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Decarbonisation - Inhaler use and disposal Task and Finish Group 2022-2026

Final report

Inhaler Decarbonisation in Wales 2022-2030

A Whole-System Approach to Sustainable Prescribing



A coordinated national and local approach to drive sustainable inhaler use across Wales.

August 2026

Contents

Executive Summary.....	3
1. Introduction	5
2. Background	6
3. The Task and Finish Group	6
3.1 Purpose, aims and objectives.....	6
3.2 Membership	6
3.3 Structure & governance.....	7
3.4 Deliverables	7
4. Progress and impact.....	9
4.1 Meetings.....	9
4.2 Outputs.....	9
4.3 Highlights.....	10
4.3.1 Strategic direction.....	10
4.3.2 Impact on the carbon footprint of inhalers in Wales	10
4.3.3 Changing patterns of inhaler prescribing	12
4.3.4 Responsible inhaler disposal	15
4.3.5 Resources and assets.....	16
4.3.6 Recognition.....	16
4.3.7 Collaboration across UK	16
5 Other influences / drivers for change	17
7 Conclusion.....	18
8 Recommendations	19
Appendix 1 – Members.....	21
Appendix 2 – Progress against the Task and Finish Group’s agreed deliverables	23
Appendix 3 – Progress against the top 12 actions of the strategy	24

Authorship, acknowledgements and contact information

This report presents the work of the Task and Finish Group, sub-delivery groups, and wider activity in decarbonising inhalers in Wales by a variety of factors external to the Group. Public Health Wales would like to acknowledge the input provided by the wide range of stakeholders in providing their expertise, time, and efforts to effect the changes reported.

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Executive Summary

Wales has made a strong commitment to tackling climate change, with a national target to achieve net zero greenhouse gas emissions by 2050. The [NHS Wales Carbon Footprint](#) assessment (2018/19) highlighted the significant contribution of medicines to healthcare-related emissions. This report identified drugs and pharmaceuticals as responsible for 23% of carbon emissions, and inhalers as contributing approximately 4% of total carbon emissions. Inhalers were subsequently identified as a priority area for action because of their substantial environmental impact, largely driven by the use of pressurised metered dose inhalers (pMDIs) containing high global warming potential propellants.

To address this challenge, in December 2022, the **Decarbonisation – Inhaler Use and Disposal Task and Finish Group** was established, bringing together expertise across organisations and sectors. The aim was to provide national leadership, coordination, and oversight to the work. The focus was on delivering a whole-system approach across three key areas: inhaler prescribing, inhaler use and optimisation, and responsible inhaler disposal. Having established firm foundations and driven considerable progress, the Task and Finish Group concluded in early 2026 and this work integrated into existing organisations as ‘business as usual’. These being the All-Wales Therapeutics and Toxicology Centre, the National Strategic Clinical Network for Respiratory Conditions and NHS Wales Shared Services Partnership.

The Group identified a number of key prescribing areas for action. These being prescribing of lower global warming potential inhaler devices (dry powder inhalers, soft mist inhalers and CFC free inhalers) in preference to pMDI inhalers; reviewing the over ordering of inhalers signalling poor respiratory disease management and triggering a chronic condition and medication review, optimising treatment options for patients taking short acting beta agonist (SABA) inhalers (reliever or rescue) only. The Group also focussed on patient education and the safe and responsible disposal of inhalers and options for recycling used and unused inhalers in Wales.

Key achievements include:

- A **45% reduction in the carbon footprint of inhalers** issued between January 2022 and January 2026.
- A reduction in total emissions of **44%** from approximately **65.8 million kg CO₂ (2019) to 36.9 million kg CO₂ (2025)**.
- A **reduction** in the proportion of inhaler items prescribed as pMDIs from 70% in January 2022 to 52% in January 2026.
- A **31% reduction** in the total number of pMDI items prescribed decreased by 31%, representing a reduction of approximately 75,500 items over the same period.
- A **10% reduction** in the proportion of inhaler items prescribed as SABAs from 41% in January 2022 to 31% in January 2026. ([Figure 6](#))

- An **increase** in the proportion of inhaler items prescribed as dry powder inhalers (DPIs) and soft mist inhalers (SMIs) from 30% in January 2022 to 48% in January 2026. ([Figure 7](#))
- A **26% increase** in the proportion of the Anti-inflammatory Reliever (AIR) inhalers and combined Maintenance and Reliever Therapy (MART) inhaler items from 15% in January 2022 to 41% in January 2026 in line with national guidance. ([Figure 8](#))

The national target for 80% low global warming potential inhaler prescribing by 2025 was not achieved by the target date. However, the level of change achieved in a short time shows clear progress. The main reasons for this progress are described in [section 4.3 Highlights](#) of this report.

The development and publication of the All Wales Medicines Strategy Group (AWMSG) endorsed national strategy, *Decarbonisation: Inhaler Prescribing, Use and Disposal 2023–2030* provided a clear strategic direction and framework for action for the Task and Finish Group and its partners. Most of the deliverables identified by the Task and Finish group were completed, either fully or partially. As a result, a solid foundation has been established to sustain progress beyond the lifetime of the Task and Finish Group, supporting the continued integration of inhaler decarbonisation into routine respiratory care and medicines optimisation.

Although the Task and Finish Group has concluded, continued effort is required to sustain momentum, embed the changes achieved, and build on the foundations established over recent years. A small number of actions identified were not progressed. These should be reviewed to determine whether they remain relevant or necessary, and aligned with current priorities. The following recommendations are proposed to support the continuation of this work.

1. Maintain efforts to implement the national inhaler strategy
2. Integrate inhaler work with environmentally sustainable medicines management in Wales and link with the Value and Sustainability Medicines Delivery Assurance Group
3. Sustain data collection, monitoring, reporting, and improvement capability
4. Continue to improve respiratory prescribing and patient outcomes
5. Progress safe and responsible inhaler disposal, recovery, and recycling opportunities
6. Retain UK-wide collaboration
7. Continue education, engagement and awareness raising

The work of the Task and Finish Group has contributed to a broader shift towards environmentally sustainable respiratory care, supporting improved prescribing practice, patient outcomes, and reduced waste. A coordinated, whole-system approach, supported by national leadership and local delivery, has been critical to achieving this progress. This work has also positioned Wales as a leader in inhaler decarbonisation, with learning shared across the UK to maximise wider impact.

1. Introduction

In recent years, Wales has made a formal commitment to tackling environmental challenges. In 2019 the Welsh Government [declared a climate emergency](#) and two years later, the Senedd declared a nature emergency. Following these declarations, Wales agreed a commitment to achieve net zero greenhouse gas emissions by 2050 through a [2021 amendment](#) to the [Environment \(Wales\) Act 2016](#). Interim emission reduction targets have been put in place for 2020, 2030, and 2040 together with cumulative five-year carbon budgets. Emissions fell by 38% between 1990 and 2023, and all emissions targets and carbon budgets to-date have been achieved.¹

The [NHS Wales Carbon Footprint](#) assessment (2018/19) identified that drugs and pharmaceuticals accounted for 23% of carbon emissions and that inhalers accounted for approximately 4% of total carbon emissions. This analysis was based on hospital data only, thereby underestimating the true volume of carbon emissions associated with healthcare services across Wales. At the time the propellants used in pressurised metered dose inhalers (pMDIs) were hydrofluorocarbons HFA-134a and HFA- 227ea, both of which are powerful global warming gases and harmful to the environment. By contrast, lower global warming potential inhalers such as dry powder inhalers (DPIs) and soft mist inhalers (SMIs) have a lower carbon footprint. DPIs and SMIs are as effective as pMDIs, and for most patients could be prescribed instead, where clinically appropriate.

