

# Laboratório Nacional de Energia e Geologia

RH de Excelência em  
Investigação



Implementação dos Princípios da Carta Europeia do Investigador e do Código de Conduta para o Recrutamento de Investigadores.

Em 2010, o Laboratório Nacional de Energia e Geologia aderiu aos princípios da Carta Europeia do Investigador e Código de Conduta para o Recrutamento de Investigadores, em 2013 recebeu o Logó de Excelência em RH de Investigação.

## Carta e Código do Investigador Europeu

### Investigador Europeu

Profissionais que trabalham na conceção ou criação de novos conhecimentos, produtos, processos, métodos, sistemas e na gestão dos projetos.

*Definição de investigador do Manual de Frascati.*

### Investigação

A profissão de investigador abrange todas as pessoas envolvidas em I&D em qualquer fase da carreira e independentemente da categoria profissional.

### Empregadores e Financiadores

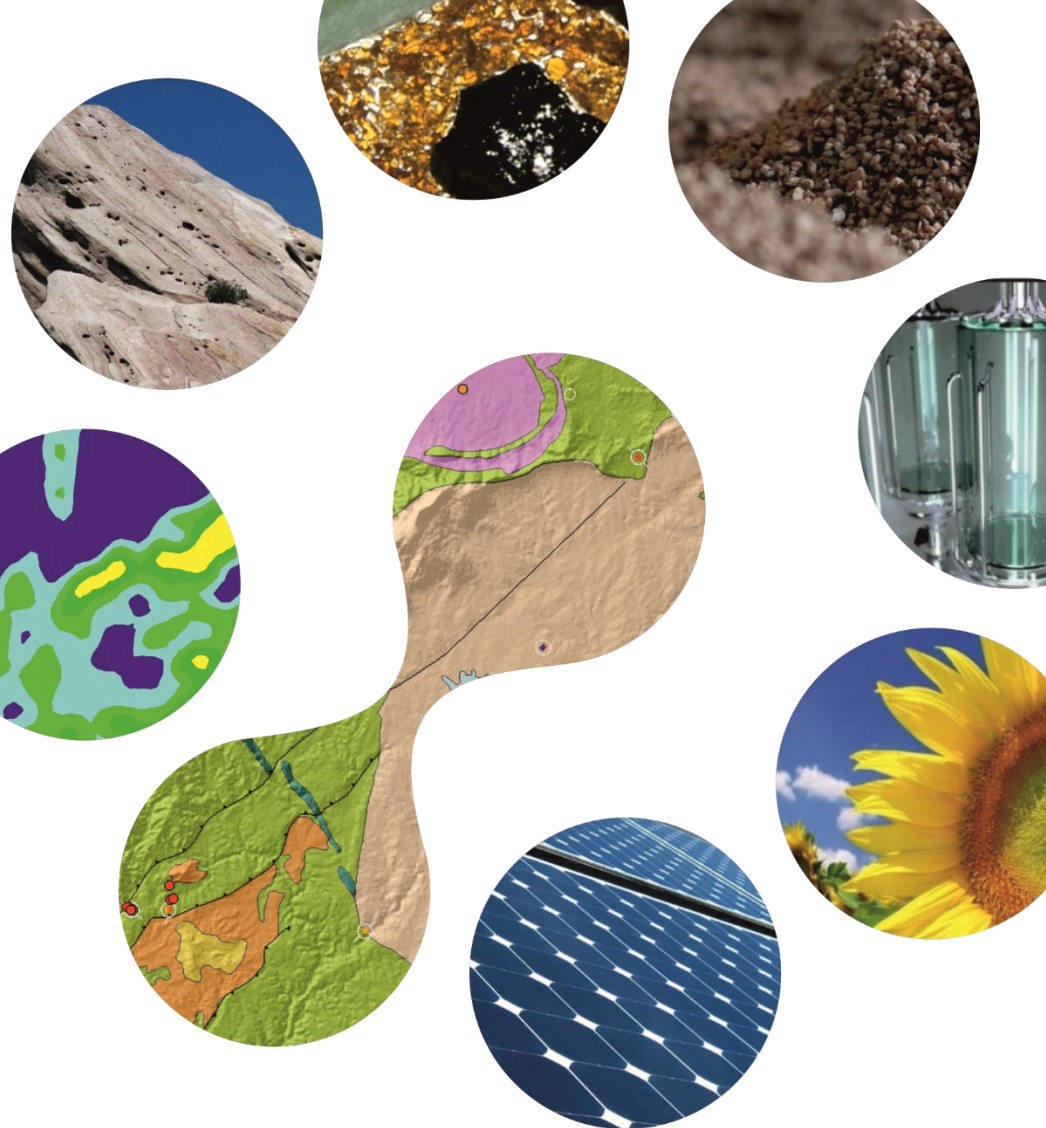
- Condições de trabalho
- Estabilidade de emprego
- Financiamento e salários
- Desenvolvimento de carreira



### Princípios Gerais do Investigador

- Liberdade de investigação
- Responsabilidade profissional
- Princípios éticos
- Deveres de orientação e gestão

[www.lneg.pt](http://www.lneg.pt)





Unidade de Economia de Recursos

# OS PLANOS DE ADAPTAÇÃO DAS CIDADES EUROPEIAS ESTÃO A FICAR MELHORES COM O PASSAR DO TEMPO?

*Webinar / Palestra LNEG ONLINE*

*19 abril 2023*

Sofia G. Simões

LNEG – Laboratório Nacional de Energia e  
Geologia

UER – Unidade de Economia de Recursos



**O webinar vai ser gravado e a apresentação será disponibilizada a quem solicitar por e-mail**

**Por favor desligar os microfones  
Colocar perguntas via chat / bate-papo do Zoom ou oralmente (após conclusão da apresentação)**

**A apresentação é feita em Português (mas alguns slides estão em inglês)**

**OS PLANOS DE ADAPTAÇÃO DAS CIDADES EUROPEIAS ESTÃO A FICAR MELHORES COM O PASSAR DO TEMPO?**

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## LNEG's RESOURCE ECONOMICS UNITS (UER)

The unit is **crosscutting the Energy and Geology areas** of LNEG.

Develops I&D&D activities and decision-support for both public policy-makers and the private sector on **energy and geology resource economics, towards carbon neutrality and sustainable resource exploitation and use**

UER applies techno-economic & social analytical approaches in the following I&D domains:



1

**Sustainable energy systems (decarbonization, systems modelling, climate change impacts)**



2

**Resource use for energy production and consumption**



3

**Classification of geological deposits in a global economy**



4

**Economic and social impact of the energy transition**



5

**Circular economy, including design of products, services, systems and business models**



6

**Circular and sustainable public procurement**

Desde o Acordo de Paris, tem havido um foco crescente na avaliação do progresso da adaptação às alterações climáticas em vários setores e regiões.

Uma questão importante é o que significa “progresso” e como ele pode ser avaliado, aos níveis internacional mas também nacional e local. O papel das cidades e áreas urbanas é cada vez mais reconhecido como vital para lidar com os desafios das alterações climáticas.

**O número de planos locais de adaptação tem vindo a aumentar nas últimas décadas. Neste webinar exploramos até que ponto os governos locais estão a aprender e a melhorar a sua capacidade para planear a adaptação ao longo do tempo.**

Foi analisada a qualidade dos planos de adaptação de 167 cidades europeias publicados entre 2005 e 2020. A análise foca seis princípios bem estabelecidos que determinam a qualidade deste tipo de planos: 1. articulação com impactos climáticos previstos; 2. objetivos; 3. medidas; 4. implementação; 5. monitorização e avaliação das medidas; e 6. participação social.

