

I Iberian Workshop on Road Safety

Autoridade Nacional de Segurança Rodoviária



02 July 2019
Lisbon, Portugal

Road Safety in Portugal

Past, Present and Future

road accidents and road fatalities

world wide problem

Consequences of road accidents



≈ **1,35M** deaths per year

≈ **3,700** deaths per day



≈ **50M** injuries per year



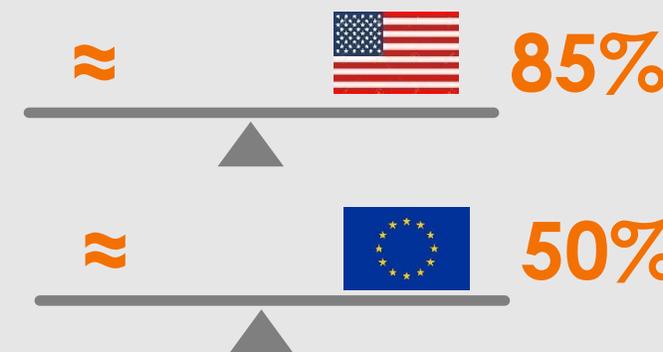
WHO: next 15 years...

≈ **265M** fatalities and serious injuries

Public Health Problem

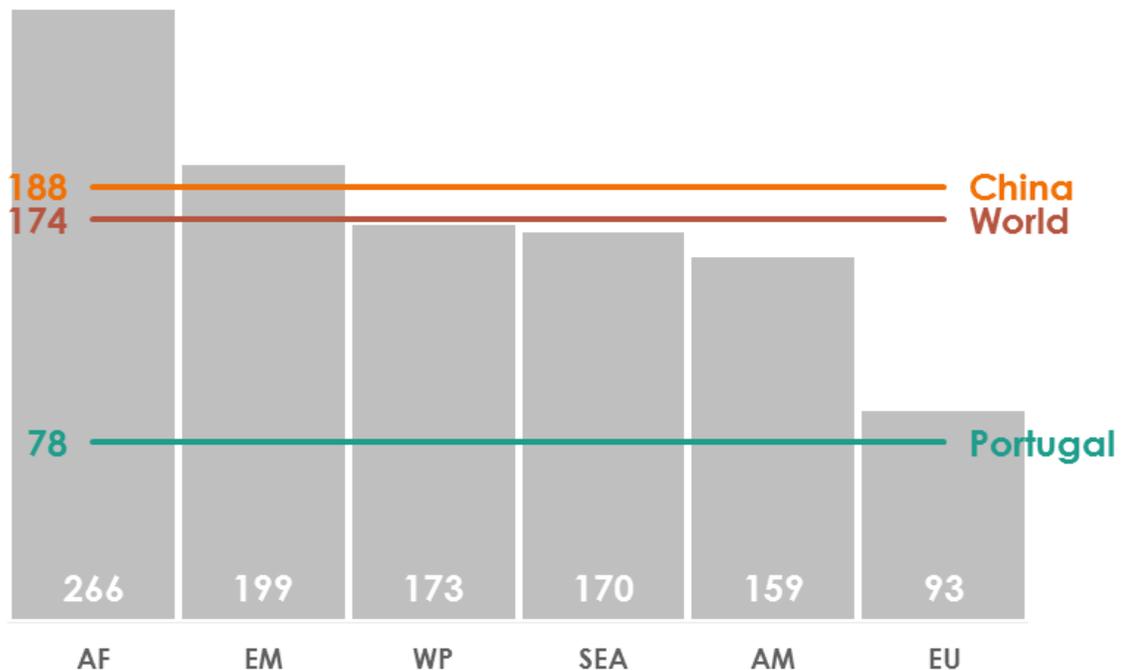
#1 cause of death between 5-24 years old

#3 cause of death between 5-40 years old



Europe vs World context

Fatalities per million inhabitants (2013)



