BOOSTING STARTER CYCLING CITIES

Research & Development for supporting urban planners

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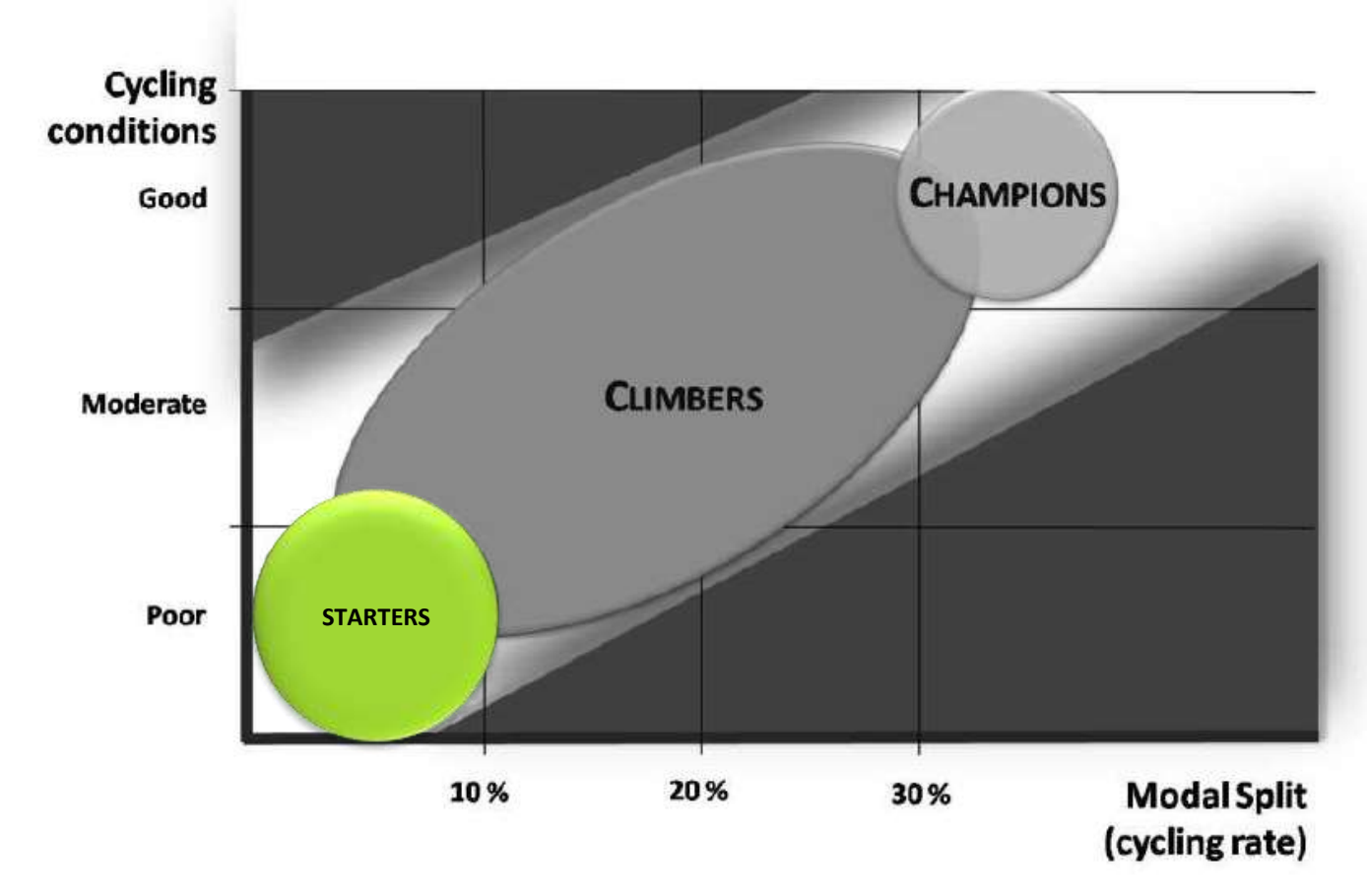
Starter Cycling Cities?

Research Project



Source: PRESTO (Dufour, 2010)

Challenges

- **Residual use of bikes** (little pressure)
- **Car-centric societies and planning**
- **Limited cycling infrastructure** (often leisure oriented)
- **High scepticism on the ability of the bicycle to become a transport mode**
- **Lack of research, data and planning methods specifically focused on starter cycling cities**

Objectives

- **Bridge the knowledge gap**
- **Providing specific technical know-how**
- **Breaking with resistance and fostering the latent demand**
- **Linking cycling with the cities' wider agenda**
- **Boosting cities to reach the next level of bicycle use**

Starter City Roadmap

GPC – Gross Potential for Cycling

EVC – Economic Value of Cycling

- Local scale (inspired by HEAT methodology)
- Regional/ National scale (Portuguese Bike Industry Cluster)

CMS – Cycling Measure Selector

https://boost.up.pt/

Gross Potential for Cycling

GPC

- **Draws on the Cycling Potential Assessment Method (CPAM)**
  - **Generation.Mobi (Silva et al. 2019)**

Spatial Dimension

- **Reveal the potential for cycling of a city**
- **2-dimensional approach:**
  - **Target-Population**
    - What is the population with higher potential to cycle and where do they live?
  - **Target-Areas**
    - What are the physical conditions that favour cycling and where can they be found?

