

# TRANS-forming road SAFETy in Africa

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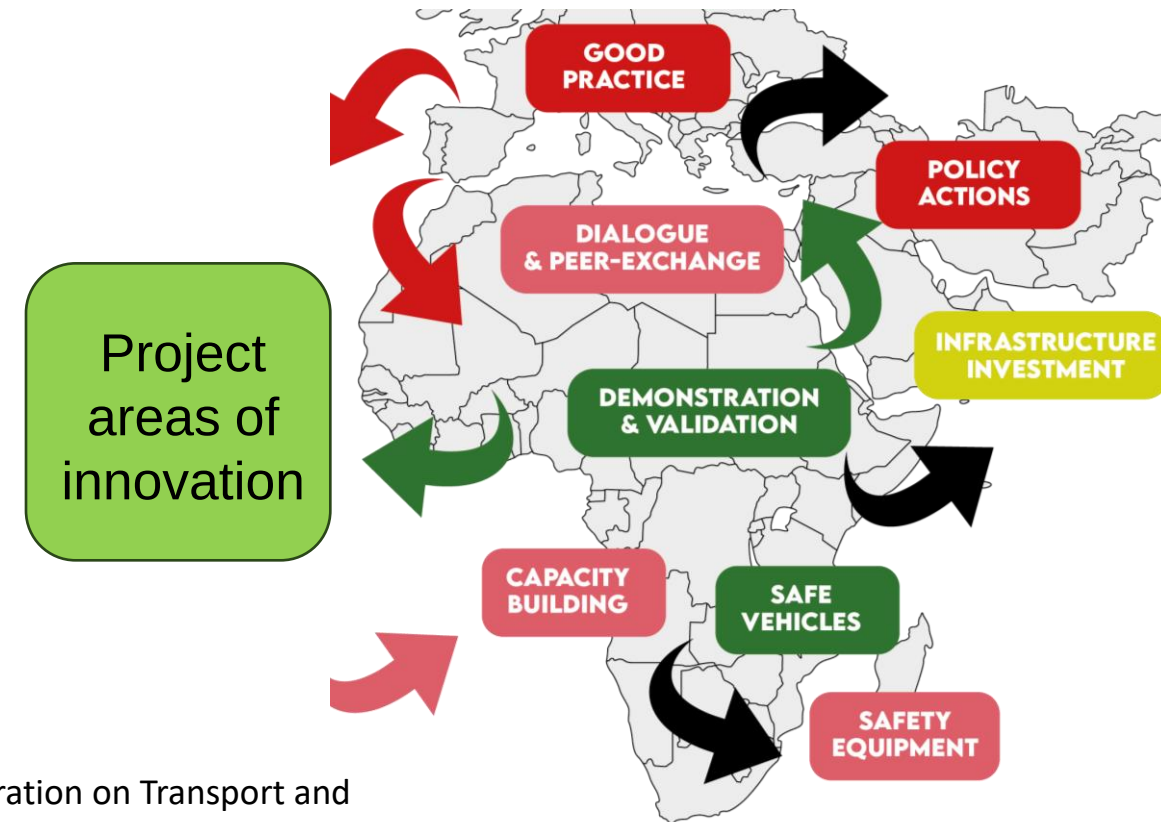
# Introduction: TRANS-SAFE