# Agenda

- **As cidades e a ação climática**
- **Mitigação versus adaptação**
- **Panorama Europeu**
- **Metodologia estudo análise da evolução da qualidade dos planos de adaptação**
- **Principais resultados**

# As cidades e ação climática

*“As áreas urbanas alojam mais de 50% da população mundial e são onde se localizam a maior parte dos seus ativos e atividade económica.*

*Até 2050, a população nas áreas urbanas deve aumentar entre 2,5 a 3 mil milhões o que corresponderá a **2/3 da população mundial.***

*Nas próximas três décadas, quase **setenta milhões de residentes irão realocar-se em áreas urbanas** todos os anos. A maioria desses novos residentes morará em **cidades pequenas e de média dimensão** nos países em desenvolvimento.”*

*(re)construção  
massiva de infra-  
estruturas urbanas e  
edifícios*

*A expansão urbana  
será um  
determinante  
chave das emissões  
em vários setores.*

*crescimento pode ser  
catalisador para a adoção  
de novas tecnologias,  
edifícios e infra-estruturas  
com baixas ou quase zero  
emissões (e adaptados às futuras  
alteração climáticas)*

*A ação atempada é fundamental e  
custo-eficaz, pois o longa vida útil  
de infraestrutura e edifícios  
poderá torná-los propensas ao  
“lock-in” de de energia e emissões  
cuja alteração posterior será  
posteriormente mais cara.*

# Cidades ...rumo a 2050 com aumento de temperatura de 1,5 °C

*Taxa anual de reabilitação energética de 5% nos **edifícios** existentes em países desenvolvidos e todos os novos edifícios construídos com NZEB (near zero energy buildings) e sem virem a usar combustíveis fósseis a partir de 2020*

*Nos **transportes**, os combustíveis de baixo carbono (eletricidade, hidrogénio e biocombustíveis) serão 12% do consumo de energia em 2030 e 55% em 2050. O planeamento urbano diminui a necessidade de transporte intensivo em carbono a longo prazo (cidades compactas e pedestres).*

*Recorrer a **simbioses urbanas e industriais** com trocas de água, calor, etc.*

<https://www.c40.org/researches/summary-for-urban-policymakers-what-the-ipcc-special-report-on-global-warming-of-1-5-c-means-for-cities>

**< 80 - 90%**

## **Emissões dos edifícios**

As emissões dos edifícios em 2050 terão que ser 80-90% mais baixas do que atualmente.

**< 30%**

## **Uso de energia nos transportes**

Será precisa uma redução de 30% do consumo de energia final no setor dos transportes.

**> 70-85%**

## **Energia renovável**

Em 2050 os recursos energéticos renováveis (RES) fornecem 70-85% da eletricidade



# Ação climática local: adaptação vs mitigação

## Mitigação

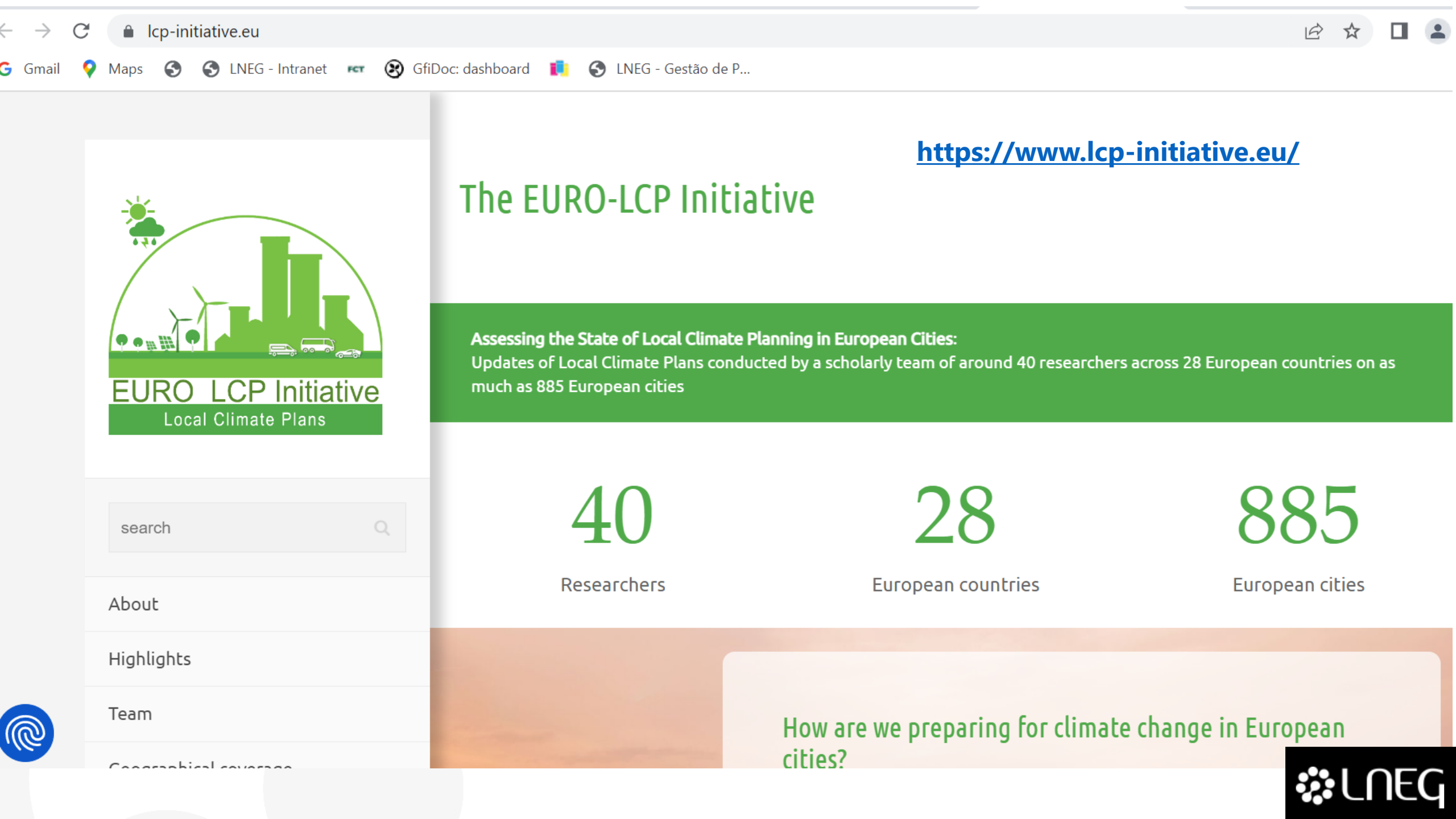
das alterações climáticas envolve ações que reduzem a taxa de ocorrência das alterações climáticas. É alcançada através da limitação ou prevenção das emissões de gases de efeito estufa e do aumento das atividades que removem esses gases da atmosfera.

*IPCC (Painel Intergovernamental para as Alterações Climáticas) Grupo de Trabalho III. Mitigação de Alterações Climáticas*

## Adaptação

Ajustamento nos sistemas naturais ou humanos como resposta a estímulos climáticos verificados ou esperados, que moderam danos ou exploram oportunidades benéficas.





About

Highlights

Team

Geographical coverage

<https://www.lcp-initiative.eu/>

## The EURO-LCP Initiative

**Assessing the State of Local Climate Planning in European Cities:**  
Updates of Local Climate Plans conducted by a scholarly team of around 40 researchers across 28 European countries on as much as 885 European cities

40

Researchers

28

European countries

885

European cities

How are we preparing for climate change in European cities?

