Air quality and Climate for 2020/2030

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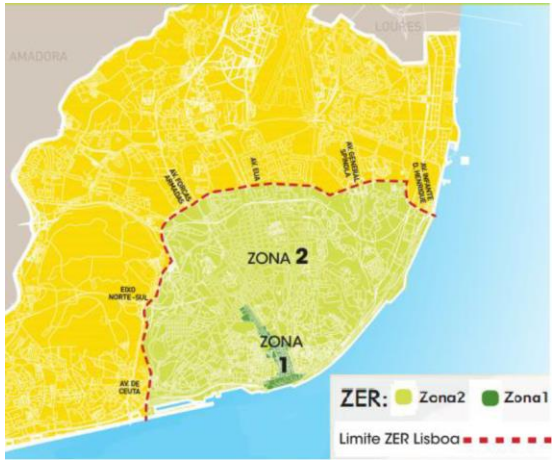
ZER – LISBON LEZ (3rd stage)

Geographical limits ZER Lisboa

(ZONA/ZONE 2)
Roughly 1/3 city limits
Av. Ceuta, Eixo Norte-Sul, Av. Forças Armadas, Av. EUA, Av. Marechal António Spínola, Av. Santo Condestável, Av. Infante D. Henrique

(ZONA/ZONE 1)

"Inner old town"



- *Started in Jan, 15th 2015*

stage I started in ZONA 1 in July, 4th 2011

stage II started in April, 1st 2012

- *MONDAY to FRIDAY, 7:00AM to 9:00PM*
- *HDVs, BUS, passenger cars (petrol and diesel) included*
- *TECHNOLOGICAL REQUIREMENTS*

ZONE 1 *at least Euro 3/III*

ZONE 2 *at least Euro 2/II*

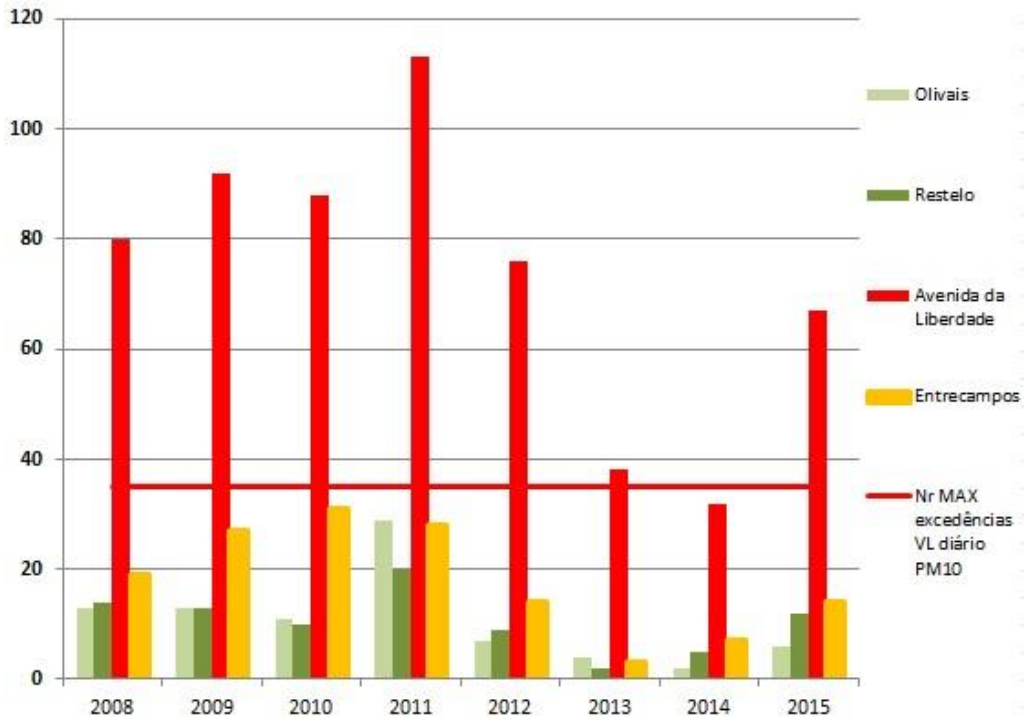
- *EXEMPTIONS:*

emergency vehicles, reduced mobility private cars, historical vehicles, city resident vehicles, NG & LPG powered vehicles, motocycles, police and military vehicles, taxi fleet (different scheme & calendar)

ZER LISBOA – Up-to-date RESULTS

AIR QUALITY – LEGAL ASSESSMENT ALL LISBON MONITORING STATIONS

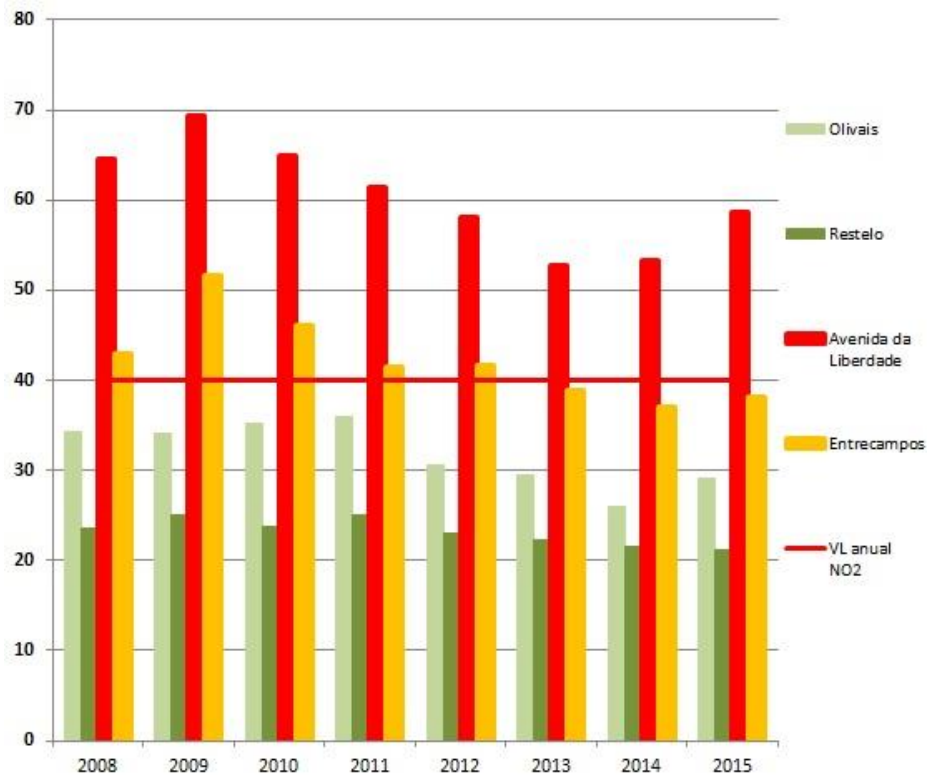
PM_{10}



ZER LISBOA – Up-to-date RESULTS

AIR QUALITY – LEGAL ASSESSMENT ALL LISBON MONITORING STATIONS

NO_2

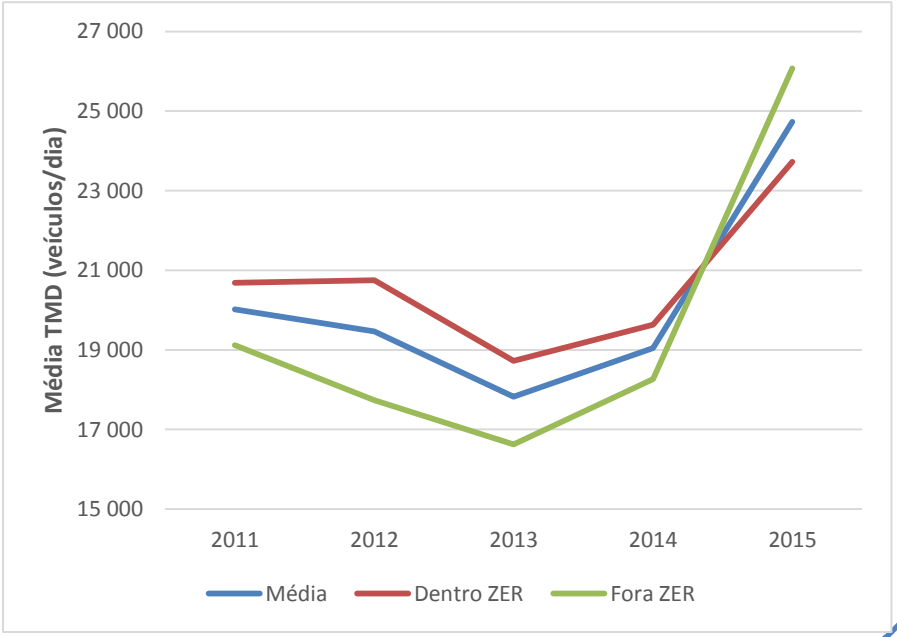


ZER LISBOA – Up-to-date RESULTS

TRAFFIC FLOWS – Average DAT in March 2011-2015

Daily Average Traffic Flows
TMD médio

	Mar 2011	Mar 2015	diferença
Média	20.015	24.729	24%
Dentro ZER	20.686	23.722	15%
Fora ZER	19.120	26.072	36%



***FONTE*: Gertrude**

Context

The New University of Lisbon was contracted by the Portuguese Environment Agency for the main studies of:

- **NAPCC - National Action Plan for Climate Change 2020/2030**
- **National Air Strategy for 2020**

Context

National Air Strategy for 2030

- **Gothenburg Protocol (2020)**
- **NEC (2030)**

- **Air quality levels for 2020**

(modelling by University of Aveiro)