Starter Cycling Cities

- **Overcome the political/planning scepticism towards cycling**
- **Support the development of cycling policies** (specific for each city)

Gross Potential for Cycling

GPC

MAPS

5	4	3	2	1

INDICATORS

Target Population

- P1.Age: 3
- P2.Amount of Drivers: 2
- P3.Population Density: 3
- P4.Employment Density: 3

Target Area

- A1.Accessibility to Education Facilities: 3
- A2.Accessibility to centralities: 2
- A3.Accessibility to PT: 2
- A4.Relative Accessibility to Car: 3
- A5.Connectivity: 2
- A6.Occupation Diversity: 1

Cycling Infrastructure potential

- Coverage of Cycling Infrastructure and of 30km/h Zones
- Bicycle parking coverage areas
- Easiest roads for intervention

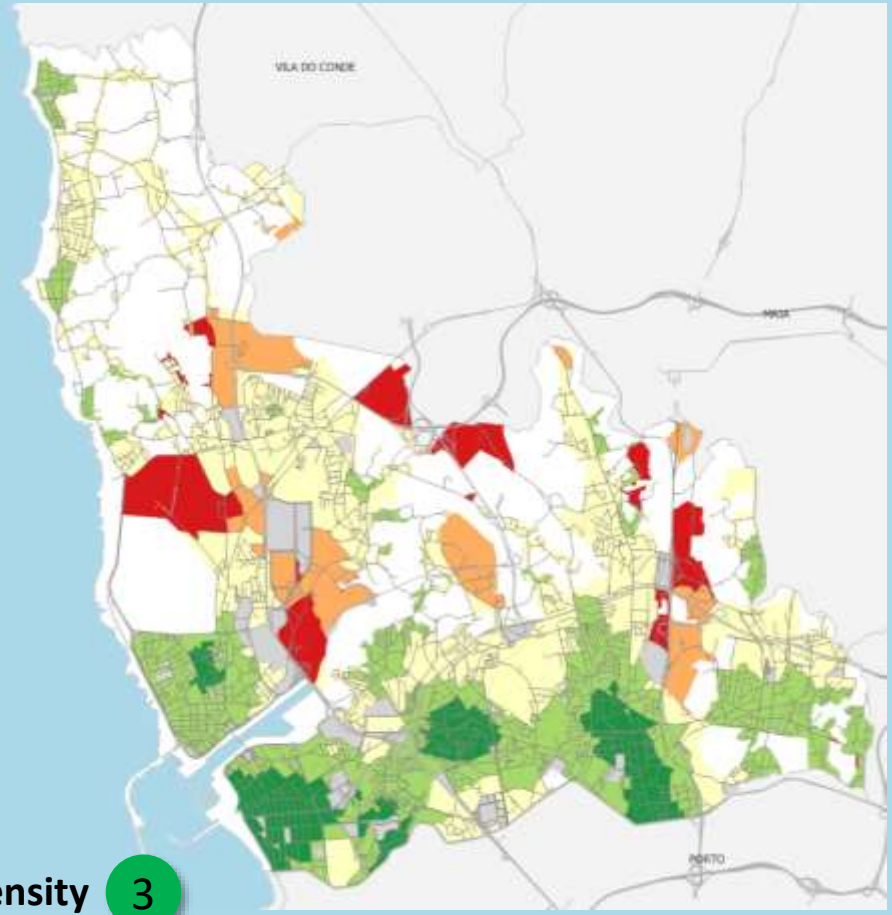
Current cycling conditions

Cycling Infrastructure
Road Hierarchy
Road Network speed
Accidents
Topography (Slopes)

