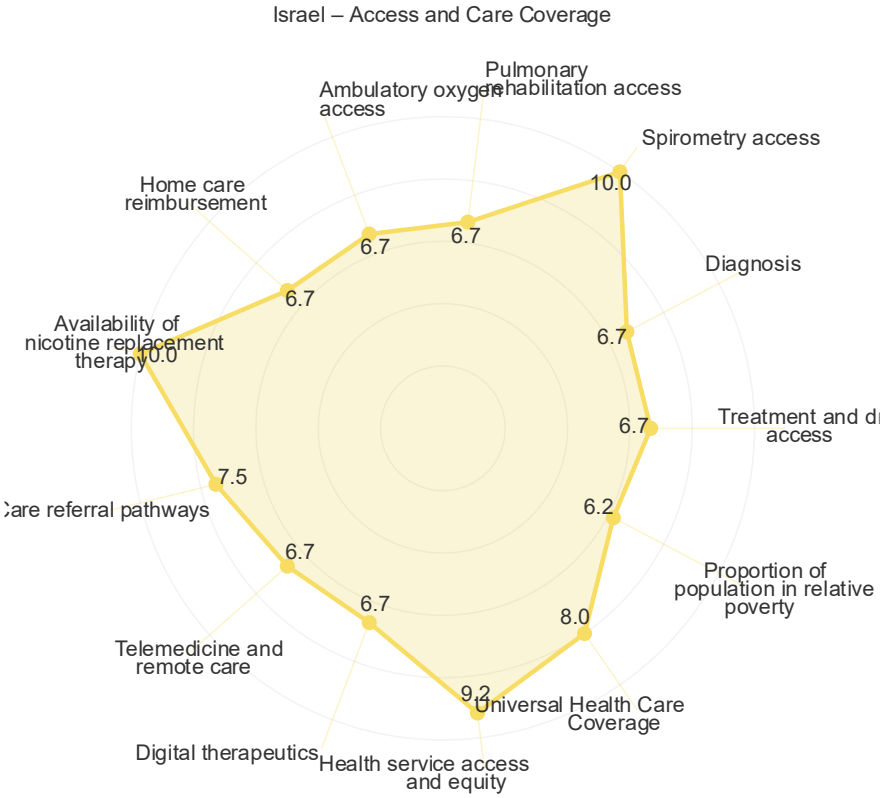
- Access to broad COPD care, including diagnostics, rehab, oxygen, and cessation support
- National spirometry monitoring in COPD under the community quality indicator programme
- Official COPD treatment guideline
- Low unmet healthcare needs and efficient hospital readmission rates

Challenges

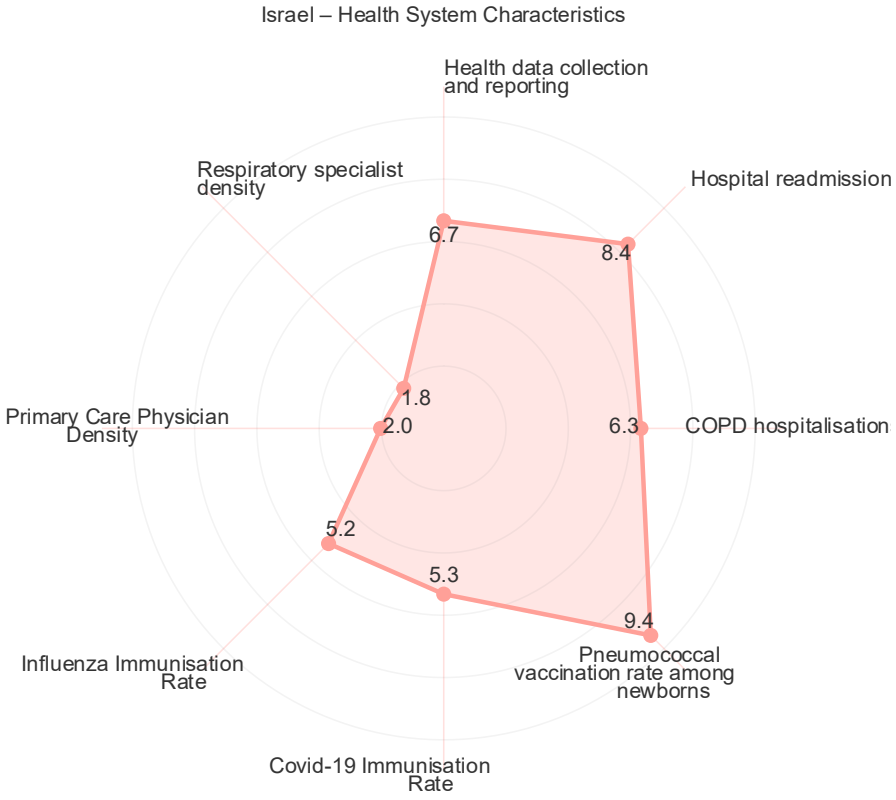
- No national COPD strategy or structured personalised care pathways
- Inconsistent implementation of available guidelines and GOLD-based treatment
- Workforce and capacity constraints
- High PM2.5 exposure and continued reliance on fossil fuels



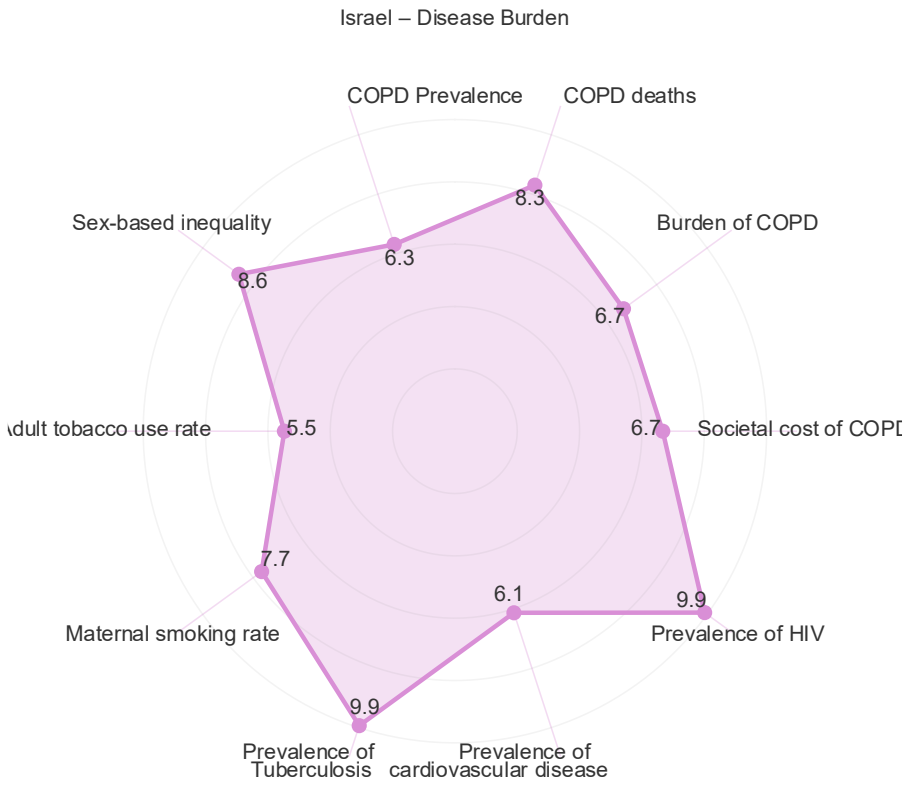
Access and Care Coverage – Score: 75/100



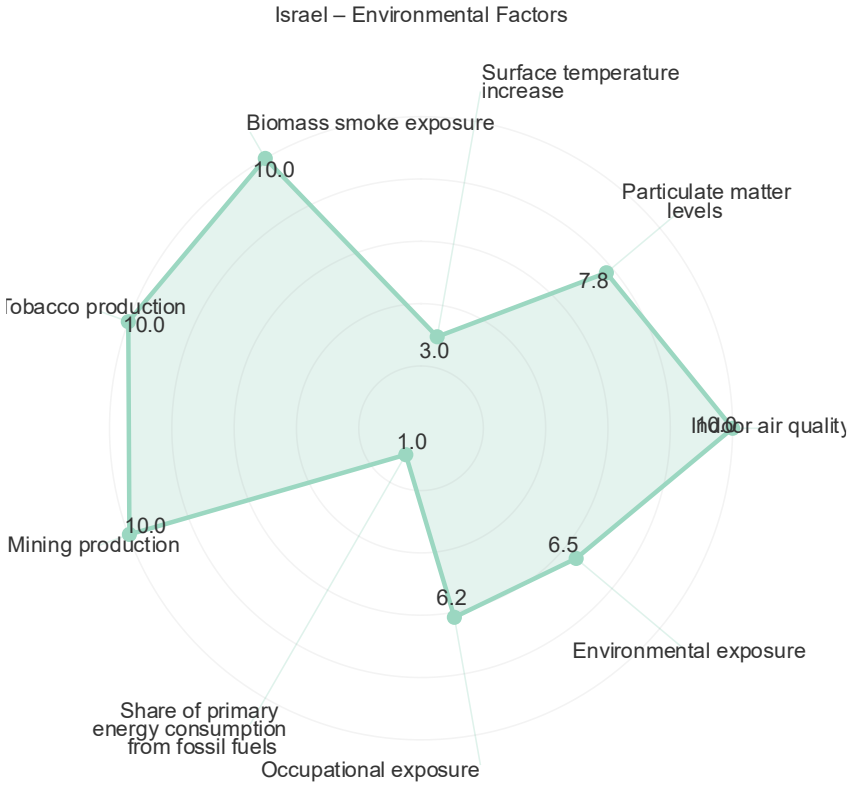
Health System Characteristics – Score: 56/100



Disease Burden – Score: 76/100

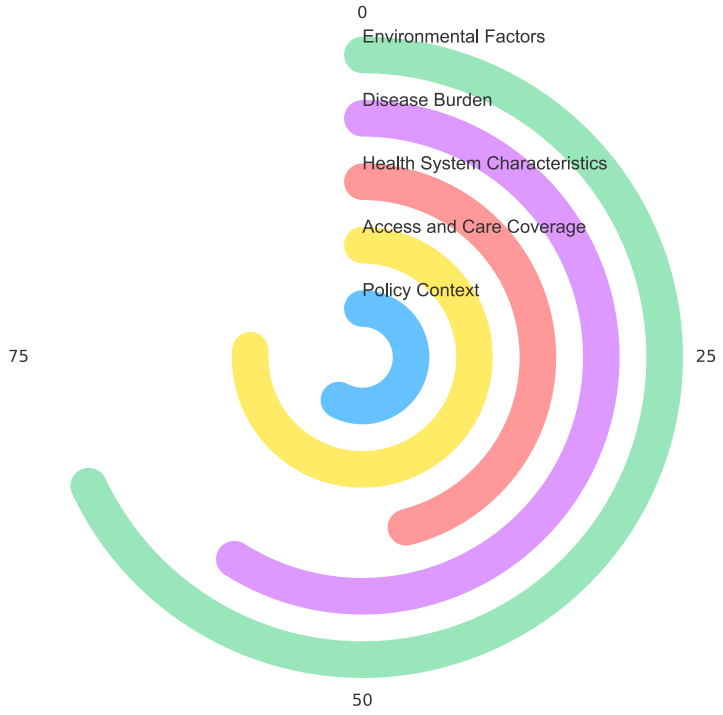


Environmental Factors – Score: 70/100



Romania – COPD Country Profile

🌐 Aggregate Score (Unweighted): 61.3/100



Country Overview

Romania shows a mixed performance across the COPD Index. **Access and Care Coverage** is its **strongest dimension**, supported by available diagnostics, treatment access, home care reimbursement, specialist care and rehabilitation. Telemedicine is in place and could help expand reach further. Despite this, unmet healthcare needs remain moderate and access is affected by socioeconomic inequalities, as around one-fifth of the population lives in relative poverty.

Romania performs **moderately** in the **Policy Context** category. The country does not yet have a national COPD strategy or dedicated COPD-specific clinical guidelines, which limits consistent referral pathways and coordinated care. Regulatory frameworks for occupational exposure exist, but are not COPD-targeted.

Health System Characteristics remain a **challenge**. Hospitalisations and readmissions are relatively high, and specialist supply and vaccination rates fall behind regional leaders. While important building blocks such as rehabilitation and spirometry exist, the lack of stronger integration between primary care, hospitals, and rehabilitation reduces overall system performance.

Disease Burden is around **average**. COPD-related DALYs remain substantial, and sex-based inequality in burden is high. Adult tobacco use is also high, which continues to fuel COPD incidence and progression. Cardiovascular disease and tuberculosis prevalence add further complexity to the patient profile.

Environmental Factors show strength in access to clean household fuels, but particulate matter levels, fossil fuel reliance and occupational and environmental exposures present ongoing risks.

Key Takeaways

- Romania's strong Access and Coverage score reflects a broad availability of diagnostics, treatment and rehabilitation, but inequalities and fragmentation reduce the impact. Strengthening practical referral mechanisms, expanding primary care involvement and using telemedicine more systematically can improve continuity using structures already in place.
- Tobacco use and comorbid conditions continue to drive burden. Integrating cessation counselling into existing rehabilitation, hospital care and primary care could immediately strengthen prevention without major new programmes.
- The absence of a national strategy limits coherence, but Romania already has most components needed to build one. Formalising COPD guidelines, defining a structured referral pathway and monitoring key indicators could significantly improve system coordination and outcomes.

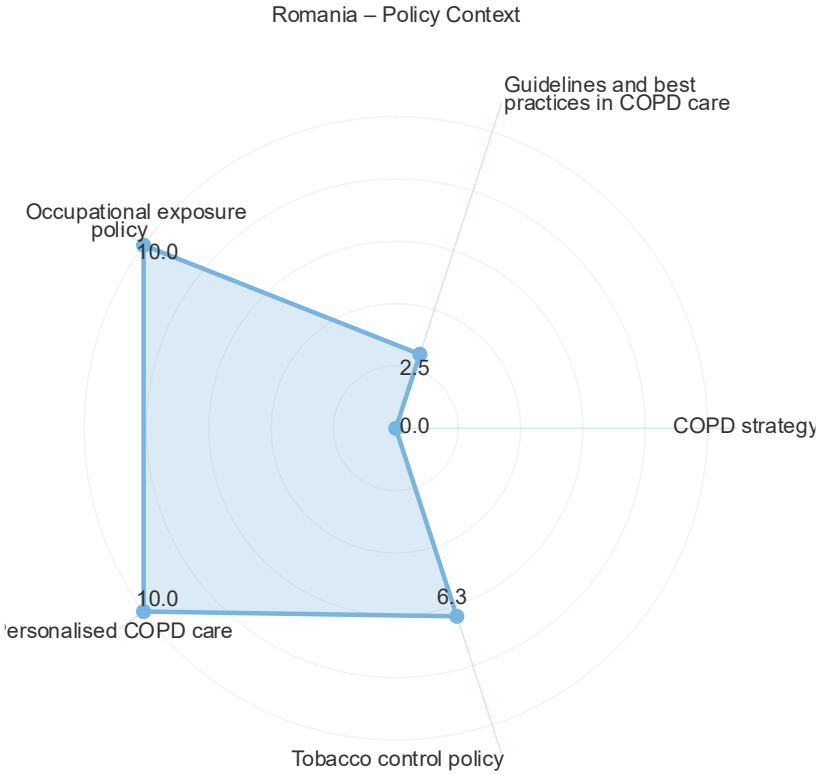
Best practices

- Rehabilitation, spirometry, treatment access and specialist care available across the country.
- Telemedicine infrastructure provides an opportunity to support follow up and remote access.
- Universal clean household fuels reduce indoor exposure risk.

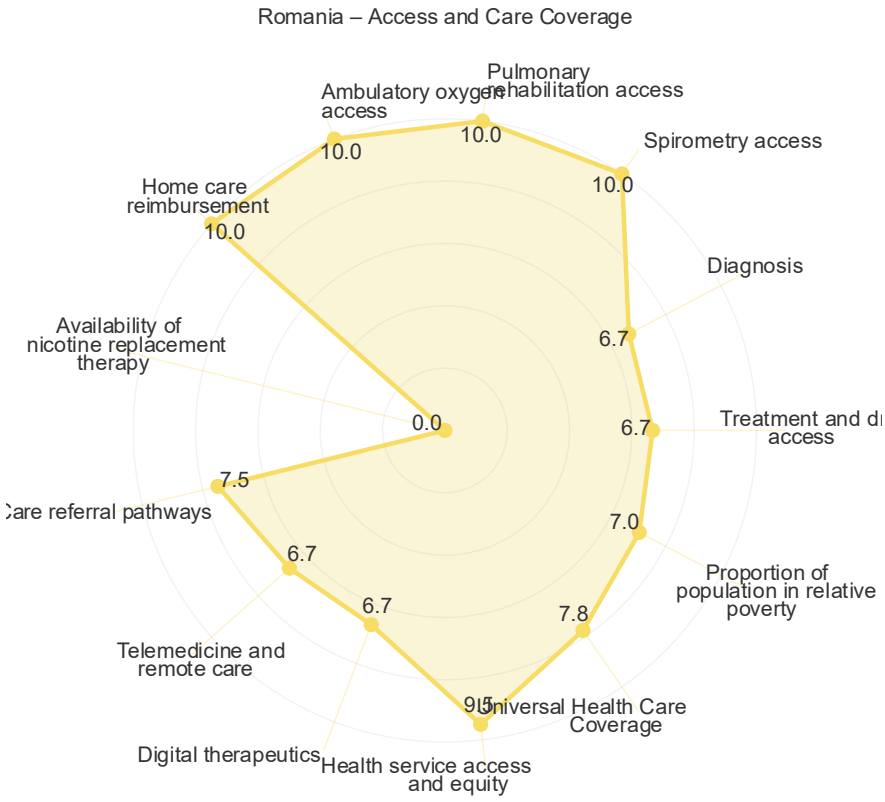
Challenges

- No national COPD strategy or COPD specific clinical guidelines.
- High smoking prevalence and significant comorbidity related pressures.
- Environmental and occupational exposures remain elevated, particularly particulate matter.

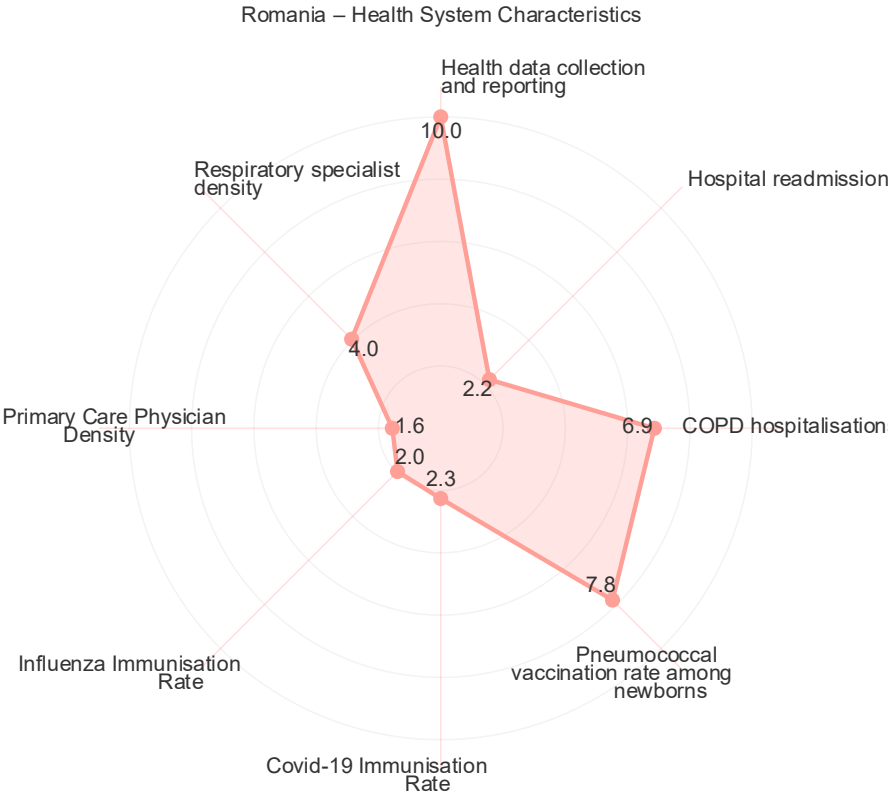
Policy Context – Score: 58/100



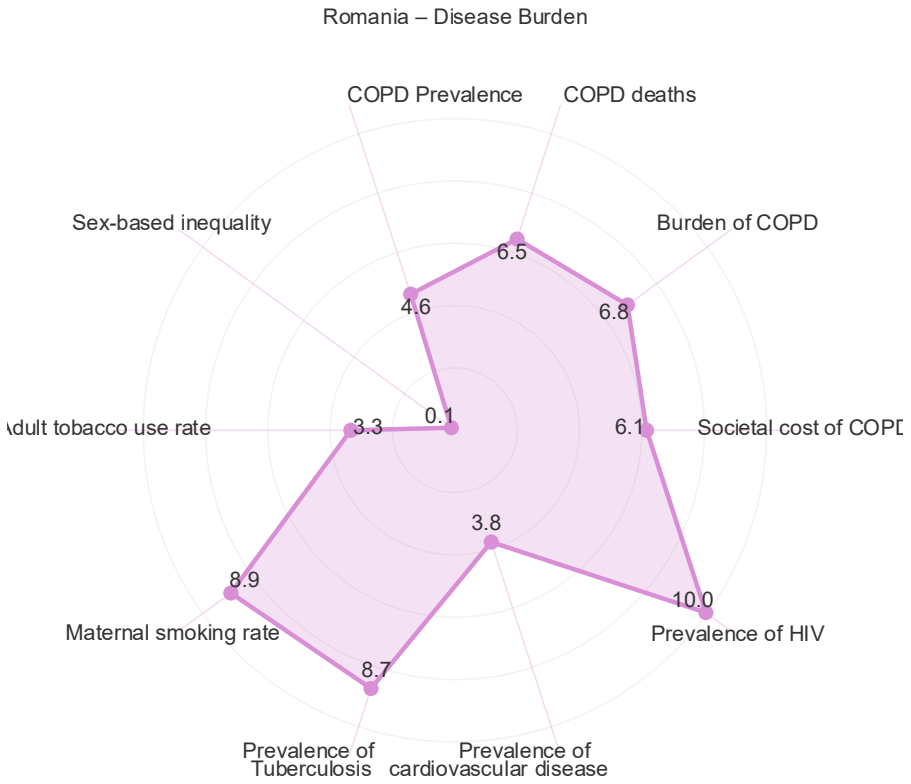
Access and Coverage – Score: 76/100



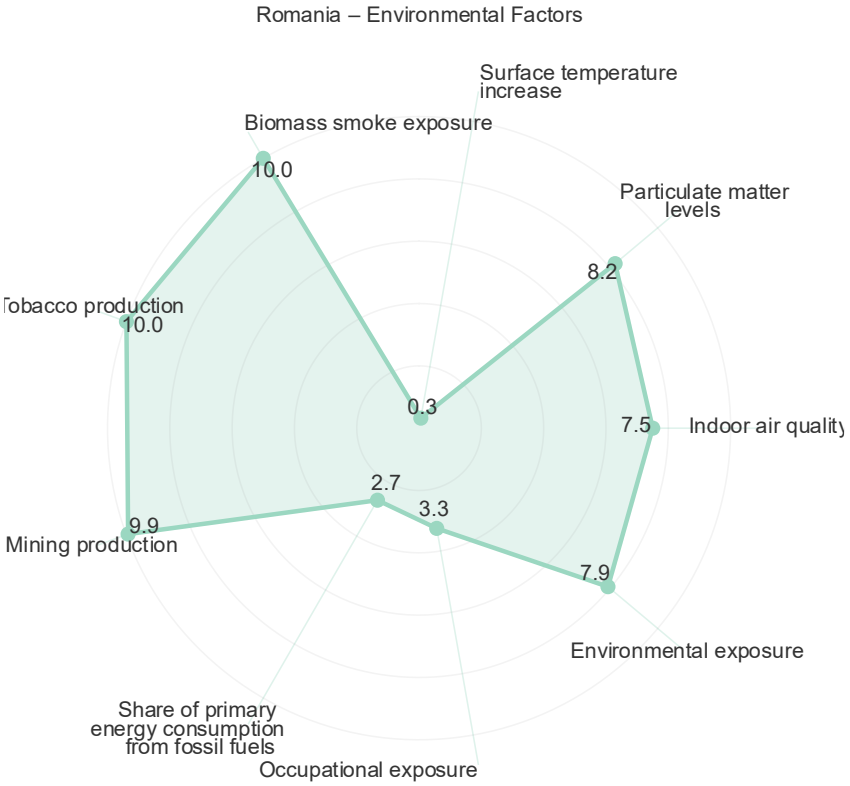
Health System Characteristics – Score: 46/100