Inhalers were identified as a priority area for action in the [NHS Wales Decarbonisation Strategic Delivery Plan](#) (2021) due to the high volume of prescribing, the considerable proportion of inhalers prescribed as pMDIs, and their associated environmental impact. These consisted of three initiatives specifically on inhalers and a fourth linked to pharmaceutical waste. ([Table 1](#))

Table 1: Inhaler initiatives in the NHS Wales Decarbonisation Strategic Delivery Plan (2021)

Initiative 42	Take a patient-centric approach to optimise inhaler use, focusing on a reduction in the over-reliance on reliever inhalers where possible.
Initiative 43	Transition the existing use of carbon-intensive and high global warming potential (GWP) inhalers to alternative lower GWP inhalers where possible.
Initiative 46	We will work with pharmacists and prescribers to build upon and support existing efforts to encourage responsible disposal of inhalers.
Initiative 44	Support the development of guidance by 2022 for best practice reduction of pharmaceutical waste.

To note: The initiatives above are as of 2021. These were reviewed and reworded for the updated

¹ [Cars, cows, and coal: Welsh emissions from 1990 to 2024](#), Senedd Research Report, June 2026.

NHS Wales Decarbonisation Strategic Delivery Plan (2025).

The pharmaceutical industry is transitioning pMDIs from traditional potent greenhouse gases and ozone-depleting substances to "greener" propellants with near-zero global warming potential (GWP). The progress in product development and launch in the UK is slow with only a small number of modern propellant inhalers currently brought to market.

2. Background

In 2021, around 300,000 people in Wales were living with asthma and a further 80,000 with chronic obstructive pulmonary disease (COPD). Together, these conditions accounted for approximately 4.2 million inhaler items prescribed annually, at a cost of £72.3 million and an associated carbon footprint of 65.5 million kg CO₂.¹

Prescribing data from November 2022 showed that 68% of inhalers prescribed in primary care in Wales were pMDIs. In response, a national target was set for 80% of all inhalers prescribed in Wales to be lower global warming potential inhalers by 2025. To support delivery of this target, NHS Wales was encouraged to implement routine respiratory reviews, optimise prescribing practices, and use of lower GWP inhalers where clinically appropriate.

At the request of Welsh Government, a Task and Finish Group was established to take this work forward.

3. The Task and Finish Group

The multidisciplinary, cross-agency *Decarbonisation - Inhaler Use and Disposal Task and Finish Group* was established in 2022 and held its first meeting on 25 January 2023. After agreement with key stakeholders the Task and Finish Group concluded in March 2026.

3.1 Purpose, aims, and objectives

The purpose of the Group was to provide a coordinated approach, national oversight, input, and support to several key areas aligned to the relevant initiatives in the *NHS Wales Decarbonisation Strategic Delivery Plan* (2021). The overall aims were to reduce the carbon footprint of inhalers and encourage responsible use and disposal of inhalers in Wales. Key objectives are detailed in the [Terms of Reference](#).

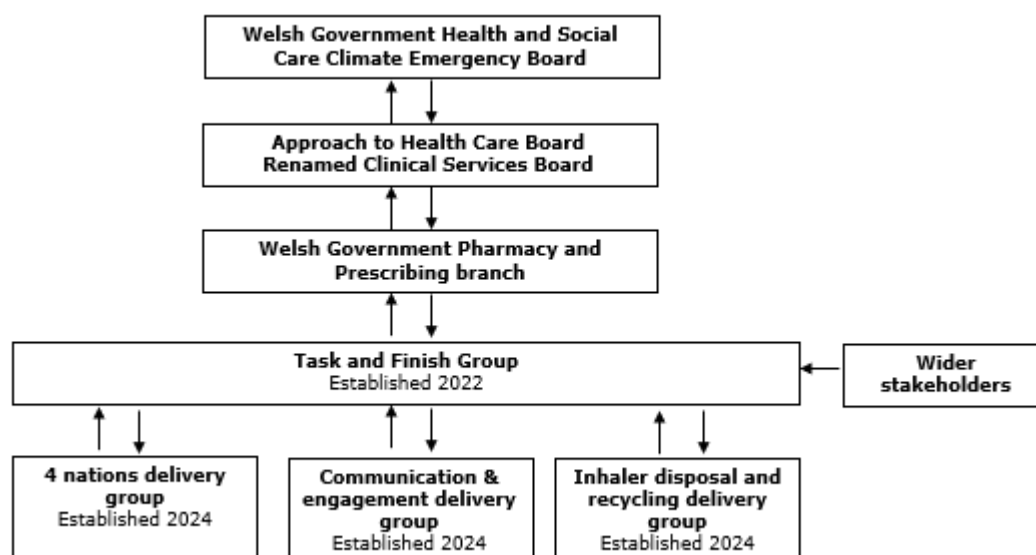
3.2 Membership

Chaired by Public Health Wales, the Task and Finish Group initially consisted of 16 members with additional members joining at various stages. Further details of members are provided in the Terms of Reference in [Appendix 1](#).

3.3 Structure & governance

The Task and Finish Group reported to the [Health and Social Care Climate Change Emergency Board](#) via the Approaches to Healthcare project through the Pharmacy and Prescribing branch of Welsh Government. Originally established as a stand-alone Task and Finish Group, the architecture was restructured in 2024 to focus on delivery by the establishment of specific delivery groups to support a smaller overarching Task and Finish Group. This is illustrated in [Figure 1](#).

Figure 1: Structure and governance of the Task and Finish Group and the sub-delivery groups



3.4 Deliverables

A set of deliverables was established at the outset in 2022 as outlined in the Terms of Reference and presented in [Table 3](#). These deliverables were subject to regular review by the Task and Finish Group to ensure they remained appropriate to the evolving context, relevant to national priorities and feasible within available resources and timelines. These were used to form the basis of an action plan. The publication of the AWMMSG endorsed [Decarbonisation: inhaler prescribing, use and disposal 2023–2030 A national strategy for Wales](#) provided an opportunity to refine and strengthen the focus of the work. The original deliverables were revisited and updated, and a revised set of actions was agreed, aligning with the published 'actions to deliver the strategy'. ([Figure 2](#))

Figure 2: Top 12 actions to deliver the strategy

1. Establish a Task and Finish Group to coordinate and oversee activity relating to inhaler prescribing, use and disposal.
2. Work in partnership with all stakeholders across three broad areas: i) prescribing of inhalers; ii) use of inhalers; and iii) responsible disposal of inhalers.
3. Engage with national and local environmental and clinical networks (such as the Respiratory Health Implementation Group, Green Health Wales, Greener Practice, and local 'green' groups) to support progress towards decarbonisation.
4. Ensure interventions, guidance and services are designed and developed using best available evidence and data including behavioural science.
5. Ensure Welsh national guidance encourages patient-centred, correct diagnosis and regular reviews of asthma and COPD by clinically appropriate staff, to promote quality respiratory care with low carbon outcomes.
6. Develop advice on repeat prescription ordering for inhalers which prompts for a chronic respiratory disease review and supports the inhaler decarbonisation strategy to reduce prescriptions for unnecessary reliever inhalers.
7. Ensure that healthcare professionals are appropriately informed, trained and carbon literate to assess a person's inhaler technique and offer more environmentally friendly products first line. The training should emphasise the importance of making sure that a patient can demonstrate good inhaler technique.
8. Use prescribing decision support software, where available, to signpost prescribers to consider an inhaler with a lower carbon footprint as first choice.
9. Use drivers such as National Prescribing Indicators and primary care contracts to encourage more environmentally sustainable prescribing, use, and disposal of inhalers.
10. Publicly report and monitor data on the progress in reducing the carbon footprint of inhalers used in primary care in Wales and highlight prescribing practice that is not in line with national asthma and COPD guidelines.
11. Support and evaluate a pilot to recycle inhalers being conducted in Swansea Bay University Health Board. Pending evaluation outcomes, NHS Wales and its partners will work together to develop and implement the necessary steps to scale and spread this initiative.
12. As well as sharing knowledge, research, and best practice across Wales, we will work with governments of the other UK nations, as well as NHS colleagues across the UK, to maximise the impact our work can have on the global carbon footprint.