AF	Africa	SEA	South-East Asia
EM	Eastern Mediterranean	AM	Americas
WP	Western Pacific	EU	Europe

In 2018:

 \approx **25,100** deaths (2% of world)
 \approx **500** deaths per week

+

 \approx **135.000** seriously injuries



280 Billion €
2% GDP

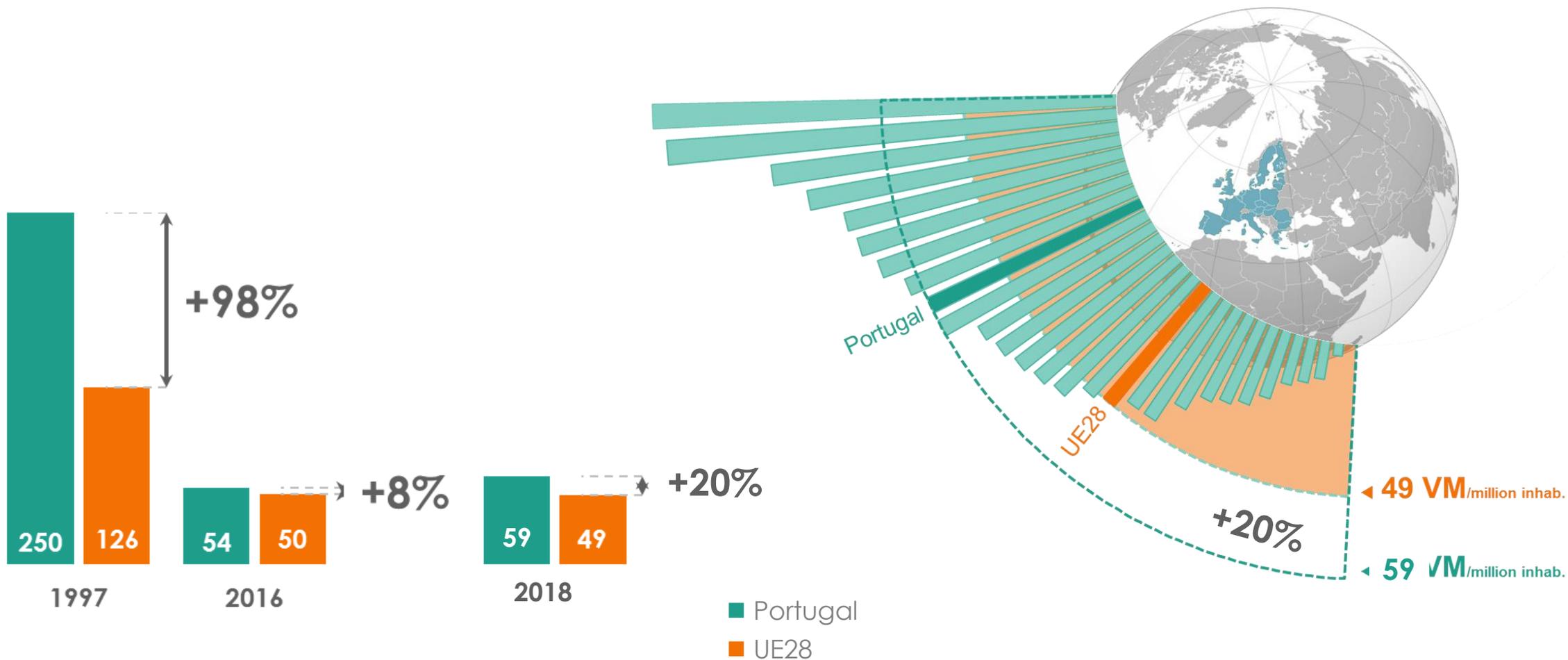
In 2018, 25,100 people died on Europe Roads, what do you think it would be a more acceptable number?



