

TiTuSS - Transport Infrastructure and Urban Spatial Structure: Economic, Social & Environmental Effects

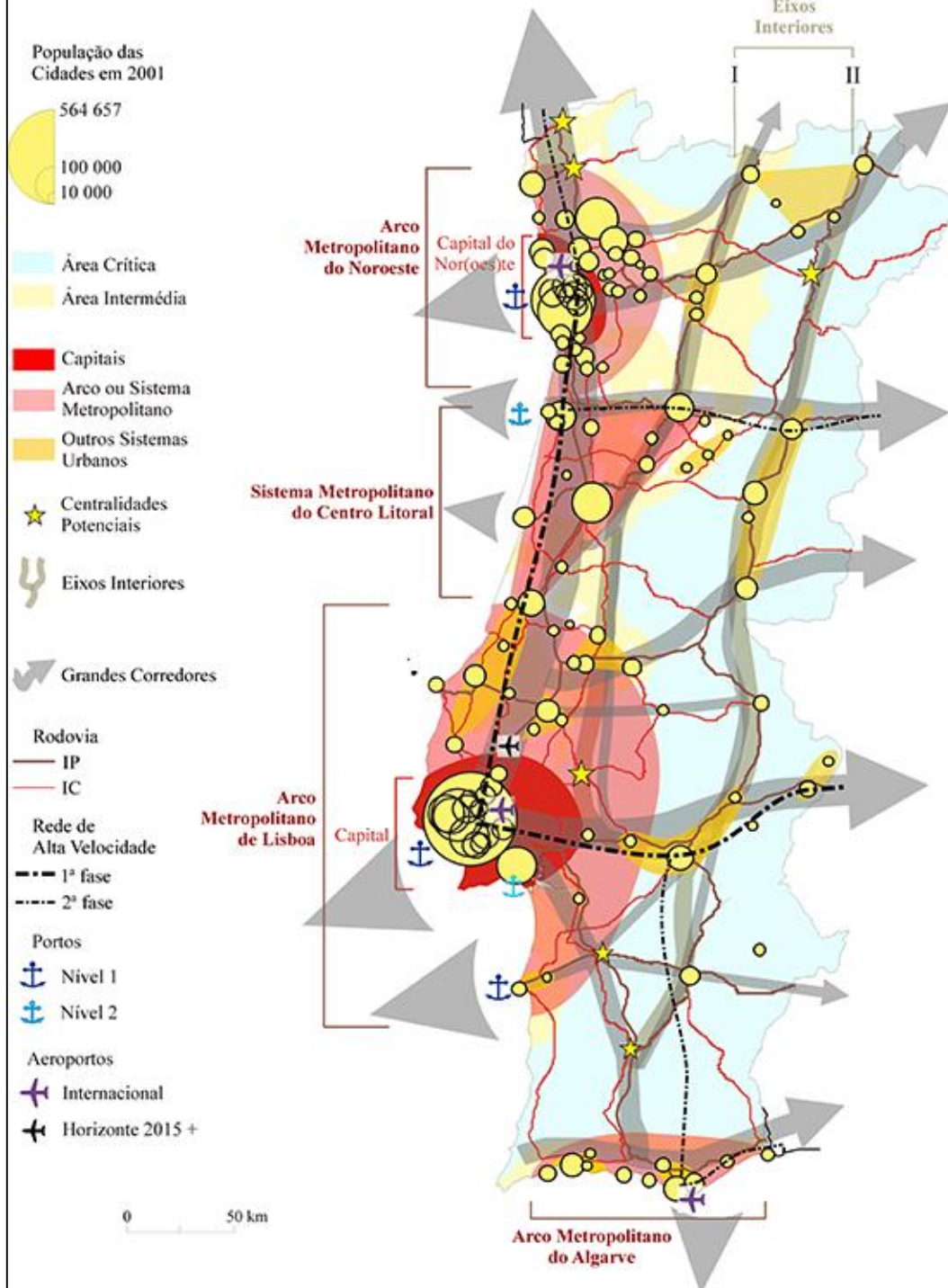
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IMPACT workshop on “Road Investments, Agglomeration and Wider Economic Impacts”