Disease Burden – Score: 59/100

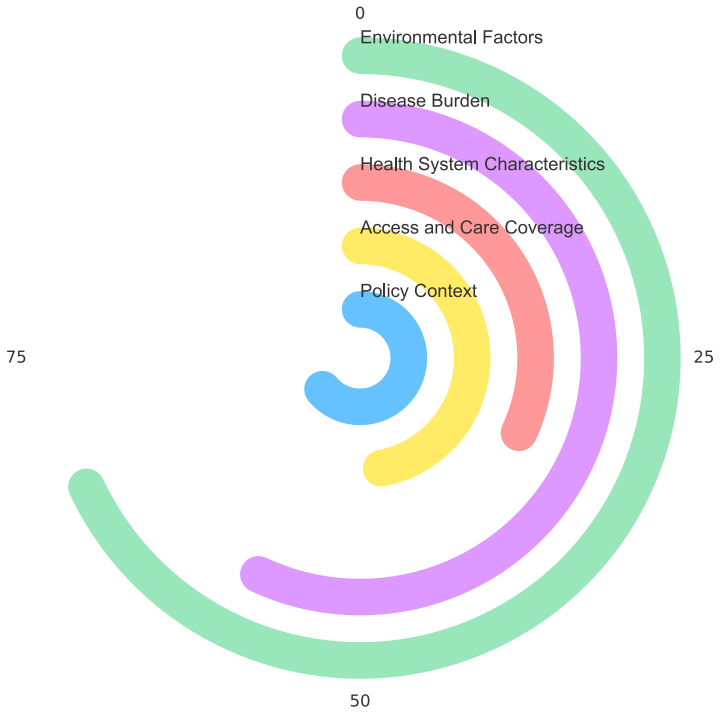


Environmental Factors – Score: 68/100



South Africa – COPD Country Profile

🌐 Aggregate Score (Unweighted): 53.4/100



Country Overview

South Africa performs **above average in Policy Context**, with respiratory diseases and COPD explicitly mentioned in the National Strategic Plan for NCDs (2022–2027). While there is no standalone COPD strategy, the country has clinical guidelines for COPD management that support individualised treatments. There are also system improvement initiatives, such as the Practical Approach to Care Kit (PACK) programme. PACK supports primary care clinicians through symptom-based, task-sharing protocols, which have improved guideline uptake in several provinces. However, tobacco control remains weak, with limited enforcement of smoking bans and modest progress on health warnings and taxation.

In **Access and Care Coverage**, South Africa performs **below average**. COPD diagnosis and pharmacological treatment are available through the public system. Still, pulmonary rehabilitation and ambulatory oxygen therapy are rarely reimbursed, and nicotine replacement therapy is not provided in the public sector. While access to specialist respiratory care is relatively good in urban centres, rural coverage and affordability remain limited, compounded by the highest relative poverty rate among countries in the Index.

Health System Characteristics are **among the weakest**. Data collection on COPD hospitalisations and readmissions is limited, and national health information systems are still being developed; however, plans for a national electronic health record system set out in the National Digital Health Strategy (2019–2024). The shortage of respiratory

specialists, particularly outside major cities, limits care quality and follow-up. Vaccination coverage, including influenza immunisation for COPD patients, remains low.

In the **Disease Burden** domain, South Africa performs **below average**. COPD mortality and DALYs are moderate but worsened by high rates of maternal smoking, tuberculosis, and HIV challenges, which exacerbate respiratory vulnerability.

Environmental Factors present a **mixed** picture. While access to clean household fuels is improving, fossil fuel dependence continues, and particulate matter levels remain high, with a substantial share (27%) of COPD DALYs is attributable to air pollution exposure.

Key Takeaways

- **Strong clinical foundation but limited system integration**

  South Africa has well-established national COPD management guidelines that align with international standards and encourage individualised treatment. However, the lack of a dedicated COPD strategy and weak interlinkages between national and provincial programmes limit full-scale implementation and monitoring.

- **Persistent inequities in access and capacity**

  Access to COPD medication and diagnostics is reasonably strong, yet rehabilitation, home oxygen, and cessation services remain scarce or unfunded, particularly in rural areas. Shortages of respiratory specialists and low influenza vaccination uptake further widen health gaps.

- **Risk factors amplify preventable burden**

  Despite moderate COPD prevalence, tobacco use, indoor air pollution, and fossil-fuel dependence continue to elevate risk. Air pollution contributes to over one-quarter of COPD DALYs, while co-existing TB and HIV add to chronic respiratory vulnerability.

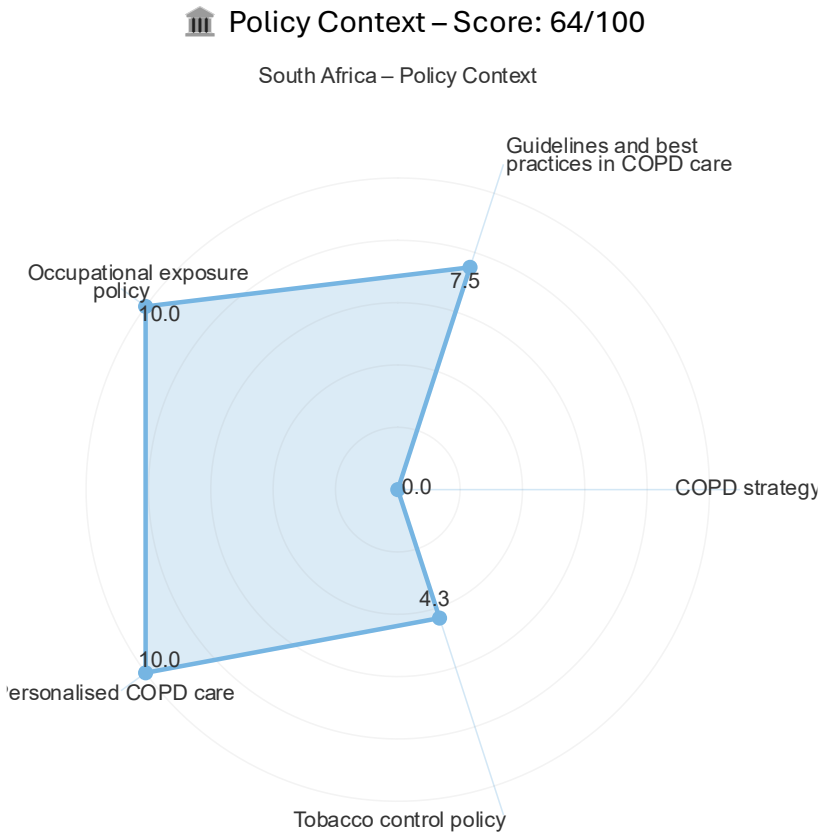
Best Practices

- National COPD management guidelines support evidence-based, individualised care and are integrated within broader chronic disease programmes
- Established specialist centres and university hospitals (e.g. Groote Schuur, Charlotte Maxeke) deliver advanced respiratory care and training, creating a platform for clinical excellence

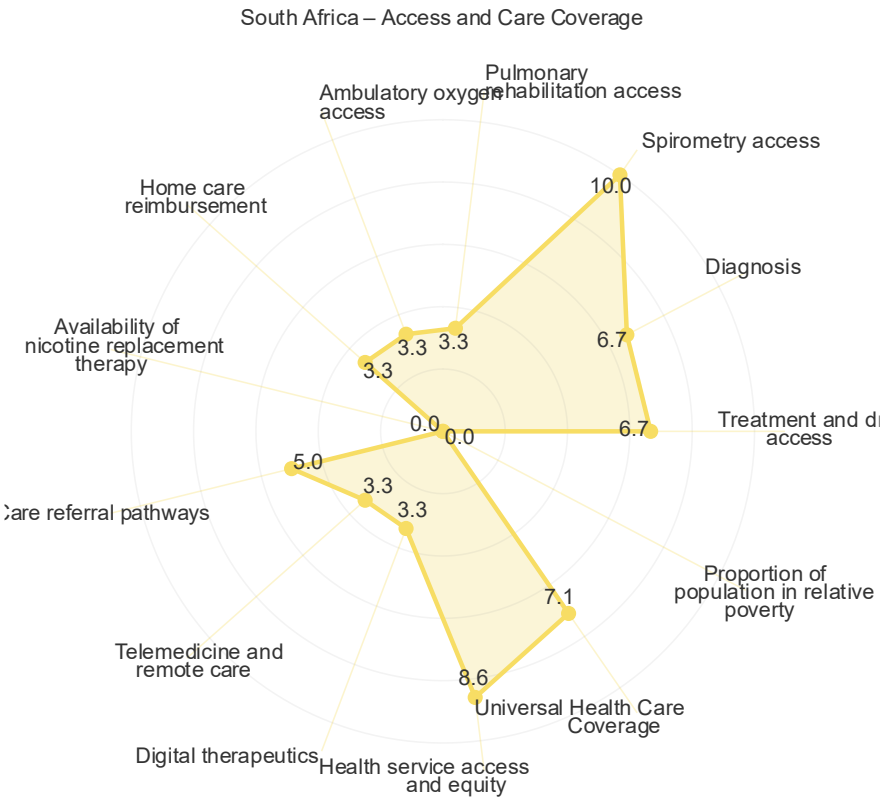
- Ongoing digital health reforms toward a national electronic health record offer long-term potential to improve data capture and continuity of care

Challenges

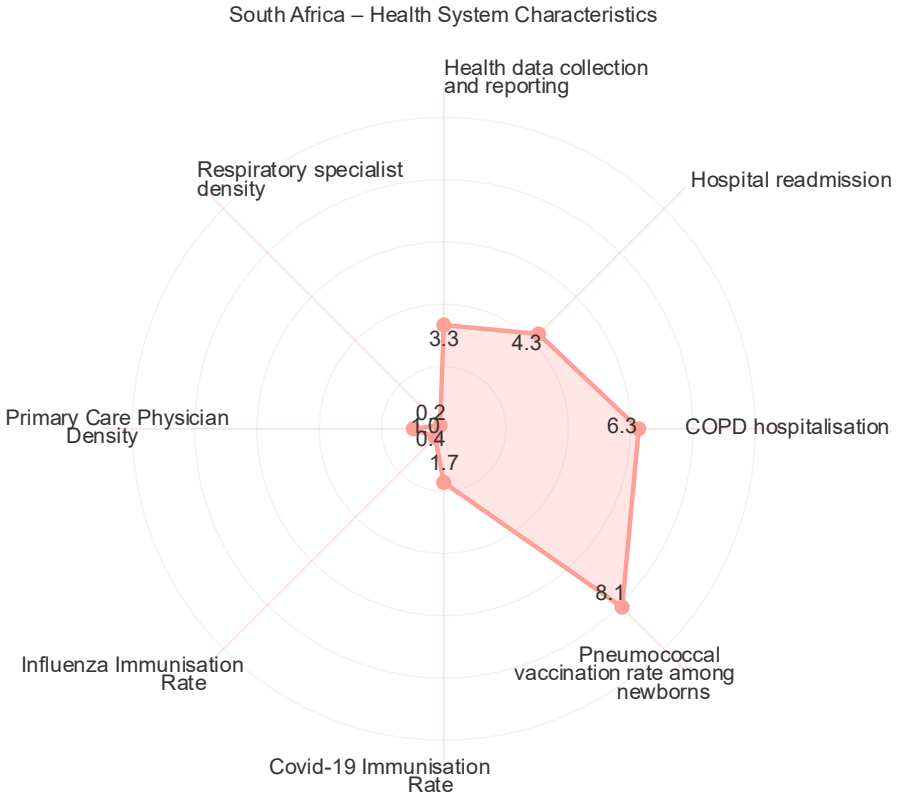
- No standalone COPD strategy and weak tobacco control enforcement
- Limited access to pulmonary rehabilitation, oxygen therapy, and cessation support
- Severe data gaps on COPD hospitalisation and outcomes
- Shortage of respiratory specialists and limited influenza vaccination uptake
- High air pollution exposure linked to fossil fuel use and poor indoor air quality



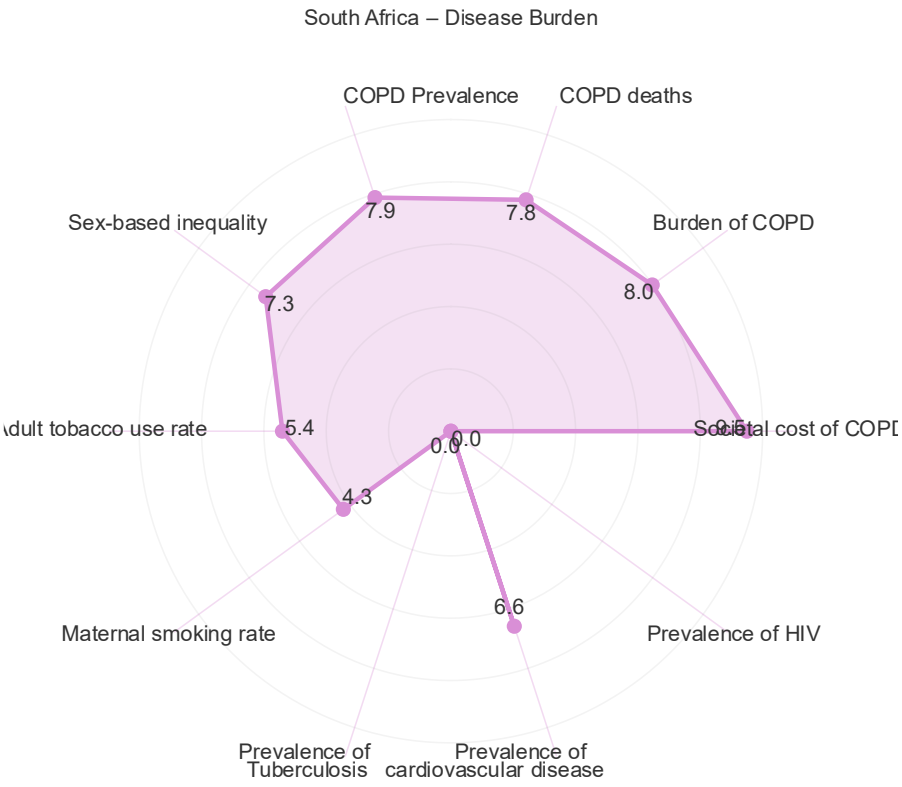
Access and Care Coverage – Score: 47/100



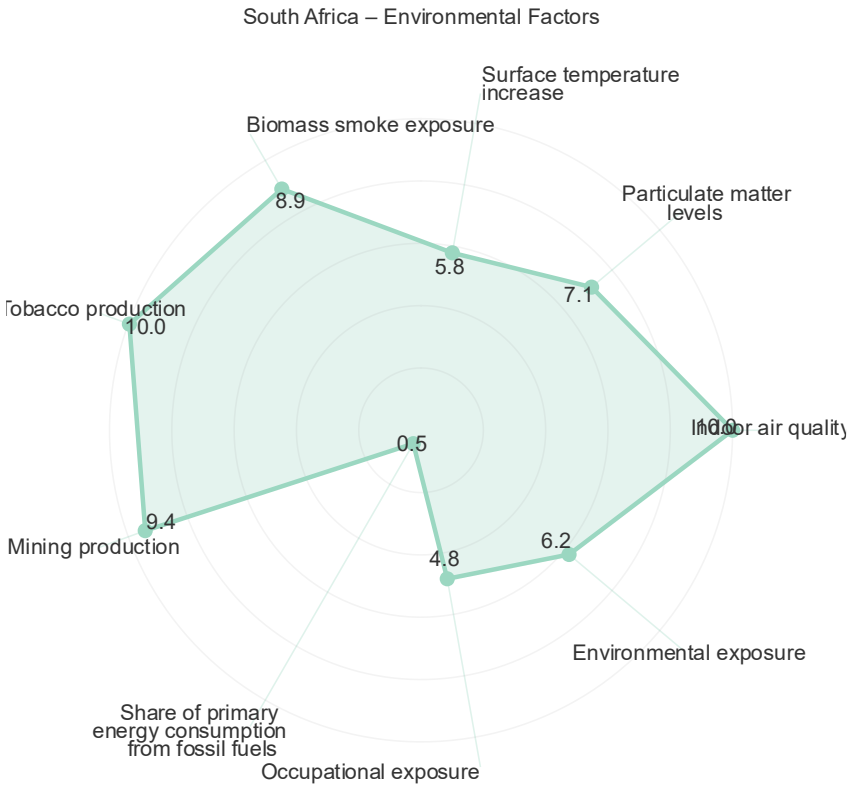
Health System Characteristics – Score: 32/100



Disease Burden – Score: 57/100



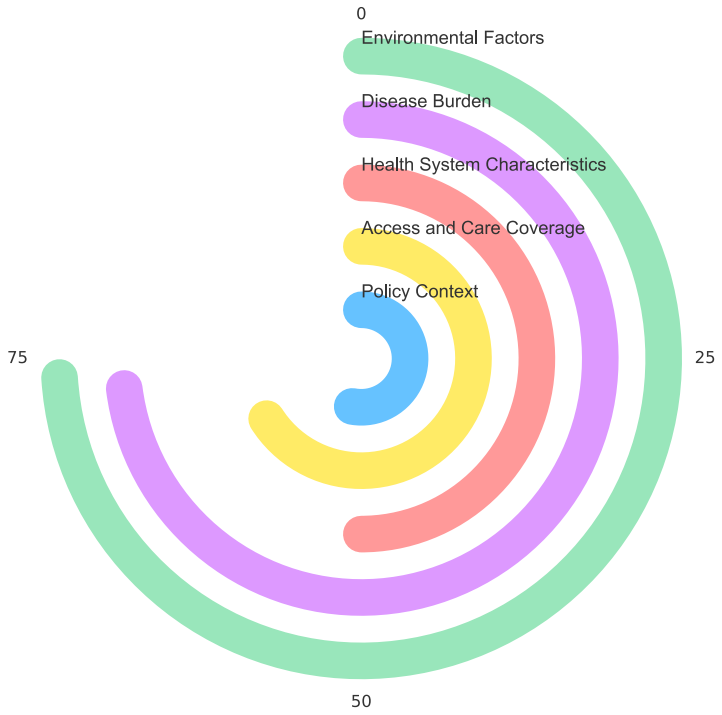
Environmental Factors – Score: 68/100



Latin American Countries

Argentina – COPD Country Profile

🌐 Aggregate Score (Unweighted): 63.1



Country Overview

A score of 63.1 reflects that Argentina has developed outstanding epidemiological and clinical capabilities for addressing COPD, but significant challenges remain in systematic implementation, equitable access, and integration of public policies at the national level.

Argentina has robust epidemiological evidence, with the EPOC.AR Study (2017) was the first population survey with standardised methodology that established a national prevalence of 14.5% in the population over 40 years of age, equivalent to more than 2.3 million people affected. This study represents a solid basis for the design of public policies. The country has updated national clinical practice guidelines that are aligned with international standards and prioritise the use of spirometry, stepwise management according to severity, and access to long-acting treatments.

In terms of access and coverage of care, essential medicines (bronchodilators and inhaled corticosteroids) are available through the Remediar Programme and the social security system. Among the leading institutions are the Ferrer, Cetrángolo, San Juan de Dios, and Lanari hospitals; however, the Ramos Mejía Hospital occupies a particularly prominent place, having been a pioneer in the implementation of pulmonary

rehabilitation services in the country. These specialised services are mainly concentrated in large urban centres. Home oxygen therapy is included in public and social security coverage, although administrative delays persist.