- **Definition of policies and measures**

Methodology

NAPCC - National Action Plan for Climate Change 2020/2030

National Air Strategy for 2020

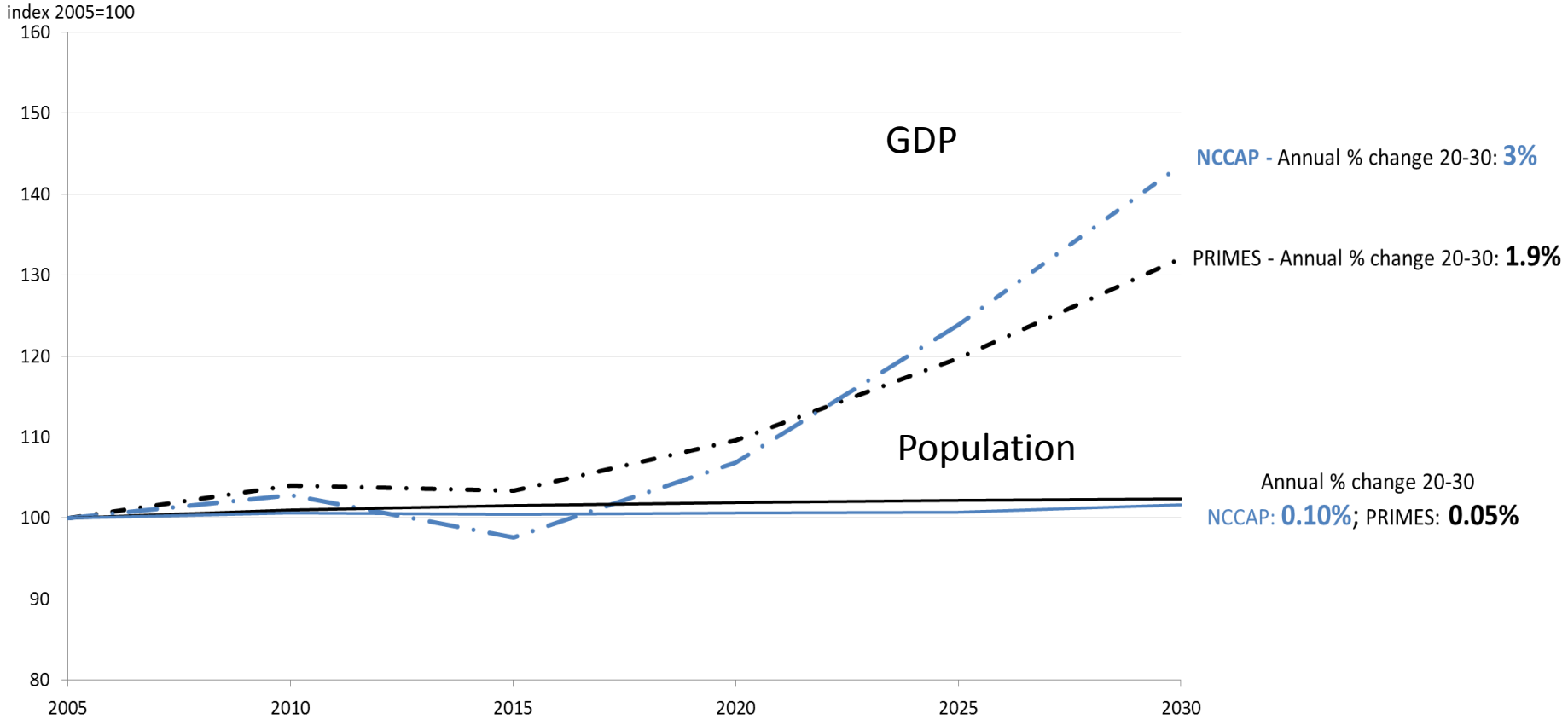
Information used:

- Primary energy consumption by fuel type
- Final energy consumption by fuel type and sector
- Materials and service demands
- Macroeconomic drivers

Methodology

NAPCC - National action plan on climate change 2020/2030

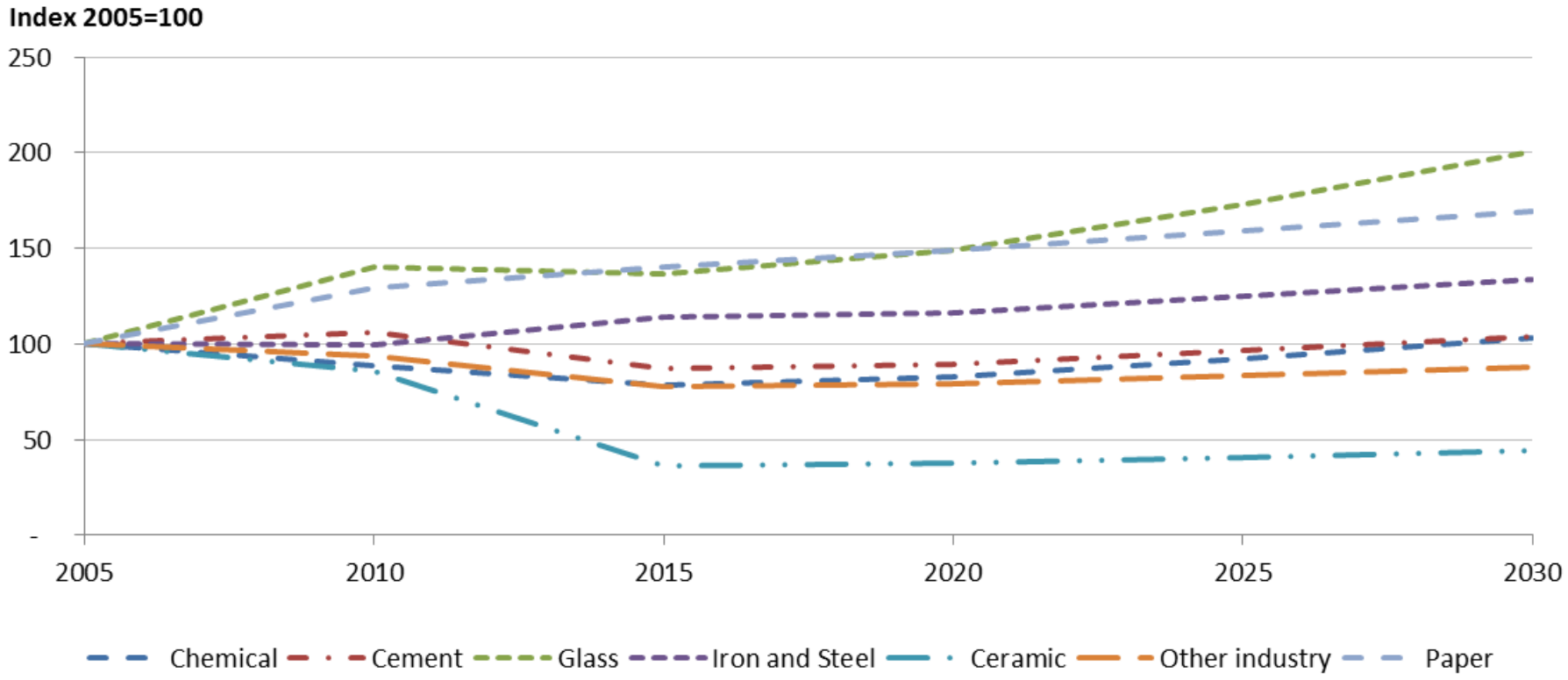
- **Main drivers: GDP and population**



Methodology

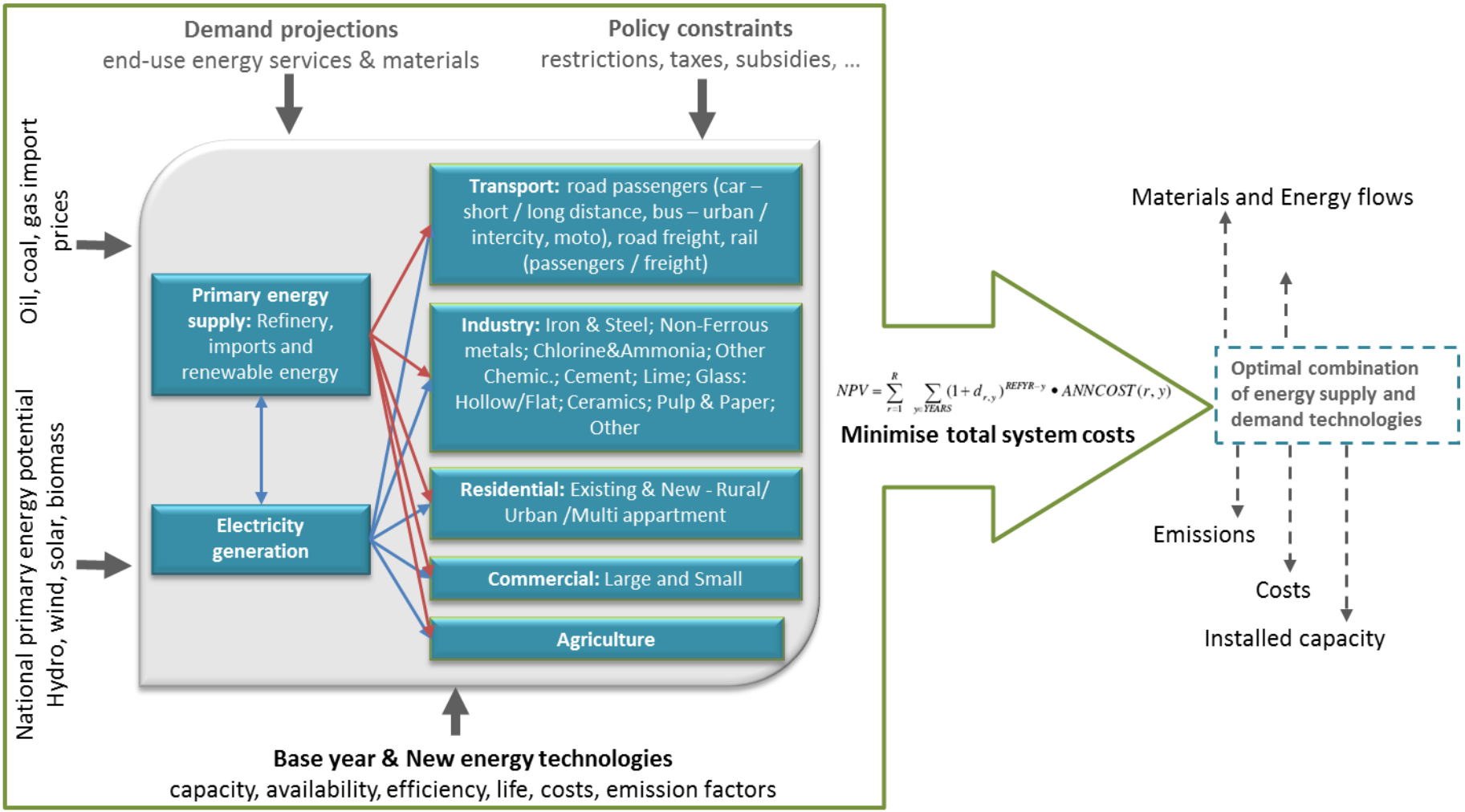
NAPCC - National action plan on climate change 2020/2030

