



Department
for Environment
Food & Rural Affairs

Inventories for policy support

TFEIP

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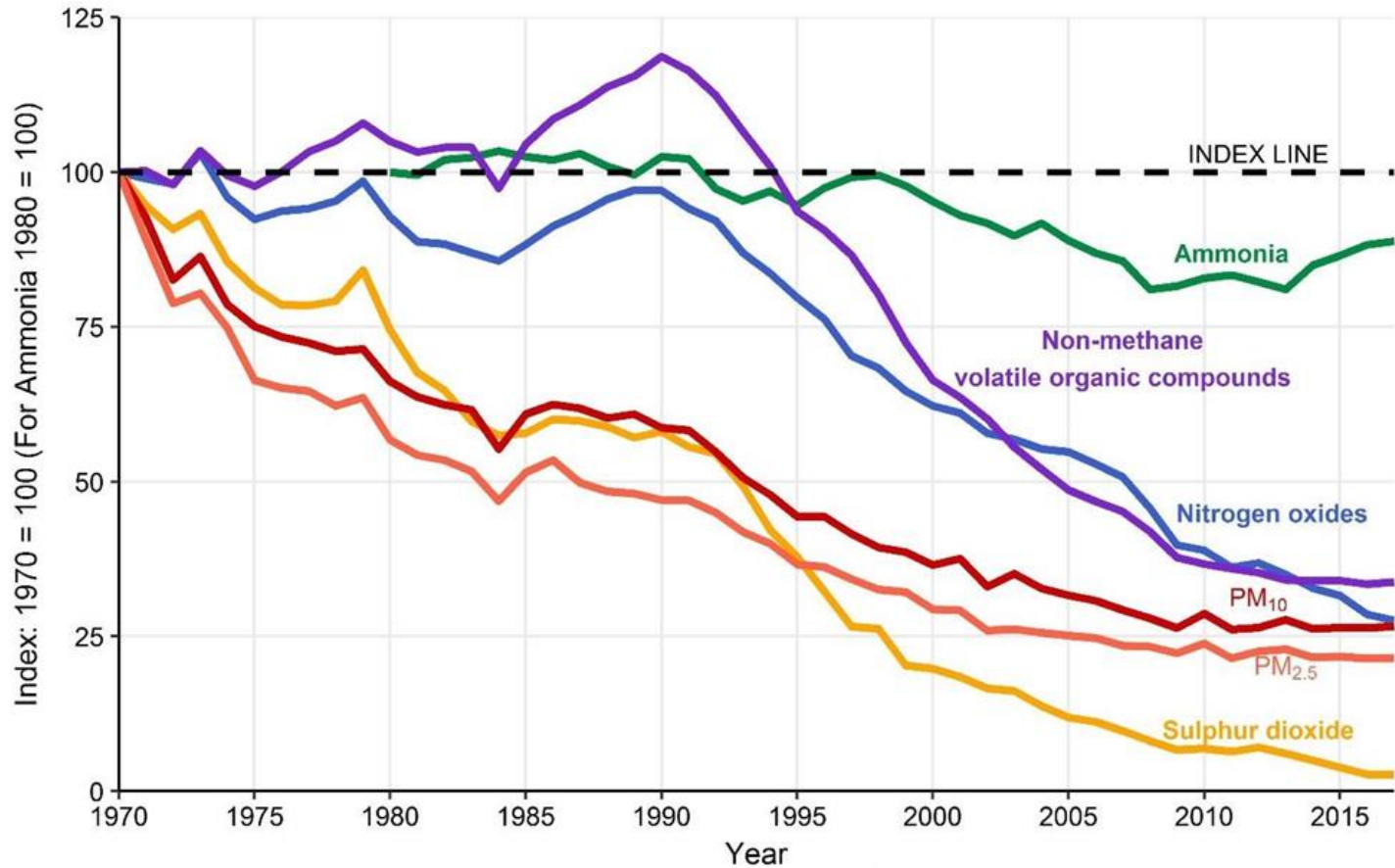


Overview

- UK submission
- Update on UK AQ policies
- UK inventory
- Using the inventory to inform policy – some challenges
- Summary