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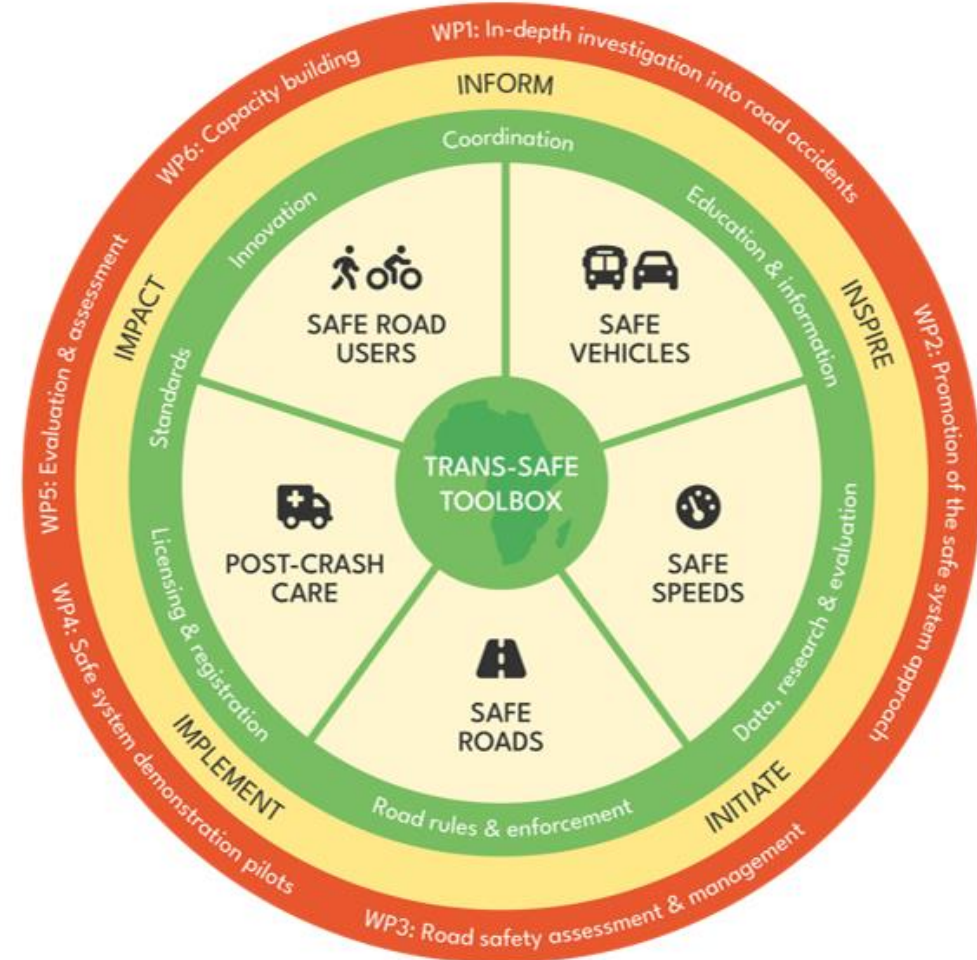
- 2% of the global car fleet is in Africa, yet 16% of road deaths and 44% of pedestrian and cyclist fatalities occur on this continent [1]
- The project aims to make a substantial contribution to the reduction of road traffic accidents in Africa's transport sector



[1] European Commission (2020): Towards an enhanced Africa-EU Cooperation on Transport and Connectivity - Report by the Task Force on Transport and Connectivity

# Areas of innovation

- Safe Speeds
- Safe Roads
- Post-crash Care
- Safe Road Users
- Safe Vehicles



# Vehicle Regulations in African countries

- Age and mileage limits
  - 30 countries with no age or mileage limit for imported used vehicles
- Emission Standards
  - 46 countries with no emission standards
- East African Community Safety Standards: meeting in September 2022 to establish minimum safety standards

# Vehicle fleets in African countries (I)

- Average of 44 vehicles per 1.000 people in Africa
- Majority of vehicles have an age between 15-20 years, with mileages of around 200.000 km
- Example of Rwanda's imported vehicles proportion (used vehicles represent 87% of all imported vehicles from 2014-2019):

| Age range          | Cars (%) | Buses (%) | Trucks (%) | Tractors (%) | Special Engine (%) | All categories (%) |
|--------------------|----------|-----------|------------|--------------|--------------------|--------------------|
| Brand new          | 8.4      | 29.2      | 22.4       | 53.8         | 61.3               | 13                 |
| From 1 to 5 Years  | 13.8     | 27.2      | 18.5       | 15.7         | 12.1               | 15.2               |
| 6 to 8 years       | 5.2      | 8.1       | 3.4        | 17.0         | 3.4                | 5.8                |
| 9 to 10 years      | 6.8      | 5.7       | 4.1        | 6.8          | 3.1                | 6.2                |
| 11 to 15 years     | 34.9     | 16.5      | 11.3       | 4.3          | 7.0                | 29.4               |
| More than 15 years | 30.9     | 13.3      | 36.3       | 2.3          | 13.1               | 30.4               |

*Data provided by University of Rwanda*

# Vehicle fleets in African countries (II)

- Non-homologated aftermarket modifications
- Non-Road-worthy vehicles
- Lack of enforcement of Road-worthy certificates
- Lack of certified repair shops and skilled technicians/mechanics
- Unsafe vehicles