# Panorama de ação climática nas cidades na Europa

## 885 cidades da amostra “core” do Urban Audit (UA) através da UE-28

As cidades da UA são uma **amostra equilibrada e regionalmente representativa, i.e.**

- geograficamente dispersas e
- **variando em tamanho**, com representatividade também de **cidades mais pequenas (<50 000 habitantes)**.



Journal of Cleaner Production  
Volume 191, 1 August 2018, Pages 207-219



## How are cities planning to respond to climate change? Assessment of local climate plans from 885 cities in the EU-28

Diana Reckien <sup>a</sup>, <sup>✉</sup>, Monica Salvia <sup>b</sup>, Oliver Heidrich <sup>c</sup>, Jon Marco Church <sup>d</sup>, Filomena Pietrapertosa <sup>b</sup>, Sonia De Gregorio-Hurtado <sup>e</sup>, Valentina D'Alonzo <sup>f, g</sup>, Aoife Foley <sup>h</sup>, Sofia G. Simoes <sup>i</sup>, Eliška Krkoška Lorencová <sup>j</sup>, Hans Orru <sup>k, l</sup>, Kati Orru <sup>m</sup>, Anja Wejs <sup>n, o</sup>, Johannes Flacke <sup>a</sup>, Marta Olazabal <sup>p</sup>, Davide Geneletti <sup>f</sup>, Efrén Feliu <sup>q</sup>, Sergiu Vasiliu <sup>r</sup> ... Richard Dawson <sup>c</sup>

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<https://doi.org/10.1016/j.jclepro.2018.03.220>

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### Highlights

- Analysis of different types of Local Climate Plans of 885 Urban Audit cities of EU-28.

Fonte: Reckien et al., 2018

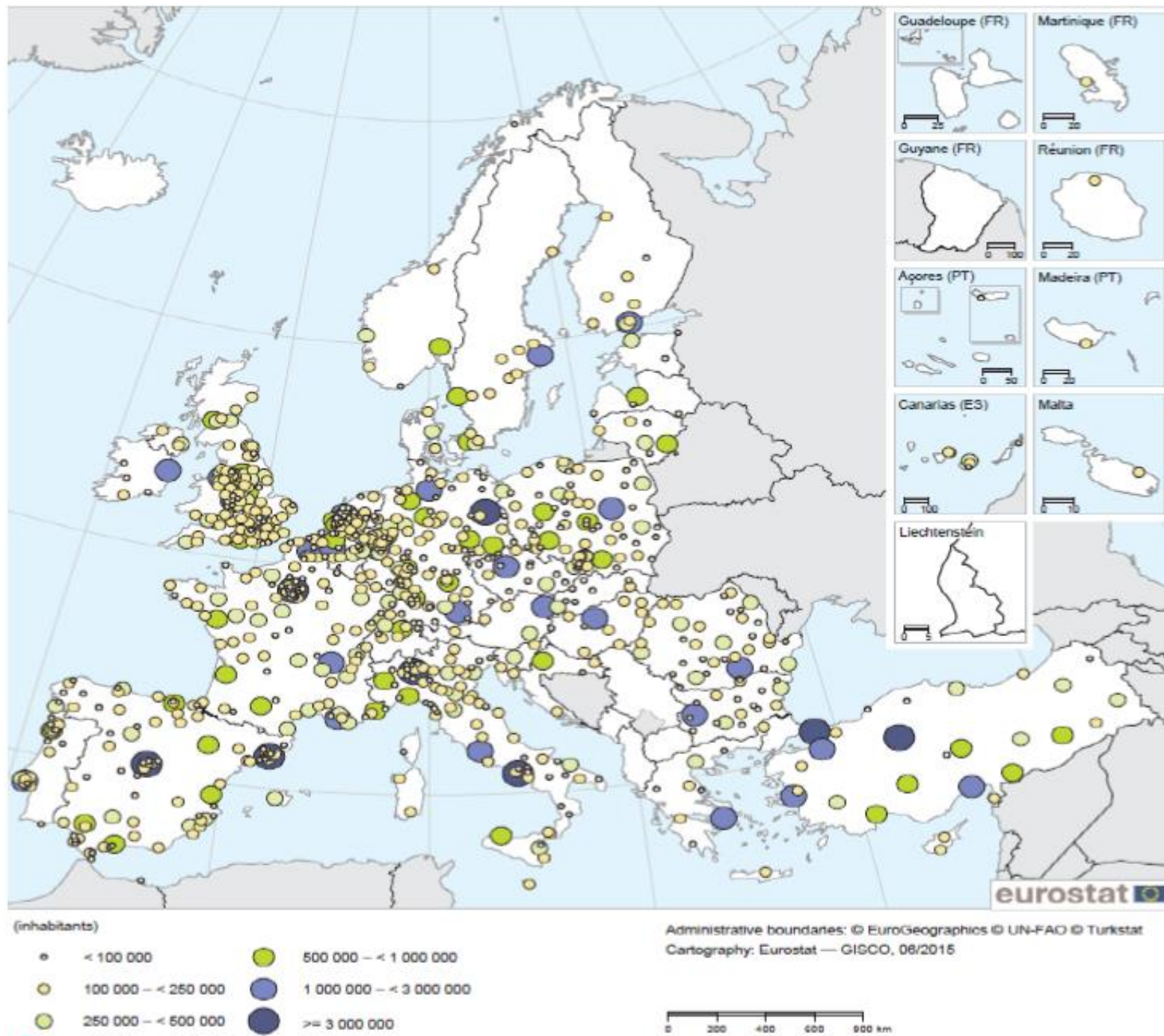
# Panorama Europeu

Das 885 cidades na amostra

- 586 cidades planos de **mitigação** (66.2%)
- 226 com planos de **adaptação** (25.5%)
- 145 planos de **adaptação & mitigação integrados** (16.4%)
- 288 sem qualquer plano (32.5%)

Mapa da localização das cidades na amostra **Eurostat Urban Audit**, com a população residente à data de 1 janeiro 2012 (Eurostat, 2016).

Fonte: Reckien et al., 2018



## The transformative potential of a Global Urban Agenda and its lessons in a time of crisis



Reckien, D., Buzasi, A., Olazabal, M., Spyridaki, N-A., Eckersley, P., Simoes, S.G., et al. **Quality of urban climate adaptation plans over time.** npj Urban Sustain 3, 13 (2023). <https://doi.org/10.1038/s42949-023-00085-1>

**Amostra 327 cidades com 167 planos publicados entre 2005 e 2020 (35 investigadores)**

● Plans, < mid-2015 ● Plans, mid-2015 to mid-2018 ● Plans, > mid-2018



## ARTICLE OPEN

## Quality of urban climate adaptation plans over time

Diana Reckien<sup>1,2,3,4</sup>, Attila Buzasi<sup>2</sup>, Marta Olazabal<sup>3,4</sup>, Niki-Artemis Spyridaki<sup>5</sup>, Peter Eckersley<sup>6,7</sup>, Sofia G. Simoes<sup>8</sup>, Monica Salvia<sup>9,10</sup>, Filomena Pietrapertosa<sup>9,10</sup>, Paris Fokaides<sup>11</sup>, Sascha M. Goonesekera<sup>12</sup>, Léa Tardieu<sup>9,11,14</sup>, Mario V. Balzan<sup>15,16</sup>, Cheryl L. de Boer<sup>1</sup>, Sonia De Gregorio Hurtado<sup>17</sup>, Efrén Fellu<sup>18</sup>, Alexandros Flamos<sup>5</sup>, Aoife Foley<sup>19,20</sup>, Davide Geneletti<sup>21</sup>, Stelios Grafakos<sup>22</sup>, Oliver Heidrich<sup>23</sup>, Byron Ioannou<sup>11</sup>, Anna Krook-Riekkola<sup>24</sup>, Marko Matosovic<sup>25</sup>, Hans Orru<sup>26,27</sup>, Kati Orru<sup>28</sup>, Ivan Paspaldzhiev<sup>29</sup>, Klavdija Rižnar<sup>30</sup>, Magdalena Smigaj<sup>31</sup>, Maria Szalmáné Csete<sup>32</sup>, Vincent Vigié<sup>33</sup> and Anja Wejs<sup>32,33</sup>

