



CAPACITY BUILDING INITIATIVES

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1. Executive Summary

The first main objective of work package 3 is to assess the implementation of the Action Plan 2011–2020 (AU-UNECA, 2010). This assessment has been supported by SWOT and PESTEL analysis completed at different geo-political scales (continental, regional economic communities/corridors and country) and is described in deliverable 3.1. The second main objective of work package 3 is to define initiatives for different topics (i.e., road safety policies, road safety and traffic management, capacity building and other road safety interventions). Those initiatives are designed to foster the implementation of the Action Plan and to contribute to a better situation in terms of road safety. This deliverable deals with the definition of initiatives for capacity building and training in the African continent.

Deliverable 6.1 'Road Safety Curriculum for Africa' highlights the specific needs and demands for training and education according to African education experts (Vieira Gomes, Kluppels & Schemers, 2017). One of the needs emphasizes the multidisciplinary characteristics of the road safety expertise. Subsequently, a lot of different professionals are active in different areas of road safety. Although cooperation between different road safety professionals is wanted to enhance road safety in general, this deliverable tries to categorize different capacity building initiatives (i.e., available courses) according to different groups of road safety professionals. A general education for all road safety experts is certainly needed. But after a general introduction to road safety, more specific capacity building initiatives for different road safety professionals are required in the African continent. This doesn't exclude that some capacity building initiatives in this deliverable are applicable for two or more groups of road safety professionals.

According to the Transportation Research Board (2007), road safety professionals have been defined as workers who spend all or most of their workday on matters pertaining directly to road safety, such as assessing safety performance and needs, planning, developing and implementing safety initiatives and taking specific actions related to safety (TRB, 2007). In this deliverable road safety initiatives are proposed for six different groups of road safety professionals. These groups are data collectors and analysts, health personnel, public policy makers, road safety engineers, teachers and educators and traffic police.

The described capacity building initiatives in this report serve as a guideline for capacity building for the previously mentioned target groups. Of course, the proposed initiatives need to be further adjusted to the specific requirements for the group of road safety professionals within the country or region where they would be used.



2. Introduction

2.1 Objective Work Package 3

The first objective of work package 3 is to contribute to the assessment of the implementation of Action Plan 2011–2020 and to contribute to the final evaluation of the Action Plan by UNECA. UNECA realized a mid-term, intermediary evaluation of that plan (AU-UNECA, 2015). There is indeed a need for assessing the efforts accomplished by the countries and taking into consideration the evolution at different levels since the last review. This assessment has been supported by a SWOT and PESTEL analysis completed at different geo-political scales (continental, regional economic communities/corridors and country). SWOT and PESTEL combined analysis make it possible to identify the weakness, the strengths, the assets and the dynamics a country face for the different levels of intervention in the road safety field according the political, economic, social, technical, environment and legal dimensions. This assessment of the Action Plan and of regional instruments has been described in Deliverable 3.1.


The second main objective is to define initiatives for different topics (i.e., road safety policies, road safety and traffic management, capacity building and other road safety interventions). Those initiatives are designed to foster the implementation of the Action Plan and to contribute to a better situation in terms of road safety. The initiatives will be based on the outputs of WP4, WP5, WP6 and WP7 and will address technical, administrative and economic concerns. The aim is to prepare information to support the discussions with the Dialogue Platform Management Board.

2.2 Task 3.4 Fostering initiatives on capacity building and road safety interventions

Whereas task 3.2 and task 3.3 focusses on the institutional and organisational dimension of the “Level/Layer” matrix, task 3.4 of Work Package 3 focusses on the operational dimension of the “Level/Layer” matrix. It will address in particular, the definition of future initiatives regarding a) capacity building and training and b) operational road safety interventions. For this task the inputs of mainly WP5 (i.e., road safety and traffic management), WP6 (i.e., capacity building and training), WP7 (i.e., the sharing of good practices) are used. The aim of task 3.4 is to develop a set of detailed proposals for future initiatives concerning capacity building and road safety interventions and to define conditions for the implementation of those initiatives. This includes among other things technical aspects and estimations of the resources needed for the implementation of the initiatives.

Task 3.4 is divided into two different subtasks, one subtask includes the development of capacity building and training initiatives and the other subtask includes the development of other road safety interventions. This deliverable deals with the elaboration of the first subtask of task 3.4. Deliverable 3.5 deals with the elaboration of the second subtask.

More concretely, the subtask about capacity building initiatives tries to capture the following objectives:

- 
- Identify where future initiatives of capacity building should be realised (based on the needs described in deliverable 6.1);
 - Identify priorities for such future initiatives of capacity building;
 - Develop recommendations for the implementation of future initiatives of capacity building (i.e., technical aspects, resources needed,...);
 - Prepare information to support discussions of the Dialogue Platform.

3. Methodology

According to the Transportation Research Board (2007), **road safety professionals** are defined as workers who spend all or most of their workday on matters pertaining directly to road safety, such as assessing safety performance and needs, planning, developing and implementing safety initiatives and taking specific actions related to safety.


First, there was the idea to organize the capacity building initiatives according to the traditional five pillars of road safety that the World Health Organization recommended in their *Global Plan for the Decade of Action for Road Safety 2011-2020* (UN, 2011):

- Pillar 1: Road safety management
- Pillar 2: Safer roads and mobility
- Pillar 3: Safer vehicles
- Pillar 4: Safer road users
- Pillar 5: Post-crash response.

In Table 1 an overview is given of the different road safety professionals that operate in one pillar of road safety. As can be seen, the same professionals are sometimes active within different pillars. For example the traffic police is active within the pillar about road safety management, safer road users and post-crash care. Thus, an organisation of the capacity building initiatives according to the five pillars would be difficult.

Table 1 – overview of different road safety professionals operating in the five pillars of road safety

Pillar	Road Safety professionals
Pillar 1 – Road safety management	<ul style="list-style-type: none"> • Politics • Legislators • Administrators (road, vehicles, municipalities,...) • Traffic police • Data collectors and analysts
Pillar 2 – Safer Roads and mobility	<ul style="list-style-type: none"> • Civil engineers • Urban planners • Traffic police
Pillar 3 – Safer Vehicles	<ul style="list-style-type: none"> • Professional drivers • Cars and car parts manufacturers
Pillar 4 – Safer Road Users	<ul style="list-style-type: none"> • Professional drivers • Traffic police • Legislators • Insurance professionals • Teachers and educators (school teachers and driving teachers) • Psychologists
Pillar 5 – Post-crash Response	<ul style="list-style-type: none"> • Medical and paramedical professionals

- 
- | | |
|--|---|
| | <ul style="list-style-type: none">• Traffic police• Firefighters• Psychologists• Insurance professionals• Data collectors |
|--|---|

Therefore, the choice has been made to work out different capacity building initiatives for six different target groups, which contains the most important road safety professionals. In this report capacity building initiatives are described for the following road safety professionals:

- Data collectors and analysts
- Health personnel
- Public policy makers
- Road safety engineers
- Teachers and educators
- Traffic police.

For the description of each capacity building initiative that is detailed in the next chapter, the same structure was used. It contains the following elements:

- Background about why is it important to provide capacity building initiatives for a specific target group;
- A description of the core competences and learning objectives for the group of road safety professionals;
- An overview of the available courses for the target group, much of the work to identify road safety relevant courses has been undertaken in the 'Capacity building and training actions' work package (WP6), particularly in D6.1: 'Road Safety Curriculum for Africa' (Vieira Gomes, Kluppels & Schemers, 2017);
- A description of the necessary resources to organize the courses for the road safety professionals (if applicable);
- A conclusion with the emphasize on the overall benefit of capacity building for the specific target group;
- Some useful references for the group of road safety professionals to accomplish extra knowledge.



4. Overview of capacity building initiatives

4.1 Data collectors and analysts

(authors: Ruth Welsh and Rachel Talbot – Loughborough University)


The topic 'Data Collectors and analysts' covers those who are responsible for the collecting and the compiling of road traffic crash data – both for national statistics and more in-depth studies – as well as those responsible for the analysis of such data. The roles described below have been chosen with the assumption that a national data collection system exists, but we acknowledge that this is not the case in many African countries. In a comprehensive manual the WHO (2010) set out how to design or improve and implement a data collection system including the importance of data, what data sources may be available and suggestions for the minimum data required for a common road crash dataset that can be used for national analysis. The dataset recommended by the WHO (2010) is the Common Accident Dataset (CADaS), originally developed as part of the SafetyNet project (Duchamp & Trenvy, 2008) and now used within the European CARE data. Deliverable 4.2, of *SaferAfrica* further elaborates this by settings out recommendations for a Common Data Collection System which includes accident, exposure and safety performance indicator (SPI) data (Thomas et al., 2018). The focus here is on accident data but the collection of exposure and safety performance indicator data would fall under the responsibility of the data collection roles described below

For the collection of national statistics there is a need for basic data to be collected at the scene of a collision which may be complimented by other data at a later stage. This data needs collating and adding to a national database. The roles important for this are the at the scene data collector (4.1.1), this is often the responsibility of the police; a local data coordinator to collect the data from the police (4.1.2), add any additional data and send the data to the national data coordinator; and the national data coordinator themselves (4.1.3), who is responsible for the national database(s). In addition, if there is a requirement for more in-depth investigations to take place, there is a need for more highly trained crash investigators who may or may not be part of the police (4.1.4). Finally, there is a need for data analysts who understand crash and other road safety data (4.1.5).