# New vehicles

- New vehicles are usually models that have been for a long time on the market with very few or no changes
- #SaferCarsForAfrica campaign from Global NCAP shows the lack of occupant protection of some new cars



Mahindra XUV300 – 2 Airbags



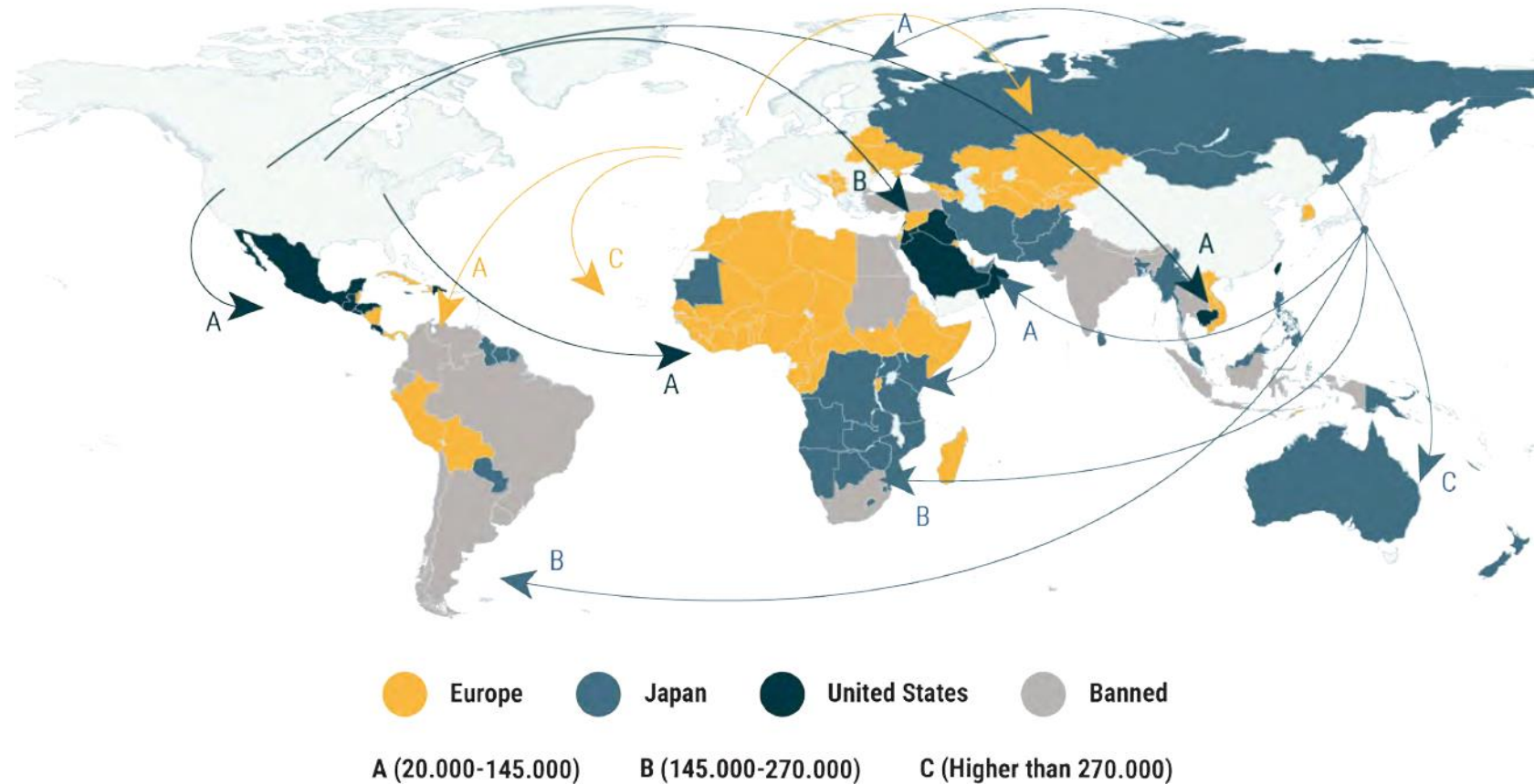
Renault Kwid – 2 Airbags



Great Wall Steed 5 – No Airbags

# Used vehicles (I)

- Most vehicles come from Europe, followed by Japan
- Imported Used vehicles to African countries are usually “2<sup>nd</sup> life vehicles”
- Used vehicles are much affordable than new vehicles