Oslo / Asker, Norway, 26 – 27 Nov. 2018

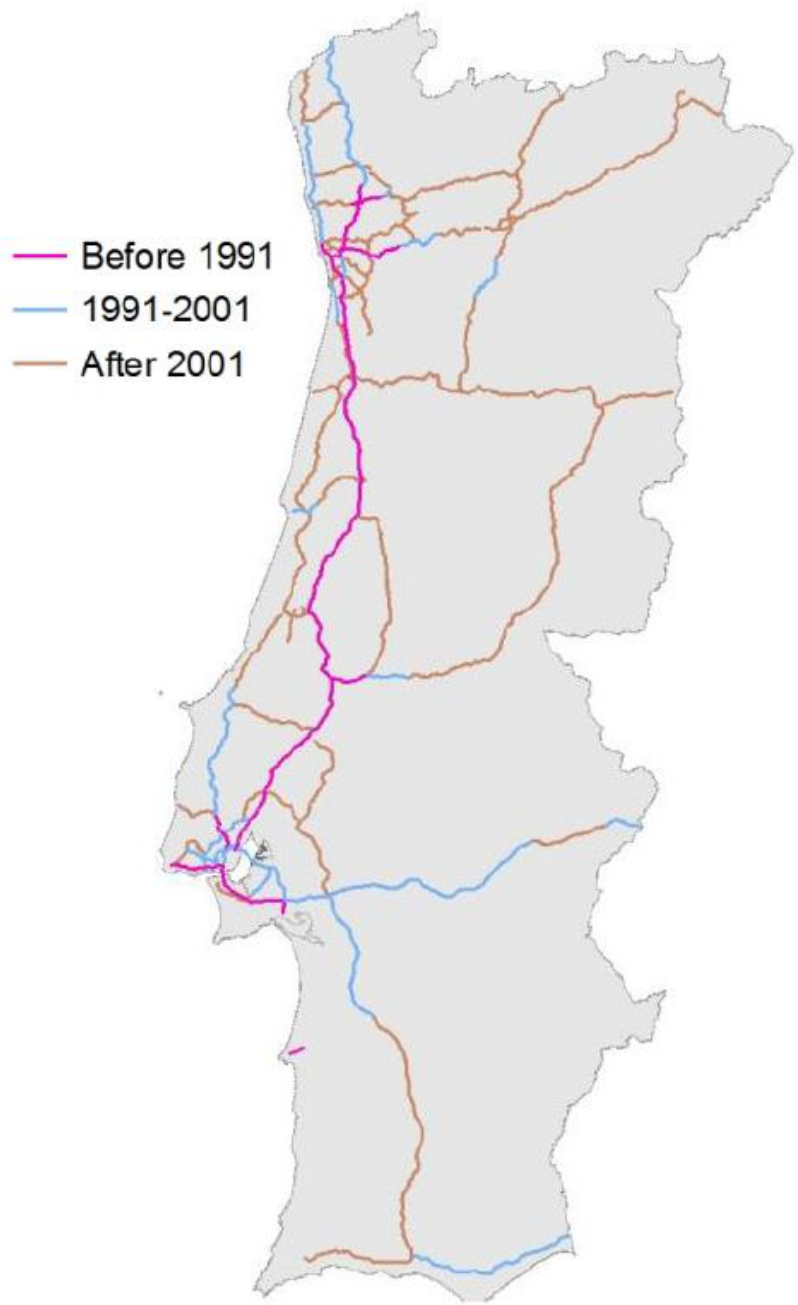


CURRENT URBAN & TRANSPORT SYSTEM

- ~90% of population on the west + south coast
- Bipolarization around Lisbon and Porto urban areas
- Prevalence of a dispersion-based urbanisation process (suburbanisation)