4. Progress and impact

4.1 Meetings

Established during December 2022, the Task and Finish Group met 10 times over 26 months with a further 3 planned meetings being cancelled due to a variety of reasons. A summary of the quantity of meetings by group is provided in [Table 2](#).

Table 2: Number of meetings held by group and by year

	Number of meetings			
	2022/23	2023/24	2024/25	2025/26
Task and Finish Group	2	4	3	2
4 Nations delivery group	-	-	4	4
Communications and engagement delivery group	-	-	3	4
Inhaler disposal and recycling delivery group	-	-	3	3

4.2 Outputs

Working through a series of sub-delivery groups, the Task and Finish Group identified priorities and opportunities for operational delivery, as well as once-for-Wales (or UK-wide) solutions. These were designed to support delivery of the relevant initiatives in the *NHS Wales Decarbonisation Strategic Delivery Plan* (2021). As the Group matured and the work became clearer some of the original deliverables were amended year on year.

Progress against the original deliverables: Progress made against each of the original deliverables during the lifetime of the Task and Finish Group is summarised in [Table 3](#). This provides a high-level overview of delivery and achievements, highlighting the extent to which initial objectives were met and areas for further development. In summary, by 31 March 2026, 6 of 9 actions were completed; 2 of 9 actions were merged with another deliverable which was rated as completed; and 1 action was not progressed. A more detailed account of progress against the deliverables can be found in [Appendix 2](#).

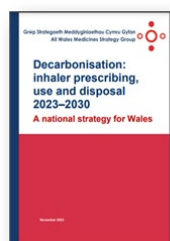
Progress against the national strategy's actions: In addition to the summary of original deliverables, a more detailed assessment has been undertaken against the top 12 actions outlined in [Decarbonisation: Inhaler prescribing, use and disposal 2023–2030 – A national strategy for Wales](#). This provides a more comprehensive view of progress aligned to national strategic priorities, captures achievements, areas of ongoing work, and any remaining gaps. Further detail is provided in [Appendix 3](#).

Table 3 - Summary of RAG rating against each original deliverable

Deliverable		RAG rating by year		
		2023-2024	2024-2025	2025-2026
1	A Strategy for inhaler use and disposal in Wales aligned to support implementation initiatives 42, 43, 44 and 46 in the NHS Wales Decarbonisation Strategic Delivery Plan.			
2	A Communications and Engagement Plan. <i>Integrated into deliverable 4 -Action Plan</i>		N/A	N/A
3	A stakeholder map to support implementation of the aforementioned strategy.			
4	An action plan to ensure a coordinated approach in implementing the aforementioned Strategy.			
5	Liaison required the various stakeholders to identify current and forecasted planned activity, notable practice, shared learning, and methods to cascade the learning and / or scale up across Wales and other UK devolved administrations.			
6	A map of activity required for the short term, medium term and long term, including research and opportunities to work with other devolved UK administrations. <i>Linked to deliverable 4 – Action Plan</i>	N/A	N/A	N/A
7	A descriptor of the lifecycle and explore what is required to describe the associated carbon footprint of different inhalers from manufacture to disposal.			
8	Consider how to gain behaviour change insight into barriers and enablers to encourage patient's use of low global warming potential inhalers and responsible disposal of inhalers.			
9	Consider common measures to aid evaluation. Some may already exist and can be adopted; others may need to be developed.			

4.3 Highlights

4.3.1 Strategic direction



In response to the [NHS Wales Decarbonisation Strategic Delivery Plan](#) (2021) the Group was instrumental in developing the AWMMSG endorsed [Decarbonisation: inhaler prescribing, use and disposal 2023-2030 A national strategy for Wales](#) (November 2023). This set out a list of actions which would enable the delivery of the strategy which then formed the basis of an action plan for the Group.

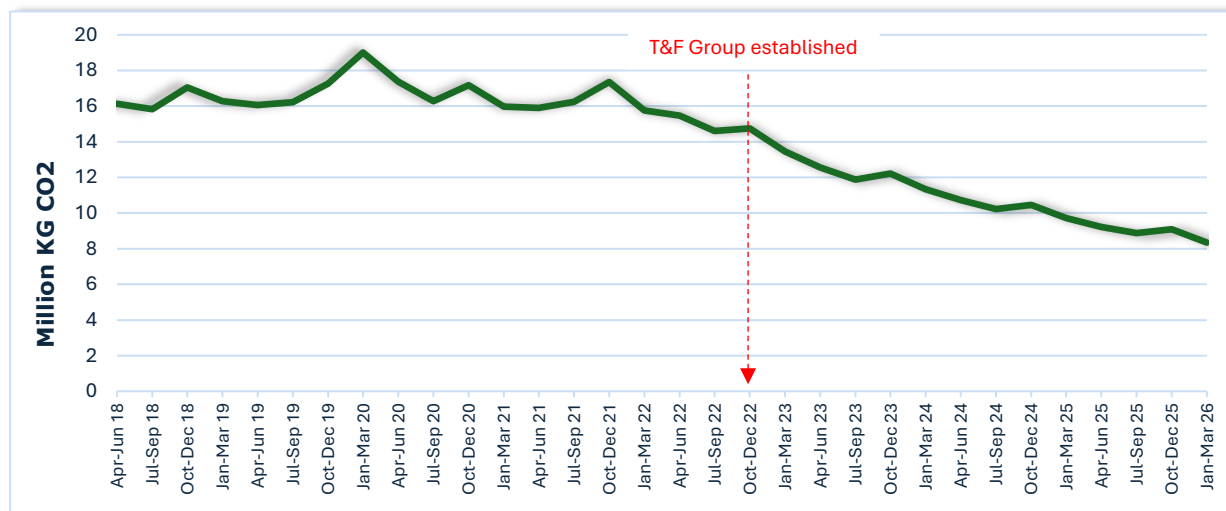
4.3.2 Impact on the carbon footprint of inhalers in Wales

The multidisciplinary, cross-agency Task and Finish Group led, coordinated, and accelerated activity which contributed to the following:

- A **45% decrease** in the total carbon footprint of inhalers issued in January 2026 compared to January 2022.

- An actual annual reduction in CO₂ from 65.8 million kg in 2019 to 36.9 million kg in 2025.