Source: *Used Vehicles and the Environment* - UNEP

# Used vehicles (II)

- Imported used vehicles are usually not road-worthy, unsafe and lack a lot of safety components
- Some of these vehicles have been through rough accidents that have compromised integrity of structural elements and have not been properly repaired or not repaired at all



Vehicles at port of Antwerp waiting for loading with Lagos, Nigeria as destination – Used vehicles exported to Africa report

# Vehicle maintenance issues

- Lack of certified repair centres
- Lack of skilled technicians
- Newer vehicles require modern tools and a higher level of skills
- Lack of certified spare parts
- Existing spare parts are heavily taxed

# Outcomes and recommendations



# Recommendations (new vehicles)

- Progressive regulations
- Starting from East African Community Safety Standards
- Finishing once all UN Regulations are adopted
- Adaptation of an established New Car Assessment Program
- Revised Periodic Technical Inspections procedures and standards for every new and used vehicle

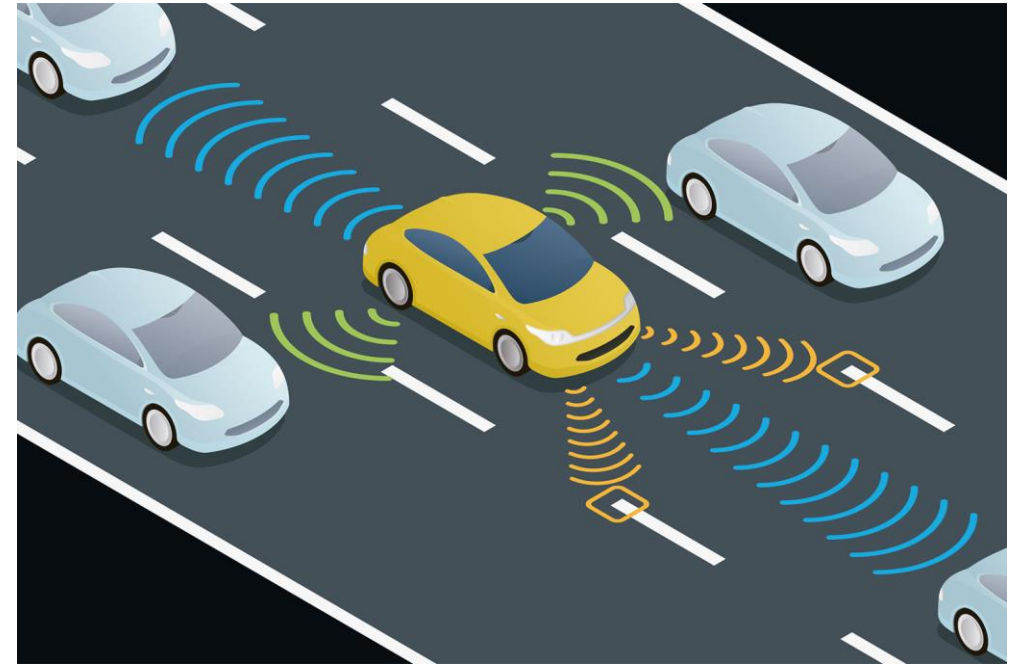
# Recommendations (used vehicles)

- For used imported vehicles:
  - Technical inspection before leaving country of export and after arriving at country of import
  - Vehicle age and mileage limits
- For all used vehicles:
  - Minimum safety components: ABS, ESC, functioning airbags and seatbelts
  - Applied taxes proportional to vehicle age: old vehicles should have higher taxes
- General recommendations for maintenance:
  - Online support from OEMs to local repair shops/creation of franchises: Online trainings, online support, lower prices for spare parts and more accessibility, etc.