The following sections detail the above roles, identify the training needs and suggest courses that may be helpful. Training requirements have been informed by WHO (2010). Courses included in Deliverable 6.1 (Vieira Gomes, Kluppels, & Schemers, 2017) that are relevant to the key roles in data collection and analysis process (as described above) have been selected as example courses. However, it is also acknowledged that for training to be most effective, it would have to draw on the actual data collection variables and methodologies adopted by the particular country. There is also a need to develop additional courses/training that is relevant for the African country in which it is to be delivered. Many of the courses identified constitute 'train the trainer' courses so it may be that taking these courses is only the first step to developing the skills necessary to undertake the five broad roles that have been identified within the 'data collection and analysis' topic.

4.1.1 Police – Data collection for national statistics

Who are the road safety professionals that are targeted?



Police officers who attend the scene of a crash and are responsible for the recording of data for national statistics. As the police officers attend the scene of a crash with potential injured people, it is also useful that they acquire some basic knowledge about first aid.

In which pillar(s) of road safety is the target group involved?

- Road Safety Management
- Post-crash response

Why is it important to develop capacity building initiatives for this target group?

The quality of the data in the national statistics is dependent upon the accuracy of the data collected. It is important that police officers understand what should be collected and how this should be recorded.

4.1.1.1 Core competences and learning objectives

What are the needed core competences of the road safety professionals?

- Fully trained police officers
- Some experience of attending crash scenes would be helpful but is not essential

What are the learning objectives of the target group?

- Understand the purpose of data collection
- Record data at the scene of a crash quickly and accurately
- Be able to fill in a 'data collection' form or equivalent according to the definitions of data required by national statistics
- Interviewing techniques
- Record measurements and sketch a crash diagram
- Basic understanding of injury severity and how to find out and record such information
- First aid training (if not part of standard police training)

4.1.1.2 Available courses

There are no available courses that suit the needs of this group in terms of data collection. The ideal would be 'in-house' training that covered why the data is necessary to collect, what is necessary to collect and how this should be done. This could be conducted by the local or national data coordinator. The content of this training depends upon the national policy for road traffic crash data collection.

First Aid (if not included in standard police training): First Aid training courses are available in Africa through the following website: www.firstafrica.org. The price charged depends on the type of organization requiring training. Classes are led by a first aid instructor and three levels of qualification are available: bronze (first time training), silver (skills improvement) and gold (advanced). Their partner countries with local offices are Zambia, Malawi, Tanzania, Kenya, and Uganda. Training in other countries undertaken is offered if travel costs are covered.

4.1.1.3 Resources

The basis resources are:

- Notepad and pen or pencil
- Data collection form

- Cones, torch, high vis clothing

The advanced resources are:

- Laptops, tablets or equivalent
- Electronic version of the data collection form

4.1.1.4 Conclusion

Accurate and complete data on road traffic crashes is essential to inform road safety policy and strategy both at the local and national level. Training police officers with the necessary skills to do this would be invaluable.

4.1.1.5 References

A relevant data collection manual, this may be based on the EC Common Accident Data Set (CADaS) manual: https://ec.europa.eu/transport/road_safety/sites/roadsafety/files/cadas_glossary_v_3_6.pdf.

WHO (2010). Data systems: A Road Safety Manual for decision makers and practitioners. World Health Organization, Geneva.

4.1.2 Local data collection coordinator

Who are the road safety professionals that are targeted?

People responsible for ensuring that all relevant data is collected in a region and transferred to the national database or data coordinator.

In which pillar(s) of road safety is the target group involved?

- Road Safety Management

Why is it important to develop capacity building initiatives for this target group?

The quality of the data in the national statistics is dependent upon the accuracy of the data collected. An important role in this is to have a local person in charge to ensure that data is accurate and complete.

4.1.2.1 Core competences and learning objectives

What are the needed core competences of the road safety professionals?

- A general knowledge of road safety data collection
- A general knowledge of crash investigation

What are the learning objectives of the target group?

- Understand what kind of data should be recorded
- Understand the local conditions of data collection and any differences with other regions
- Knowledge of the fields to be filled in, the variable definitions and extracting and coding of data
- Check the accuracy and completeness of data
- Submit data to a central system
- Review how representative the data is for a specific region

4.1.2.2 Available courses

Ideally, a course should be developed in the country that is tailored to the particular country's needs. The national data coordinator could run this type of course for the regional coordinators.

The available courses are:

- Certificate: 'Atelier de formation en sécurité routière et bonnes pratiques dans le transport' VIAS-course in Douala (Cameroon)
- Certificate : 'International course in Vision Zero' Trafikverksskolan in Angelholm (Sweden)

4.1.2.3 Resources

The basis resources are:

- Crash database
- Computers
- IT infrastructure

4.1.2.4 Conclusion

This role is important to ensure that local data is recorded accurately and is in the form necessary to be incorporated into a national database. Training in road safety in general and the type of data collected in particular is essential to fulfilling this role, as is knowledge of local conditions and variations.

4.1.2.5 References

A relevant data collection manual, this may be based on the EC Common Accident Data Set (CADaS) manual: https://ec.europa.eu/transport/road_safety/sites/roadsafety/files/cadas_glossary_v_3_6.pdf.

WHO (2010). Data systems: A Road Safety Manual for decision makers and practitioners. World Health Organization, Geneva.

4.1.3 National road safety data collection coordinator

Who are the road safety professionals that are targeted?

Person responsible for ensuring that the regional data is combined in the national database and the accuracy and validity of that data. This role will also be involved in selecting what data to collect.

In which pillar(s) of road safety is the target group involved?

- Road Safety Management

Why is it important to develop capacity building initiatives for this target group?

This is a key role in the management of national data. National data will form the basis of road safety policy. So, it is important to have a role that coordinates this on a national level and strategically examines what data is needed to be collected for evidence based policy making.

4.1.3.1 Core competences and learning objectives

What are the needed core competences of the road safety professionals?

- A background in data collection and management
- Knowledge of the road safety management processes and data needs for the particular country

What are the learning objectives of the target group?

- Understand the road safety priorities of the country and what data must be collected to monitor and evaluate interventions
- Combine data collected in different regions in one place
- Transform any data that is collected differently in a particular region
- Validate the data – check for missing fields, wrongly filled in data

4.1.3.2 Available courses

The available courses are:

- Overview of road safety/data collection
 - See courses for local data collection coordinator
- Potential risks in Africa
 - Certificate: 'Delft Road Safety Course', Delft University (Netherlands). www.delftroadsafetycourses.org (more information about this course can be found in section 4.4.2)
- Data collecting and analysing
 - Certificate: 'Delft Road Safety Course', Delft University (Netherlands) www.delftroadsafetycourses.org (more information about this course can be found in section 4.4.2)
 - Certificate: 'Atelier de formation en sécurité routière et bonnes pratiques dans le transport', VIAS-course in Douala (Cameroon)
 - Program in Delhi (India) on transport safety
 - Masters: 'BeSafe, Belarussian Road Safety Network' – taught in Belarus; materials available to be used in other countries (<http://en.bstu.by/en/international/projects-2/be-safe>).

4.1.3.3 Resources

The basis resources are:

- Crash database
- Computers
- IT infrastructure

4.1.3.4 Conclusion

High quality data is essential for evidence-based policy making. Road safety and data collection training would allow a road safety data coordinator to manage national data and ensure its quality.

4.1.3.5 References

A relevant data collection manual, this may be based on the EC Common Accident Data Set (CADaS) manual: https://ec.europa.eu/transport/road_safety/sites/roadsafety/files/cadas_glossary_v_3_6.pdf.

WHO (2010). Data systems: A Road Safety Manual for decision makers and practitioners. World Health Organization, Geneva.

4.1.4 Specialist road crash investigator (police or independent)

Who are the road safety professionals that are targeted?

Police officers or other professionals who attend the scene of a crash and conducts an in-depth investigation into its occurrence.

In which pillar(s) of road safety is the target group involved?

- Road Safety Management
- Post-crash response

Why is it important to develop capacity building initiatives for this target group?

This is the next step after national statistical data collection has been established. National statistics can only give limited information as to the causes of a crash. Investigating more thoroughly a subset of crashes gives valuable information on the specific circumstances of a crash and the factors that caused or contributed to them. This gives valuable data to feed into an evidence based policy making process.

4.1.4.1 Core competences and learning objectives

What are the needed core competences of the road safety professionals?

- Fully trained police officers
- Background in road safety
- Experience of attending a crash scene or knowledge about the causes of crashes

What are the learning objectives of the target group?