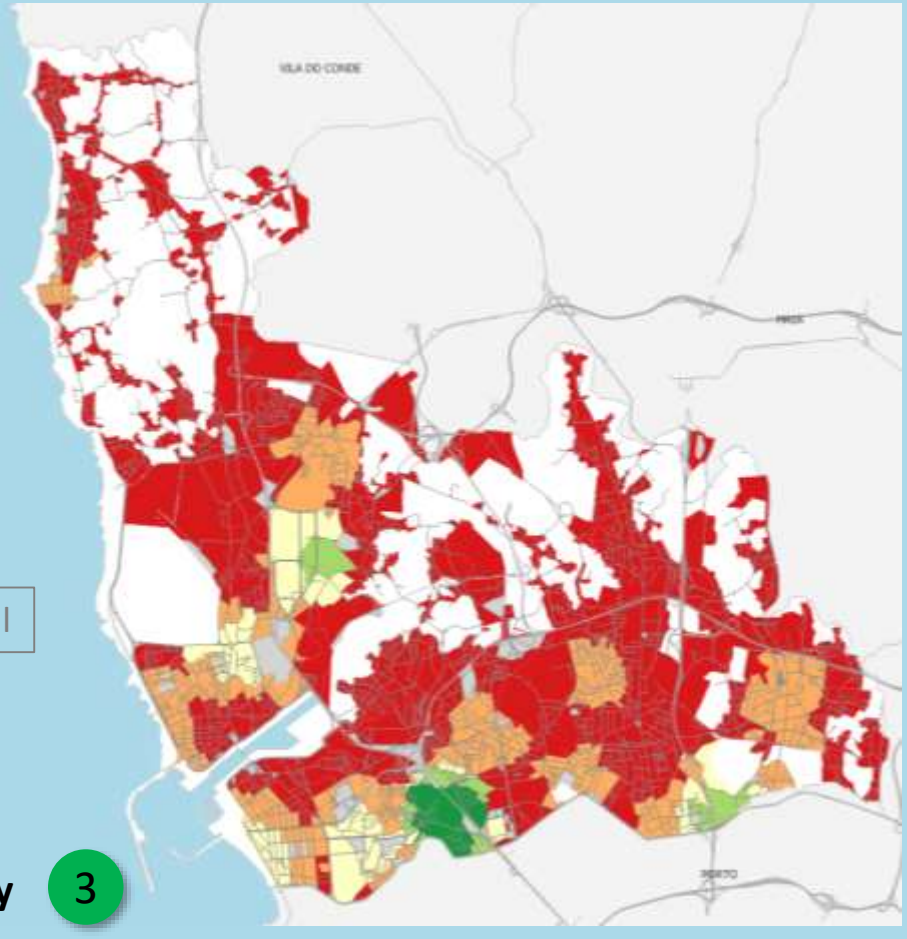
Approach to Urban Areas

Cities
Tows and Suburbs

GPC – Target Population



Matosinhos, Portugal



Population Density 3

- 5 > 8805 inhabitants / km²
- 4 4842 – 8805 inhabitants / km²
- 3 1500 – 4842 inhabitants / km²
- 2 820 – 1500 inhabitants / km²
- 1 < 820 inhabitants / km²
- No Population

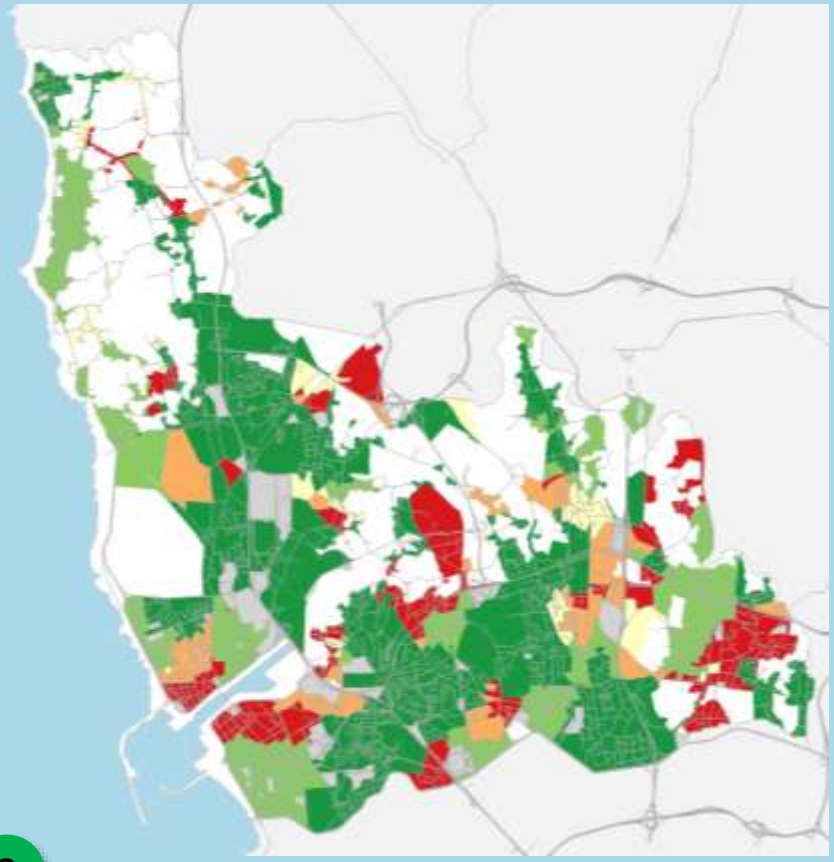
Urban Centres

Surrounding Urban Areas

Employment Density 3

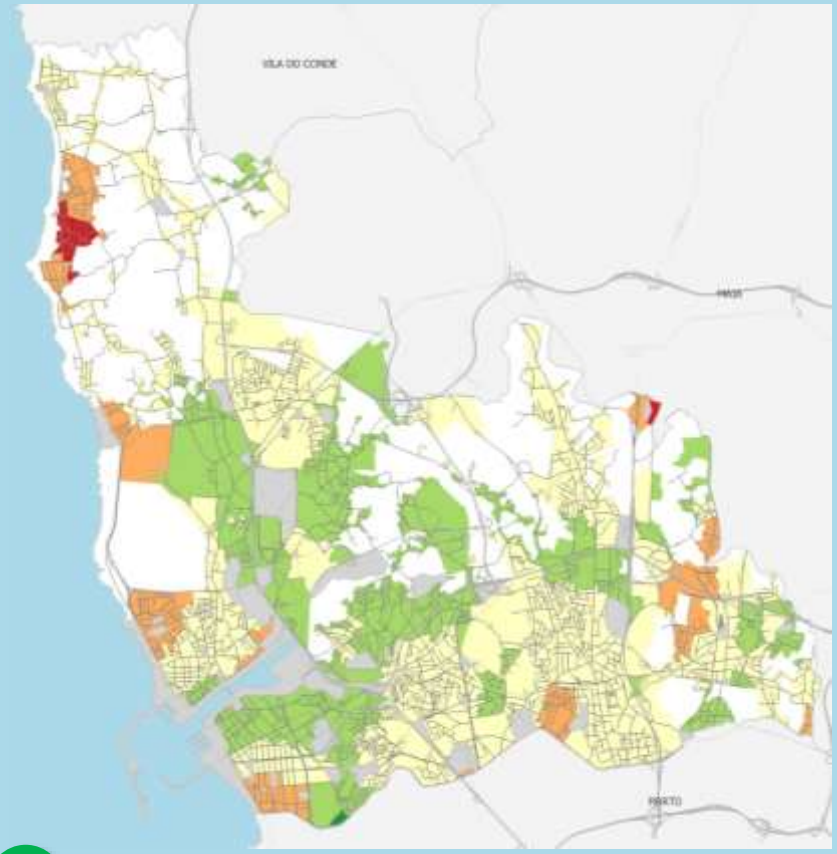
- 5 > 1472 employments / km²
- 4 685 – 1472 employments / km²
- 3 274 – 685 employments / km²
- 2 79 – 274 employments / km²
- 1 < 79 employments / km²