Transport Accident Commission Victoria, Australia

europaean union context

fatalities per million inhabitants



how did we get here?

national road network plan



1998

Implementations of NRNP45 and NRNP85

Connect destinations

Connect every municipality seat by

National Road

National Road Network Plan 2000 (NRNP2000)

Approved by the parliament in 1998

To develop and adapt the national road network and the road transport system to the country needs

Introduces explicitly a new concern – **Road safety**

Road safety audits

Road safety inspections

Road safety plan

Safe Expressways

how did we get here?

national road safety strategy

2003



National Road Safety Plan
Aiming a 50% reduction in road fatalities by 2010

1.748 road fatalities as base value
(average 1998-2000)

874 road fatalities as objective in 2010

Achieved in 2006 – 4 years before (850
road fatalities)

2007



Infraestruturas
de Portugal

Concession
Contract
3 road safety
objectives



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2008



National Road Safety Strategy
Aiming a 32% reduction in road fatalities by 2015

Approved by Council of Ministers
Resolution

850 road fatalities as base value (2006)

579 road fatalities as objective in 2015

Achieved in 2012 – 3 years before (573
road fatalities)

how did we get here?

national road safety strategy

2017



National Road Safety Strategic Plan (PENSE2020) Aiming a 56% reduction in road fatalities by 2020

Approved by Council of Ministers

937 road fatalities as base value (30 days evaluation) (2010)

399 road fatalities as objective in 2020 (30 days evaluation)

or **41** road fatalities per million inhabitants

2.475 road serious injuries (MAIS ≥ 3) as base value

22% reduction serious injuries by 2020

178 road serious injuries per million inhabitants in 2020



2020

National Road Safety 2020-2030

Aligned with the EU

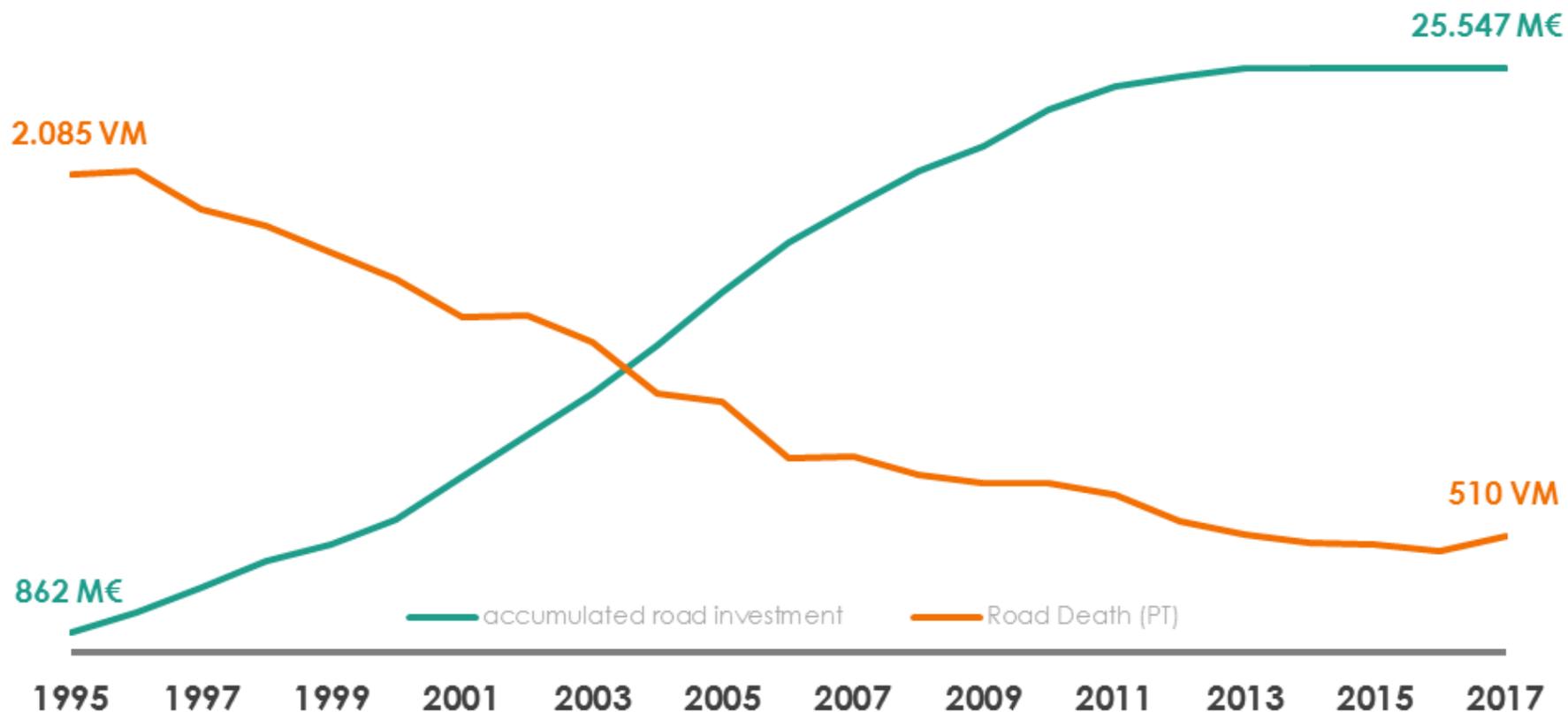
Mindset of "Vision Zero"