The Argentine health system is structurally fragmented between the public sector, social security, and the private system, creating significant inequalities in access to and continuity of treatment. There is no systematic national registry for COPD or an exclusive national programme with its own budget, goals, and indicators. The implementation of clinical guidelines depends on provincial or institutional capacity, without a uniform national monitoring system.

COPD represents a substantial health and economic burden for Argentina. Underdiagnosis reaches 77.4% of cases, while diagnostic error affects 60.7% according to the EPOC.AR Study. This means that the vast majority of patients do not receive a correct and timely diagnosis, severely limiting the possibilities for early intervention and adequate treatment.

Treatment costs represent a significant burden, especially considering that only one-third of patients adhere well to therapy and more than 50% make mistakes in inhalation technique, reducing the effectiveness of available treatments and increasing the risk of exacerbations.

Environmental and socioeconomic factors are determinants of the burden of COPD in Argentina. The persistence of smoking is notable, with 35% of current smokers and 35% of former smokers. High levels of particulate matter in metropolitan areas and the use of biomass in rural households contribute significantly to the risk. In addition, there is a higher prevalence in groups with low levels of education, highlighting structural inequalities.

Key Takeaways

- **Solid epidemiological evidence without translation into public policy:** Argentina has the EPOC.AR study, a rigorous population survey that establishes a prevalence of 14.5% and shows an underdiagnosis rate of 77.4%. However, this evidence has not been translated into a specific national programme with a defined budget and goals, limiting its impact on clinical practice.
- **Crisis of underdiagnosis and diagnostic error:** Massive underdiagnosis (77.4%) combined with a diagnostic error rate of 60.7% represents a critical systemic failure of primary care. Spirometry is not systematically available at the primary care level, preventing early detection and timely treatment of the disease.
- **System fragmentation and regional inequality:** The fragmented structure of the health system (public, social security, and private) generates profound inequalities in access to diagnosis, specialised treatment, and pulmonary rehabilitation. The

concentration of specialists and equipment in CABA and large cities leaves rural areas with little or no coverage.

- **Absence of monitoring systems and national registry:** The lack of a national COPD registry integrated into SNVS 2.0 prevents epidemiological monitoring, evaluation of intervention outcomes, and efficient allocation of resources. This absence of up-to-date data severely limits the health system's planning and response capacity.
- **Weakness in the prevention and control of risk factors:** despite consolidated anti-smoking policies (Laws 26.687 and 27.113), smoking persists at high levels (35% of the population are current smokers). Insufficient integration of smoking cessation programmes at all levels of care and the lack of specific policies to reduce exposure to environmental pollutants and biomass limit the preventive impact.

Best Practices

- **EPOC.AR Study as a Regional Benchmark:** The first population survey with standardised methodology (2017), which established a national prevalence of 14.5%, represents an exemplary practice in the region. This study provides solid epidemiological data that allows for the correct assessment of the public health problem and constitutes a robust scientific basis for the design of evidence-based policies.
- **Centres of Excellence in Pulmonary Rehabilitation:** The existence of specialised referral hospitals (Ramos Mejía, Ferrer, Cetrángolo, San Juan de Dios, Lanari) that offer structured pulmonary rehabilitation programmes is a valuable asset. These centres establish quality standards, train specialised human resources and generate local evidence on the effectiveness of these interventions. The Ramos Mejía hospital in particular, is a leader in training throughout the country.
- **Remediar Programme and Essential Medicines Coverage:** The availability of bronchodilators and inhaled corticosteroids through the Remediar Programme and the social security system guarantees a basic level of access to essential pharmacological treatments. This programme represents an effective mechanism for accessing medicines in the public sector.
- **Consolidated Anti-Tobacco Legal Framework:** National Laws 26,687 and 27,113 establish a robust regulatory framework for tobacco control, with sustained prevention and control campaigns. These policies, aligned with the WHO Framework Convention on Tobacco Control, demonstrate the State's commitment to primary prevention.
- **Development of Updated National Guidelines:** Argentina has national clinical practice guidelines for COPD that are up to date and aligned with international recommendations. These guidelines establish standardised protocols for diagnosis and treatment, prioritising the use of spirometry and stepwise management according to severity.

- **National Network of Respiratory Laboratories and Telemedicine:** The existence of a network of respiratory laboratories and the development of telemedicine capabilities represent an opportunity to expand access to diagnosis and follow-up for patients with COPD, especially in areas with limited infrastructure and specialised human resources.
- **Home Oxygen Therapy Coverage:** The inclusion of home oxygen therapy in public and social security coverage guarantees access to this vital intervention for patients with chronic respiratory failure. Although administrative delays persist, formal coverage represents an important basis for improving implementation.

Challenges

- **High national prevalence and massive underdiagnosis:** with a prevalence of 14.5% (more than 2.3 million people affected) and an underdiagnosis rate of 77.4%, Argentina faces a silent public health crisis. Most COPD patients are unaware of their condition, which prevents early intervention, timely treatment, and preventive strategies. This challenge is exacerbated by a diagnostic error rate of 60.7%, highlighting critical flaws in the system's diagnostic capacity.
- **Fragmentation of the health system:** the coexistence of three subsystems (public, social security, and private) without adequate coordination creates profound inequalities in access to diagnosis, specialised treatment, and pulmonary rehabilitation. This fragmentation results in duplication of efforts, inefficiencies in resource allocation, and significant gaps in continuity of care. Patients face administrative barriers that limit their ability to access specialised services and adequate follow-up.
- **Absence of a specific national programme:** There is no exclusive national COPD programme with its own budget, specific goals, and performance indicators. The implementation of clinical guidelines depends on provincial or institutional capacity, resulting in heterogeneous application and no uniform national monitoring. This lack of national leadership severely limits the possibility of coordinating effective actions, allocating resources efficiently, and evaluating the impact of interventions.
- **Lack of a national registry and monitoring system:** The absence of a national COPD registry integrated into SNVs 2.0 prevents real-time epidemiological monitoring, evaluation of intervention outcomes, and planning based on up-to-date evidence. Without systematic data on prevalence, incidence, treatment, adherence, and mortality, the health system operates with fragmented and outdated information, limiting its ability to respond and adapt to population needs.

- **Regional inequality in access to specialised services:** The concentration of specialists, diagnostic equipment, and pulmonary rehabilitation programmes in CABA and large urban centres leaves rural areas and provinces with relatively less development, with little or no coverage. This geographical inequality perpetuates disparities in health outcomes and limits opportunities for access to quality care for populations far from major centres.
- **Limitations in primary care:** Spirometry is not systematically available at the primary care level, where the greatest opportunity for early detection lies. In addition to the lack of access to equipment, there are persistent deficits in the training of health personnel to perform and interpret spirometry tests properly. This structural weakness at the primary care level is the main barrier to reducing underdiagnosis.
- **Persistence of smoking and environmental exposure:** Despite having a consolidated anti-smoking legal framework, 35% of the population continues to smoke, and another 35% are ex-smokers, maintaining a high population risk. Additionally, high levels of particulate matter in metropolitan areas and the persistent use of biomass in rural households contribute significantly to the burden of disease. Insufficient integration of environmental and health policies limits the impact of preventive strategies.
- **Low therapeutic adherence and inhalation technique errors:** Only one-third of patients have good therapeutic adherence, and more than 50% make errors in inhalation technique, drastically reducing the effectiveness of available treatments. This situation highlights the urgent need for structured patient education programmes, systematic follow-up, and verification of inhalation technique as an integral part of treatment.

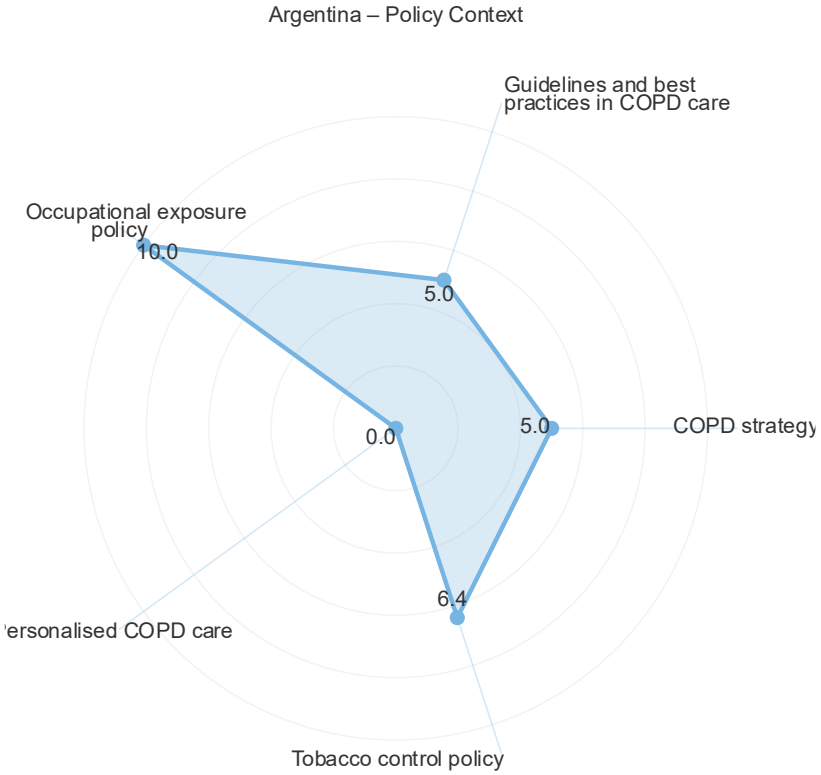
Recommendations

- **Create a National COPD Programme:** Design and implement a national programme exclusively for COPD with its own budget, specific goals, and performance indicators. This programme should coordinate actions between the national, provincial, and municipal levels, establishing minimum standards of care, training, and access to diagnostic and therapeutic technologies throughout the country.
- **Implement systematic spirometry screening:** Launch a systematic spirometry screening programme for people over 40 with risk factors, ensuring the availability of spirometers in primary care and the ongoing training and certification of healthcare personnel. Incorporate telemedicine and the national network of respiratory laboratories to expand access in remote areas.
- **Establish a National COPD Registry:** Integrate COPD into the National Health Surveillance System (SNVS 2.0) with standardised and detailed coding. This registry should allow for real-time monitoring of prevalence, incidence, treatment,

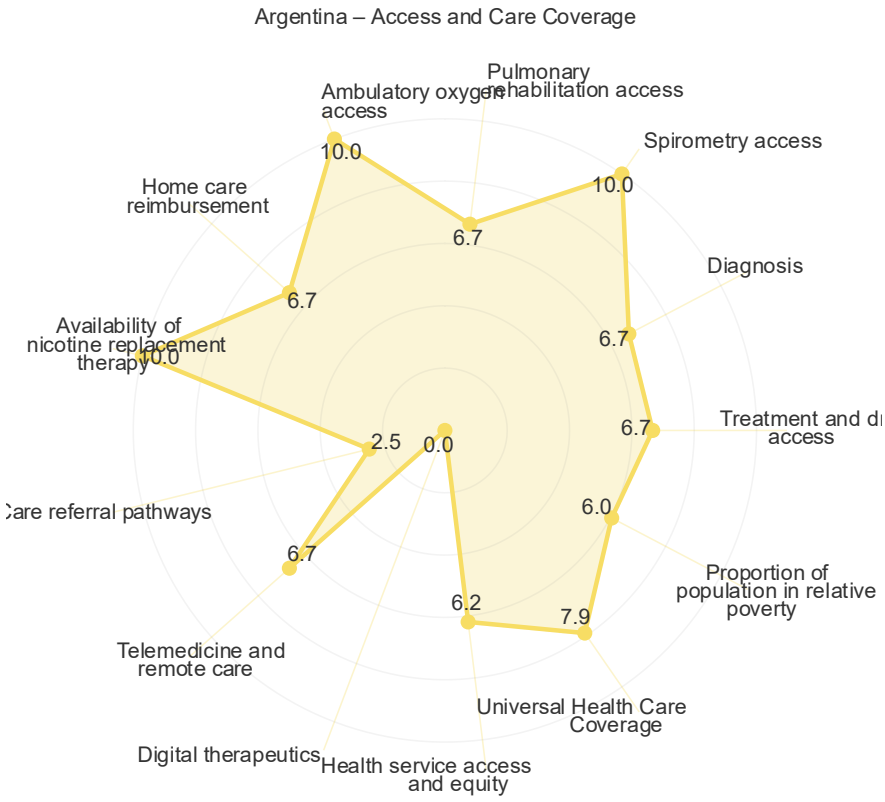
adherence, exacerbations, and mortality, facilitating evidence-based decision-making and evaluation of the impact of public policies.

- **Ensure equitable access to Long-Acting treatments:** Ensure the availability of long-acting therapies (LAMA, LABA+LAMA, ICS) throughout the country, including their incorporation into the Remediar Programme and the National Formulary. Implement strategies to improve therapeutic adherence and inhalation technique through patient education programmes and structured follow-up.
- **Decentralise and expand pulmonary rehabilitation:** Expand pulmonary rehabilitation programmes to provinces with less infrastructure, establishing regional centres with stable funding and interjurisdictional coverage. Incorporate home rehabilitation and telerehabilitation modalities for patients with mobility or geographical access limitations.
- **Strengthen smoking cessation programmes:** integrate smoking cessation programmes with pharmacological support (nicotine replacement therapy, bupropion, varenicline) and counselling at all levels of care. Expand the coverage and accessibility of these programmes, eliminating economic and administrative barriers that limit their effective use.
- **Update epidemiological studies periodically:** repeat the EPOC.AR study every 5-10 years to measure the impact of interventions, update estimates of prevalence and disease burden, and identify new epidemiological trends. This will allow public policies to be adjusted based on updated evidence.
- **Integrate environmental and occupational prevention:** Develop intersectoral policies that address exposure to urban pollutants and the use of biomass in rural households. Coordinate actions with the environment, energy, and labour sectors to reduce population exposure to environmental and occupational risk factors, especially in vulnerable communities.

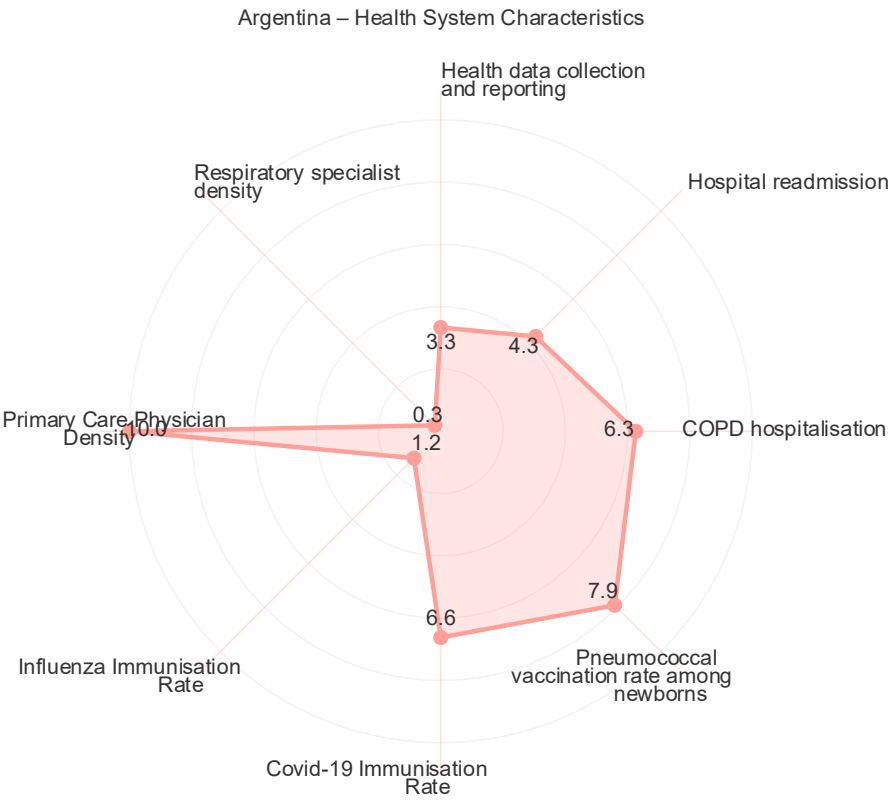
Policy Context – Score: 53/100



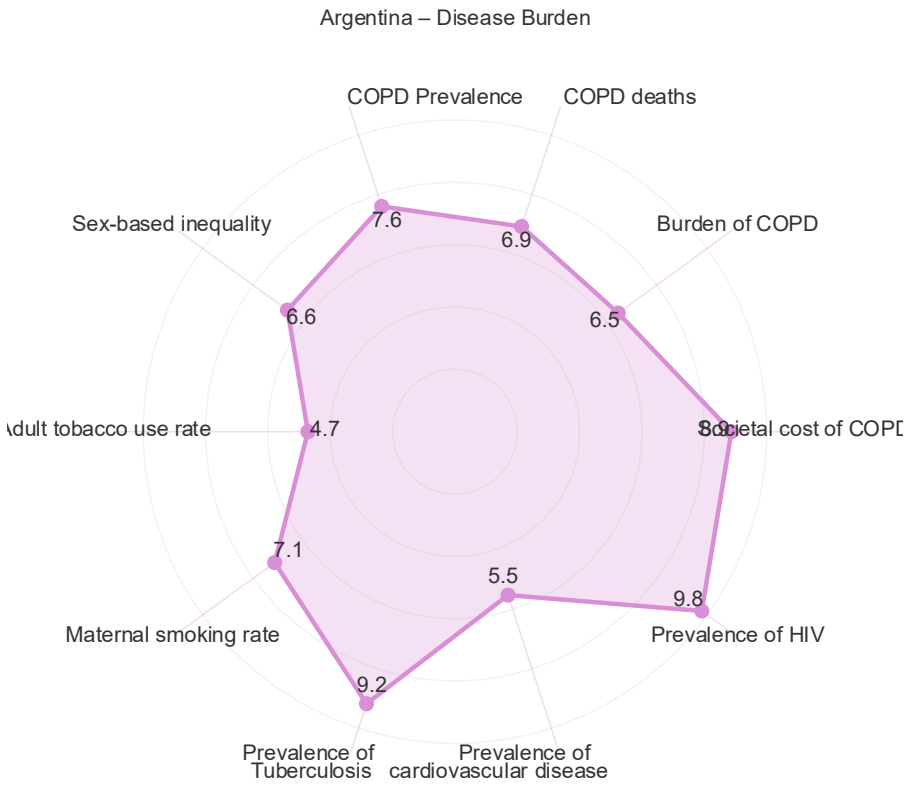
Access and Care Coverage – Score: 66/100



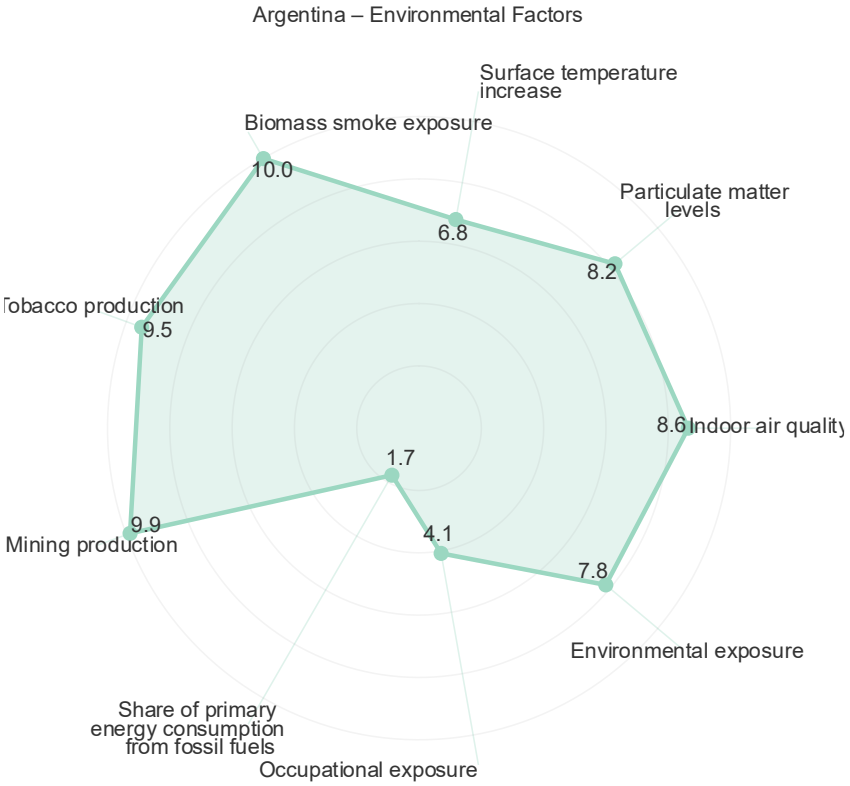
Health System Characteristics – Score: 50/100



Disease Burden – Score: 73/100

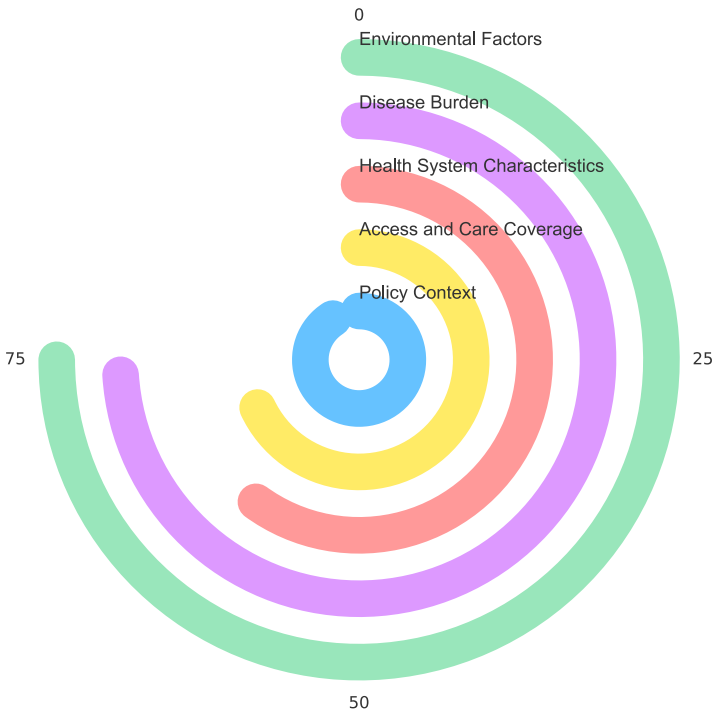


Environmental Factors – Score: 74/100



Chile – COPD Country Profile

🌐 Aggregate Score (Unweighted): 73.5/100



County Overview

Chile has made significant progress in addressing COPD over the past two decades, with a robust regulatory framework that includes GES coverage since 2006 and effective tobacco control policies. The country has demonstrated a sustained reduction in COPD mortality (23.6% between 2002 and 2019) and has decreased the prevalence of smoking from 42.2% (2003) to 32.5% (2016–2017). However, significant challenges remain in practical implementation, particularly in early diagnosis, treatment adherence, and equitable distribution of specialised resources.