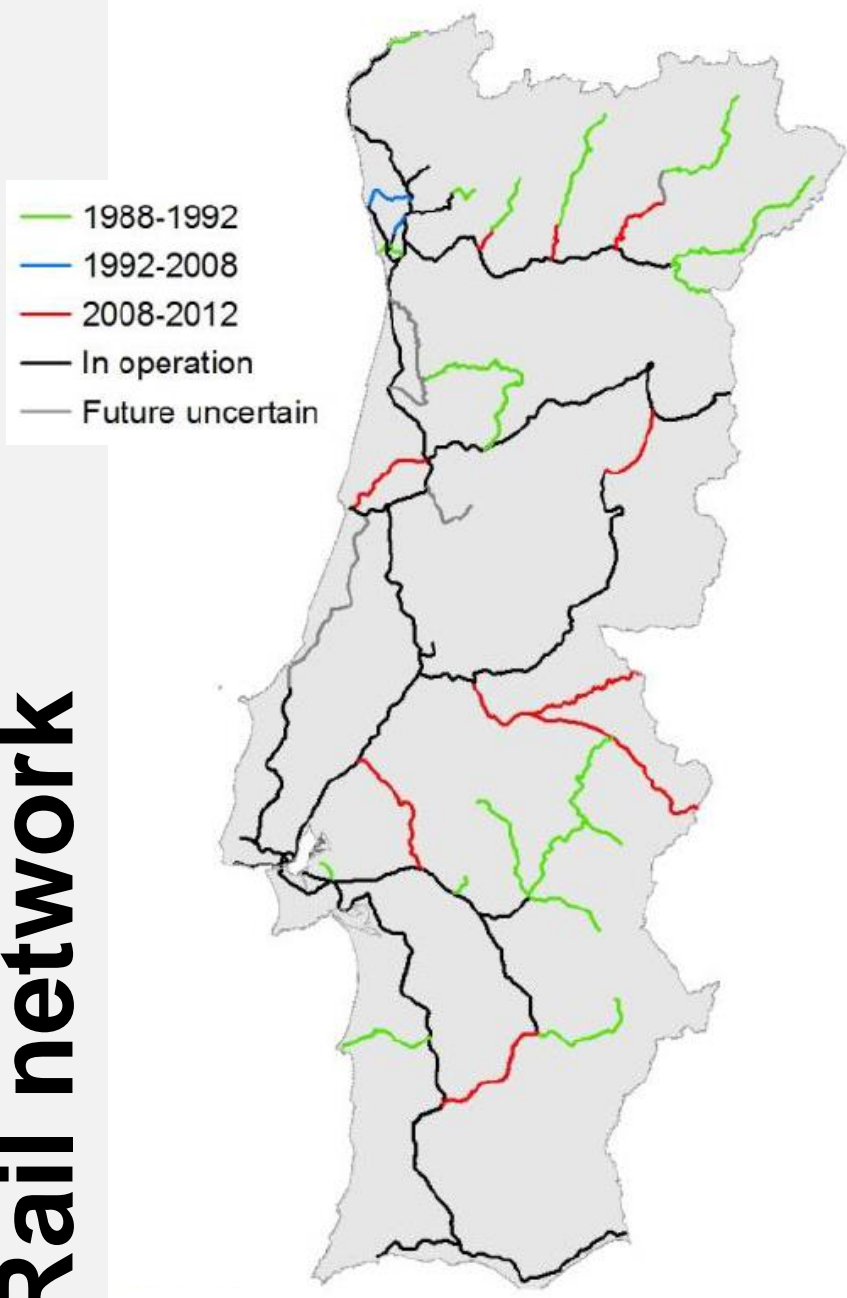
Motorway network

Motorways, by period of opening