- Conduct in-depth crash investigations and use specialist techniques
- Understand that a traffic crash occurs in the context of the road traffic system
- Understand and measure infrastructure characteristics
- Examine vehicles and damage
- Talk to involved road users and collect behaviour data
- Collect data on crash causation/use crash causation methodologies
- Identify the causes of injuries

4.1.4.2 Available courses

The Available theoretical courses are:

- In-depth crash investigation:
 - Masters: Research Centre for Transport and Logistics (CTL) of Sapienza University of Rome (Italy): 'BeSafe, Belarussian Road Safety Network' (<http://en.bstu.by/en/international/projects-2/be-safe>)
 - Masters: Master of transportation Science by 'distance learning', University of Hasselt (Belgium) (www.uhasselt.be/Master-of-Transportation-Sciences-by-distance-learning)
 - E-learning: Crash Investigation (1 & 2) aimed at police officers. USA (US\$1,200 each, 2019) (<https://sps.northwestern.edu/center-for-public-safety/programs/crash-investigation.asp>)
- Frequency and nature of injuries, human tolerance to injury, injury severity scaling
- Certificate: Program in Delhi (India) on transport safety



The available practical courses are:

Training courses have been put together for various EC projects, for example, DaCoTA and SaferWheels. The ideal would be for a team of experts to run a training course in Africa and support the setup of activities. Trained teams could pass on this training to others.

4.1.4.3 Resources

The basis resources are:

- Standardized investigation forms
- Camera
- Measuring equipment: tape measure or digital measuring equipment
- Vehicle examining equipment (e.g., Tyre pressure or tread depth)
- Angle measure
- Cones, lighting, high vis clothing
- Personal Protective Equipment: steel toe caps, latex gloves, safety glasses
- Evidence markers, marker tape, spray paint or chalk
- In the office: graph paper, calculator, computer

The advanced resources are:

- Laser scanner
- Crash reconstruction software
- Photo manipulation software

4.1.4.4 Conclusion

Conducting in-depth investigations can be expensive and requires extensive training, however the data collected can be invaluable for identifying how certain groups of crashes were caused. More detailed investigations can identify how a specific element of the road traffic system (e.g., infrastructure) can be changed to benefit road safety.

4.1.4.5 References

A relevant accident investigation manual, a very comprehensive in-depth road crash investigation manual – training tools and variable definitions: <http://dacota-investigation-manual.eu/Main/HomePage> (Atalar, Talbot & Hill, 2012).

4.1.5 Road safety data analysts

Who are the road safety professionals that are targeted?

People responsible for the analysis of crash and other road safety data.

In which pillar(s) of road safety is the target group involved?

- Road Safety Management

Why is it important to develop capacity building initiatives for this target group?

This role produces the 'evidence' for evidence based policy making. A skilled analysis is essential for the process of identifying the road safety issues to be addressed in a country and to identify which measures or strategies would be most effective.

4.1.5.1 Core competences and learning objectives

What are the needed core competences of the road safety professionals?

- Degree level education in a subject that gives a good grounding in statistical methodologies (e.g., psychology, mathematics or engineering)

What are the learning objectives of the target group?

- Understand and interpret crash data
- Understand how the data is collected and how representative it is for the country or region
- Perform statistical analyses of road safety data
- Understand the road safety priorities of the country and how the data can be used to monitor and evaluate interventions

4.1.5.2 Available courses

The available courses are:

- Methods for evaluation of interventions
 - Certificate: 'Delft Road Safety Course', Delft University, delivered in Ghana. (www.delftroadsafetycourses.org) (more information about this course can be found in section 4.4.2)
 - Masters: Master of transportation Science by 'distance learning', University of Hasselt (Belgium) (www.uhasselt.be/Master-of-Transportation-Sciences-by-distance-learning)
- Data collecting and analysing
 - Certificate: 'Delft Road Safety Course', Delft University (Netherlands) (www.delftroadsafetycourses.org) (more information about this course can be found in section 4.4.2)
 - 'Atelier de formation en sécurité routière et bonnes pratiques dans le transport', VIAS-course in Douala (Cameroon)
 - Program in Delhi (India) on transport safety
 - Masters: 'BeSafe, Belarussian Road Safety Network' – taught in Belarus; materials available to be used in other countries (<http://en.bstu.by/en/international/projects-2/be-safe>).
- Epidemiology and statistics applied to road safety
 - Masters: 'The Road Safety Management Master's Degree Program', The Renault corporate foundation (https://www.fondation.renault.com/wpcontent/uploads/2018/10/Fondation_Renault_Brochure_MANSER.pdf)
- Road safety injury statistics
 - Certificate: 'International course in Vision Zero' Trafikverkksskolan in Angelholm (Sweden)
 - Program in Delhi (India) on transport safety

4.1.5.3 Resources

The basis resources are:

- Crash database
- Computers
- IT infrastructure
- Other road safety data (e.g., exposure)
- Statistical analysis software

4.1.5.4 Conclusions

Analysing data is a key part of the policy making cycle. Training data analysts in road safety and familiarising them with the relevant data and the techniques for analysing it is essential in providing evidence for risks and countermeasures. This knowledge is important in developing road safety action plans and evaluating their success.

4.1.5.5 References

A Relevant data collection manual, this may be based on the EC Common Accident Data Set (CADaS) manual: https://ec.europa.eu/transport/road_safety/sites/roadsafety/files/cadas_glossary_v_3_6.pdf

Analyses on road safety risk and measures and Economic Efficiency Evaluation tool: <https://www.roadsafety-dss.eu/#/>

Elvik, R, Vaa, T., Høy, A., Sørensen, M. (2009). Handbook for Road Safety Measures (Second Addition), Emerald Group Publishing Limited

WHO (2010). Data systems: A Road Safety Manual for decision makers and practitioners. World Health Organization, Geneva.

4.2 Health personnel

(authors: Jean-Louis Martin and Dominique Mignot – IFSTTAR)

Who are the road safety professionals that are targeted?

We can highlight the two following subgroups of health personnel:

- Health administrative personnel in hospital emergency services, they should be trained in the epidemiology of accidents and in basic road safety knowledge in order to collect data about traffic accidents.
- Emergency medical staff, these medical staff are in general medicine doctors that should be trained in the domain of emergency medicine.

In which pillar(s) of road safety is the target group involved?

- Post-crash response

Why is it important to develop capacity building initiatives for this target group?

For the first subgroup, the aim is to have a health key staff able to contribute to the recording of traffic accidents from medical data, in order to strengthen road fatalities data.

For the second subgroup, the aim is to train general medicine doctors to emergency medicine, particularly for all kinds of trauma caused by traffic accidents.

4.2.1 Health administrative personnel in hospital emergency services

4.2.1.1 Core competences and learning objectives

What are the needed core competences of the road safety professionals?

- Set up and operate a system for recording traffic accidents from medical facilities that take care of physical victims
- Prerequisites: doctor, or failing that, nurse with additional medical training

What are the learning objectives of the target group?

- Obtaining knowledge in the organisation of trauma care by the police, emergency services and health care services
- Perform data collection and data organization for statistical processing
- Understand how to design and develop information systems for collecting, structuring, storing and linking data
- Learning how to collect the most essential information on accidents and injuries
- Learning how to do injury coding (ICD, AIS)
- Perform descriptive data analysis
- Ensure the coordination of the collection of data on accidents and injuries in its operational aspect
- Be able to control the quality of (medical) information in hospitals
- Be able to initiate or even set up statistical or clinical studies based on the data collected, with or without additional collection

4.2.1.2 Available courses

We looked for relevant trainings for health personnel to field epidemiology. This kind of training could balance the road safety engineers approach. Very few courses have been found and not in Africa. Some courses could be followed by participants online, so they are internet-based courses.

Two institutes in France provide such courses:

- EHESP (École des Hautes Études en Santé Publique)
 - The EHESP is a public establishment with a dual role of education and research into public health and social welfare. It encourages synergy between the disparate cultures of public health and management.
 - The EHESP propose courses on intervention epidemiology training, with a special certificate IDEA on "Intervention epidemiology training".
 - This training is relevant but the cost is quite "high": 5000 € for the whole training, 1700 € for the module 1 - IDEA Express and 3500 € for the module 2 - IDEA Survey.
 - More details about the training can be found at: <https://idea.ehesp.fr/formation/>
- ISPED (Institut de Santé Publique, d'Épidémiologie et de Développement)
 - ISPED propose internet-based courses
 - Costs are lower, less than 2000 € for a University Diploma (DU) but the duration is one year with selection at the beginning.
 - More details can be found at: <http://www.isped.u-bordeaux.fr>



Both institutes are members of the Association of Schools of Public Health in the European Region (ASPHER):

- As described on the website, the main functions of the association are to support the professionalization of the public health workforce in Europe, and to sustain capacity building in public health.
- More detail can be found at: <http://aspher.org/>

4.2.1.3 Conclusions

The main overall benefit and impact of capacity building on health administrative personnel is to have a health key staff able to contribute to the recording of traffic accidents from medical data, in order to cross data from the health sector and from the police and to reinforce the quality of road fatalities data, which is a very challenging goal in African countries.

4.2.1.4 References

Mulhrad N. Road safety Management systems. A comprehensive diagnosis method adaptable to low and middle income countries. INRETS; 2009.

Robertson L. Injury Epidemiology. Fourth Edition. Lulu; 2018 364 p.

Thomas, Hill J, Welsh J, et al. Dakota: Road Safety Data, Collection, Transfer and Analysis Deliverable 0.1-Final Project Report. 2013.

4.2.2 Emergency medical staff in hospital emergency services

The second subgroup of health personnel that can be outlined is emergency medical staff. A number of short courses that allow a specialization to emergency medicine for doctors with a degree in general medicine are described below.

4.2.2.1 Available courses

Several university degrees (D.U.) are organized in France over one semester with grouped lectures and practical training.