Defining and measuring progress in adaptation are important questions for climate adaptation science, policy, and practice. Here, we assess the progress of urban adaptation planning in 327 European cities between 2005 and 2020 using three 'ADAPtation plan Quality Assessment' indices, called ADAQA-1/ 2/ 3, that combine six plan quality principles. Half of the cities have an adaptation plan and its quality significantly increased over time. However, generally, plan quality is still low in many cities. Participation and monitoring and evaluation are particularly weak aspects in urban adaptation policy, together with plan 'consistency'. Consistency connects impacts and vulnerabilities with adaptation goals, planned measures, actions, monitoring and evaluation, and participation processes. Consistency is a key factor in the overall quality of plans. To help evaluate the quality of plans and policies and promote learning, we suggest incorporating our ADAPtation plan Quality Assessment indices into the portfolio of adaptation progress assessments and tracking methodologies.

npj Urban Sustainability (2023)3:13; <https://doi.org/10.1038/s42949-023-00085-1>

## INTRODUCTION

Since the Paris Agreement (PA) in 2015<sup>1</sup>, there has been an increasing focus on assessing the progress of climate change adaptation across multiple sectors and regions<sup>2–4</sup>, including subnational jurisdictions such as local and regional authorities<sup>5–16</sup>. The Paris Agreement set an agenda for the Global Stocktake of adaptation, with a view to 'review the overall progress made in achieving the global goal on adaptation' (PA, art. 14d). Hence, an important question is what 'progress' means and how it could be assessed, at the international, national, and local levels. With the first Global Stocktake due in 2023, researchers have sought to address the issue, whilst acknowledging 'the challenge of lacking consensus on how adaptation at this level can be tracked'<sup>17</sup>.

Hitherto, there is a wealth of information on climate responses at sub-national levels<sup>18</sup>. Cities and urban areas are increasingly recognized as important actors in climate responses<sup>1,19</sup>, with the

potential to influence neighbouring as well as upper levels of government. In urban adaptation studies, most assessments focus on tracking and analyzing outputs, such as approved adaptation plans, as these currently represent the majority of adaptation activities on the ground<sup>20,21</sup> and are often more easily comparable and trackable<sup>22</sup> than, e.g., impacts and outcomes. Analyzing plans cannot tell the whole story in terms of actual progress in collective reduction (or redistribution) of climate risks<sup>23,24</sup>. However, it can provide information about the quality and relevance of adaptation processes and actions (also referred to as 'measures' in policy and planning literature), and help to assess the likelihood that we are advancing adaptation goals by reducing risks and increasing resilience in an equitable manner<sup>25,26</sup>. Scholars argue that 'the best method to ensuring robust adaptation is to ensure rigorous adaptation planning processes'<sup>27</sup>. Indeed, higher quality plans have been found to decrease the cost of disasters more than

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# EM PORTUGAL – NESTE ESTUDO

1. Lisboa
2. Funchal
3. Porto
4. Braga
5. Coimbra
6. Setúbal
7. Ponta Delgada
8. Aveiro
9. Faro

Deve ter-se em conta que existem (e já existiam à altura) bastante mais cidades portuguesas com planos de adaptação (ex. Amarante, Barreiro, Bragança, Cascais, Castelo Branco, Castelo de Vide, Coruche, Évora, Ferreira do Alentejo, Figueira da Foz, Guimarães, Ílhavo, Leiria, Loulé, Montalegre, Odemira, São João da Pesqueira, Seia, Tomar, Tondela, Torres Vedras, Viana do Castelo e Vila Franca do Campo).

Estas não foram consideradas no estudo porque tivemos que recorrer à amostra representativa de cidades de cada país participante - definida pelo EUROSTAT (na altura chamava-se [Urban Audit](#) e agora chama-se "Cities"). Esta amostra é **representativa da variedade das cidades na Europa, mas não é necessariamente representativa de todas as cidades com planos de adaptação em Portugal.**

ARTICLE OPEN



## Quality of urban climate adaptation plans over time

Diana Reckien<sup>1,2,3,4</sup>, Attila Buzasi<sup>2</sup>, Marta Olazabal<sup>3,4</sup>, Niki-Artemis Spyridaki<sup>5</sup>, Peter Eckersley<sup>6,7</sup>, Sofia G. Simoes<sup>8</sup>, Monica Salvia<sup>9,10</sup>, Filomena Pietrapertosa<sup>9,10</sup>, Paris Fokaides<sup>11</sup>, Sascha M. Goonesekera<sup>12</sup>, Léa Tardieu<sup>13,14</sup>, Mario V. Balzan<sup>15,16</sup>, Cheryl L. de Boer<sup>1</sup>, Sonia De Gregorio Hurtado<sup>17</sup>, Efrén Fellu<sup>18</sup>, Alexandros Flamos<sup>5</sup>, Aoife Foley<sup>19,20</sup>, Davide Genelletti<sup>21</sup>, Stelios Grafakos<sup>22</sup>, Oliver Heidrich<sup>23</sup>, Byron Ioannou<sup>11</sup>, Anna Krook-Riekkola<sup>24</sup>, Marko Matosovic<sup>25</sup>, Hans Orru<sup>26,27</sup>, Kati Orru<sup>28</sup>, Ivan Paspaldzhiev<sup>29</sup>, Klavdija Rižnar<sup>30</sup>, Magdalena Smigaj<sup>31</sup>, Maria Szalmáné Csete<sup>32</sup>, Vincent Vigiùè<sup>33</sup> and Anja Wejs<sup>34,35</sup>