Emissions are generally decreasing

Statutory inventory submission to the EU/UNECE on 15th February 2019



Source: Ricardo Energy & Environment

Key trends

- Emissions of **NMVOCs increased by 1.0%** between 2016 and 2017.
- Emissions of **NOx decreased in 2017** compared to 2016 by 3.4%, dropping to the lowest level in the time series
- **PM_{2.5} emissions decreased by 0.1%** between 2016 and 2017.
- **Emissions of SO2 decreased by 1.6%** from 2016 to 2017
- **Increase of 0.7% in emissions of ammonia** between 2016 and 2017. Increases since 2013 go against the trend of steady overall reduction observed from 1998 to 2013.
 - **Agriculture accounted for 87 per cent of NH3 emissions in 2017.**



UK Government investment in air quality

- Local Authorities receive financial support through:
 - A **£275m Implementation Fund** to support local authorities to develop and implement their plans to tackle air quality issues.
 - A **£220m Clean Air Fund** to mitigate the local impact of air quality measures. This includes improvements to bus services and cycling infrastructure, employer-led travel to work schemes and support for businesses.



- Government is committed to **investing over £3.5 billion overall in air quality and cleaner transport**. This includes:
 - £1.5 billion in ultra-low emission vehicles and infrastructure.
 - £1.2 billion through the Cycling and Walking Investment Strategy.
 - £156 million for retrofitting through Green Bus Fund, Clean Bus and Vehicle Technology Funds.
 - £100 million for air quality as part of Road Investment Strategy.

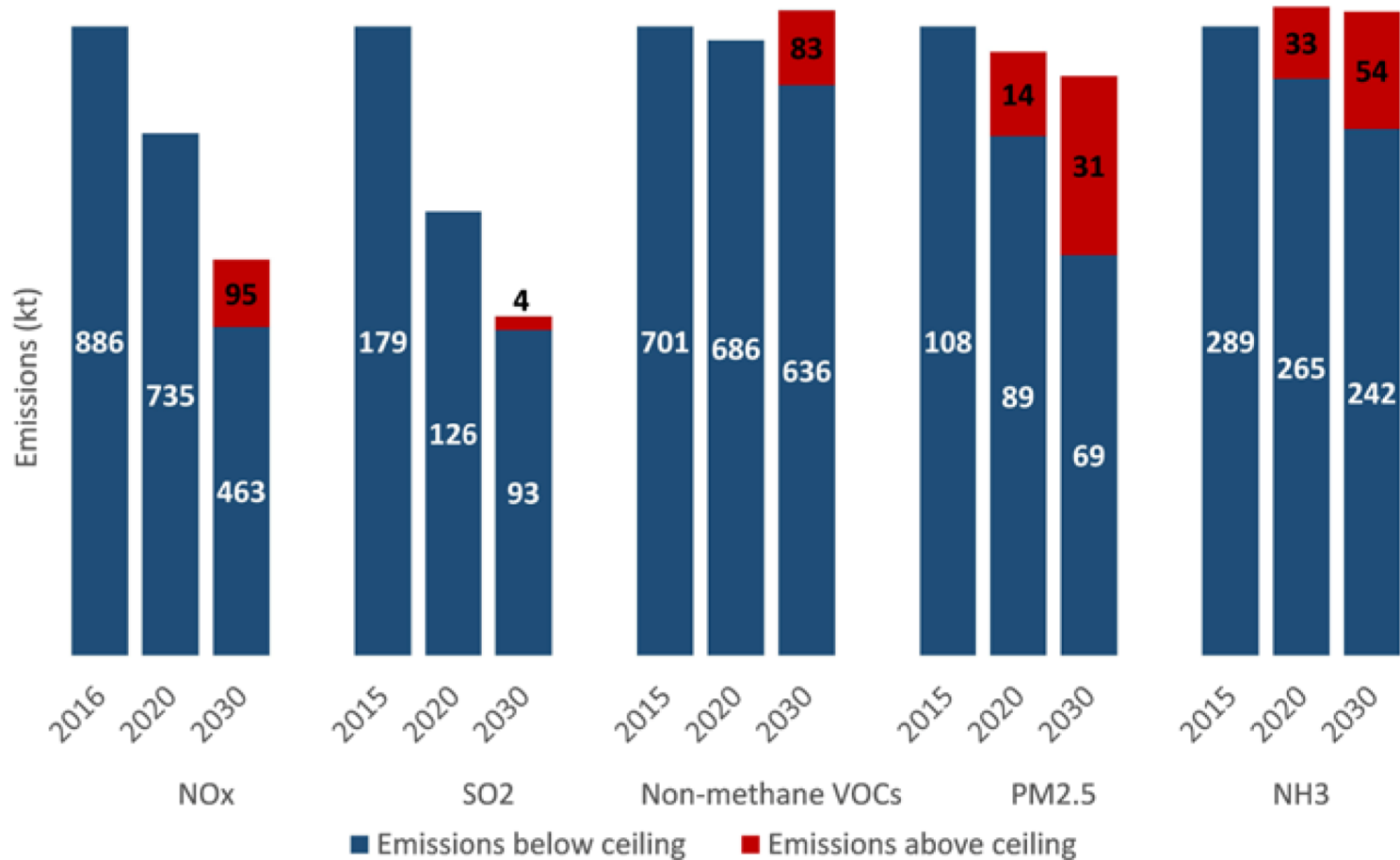
Defra's Strategic 25 Year Environment Plan