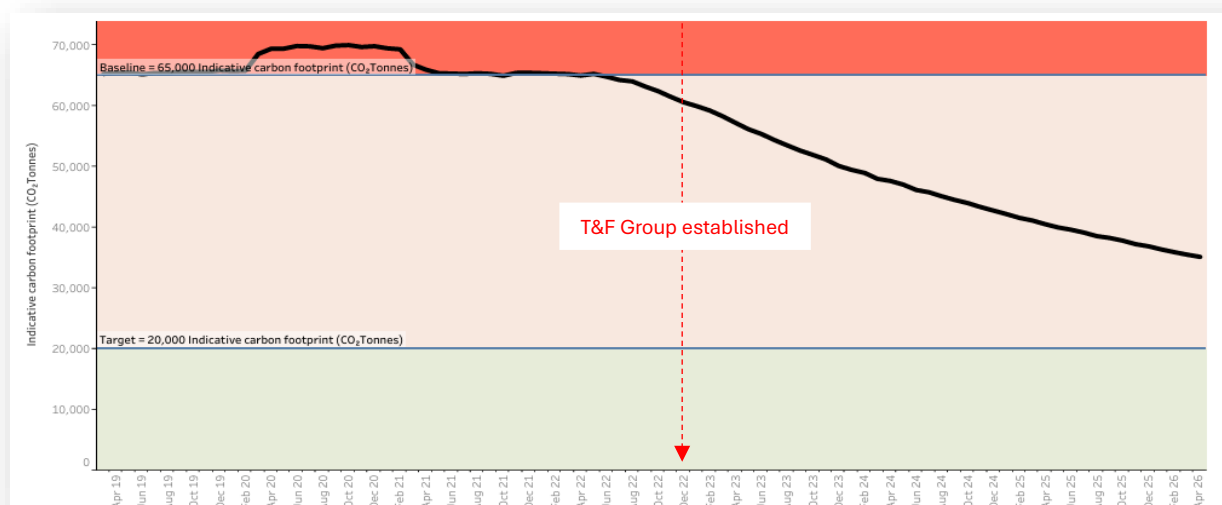
Figure 3: Carbon footprint - all inhalers prescribed in primary care (April 2018 to March 2026)



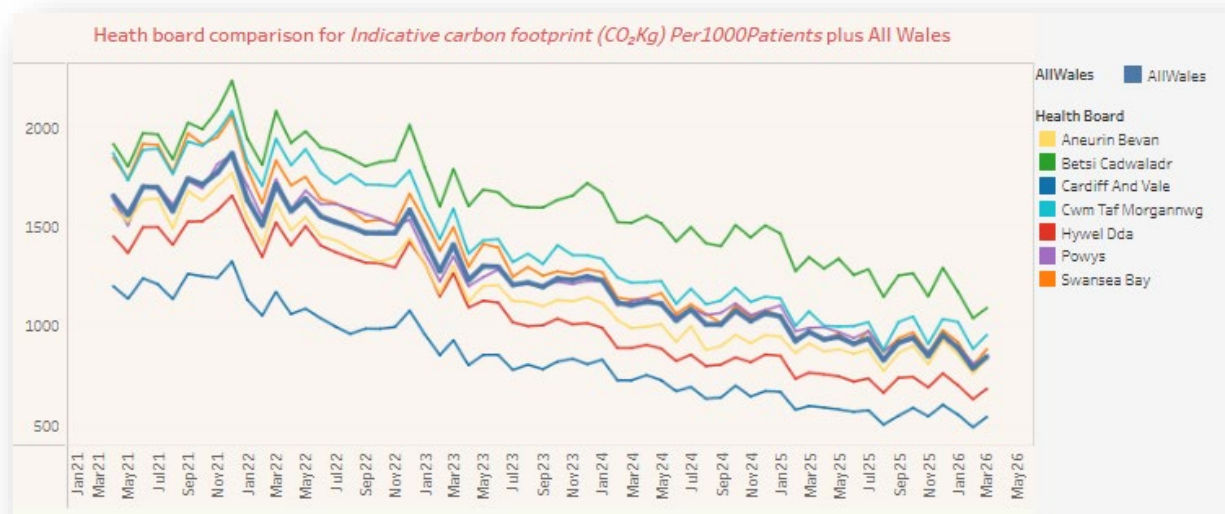
Source: AWTTTC, [SPIRA: Green Inhaler QI Project Self-Serve](#)

Although the aspirational target of 80% of inhalers being low GWP alternatives by 2025 set by the *NHS Wales Decarbonisation Strategic Delivery Plan* (2021) was not achieved by 2025, there has been considerable progress over a relatively short period of time. Wales is leading the way, and the other nations are looking to us to share good practice. Progress against this target is monitored and reported by AWTTTC in the monthly [NHS Wales inhaler carbon footprint reports](#). The overall reduction in carbon footprint of inhalers is illustrated in these reports as the indicative annual carbon footprint of all inhalers issued within primary care in Wales. (Figure 4 and Figure 5)

Figure 4: The indicative annual carbon footprint of all inhalers issued within primary care in Wales (April 2019 – April 2026)



Source: AWTTTC, [NHS Wales inhaler carbon footprint reports](#)
 Figure 5: The indicative carbon footprint by health board and all Wales (CO₂/kg per 1000 patients) (January 2021 – March 2026)



Source: AWTTTC, [SPIRA: Green Inhaler QI Project](#)

4.3.3 Changing patterns of inhaler prescribing

Patterns of inhaler prescribing in primary care across Wales have changed since 2022, reflecting a shift towards prescribing practices that support both high-quality respiratory care and reduced environmental impact in line with [All Wales Asthma and COPD Prescribing Guidelines](#).

The prescribing of pMDIs and SABA inhalers fell steadily across all health boards whilst the proportion of DPIs, SMIs, Anti-inflammatory Reliever (AIR) inhalers and Maintenance and

Reliever Therapy (MART) inhalers showed a similar steady increase across every health board area.

Despite the changes in prescribing aligned to All Wales guidelines, variation in prescribing remains between health boards. This differs depending on indicator, however individual health boards such as Hywel Dda University Health Board consistently perform the best for all indicators.

These changes in prescribing have contributed to a substantial reduction in the carbon footprint associated with inhaler prescribing in Wales while continuing to support patient-centred, clinically appropriate respiratory care. These changes are consistent with national policy, clinical guidance, prescribing incentives, and wider efforts to encourage the use of lower GWP inhalers.

Key prescribing trends observed between 2022 and 2026 include the following:

Reduction in high GWP inhalers

- The proportion of inhaler items prescribed as pMDIs decreased from 70% in January 2022 to 52% in January 2026.
- The total number of pMDI items prescribed decreased by 31%, representing a reduction of approximately 75,500 items over the same period.

Reduction in SABA inhalers

- The proportion of inhaler items prescribed as SABAs fell by 10% from 41% in January 2022 to 31% in January 2026. ([Figure 6](#))

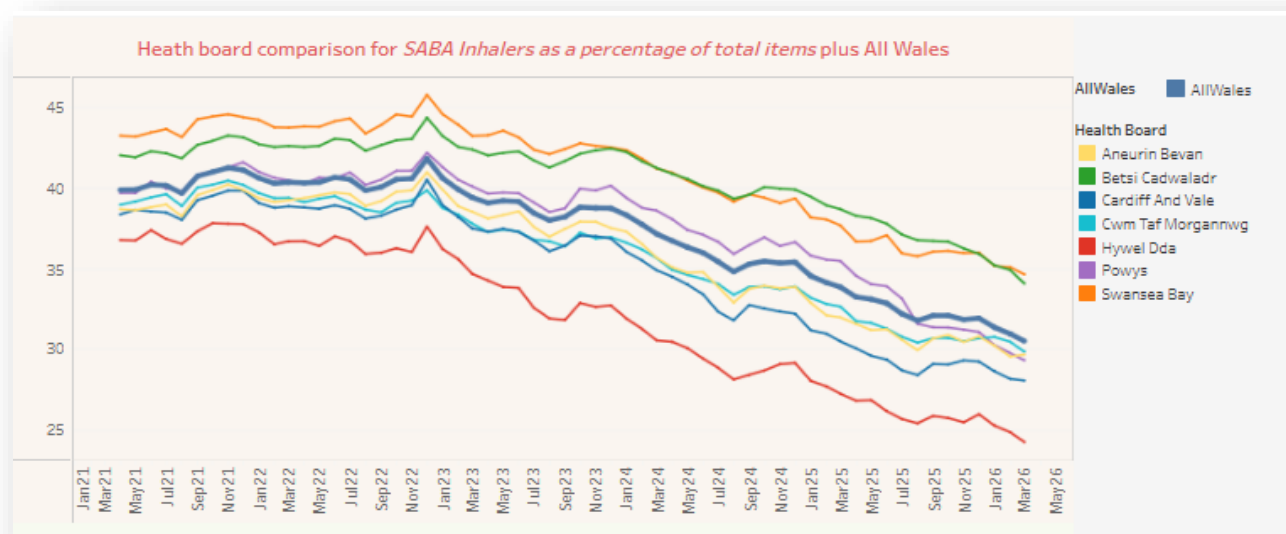
Increase in lower GWP inhalers

- The proportion of inhaler items prescribed as DPIs and SMIs increased from 30% in January 2022 to 48% in January 2026. ([Figure 7](#))