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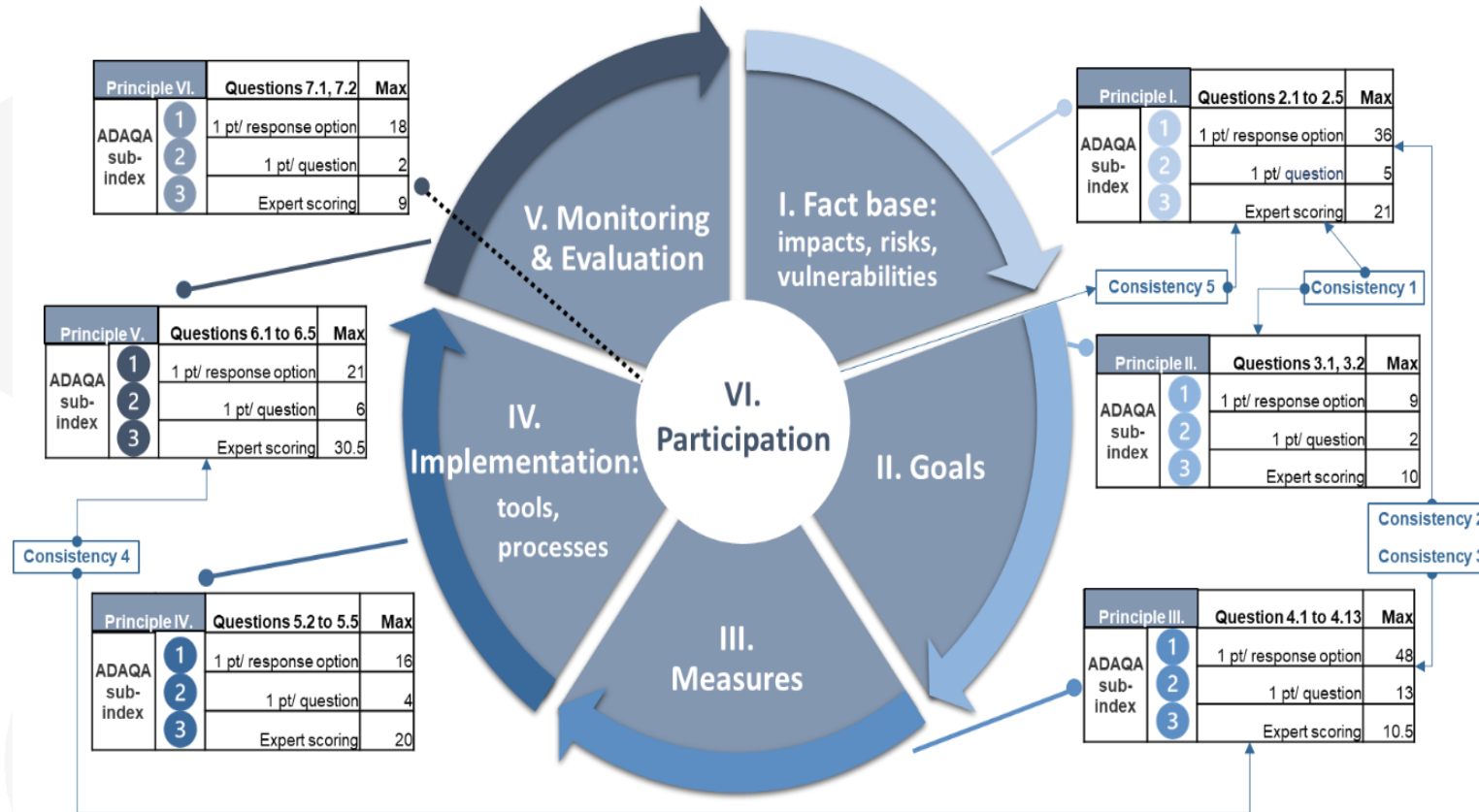
Hitherto, there is a wealth of information on climate responses at sub-national levels<sup>18</sup>. Cities and urban areas are increasingly recognized as important actors in climate responses<sup>1,19</sup>, with the

potential to influence neighbouring as well as upper levels of government. In urban adaptation studies, most assessments focus on tracking and analyzing outputs, such as approved adaptation plans, as these currently represent the majority of adaptation activities on the ground<sup>20,21</sup> and are often more easily comparable and trackable<sup>22</sup> than, e.g., impacts and outcomes. Analyzing plans cannot tell the whole story in terms of actual progress in collective reduction (or redistribution) of climate risks<sup>23,24</sup>. However, it can provide information about the quality and relevance of adaptation processes and actions (also referred to as 'measures' in policy and planning literature), and help to assess the likelihood that we are advancing adaptation goals by reducing risks and increasing resilience in an equitable manner<sup>25,26</sup>. Scholars argue that 'the best method to ensuring robust adaptation is to ensure rigorous adaptation planning processes'<sup>27</sup>. Indeed, higher quality plans have been found to decrease the cost of disasters more than

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# Methods: NEW quality of adaptation planning index

**New ADAQA** index consisting of six well-established plan quality principles, including a measure for participation and plan consistency.

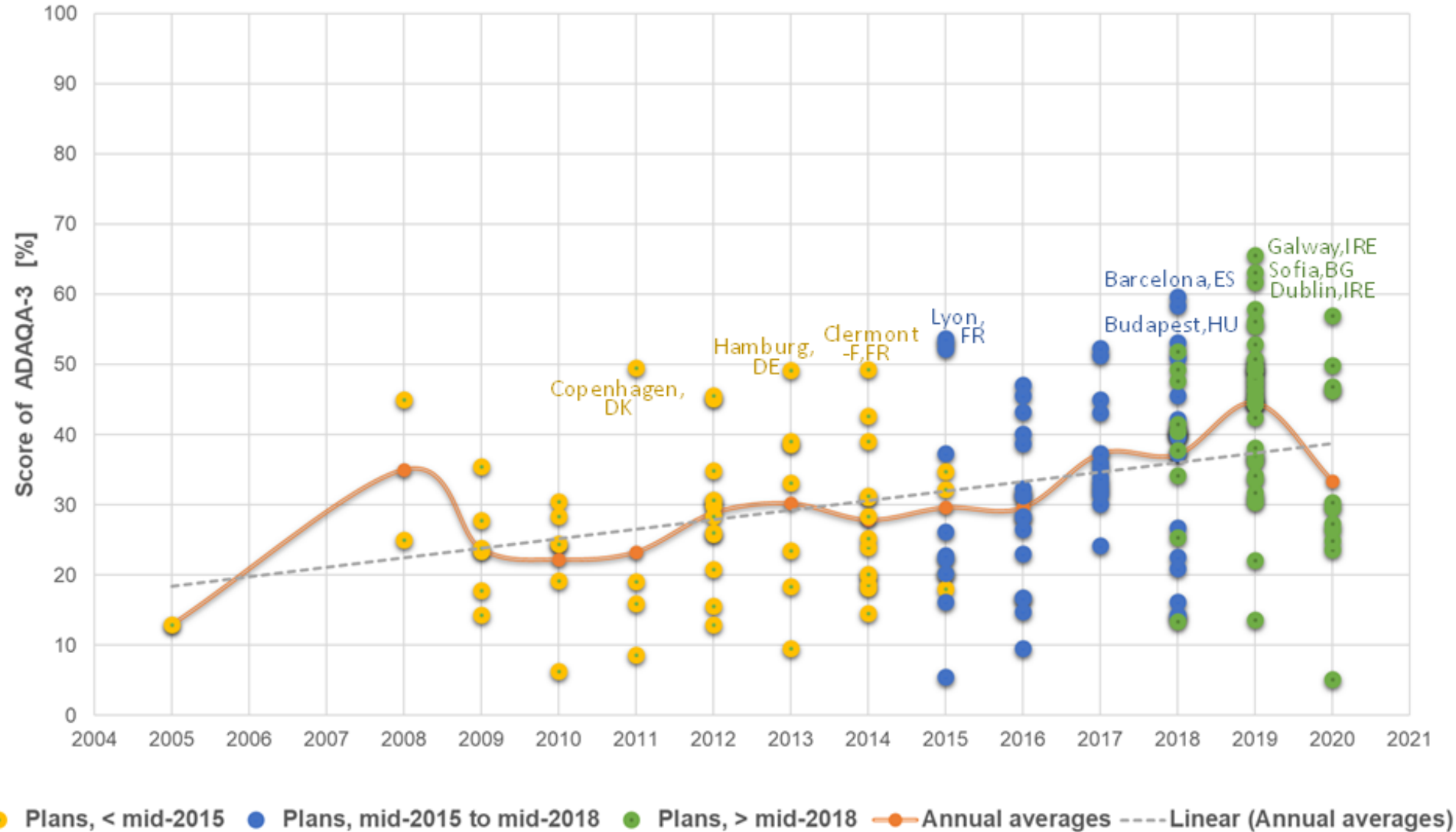


- 1.) **fact base of impacts and risks** in the local area;
- 2.) **adaptation goals**;
- 3.) **adaptation measures**;
- 4.) **details on the implementation** of adaptation measures;
- 5.) **monitoring & evaluation** of adaptation measures; and
- 6.) **societal participation** in plan creation.

relatively new aspect concerning the “**consistency**” of the plans: this means that impacts/ risks, goals, measures, monitoring, and participation are aligned with each other.