- **Main drivers: Materials demand in industry**



Methodology

Model Use: bottom-up **TIMES_PT**



Simões, S., Cleto, J., Fortes, P., Seixas, M., Huppes, G., (2008). Cost of energy and environmental policy in Portuguese CO2 abatement—scenario analysis to 2020. Energy Policy 36, 3598–3611.

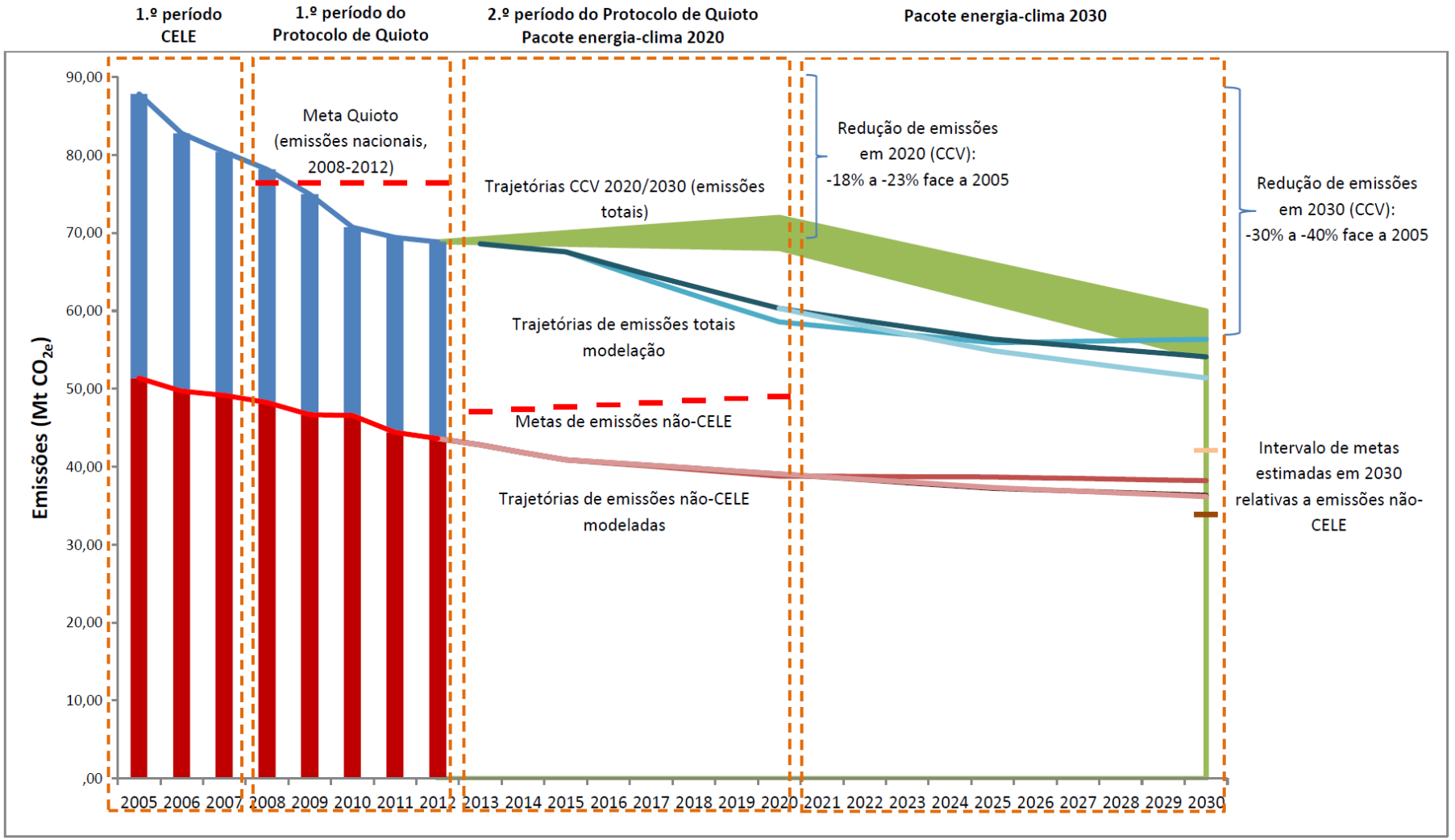
From 2020 to 2030

PNAC
Programa Nacional para as Alterações Climáticas

- **CO_2e emissions (without LULUCF)**
  - 68 – 72 (2020) to 54 – 60 (2030) Mt CO2e
  - Reduce 30%-40% (2030) from the year 2005

- **Renewables (%)**
  - Increase from 31% to 40%

- **Increase energy efficiency**
  - From 134 (2020) to 107 (2030) tep/M€PIB
  - Reduction of 30% comparing with the baseline


1.º período CELE
1.º período do Protocolo de Quioto
2.º período do Protocolo de Quioto
Pacote energia-clima 2020
Pacote energia-clima 2030
Emissões (Mt CO_{2e})
90,00
80,00
70,00
60,00
50,00
40,00
30,00
20,00
10,00
,00
Meta Quioto (emissões nacionais, 2008-2012)
Trajetórias CCV 2020/2030 (emissões totais)
Redução de emissões em 2020 (CCV): -18% a -23% face a 2005
Redução de emissões em 2030 (CCV): -30% a -40% face a 2005
Trajetórias de emissões totais modelação
Metas de emissões não-CELE
Trajetórias de emissões não-CELE modeladas
Intervalo de metas estimadas em 2030 relativas a emissões não-CELE
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

ENAR 2020

NATIONAL STRATEGY FOR AIR 2020

ENAR 2020: VISION

Assess

Anticipate

Act

To improve air quality for human health and life-quality protection and for ecosystems preservation

ENAR 2020: GOALS

- To achieve compliance on emissions and air quality objectives for 2020
- Improve knowledge of the effects on air pollution in Portugal (where, when, for which compounds, extension of damages)
- Outline the path to achieve WHO's air quality long term objectives
- To achieve compliance with air quality goals established in the 'Commitment for the Green Growth', for 2020 and 2030
- Guarantee measures convergence with Climate Policy that focus simultaneously in atmospheric pollutants and GHG, with co-benefits for air quality and climate change