Safe System approach

Include the new trends in mobility: connectivity and automation

investing in SAFER ROADS

investment vs road fatalities



a strong correlation between investment in road infrastructures and the reduction of road deaths

Investment in **+3.200 km** of roads with higher quality and safety

75% reduction in road fatalities

Investment in SAFER ROADS

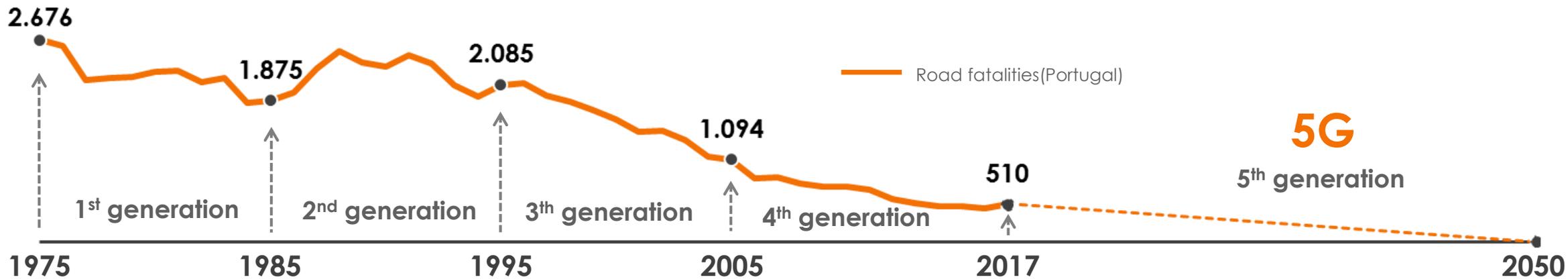
benefits



benefit to the country and to the society - the savings resulting from the reduction in roads accidents is more than twice its cost