GPC – Target Population



Age 3

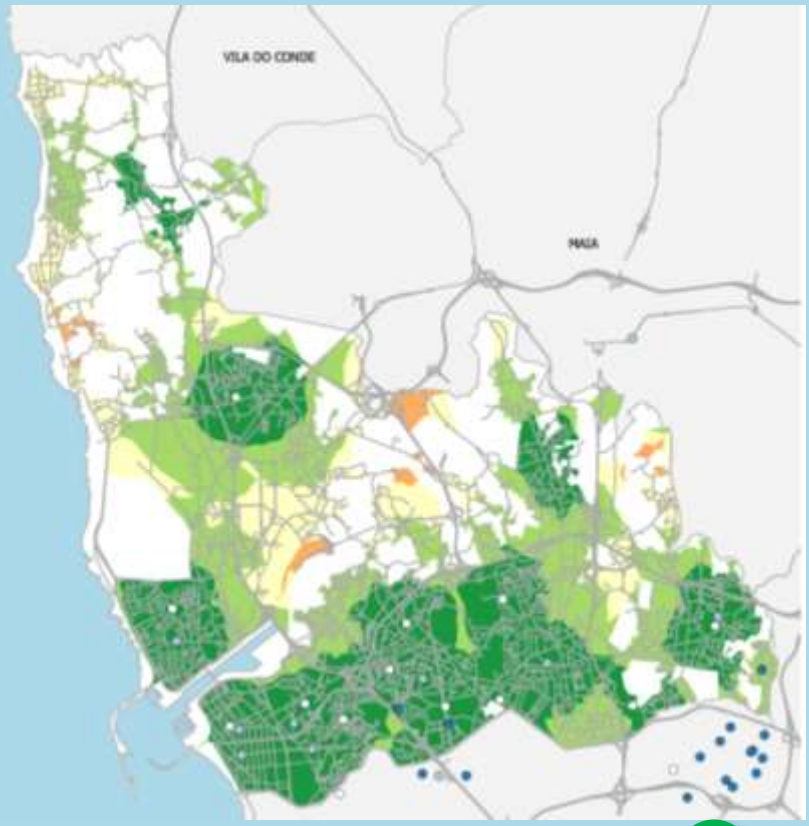
- 5 - Age from 15 to 29 above average
- 4 - Age from 10 to 14 and from 30 to 39 above average
- 3 - Age from 40 to 44 above average
- 2 - Age from 45 to 49 above average
- 1 - Age <10 and ≥50 above average
- No Population



Car Drivers 2

- 5 0 – 110 Car drivers per 1000 inhabitants
- 4 111 – 220 Car drivers per 1000 inhabitants
- 3 221 – 330 Car drivers per 1000 inhabitants
- 2 331 – 440 Car drivers per 1000 inhabitants
- 1 > 441 Car drivers per 1000 inhabitants
- No Population