ENAR 2020: CONTENTS

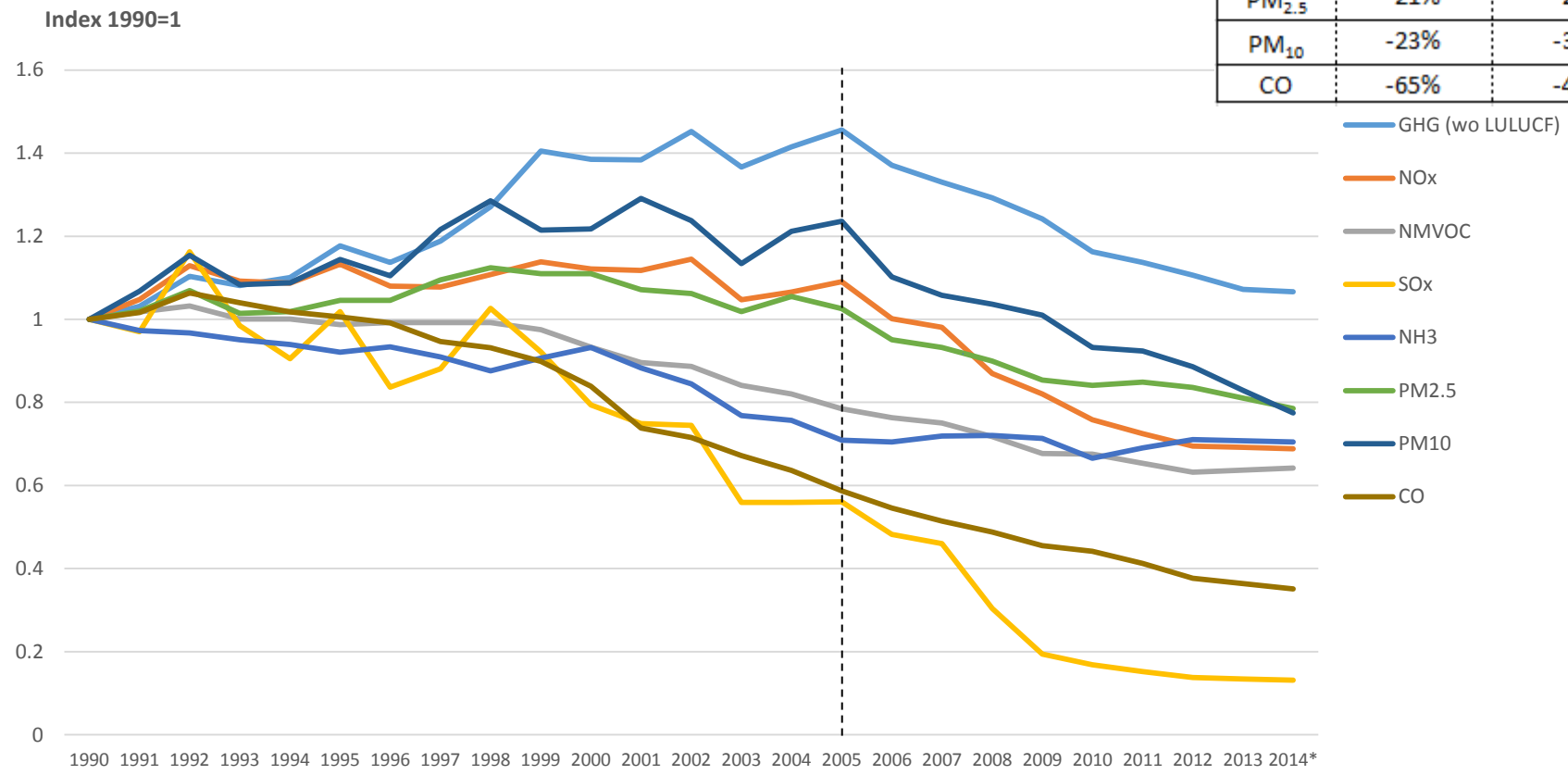
Summary Report and Other Support Documents

- **Scope and Background**
- **Scenarios and Projections of Emissions and Air Quality for 2020**
- **Strategic Action Lines for 2020**

ENAR 2020: ATMOSPHERIC EMISSIONS TRENDS

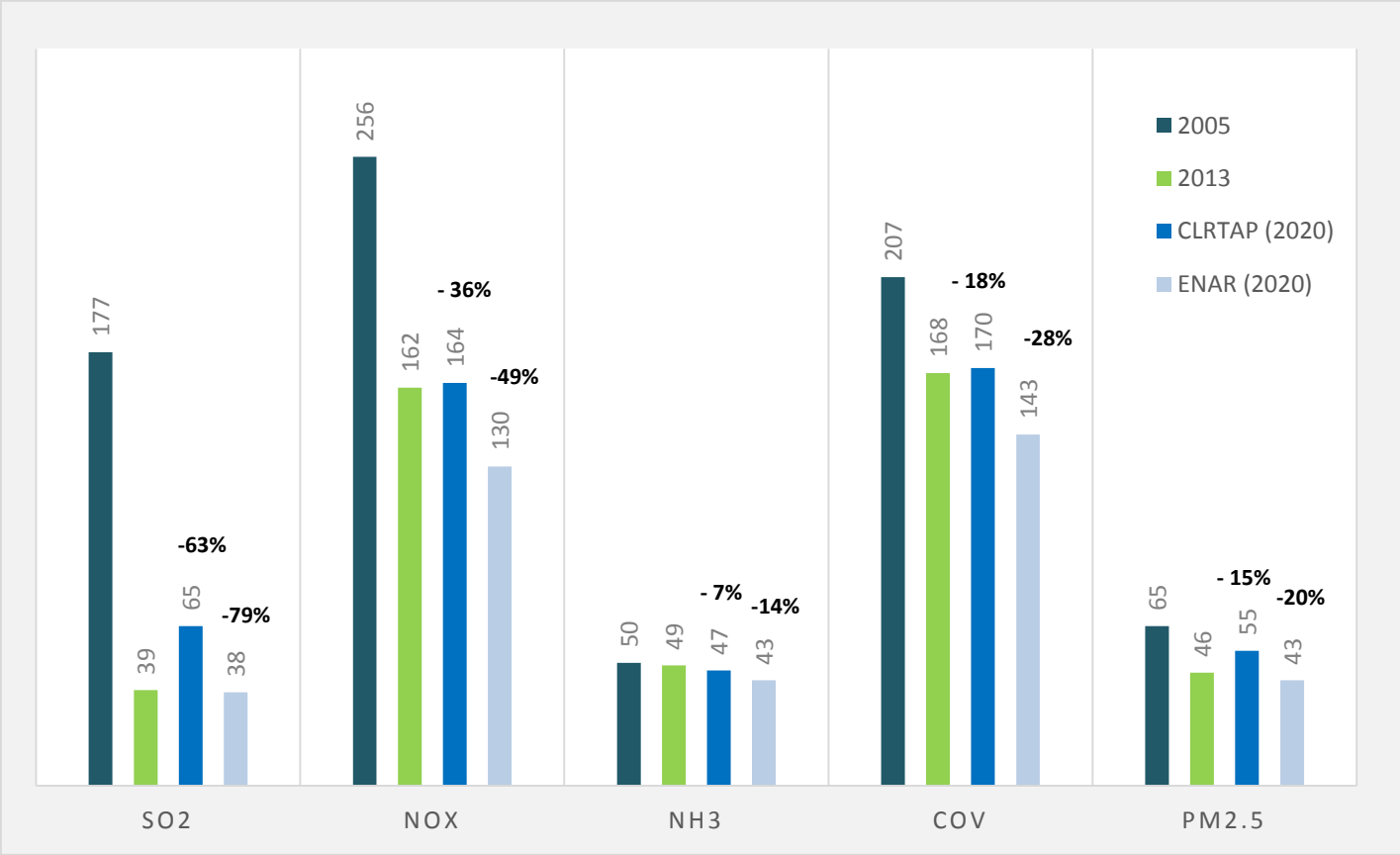
EMISSION TRENDS:
GHG and Air pollutants

Pollutant	Δ2014-1990	Δ2014-2005
GHG	7%	-27%
NO_x	-31%	-37%
NMVOC	-36%	-18%
SO_2	-87%	-77%
NH_3	-30%	-1%
$PM_{2.5}$	-21%	-23%
PM_{10}	-23%	-37%
CO	-65%	-40%



* estimative for non-GHG pollutants

ENAR 2020: EMISSIONS PROJECTION FOR 2020 - RESULTS

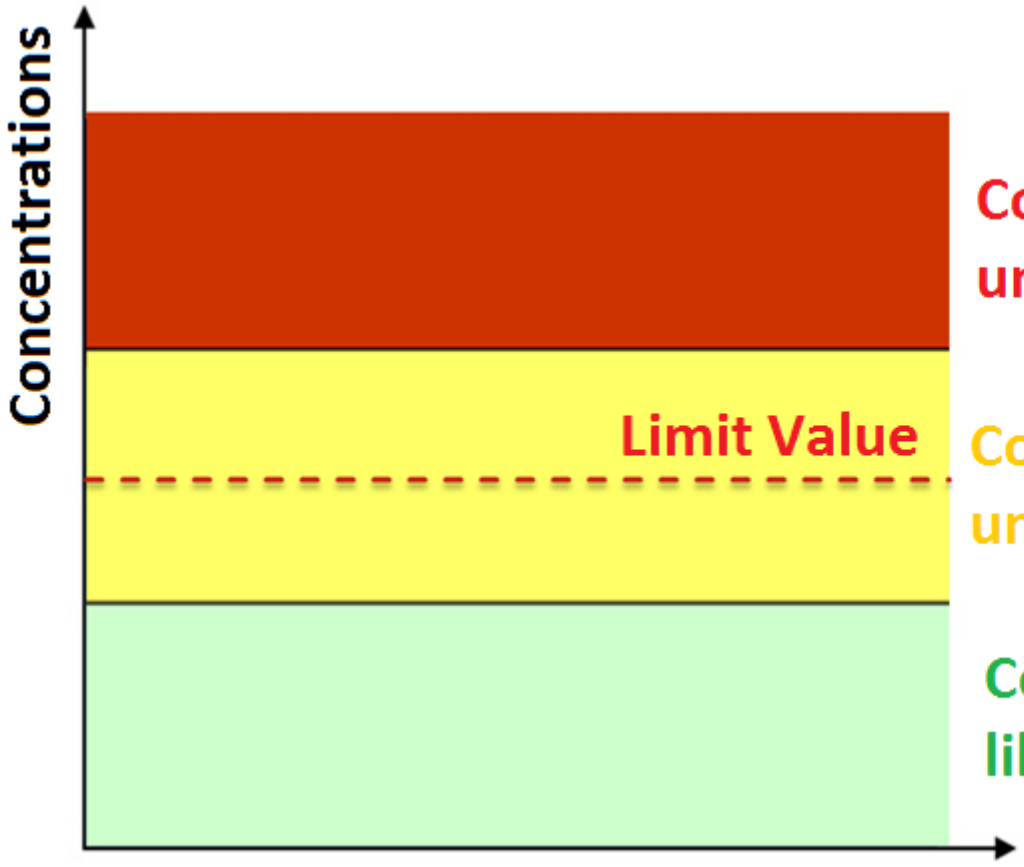


CLRTAP - Convention on Long-Range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone

- Projections for 2020 assuming that all Policies & Measures programmed until this date will enter into force
- CLRTAP (2020) – Reduction goals to meet in 2020