Portuguese infrastructure evolution

adapt to demand



accessibility

Roads that connect destinations

mobility

Roads that connect destinations with less time

safety

Roads that connect destinations with less time and with safety

Self Explaining Forgiving roads

Roads that prevent driver errors and minimize their consequences

Smart Roads
Roads that cars can read

ZERO

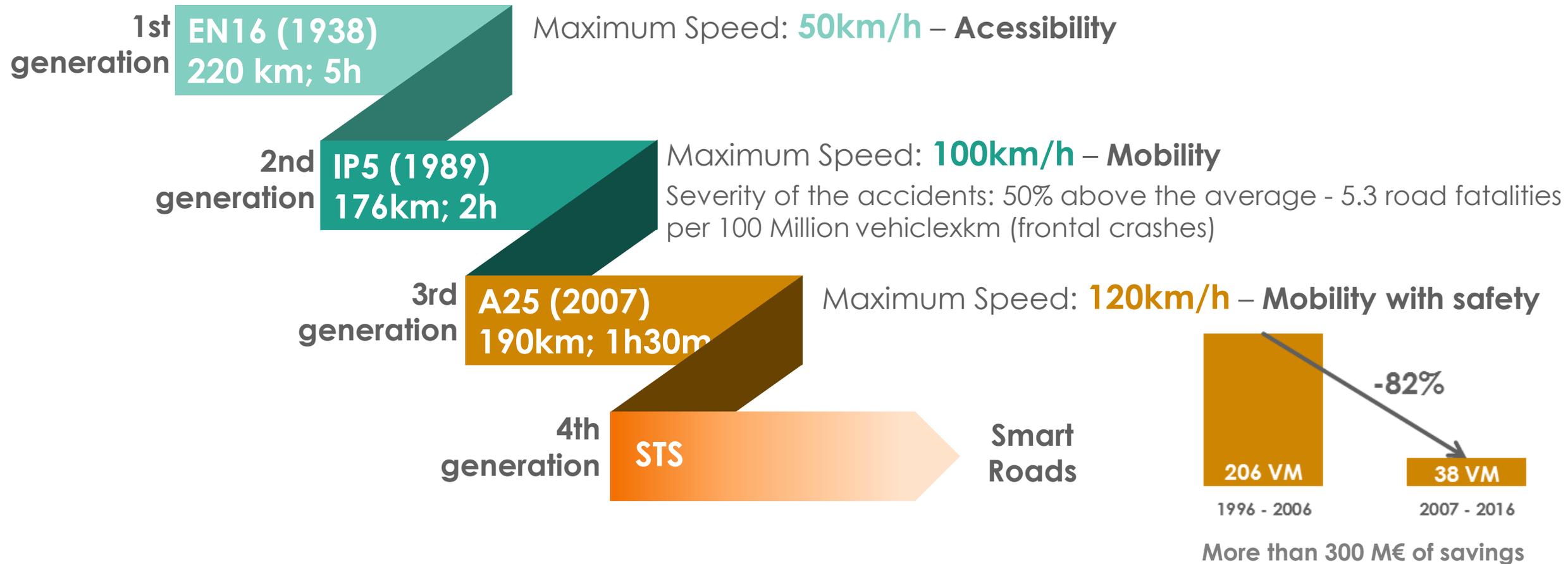
- Congestion
- Emissions
- Road fatalities