1. Emergency Medicine D.U., University of Paris-Sud (France)

- The main topics of this course are:
 - Severe trauma
 - Management of the first 24 hours
 - Anesthesia
 - Intensive care physicians and emergency physicians are frequently called upon to receive traumatized patients in pre-hospital situations and at the emergency room.
 - This training is based on the recommendations of the conferences of experts of the Société Française d'Anesthésie Réanimation.
 - More details can be found at: http://www.medecine.u-psud.fr/fr/formations/formation_continue/diplomes_universite/medecine-d-urgence.html

2. Vital Emergency Management

- The objective of this course is to provide theoretical and above all practical training through scenarios proposed to practitioners practicing or intending to practice emergency medicine. The knowledge provided by this course is complementary to the continuing medical education provided in the field of emergency medicine. The interest of this training, which focuses on the simulation of clinical cases in real time, is to be reproducible, standardized and didactic by immediately visualizing physiological changes and responses to the treatments given. It also allows emphasis to be placed on the categorization of care priorities.
- More details can be found at: <https://www.kelformation.com/formation/formation-diu+gestion+des+urgences+vitalles-171366.htm>
- Next, there are also specific training courses for pediatric emergencies such as the D.I.U. "accueil des urgences médico chirurgicales pédiatriques", given in Lyon, with a preliminary probationary examination for persons holding a non-European foreign diploma (<http://offre-de-formations.univ-lyon1.fr/parcours-593/accueil-des-urgences-medico-chirurgicales-en-service-de-pediatrie.html>).
- There are also EPLS (European Pediatric Life Support) training courses on vital emergency procedures for children (ERC: European Resuscitation Council) open to doctors in general (<https://www.erc.edu/courses/european-pediatric-advanced-life-support>).

4.2.2.2 Conclusions

The effectiveness of the management of road traffic injuries depends on the competences of the medical team. To strengthen this competences, a few proposals for training in emergency medicine are suggested above. Next, the effectiveness of the management of road traffic injuries also depends on the organization of rescue, i.e., the alert system, triage, the organization of the rescue delivery adapted to the infrastructure of the country and the existence of trauma centres.

4.2.2.3 References

Dijkink, S., Nederpelt, C.J., Krijnen, P., Velmahos, G.C., Schipper, I.B., 2017. Trauma systems around the world: A systematic overview. *J. Trauma Acute Care Surg.* 83 5 , 917–925. doi:10.1097/TA.0000000000001633

Kim, Y.-J., 2014. Relationship of trauma centre characteristics and patient outcomes: a systematic review. *J. Clin. Nurs.* 23 3–4 , 301–314. doi:10.1111/jocn.12129

Tissier, C., Bonithon-Kopp, C., Freysz, M., 2013. Statement of severe trauma management in France; teachings of the FIRST study. *Ann. Fr. Anesth. Reanim.* 32 7–8 , 465–471. doi:10.1016/j.annfar.2013.07.003

4.3 Public policy makers

(author: Ellen Boudry – Vias institute)

Who are the road safety professionals that are targeted?

- Politics
- Legislators
- Administrators (road, vehicles, municipalities,...)

In which pillar(s) of road safety is the target group involved?

- Road Safety management
- Safer Road users

Why is it important to develop capacity building initiatives for this target group?

Public policy makers have a central role in road safety management. On the base of the results of road safety data, they form conclusions and try to identify the most important shortcomings concerning road safety in a specific country or region. Next, important measures should be implemented and afterwards evaluated. It is really important that public policy makers have a clear vision about the future of road safety in a country or region and develop action plans according to that vision.

4.3.1 Core competences and learning objectives

What are the needed core competences of the road safety professionals?

The road safety professionals may have basic knowledge on:


- Risky behaviour
- Road safety management
- Road safety data management
- Policy priorities, those policy priorities in Low and middle income countries are (PIARC):
 - Providing pedestrian and motorcycle facilities which improve safety outcomes;
 - Addressing incompatible speeds between road users in areas of high risk;
 - Installing traffic management and infrastructure safety measures to reduce crash risk;
 - Controlling vehicle access to/from roadsides;
 - Controlling land use developments;
 - Improving safety of operation of heavy vehicles;
 - Improving compliance with road rules.

What are the learning objectives of the target group?

- Understand the importance of developing policies for road safety
- Describing the process of developing a policy for road safety
- Understand that the formulation and implementation of policies is a continuous process
- Understand the importance of political will and commitment for the formulation and implementation of a policy for road safety
- Understand the road safety situation in a country on the base of the results from crash data analysis
- Acquire the ability to form conclusions on the base of the results from crash data analysis
- Use the available data for the planning of road safety interventions
- Develop action plans for road safety on a regional or country level and evaluate those action plans

4.3.2 Available courses


- 1. Delft Road Safety Course, Delft University of Technology & SWOV institute for Road Safety Research, 9-20 September 2019 in Delft**



The Delft Road Safety Course (<https://www.delftroadsafetycourses.org>) is an example of a good practice of capacity building and training in Low and Middle Income Countries (LMIC). It's a cooperation between the Delft University of Technology, the SWOV Institute for Road Safety Research, the Delft Post Graduate Education and the Road Safety for All. The course is organised each year in September and local courses are organised in LMIC (i.e., Ghana). The philosophy behind the course is to support the development of road safety strategies and academic educational programs in LMIC, i.e. both at universities and for policymakers. This course targets participants with different backgrounds and thus emphasizes the multidisciplinary nature of road safety.

The course focuses among other things on organizational subjects (policy development, agenda and target setting, implementation of action plans, financing, and research programs) and technical safety measures in the area of engineering, enforcement and education. The following topics are a selection of the extensive program of a period of two weeks that is relevant for public policy makers (more information about this course can be found in section 4.4.2).

- Road safety management – managing key risks
 - Road safety as a global health and development problem
 - Key risks: vehicles, speed, seat belts, 2-wheelers, alcohol
 - Road safety management
 - Designing a road safety strategy and action plan(s)
 - Occupational road safety management and key risks
 - When crashes occur: managing post-crash care
 - Effective road safety actions on key risks: vehicles, speed, seat belts, two-wheelers and alcohol
 - Introduction to road safety advocacy, road safety campaigning and road safety awareness raising
 - Road safety partnerships and enforcement for effective delivery on key risks
 - Key risks: road safety awareness raising
 - Road safety advocacy: influencing decision makers and using the media
 - Safe system approach and road safety data
 - causes of crashes
 - Safe system approach
 - Road safety data, data collection and data analysis
 - Science & Policy (with the collaboration of a research institution)
 - Research to support road safety policy making
 - Policy and strategic road safety development in the Netherlands
 - Road safety management for some African countries
 - Monitoring road safety developments
 - Road infrastructure safety
 - Safety for cyclists
 - SafetyCube, using research in developing an innovative decision support system
 - Designing a road safety strategy
- 2. Road Traffic Injury Prevention and Control in Low- and Middle-Income Countries, Johns Hopkins International Injury Research Unit (free online training)**



The Road Traffic Injury Prevention training program (<https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-international-injury-research-unit/training/courses-in-injury-prevention/free-online-training/>) **consists of six multimedia educational modules**, which cover a wide range of topics in the fields of road safety and road traffic injury prevention. All modules were designed with the general public in mind, but are especially useful for public health professionals—health officers, researchers, or educators—and policy-makers and politicians.

The six educational modules in the Road Traffic Injury Prevention training program include:

- Fundamentals of Road Traffic Injury Prevention
- Concepts in Injury Prevention
- Risk Factors and Choosing Interventions for Road Traffic Injuries
- Injury Surveillance Systems
- Evaluation of Road Safety Interventions
- Influencing Policy for Road Traffic Injury Prevention

Through the Road Traffic Injury Prevention training program participants will become familiarized with the global burden and common risk factors for road traffic injury. Recorded lectures will equip participants with the skills they need to develop, implement, and evaluate evidence-based road traffic injury prevention and control programs. The Road Traffic Injury Prevention training program is self-paced so participants are able to access the materials at their convenience. Upon the successful completion of all six educational modules participants receive an individualized certificate of training.

3. **Global Road Safety Leadership Course, Johns Hopkins International Injury Research Unit and the Global Road Safety Partnership**

The Global Road Safety Leadership Course (<https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-international-injury-research-unit/training/global-road-safety-leadership-course.html>) aims at building leadership capacity to design, advocate for, and implement effective road safety programs and policies. The Global Road Safety Leadership Course includes, among others, modules on the following topics:

- Road safety management
- Safer roads and mobility
- Safer vehicles
- Safer road users
- Post-crash response
- Advocating for road safety policy passage and implementation

Key features of this program include:

- Active engagement among a wide variety of international participants from different settings and backgrounds, including government and civil society
- Delivery of the program through a diverse, experienced international faculty who aim to challenge and inspire participants
- Thematic emphasis on leadership across a range of road safety issues, irrespective of participants' positions in their organizations
- Certification from a leading university and global road safety set of partners

- The goal of the course is to enhance effective leadership capacity to optimally address road safety in low- and middle-income countries (LMICs) in order to reduce deaths and serious injuries around the world.
- 4. Road Safety Legislation Course, Johns Hopkins International Injury Research Unit (free online training)**

The Johns Hopkins International Injury Research Unit developed in collaboration with the World Health Organization a free, online course to support capacity building in the field of road safety legislation (<https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-international-injury-research-unit/training/road-safety-legislation.html>). The course will allow participants to become familiar with how to develop evidence-based road safety laws and regulations and country-specific examples on how road safety is addressed in the legal sphere.