ENAR 2020: AIR QUALITY MODELLING - RESULTS

Presentation of results through colour scale, according to the range of the concentrations

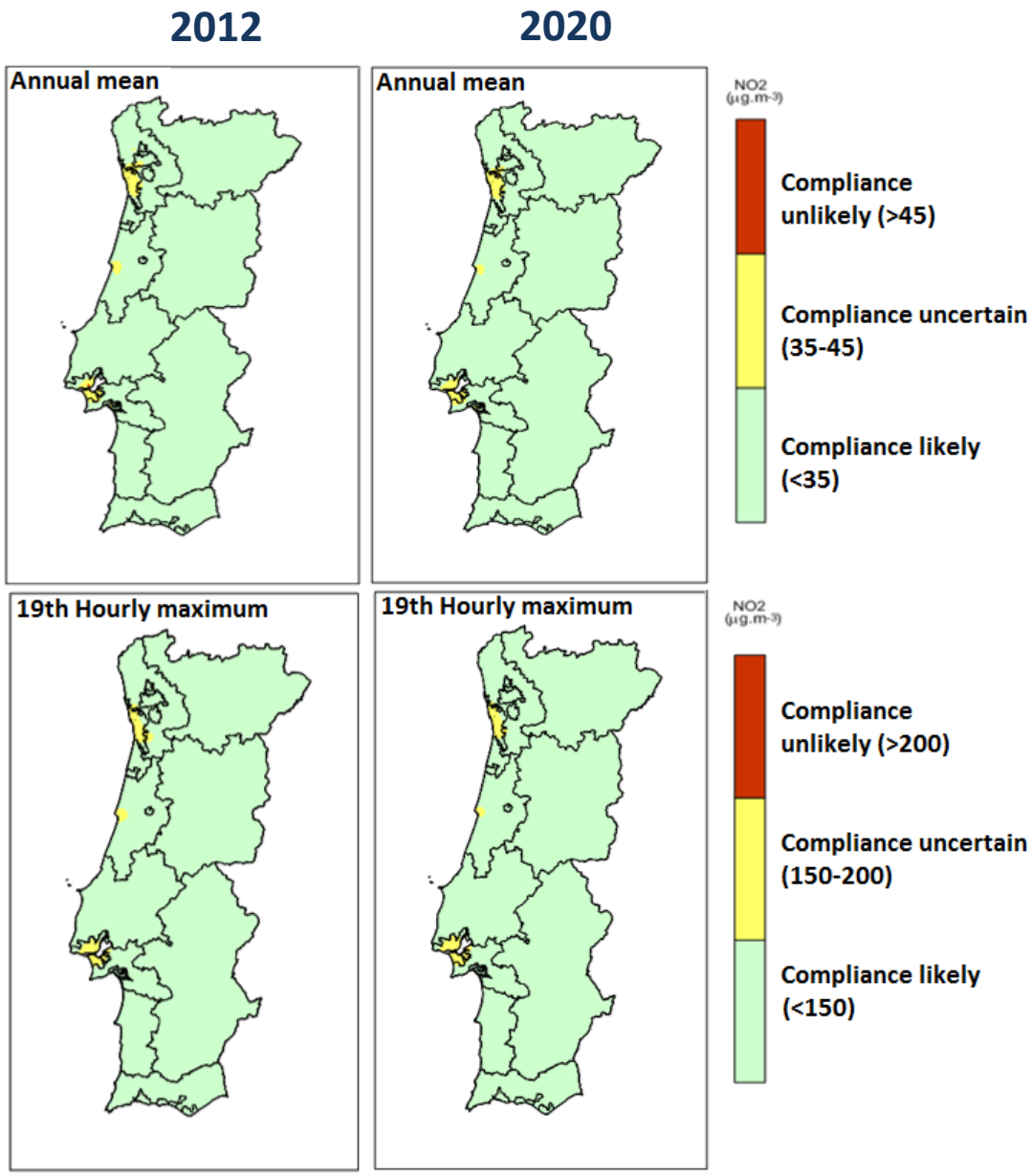


Compliance unlikely — modeled results clearly above the limit/target value

Compliance uncertain — modeled results around the limit/target value (± 20%)