Launched by UK Prime Minister on 11 January 2018



- Targets to reduce emissions of five damaging air pollutants. This should halve the effects of air pollution on health by 2030.
- Ending the sale of new conventional petrol and diesel cars and vans by 2040.
- Maintaining the continuous improvement in industrial emissions by building on existing good practice and the successful regulatory framework.
- Explore how to address pollution from coal and wet wood.
- Legislating to set limits on the levels of air pollutants that MCPs and generators can emit.
- Work with farmers to use fertilisers efficiently to reduce release of ammonia

Why further action is needed



Without further action we would breach our emissions ceilings for PM_{2.5} and NH₃ in 2020 and all of them in 2030.

The UK's Clean Air Strategy 2019

- Our consultation ended in August 2018, with over 750 responses
- Final Clean Air Strategy published on 14th January 2019
- Described as “world-leading” by the WHO



Key Commitments in the Clean Air Strategy (1)

- **We will reduce PM2.5 levels in order to halve the number of people living in locations where concentrations of PM2.5 are above WHO guidelines (10 µg/m³);** we will set out our plans to reduce PM2.5 concentrations even further in due course and to support this we will publish evidence examine what action would be needed to meet the WHO annual guideline limit of 10ug/m³.
- **We will legislate to prohibit the sale of the most polluting domestic fuels** and we will ensure only the cleanest stoves are available for sale by 2022.
- **We will give new powers to Local Authorities** to take action in areas of high pollution; bringing legislation into the 21st century with more flexible, proportionate enforcement powers.

Key Commitments in the Clean Air Strategy (2)

- We will require and support farmers to make investments in farm infrastructure and equipment to reduce ammonia emissions
- Holistic approach to address emissions from transport, by taking action on each mode of transport and encouraging a transition to lower modes of transport (public transport, active travel).
- Commitment to address non-exhaust PM from road transport.
- Commitment to address emissions from NRMM.
- Evidence and tools – e.g., sensors, future evidence programme

National Air Pollutant Control Programme

- Under the revised NECD, the UK submitted its NAPCP to the EU on 1st April 2019
- Contains details of policies and measures that were included in the Clean Air Strategy
- Contains a set of “with additional measures” projections
- NAPCP is UK-wide, whereas the Clean Air Strategy was England-only
- Includes an assessment of transboundary effects of UK emissions
- Full UK NAPCP reporting document available:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/791025/air-quality-napcp-march2019.pdf



Air Quality: National Air Pollution Control Programme

March 2019



Scottish Government
Riaghaltas na h-Alba
gov.scot



Department of
Agriculture, Environment
and Rural Affairs
www.dera.gov.uk

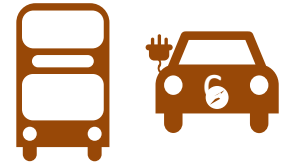


Uywodieth Cymru
Welsh Government



Cross-government working

The **Road to Zero Strategy** was published in July 2018, setting out how government will support the **transition to zero emission road transport** and reduce emissions from conventional vehicles during the transition. **Maritime 2050** highlighted the need to develop port-level emissions inventories... **Aviation 2050**...