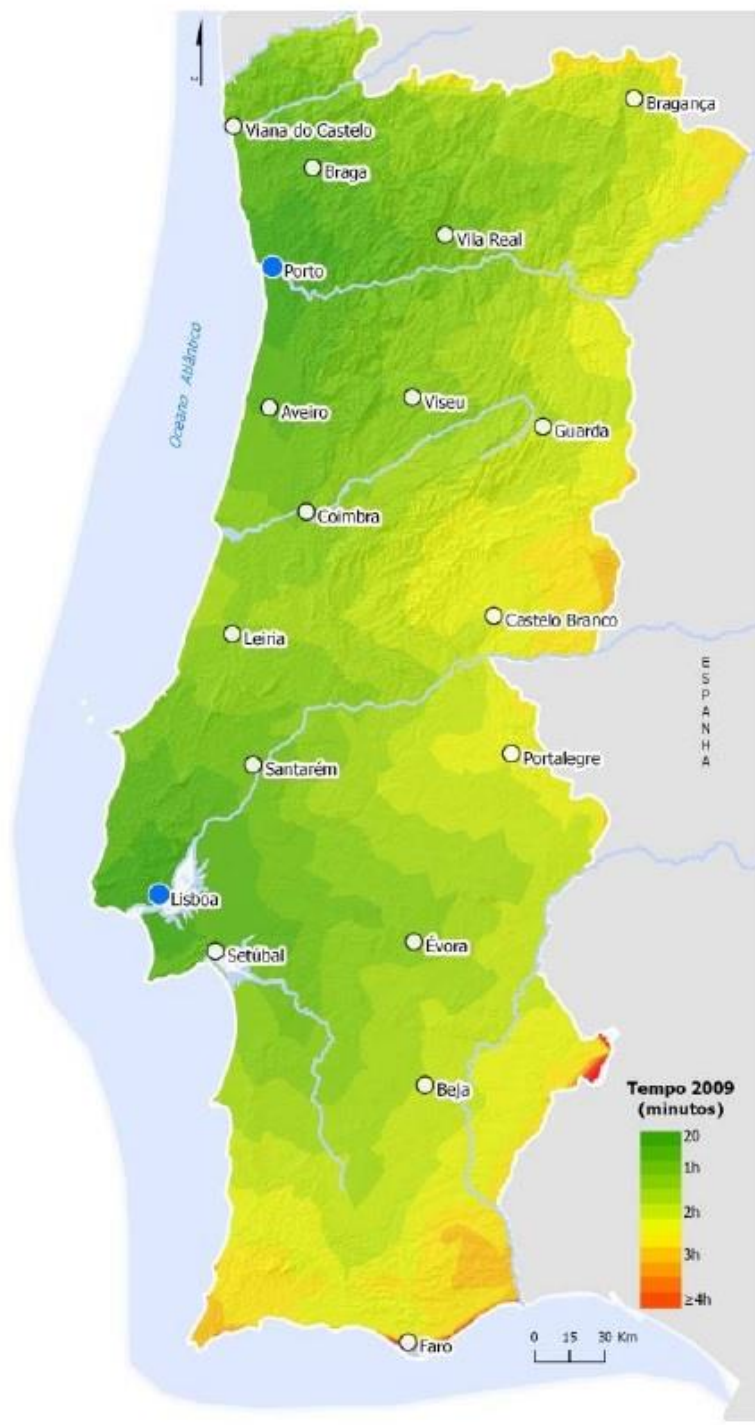
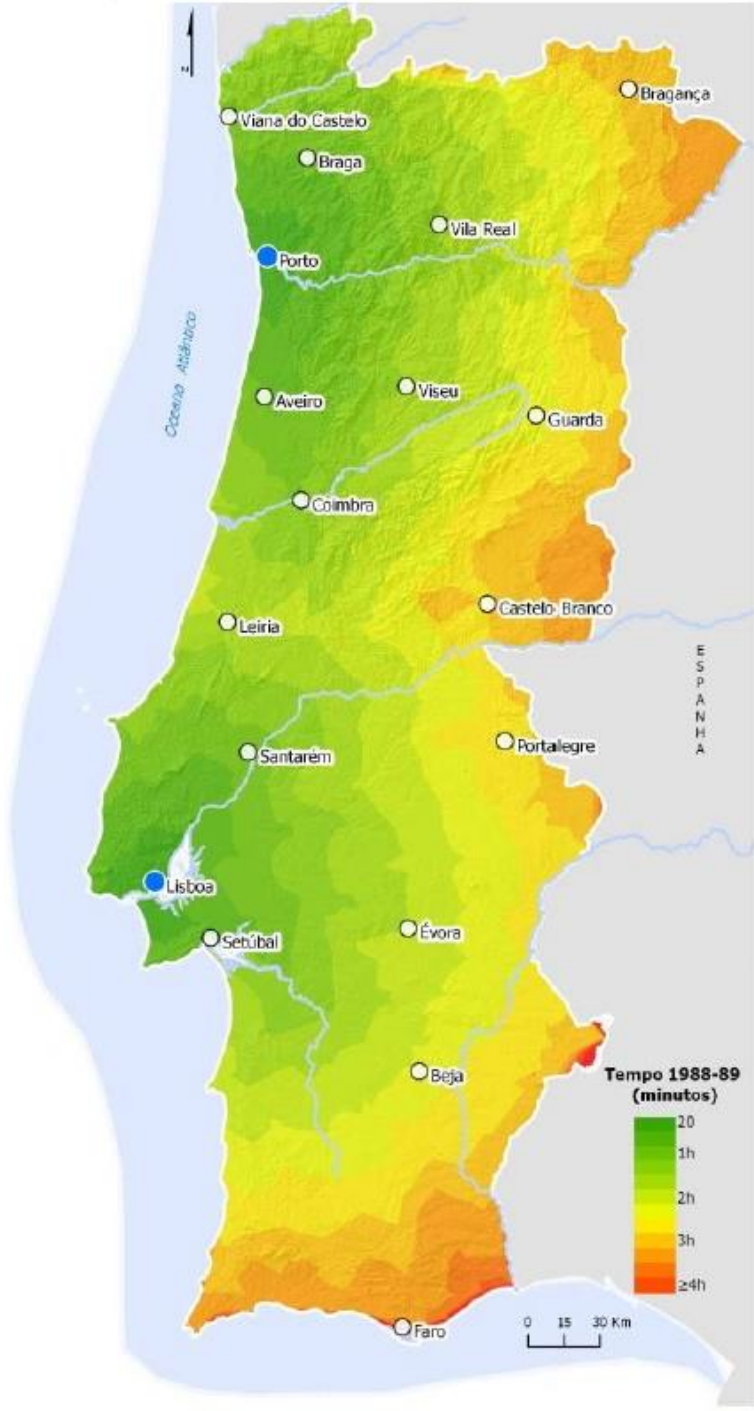
Rail network