COPD is one of the leading causes of morbidity and mortality in Chile, with an estimated prevalence of 16.9% in adults over 40 years of age (PLATINO, 2005). It remains among the top 10 causes of death, being the third leading cause of premature mortality in the 30-70 age group. Underdiagnosis reaches 70-75% of cases, with limited access to spirometry in primary care, especially in rural areas.

The predominant risk factors include smoking (the main factor in 70-75% of cases), exposure to biomass (15-20% of households, mainly in rural areas in the south), and environmental pollution by PM_2.5 in urban areas and the use of firewood in the south. The social security system guarantees access to essential diagnosis and treatment through GES coverage, but territorial inequalities persist. There is a shortage of pulmonologists concentrated in large cities and insufficient coverage of respiratory rehabilitation (<40% of public hospitals).

Chile has a robust regulatory framework, including the GES Law, which has guaranteed access since 2006, advanced tobacco control policies (Law No. 20,105, amended in 2013), and structured programmes such as the Adult Respiratory Health Programme (ERA). Clinical guidelines are aligned with international standards. However, significant gaps remain in practical implementation: access to spirometry is concentrated in urban centres, leading to persistent underdiagnosis; therapeutic adherence is suboptimal (40-50%); and pulmonary rehabilitation programmes have insufficient coverage outside of referral centres.

In terms of access and coverage of care, Chile has almost universal health insurance coverage through FONASA (78%) and ISAPRES (17%), with explicit GES guarantees covering confirmatory diagnosis with spirometry, pharmacological treatment according to severity, respiratory rehabilitation, and home oxygen therapy. Pharmacological support for smoking cessation will be incorporated into the GES Law in December 2025, representing a significant advance in the prevention and comprehensive management of COPD. This measure will expand access to smoking cessation treatment in the public system and is expected to contribute to a sustained reduction in its prevalence and improved clinical outcomes for patients. Innovative strategies such as post-pandemic telemedicine programmes and structured follow-up protocols have been implemented. To be improved: waiting times for spirometry and specialised care are long in rural areas; access to pulmonary rehabilitation is limited, with waiting lists of 3-6 months; the availability of pharmacological smoking cessation therapies in the public system is insufficient; and there is a continuing concentration of specialists in the Metropolitan Region and regional capitals.

The health system is based on a mixed public-private model with universal coverage but fragmentation between subsystems. The emphasis has gradually shifted from a predominantly curative approach to greater prevention and early detection, driven by the policies of the Ten-Year Public Health Plan and the ERA Programme. Care is based on risk stratification and management according to national clinical guidelines aligned with GOLD. However, there is an unequal distribution of human talent, with a concentration of pulmonologists in urban areas and a marked deficit in rural and isolated areas.

Key Takeaways

- **Solid regulatory framework with opportunities for optimisation**
  Chile has a robust framework of policies and guidelines for COPD, including:
  - **GES coverage since 2006**: Guarantees access to essential diagnosis and treatment
  - **Anti-smoking law (Law No. 20,105, amended in 2013)**: Advanced tobacco control policies with proven impact on reducing prevalence and mortality

- **ERA Programme**: Adult Respiratory Health Programme implemented in >60% of primary care centres
- **Ten-Year Public Health Plan**: Strategic framework for chronic respiratory diseases

Evidence of impact: The sustained reduction in COPD mortality (-23.6% between 2002-2019, $p<0.001$) and the decrease in smoking prevalence (42.2% → 32.5%) demonstrate the effectiveness of these policies.

Implementation challenges: Significant gaps in practical implementation, especially in access to early diagnosis in primary care and equitable distribution of specialised resources.

2. Underdiagnosis as a Fundamental Barrier

Magnitude of the problem: 70-75% of COPD patients are without a formal diagnosis, which is the main barrier to early intervention.

Contributing factors:

- Limited access to spirometry in primary care (concentrated in urban centres)
- Normalisation of symptoms by patients ("smoker's cough")
- Low clinical suspicion in non-smokers (25-30% of cases)
- Travel time >2 hours to access a high-complexity hospital in rural areas

Consequences: Perpetuates disease progression without treatment, diagnosis in advanced stages, and increased burden of exacerbations and hospitalisations.

3. Territorial Inequality in Access

Access to diagnosis, specialised treatment, and pulmonary rehabilitation is markedly unequal, conditioned by geographical location:

Access to spirometry:

- 600 spirometers in the public network, but concentrated in urban centres
- Long waiting times in rural areas
- Variability in technical quality between centres

Access to specialists:

- Concentration of pulmonologists in the Metropolitan Region and regional capitals
- Travel time >2 hours to access a high-complexity hospital in rural areas

- Waiting times: 180 days for access to a specialist according to GES

Pulmonary rehabilitation:

- Available in <40% of public hospitals
- Greater concentration in high-complexity hospitals in urban areas
- Waiting lists: 3-6 months
- Dropout rate: 30-40%
- Significant deficit in primary care and rural areas

4. Suboptimal adherence to treatment

Magnitude of the problem:

- 40-50% of patients with suboptimal adherence to inhaled therapy
- 40-60% of patients with incorrect inhalation technique

Associated factors:

- Complexity of therapeutic regimens (multiple inhalers)
- Lack of structured education on inhalation technique
- Cost of medications (especially in multiple therapies)
- Insufficient follow-up
- Normalisation of symptoms by patients

Impact:

- Individual education in inhalation therapy reduces exacerbations (moderate evidence)
- Likely improvement in hospitalisations and quality of life (low evidence)
- Improvement in inhalation technique (very low but clinically relevant evidence)

5. Persistence of environmental risk factors

Smoking (main risk factor):

- Current prevalence: 32.5% (2016-2017)
- 70-75% of COPD cases related to tobacco
- Average age of onset: 16-17 years

- Demonstrated impact of Law No. 20,105: Reduction from 42.2% (2003) to 32.5% (2016-2017)

Exposure to biomass:

- 15-20% of households, mainly in rural areas in the south
- Use of firewood for heating and cooking
- Greater impact on women
- Accounts for 25-30% of COPD cases

Air pollution:

- Critical areas: Santiago, Temuco, Osorno, Coyhaique, Concepción
- PM 2.5 exceeds WHO standards, especially in winter
- Documented correlation with increased hospitalisations for COPD

Occupational exposure:

- Mining (particulate matter, silica)
- Agriculture (pesticides)
- Construction (dust)
- Little studied in local cohorts

Previous tuberculosis:

- Risk factor for chronic post-tuberculosis obstruction
- Higher prevalence in population >60 years
- **Special consideration:** DO NOT use inhaled corticosteroids in post-tuberculosis COPD due to risk of reactivation

Best Practices

Policies and Regulatory Framework

- GES coverage since 2006: Inclusion of COPD with explicit guarantees of access to diagnosis, pharmacological treatment, rehabilitation, and home oxygen therapy.
- Tobacco Control: Law No. 20,105 (amended in 2013) prohibiting smoking in enclosed public spaces, health warnings, advertising restrictions, and tax increases. Demonstrated impact: Reduction in prevalence from 42.2% (2003) to 32.5% (2016-2017) and reduction in COPD mortality (-23.6% between 2002-2019).

- Adult Respiratory Health Programme (ERA): Structured programme for screening, diagnosis and follow-up in primary care, implemented in >60% of centres.
- Ten-Year Public Health Plan: Strategic framework that prioritises chronic respiratory diseases.

Clinical Care and Access to Treatment

- Clinical Guidelines Aligned with International Standards: Adoption of evidence-based guidelines, aligned with GOLD and updated periodically.
- Availability of Spirometry: >600 spirometers in the public network for diagnostic confirmation.
- Universal Drug Coverage: Benefits plan covers long-acting bronchodilator therapy, inhaled corticosteroids, and treatment of exacerbations.
- Rehabilitation programmes: Available in referral centres with a comprehensive approach (exercise, education, nutrition, psychological support).
- Home Oxygen Therapy: 100% coverage of equipment and maintenance costs; electricity subsidy for concentrators.

Innovation and Education

- Telemedicine: Expanded post-pandemic implementation for monitoring chronic patients, especially in rural areas.
- Heater Replacement Programme: Subsidies for replacing wood-burning heaters with cleaner systems in southern regions, reducing exposure to biomass.
- Educational Materials: Development of clear and accessible materials for patients and health professionals.

Monitoring and Evaluation

- Evidence of Impact: Sustained and significant reduction in COPD mortality (23.6% between 2002-2019, $p<0.001$), demonstrating the effectiveness of implemented policies.

Challenges

1. Diagnosis and Detection

Persistent Underdiagnosis:

- 70-75% of cases without formal diagnosis
- Main barrier: Limited access to spirometry in primary care
- Concentration of diagnostic resources in urban centres

- Normalisation of symptoms by patients
- Low clinical suspicion in non-smokers (25-30% of cases)

2. Access to healthcare

Territorial inequality:

- Concentration of pulmonologists in the metropolitan area and regional capitals
- Travel time >2 hours to high-complexity hospitals in rural areas
- Waiting times: 180 days for a specialist, 60-120 days for a CT scan
- Waiting lists for rehabilitation: 3-6 months
- Limited access to pharmacological cessation therapies in the public system

3. Treatment adherence

Suboptimal adherence:

- 40-50% of patients with inadequate adherence
- 40-60% with incorrect inhalation technique
- Complexity of therapeutic regimens
- Lack of structured education
- Insufficient follow-up
- Economic barriers (co-payments)

4. Human Resources and Training

Shortage of qualified personnel:

- Concentration of pulmonologists in large cities
- Insufficient staff trained in spirometry
- Insufficient coverage of rehabilitation programmes (<40% of hospitals)
- Limited capacity of specialised physiotherapists

5. Risk Factors and Prevention

Persistence of Risk Factors:

- Smoking: 32.5% prevalence (main preventable factor)
- Exposure to biomass: 15-20% of households in rural areas in the south
- Air pollution: PM_2.5 exceeds WHO standards in urban areas and in the south of the country

- Occupational exposure: Little studied in local cohorts
- Poverty and social determinants: Greater vulnerability in lower-income populations

6. Information and Management Systems

Data fragmentation:

- Lack of unified records between FONASA and ISAPRES
- Limited use of health outcome indicators
- Prevents accurate epidemiological monitoring
- Hinders policy evaluation and efficient resource allocation

7. Programme Coverage

Insufficient respiratory rehabilitation:

- Available in <40% of public hospitals
- Concentrated in high-complexity urban hospitals
- Deficit in primary care
- Dropout rate: 30-40%
- Transport barriers in rural areas

8. Implementation of Evidence

Gap between evidence and practice:

- Inhalation therapy education not systematically implemented
- Limited physical activity programmes in primary care
- Smoking cessation: Insufficient access to pharmacotherapy
- Inadequate reassessment of oxygen therapy after exacerbation
- Lack of local studies on non-smoking COPD

Recommendations:

1. Strengthen early detection (highest priority)

Objective: Reduce underdiagnosis from the current 70-75% to 50% in 5 years.

Specific actions:

- National spirometer provision programme: Expand from the current 600 to ensure 100% coverage in primary care centres
- Mass training: Training of general practitioners and health personnel in spirometry technique and interpretation
- Quality control: Periodic supervision of spirometry tests performed in primary care
- Systematic screening: Implement respiratory symptom questionnaires in the at-risk population ≥40 years of age
- Awareness campaigns: National campaigns on chronic respiratory symptoms and the need for early diagnosis

Supporting evidence: Early diagnosis allows for timely intervention, prevents progression, and reduces exacerbations and hospitalisations.

2. Optimise therapeutic adherence

Objective: Increase adherence to inhaled therapy from 50% to 70% in 5 years.

Evidence-based concrete actions:

a) Individual education in inhalation therapy (conditional recommendation in favour, low evidence):

- Implement structured education in 100% of patients with COPD
- Modality: Verbal, practical demonstration, audiovisual material
- Trained healthcare personnel
- Verification of technique at each medical check-up
- Supplementary informational material (brochures, videos)

b) Simplification of therapeutic regimens:

- Evaluation of triple therapy in a single device vs. multiple inhalers according to local cost-effectiveness
- According to the literature: There are no significant clinical differences between single device vs. multiple devices; decision based on cost, availability, and patient preference

c) Structured follow-up:

- Periodic check-ups with verification of inhalation technique

- Telephone follow-up or telemedicine to reinforce adherence
- Mobile reminder applications (under development)

d) Reduction of economic barriers:

- Assessment of co-payments according to FONASA bracket
- Guaranteeing access to long-acting bronchodilator therapy in the public system

Expected impact: Reduction in exacerbations and hospitalisations and improvement in quality of life.

3. Expand pulmonary rehabilitation programmes

Objective: Increase coverage from <40% to 70% of hospitals in 5 years; develop home-based and primary care programmes.

a) Physical activity incentive programmes in primary care (conditional recommendation in favour, low evidence):

- Modalities: Supervised walks, personalised advice, use of pedometers, mobile applications
- Advantages: Low cost, feasible in primary care, accessible
- Impact: Small to moderate effect on exacerbations and quality of life

b) Structured pulmonary rehabilitation:

- Expansion in medium-complexity hospitals
- 8–12-week programmes, 2-3 sessions/week
- Components: Physical training, education, psychological support, nutrition

c) Telerehabilitation:

- Development of supervised home rehabilitation programmes
- Use of telemedicine for follow-up
- Overcoming geographical and transport barriers

d) Training:

- Training of physiotherapists in all regions
- Standardised protocols

e) Consideration regarding inspiratory muscle training:

- Do NOT incorporate routinely and in isolation; only in conjunction with a structured rehabilitation programme

Expected impact: 20% reduction in hospitalisations, improved quality of life and functional capacity.

4. Strengthen smoking cessation

Objective: Double the rate of successful cessation in patients with COPD; increase access to pharmacological therapies in the public system.

Evidence-based specific actions:

a) Non-pharmacological interventions (conditional recommendation in favour, moderate evidence for abstinence):

- Structured individual/group counselling
- Educational materials (brochures, videos)
- Follow-up by telephone or text message
- Impact: Significant increase in abstinence rate (RR 1.83, 95% CI 1.35-2.49)

b) Pharmacological therapies:

- Include in GES coverage: Nicotine replacement therapy and other agents for smoking cessation
- Ensure equitable access at all levels of the system
- Ideal: Combine non-pharmacological and pharmacological interventions

c) Salud Responde helpline (600 360 7777):

- Expand telephone counselling capacity
- Intensive follow-up of patients in the process of quitting

d) Counselling at every contact:

- Brief intervention at each medical consultation
- Record smoking status in medical records

e) Considerations for active smokers with COPD:

- Patients who continue to smoke show a greater decline in FEV_1 despite bronchodilator therapy (low evidence)
- Implication: Reinforces the importance of cessation as a therapeutic priority

Expected impact: Reduction in mortality, exacerbations and disease progression. Most cost-effective investment to reduce the burden of COPD.

5. Optimise home oxygen therapy

Objective: Ensure appropriate use according to evidence-based criteria; reassess need after exacerbation.

Recommendations

a) Indication for oxygen therapy (conditional recommendation in favour, low evidence):

- INDICATED: Severe hypoxemia (PaO_2 ≤55 mmHg) OR PaO_2 56-59 mmHg with pulmonary hypertension, cor pulmonale, or polycythaemia
- Duration: ≥15 hours per day (recent study shows similar results between 15 and 24 hours)
- NOT INDICATED: Moderate hypoxemia (PaO_2 >55 mmHg) without evidence of polycythaemia or pulmonary hypertension

b) Special considerations for Chile:

- Altitude adjustment: Criteria must be adjusted according to barometric pressure in Andean areas and the north of the country
- Areas with moderate to high altitude require specific criteria

c) Post-exacerbation reassessment:

- Reassessment protocol: 60-90 days post-hospitalisation
- Evidence: 40-60% of patients may improve and not require long-term oxygen
- Currently, there is insufficient reassessment in Chile

d) Available modalities:

- Concentrators (most commonly used modality, with electricity subsidy)
- Portable cylinders
- Expand availability of liquid oxygen

e) Outpatient oxygen:

- Marginal benefit in patients without severe daytime hypoxemia
- Oxygen during exercise: Improves dyspnoea but not survival or walking distance
- As palliative treatment: Effective in improving dyspnoea during exercise

Expected impact: Appropriate use of resources, reduction of unnecessary costs, improvement in quality of life in appropriate patients.

6. Reduce geographical inequalities

Objective: Ensure access to essential diagnosis and treatment within <30 days in rural areas.

Specific actions:

a) Telemedicine:

- National respiratory telemedicine platform
- Remote specialist consultations
- Follow-up of chronic patients
- Distance training for personnel in isolated areas

b) Portable spirometers:

- Rural operations with mobile teams
- Ensuring timely diagnosis

c) Decentralisation of rehabilitation:

- Programmes in medium-complexity hospitals
- Tele-rehabilitation for isolated areas

d) Incentives for professionals:

- Policies to retain pulmonologists and physiotherapists in rural areas

Expected impact: Reduction of urban-rural gaps, more timely diagnosis and treatment.

7. Strengthen control of environmental risk factors

Objective: Reduce exposure to preventable risk factors.

Specific actions:

a) Air pollution:

- Strengthen Air Decontamination Plans (PDAs) in 18 saturated areas
- Stricter measures to reduce $PM_{2.5}$ and NO_2 in large cities
- Continuous air quality monitoring
- Early warning system for patients with COPD

- Vehicle restrictions during critical episodes

b) Exposure to biomass:

- Expand the Heater Replacement Programme in southern regions
- Subsidies for transition to clean fuels in rural and marginalised areas
- Greater coverage in the Biobío, La Araucanía, Los Ríos and Los Lagos regions
- Enforcement of firewood use

c) Occupational exposure:

- Air monitoring in high-risk sectors (mining, manufacturing, agriculture)
- Implementation of respiratory protection measures
- Occupational epidemiological surveillance

Expected impact: Reduction in the incidence of COPD, especially in vulnerable populations; decrease in exacerbations.

8. Improve Exacerbation Management

Objective: Reduce hospitalisations due to exacerbations by 20%; improve early recognition.

Specific actions:

a) Personalised action plans:

- Provide a written plan to 100% of patients
- Education on recognising warning signs
- Clear criteria for when to seek medical attention

b) Reassessment of oxygen therapy after exacerbation:

- Reassessment protocol 60-90 days after discharge
- 40-60% may discontinue oxygen after recovery

c) Post-discharge follow-up:

- Telephone call 48-72 hours after discharge
- Medical check-up 7-14 days after discharge
- Verification of adherence and inhalation technique

d) Severity classification:

- Continue with traditional classification (level of care)

- Rome proposal requires further validation; do not use as sole instrument (low evidence)
- Validation needed at moderate-high altitudes (relevant for Andean regions)

e) Hospital protocols:

- Standardised management in emergency departments
- Access to non-invasive ventilation (available in >80% of high-complexity hospitals)
- ICU admission criteria

Expected impact: Reduction in hospitalisations, shorter hospital stays, better quality of life.

9. Addressing non-smoking COPD

Objective: Characterise and manage 25-30% of non-smoking cases appropriately.

a) Therapeutic management:

- In the absence of specific evidence: Follow guidelines for tobacco-related COPD
- CRITICAL EXCEPTION: Post-tuberculosis COPD → DO NOT use inhaled corticosteroids due to risk of tuberculosis reactivation
- Assess individual response to bronchodilator therapy

b) Necessary research:

- National COPD registry with characterisation of aetiologies
- Participation in ALAT multicentre project on non-smoking COPD
- Studies on the effectiveness of bronchodilator therapy and inhaled corticosteroids according to aetiology
- Clinical and radiological differential characterisation

c) Main aetiologies in Chile:

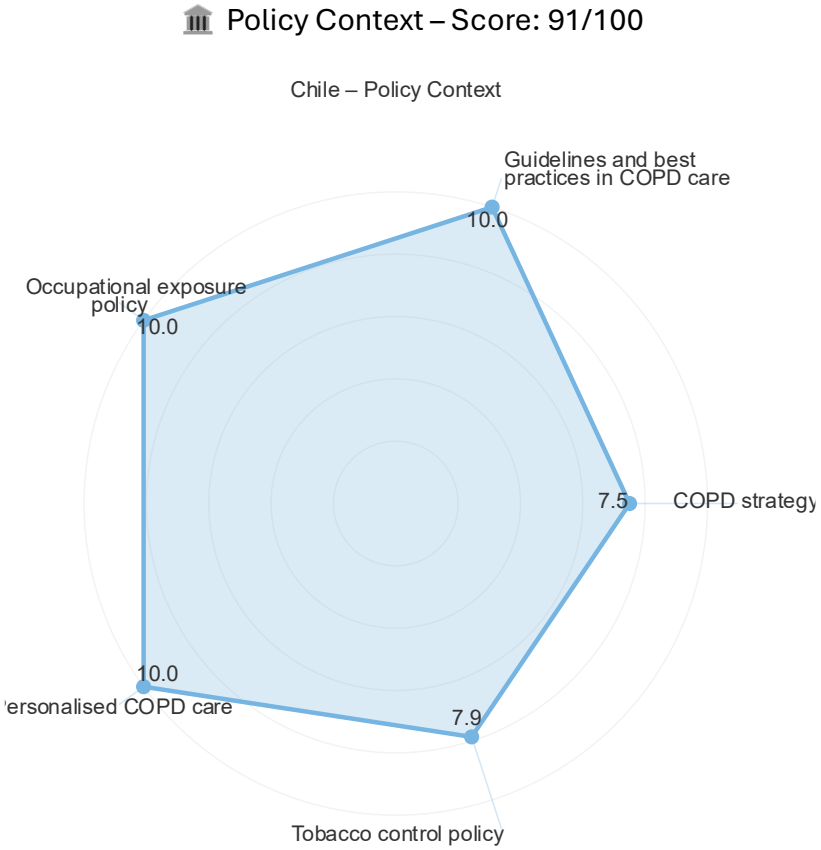
- Exposure to biomass (15-20% of households, higher in rural areas in the south)
- Previous tuberculosis (higher in people over 60)
- Occupational exposure (mining, agriculture, construction)
- Genetic factors (little studied locally)

Expected impact: More appropriate and safer management; generation of regional evidence; better clinical outcomes.