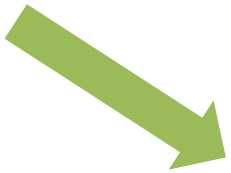


Alongside these sits a targeted delivery programme on the UK's most immediate air quality challenge: **tackling roadside NO_x/NO_2 concentrations** – plan published in July 2017.

Crucial to understand synergies and impacts of implementing the **Clean Growth Strategy** and Paris/Kyoto commitments on air pollutants in parallel with GHGs.

National Atmospheric Emissions Inventory (NAEI). Our Evidence Base.

DUKES energy stats (BEIS)
Transport stats (DfT)
Pollution Inventories
(EA/SEPA/NRW/NIEA)
Agriculture (Rothamsted)
Waste (CEH)
Stakeholder datasets



Official reporting to EU and
UNECE under NECD and CLRTAP

Modelling of Ambient Air Quality (MAAQ)

Support for National Air Pollution Control Strategies (SNAPS)
Scenario modelling e.g. MPMD
UKIAM

Local Air Quality Management (LAQM)
AQ forecasting



Challenges

“The inventory is designed to meet international reporting requirements and so the inputs and outputs do not easily lend themselves to policy analysis or scenario modelling.”

Granularity of data is not sufficient to assess emerging sources.

- mix of bottom-up and top-down methods doesn't help!

Evidence gaps. Recent projects include:

- burning in homes and gardens
- shipping emissions using AIS data
- spatial emissions using earth observation data
- telematics data for NRMM
- further engagement with stakeholders and identify new data sources

