

Where is the Data? Assessing indicator and data readiness for urban green transitions

From Knowledge
to Competitiveness

Portugal-US Partnerships 2026 Summit

Mit Portugal
Program



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METHODOLOGY

Route question: Which variables can feed System Dynamics (SD) and Digital Twins (DT) models for urban green transitions – and how ready is the data to support them?

1

Select indicators

Indicators to assess, monitor and improve the resilience of urban green transitions, from literature and the GRIDS plan.

Mobility Energy Quality of life Environment

2

Map variables & sources

Each indicator broken into measurable variables; public portals, open and operator APIs and repositories screened.

INE · PMMUS Carris · TomTom Open-Meteo · OCM OSM · Copernicus

3

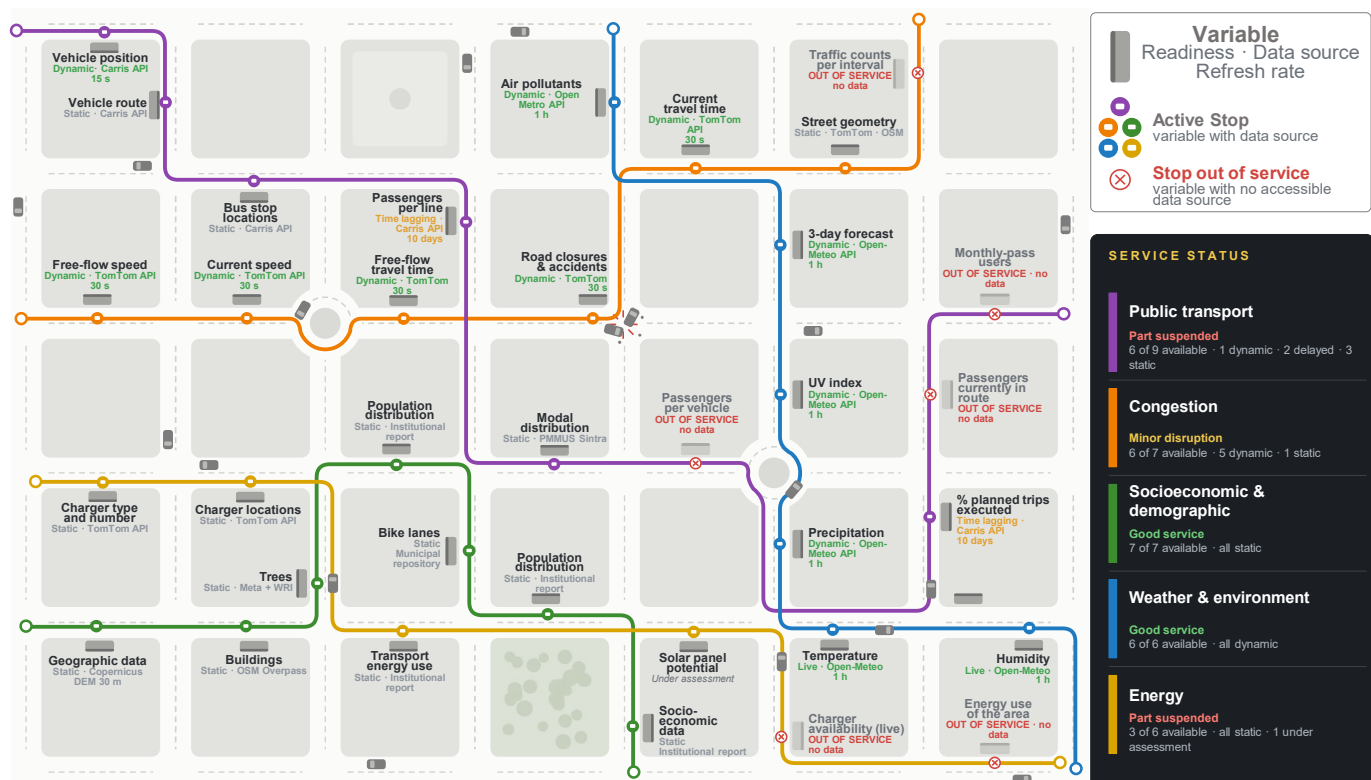
Classify readiness

Every variable rated by availability, source and refresh rate – from 15-second feeds to yearly reports.

Dynamic Delayed Static Not available

VARIABLE MAP

35 variables · 5 data groups · Sintra (Lisbon Metropolitan Area)



Terminus · Conclusions

12

of 35 variables
are dynamic data

2

of 35 variables
are with time lag

14

of 35 variables
are static data

6

of 35 variables
are unavailable

Readiness is uneven: weather, air quality and traffic run on time; demand-side data (passenger loads, charger use, energy demand) is where service stops.

A Digital Shadow already runs on open and operator data.

Reaching a Digital Twin needs data-sharing agreements with operators and utilities.

NEXT DEPARTURES

ROUTE	DESTINATION	
SD	SD model calibration	2011–2021 window
ML	Indicator forecasting	adaptive ML models
DT	SD + DT pairing	towards a Digital Twin
ST	Stakeholder validation	city technicians

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