The Road Safety Legislation Course includes the following four modules:

- Basic road safety facts
- The importance of legislation in road safety
- The evidence base for key road safety risk factor and post-crash care laws; factors to consider when prioritizing legislative changes
- How to advocate for improvements, including how to engage media in these efforts

4.3.3 Conclusions

Road safety policy is at the heart of road safety. Public policy makers need to identify, assess and prioritise risks on the base of road safety data. After that, effective measures should be implemented and evaluated. Capacity building for road safety professionals that can influence road safety legislation will have a positive impact on road safety.

4.3.4 References

Mohan, D., Tiwari, G., Khayesi, M., Nafukho, F. M., 2006. Road traffic injury prevention training manual. Who 1–126.


TRB, 2007 - Building the Road Safety Profession in the Public Sector. SPECIAL REPORT 289, Transportation Research Board, Washington, D.C.

World Health Organization (2017). Save LIVES - A road safety technical package, ISBN 978-92-4-151170-4.

4.4 Road Safety engineers

(authors: Sandra Vieira Gomes and João Lourenço Cardoso – LNEC)

The inclusion of road safety engineers as a target group in fostering road safety capacity building is crucial to the success of these initiatives, as they are one of the main actors in delivering road safety,



through proper road infrastructure – both in urban areas and in interurban connections. Within this professional group, road traffic engineers are also included, as their activity is intrinsically related.

Road safety and traffic engineers usually have a civil engineering background, although some have made a successful transition from a different background into a road safety specialist.

They may play different roles in an organization (Lawson et al., n. d.), but usually a road safety engineer will be responsible for remedial measures programs or crash-related proposals. They are required to have a thorough understanding of the contributory factors in road crashes and the measures that may be used to counter them. They need a good understanding of the distribution of crashes in their jurisdiction and the implications of “accidents” being rare non-deterministic events, their occurrence having multidimensional contributions from the road, vehicle and road-user and a non-negligible random component.

Road safety engineers may also act as software programmers, for instance in the extraction of crash data, or as crash analysts, when determining priorities for countermeasure treatment, by seeking locations where countermeasures are justified because of high crash and injury numbers, by searching how to counter common crash types or by looking for patterns in the causes of crashes at selected locations.

Other activities relate to highway design, for instance through providing input to scheme designing, recommendations for crash countermeasures, carrying out road safety audits or road safety inspections, or performing activities within highway maintenance and asset management.

4.4.1 Core competences and learning objectives


What are the needed core competences of the road safety professionals?

The Safe System approach evidences road accidents as a complex phenomenon requiring integrated interventions from several institutional public and private actors, in order to implement preventive and corrective policies based on multidisciplinary knowledge. The WHO arrangement of road safety policies in a limited set of pillars reflects a methodological simplification that highlights the need for balancing interventions in five critical areas:

- Pillar 1 – Road Safety Management;
- Pillar 2 – Safer Roads;
- Pillar 3 – Safer Vehicles;
- Pillar 4 – Safer Road Users;
- Pillar 5 – Post Crash Response.

The underlining assumption is that focusing in only one or two of those critical areas will not meet efficient criteria to reduce the burden of road crashes.

Many transportation professionals are educated in schools of civil engineering. While several civil engineering graduates take positions in transportation planning, design, and operations, some pursue full-time careers in road safety management, especially in areas related to road infrastructure design, construction and operation. These road safety engineers should have core competences at least in Road Safety Management, Safer Roads and Mobility, as well as Safer Road Users.



Practicing road safety engineers' competencies should cover the knowledge and skills on the following five broad issues:

1. Understand that the management of highway safety is a multidisciplinary area, dealing with a complex system, requiring the application of science based research results within a rational approach to the system, in order that efficient and effective solutions may be applied;
2. Appreciate the global history of highway safety, namely the scope and limitations of previous approach philosophies towards the road crash phenomenon, and the legal and institutional settings in which safety management decisions are made in their own country and road agency;
3. Understand the origins and characteristics (including their limitations) of traffic safety data and information systems available to support safety management decisions;
4. Be able to identify high risk and high danger sites, to assess factors contributing to highway crashes, to match potential countermeasures, to those factors and to evaluate their effectiveness;
5. Be qualified to participate in the development and delivering of a highway safety management program.

Safety professionals should have basic **skills** in analysis, communication and management. The level of skill required will depend on specific job responsibilities.

- Analysis

All safety professionals should recognize and have a basic ability to access and interpret the results of the main scientific methods and statistical techniques used to identify road safety problems, develop, implement and evaluate safety countermeasures and programs. More advanced skills are required for some professional categories, such as safety program analysts, planners and developers. They should be able to use scientific methods and statistical techniques to identify current and potential safety problems, develop countermeasures and evaluate their effects robustly, and present the results of complex analyses in ways that can be understood and used by decision makers.


- Communications

All safety professionals should be able to communicate the importance of using data and scientific methods in safety management. High proficiency in communications is required for some safety professionals. Safety program managers should be able to communicate safety concepts and research results to a wide range of audiences from within and outside their organizations. They should have marketing and public relations skills to promote rational safety programs to the public and to decision makers in a more convincing way than proponents of pragmatic actions¹.

- Management

Road safety professionals in management positions should be able to draw conclusions and establish plans and priorities on the basis safety research, analyses, and evaluations. They should be able to integrate safety into transportation planning processes. Safety program managers should be able to establish multidisciplinary and multiorganizational relationships to develop, plan, and implement safety programs. They should have the administrative,

¹ According to Hauer (1998), the rational management is based on factual information and prospective expected consequences; whilst a pragmatic approach does not need factual knowledge nor evaluative research, as it is based on lay beliefs and organizational self-interest.



organizational, and financial skills to oversee safety programs and personnel from multiple disciplines and to build coalitions.

What are the learning objectives of the target group?

A fully qualified road safety engineer should have an understanding of the following:

- **The involvement of multiple disciplines in safety management.**

Among the disciplines that must be called on to manage road safety are civil engineering, mechanical engineering, law enforcement, psychology, human factors, economics, statistics, education, systems analysis, organizational behaviour, and social marketing. The safety professional needs only to be an expert in a couple of these areas but should be able to explain and appreciate the roles of all these disciplines in safety management.

- **The importance of science-based research and its application in effective safety management.**

The road safety engineer should appreciate how road safety research and analysis results can help in making more informed choices, by clarifying issues, revealing inconsistencies between aims and efforts, generating alternatives, and helping translate ideas into effective safety policies.

- **The effects of economic, social, technological, and demographic trends on safety.**

It is important that road safety engineers are able to recognize that road safety is affected by many exogenous and dynamic trends that continually present new challenges to improving safety performance. The professional should be able to describe major trends that are ongoing and emerging and explain their potential effects on safety, as well as be able to take advantage of the opportunities they present to safety improvements.

- **The factors occurring before, during, and after a crash and involving the driver, the vehicle, the highway, and emergency response that affect crash incidence and severity.**

Road safety professionals should be familiar with common classifications of highway crash and injury severity factors and their relationship to the crash event through the use of models such as the Haddon matrix. They should understand how contributing factors can be identified through in depth accident reconstruction and how they can interact.

- **The combining of countermeasures from the five E's of traffic safety: engineering, enforcement, education, evaluation and emergency response.**

The road safety professional should be able to explain how measures from each of the five E's have yielded safety benefits, individually and in combination.

- **The institutional settings in which safety management decisions are made and the main public and private organizations that have safety responsibilities, information, and resources.**

All road safety engineers should understand the importance of collaboration among organizations and how to address the barriers that can hinder this collaboration. They should know the major legislation, historical figures, and stakeholder groups affecting safety goals, responsibilities, and investment decisions. They should also be aware of other transportation priorities (e.g., congestion mitigation, environmental protection, economic development) that accompany safety.

- **The main databases and information systems that can be used for safety management, including state, local, and national databases.**

The safety engineer should know how to access safety-related data and extract reliable and relevant data from existing information systems and have a working understanding of how the data are collected and their strengths and weaknesses.

4.4.2 Available courses

According to Hauer (2007) most civil engineers that graduate from a four year program and enter practice, were not taught about the link between the design decisions they will make and the crash frequency and severity that will follow. This author also states that claims that concern for safety are implicit in matters such as signal-timing procedures or geometric design standards, which will automatically ensure that a proper amount of safety is built into roads. The lack of existing safety research material to provide a more fundamental and rigorous safety educational experience is a particular concern.

Road safety engineers need not only to have the basic skills in the road design and traffic engineering and human factors in road safety, but should also understand and be able to apply knowledge from other related areas.

According to Lawson *et al.* (n. d.), there are few formal direct ways to become a road safety engineer. Typically, road safety education is not taught within first degree courses but it may be found sporadically within civil and highway engineering courses. Also, often it is the result of learning “on the job” with a road authority or an engineering contractor.