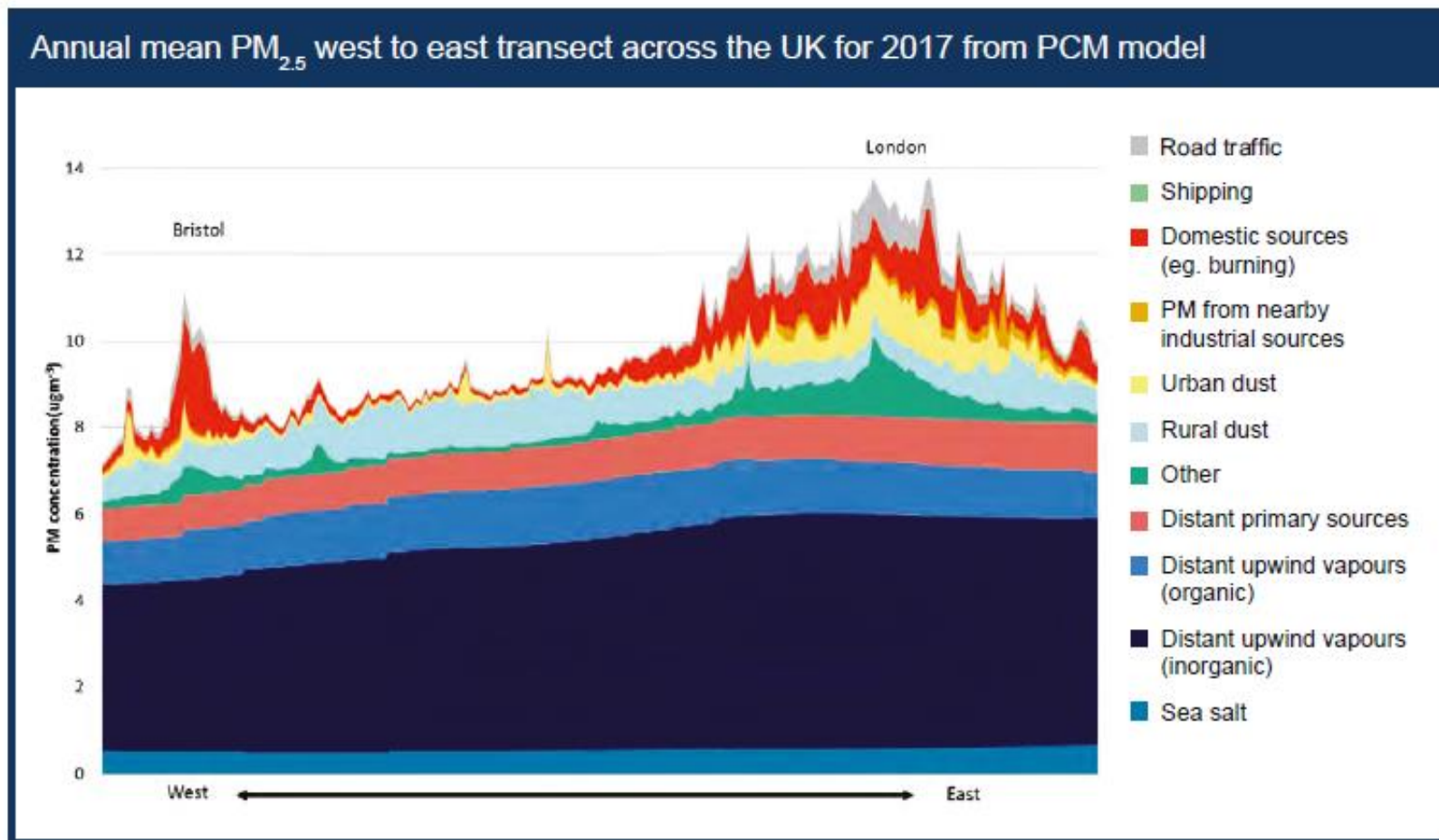
Scenario modelling with the NAEI

Some of the difficulties we face are:

- Current **projections** only for 2020, 2025 and 2030 – we now need to look beyond this time horizon and in greater temporal detail;
- Limited **spatial resolution** of data and outputs – this makes it difficult to align local and national policy development and scenario modelling;
- Limited ability to estimate **uncertainty** in estimates either qualitatively or quantitatively – this makes it harder to design robust policies which will allow for changes in the expected outcome;
- **Projections** only cover a “central” scenario of assumed business as usual and do not allow for the impact of potential changes in conditions, e.g. economic/population growth;
- Difficulties reflecting existing **implemented policies** due to data quality and therefore the complexity of assumptions required