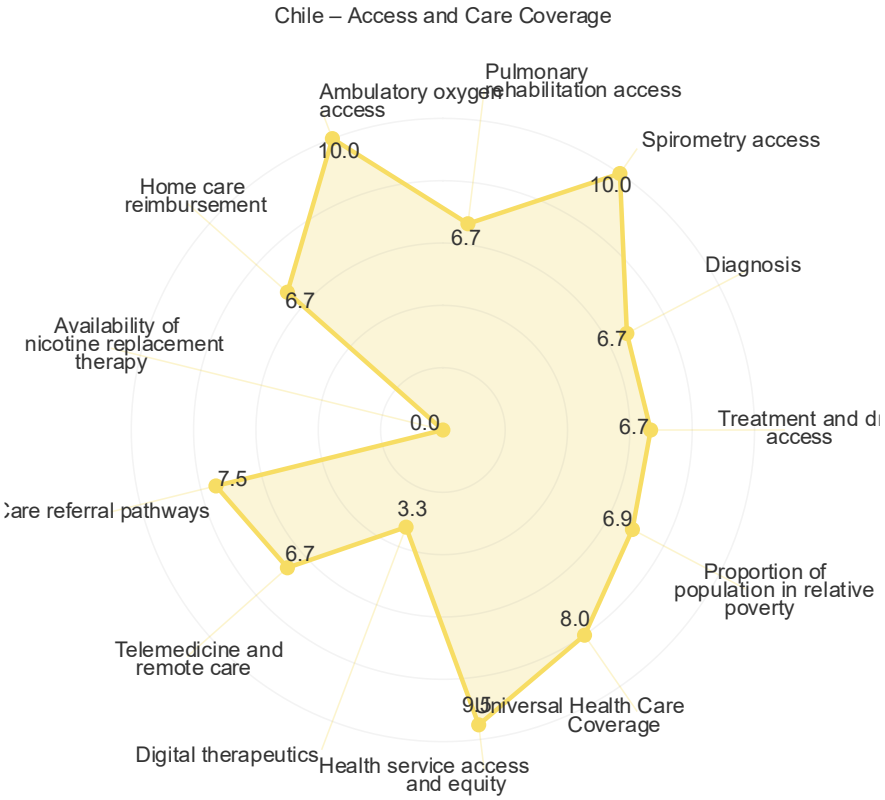
10. Consolidate Information System

Objective: Implement a unified national registry with quality indicators.

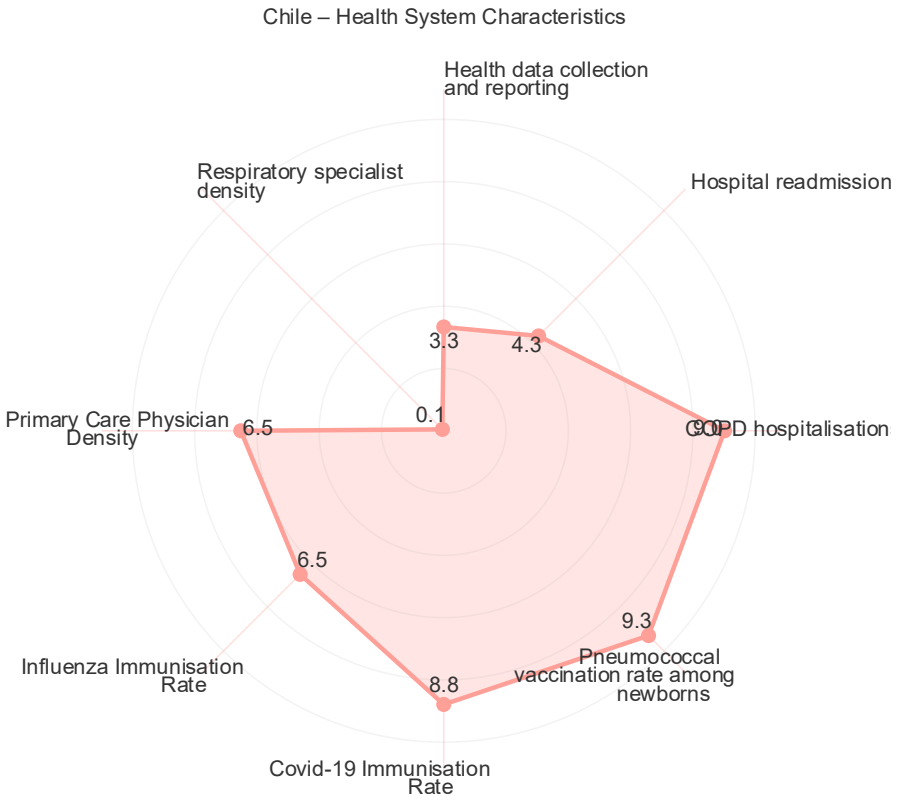
Expected impact: Accurate epidemiological monitoring, evaluation of intervention effectiveness, evidence-based planning.



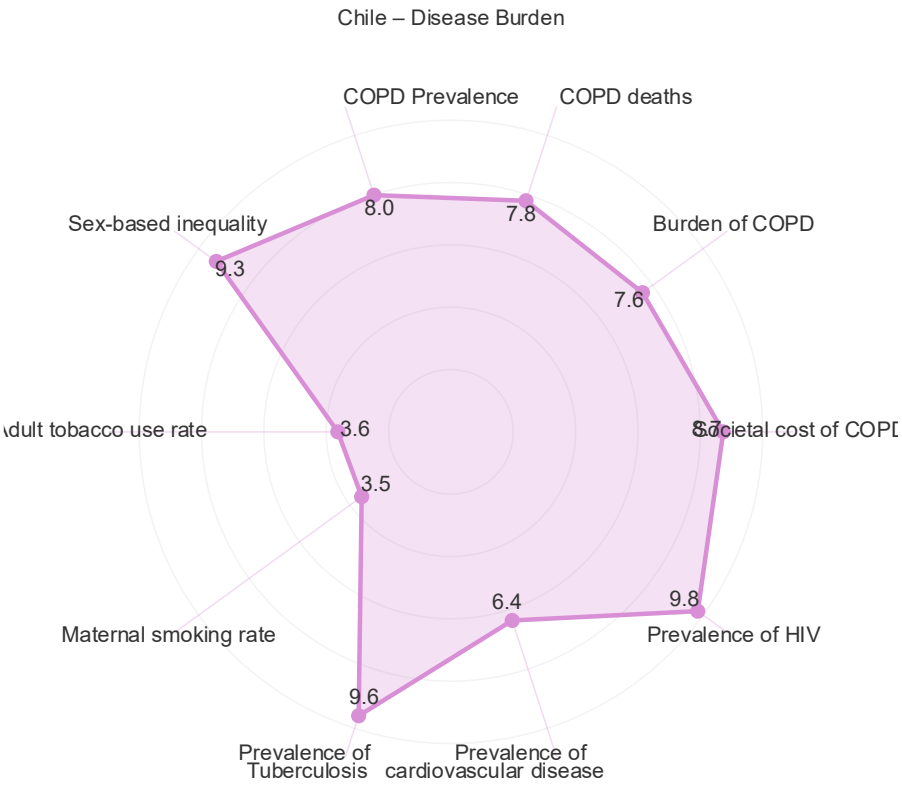
Access and Care Coverage – Score: 68/100



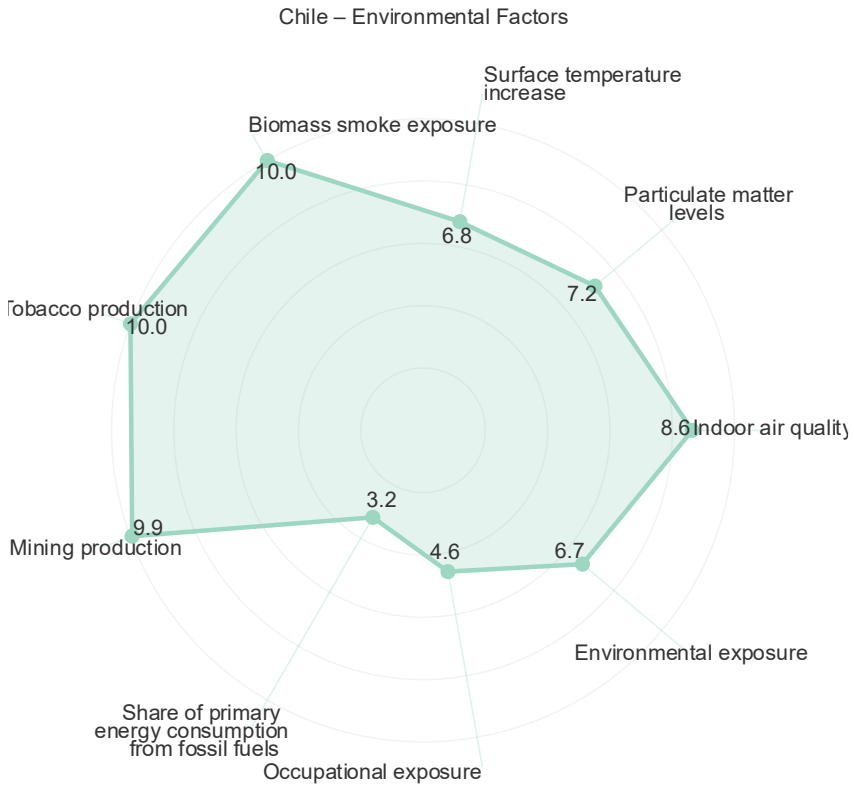
Health System Characteristics – Score: 60/100



Disease Burden – Score: 74/100

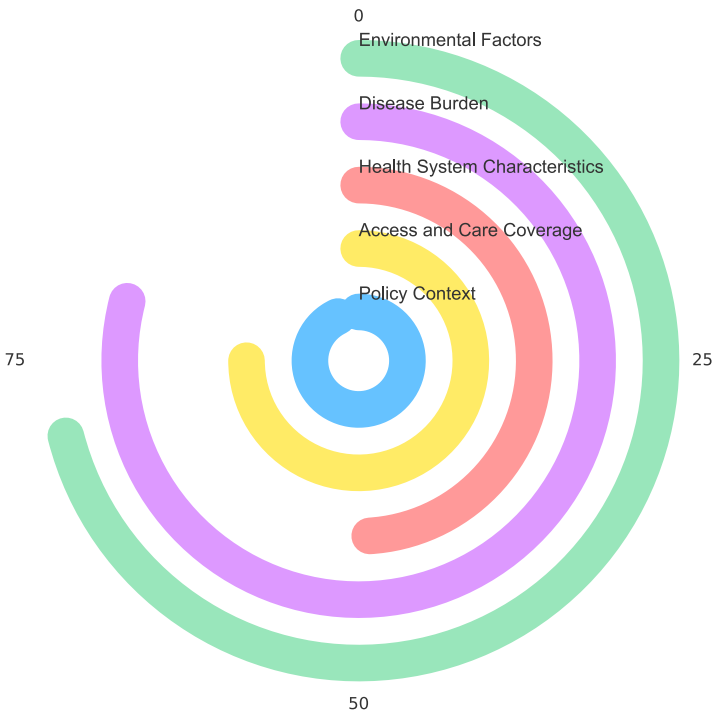


Environmental Factors – Score: 75/100



Colombia – COPD Country Profile

🌐 Aggregate Score (Unweighted): 73.5/100



Country Overview

A score of 73.5 suggests that Colombia has established a solid regulatory framework for COPD management, with robust tobacco control policies and near-universal health insurance coverage. The country has high-quality clinical guidelines and has prioritised COPD as a chronic respiratory disease of public health concern. However, it faces significant challenges in practical implementation, particularly in access to timely diagnosis and equitable distribution of specialised resources.

COPD is one of the leading causes of morbidity and mortality in Colombia, with an estimated prevalence of 8.9% in adults over 40 years of age (PREPOCOL, 2005). It is the third leading cause of premature mortality in the 30–70 age group. Underdiagnosis remains high, with low availability of spirometry in primary care, especially in rural areas.

The predominant risk factors include smoking (83% of patients with a history), exposure to biomass (12.9%), and environmental pollution by $PM_{2.5}$ and NO_2 in Bogotá and other cities. The social security system covers essential inhaled medications and pulmonary rehabilitation programmes, but with unequal territorial access. There is a shortage of pulmonologists (less than 1 per 100,000 inhabitants) and low coverage of rehabilitation programmes outside referral centres.

Colombia has a robust regulatory framework, including the prioritisation of COPD in the 2022–2031 Ten-Year Public Health Plan and advanced tobacco control policies (Law 1335/2009 and Law 2354/2024). The 2023 Clinical Practice Guideline for COPD proposes risk stratification, phenotype identification, and comorbidity management, moving toward an individualised approach. However, significant gaps in practical

implementation remain. Access to spirometry is concentrated in urban centres, leading to underdiagnosis. Pulmonary rehabilitation programmes, although available in referral institutions, have insufficient coverage in rural areas.

In terms of access and coverage of care, Colombia has almost universal health insurance coverage (≈95%), and the Health Benefits Plan (PBS) covers inhaled medications, pulmonary rehabilitation, and basic diagnostic tests. Innovative strategies such as telemedicine and digital applications ("Auto Cuídate") have been initiated for the monitoring and self-care of chronic patients. To be improved: access to spirometry in primary care is limited, especially in rural areas, which is the main cause of underdiagnosis. Access to pulmonary rehabilitation and smoking cessation therapies is uneven depending on the EPS and institutions. The concentration of pulmonologists and specialised services in large cities creates geographical barriers.

The health system is based on a universal insurance model (contributory and subsidised scheme) with a mixed approach: broad coverage but with fragmentation in clinical records and limited use of health outcome indicators. Personalised care according to the COPD 2023 CPG proposes risk stratification, phenotype identification and comorbidity management. However, there is an unequal distribution of human talent, with a concentration of pulmonologists in large cities and a shortage in the periphery. The emphasis remains strongly on curative and hospital care, although recent policies seek to reinforce prevention and early detection.

COPD represents a significant health burden for Colombia. The estimated prevalence is 8.9% in adults >40 years of age (PREPOCOL, 2005), making it the third leading cause of premature mortality in the 30–70 age group. An increase in mortality among women has been observed in the last decade, associated with smoking and exposure to biomass. According to the AIREPOC cohort (Bogotá, 2018–2021), 52.9% of patients had at least one exacerbation and 9.5% died during follow-up, all from respiratory causes. COPD is one of the leading causes of disability-adjusted life years (DALYs) in Colombia, with a major economic and social impact.

Environmental factors are determinants in the burden of COPD in Colombia. Air pollution by $PM_{2·5}$ and NO_2 is associated with an increased risk of COPD exacerbations in Bogotá (AIREPOC, 2024). Solar radiation has also been identified as a factor associated with exacerbations. Exposure to biomass affects 12.9% of patients in the AIREPOC cohort, being the main risk factor in rural areas, with women being the most affected. Smoking remains the main preventable risk factor (83% of patients had a history of smoking). Social conditions such as multidimensional poverty (30.1% in Colombia, DANE 2023) increase vulnerability and exposure to solid fuels. Occupational exposure in mining, agriculture, and manufacturing is identified as a risk, although it has been little studied in local cohorts.

Key Takeaways

- **Solid regulatory framework with implementation challenges:** Colombia has a robust framework of policies and guidelines for COPD, including its prioritisation in the 2022–2031 ten-year public health plan and advanced tobacco control policies. However, its impact is limited by gaps in practical implementation, especially at the primary care level.
- **Underdiagnosis as a fundamental barrier:** the lack of access to and use of spirometry in primary care is the main cause of persistent underdiagnosis, which prevents early intervention and perpetuates the progression of the disease without treatment.
- **Territorial inequity in access:** access to diagnosis, specialised treatment, and pulmonary rehabilitation is markedly unequal, conditioned by geographical location. There is a shortage of pulmonologists and low coverage of rehabilitation programmes outside of referral centres, with resources concentrated in large cities.
- **Fragmentation of the information system:** fragmentation in clinical records and limited use of health outcome indicators prevent accurate epidemiological monitoring, policy evaluation, and efficient resource allocation.
- **Persistence of environmental risk factors:** Although tobacco use is the main focus, exposure to biomass smoke is a significant risk factor, especially in vulnerable rural populations. Urban air pollution ($PM_{2.5}$ and NO_2) also contributes significantly to COPD exacerbations.

Best practices

- Policies and regulatory framework
    - Public health priority: include COPD as a priority in the 2022–2031 ten-year public health plan.
    - Tobacco control: robust strategies such as law 1335/2009 and law 2354/2024, which ensure smoke-free environments, generic packaging, and smoking cessation programmes.
    - Standardisation of care: definition of standardised care pathways (resolution 3202/2016 and resolution 3280 of 2018) to unify the quality of care.
- Clinical care and access to treatment
    - Quality clinical guidelines: adoption of a clinical practice guideline for COPD (Colombia 2023) of high methodological quality and aligned with international standards such as GOLD 2024.

    - Accessible diagnosis: availability of spirometry in referral institutions to confirm diagnosis on time.
- Comprehensive programmes: implementation of programmes that combine clinical management, pulmonary rehabilitation, and self-care education in specialised centres.
    - Universal coverage: guaranteed coverage of inhaled medications and rehabilitation through health benefit plans and social security.
- Innovation and education
    - Digital tools: use of telemedicine and mobile applications (auto cuídate app) for patient monitoring, control, and continuing education.
    - Educational materials: creation and distribution of clear and accessible training materials for both patients and healthcare professionals.

Challenges

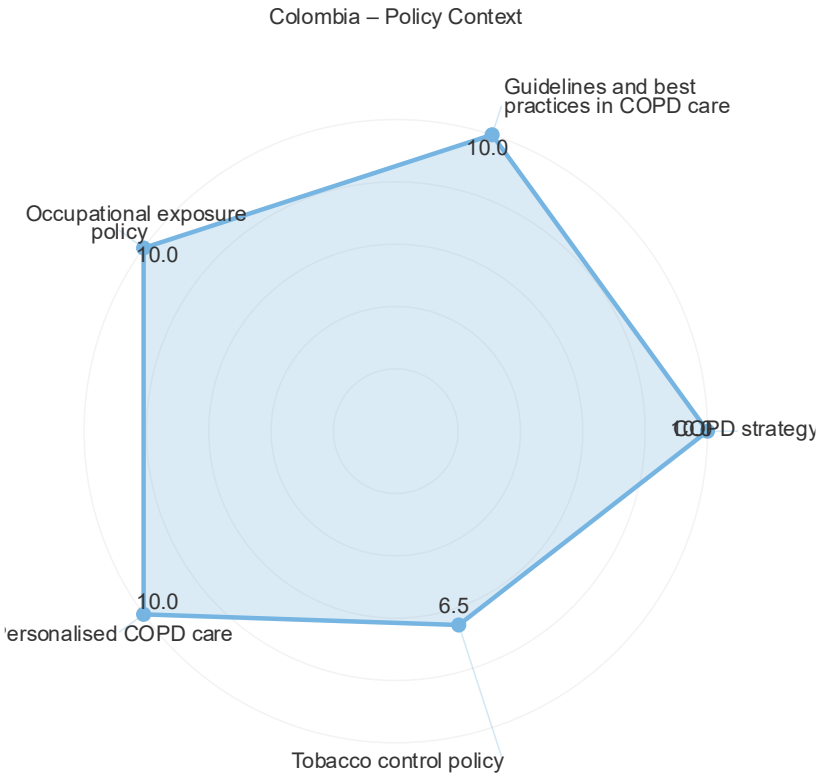
- Diagnosis and detection: Persistent underdiagnosis: difficulty in identifying the disease, exacerbated by the low availability of spirometry in primary care.
- Access to healthcare: Inequality in access: significant gaps in access to specialists, pulmonary rehabilitation, medications, and diagnostic tests (e.g., alpha-1 antitrypsin), especially pronounced in rural areas.
- Human resources and training: Shortage of qualified personnel: shortage of pulmonologists (less than 1 per 100,000 inhabitants) and personnel trained in performing and interpreting spirometry tests.
- Risk factors and prevention: Persistence of risk factors: continued high exposure to tobacco smoke, biomass smoke (solid fuels), and urban pollution.
- Information and management systems: Data fragmentation: lack of unified records and health outcome indicators, which limits the monitoring and evaluation of implemented policies.