Compliance likely — modeled results clearly below the limit/target value

ENAR 2020: AIR QUALITY MODELLING - RESULTS



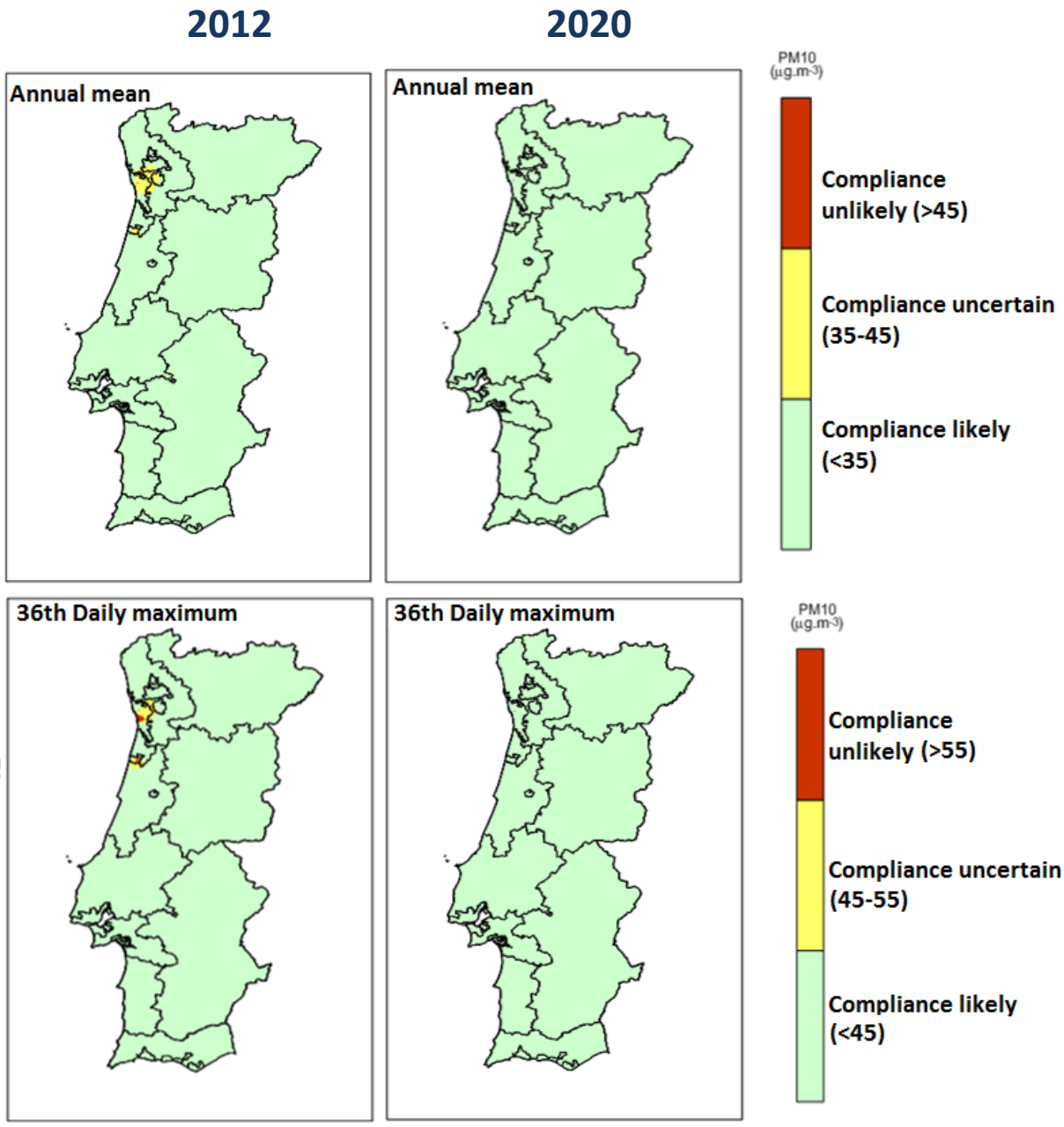
NO_2

Uncertain compliance in urban areas

ENAR 2020: AIR QUALITY MODELLING - RESULTS

PM_{10}

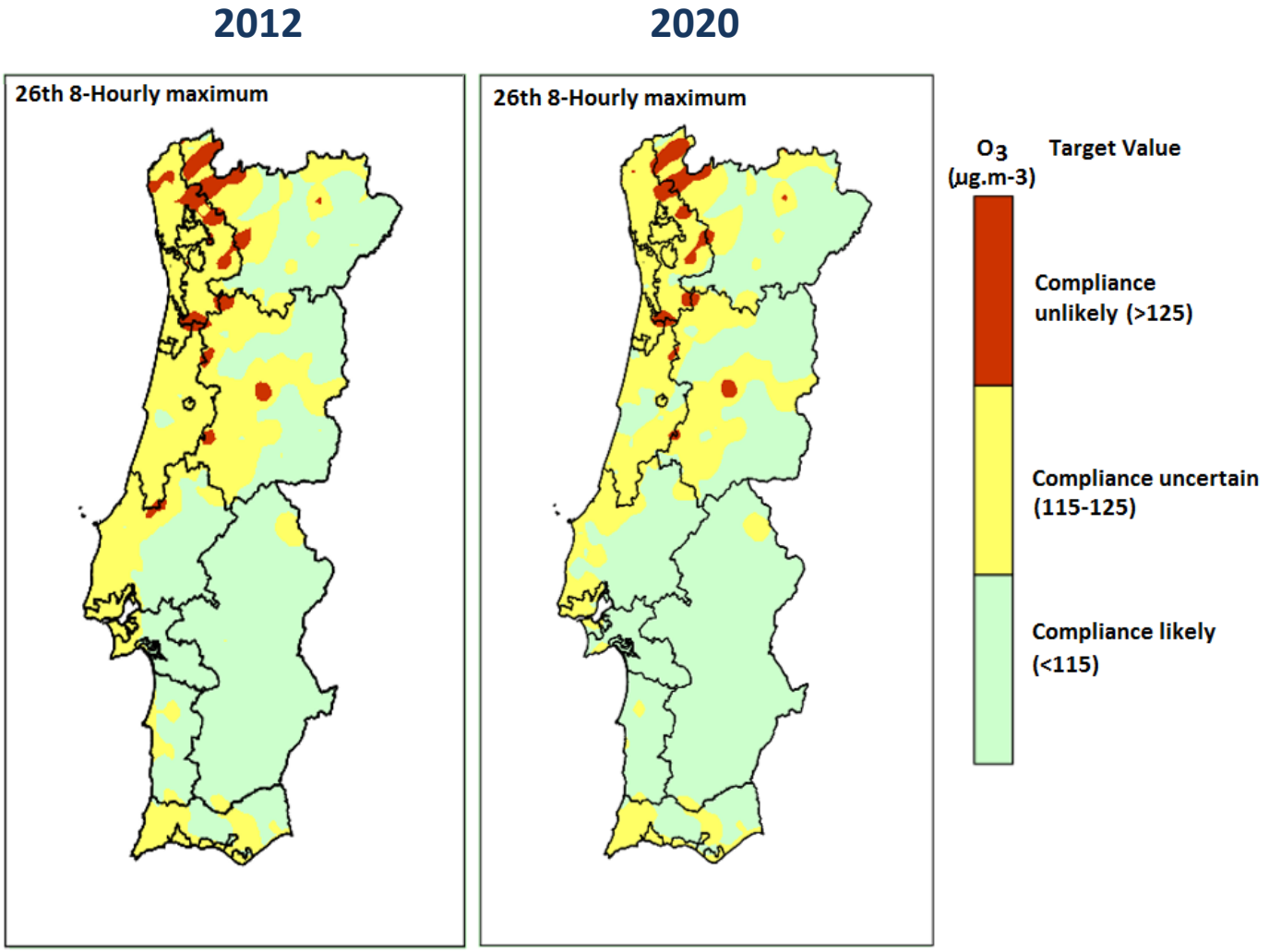
Uncertain compliance in urban areas of North region in 2012 and likely in 2020



ENAR 2020: AIR QUALITY MODELLING - RESULTS

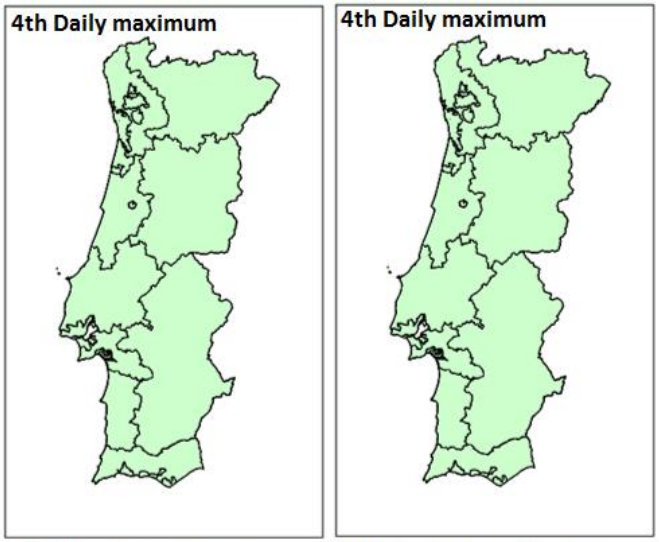
O_3

Improbable compliance in the North and Centre regions and uncertain in the rest of the country



ENAR 2020: AIR QUALITY MODELLING - RESULTS

Probable compliance nationwide in 2012 and 2020



SO_2

SO2 (µg.m-3)

Compliance unlikely (>150)

Compliance uncertain (100-150)

Compliance likely (<100)

SO2 (µg.m-3)

Compliance unlikely (>400)

Compliance uncertain (300-400)

Compliance likely (<300)

$PM_{2.5}$

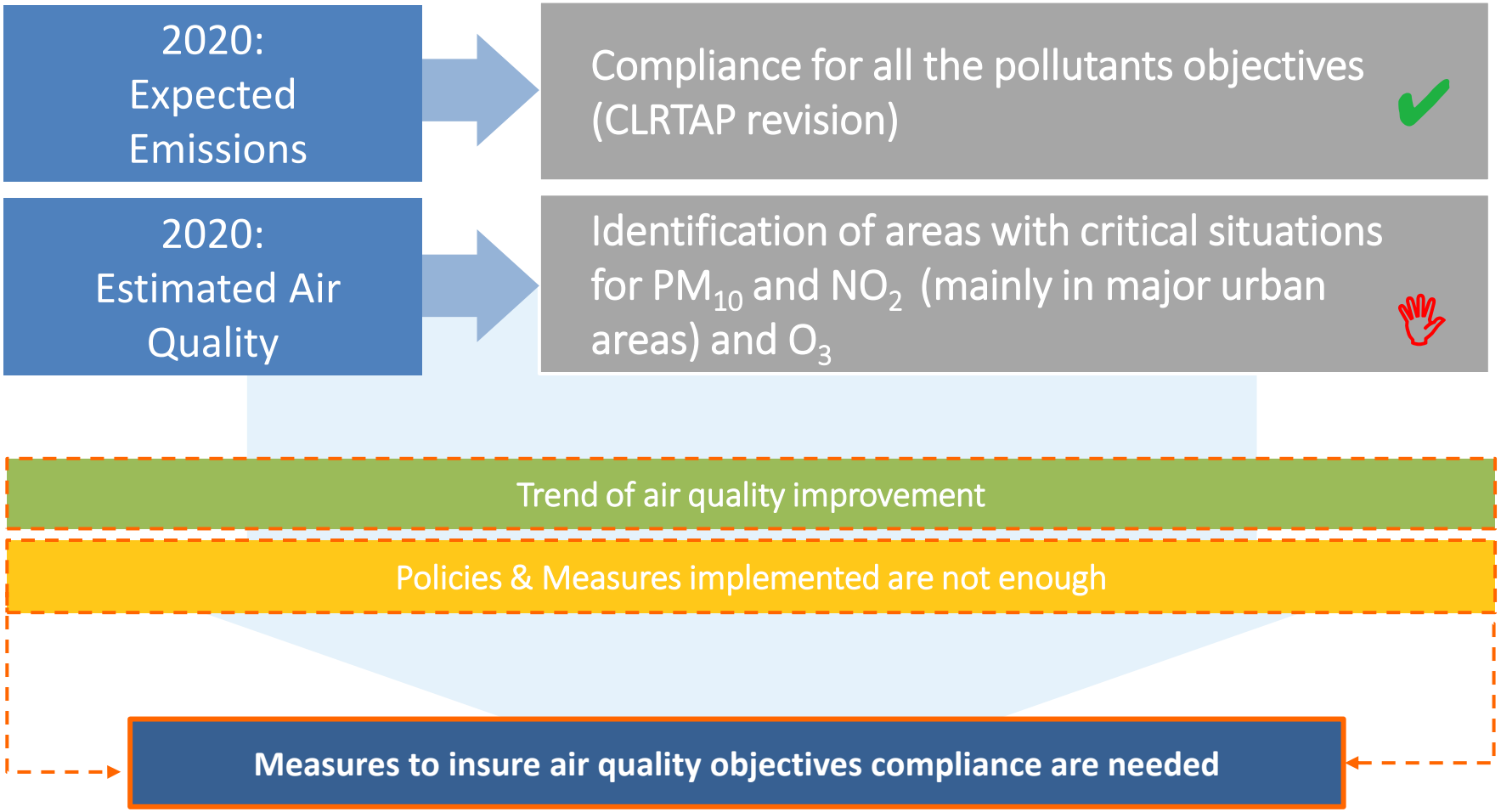
PM2.5 (µg.m-3)

Compliance unlikely (>30)