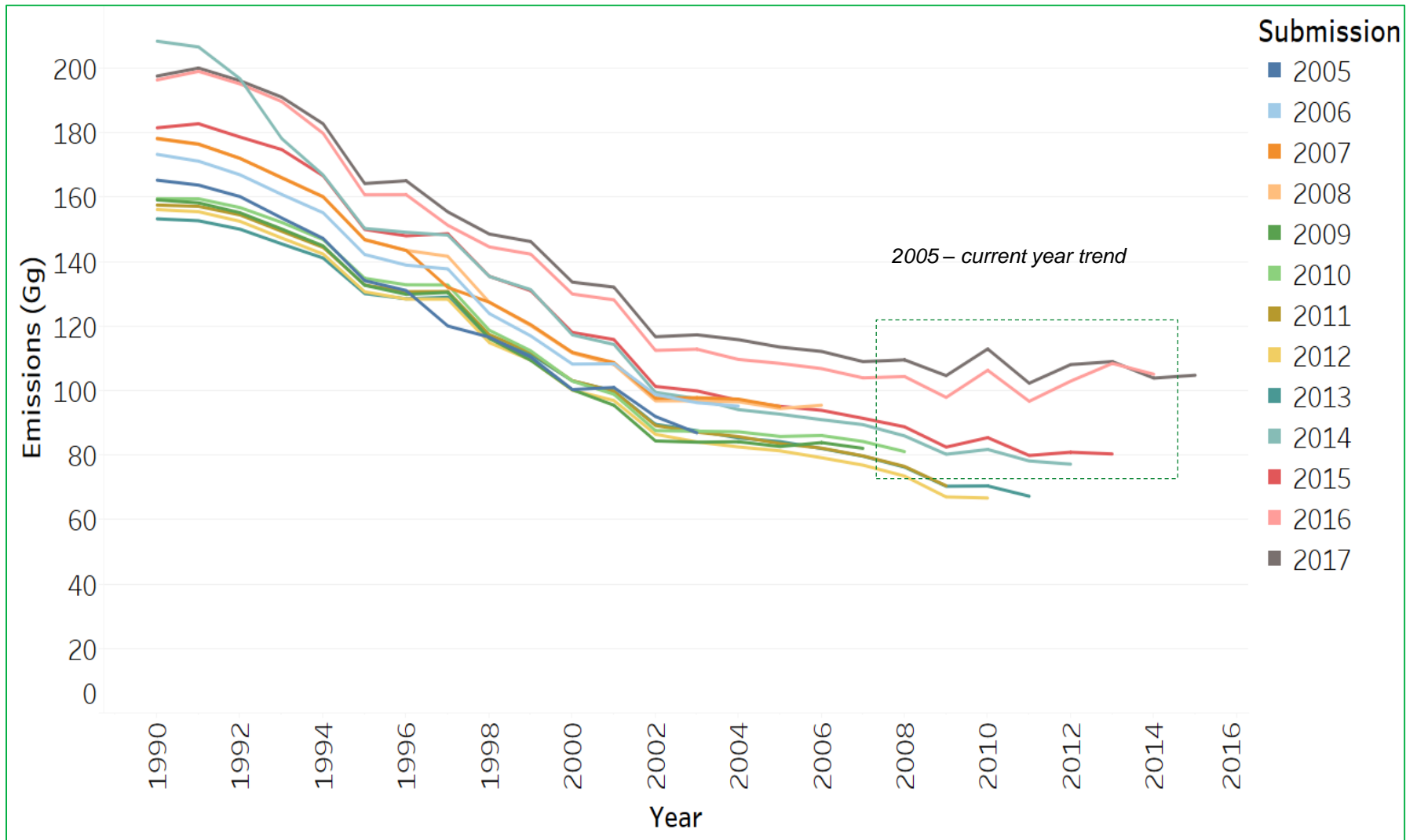
Achieving WHO limits

Target is $10 \mu\text{g}/\text{m}^3$



PM travels long distances and builds up as background pollution

PM_{2.5} inventory



Calls for evidence

- **Call for evidence on domestic combustion**
 - 26% of PM_{2.5} emissions from residential combustion (2016)
 - Focus on what fuels are currently used, range of appliances, behaviour.....EFs?
- **Call for evidence on red diesel and NRMM**
 - 15% of all diesel use
 - End users?
 - Geographic spread?
- **Call for evidence on non-exhaust PM (tyre and break wear)**
 - Non-exhaust PM on the rise

Some thoughts

- **Combining projections and historic inventory data:** Promoting the need for greater granularity to ensure guidance for the historic inventory is consistent with the projections
 - **Industry specific emissions:**
 - Proxy inventories if data is available sooner, e.g. PRTRs
 - **Localisation:** Useful especially for agriculture and road transport. This was identified whilst developing the NAPCP and is needed for concentration modelling.
 - **Suggestions** to improve spatial validation and uncertainty analysis
 - Increased **cooperation** between industry, stakeholders and compilers to address evidence gaps in a cohesive and holistic manner
-

Tools we use

Modelling

- Support for National Air Pollution Strategies
 - Multi-pollutant measures database (MPMD)
 - UKIAM – Integrated assessment modelling run by Imperial College London
 - “In-house” assessment of policies and measures, including economic analysis
- Other tools, e.g. EMEP4UK, FRAME, PCM etc

Clear need for a dedicated emissions scenario tool that can work well with inventory outputs

A different approach?

What happens after 2030?

Looking ahead



- Publication of report on WHO targets
- Laying Environment Bill – sets out environmental watchdog and includes package of measures on air quality.
- Longer term – development of approaches to reduce emissions for other sources.





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Thank you



Forestry Commission
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