Safe CASE vehicles
System

+ demand

Portuguese road evolution

Connection between Aveiro and Vilar Formoso



Portuguese road evolution

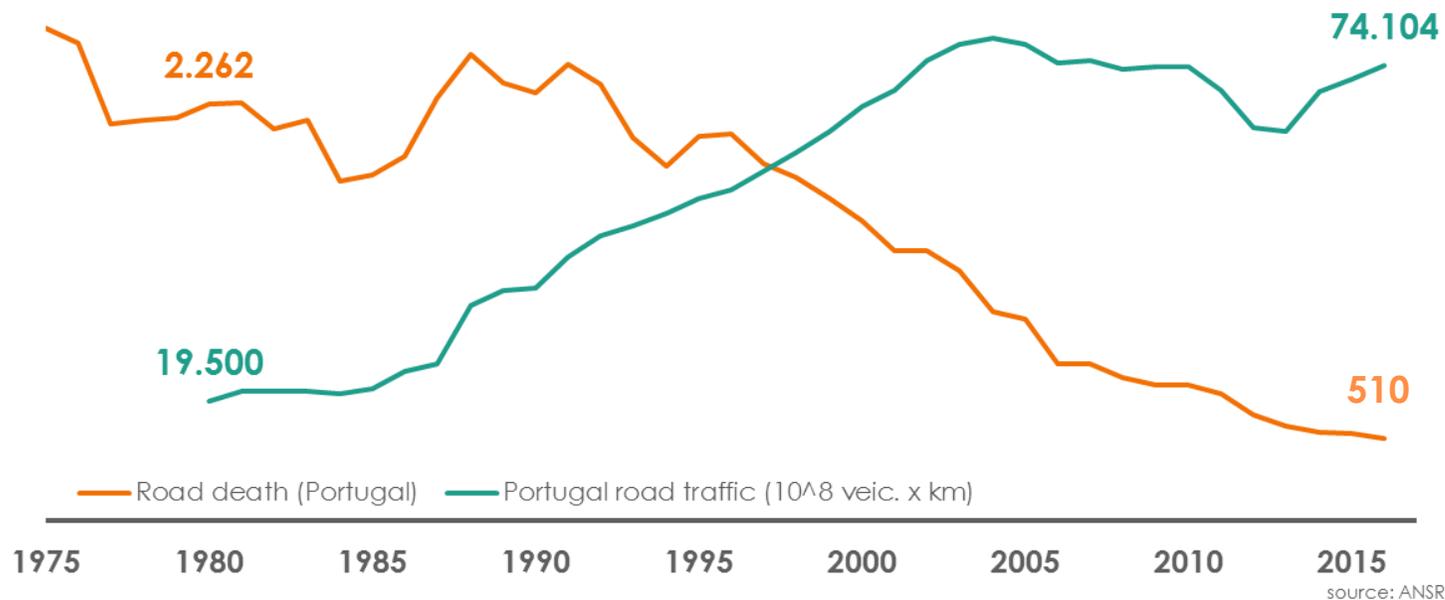
Road between Aveiro / Vilar Formoso



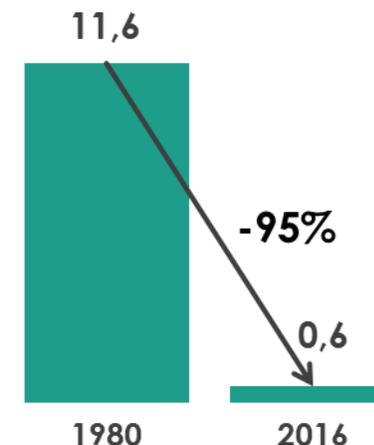
investment in road infrastructure

results

Portugal: road fatalities vs road traffic



Road fatalities/100 Million vehicle x km



Road Network



- + quality
- + use
- + safety
- - road accidents

Strategic Asset for the future



Winning Bet
Quality Road Network

safe system

safety principles



Road users are fallible and will always make mistake

Human body has physical limits for energy exchange in crashes

Road safety is a shared responsibility

Well design system to ensure the physical limits of human body

System that eliminates of fatalities and serious injuries

System that absorbs the road users mistake

SOLUTIONS
FOUND IN 4
PILLARS

SAFE vehicles

SAFE road users

SAFE roads and roadsides

SAFE speeds



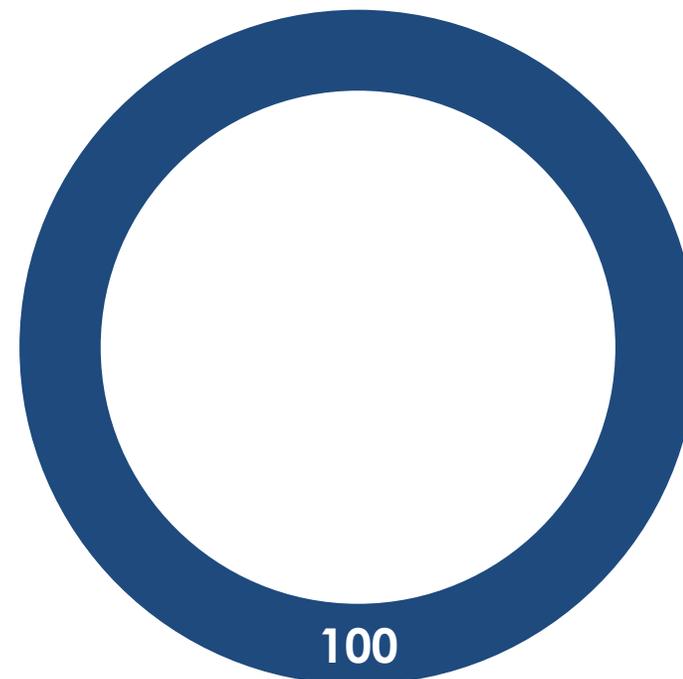
**TARGET
ZERO**

safe system

a shift on redistribution of the effort



Behavior tend to zero
Potential to reduce
and eliminate driver
errors



■ infrastructure ■ human behavior ■ vehicle

■ Infrastructure + vehicle

smart road

vision 2030-2050

Smart Road :: Roads that cars can read

- Safe
- More capacity (number of lanes and spacing between vehicles)
- Advanced User Assistance Systems
- Communicates with users and vehicles
- Provides real-time information
- Monitoring and permanent surveillance
- Environmentally sustainable
- Platform for other services-electric power, solar power...



smart road

vision 2030-2050

■ new challenges for a safe transition towards automation

- Quality and performance of road signs, road marking and safety equipment
- Level of maintenance and conservation – level of investment