Recommendations

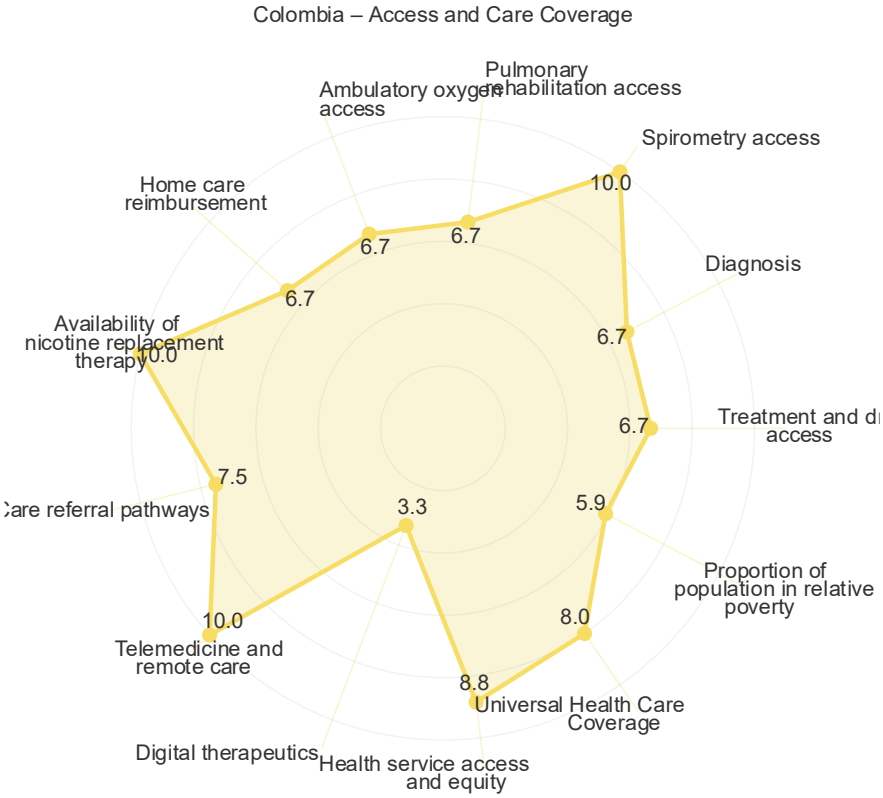
- **Strengthen early detection**: It is imperative to expand access to spirometry in primary care through a programme to provide equipment and train general practitioners in interpretation. This should be a national programme and prioritised to reduce underdiagnosis.
- **Expand pulmonary rehabilitation programmes**: Ensure rural and digital coverage through tele-rehabilitation. The programme should be scaled up as public policy to overcome geographical barriers and the lack of specialists.

- **Consolidate unified clinical records:** Implement a national COPD registry with quality and health outcome indicators to enable epidemiological monitoring, intervention evaluation, and resource planning.
- **Strengthen environmental surveillance:** Adopt stricter measures to reduce $pm_{2.5}$ and no_2 in large cities. Implement continuous air quality monitoring programmes and early warnings for COPD patients.
- **Expand tobacco control policy:** Ensure equitable access to nicotine replacement therapy and brief counselling at all levels of the health system. This is the most cost-effective investment for reducing the burden of COPD.
- **Strengthen occupational exposure policy:** Ensure air monitoring in high-risk sectors (mining, manufacturing, agriculture) and create subsidy programmes for the transition to clean fuels in rural and marginalised areas.

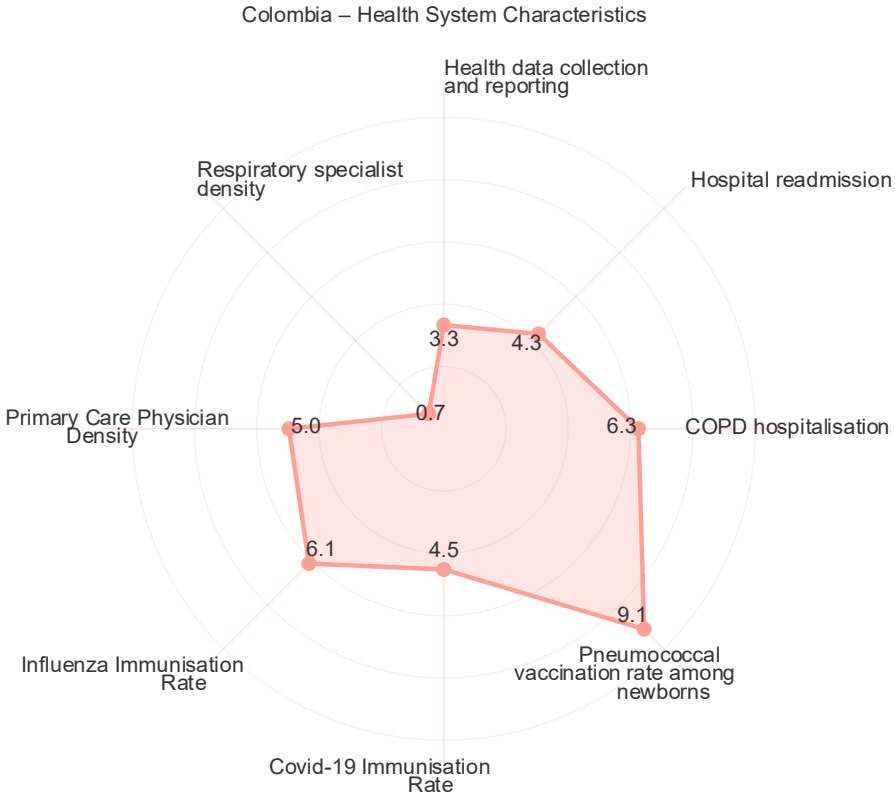
🏛️ Policy Context – Score: 93/100



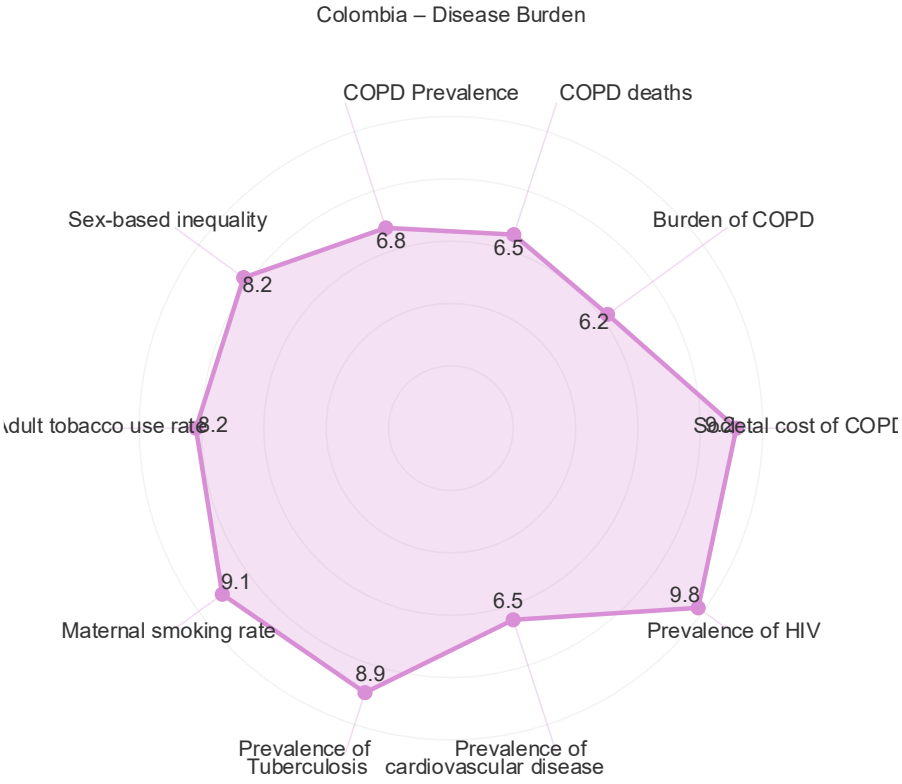
Access and Care Coverage – Score: 75/100



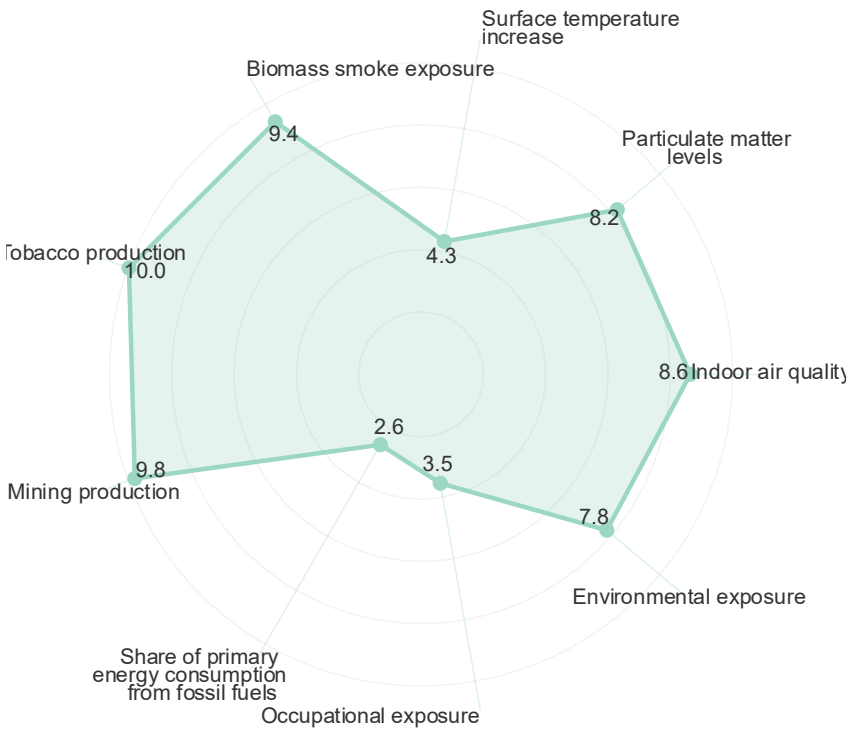
Health System Characteristics – Score: 49/100



Disease Burden – Score: 79/100

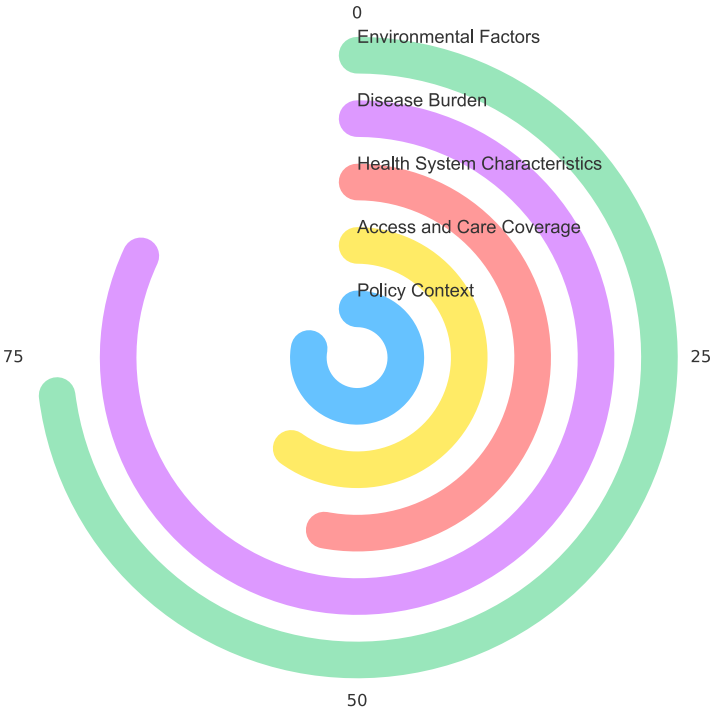


Environmental Factors – Score: 71/100



Costa Rica – COPD Country Profile

🌐 Aggregate Score (Unweighted): 69.5/100



Country Overview

The score of 69.5 out of 100 reflects a contrasting health profile for COPD in Costa Rica. The country demonstrates exemplary strength in tobacco control policies, but faces critical weaknesses in diagnosis, integrated disease management, and control of environmental risk factors, which limit its overall performance.

In the context of public policy, Costa Rica's greatest achievement is its robust General Law on Tobacco Control (No. 9028), which establishes 100% smoke-free spaces, prohibits advertising, and creates a specific tax that directly finances health services for associated diseases, including cessation. However, this strength contrasts with the notable absence of a unified national COPD strategy. There is no comprehensive clinical guide for the management of the pathology; Actions are fragmented and reactive, focused on the management of acute exacerbations rather than a preventive and standardized approach.

The health system, based on the universal coverage of the CCSS and the EBAIS network, guarantees good general access. However, for COPD patients, the main barrier is a massive underdiagnosis of 88.7%. This problem originates in the limited availability of spirometry in primary care and the difficult access to consultations with specialists, identified as key gaps in the system. Although drugs are covered, prescribing patterns in the public sector show low use of internationally recommended combination therapies and high use of monotherapy, suggesting suboptimal disease management.

With a prevalence of 9 cases per 100 people over the age of 40, COPD imposes a significant burden. The impact on the system is visible in hospitalizations: 23.8% of

patients suffer at least one severe exacerbation that requires hospitalization or a visit to the emergency room within a period of 5 years. Mortality from respiratory diseases such as bronchopneumonia, for which COPD is a major risk factor, is among the leading causes of death in the country, especially in men and the elderly. The burden is aggravated by a high prevalence of comorbidities, mainly hypertension (58.3%) and diabetes (20.4%), which increase the risk of mortality.

The environmental factor is a growing and underestimated challenge. Despite a 100% renewable electricity matrix, poor air quality is a critical risk, with an average exposure to PM2.5 particles of 14.3 μg/m^3, almost triple that recommended by the WHO, affecting more than 88% of the population. The main source of this pollution is the transport sector's dependence on imported fossil fuels, compounded by lax and lax vehicle emission standards. In addition, climate change intensifies the health risks of outdoor workers due to heat stress and exposure to pollutants and agrochemicals.

Key Takeaways

- Costa Rica has robust and exemplary anti-smoking legislation; however, it lacks an integrated national strategy and clinical guidelines for COPD, resulting in reactive and fragmented management.
- Underdiagnosis is the biggest barrier, with the rate of 88.7% being the main obstacle to effective management. The lack of access to spirometry and specialists at the first level of care is the fundamental cause.
- There is a gap between urban and rural areas in terms of access to diagnosis and care, which is reflected in worse health outcomes in the latter.
- Although drug coverage is extensive, limited access to modern combination therapies can result in suboptimal disease management.
- Increasing environmental risks, poor air quality, driven by a fossil-fuel-dependent transport sector, is a critical risk factor that counteracts the progress made in tobacco control.

Best practices

- **Tobacco control model (law 9028):** Comprehensive legislation, which combines smoke-free spaces, advertising bans and a taxation financing mechanism, is a model to follow and should be protected and strengthened.
- **Network of tobacco cessation clinics (tccs):** The existence of a national network of clinics offering multidisciplinary and pharmacological support is an invaluable asset that should be expanded and actively promoted among the smoking population.

- **Primary care system (ebais):** The extensive network of ebais is the ideal platform to deploy a strategy for early detection and management of COPD, if it is provided with the necessary resources and training.
- **Sustainable financing:** The "healthy tax" mechanism that allocates tobacco funds to care for the diseases it causes is an innovative practice that guarantees resources for cessation and treatment programs.
- **Develop a national comprehensive care route for patients with COPD:** Work is being done on a national route for patients with COPD, which includes improvements in diagnosis, access to spirometry, pulmonary rehabilitation and combined therapies for public patients.
- **Standardise cardiopulmonary risk management:** They have a cardiopulmonary risk management protocol, which is under review for publication.

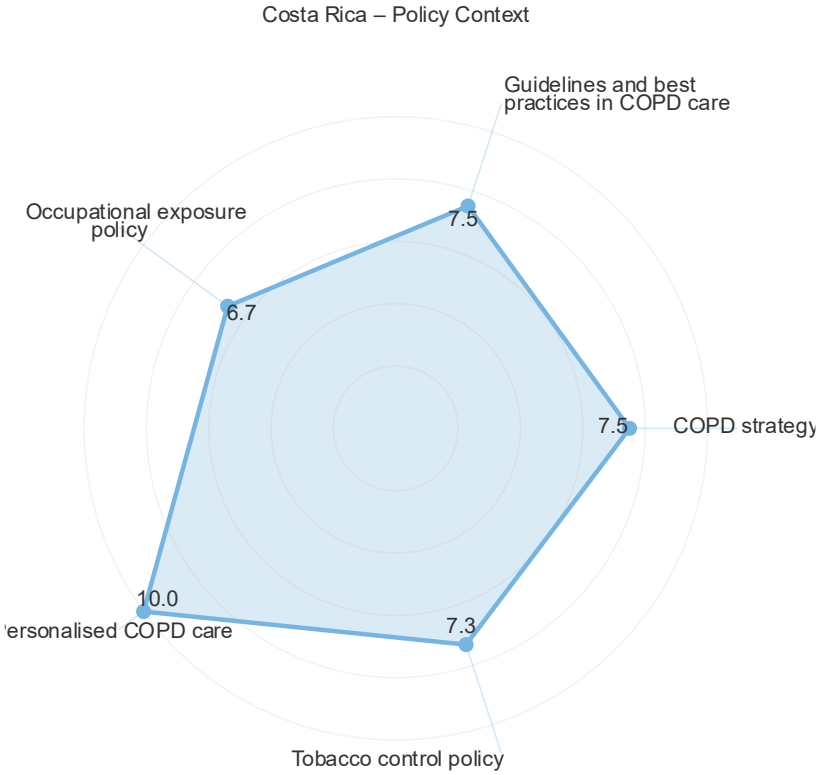
Challenges

- **Detection and diagnosis:** Underdiagnosis is high, a large proportion of patients are not formally diagnosed; due to limited access to key tests such as spirometry, the fundamental tool for diagnosis.
- **Treatment and rehabilitation:** The public health system does not offer access to combination drug treatments, which are standard in the management of the disease. Limited access to pulmonary rehabilitation programs, key to quality of life.
- **Long waiting times:** Patients face long delays in getting appointments with the speciality of pulmonology.
- **Demographic transition:** The ageing Costa Rican population will inevitably increase the prevalence and burden of COPD in the coming years, further straining the health system's resources.
- **Financial sustainability:** Despite the funds from the tobacco tax, the care of COPD and its comorbidities (especially cardiovascular and cancer) represents a high and growing cost for the ccss.
- **Institutional fragmentation:** The lack of unified governance for COPD between minae, the Ministry of Health, ccss, iafa, and municipalities hinders the implementation of comprehensive policies, especially those that address environmental determinants.
- **Impact of climate change**: The effects of climate change, such as rising temperatures and extreme weather events, will exacerbate air pollution and respiratory health risks for the population, especially vulnerable workers.

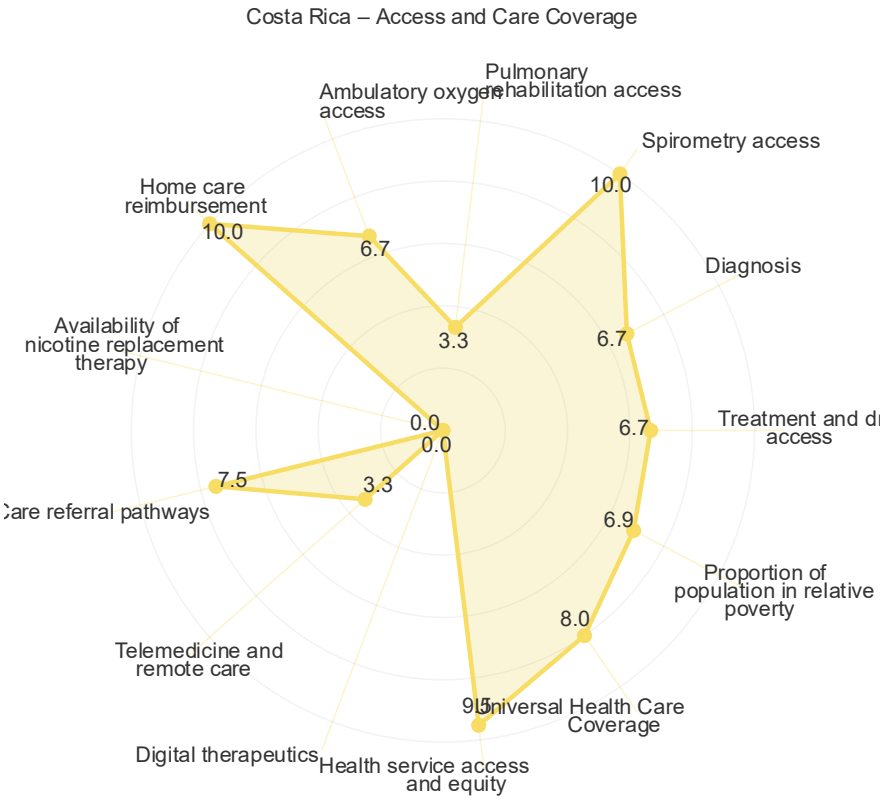
Recommendations

- **Develop and implement a national COPD strategy:** Create a comprehensive plan that unifies the efforts of the ccss, the Ministry of health, and the iafa (Institute on Alcoholism and Drug Dependence). This plan should include a national clinical practice guideline for the diagnosis, treatment and follow-up of COPD, which is mandatory at all levels of care.
- **Launch a national active detection program:** To combat underdiagnosis, active case finding should be implemented in high-risk populations (smokers and ex-smokers over 40 years of age). This should include awareness campaigns about the early symptoms of the disease.
- **Strengthen the resolution capacity of primary care:** Providing the basics (basic equipment for comprehensive health care) with spirometers and training health personnel in their use and interpretation is essential. Likewise, clear and agile referral routes to pulmonology must be established.
- **Update access to pharmacological treatments:** The ccss must revise its official list of medicines to include and facilitate access to combination therapies (LAMA/lama, ics/Laba), in accordance with international clinical guidelines and the profile of each patient, to overcome the current monotherapy pattern.
- **Strengthen environmental policies with a health focus:** Implement stricter standards on vehicle emissions (accelerate the adoption of Euro 6), improve vehicle technical inspection, and actively promote electric public transport and active mobility to reduce air pollution in the greater metropolitan area (gam).