# Quality of adaptation planning over time

Urban climate change adaptation Plan Quality in European cities is increasing from 2005 to 2020, by about 1.3 percentage points/ year





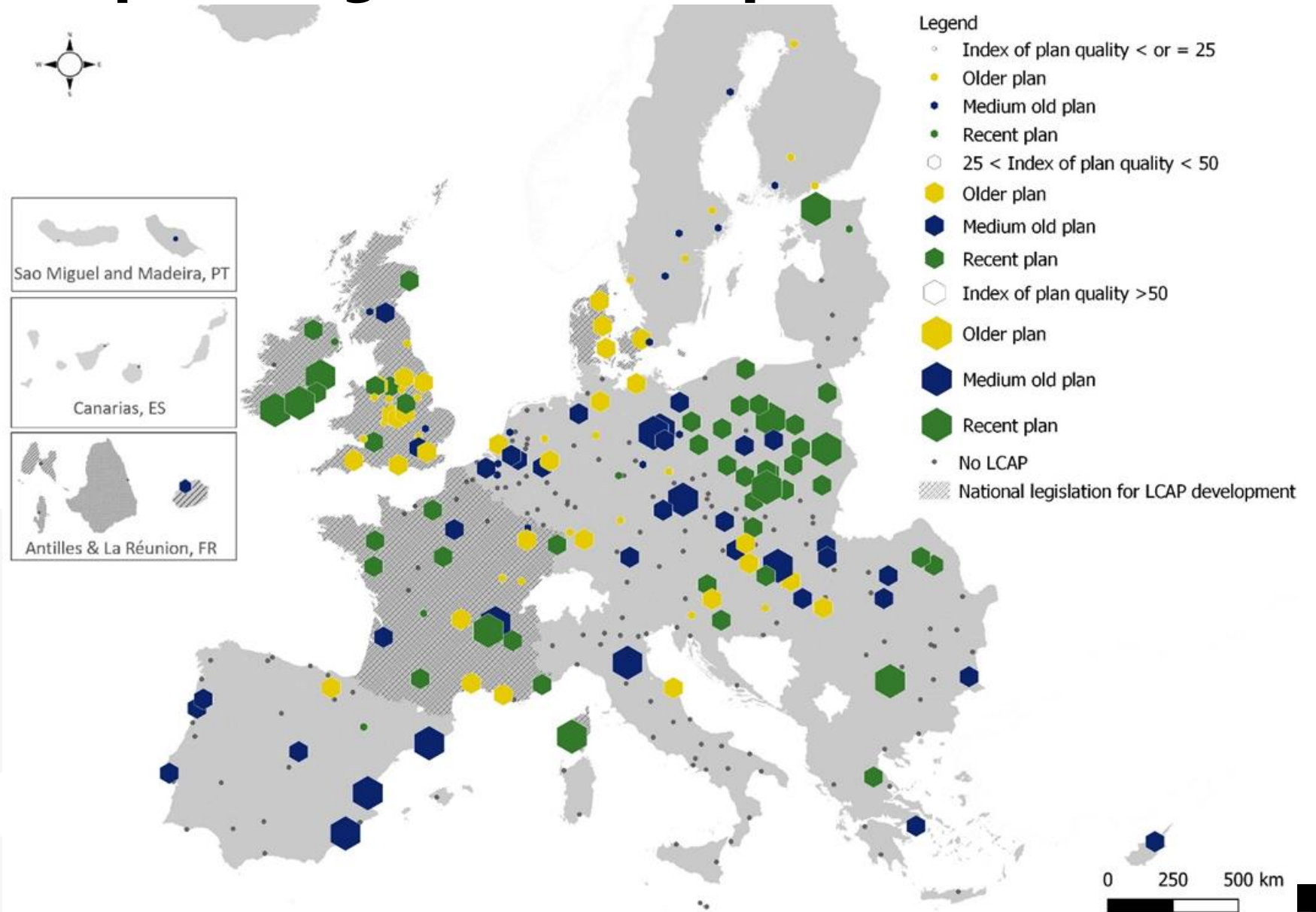
# Quality of adaptation planning across European cities

**Newer plans, which are higher in quality, are mainly found in cities in Ireland, France, and Eastern Europe, in particular Poland.**

But there are also some good plans before 2018, spread across Europe, **mostly in larger cities.**

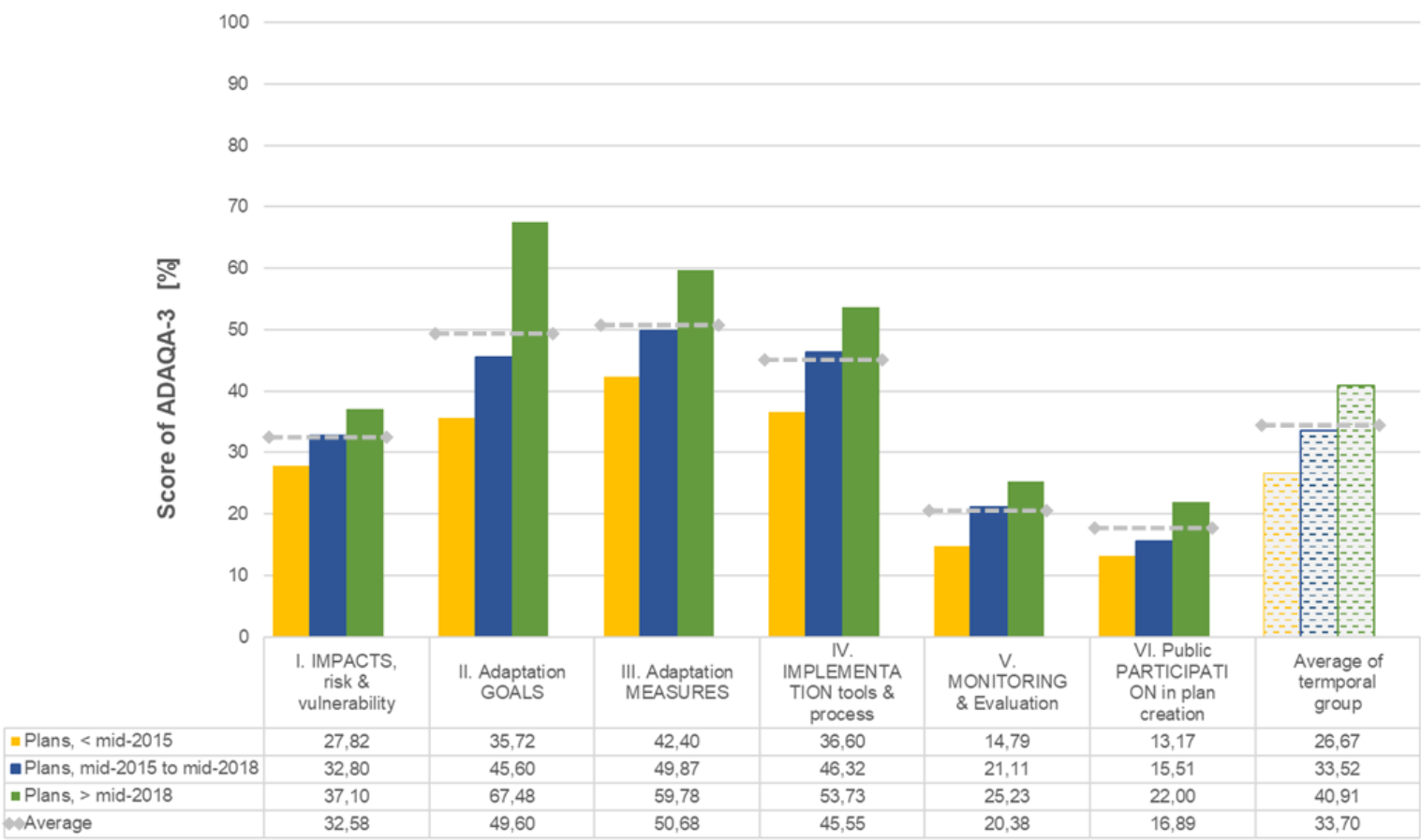
**Top-ranking cities are:**

- Sofia (BG)
- Galway (IE)
- Dublin (IE)
- Potsdam (DE)
- Waterford (IE)



# Quality of adaptation planning across principles/ components

Across principles of climate change adaptation plan quality, specifying **adaptation goals** improved most in recent plans



Note that  
Monitoring & evaluation,  
and participation is  
generally low...