In a study performed in the U.S., conclusions were drawn about the existence of university courses in safety: few offerings within engineering programs and a comparable lack of coverage within public health programs (Gross & Jovanis, 2008). Findings support the hypothesis that highway safety is under-represented in transportation curricula throughout the United States. An in-depth review of course materials revealed that many current safety courses were not addressing several key issues identified by the safety core competencies in development through a TRB subcommittee (TRB 2005). According to TRB (2007), the coverage of core competencies and learning objectives in Engineering Schools revealed significant gaps in course coverage in all competency areas, as presented in Table .

Table 2 - Coverage of Core Competencies and Learning Objectives in Engineering Schools (TRB, 2007)

	Course Coverage Level
Road Safety Knowledge	
Safety management is multidisciplinary	Modest
Science-based research is essential in safety management	Modest
Economic, social, technological, and demographic trends affect safety	Modest
Motor vehicle crashes have many contributing factors	Weak
Safety management requires countermeasures from the four E's	Modest
Institutional setting for safety management	Modest

Databases used for safety management	Modest
Road Safety Skills	
Analysis	
Ability to use traffic safety and public health data	Modest
Ability to use scientific methods to identify safety problems	Strong
Ability to evaluate safety program and countermeasure effectiveness	Modest
Communications	
Ability to communicate the importance of data for managing safety	Strong
Ability to reach out to the public for involvement in safety programs	Weak
Ability to explain opportunities for strategic communication of safety initiatives	Weak
Management	
Ability to use scientific management techniques for safety programs	Weak
Ability to establish multidisciplinary relationships	Weak

From a survey performed under WP 6.1, several university courses were identified which include road safety related content in their program, as presented in Table .

There is little evidence of graduate and post graduate courses related to geometric design, crash data analysis and statistics, road safety audit, vehicle safety, post-crash care management, traffic calming, traffic monitoring techniques, critical offence monitoring or other related road safety subjects.

It seems that not all countries have tertiary level education in the field of (traffic/civil) engineering, traffic psychology and human factors, transport planning or transport economics in which traffic safety engineering, traffic safety management and road user behaviour are part of the standard curriculum.

Table 3 - Graduate and post graduate road safety courses in Africa (partial coverage from WP6 response)

University/College/Tertiary institution	Degree	Subjects covered
Ghana		
Takoradi University	Technical Higher National Diploma in Civil Engineering BTech. in Civil Engineering	Transportation Planning and Policy, Introduction to Public Transport, Rural Roads and Technology Choice
Kwame Nkrumah University of Science & Technology	BSc. Civil Engineering MSc. Road & Transportation Engineering	Geometric Design, Traffic Movement and Operations, Road Safety, Traffic and the Environment Traffic Engineering Operation
Kumasi Technical University	HND Civil Engineering BTech. Civil Engineering	
Koforidua University	Technical HND Civil Engineering BTech. Civil Engineering	

South Africa		
Centre for Road Safety and Transport Studies, University of KwaZulu-Natal, Durban, SA	BSc, MSc, PhD in Civil Engineering	
University of Stellenbosch	BSc; MSc PHD in Civil engineering	Transport Science
University of Pretoria	BSc; MSc PHD in Civil engineering	
Morocco		
Mohammadia School of Engineers (Rabat)	Engineer	Traffic Engineering, Transport modelling, Road design
Hassania School for Public Works (Cassablanca)	Master degree	Management and Operation of Transport
Saint Joseph University (Beirut Lebanon)	International Master Degree	Road Safety Management with several specialisations: Road Safety engineering, Traffic behaviour
Uganda		
Eastern and Southern Africa Management Institute Uganda	MBA in Transport Economics and Logistics Management	Road and Transport Safety Planning and Management
Nigeria		
University of Ilorin	MSc; Ph.D. Economics	Transport Economics – (includes a road safety economics part, with focus in road safety education and traffic psychology)
Kwara State University	Bachelor of Engineering	Traffic ,Traffic System Design & Analysis and Transportation Engineering
	Master of Engineering Degree	Road Safety Engineering is proposed
Kenya		
University of Nairobi	BSc and MSc in Civil engineering	Includes road safety issues

One of the evidences from this survey was that road safety is mainly offered as a short course, which is also an available solution for training road safety professionals. Worldwide, the availability of short courses is diverse: some courses are very specific, others have a more broad scope.


In this section we are including an overview of some reference courses, focusing on the ones that previously were offered physically in Africa, namely: the Delft Road Safety Course, the Master in Management of Road Safety from Saint-Joseph University in Lebanon, and several IRF short term courses.

1. Delft Road Safety Course, September 2018


The course (delftroadsafetycourses.org) focuses on organizational subjects (policy development, agenda and target setting, implementation of action plans, financing, and research programs) and technical safety measures in the area of engineering, enforcement and education.

The overall program of this course includes the following subjects:

- Road safety management – managing key risks

- 
- Road safety as a global health and development problem
 - Key risks: vehicles, speed, seat belts, 2-wheelers, alcohol
 - Road safety management
 - Designing a road safety strategy and action plan(s)
 - Occupational road safety management and key risks
 - When crashes occur: managing post-crash care
 - Effective road safety actions on key risks: vehicles, speed, seat belts, two-wheelers and alcohol
 - Introduction to road safety advocacy, road safety campaigning and road safety awareness raising
 - Road safety partnerships and enforcement for effective delivery on key risks
 - Key risks: road safety awareness raising
 - Road safety advocacy: influencing decision makers and using the media
 - Safe system approach and road safety data
 - Causes of crashes
 - Safe system approach
 - Road safety data, data collection and data analysis
 - Science & Policy (with the collaboration of a research institution)
 - Research to support road safety policy making
 - Policy and strategic road safety development in the Netherlands
 - Road safety management for some African countries
 - Monitoring road safety developments
 - Road infrastructure safety
 - Safety for cyclists
 - SafetyCube, using research in developing an innovative decision support system
 - Engineering and effects of measures
 - Safe Design for Vulnerable Road Users: Pedestrians & Cyclists
 - Road safety audits (RSA) and inspections
 - Case studies (learning by doing) – (RSA)
 - Priority setting for road safety interventions
 - Results of evaluating of road safety measures
 - 'Forum' Take away of the day and open discussion on usability and application in low and middle income countries
 - Education
 - Why is road use a complex task, how do humans learn these tasks, implications for driver training
 - The importance of understanding child development for designing strategies
 - Understanding the target group: the case of young drivers
 - The role of parents and families and how cultural context matters
 - Education and road safety in (transport) organisations
 - Designing education programmes do's and don'ts and lessons learnt from practical experience
 - The role of emotions, motivations, intuitions
 - Designing a road safety strategy

This course was already held in the African Continent, namely in Ghana, with a focus on road safety problems in Low and Middle Income Countries and on which approaches are best used to tackle



these problems. Concerning road safety management aspects, comparisons were made on road safety policies in Ghana and Nigeria with others worldwide. Other issues covered included road safety data, research and risk on roads and evaluation of road safety interventions.

2. Master in Management of Road Safety from Saint-Joseph University (USJ), Lebanon

The objective of this master is to train a generation of executive managers specializing in local road safety issues and capable of initiating and managing actions or policies to tackle the root causes of poor road safety and enable the region to achieve sustainable mobility.

The pedagogic content of this master degree supported by Foundation Renault crosses fields encompassing society (transport, mobility), politics (land-use management), economics (choice of infrastructures), public health (human cost, social costs), technical issues (developing vehicles), psychosocial issues (education, culture) that must all be understood in detail to get a good command.

The detailed programme includes the following subjects:

- Principles of management applied to road safety
- Vehicles safety
- Road users behaviour
- Management of fleet safety
- Epidemiology and statistics applied to road safety
- Road environment and traffic management
- Regulatory framework of road safety: elaboration and application
- Post-accident optimisation
- Policies and plans for road safety
- Data analyst
- Management of accident scene and post-accident care
- Financing road safety
- Safety of road environment
- Road users behaviour modification
- Enhancing national capacities and research on road safety
- ISO 39001
- Safe urban development
- Establishment of a national system for road safety management
- Project seminar

3. IRF Geneva courses

The International Road Federation (IRF) is a nongovernmental organisation aimed to promote the development of better, safer and more sustainable roads networks. Within their activities, training courses are often developed, many of them in the African Continent:

- RS Management and ISO:
<https://www.irfnet.ch/event-info/course-on-road-traffic-safety-management--&-iso-certification/1/985>
- Safe Urban Street Design for VRU:
<https://www.irfnet.ch/event-info/international-course-on-safe-urban-street-design-for-vulnerable-road-users/1/941>

- Senior Road Executives Programme:
<https://www.irfnet.ch/activities-details.php?id=37&cid=14&title=Senior%20Road%20Executives%20Programme>
- RS Engineering and Audits:
<https://www.irfnet.ch/event-info/international-course-on-road-safety-engineering-and-audits/1/936>

This last course is more in line with the main focus of road safety engineers, and, therefore, is further detailed. It was held in Tanzania in 2018, and the five-day program included the following topics:

- Road safety in Tanzania – An overview and characteristics of road accidents
- Planning for network, land use and road environment for safety
- Introduction to road safety engineering
- Crash/accident data analysis, crash investigation, treatments & reporting
- Crash/accident costing and economic appraisal
- Accident blackspots – identification, prioritization, analysis and mitigation
- Safe System Approach – A global perspective
- Human factors relating to crashes/accidents and consideration in audit
- Safety provisions for vulnerable road users
- Roadside hazard management and traffic calming measures
- Speed management – Speed zoning, control and enforcement
- Traffic control devices and their adoption for safety
- Traffic enforcement and safety
- Design considerations for safety in road link design
- Design considerations for safety in design of road junctions
- Design and provisions of signs and markings
- Road safety audit - procedure, benefits, reporting and use of check lists
- Road safety audits of land use developments
- Detailed design stage audit – practice with an example design
- Work zone safety and pre-opening audit
- Site visits and practice audits on actual locations
- Introduction to iRAP (International Road Assessment Programme) and road safety toolkit
- Solutions, effectiveness and corrective action report
- Legal implications of road safety audit
- Organizational commitment/encouragement for road safety audits

4.4.3 Conclusions

Education for road safety engineers has usually a civil engineering background, but, as these graduation courses do not cover in depth the road safety subject, complementary training is often achieved through the attendance of other types of courses.