Increase in AIR inhalers and MART inhalers

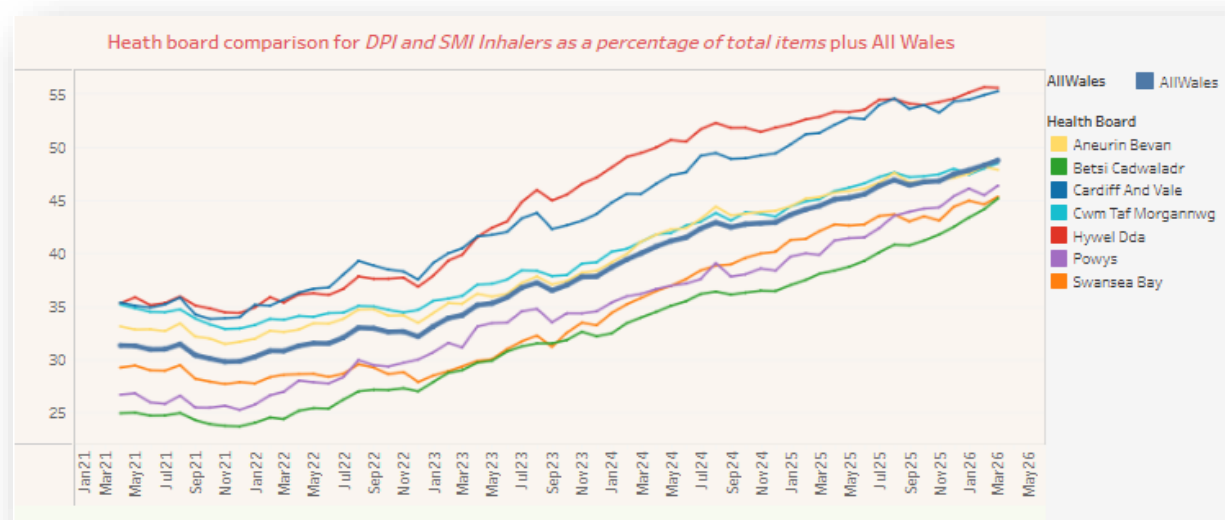
- The proportion of AIR and MART inhaler items prescribed increased 26% from 15% in January 2022 to 41% in January 2026. ([Figure 8](#))

Figure 6: Short acting beta agonist inhalers (SABA) as a percentage of total inhaler items prescribed in primary care in Wales by health board and all Wales (January 2021 – March 2026)



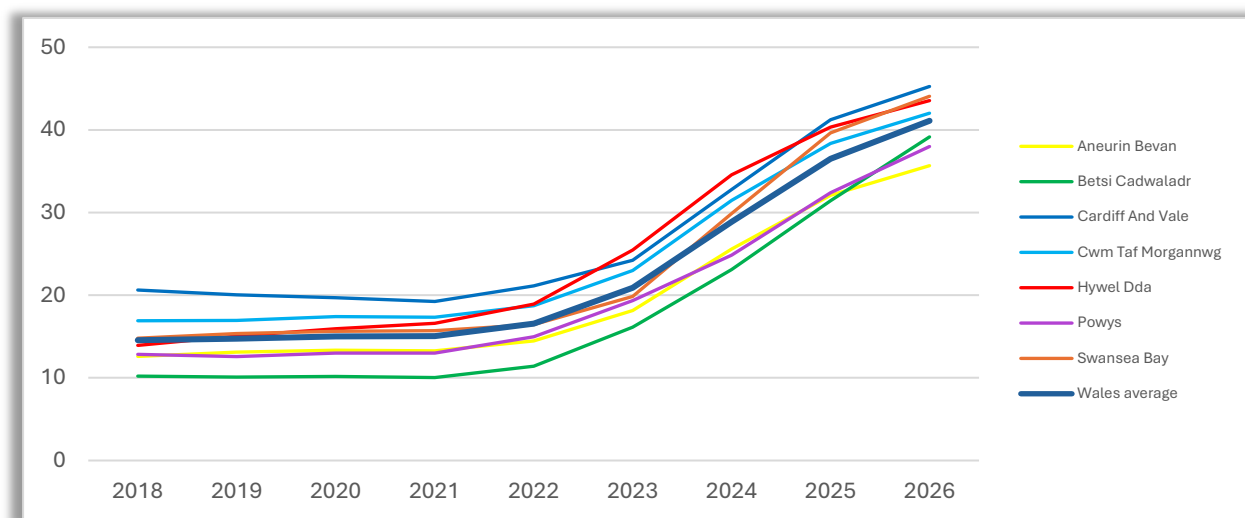
Source: AWTTTC, [SPIRA: Green Inhaler QI Project](#)

Figure 7: Dry powder inhalers (DPI) and soft mist inhalers (SMI) as a percentage of total inhaler items prescribed in primary care in Wales by health board and all Wales (January 2021 – March 2026)



Source: AWTTTC, [SPIRA: Green Inhaler QI Project](#)

Figure 8: AIR and MART regime inhalers as a percentage of all ICS and ICS/LABA inhalers issued within primary care in Wales by health board and all Wales (April 2018 to March 2026)



Source: AWTTC, [SPIRA Inhaler Decarbonisation – Quantity Volume Measure Self Serve](#)

4.3.4 Safe and responsible inhaler disposal

Safe and responsible inhaler disposal was identified as a priority for the Task and Finish Group. This area of work was considered essential to support wider decarbonisation efforts. The Group aimed to undertake a number of work packages to ensure that inhaler disposal is considered within a system-wide, sustainable approach to clinical waste management. The *Collection & Disposal of Clinical Waste contract* in Wales is managed by NHS Wales Shared Services Partnership and is due for renewal on 1 April 2027.

The Task and Finish Group, through collaboration across the UK, with NHS Wales Shared Services Partnership and academia facilitated the following highlights to inform the commissioning of the new contract:

- Evaluation of the Upper Valleys, Swansea Bay University Health Board, [inhaler recycling pilot](#) by Public Health Wales. Report unpublished and available upon request.
- Insight commission about [Behavioural Insights about Facilitators and Barriers to Service Users Returning Inhalers to the Community Pharmacy for Safe Disposal](#). This has resulted in four nation collaboration and publication of the findings in the International Journal of Pharmacy Practice in July 2025.
- A desktop evidence review [Comparative Review of Inhaler Return, Recycling & Recovery Schemes in the UK](#) conducted by Public Health Wales. Report to be available July 2026. Findings identify common components, operational barriers, enablers, and features associated with scalability, environmental credibility and feasibility and will be used to generate an outline service specification for commissioners.