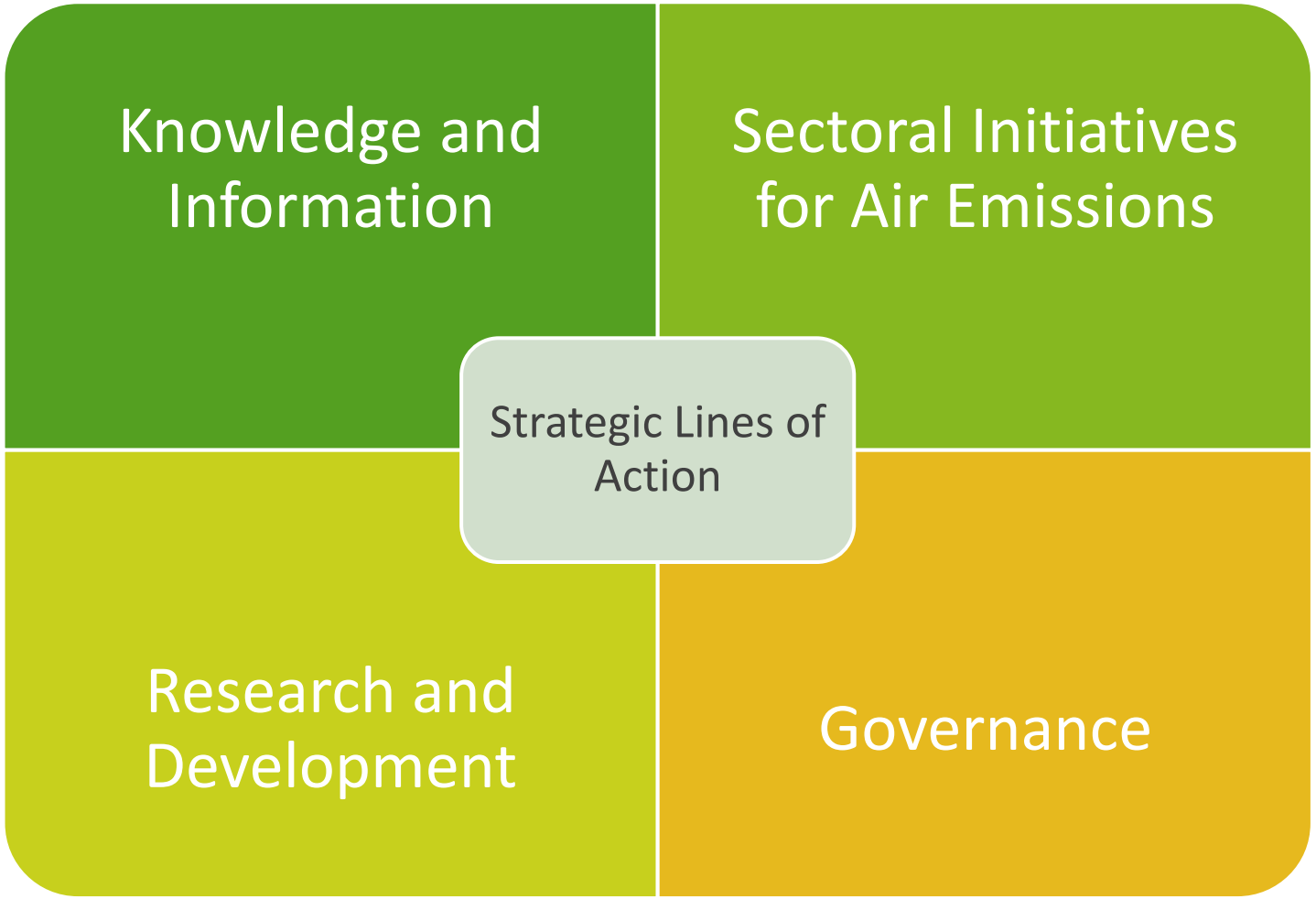
Compliance uncertain (20-30)

Compliance likely (<20)

ENAR 2020: PROJECTIONS – GOALS ACHIEVEMENTS?



ENAR 2020: STRATEGIC LINES OF ACTION



ENAR 2020: STRATEGIC LINES OF ACTION- MEASURES

Knowledge and Information

. Improvement on the quantity and quality of information concerning both air quality and emissions

. Adequacy/optimization of the air quality monitoring network

Sectoral Initiatives

. Sustainable management of urban mobility and passengers and goods transportation

. Promotion and adoption of efficient climate control solutions for the residential/services sector

Research and Development

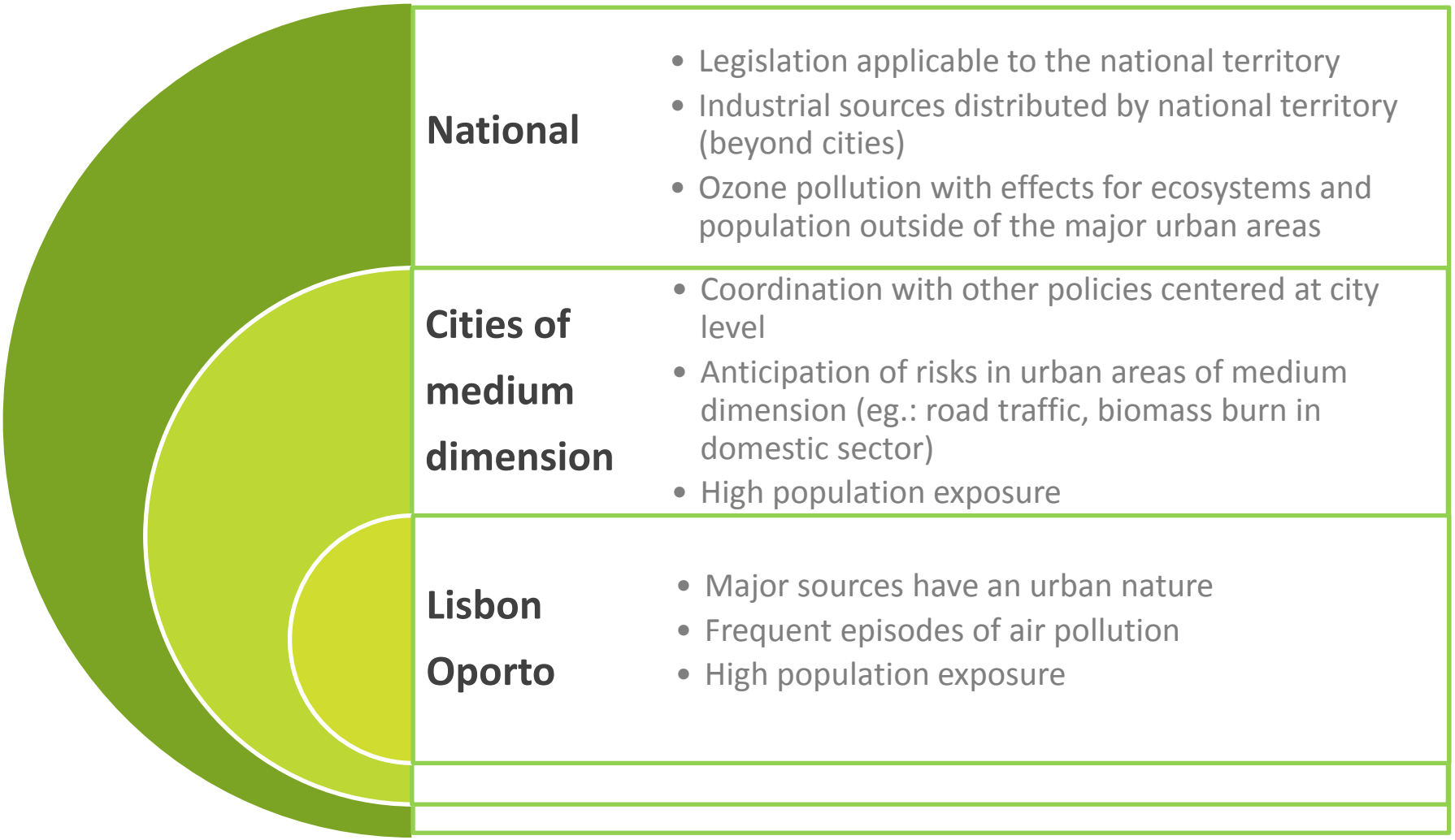
. Development of tools for integrated assessment

. Air pollution impacts on health and ecosystems quantification

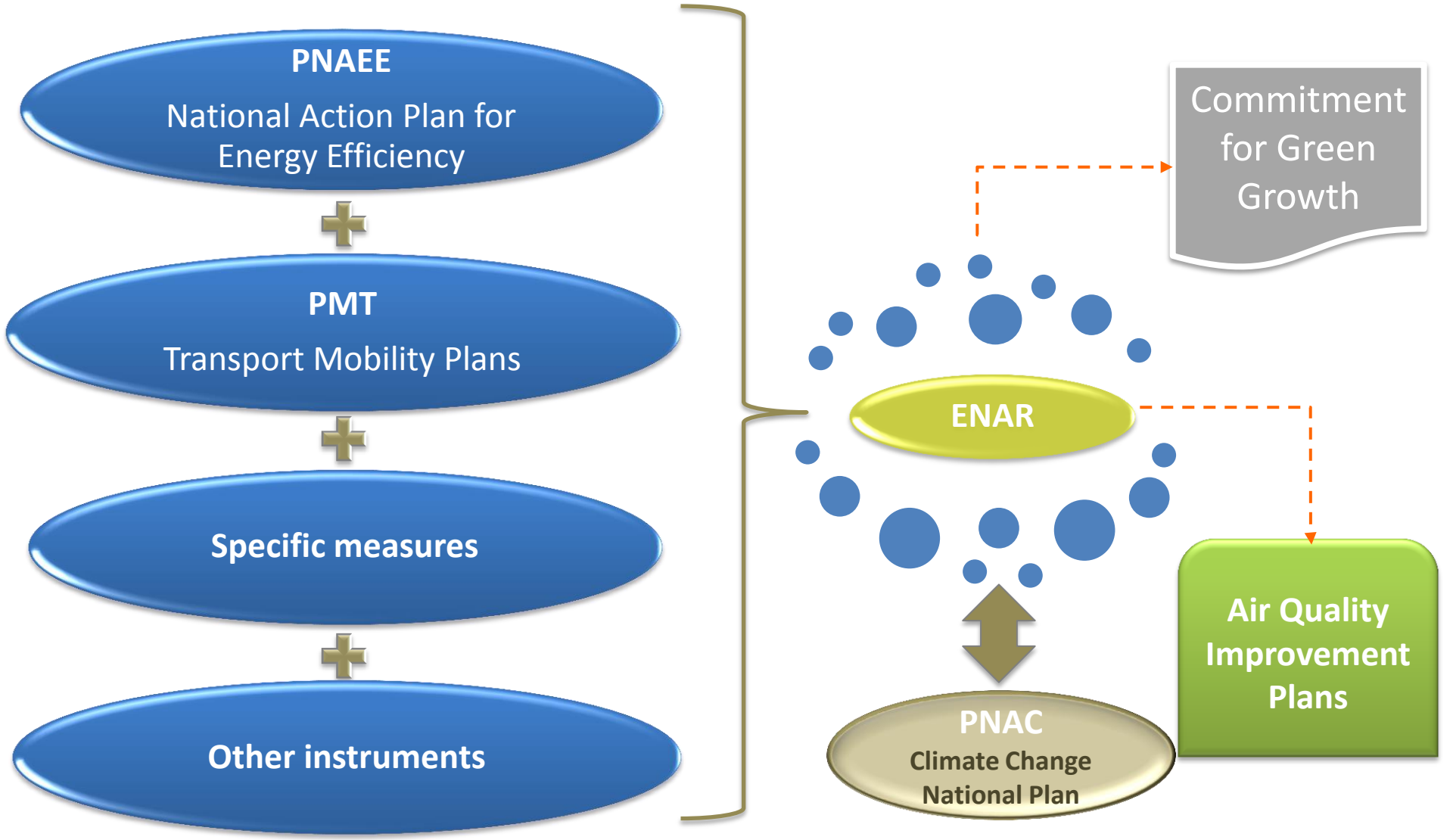
Governance

. Process optimization in the Public Administration sector to improve the effectiveness of evaluation, monitoring and reporting