It is recommended that universities promote the inclusion of road safety related content within their general engineering and road engineering courses. A number of important aspects of road safety related to engineering should be embedded in current road engineering courses. As examples:

- Design standards and rules should contain explanations of the road safety considerations which are embedded in the rules

- Reference speeds for alignment design should be complemented by and integrated with considerations from the Safe System approach
- Class exercises and small project workshops can be related to analysis of actual situations in order to demonstrate and understand the deficiencies of traditional design approaches
- Crash recording, crash types and some of the basic elements of crash countermeasures.

Postgraduate degrees at the level of MSc with a specific focus in road safety are more frequent. In some cases, students can attend free-standing modules. Another possibility is the establishment of partnerships between universities, as a way to introduce road safety courses into a university that still does not currently have one.

It is recommended for African countries to increase the availability of road safety education options, either through full-time university courses, short courses, delivered as a webinar or distance learning.

4.4.4 References

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4.5 Teachers and educators

(author: Matin Nabavi – SWOV)


Who are the road safety professionals that are targeted?

- Teachers
- Educators

In which pillar(s) of road safety is the target group involved?

- Safer Road users

Why is it important to develop capacity building initiatives for this target group?



It's vitally important to help shape children and young people's understanding of, and attitudes towards road safety. This will give them the best chance of keeping safe while they're young and as they get older (Road safety week- global hub, n.d.). Poor road safety not only means children are in danger of being hurt or killed, it also often affects their health and wellbeing. In many countries, children (especially from wealthier families) are increasingly being driven to school, and are less likely to regularly walk and cycle, contributing to inactivity, obesity and affecting social development. If streets are unsafe, parents are often less willing to let their children walk or cycle (Road safety week- global hub, n.d.).

4.5.1 Core competences and learning objectives

Teachers should be educated in three dimensions of road safety to deliver the relevant courses/workshops for their student:


The first dimension of the education program for teachers is the awareness in the context of road safety. It covers some facts such as:

- Traffic hurts millions of people every year across the world, and someone dies every 30 seconds globally in road crashes.
- People hurt by traffic are often killed and seriously injured. Injuries include paralysis and losing limbs. (Note: many children may think minor injuries such as breaking an arm are okay – teachers may need to be educated regarding how awful a serious injury is.)
- Some people do dangerous things when walking or cycling, such as texting on their phone while crossing a road, or not wearing a cycle helmet. These people are more likely to be killed or hurt.
- Some drivers do dangerous things, which increase the chance of them killing or hurting themselves or someone else, for example, speeding, or using a phone at the wheel, or driving after drinking alcohol. There are several legislations such as speed limits to decrease the number of people being killed or hurt in crashes, but some drivers break them.

The second dimension of the course should be focused on the behaviour of road users. Although some teachers and educators may already have a grasp of fundamental road safety rules, initially they should be taught the language of road safety before they can fully understand the rules. For example, types of vehicles, types of street furniture, the crossing code (find a safe place to cross, stop, look, listen, cross with care, looking and listening all the time), safest places to cross, the importance of wearing the right gear when walking and cycling, wearing seatbelts, bereavement issues and the social impact of road crashes, responsibilities of drivers to protect other people especially people who are on foot or bicycle, dangers of giving in to peer pressure to take risks, etc..

Hence, this dimension of the education program for teachers should focus on:

- Building on teachers' existing knowledge.
- Requiring teachers to think for themselves and conduct original research.
- Being discursive and creative, and related to teachers' real lives.
- Exploring the dangers of risk-taking.
- Explaining clearly that road safety is about decreasing deaths and serious injuries and therefore it is crucial to take it seriously.



This program's dimension also should extend the knowledge of the teachers on:

- Life-changing injuries (such as paralysis and brain injury) and how this affects people and their families.
- Taking responsibility for others in the context of good citizenship - particularly if driving.
- Society's obsession with motor vehicles, the negative effects this has on communities (safety, health, pollution, social interaction, costs), and the alternatives to driving.
- The differences in levels of risk-taking among males and females.
- Alcohol and drugs – including alcohol and drug use among young people, and how this links with the issue of drink and drug driving.

Based on the knowledge compiled from this dimension of the program, teachers can teach their students rules and encourage them to follow them through practical training.

The third and last dimension of the teachers' education program in the context of road safety should focus on choice and campaigning. In other words, it unravels how teachers can make safer choices and able them to help their students make these choices too. It is important that teachers recognise their ability to make safe choices, recognise pressures they may come under to make dangerous choices (running across roads without looking, or drivers driving too fast, or people not doing up their seatbelts or not wearing helmets on mopeds or motorbikes), and learn how to resist those pressures, and how to speak up for the safety of others too.

4.5.2 Available courses

1. Basic culture on traffic safety


The French Ministry of Education provides some modules for school teachers to give them enough background and tools for enriching the traffic safety education in their schools (<http://formation.education-securite-routiere.fr/>).

Content: This course is promoted as a basic course for everyone who is involved in education. Attendance of this module is a mandatory pre-requisite for attendance to some other modules.

- Short history of education on traffic safety in France
- Traffic safety as an integral part of safe citizenship
- Specific problems for adolescents in traffic (15 -24 years old)
- Accidents causes
- Risky male behaviour
- Older road users and possible issues related to incapacity
- Who are the stakeholders in traffic safety?

How can you use the existing course? Teachers should register for training. E-learning modules consist of text and illustration (pictures and videos), followed by a simple evaluation tool at the end, with a quiz and a crossword puzzle. There is no information about an official certificate. There is the possibility to contact the course developers about specific questions and to have some follow-up.

2. Traffic safety awareness for primary school students



Content: This course is developed for primary school teachers and follows the national official curriculum ('Attestation de Première Education à la Route – APER') that must be unfold in every school. To start this module, participants have to prove that they have already done the basic module 'Basic culture on traffic safety' (<http://formation.education-securite-routiere.fr/>).

- The principles of organizing a road safety intervention (centred around projects to be developed during and after school hours)
- Traffic Safety for kindergarten (3 – 5 years old)
- Traffic Safety for first grades of primary school (6 – 8 years old)
- Traffic safety for last grades of primary school (7 – 11 years old)
- Traffic safety for disabled children
- The official program (APER)

How can you use the existing course? Teachers should register for training. The course contains a presentation with videos and links for further reading. There is no mention to an evaluation procedure nor to certificate. Participants can ask for more information or support.

4.5.3 Conclusions

Teachers and educators play a vital role in protecting and educating children and stopping devastating casualties by teaching life-saving messages, and promoting road safety more widely and effectively than other influencers such as parents and drivers in the local area. Training teachers can significantly improve behaviour of the younger generation on the road.

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4.6 Traffic police

(author: Eric Remacle and Casimir Sanon – HI)

Who are the road safety professionals that are targeted?

- Parliamentarians
- Transportation Administration Officers in charge of Legislation
- Road Manager (Urbanists and Road Engineers)
- Mayors and municipal technical staff
- Magistrates
- Police Commissioners
- Police officers
- Police Assistants
- Driving license examiners
- Driving instructors

In which pillar(s) of road safety is the target group involved?

- Road safety management
- Safer Road users
- Post-crash response

Why is it important to develop capacity building initiatives for this target group?

The Traffic Police is defined as the set of legislative and regulatory measures organizing traffic and setting the rules (administrative police) and sanctions for non-compliance (judicial police).


According to van Rooyen (2000), Capacity building includes the following:

- **Human resource development:** the process of equipping officers with the understanding, skills and access to information, knowledge and training that enables them to perform effectively.
- **Organizational development:** the elaboration of management structures, processes and procedures, not only within organizations, but also management of the relationships between the different organizations and sectors (public, private and community).
- **Institutional and legal framework development:** making legal and regulatory changes to enable organizations, institutions and agencies at all levels and in all sectors to enhance officers' capacities (van Rooyen, 2000).