4.3.5 Resources and assets

Early in the lifetime of the Task and Finish Group, members of the Communication and Engagement Sub-delivery Group highlighted the need for communication materials and supporting assets such as posters, leaflets etc. to aid consultations and provide advice to patients on inhaler choices.

In response, Public Health Wales undertook a desktop review to identify existing communication materials and assets, assess their suitability for current use, and evaluate their currency and relevance. The review was undertaken prior to developing any new materials, ensuring that existing resources were fully utilised where appropriate before further production was considered. It became evident that a range of valuable resources and assets already existed but there were challenges with their accessibility:

- Resources had been developed by different organisations without a unified or strategic approach.
- Both healthcare professionals and the public were uncertain about where to find relevant information and tools.
- There was no clear, centralised location for accessing available materials.

As a result, the assets were collated, promoted, and made available via dedicated [Inhalers and their environmental impact](#) web pages originally hosted on Primary Care One and transitioned to PHW corporate webpages.

4.3.6 Recognition

In October 2025, the work of the Task and Finish Group was recognised at the 2025 Welsh Pharmacy Awards. Richard Boldero (senior pharmacist, AWTTTC) and Sian Evans (Consultant in Public Health, Public Health Wales) accepted the Sustainability in Healthcare award on behalf of the Inhaler Decarbonisation Task and Finish Group.²



4.3.7 Collaboration across the UK

A small working group consisting of representatives working on the inhaler decarbonisation agenda across the UK (4 Nations Sub-delivery group) was established to facilitate collaboration and provide specialist input into the Task and Finish Group on issues of UK wide relevance. The Group consists of representatives from NHS Wales, NHS Scotland and NHS England, Scottish Government, Welsh Government, Department of Health, Northern Ireland, All Wales Therapeutics and Toxicology Centre and the National Strategic Clinical Network for

² [Pharmacy award for the Inhaler Decarbonisation Task and Finish Group - All Wales Therapeutics and Toxicology Centre.](#)

Respiratory Conditions (Wales). Through collaboration across the UK, the group progressed several areas of shared interest, including:

- Responding to requests for and ensuring interpretation of prescribing data across the nations.
- Agreeing and monitoring common measures and metrics.
- Identifying current and forecasted planned activity, notable practice, and shared learning.
- Consulting with the pharmaceutical industry specifically regarding inhaler recycling options and the development of new generation propellants.

Although the Task and Finish Group has now concluded, members of the 4 Nations Sub-delivery Group continue to meet as an informal network. This enables ongoing collaboration, knowledge sharing, and progression of issues that benefit from a coordinated UK-wide approach.

5 Other influences / drivers for change

The progress reported in the previous section cannot be attributed solely to the Task and Finish Group; however, the national focus and collaboration enabled it to be a significant contributor. The following factors have been identified as key drivers of change, many of which were integrated into the work of the Task and Finish Group.

5.1 National policy, strategy, and system drivers

- Endorsement by AWMMSG of a national [strategy](#) setting ambitious decarbonisation goals to reduce the carbon impact of inhalers in support of the [Net Zero Wales](#) ambition.
- Inclusion in the General Medical Services (GMS) contract 2021-2024.
- Inclusion in the Community Pharmacy Contract Quality and Safety Scheme (Wales) 2023-2024.
- Local Enhanced Respiratory Service provision in GMS practices and community pharmacies ([Community Pharmacy Inhaler Review Service](#)) in some health boards.
- Inclusion in [National Prescribing Indicators](#) since 2022 and local Prescribing Incentive Schemes.

5.2 Clinical guidance and pathways

- Ongoing support and collaboration with the [National Strategic Clinical Network for Respiratory Conditions](#) (NSCNRC).
- Development of national AWMMSG endorsed [All Wales Prescribing Guidelines for COPD and asthma in adults and asthma in children](#).
- Integration into relevant [Health Pathways](#).

5.3 Digital tools and data monitoring

- Development of the AWTTTC [Inhaler decarbonisation dashboard](#).
- Development of the AWTTTC [Green inhaler QI project dashboard](#).
- Use of nationally agreed [ScriptSwitch](#) messages.
- Development of the NSCNRC [Respiratory baseline dashboard](#).

5.3 System enablers

- Integration into the [Greener Primary Care Wales Scheme](#).
- Inclusion in Primary Care [cluster plans](#) (local delivery and planning mechanisms).

5.4 Education, resources, and capacity building

- Development of a AWTTTC patient information video [Improving inhaler prescribing, use and disposal](#).
- A wide range of educational events delivered nationally and locally by multiples agencies.
- ICST developed and hosted [Respiratory Toolkit](#) which includes patient apps.

7 Conclusion

The Decarbonisation – Inhaler Use and Disposal Task and Finish Group has demonstrated the value of a coordinated, whole-system approach in delivering environmental sustainability alongside improvements in clinical care. Over the lifetime of the Group, considerable progress has been achieved seeing a 45% reduction in the carbon footprint of inhalers prescribed.

The aspirational target of 80% of inhalers being lower GWP devices by 2025 was not achieved. However, the scale of progress made over a relatively short period demonstrates that meaningful transformation is possible when national policy, clinical leadership, prescribing systems, data intelligence, and local delivery mechanisms work together to create the conditions required for change. As the Task and Finish Group concludes, the challenge now is to sustain momentum and embed successful approaches into routine practice.

While the outcomes of this work cannot be attributed solely to the Task and Finish Group, it played an important role in facilitating collaboration and accelerating progress across Wales. The improvements achieved were ultimately delivered by health boards and frontline staff working in partnership with patients to implement change. The work also reinforced that

environmentally sustainable respiratory care should remain focussed on improving health outcomes, supporting appropriate prescribing, optimising inhaler use and technique and reducing avoidable waste.

8 Recommendations

The recommendations below recognise that inhaler decarbonisation should now be embedded within routine respiratory care, medicines optimisation and broader NHS Wales sustainability activities.

Recommendation 1

Maintain efforts to implement the national inhaler strategy

Delivery of the national strategy should continue through existing organisations and governance structures. Prior to concluding the Task and Finish Group it was agreed in principle that this work will continue via the National Strategic Clinical Network for Respiratory Conditions, AWTTTC via the Your Medicines Your Health initiative, and NHS Wales Shared Services Partnership (regarding disposal).

There are some actions that were either partially or not progressed. These should be reviewed and a decision made as to whether these should be started, continued, or retired. Consideration should be made as to who is best to undertake this review.

Recommendation 2

Integrate inhaler work with environmentally sustainable medicines management in Wales and link with the Value and Sustainability Medicines Delivery Assurance Group

The emerging work to progress environmentally sustainable medicines management in Wales should also include ongoing efforts to decarbonise inhalers and address safe and responsible disposal. This will ensure alignment with the remit of the Value and Sustainability Medicines Delivery Assurance Group.

Recommendation 3

Sustain data collection, monitoring, reporting, and improvement capability

Progress against the strategy should continue to be monitored through the tools identified to support continuous quality improvement, benchmarking, and evaluation of future interventions. Reliable data and feedback mechanisms have been essential enablers of progress and will remain critical to achieving further reductions in emissions. The focus should be on inhaler prescribing and respiratory health outcomes. Currently this is via NHS Wales inhaler carbon footprint reports, existing dashboards, National Decarbonisation Strategic Delivery Plan 2025 Key Performance Indicators, National Prescribing Indicators, and the NSCNRC Respiratory baseline dashboard.