# Pilot demonstrations

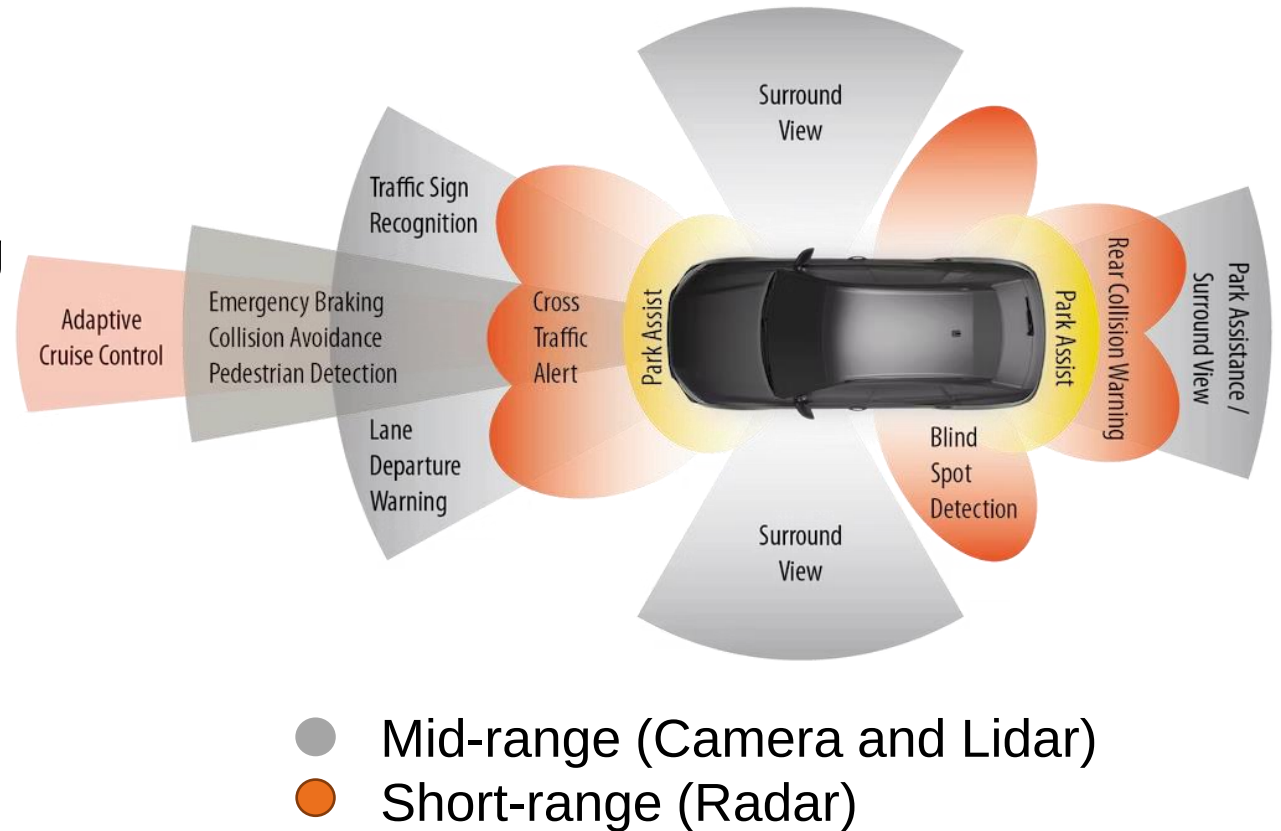
# Aftermarket ADAS retrofitting (I)

- Adapting older vehicles to be safer: through aftermarket ADAS devices fitted on older vehicles
- Objective of the device: to help the driver be more aware of its surroundings
- Target group: Public transportation and goods transportation companies (consolidated fleets)



# Aftermarket ADAS retrofitting (II)

- Cameras to detect obstacles
- Minimum requirements:
  - Front Collision Warning
  - Lane Departure Warning
  - Pedestrian and Cyclist collision warning
- Additional optimal functions:
  - Blindspot Detection Warning
  - Headway monitoring and warning
  - Speed limit indicator
- Real time warnings through auditory and visual alerts



# Aftermarket ADAS retrofitting (III)

## Assessment of the device in 2 types of tests

1<sup>st</sup> type of test: Controlled environment

- 1 scenario per function
- Ego vehicle: Van
- Opponent: car and pedestrian
- 2 GoPro cameras
- Input parameters: Vehicle speeds, trajectories and initial positions

2<sup>nd</sup> type of test: Real traffic conditions

- Ego vehicle: Van
- 2 GoPro cameras
- Input parameters: Real traffic conditions

**Activities are planned for 2024**

# Conclusions

- On average, African vehicles are generally old and unsafe
- Current Vehicle regulations in Africa do not ease the problem
- Recommendations have been defined to improve current regulations and safety for new and used vehicles
- Pilot demonstration activities will be performed to assess aftermarket opportunities regarding the installation of ADAS devices in older vehicles

# Contact Information



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