Capacity building in traffic police takes into account the following aspects:

- Reform of the legislative and regulatory framework for road traffic
- Institutional mechanism of road safety
- Implementation of preventive and repressive actions in respect of the rules of the road
- Regulation of traffic in the event of major and unplanned disturbances of mobility
- Establishment of reports in case of traffic accidents and the drafting of minutes
- Collection of traffic accident data and traffic violations committed by road users
- Provision of opinions to the competent authorities on mobility and road safety

Thus defined, the Traffic police is very important for road safety. But this mission is a bit neglected in Africa. In fact, road safety management assessments in Africa reveal that, in most African



countries, road safety legislation is inadequate and not in line with international standards. In many countries, the laws and regulations adopted are not effectively enforced. Moreover, in almost all African countries, the data collected on accidents are unreliable and data on offences committed are almost non-existent. Finally, Traffic police services lack adequate equipment for the control (no speeding radars to control the speed, the wearing of the seat belt and the use of the mobile phone, no breathalyzer to measure the alcohol level, etc.). All these reasons require taking initiatives to strengthen the Traffic Police.

4.6.1 Core competences and learning objectives

What are the needed core competences of the road safety professionals?

The road safety professionals may have basic knowledge on:

- Risky behaviour
- The highway code
- Road signs
- Road safety data management
- Traffic control techniques
- Roadside check procedures

What are the learning objectives of the target group?

Road safety professionals will have knowledge and skills in the following areas:

- Traffic and traffic regulation
- The general role of the agent on the road
- road traffic offences
- How to set up roadside check procedures
- Accident report
- Techniques for writing accident reports
- Automobile liability
- Collection, seizure and processing of traffic accident data
- First aid
- Accident investigation
- Court proceedings
- Roads: technical aspects
- Arrest procedures
- Incident management
- Shutdown and search procedures
- Report writing skills
- Road blocking procedure
- Review of legislation on roadside checks at national and international level
- Status of regulation on the main risk factors for traffic accidents indexed by the WHO
- Documents and equipment on board vehicles to be submitted to traffic police officers
- Vehicle loading standards at national and sub-regional level
- Practical aspects of roadside checks
- The forms of corruption and racketeering of road traffic enforcement officers

- Fight against corruption and racketeering in traffic police: composition and organization of the anti-corruption unit
- Fight against corruption in traffic police: role and missions of the road police font.

4.6.2 Available courses

1. The Road Policing Capacity Building Program of the Global Road Safety Partnership in low and middle-income countries

This course has already been organized in Addis Ababa, Ethiopia and Accra, Ghana (www.grsroadsafety.org). The course contains the following content:

- Engagement with high-level road safety managers through dialogue and educational initiatives, highlighting effective road safety and strategic enforcement practice
- Promoting 'Intelligence Led' enforcement through dialogue and training
- Primary risk factor enforcement training
- Roadside check point operational practice
- Training of Trainers
- Coaching and mentoring of road policing personnel
- Strategic communications training
- Management training for senior level officers and supervisors;
- Design and development of training materials and Standard Operational Procedures for road policing agencies

2. The Correspondence College for Higher Education- Faculty of Safety and Criminal Justice – Advanced Diploma in Traffic and Metropolitan Policing

The programme is organised in South-Africa (<https://www.lyceum.co.za/criminology-police-training-courses>) and covers the following subjects:

- Advanced traffic science
- Introduction to research for law enforcement
- Police liability issues
- Advanced law enforcement practice
- Advanced fleet management
- Advanced project management

3. The Correspondence College for Higher Education- Faculty of Safety and Criminal Justice – Postgraduate Diploma in Traffic Policing

The programme is organised in South-Africa (<https://www.lyceum.co.za/criminology-police-training-courses>) and covers the following subjects:

- Professionalism in policing
- Ethics in policing
- Road safety strategies
- Road safety audits

- Research methodology

4. National Office of Road Safety (ONASER) in partnership with National Anti-Corruption Network (REN-LAC) in Burkina Faso (Email: onaser.bf@gmail.com - Phone: +226 25374478)

Target audience:

- Staff responsible for the traffic police of:
 - National Gendarmerie,
 - National Police,
 - Municipal Police,
 - Customs,
 - Zoo-sanitary and phytosanitary services,
 - Environment.
- Driving license examiners.

Training content:

- Review of legislation on roadside checks at national and international level
- Status of regulation on the main risk factors for traffic accidents indexed by the WHO
- Documents and equipment on board vehicles to be submitted to traffic police officers
- Vehicle loading standards at national and sub-regional level
- Practical aspects of roadside checks
- The forms of corruption and racketeering of road traffic enforcement officers
- Fight against corruption and racketeering in traffic police: composition and organization of the anti-corruption unit
- Fight against corruption in traffic police: role and missions of the road police font

Training aims:

- Ensure compliance with traffic regulations and road safety regulations;
- Ensure compliance with customs, zoo-sanitary and phytosanitary regulations;
- Ensure compliance with forest and environmental regulations;
- Acknowledge and punish the violations of the above regulations;
- Find, where appropriate, traffic accidents;
- Inform, educate and protect road users;
- Bring help and assistance if necessary.

Duration of the training: 5 days

5. Traffic College in Western Cape Government (South Africa)- Short Courses at Gene Louw

Gene Louw traffic College in South-Africa (<https://www.westerncape.gov.za/general-publication/short-courses-gene-louw-traffic-college>) offers various short and refresher courses:

- Overload control (One week): students will learn how to enforce the law at traffic control centers and weighbridges.

- Motor vehicle inspectors (Two weeks): students will learn how to:
 - Identify stopping areas
 - Comply with professional and ethical standards and conduct when dealing with the occupants of stopped vehicles
 - Communicate the reason for stopping the vehicle and the procedure for inspecting the vehicle with the driver in a professional manner
- Speed training (Three days): students will learn how to prepare, set-up and operate traffic law enforcement equipment according to the manufacturer's specifications approved by the South African Bureau of Standards (SABS).
- Roadside examination of vehicles (One week): students will learn how to identify vehicle fitness status and take suitable roadside action.
- National Land Transport Act (One week): students will learn the systems and processes related to land transport regulations.
- Draeger Operator (Three weeks): students will learn how to prepare, set-up and operate the Drager according to the manufacturer's specifications approved by the SABS
- Traffic Officer refresher training (duration is dependent on client's request): refresher course for traffic officers
- Examiner of Vehicles (EOV) refresher (Duration is dependent on client's request): refresher course for examiners of vehicles
- Examiner for Driving License (EDL) refresher (Duration is dependent on client's request): refresher course for examiners of driving licenses
- Traffic Warden training (Duration is dependent on client's request): Students will learn how to apply knowledge of road traffic legislation pertaining to traffic officers, road users and vehicles.

4.6.3 Conclusions


The capacity building of the traffic police allows the various actors involved in this mission to have knowledge and professional skills related to their area of competence in the field of traffic police. Thus, a good reform of the legal and institutional framework of road safety, accompanied by appropriate road signs, improves the work of the staff of the Traffic Police. Strengthening the capacity of these staff (training, staff increase and appropriate staffing of road control equipment) makes it more efficient and more effective in its interventions. This makes its actions more credible and increases the confidence of road users and their adherence to road policing measures. All this contributes to the improvement of road safety.

4.6.4 References

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5. Conclusions

Road safety professionals (TRB, 2007) are defined as workers who spend all or most of their workday on matters pertaining directly to road safety, such as assessing safety performance and needs, planning, developing and implementing safety initiatives and taking specific actions related to safety.


This deliverable tries to guide six groups of road safety professionals through suggestions of available capacity building initiatives within the form of courses that can be used to obtain knowledge and to strengthen their core competences. An overview of the target groups described in this report can be found in Table 4. Of course, the proposed courses in this report need to be adjusted to the specific requirements for the group of road safety professionals within the country or region where they would be used.

Table 4 – Overview of groups of road safety professionals discussed in this report

<i>Target group</i>	<i>Active in pillar</i>	<i>Reference D3.4</i>
Data collectors and analysts	Road safety management Post-crash response	4.1
Health personnel	Post-crash response	4.2
Public policy makers	Road safety management Safer road users	4.3
Road safety engineers	Safer roads and mobility	4.4
Teachers and educators	Safer road users	4.5
Traffic police	Road Safety management Safer road users Post-crash response	4.6

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7. ANNEX 1: List of Abbreviations

AfDB	African Development Bank
ARSAP	African Road Safety Action Plan
ASPHER	Association of Schools of Public Health in the European Region
AU	African Union
CADaS	Common Accident Data Set
D.U.	University Degree
EC	European Commission
EDL	Examiner for Driving License
EOV	Examiner for Vehicles
EPLS	European Pediatric Life Support
ERC	European Resuscitation Council
EHESP	School of Public Health
FIA	International Automobile Federation
HI	Humanity & Inclusion
IDEA	International Course on Applied Epidemiology
IFSTTAR	Institute of Science and Technology for Transport, Development and Networks
iRAP	International Road Assessment Programme
IRF	International Traffic Safety Data
IRTAD	International Traffic Safety Data and Analysis Group
IRU	International Road Transport Union
ISPED	Bordeaux School of Public Health
LMIC	Low Middle Income Countries
LNEC	National Laboratory for Civil Engineering
LOUGH	Loughborough University
PIARC	World Road Association
RSA	Road Safety Audits
SABS	South African Bureau of Standards
SPI	Safety Performance Indicator
SSATP	Sub-Saharan African Transport Policy Programme



SWOV	Institute for Road Safety Research
TRB	Transportation Research Board
UN	United Nations
UNECA	United Nations Economic Commission for Africa
WB	World Bank
WHO	World Health Organization
WP	Work package