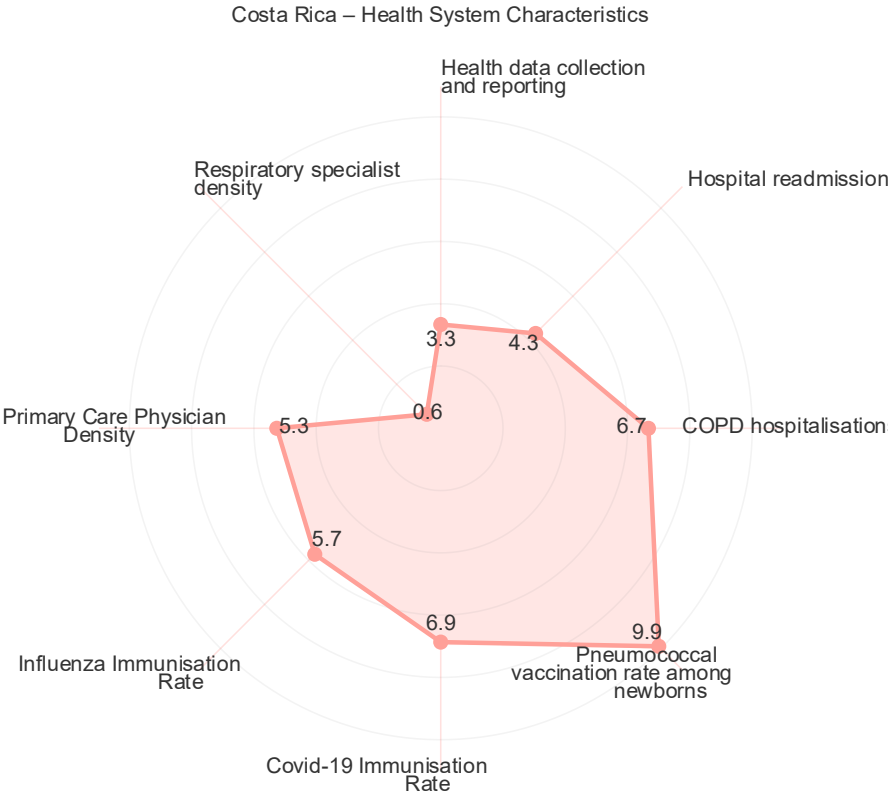
Policy Context – Score: 78/100



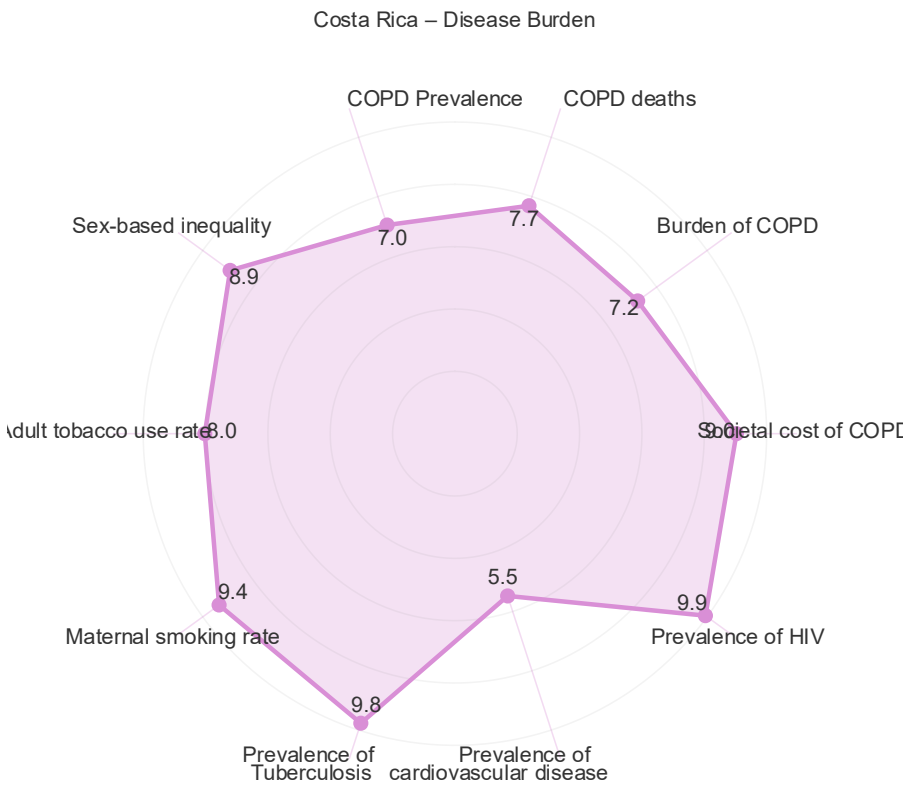
Access and Coverage – Score: 60/100



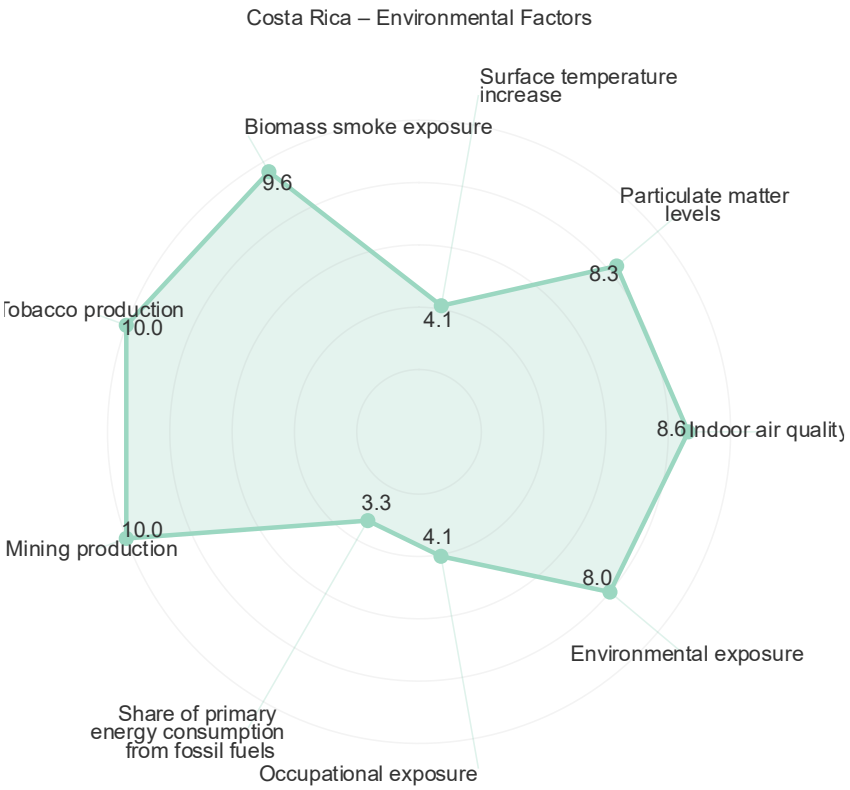
Health System Characteristics – Score: 53/100



Disease Burden – Score: 82/100

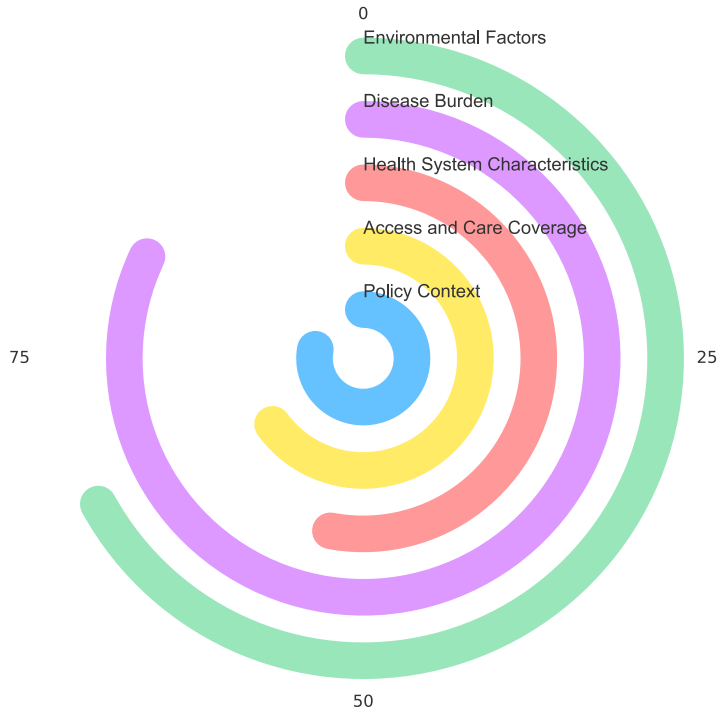


Environmental Factors – Score: 73/100



Mexico – COPD Country Profile

🌐 Aggregate Score (Unweighted): 69/100



Country Overview

A score of 69 suggests that Mexico has established a strong theoretical and regulatory framework for COPD management, but faces substantial challenges in practical implementation, equity in access, and data collection. The country has high-quality policies and guidelines, but the gap between what is planned and what is executed limits their real impact on the health of the population.

Mexico has a robust scaffolding of policies, including the Mexican COPD Guide (GMEPOC) and the Specific Action Programme (PAE-ERI), which recognize COPD as a priority. It also has a legal framework for tobacco control aligned with the WHO Framework Convention. However, the low implementation of these policies in clinical practice. Adherence to the guidelines by first-level physicians is minimal (between 31% and 49%). In tobacco control, effectiveness is limited by taxes below the WHO recommendations and virtually zero access to cessation therapies (NRT, varenicline) in the public sector, which creates an insurmountable economic barrier for the majority.

In terms of access to and coverage of care, there are defined referral pathways to specialized care for the insured population. Innovative strategies such as telemedicine (RENACE) have been initiated to overcome the lack of access to diagnosis. Modern medicines are, in theory, covered by institutions such as the IMSS. Improving access to spirometry in primary care is the most serious deficit, being the main cause of massive underdiagnosis (89%). 53.8% of first-level doctors do not request this test. Access to pulmonary rehabilitation is extremely limited due to a lack of centres and specialists. Drug coverage is not universal, generating high out-of-pocket expenses for the uninsured population, especially in drugs and oxygen.

The health system is structured in three levels of care with defined protocols, such as the IMSS. However, the health data collection system is poor, with little detail and lack of interoperability. COPD is often grouped with other respiratory diseases, preventing accurate epidemiological monitoring. As a result, there are no reliable national rates of hospitalizations or readmissions. In addition, a marked inequity is described in the distribution of specialists, who are concentrated in large cities.

COPD represents a substantial and growing health and economic burden for Mexico. The age-standardized mortality rate was 32.8 per 100,000 population (GBD 2021), having doubled since 1990. The most cited prevalence (PLATINO, 2003) is 7.8% in people over 40 years of age, although the massive underdiagnosis suggests that the real figure is much higher.

Treatment costs are very high. The annual cost per patient can exceed $89,000 MXN at the IMSS, and for uninsured patients, out-of-pocket expenses on medications and oxygen are a significant barrier. Exacerbations skyrocket costs, reaching up to $23,717 USD annually in very severe cases.

Environmental factors are determinants in the burden of COPD in Mexico. Exposure to biomass smoke is a primary risk factor, affecting 14% of households nationwide and up to 30% in rural areas. This exhibition is directly linked to poverty. Fine particulate matter (PM2.5) air pollution is a serious problem, with personal exposure levels in Mexico City patients reaching 38.4 $\mu g/m^3$ and in rural households using firewood, alarming levels of 554 $\mu g/m^3$. Globally, air pollution (environmental and domestic) and occupational exposure are responsible for a majority of Disability-Adjusted Life Years (DALYs) for COPD.

Key Takeaways

- Mass underdiagnosis is the fundamental barrier. The most alarming conclusion is that almost 9 out of 10 Mexicans with COPD have not been diagnosed. This systemic failure originates in the first level of care, where more than half of the physicians do not request spirometry due to lack of equipment (30.5%) and lack of knowledge (39.7%). Without diagnosis, there is no possible treatment, condemning patients to progression and explosive costs to the system.
- There is a critical gap between robust policies and poor implementation. Mexico has high-quality guidelines, but their application in daily clinical practice is minimal. The adherence of general practitioners is only 31.6%. Key areas such as the detection of risk factors and the request for complementary studies are the ones with the lowest compliance.
- Access to essential therapies is unequal and determined by geography and poverty. Access to specialised care is centralised, with a deficit of more than 50%

of the necessary pulmonologists. This creates insurmountable geographical barriers for rural populations. In addition, access to treatment is inequitable: smoking cessation drugs are "practically non-existent" in the public sector, and pulmonary rehabilitation is inaccessible to most. This results in high out-of-pocket expenses that can exceed $2,245 USD annually for uninsured patients.

- A lack of reliable data impedes effective governance. The health information system is deficient, with low granularity and lack of interoperability. COPD is often lumped into the generic category of "chronic respiratory diseases," making accurate epidemiological monitoring and evidence-based planning impossible.
- Gap in primary prevention, although smoking is the main focus, exposure to biomass smoke is a massive risk factor, especially in vulnerable populations. In addition, smoking cessation support is economically inaccessible to most in the public system, undermining the most cost-effective intervention.

Best practices

- **High-quality national clinical frameworks:** The existence of the Mexican COPD Guide (GMEPOC) and the IMSS Comprehensive Care Protocols are a strategic pillar that standardises evidence-based management adapted to the Mexican context.
- **Innovation in diagnostics through telemedicine:** The implementation of the National Spirometry Network (RENACE) is the best practice identified. This telehealth strategy directly addresses the lack of equipment and specialists at the first level, offering a viable model for scaling up nationally.
- **Focus on personalised care:** National guidelines actively encourage individualised treatment based on the combined classification of GOLD (groups A, B, and E), which stratifies patients according to their symptoms and history of exacerbations, promoting more precise therapy.
- **High-impact interventions:** Practices such as brief advice for smoking cessation, priority vaccination against influenza and pneumococcus, and early initiation of post-exacerbation triple therapy are cost-effective interventions recommended in all guidelines.

Challenges

- **Gap between policy and implementation:** The main challenge is to translate the excellent guidelines into standardised clinical practices at the first level of care, overcoming the current low compliance (31.6% in general practitioners).
- **Economic burden and financial sustainability:** The cost of the disease is immense for the system and for patients. Without an increase in investment in

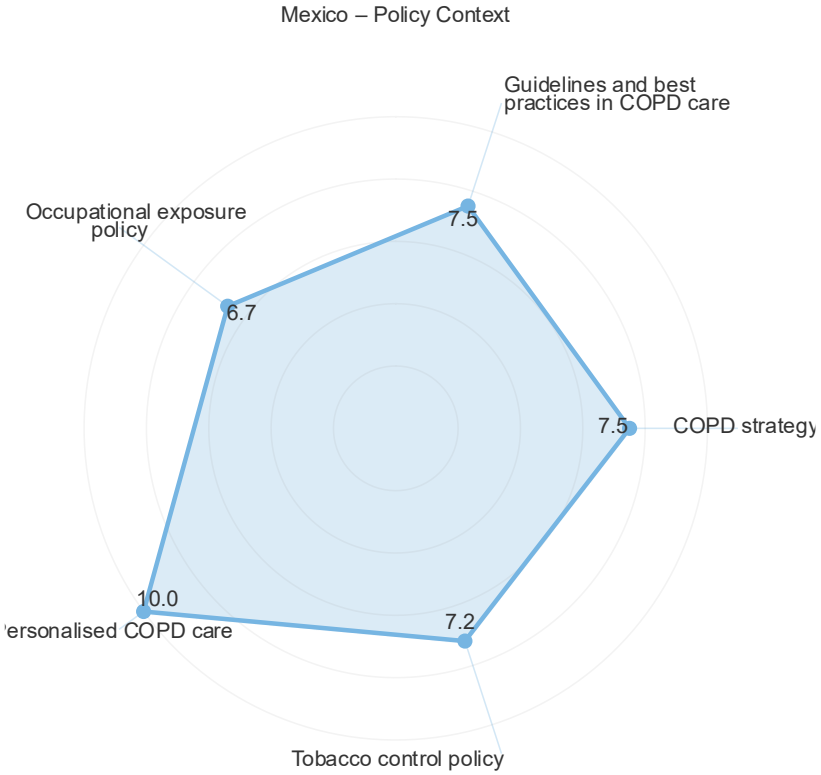
health, focused on prevention and early diagnosis, the system will continue to treat the costly consequences rather than the causes.

- **Structural and geographical inequity:** Profound inequality in access to specialists, diagnoses, and treatments such as pulmonary rehabilitation remains a structural barrier that perpetuates poor health outcomes in the most vulnerable populations.
- **Weaknesses of the information system:** Without reliable data on actual prevalence, hospitalisations, and treatment coverage, it is impossible to measure progress, justify investments, and design evidence-based public policies.
- **Socioeconomic and cultural barriers:** Poverty as a cause of the use of biomass and as a barrier to accessing smoking cessation treatments, together with the normalisation of "smoker's cough", constitute profound challenges that health policies must address in an intersectoral manner.

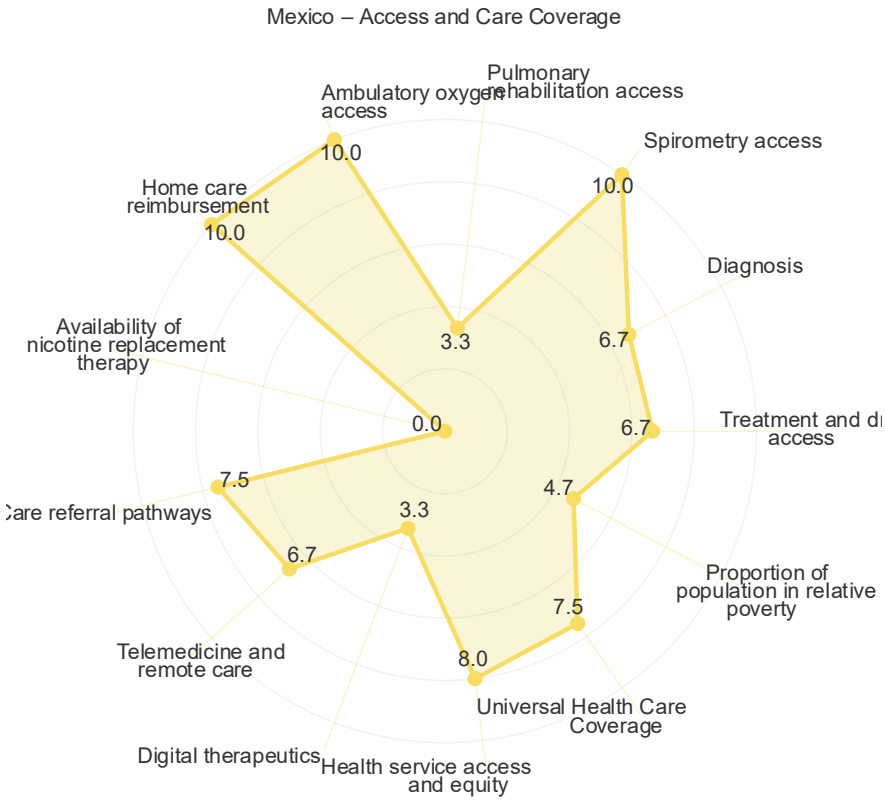
Recommendations

- **Strengthen and scale the RENACE program at the national level:** Make the National Spirometry Network the cornerstone of the diagnostic strategy to reduce the 89% underdiagnosis rate. Telemedicine is the most cost-effective tool to overcome the barriers of infrastructure and lack of specialists.
- **Ensure universal access to smoking cessation therapies:** Include first-line drugs in the basic list of medicines and ensure their free distribution. Given that cost is the main barrier for 17.6% of the population that smokes, this measure is crucial.
- **Implement cross-sectoral policies to reduce exposure to biomass:** Address energy poverty at its root by working with other ministries to facilitate access to clean fuels and/or improved stoves in the 70% of rural households that still rely on firewood.
- **Create a national pulmonary rehabilitation program:** Design and implement a program to establish rehabilitation centres at the regional level, filling the current void where this high-impact intervention is virtually non-existent.
- **Establish a national COPD registry system:** Develop an interoperable information system that allows for systematic data collection to overcome the current misclassification and enable evidence-based resource planning.
- **Launch public awareness campaigns:** Develop national campaigns to educate the population about the early symptoms of COPD and risk factors beyond smoking, such as exposure to wood smoke, to encourage the search for timely care.