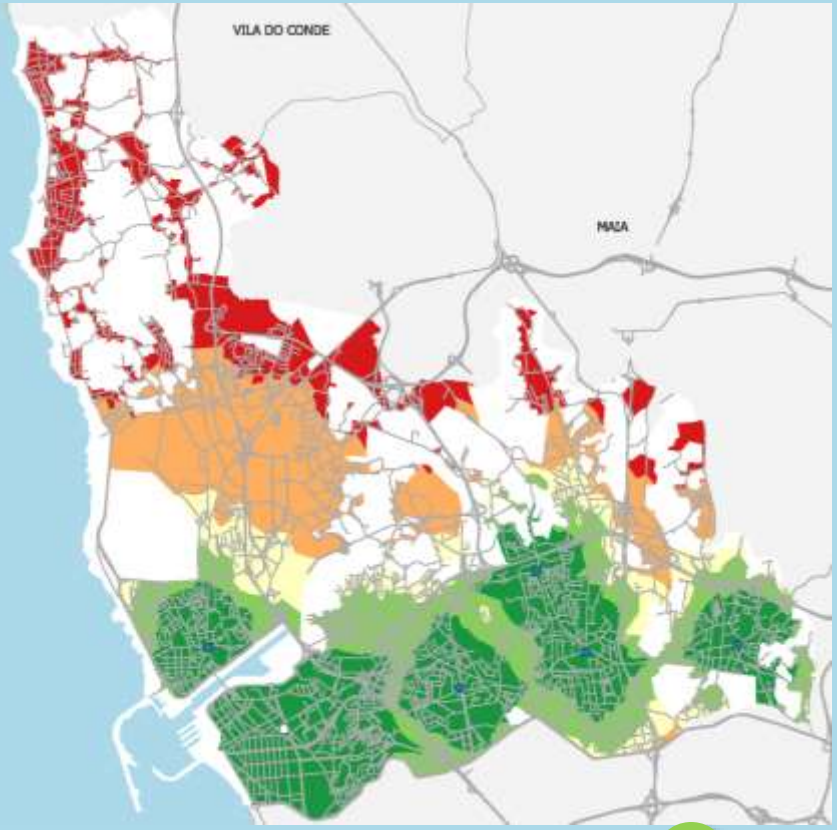
GPC – Target Areas



Accessibility to Education Facilities 3

Cycling Infrastructure

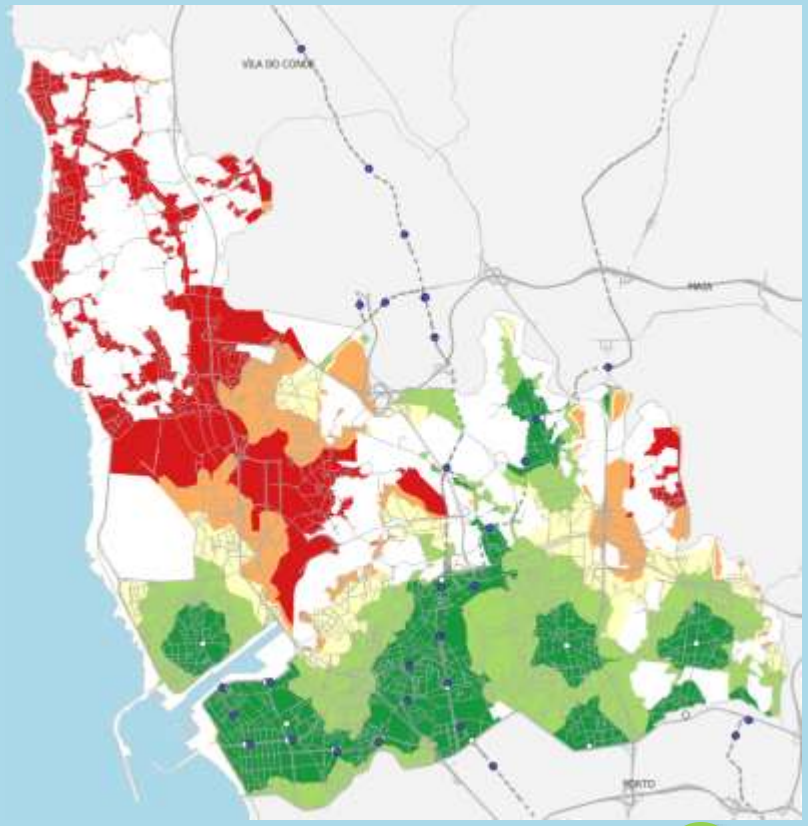
- 5 Below 5 min (BE and SE) or 10 min (HE)
- 4 Between 5-10 min (BE and SE) or 10-15 min (HE)
- 3 Between 10-15 min (BE and SE) or 15-20 min (HE)
- 2 Between 15-20 min (BE), 15-25 (SE) or 20-30 min (HE)
- 1 Above 20 (BE), 25 (SE) or 30 min (HE)
- No Population



Accessibility to Centralities 2

Cycling Infrastructure

- 5 Less than 5 min (SC) or 10 min (PC)
- 4 Between 5-7.5 min (SC) or 10-15 min (PC)
- 3 Between 7.5-10 min (SC) or 15-20 min (PC)
- 2 Between 10-15 min (SC) or 20-30 min (PC)
- 1 Above 15 min (SC) or 13 min (PC)

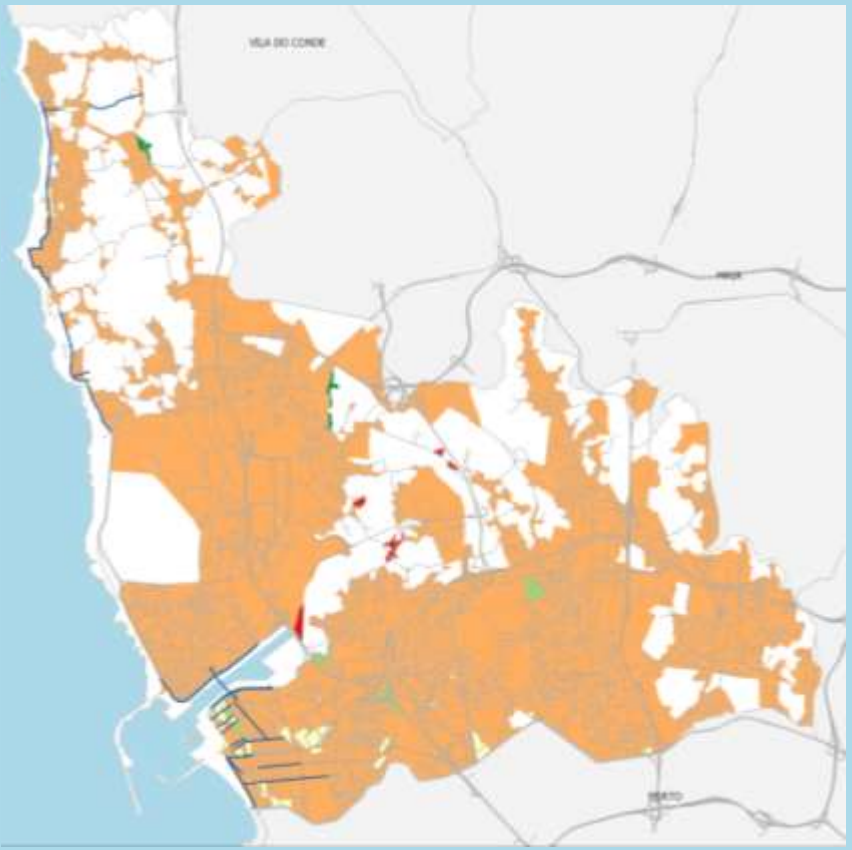


Accessibility to Public Transport 2

Cycling Infrastructure

- 5 Less than 2.5 min
- 4 Between 2.5 and 5 min
- 3 Between 5 and 7.5 min
- 2 Between 7.5 min and 10 min
- 1 Above 10 min