Railways, by period of closure



Source: Anciães, P. R. (2016), Population decline and accessibility in the Portuguese interior.

Travel times to Lisbon or Oporto



Source: de Sousa et al. (2011), A Evolução dos Transportes e Acessibilidades e as Transformações na Organização do Território.

Table 1 – Infrastructure Investments

	1980-2011	1980-89	1990-99	2000-09
Percent of GDP				
Infrastructure Investment	4.18	2.88	4.40	5.04
Road Transportation	1.19	0.74	1.32	1.52
National Roads	0.52	0.33	0.61	0.57
Municipal Roads	0.36	0.34	0.41	0.36
Highways	0.32	0.07	0.30	0.59
Other Transportation	0.38	0.22	0.47	0.46
Railroads	0.29	0.15	0.37	0.35
Ports	0.05	0.03	0.06	0.06
Airports	0.04	0.03	0.03	0.06

Source: Pereira, Alfredo e Pereira, Rui (2017) *Is All Infrastructure Investment Created Equal? The Case of Portugal*. MPRA Paper No. 77369.

Percentage of Infrastructure Investment

	1980-2011	1980-89	1990-99	2000-09
Infrastructure Investment	100.00	100.00	100.00	100.00
Road Transportation	28.49	25.99	30.35	30.23
National Roads	12.46	11.52	14.09	11.43
Municipal Roads	9.16	11.90	9.47	7.10
Highways	6.86	2.56	6.79	11.70
Other Transportation	8.91	7.57	10.52	9.21
Railroads	6.64	5.17	8.31	6.92
Ports	1.21	1.23	1.40	1.08
Airports	1.06	1.17	0.81	1.21
Social Infrastructures	23.76	28.41	24.52	20.13
Health	10.82	9.89	10.73	11.97
Educational	12.94	18.52	13.79	8.16
Utilities	38.85	38.04	34.61	40.43
Water	6.99	4.90	5.98	8.17
Petroleum	3.64	3.22	4.06	2.83
Electricity and Gas	14.44	15.97	8.45	17.53
Telecommunications	13.77	13.94	16.12	11.89

Source: Pereira, Alfredo e Pereira, Rui (2017) *Is All Infrastructure Investment Created Equal? The Case of Portugal*. MPRA Paper No. 77369.

What is TiTuSS about?

- TiTuSS studies the **relationship between transport and urban spatial structure** and how it can be better managed **to enhance regional and national economic performance together with more sustainable and inclusive growth**. Duration: 3 years (Oct 2018 – Sep 2021)
- It will provide evidence on:
 1. The effects of transport improvements on the urban spatial structure, namely the location patterns of the population and economic activities
 2. The relationship between productivity and urban agglomeration resulting from improvements to the transport networks
 3. The relationship between transport improvements and territorial cohesion, including the impacts on the environment

TiTuSS' research questions:

1. To what extent has the expansion of the road network since 1981 (pre-adhesion to EU) altered patterns of urban spatial structure?
2. How much has it contributed to patterns of suburbanisation and dispersion of economic activity?
3. What is the magnitude of transport-induced urban agglomeration externalities and how has it changed over time?
4. To what extent have the improvements in regional/local accessibility resulting from better transport networks contributed to greater territorial cohesion?

Objectives & Workplan

1981

1991

2001

2011

2021

1

Build GIS-based transport network from 80s till 2017

2

Measure changes in accessibility, urban form, spatial structure

3

Estimate wider economic impacts of urban agglomeration

4

Measure impacts on regional SEP convergence

5

Measure effect on travel, road transport emissions

Thank you



<https://rem.rc.iseg.ulisboa.pt/prj/tituss/>