Recommendation 4

Continue to improve respiratory prescribing and patient outcomes

All services across NHS Wales should continue to support All Wales endorsed national guideline-based respiratory care, routine respiratory reviews, optimisation of inhaler therapy, reduction in over-reliance on reliever inhalers, and appropriate use of lower GWP inhalers where clinically suitable. Reducing variation between health boards should remain a priority.

Recommendation 5

Progress inhaler disposal, recovery, and recycling opportunities

The renewal of the Wales clinical waste contract in 2027 presents an important opportunity to further develop sustainable approaches to inhaler disposal and recovery. Liaison with NHS Wales Shared Services Partnership should continue to ensure the learning from the Upper Valleys / Swansea Bay University Health Board pilot, Welsh specific behavioural insights research and UK-wide evidence reviews should be used to inform future service specifications and implementation plans.

Recommendation 6

Retain UK-wide collaboration

The 4 Nations Network should continue as an informal collaborative forum to share evidence, compare data, exchange good practice, and engage collectively with industry and policy makers. Consideration should be made of other stakeholders who may add value in being involved in the 4 Nations Network.

Recommendation 7

Continue education, engagement and awareness raising

Healthcare professionals, patients, and the public should continue to have access to high-quality educational resources, training and communication materials that support informed inhaler choices, correct inhaler use and responsible disposal. Existing resources should be maintained and regularly updated to reflect evolving evidence and policy and be available in one place. This would be best integrated into *Your Medicines Your Health*.

Appendix 1 – Members

The table below provides details of the members and deputies of the Task and Finish Group and associated sub-delivery groups, presented in alphabetical order by organisation. The organisations represented and their respective members evolved and changed to some degree during the lifetime of the Group.

Orgainsation	Member
Association of British Pharmaceutical Industry Cymru	Joanne Castle
Academic partner with expertise in behaviour change (Cardiff Metropolitan University)	Delyth James
Asthma and Lung UK	Joseph Carter
All Wales Therapeutics and Toxicology Centre	Richard Boldero
Aneurin Bevan University Health Board (Respiratory Lead Medicines Management Pharmacist Primary Care)	Jackie Reynolds
Cardiff University	Jemma Leighton
Community Pharmacy Wales	Judy Thomas & Kayleigh Williams
Department of Health, Northern Ireland	Greg Miller
Directors of Pharmacy (Health Board)	Jonathan Simms

Green Health Wales & Greener Practice Wales	Sarah Williams
National Strategic Clinical Network for Respiratory Conditions	Anthony Gibson & Andrea Pace
NHS England	Victoria Tozer-Brown & Peter Morgan
NHS Wales Shared Services Partnership	Aled Guy & Romano Provini
Public Health Wales	Sian Evans (Chair) & Angharad Wooldridge
Royal Pharmaceutical Society (Wales)	Elen Jones, Iwan Hughes
Scottish Government	Alifia Chakera, Emily Kennedy & Karen Vint
Swansea Bay University Health Board	Oliver Newman
Upper Valleys Cluster	Nikki Watts
Welsh Government (Health and Social Care Climate Emergency National Programme & Pharmacy and Prescribing Branch)	Ann Corp, Natalie Proctor & Jake Newberry
Your Medicines Your Health programme	Emyr Jones
Secretariat provided by Public Health Wales	Rebecca Williams-Howells & Eve Salter

Appendix 2 – Progress against the Task and Finish Group's agreed deliverables

Theme	Deliverable / Outputs	Progress
Leadership & coordination	Project management agreed and in place	Completed
	Terms of reference agreed	Completed
	Workplan developed with identifiable deliverables	Completed
	End of Year 1 report written and shared with group and key stakeholders	Completed
	Restructure after year 1 and establishment of focussed sub groups	Completed
Respiratory Mx & prescribing (primary and secondary care)	Respiratory prescribing in line with All Wales guidelines for asthma and COPD	Good progress made but ongoing
	Professional leadership in place to champion change in prescribing behaviour	Via Respiratory network
	Core metrics in common across UK using a range of data sources and freely accessible	In progress
	Evidence base for 'gold standard respiratory review'	No progress made
	Guidance on use of prescribing decision support software	Via WG secondee - limited progress made
	Low Global Warming Potential (GWP) inhalers embedded in National Primary Care Clinical Pathways	Completed
	Environmentally sustainable inhaler prescribing included in National Prescribing Indicators 2024/25	Completed
	Environmentally sustainable inhaler prescribing included in primary care contracts where possible	Completed
	Case studies of notable practice and mechanism(s) in place for sharing - including secondary care interventions to improve respiratory prescribing in hospital and upon discharge	Good progress made but no secondary care examples
	Programme of educational and learning events from a range of providers identified, promoted and easily accessible	Completed & ongoing
	Drivers to encourage appropriate prescribing and disposal e.g. NPIs, guidelines, incentive schemes, audits identified and implemented	Completed & ongoing
	Benchmarking complete to highlight notable prescribing practice in line with guidelines	Completed & ongoing via SPIRA
	Guidance on repeat prescription ordering for inhalers	No progress made
Communication & Engagement	Current and forecasted activity, notable practice, shared learning, and methods to cascade and / or scale up across Wales	Some examples but could do more
	Resource page for assets for patients and professionals on Green Health Wales - now hosted on PHW website - links with YMYH	In progress (YMYH links)
	Assets, resources, tools, and communications material all in one place and new ones developed if needed - currently on PHW webpages	Completed
	Increased use of asthma and COPD apps	Unknown - exercise in place via network
	Work with other UK nations to share practice and once for UK engagement with common stakeholders e.g. pharmaceutical industry	Ongoing via 4 nations network
Inhaler disposal	Different inhaler recycling schemes scoped and reported	Completed
	Service specification for waste management contracts developed	Completed
	Recommendations from 3 pilot site trials of recycling inhalers via Grondon (across UK) agreed	Completed
	Description of new recycling inhaler model	In progress
Measures & data	Collated data routinely accessible from a range of sources	Completed - AWTC dashboards
	Measures comparable across 4 UK nations	In progress
Other	A descriptor of the lifecycle and associated carbon footprint of different inhalers from manufacture to disposal	No progress made

Appendix 3 – Progress against the top 12 actions of the strategy

The table below relates to the 12 actions cited in the strategy ([Figure 2](#) of the main report).

ACTION	PROGRESS
Action 1	
Establish a Task and Finish Group to co-ordinate and oversee activity relating to inhaler prescribing, use and disposal.	✓ Task and Finish Group - Decarbonisation - Inhaler use and disposal established in December 2022 and operational until March 2026. Following consultation with stakeholders the group has concluded, and work embedded into business as usual. ✓ Terms of Reference can be found here and architecture of the group and sub-delivery groups can be accessed here. ✓ Inaugural meeting January 2023 with subsequent 32 meetings of the main group and associated sub-delivery groups. Details can be found in Table 2.
Action 2	
Work in partnership with all stakeholders across three broad areas: i) prescribing of inhalers; ii) use of inhalers; and iii) responsible disposal of inhalers.	i) prescribing of inhalers ✓ Collaboration with the National Strategic Clinical Network for Respiratory Conditions (former Respiratory Health Implementation Group Until October 2023) saw the publication of All Wales adult asthma management and prescribing guideline, All Wales paediatric asthma management and prescribing guideline and All Wales COPD management and prescribing guideline all updated and endorsed by the All Wales Medicines Strategy Group. ✓ Inclusion in the General Medical Services contract 2021-2024 via the optional Quality Improvement activity. ✓ Webpage Educational resources and case studies – inhalers established to signpost to case studies and resources to identify and facilitate the sharing of good practice. Case studies are available in the Greener Primary Care Wales Yearbook 2022, Greener Practice website the ICST Respiratory toolkit webpages and recorded educational events can be viewed via this webpage. ✓ <i>Inhaler prescribing in Wales. Benchmarking Report April 2024</i> (unpublished) developed and shared with a range of stakeholders. This was also presented to the Health Board Medical Directors in December 2023. Report available upon request. ✓ <i>Inhaler prescribing in Hywel Dda University Health Board, A brief review of practice within primary care 2025-26</i> (author Angharad Wooldridge as a Welsh Government secondee) (unpublished) reported to Welsh Government. Report available upon request.