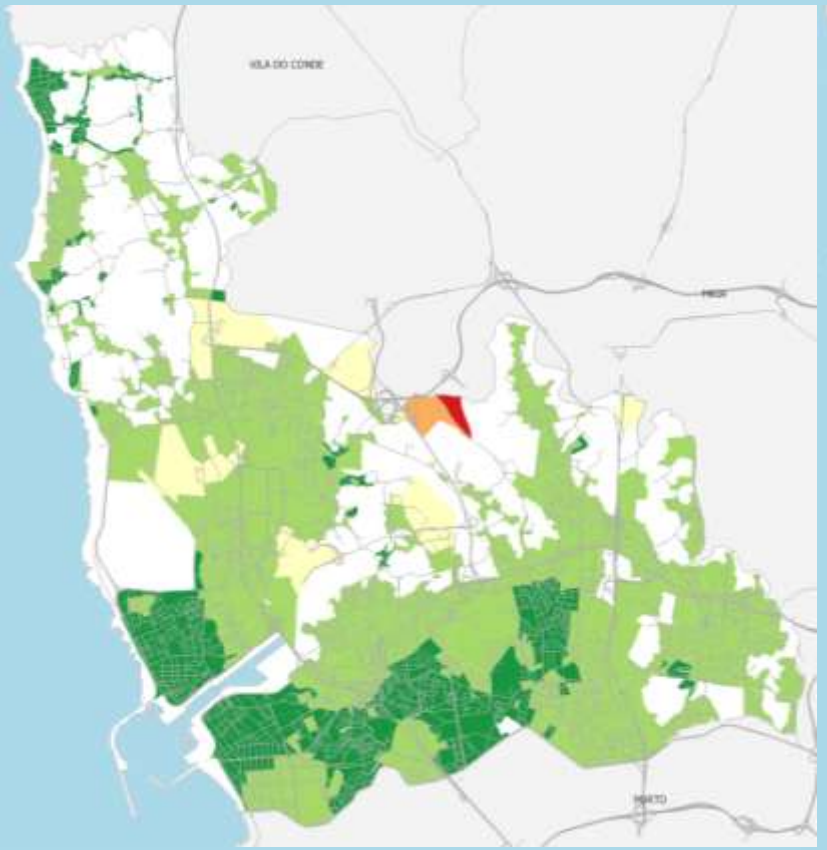
GPC – Target Areas



Relative Accessibility Car/Bicycle (5min) 3

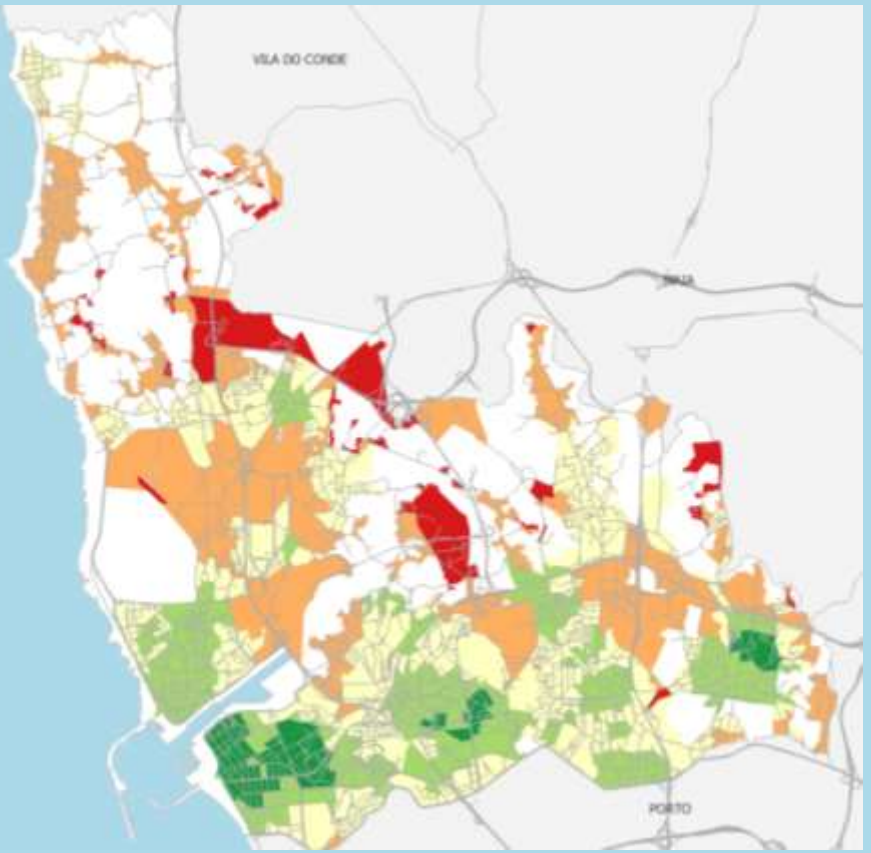
Cycling Infrastructure

- 5 Acc by Bike 1.2x Acc by Car
- 4 Acc by Bike 1.2 – 1x Acc by Car
- 3 Acc by Bike 0.8 – 1x Acc by Car
- 2 Acc by Bike 0.4 – 0.8x Acc by Car
- 1 Acc by Bike 0.4x Acc by Car
- No Population