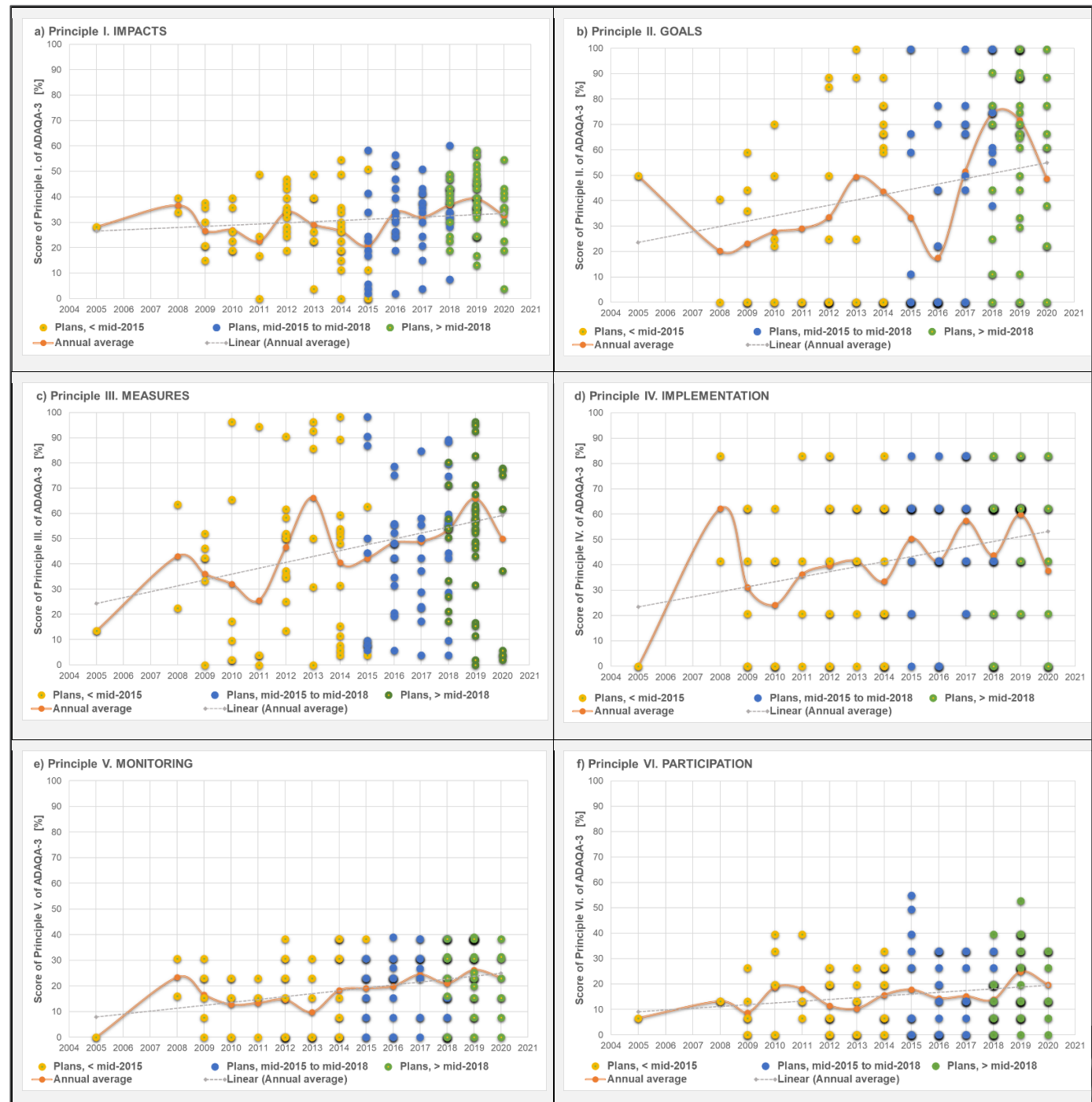
Our recent paper in Nature Urban Sustainability:  
<https://doi.org/10.1038/s42949-023-00085-1>



# Quality of adaptation planning

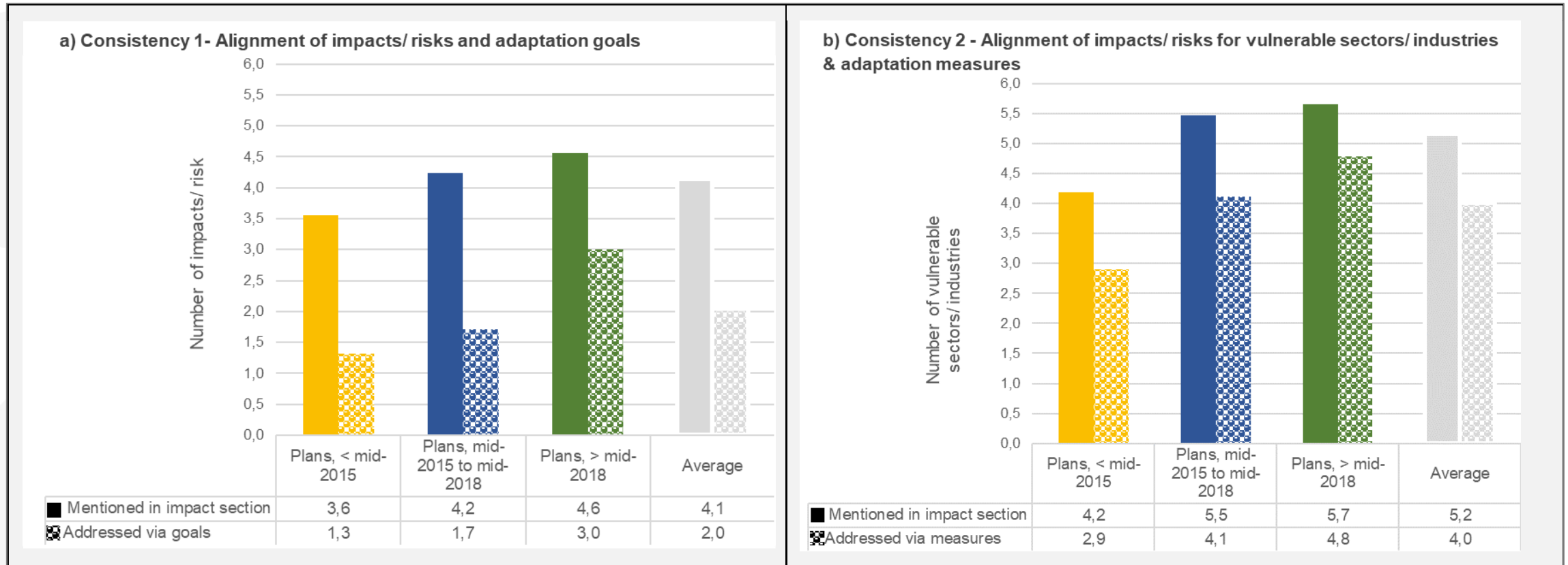
## For individual cities

- Across principles of climate change adaptation plan quality, **adaptation goals** improved most in recent plans.
- **monitoring & evaluation**, and **participation** is generally low.