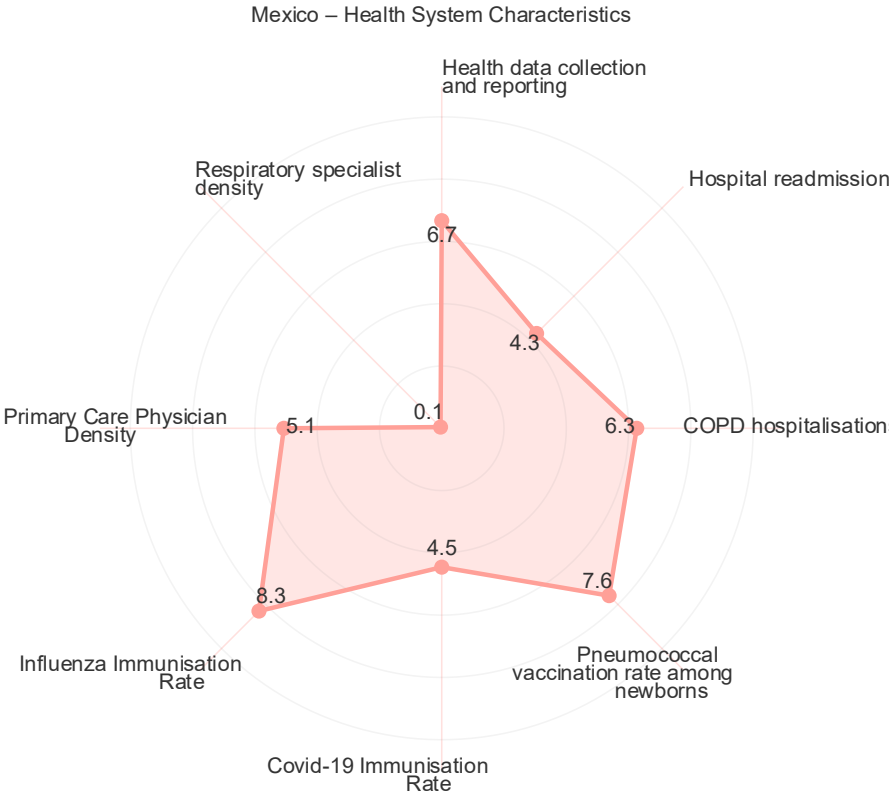
Policy Context – Score: 78/100



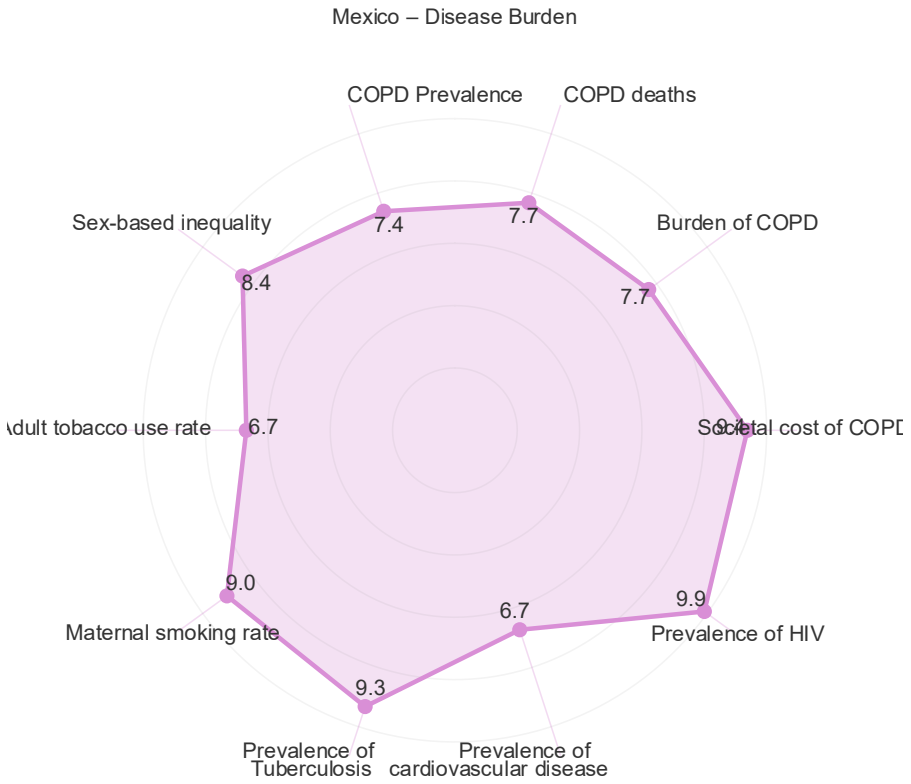
Access and Care Coverage – Score: 65/100



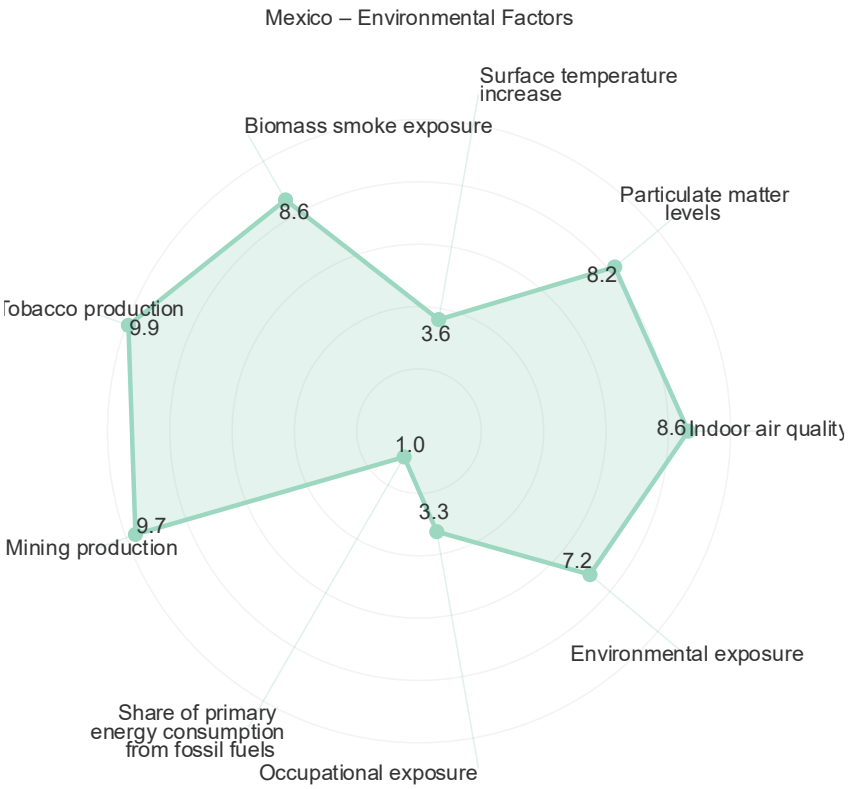
Health System Characteristics – Score: 53/100



Disease Burden – Score: 82/100



Environmental Factors – Score: 67/100

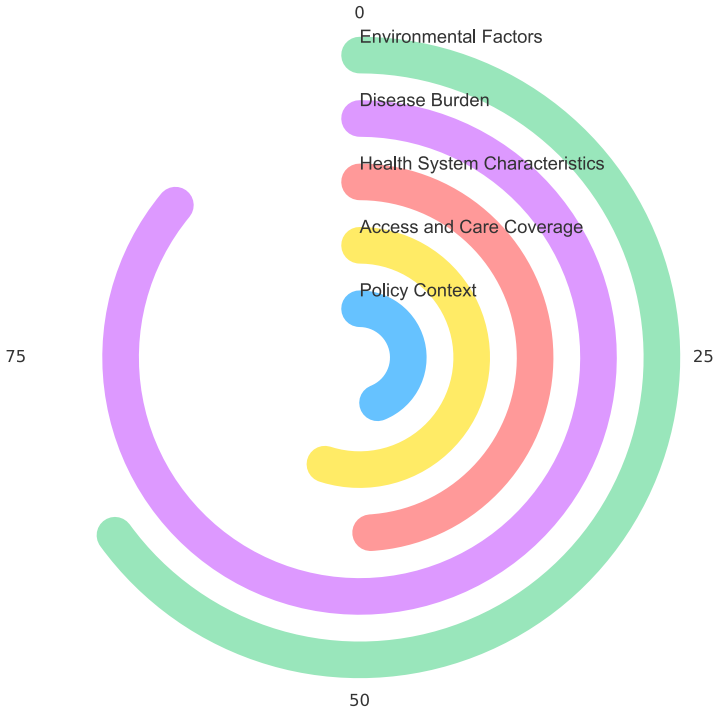


Peru – COPD Country Profile

🌐 Aggregate Score (Unweighted): 59.8/100

Country Overview

The score obtained in Peru reflects a complex panorama with some advances in the structuring of policies, but with very significant gaps in application. On the one hand, there are regulatory frameworks (guidelines) and a clear understanding of the local epidemiology (low smoking, high exposure to biomass and TB). On the other hand, there is a systemic failure in implementation, marked by massive underdiagnosis and almost insurmountable economic and access barriers to treatment, which leaves most Peruvian patients with COPD without diagnosis or care.



Peru has Guidelines; however, the application is deficient, for example, the "Peruvian COPD Guide - 2016", which is an adaptation of the Latin American guide. However, its implementation is very limited, which would show a massive underdiagnosis that exceeds 95% of cases. This means that most people with COPD in the country do not know they have the disease and therefore do not receive treatment.

Unlike high-income countries, COPD in Peru is not primarily driven by smoking, as the country has a very low daily consumption rate (3.3%). The predominant risk factors are exposure to biomass smoke (especially in women in rural areas, where about 35% of the population uses it for cooking) and a history of tuberculosis.

Both guidelines and research projects (such as the GECo study) encourage the use of individualised treatment plans and self-management, although large-scale implementation remains a challenge.

Diagnosis is limited, especially in the public sector and outside large cities, and access to spirometry is insufficient, even though it is essential for diagnosis. Historically, its use has been almost exclusively limited to pulmonology specialists.

There is a critical gap in access to maintenance medicines. Many are not available at local pharmacies, and when they are, they are economically unattainable. A 30-day treatment can cost more than the average worker's daily wage. Less than 1% of newly diagnosed patients had received a long-acting bronchodilator (LAMA).

Other therapies such as pulmonary rehabilitation are identified as a "major unmet need" for nearly half of patients. There is no information available on the use of telemedicine or digital therapies for COPD management in the country.

The overall prevalence of COPD is estimated at 6.0%, but with important geographical variations: it is lower in semi-urban areas such as Tumbes (3.6%) and higher in high-altitude rural areas such as Puno (9.9%). The prevalence is markedly higher in men (8.4%) than in women (3.6%).

As risk factors, a history of tuberculosis increases the chances of COPD by almost fourfold. Daily exposure to biomass is the main risk factor for women in rural areas, where it accounts for up to 55% of COPD cases in this group.

The health infrastructure for COPD surveillance and management is poor. Health data collection is weak, with possible underreporting on death certificates and lack of integrated systems. No data are reported on the density of respiratory specialists, but it is indicated that access to them is insufficient.

Indoor air pollution is a critical problem in Peru. About 35% of the population uses biomass for cooking. This leads to extremely high levels of particulate matter (PM2.5) in households, especially in rural areas such as Puno, where concentrations can exceed 700 $\mu g/m^3$, well above the limits recommended by the WHO.

Key Takeaways

- COPD in Peru is not a "smoker's disease". It is driven by social and environmental determinants such as poverty, biomass use, and sequelae of infectious diseases such as tuberculosis.
- The main barrier to COPD control is the lack of diagnosis. With more than 95% of cases undiagnosed, most patients do not receive any care, leading to silent progression of the disease and the onset of serious complications.
- There is a profound inequity in access to diagnosis and treatment. Rural populations, with lower socioeconomic status and a history of TB face a double burden: increased risk of disease and reduced access to necessary health services.

- Even if the diagnosis is achieved, the system does not guarantee access to essential treatments. Maintenance medications are largely inaccessible or unaffordable, posing an insurmountable barrier for most patients.
- The high mortality from infectious causes in patients with COPD underscores the need for management that integrates prevention (influenza and pneumococcal vaccination) and treatment of exacerbations, beyond bronchodilator therapy.

Best practices

- **Local research and evidence:** generation of own evidence. Peru has a strong body of research (e.g., cronicas studies, geco) that has characterised the unique profile of COPD in the country, providing an invaluable basis for public policy design.
- **Regulatory framework and clinical guidelines:** existence of national guidelines: the "Peruvian COPD guide - 2016" and other specialised guidelines demonstrate the technical capacity and formal recognition of the disease in the health system.
- **Diagnosis and treatment in the health system:** implementation of spirometry. Progress has been made in the implementation of spirometry in primary care, a key tool for timely diagnosis.
- **Coverage of essential therapies.** There is partial coverage of home oxygen therapy, ensuring access to this vital treatment for patients with advanced disease.
- **Innovative care models**, exploring new approaches. Research projects are evaluating the use of Community Health Agents for COPD management, representing a promising and low-cost model for expanding the reach of services in rural and peri-urban areas.

Challenges

- **Policies and Information Systems.**

Lack of Reconnaissance and Surveillance. COPD is not on the official list of chronic diseases, resulting in the absence of national statistics and the urgent need to improve surveillance systems for effective monitoring.

Lack of Structured Programs. There are no national smoking cessation programs or ongoing follow-up programs for diagnosed patients.

- **Diagnosis and Detection.**

Massive underdiagnosis. It is the country's main challenge, aggravated by the deficit of auxiliary examinations and specialised tests (lung volumes, CO diffusion, alpha-1 antitrypsin) for a complete diagnosis.

- **Access and Treatment Coverage.**

Critical Access and Affordability Gap. There is a complete lack of coverage for essential pharmacological treatments such as long-acting bronchodilators.

Lack of Non-Pharmacological and Advanced Therapies. There is a poor pulmonary rehabilitation network and a total absence of advanced therapies such as non-invasive mechanical ventilation at home or volume reduction surgery in the public system.

- **Human Resources and Training.**

Strengthening of Health Personnel. It is essential to train primary care personnel in the diagnosis and management of COPD to decentralise and expand the coverage of care.

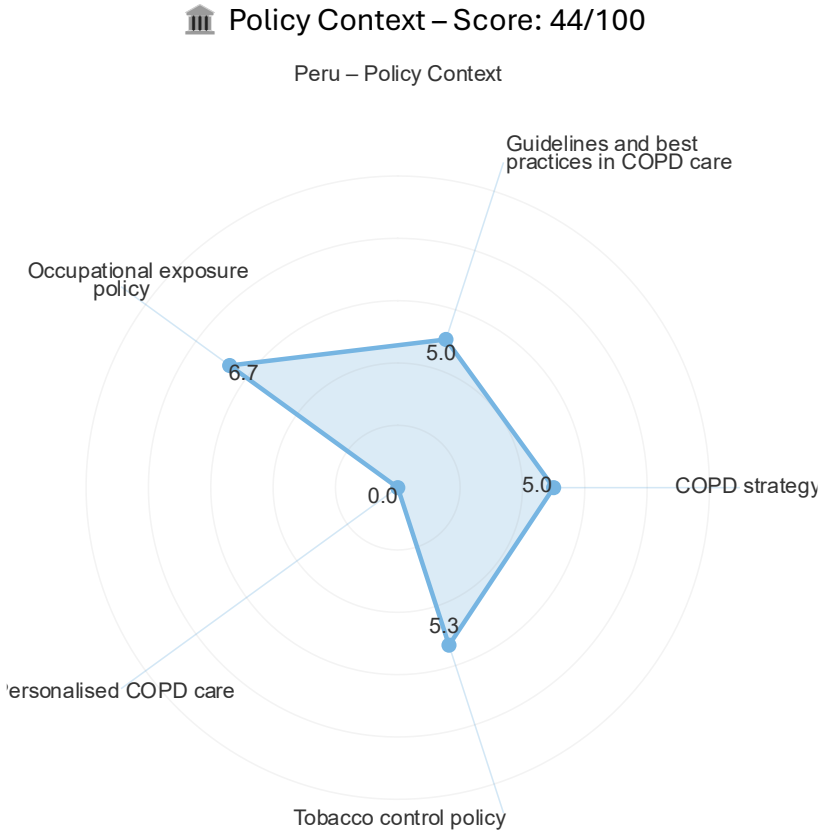
- **Prevention and Social Determinants.**

Approach to Structural Determinants. The fight against COPD is inseparable from the fight against poverty, inequality and environmental pollution by biomass, which requires long-term multisectoral political commitment.

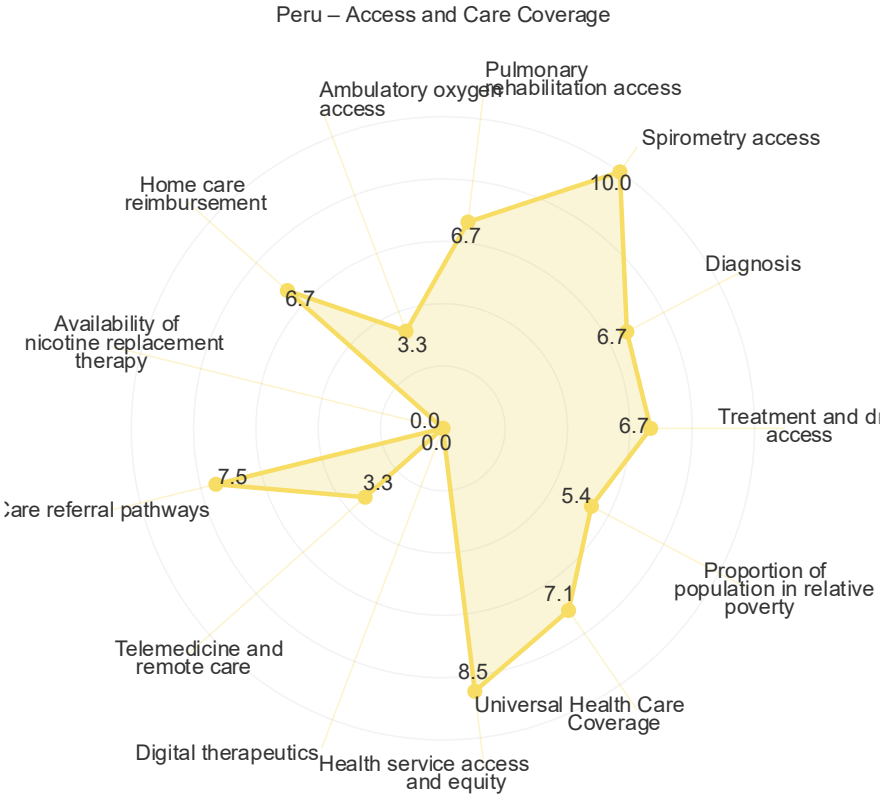
Recommendations

- **Conduct a national study of prevalence and risk factors**: It is imperative to design and execute a nationwide population-based study to determine the true prevalence of COPD and its determinants throughout the country. Although current data from local studies are an invaluable foundation, a national survey will provide the comprehensive map needed to cost-effectively target screening, diagnosis, and management strategies for the most at-risk populations.
- **National strategy for the prevention and control of COPD:** Design and implement a national strategy for the prevention and control of COPD, with secured funding and clear goals, focused on the prevalent risk factors in Peru (biomass, TB).
- **Strengthening timely diagnosis and active detection:** Expand access to spirometry at the first level of care, training non-specialised personnel. Implement active case finding (screening) programs in high-risk populations using validated questionnaires.
- **Universal access to essential pharmacological treatment:** Include long-acting bronchodilators (lama and Laba) in the single national request for essential medicines (unep) and ensure their availability and affordability through centralised purchases and subsidies.

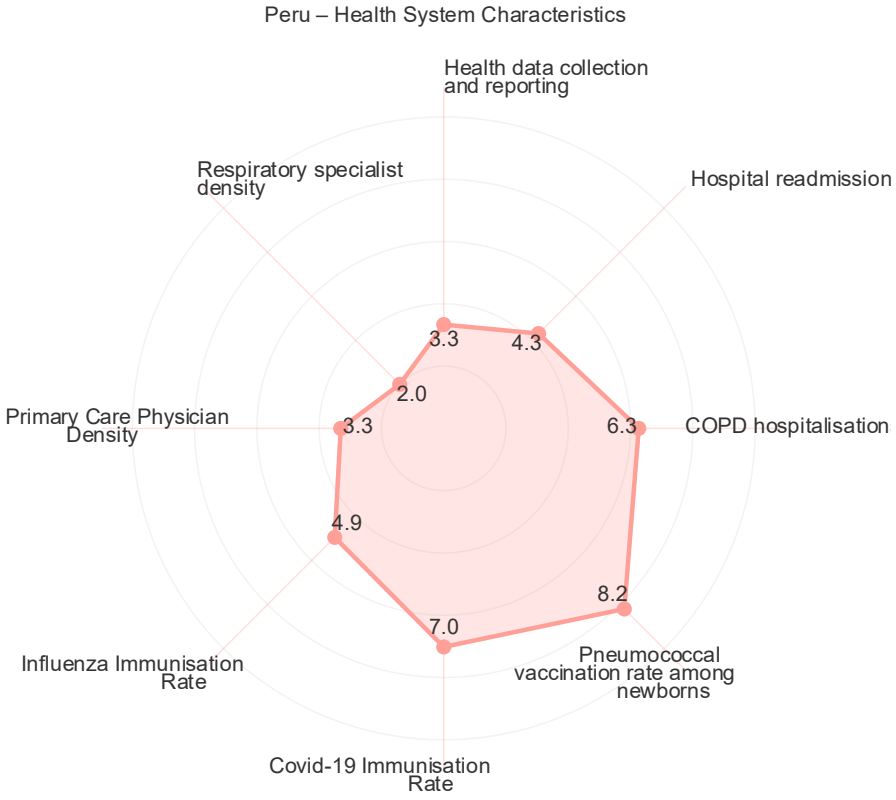
- **Comprehensive exacerbation care and prevention programs:** Develop and scale pulmonary rehabilitation programs nationwide. Ensure influenza and pneumococcal vaccination coverage for all patients with COPD to reduce mortality from infectious exacerbations.
- **Comprehensive exacerbation care and prevention programs:** Collaborate with the Ministries of Energy, Housing, and Environment to promote the transition to clean cookstoves and reduce indoor air pollution. Strengthen tuberculosis control programmes as an indirect COPD prevention strategy.



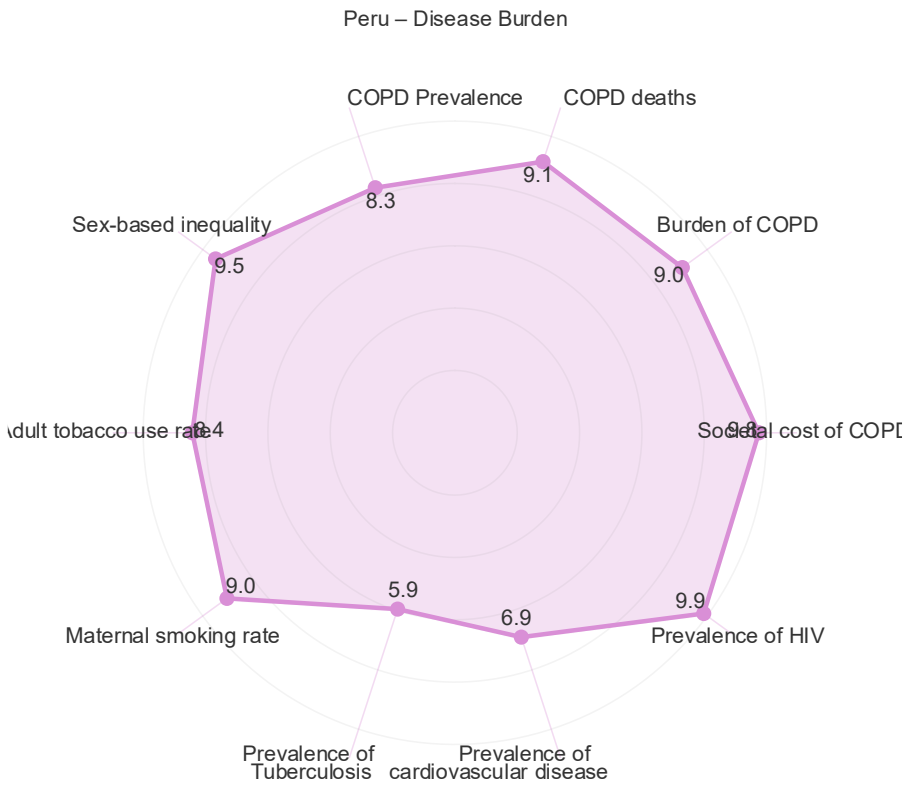
Access and Coverage – Score: 55/100



Health System Characteristics – Score: 49/100



Disease Burden – Score: 86/100



Environmental Factors – Score: 65/100