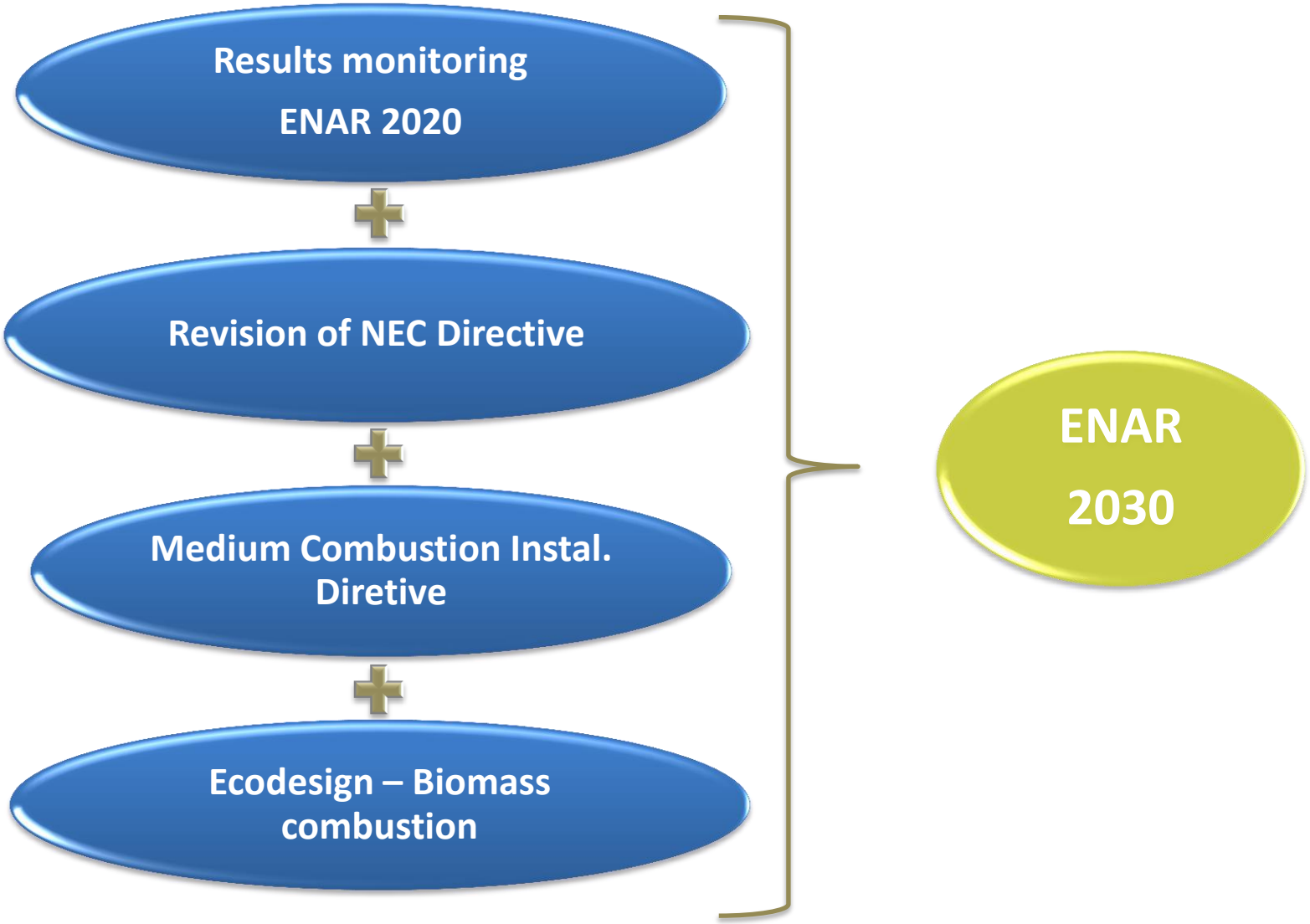
ENAR 2020: GEOGRAPHICAL SCOPE OF ACTION

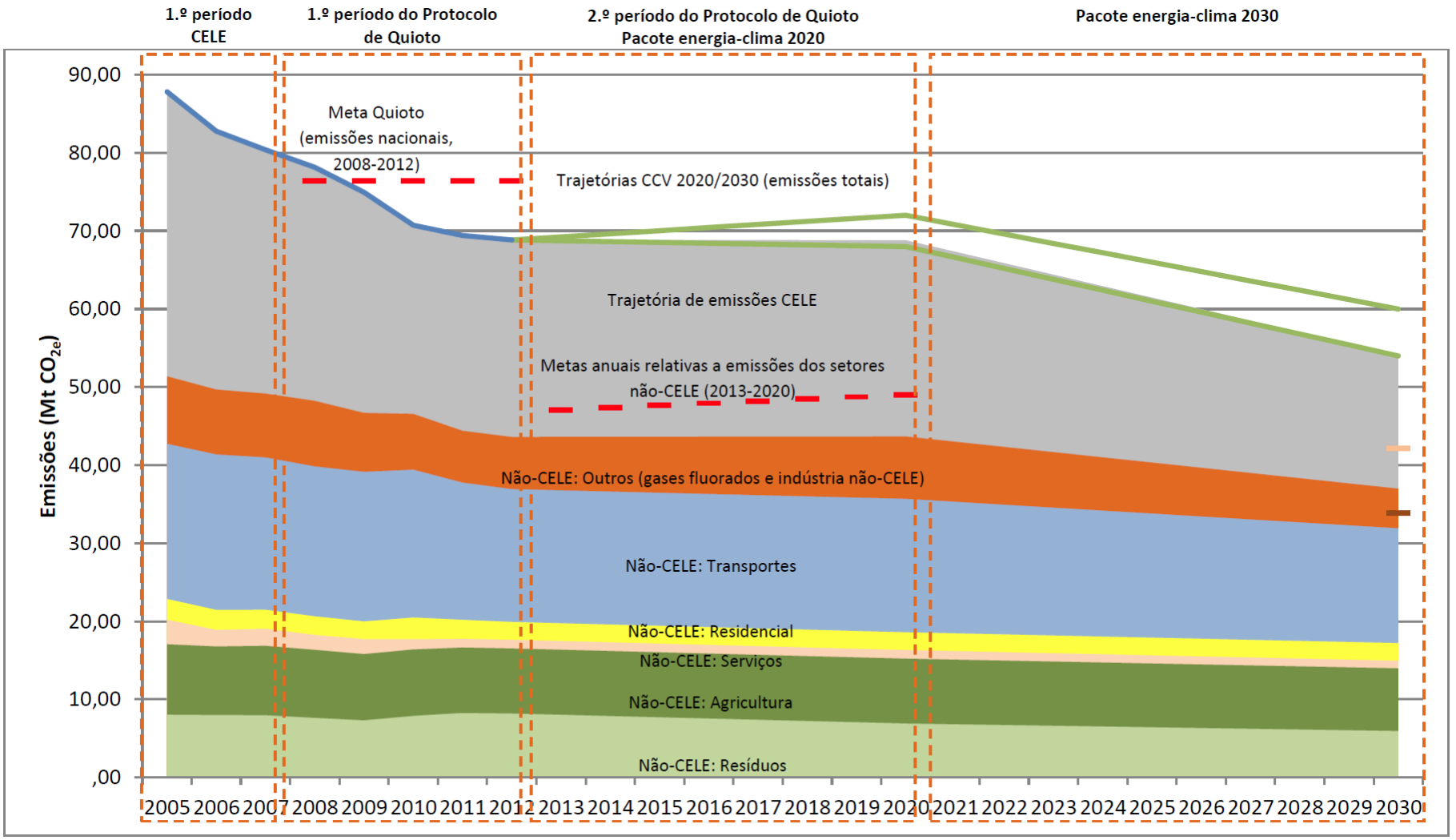


ENAR 2020: ARTICULATION OF POLICIES AND PLANNING



ENAR 2020: REVISION

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Meta Quioto (emissões nacionais, 2008-2012)
Trajetórias CCV 2020/2030 (emissões totais)
Trajetória de emissões CELE
Metas anuais relativas a emissões dos setores não-CELE (2013-2020)
Não-CELE: Outros (gases fluorados e indústria não-CELE)
Não-CELE: Transportes
Não-CELE: Residencial
Não-CELE: Serviços
Não-CELE: Agricultura
Não-CELE: Resíduos
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

Air / Climate relationships

- Renewable energy & power plant closing (phase-out of coal)
- Transportation (goods, electric mobility, carbon tax)
- Energy efficiency (heting and cooling)