- Unpredicted situations-repair/construction, atmospheric conditions
- Uniformization, standardization and international harmonization
- Transmission communication equipment – cyber security – data protection
- Human machine interfaces
- New crash types
- Transition phase: automated and connected + traditional+VRU



road

road infrastructure

The mobility for the future

Future is ZERO



Benefits for society



More safety



More convenient



More efficient



More green



Good road network
Winning Bet

Monetization of assets



Sharing economy



European Union

Vision Zero

*“While I of course welcome any reduction in road traffic fatality figures, even a **single road death is unacceptable.**”*

We have been assertive and ambitious in tackling road safety, adopting a strategic action plan, concrete actions on vehicle and infrastructure safety, and a policy framework for the next decade.

*As we continue to work **towards ‘Vision Zero’ – zero road deaths by 2050**, we are committed to working with all Member States, as well as the Parliament and road safety community, to provide a level of safety that EU citizens demand and deserve.”*

Mrs. Violeta Bulc, EU Commissioner for Transport, Road Safety in the European Union, 4 April 2019

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The Portuguese case **THANK YOU**

www.ansr.pt

ana.tomaz@ansr.pt

What are we doing now?

Improve road safety up to 2020

■ Investing in Safer Roads – 58M€

- ≈ 40 municipalities
- ≈ 100 km of roads for VRU
- ≈ 650 km with rumble strips
- ≈ 100 km of roads with high rate of accidents

■ Irap Methodology with star rating on 5.000 km of National Roads

■ Implementation of 30 km zones and 20 km zones (coexistence zones)

■ VRU Road Safety Plan

■ Working with the municipalities

■ More speed control cameras (+50)