Connectivity 2
(Average Block Size)

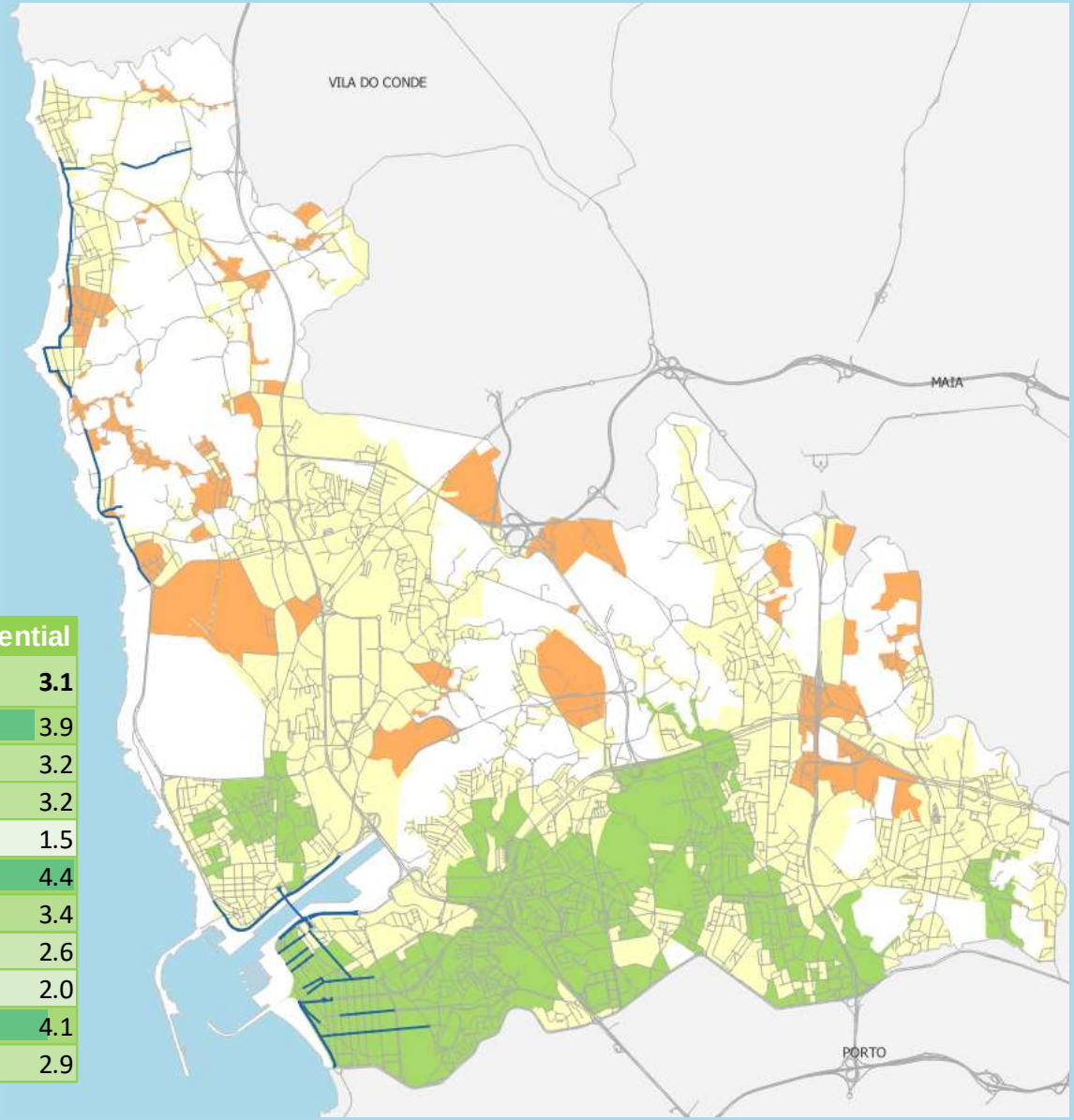
- 5 < 2 500 m^2
- 4 2 500 – 10 000 m^2
- 3 10 000 – 22 500 m^2
- 2 22 500 – 40 000 m^2
- 1 > 40 000 m^2



Occupation Diversity 1

- 5 All 9 types of activities in a 500 m radius
- 4 Between 7 and 8 activities in a 500 m radius
- 3 Between 4 and 6 activities in a 500 m radius
- 2 Between 1 and 3 activities in a 500 m radius
- 1 No activities in a 500 m radius
- No Population

GPC – Aggregated Map



5
4
3
2
1

Indicators	Overall Cycling Potential
Target-Population and Areas	**3.1**
Age	3.9
Car Users as Drivers	3.2
Population Density	3.2
Employment Density	1.5
Accessibility to Education Facilities	4.4
Accessibility to the Centralities	3.4
Accessibility to Public Transport	2.6
Relative Accessibility to Car	2.0
Connectivity	4.1
Ocupation Diversity	2.9

Decision Making Process

- Testing different scenarios
- Location of new infrastructures
- Identifty complementary measures
- Evaluate the potential of different planning strategies and break resistances

Gross Potential for Cycling

GPC

Next Steps:

- **Development of GPC**
  - Exploring the ease of street conversion - ***"fast, low cost and peaceful"*** interventions to accelerate change (street-by-street analysis)
    - For invisible infrastructure (Eg.: 30km/h speed limits)
    - For inclusion of segregated infrastructure (Eg.: too wide streets)
    - With best slopes
    - Overlay cycling potential with easy provision of cycling conditions
- **Open call** for municipalities to be assessed and implement the methodology