	ii) use of inhalers ✓ Animation developed by AWTTC to educate younger patients about inhaler use completed. ✓ Posters and leaflets for use in community pharmacies to educate patients on inhaler use designed and distributed to community pharmacies. iii) responsible disposal of inhalers ✓ See action 11 regarding the Upper Valleys cluster / Swansea Bay University Health Board pilot. ✓ Inclusion in the community pharmacy contract as part of the Community Pharmacy Contract Quality and Safety Scheme (Wales) 2023-2024. ✓ Via the Inhaler Disposal Sub-delivery Group, medicine recycling, in particular inhalers, features as a core principle of the specification for procurement of the new clinical waste contract in Wales in 2027. ✓ Comparative review of inhaler return, recycling, and recovery schemes in the UK (March 2026), reported by Public Health Wales to inform waste disposal and inhaler recycling implementation when new waste contract commissioned. ✓
Action 3	
Engage with national and local environmental and clinical networks (such as the Respiratory Health Implementation Group, Green Health Wales, Greener Practice, and local 'green' groups) to support progress towards decarbonisation	✓ Engagement made with National Strategic Clinical Network for Respiratory Conditions Clinical Lead and Project Manager. ✓ Former Clinical Lead, Simon Barry, presented work of Respiratory Health Implementation Group (RHIG) and ICST to the T&F Group in its early establishment to identify opportunity for collaboration, and his successor Anthony Gibson became a formal member of the T&F Group and the 4 Nations Sub-delivery Group. ✓ Engagement made with Green Health Wales, Greener Practice via Dr Sarah Williams. Green Health Wales website is currently not available, but links have been made with the new Sustainability Hub hosted on Y Tŷ Dysgu at HEIW. <i>To note: The Respiratory Health Implementation Group was incorporated into the NHS Executive in Wales and, in October 2023, became the new National Strategic Clinical Network for Respiratory Conditions.</i>

Action 4	
Ensure interventions, guidance and services are designed and developed using best available evidence and data including behavioural science.	✓ Monthly NHS Wales inhaler carbon footprint reports publicly available. ✓ Inhaler Decarbonisation Dashboard developed and available for NHS staff. ✓ Evidence Review <i>Why don't patients return used or unused inhalers to community pharmacies?</i> PHW 2022 (unpublished). Report available upon request. This formed the basis of the commission delivered by Cardiff Metropolitan University. ✓ Upper Valleys Cluster / Swansea Bay UHB inhaler recycling pilot evaluation completed to inform the evidence base – report (unpublished) shared with stakeholders July 2024. ✓ Cardiff Metropolitan University commissioned by the Primary Care Division, Public Health Wales to explore <i>Behavioural insights about enablers and barriers to patients returning inhalers to the community pharmacy for safe disposal</i>. Paper Behavioural insights about barriers and facilitators to returning inhalers to the community pharmacy in Wales for safe disposal: patient and community pharmacy perspectives (August 2025) published in the International Journal of Pharmacy Practice.
Action 5	
Ensure Welsh national guidance encourages patient-centred, correct diagnosis and regular reviews of asthma and COPD by clinically appropriate staff, to promote quality respiratory care with low carbon outcomes.	✓ All Wales adult asthma management and prescribing guideline, All Wales paediatric asthma management and prescribing guideline and All Wales COPD management and prescribing guideline ✓ Links made with Health Pathways. Lower GWP inhalers included in respiratory clinical pathways. ✓ Stakeholder collaboration to ensure prescribing in line with the national guidelines included in the Respiratory baseline dashboard developed and maintained by the new National Strategic Clinical Network for Respiratory Conditions.
Action 6	
Develop advice on repeat prescription ordering for inhalers which prompts for a chronic respiratory disease review and supports the inhaler decarbonisation strategy to reduce prescriptions for unnecessary reliever inhalers.	This was identified as a lower priority for the T&F Group. And subsequently there is little progress to report. ✓ National ScriptSwitch messages developed and shared.

Action 7	
Ensure that healthcare professionals are appropriately informed, trained and carbon literate to assess a person's inhaler technique and offer more environmentally friendly products first line. The training should emphasise the importance of making sure that a patient can demonstrate good inhaler technique.	✓ Range of educational resources available via ICST, Green Health Wales and Greener Practice. All can be accessed via PHW webpages Educational resources and case studies – inhalers. ✓ Going Green: An update on inhalers in Wales webinar delivered June 2025 as part of the Respiratory Matters webinar series. ✓ Variety of respiratory and inhaler related Learning at Lunch virtual training sessions delivered by different presenters and hosted by AWTTTC.
Action 8	
Use prescribing decision support software, where available, to signpost prescribers to consider an inhaler with a lower carbon footprint as first choice.	✓ All Wales ScriptSwitch messages developed and shared.
Action 9	
Use drivers such as National Prescribing Indicators and primary care contracts to encourage more environmentally sustainable prescribing, use, and disposal of inhalers.	✓ Included in the National Prescribing Indicators for 2023-24 and continues to current day. ✓ Included in the General Medical Services contract 2021-2024 via the optional Quality Improvement activity. ✓ Included in the community pharmacy contract as part of the Community Pharmacy Contract Quality and Safety Scheme (Wales) 2023-2024.
Action 10	
Publicly report and monitor data on the progress in reducing the carbon footprint of inhalers used in primary care in Wales and highlight prescribing practice that is not in line with national asthma and COPD guidelines.	✓ Via Monthly NHS Wales inhaler carbon footprint reports ✓ Inhaler Decarbonisation Dashboard developed and available for NHS staff ✓ Green inhaler QI Project Dashboard developed and available for NHS staff ✓ Reported via the Approaches to Healthcare Group now transitioned to the Clinical Services Board –a sub group of the Health and Social Care Climate Emergency National Programme.

Action 11	
Support and evaluate a pilot to recycle inhalers being conducted in Swansea Bay University Health Board. Pending evaluation outcomes, NHS Wales and its partners will work together to develop and implement the necessary steps to scale and spread this initiative.	✓ Independent evaluation of the Swansea Bay inhaler recycling pilot – <i>Upper Valleys Cluster and Swansea Bay University Health Board Inhaler Recycling Scheme Pilot; End of project report, July 2024</i> available upon request. ✓ See action 2 iii for next steps ‘<i>Pending evaluation outcomes, NHS Wales and its partners will work together to develop and implement the necessary steps to scale and spread this initiative</i>’
Action 12	
As well as sharing knowledge, research, and best practice across Wales, we will work with governments of the other UK nations, as well as NHS colleagues across the UK, to maximise the impact our work can have on the global carbon footprint.	✓ 4 nations attendance at T&F group ✓ Separate quarterly meetings set up to explore common measures, drivers etc. across UK. ✓ 4 nations collaboration to continue beyond the conclusion of the T&F Group as a network. Interests include new generation propellant gases, data, metrics, and comparisons, sharing practice, engaging with the pharmaceutical industry, guideline development and interpretation, broader medicines management opportunities, waste and recycling.