■ National Enforcement Plan

■ More effective Enforcement

■ Road Safety Campaigns

IP4 – Amarante / Vila Real

general characteristics



Source: Google maps

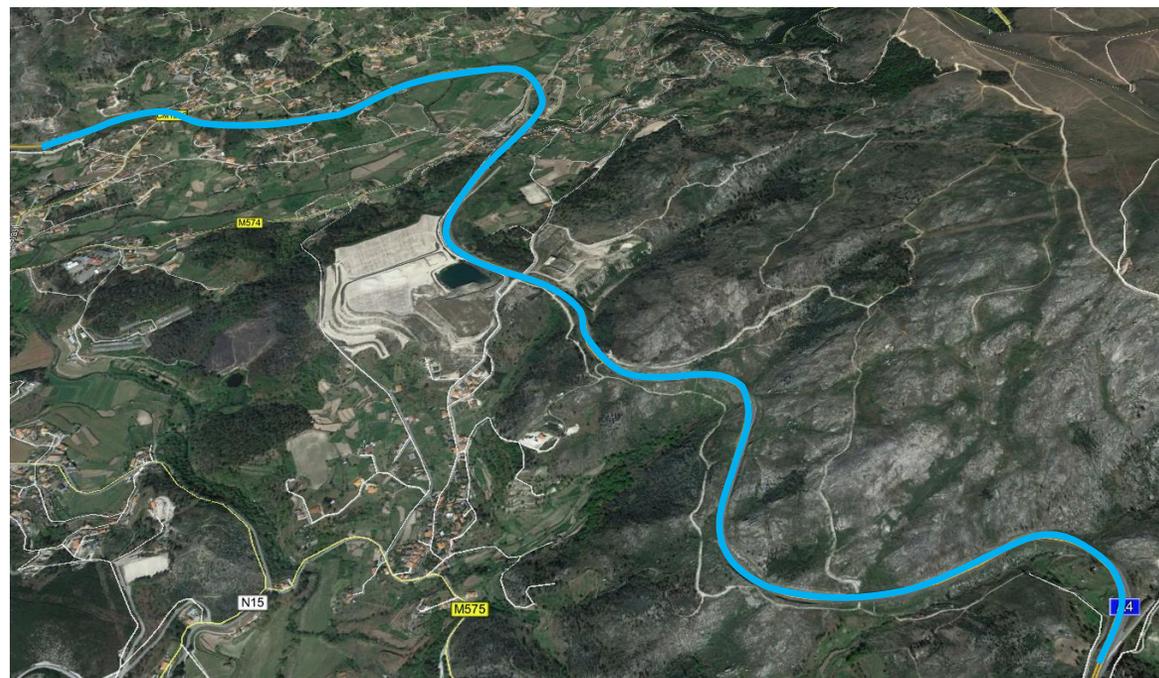
- 35 km of extension
- 2nd generation road - 1989
- Crossing a mountainous region at north of Portugal
- 1st highway to tear this territory
- Speed limit 80 km/h to 90 km/h (previous road with 50 km/h)
- Improved the mobility and accessibility, **but...**

IP4 – Amarante / Vila Real

the problem

It brought road fatalities!

- Difficult orography ► Reduced geometric characteristics ► Slopes 7% – 8%
Curves < 350m
- No separated carriageways (2 or 3 lanes)
High traffic, with high %HV
- Lack of homogeneity
Δ specific speeds



IP4 – Amarante / Vila Real

the problem

It brought road fatalities!

- High altimetry heights ► snow+fog ► Lack of visibility



IP4 – Amarante / Vila Real

the problem

It brought road fatalities!

- In a section of **20 km**
From 1996 to 2004
393 road crashes
48 fatalities
51% Head on crashes



IP4 – Amarante / Vila Real

the solution



In 2004, we implemented a set of measure, not only to reduce speed, but also to reduce the number of overtaking

- Improvement of the road pavement
- Placement of poles to separate the lanes
- Third lane suppression in some areas



IP4 – Amarante / Vila Real

the solution

- Placement of warning side panels with LEDs
- Significant improvement of signaling and guidance



IP4 – Amarante / Vila Real

the outcome

2005 to 2013



- the fatalities were reduced in **90%**, from **48** to **5**
- the injured also reduced in **90%**, from **367** to **35**
- road crashes reduced in **80%** from **393** to **78** where the head-on collision only represented **14%**, instead of **51%**
- the implementation of these measures cost **2,5 million euros**
- saving of lives and injured had an economic and social benefit to society of **45 million euros**

43 LIVES SAVED
332 LESS INJURED

IP4 – Amarante / Vila Real

the outcome

2016 (May)

- IP4 was replaced with a highway with the Marão Tunnel Highway



- two lanes in each traffic direction, a median barrier, controlled access, wide shoulders and good design characteristics.

IP4 – Amarante / Vila Real

the outcome

- This highway has also the longest Portuguese tunnel, with 5,5 km.



- Since May 2016 up to now, there are **no fatalities!**