Cycling Measures Selector

CMS

Starter Cycling Cities

- **Library of Mobility Management Measures aimed at promoting cycling in Starter Cycling Cities**
- **Inspiration:**
  - **Konsult, TDM Encyclopedia of Victoria Transport ´Policy Institute**

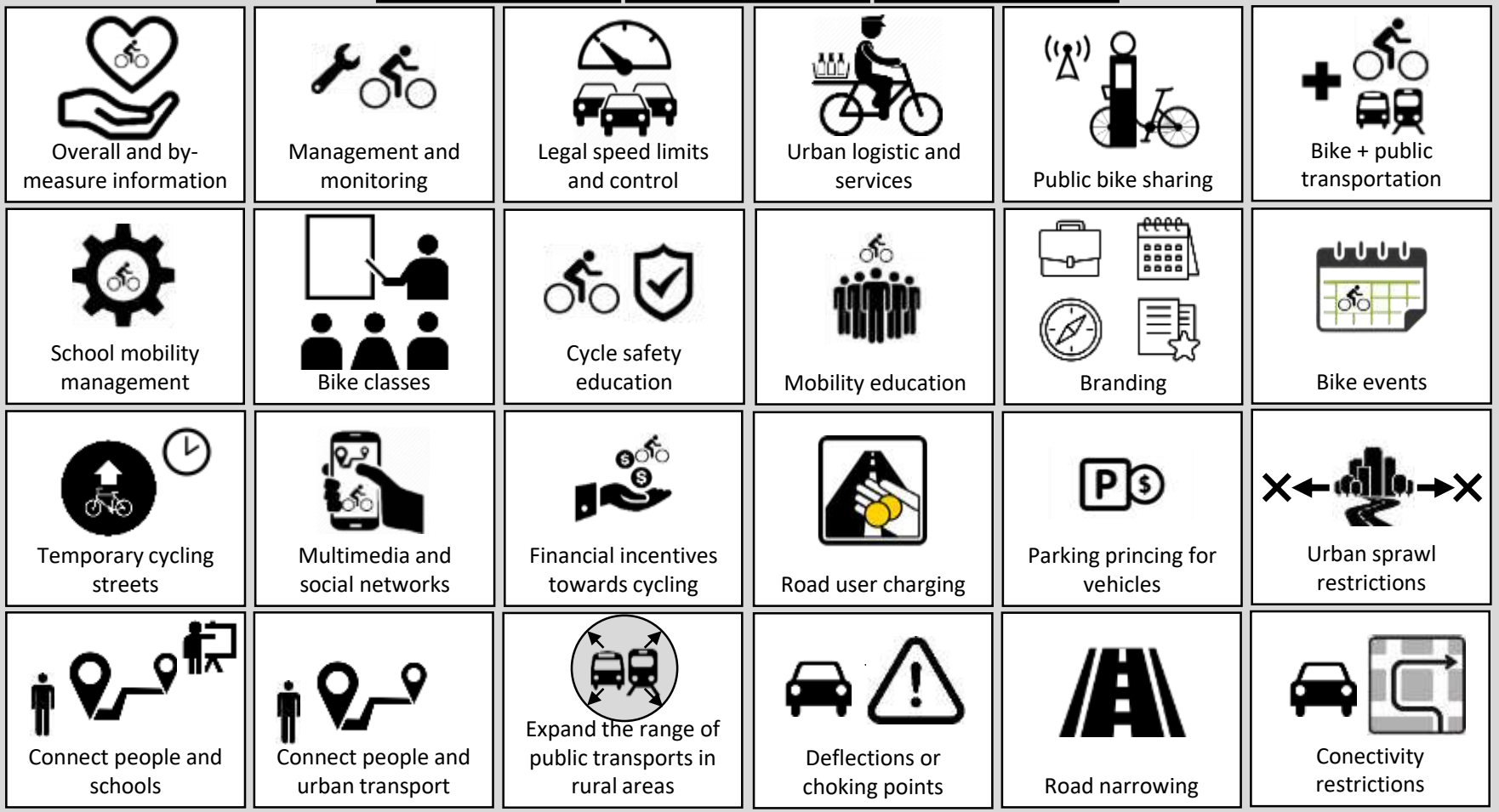
- **Support the development of cycling policies** (specific for each city)
- **Connected to the Cycling Potential**


Municipality


School
University


Company
Organization


BIKE ROUTE
Safe, direct and continuous network
Safe and eficient crossroads
Bike parking


Overall and by-measure information
Management and monitoring
Legal speed limits and control
Urban logistic and services
Public bike sharing
Bike + public transportation
School mobility management
Bike classes
Cycle safety education
Mobility education
Branding
Bike events
Temporary cycling streets
Multimedia and social networks
Financial incentives towards cycling
Road user charging
Parking princing for vehicles
Urban sprawl restrictions
Connect people and schools
Connect people and urban transport
Expand the range of public transports in rural areas
Deflections or choking points
Road narrowing
Conectivity restrictions


Limited car access areas
Car-free areas
Car parking

THANK YOU FOR YOUR ATTENTION

https://boost.up.pt/

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BooST . Cecília Silva, José Carlos Mota, Frederico Sá, Joana Marques, João Pedro Ferreira, Catarina Isidoro, Tamara Bicalho, Ana Mélice Dias, Isabel Cunha, Catarina Cadima

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