# Quality of adaptation planning regarding consistency

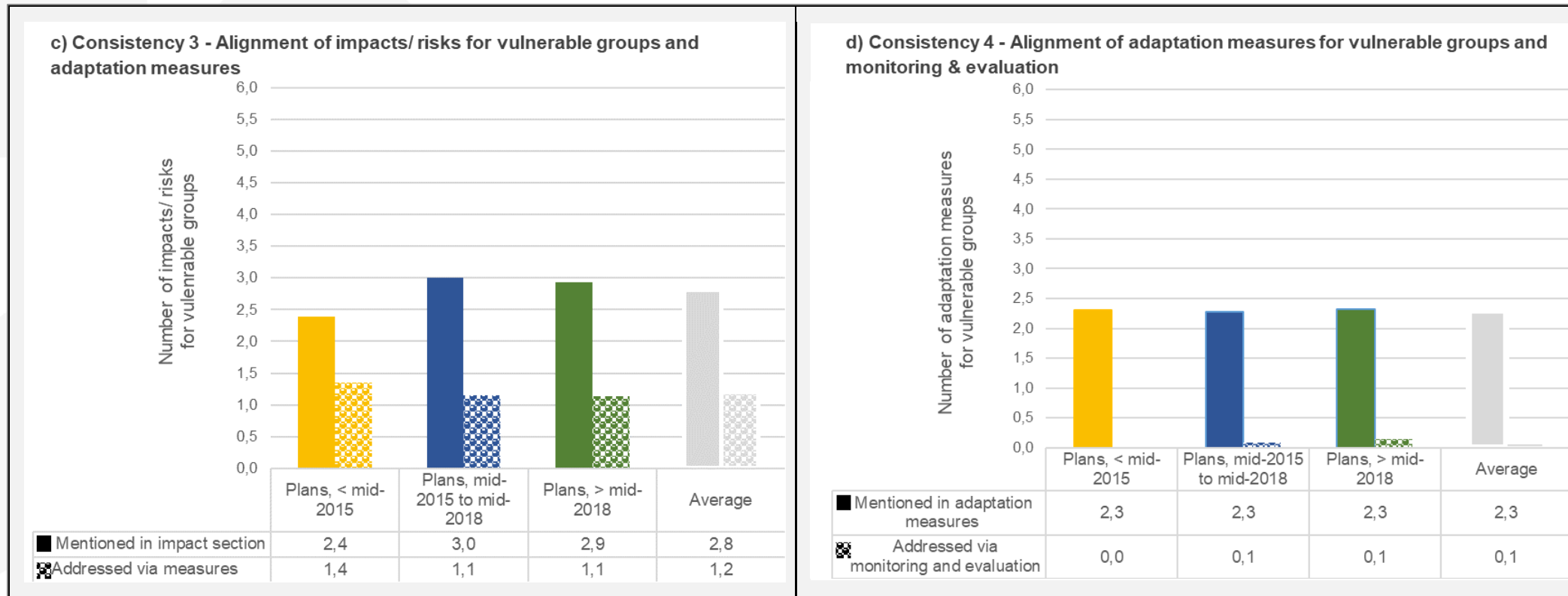
Adaptation plans are consistent to a degree between impacts of/ risks to specific hazards and adaptation goals, and impacts of/ risks to industries and measures



# Quality of adaptation planning regarding consistency

*"We are missing out on focusing on people most in need. "*

**Consistency decreased over time when looking at impacts on vulnerable groups and measures.** Consistency between measures for vulnerable groups and M&E, and impacts on vulnerable groups and participation is very low.



# Síntese: Quality of adaptation planning over time

- **Equity/ justice concerns are increasingly reflected** in (European cities') adaptation plans, identifying impacts on vulnerable groups, and involving more vulnerable groups more often in plan development.
- However, the **extent of participation is still low in absolute terms...** Moreover, **younger plans got worse** in aligning adaptation measures with the identified impacts on vulnerable groups.
- Largest group of concern is, rightly so, **people of low-income** → Focus on them
- Best **adaptation options for vulnerable groups**:
  - Social safety nets; Farm/ fishery practice adjustments; Diets changes/ Food waste reduction; Health and health system adaptation
  - Public administrations are extremely important for those and other adaptation

# Authors developed a scoring tool [here](#) useful to compute the adaptation plan quality score of any city by inputting plan content along a questionnaire



About

Highlights

Team

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Climate Change Adaptation Scoring Tool

## Access and Documentation

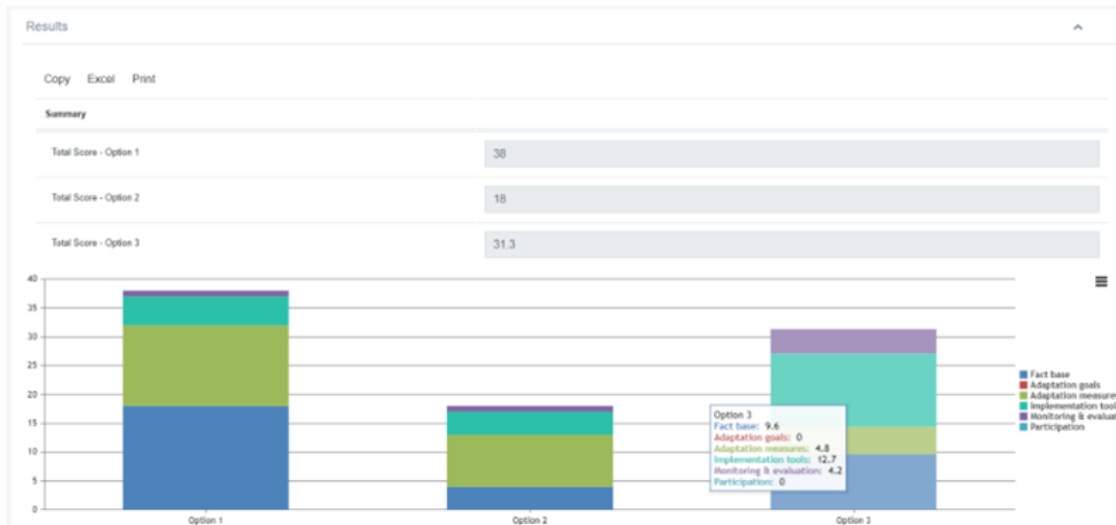
- To use the tool, simply go to [CC Scoring Tool](#)
- Climate Change Scoring Tool has comprehensive supporting documentation, available via the links on the tool's home page.
- Free and accessible to everyone.
- First-time user? Check out the [CC Adaptation Scoring Tool User Guide](#).

## Introduction

Along a number of steps, you are inputting data on the content of your local adaptation plan.

- To start that process you first need to go to the tab "Project database" on the left-hand side and then press "Create new project".
- You will then have to answer a number of questions on the content of the adaptation plan.
- In the end, the tool calculates a numerical value/ a number that shows the quality of your adaptation plan.

That number can be compared to a maximum score achievable in each section, showing you where most efforts for improvement are seen. You will also have the opportunity to compare your score with other plans already analyzed and part of the database.



Answering the complete questionnaire will take you approximately 10 minutes. You have the option to either input real data or you can just use the tool for exploration. If you input data from an existing adaptation plan we will ask you for your email address in order to verify your data and in order to have the possibility to contact you if we have any questions related to your input. In that case, your data is saved. If you just want to explore the tool we do not ask for an email address and your data will not be stored.

<https://www.lcp-initiative.eu/>



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