United Nations

Economic and Social Council

Economic Commission for Europe

Inland Transport Committee

Seventy-ninth session
Geneva, 21-24 February 2017
Item 5 (c) of the provisional agenda
Strategic questions of a modal and thematic nature
Road safety

Safe Future Inland Transport Systems

Note by the secretariat

I. Background

1.   Road accidents are a major problem in modern societies: almost 1.25 million people are killed and 50 million injured globally.[1] Road traffic injuries are estimated to be the eighth leading cause of death globally, and more than half the people killed in traffic accidents are young adults aged between 15 and 44 years, thus heavily implicating people who are entering their most productive years. Approximately 90 per cent of those killed in road crashes are from low- and middle-income countries; yet they own around 54 per cent of the world's motor vehicles. Furthermore, more than half of the global deaths are among pedestrians and motorized two-wheeler drivers. Current trends suggest that, unless action is taken, traffic injuries will become the fifth leading cause of death by 2030, with the disparity between high- and low-income countries further increased.[2] These losses are largely preventable and they underscore the urgent need for action to improve road safety globally.

2.   In 2010, the United Nations General Assembly proclaimed the decade 2011-2020 as the United Nations Decade of Action for Road Safety, and set a goal to stabilize and reduce the level of global road traffic fatalities by increasing safety programmes at the national, regional and global levels. General Assembly resolution A/70/L.44, adopted in April 2016, reaffirms the targets of road safety in the 2030 Agenda for Sustainable Development:

- SDG target 3.6 aims to reduce global road traffic deaths and injuries by 50 per cent by 2020, and

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[1] World Health Organization, 2015
[2] Ibid.

- SDG target 11.2 aims to provide access to safe, affordable, accessible and sustainable transport systems for all by 2030.

3.   A Global Plan for the Decade of Action for Road Safety 2011-2020[3] was developed to guide countries in taking concrete, national actions to achieve the goal to reduce global road traffic deaths and injuries by 50 per cent by 2020, and at the same time, to promote coordinated and concerted actions to achieving the goal. The background and the reasons behind the decision of the United Nations General Assembly are given as support for the development of national and local plans of action, and as a framework for coordinated activities at regional and global levels. Several national road safety activities are proposed based on five pillars: building road safety management capacity, improving the safety of road infrastructure and broader transport networks, further developing the safety of vehicles, enhancing the behaviour of road users, and improving post-crash response.

4.   The secretariat developed the concept note for the Safe Future Inland Transport Systems (SafeFITS) project based on: (a) the findings of a UNECE project 'Improving Global Road Safety: Setting Regional and National Road Traffic Casualty Reduction Targets',[4] (b) on the success of the For Future Inland Transport Systems (ForFITS) project and on other UNECE technical assistance activities. The aim was to close the theoretical gap in the assessment of results from road safety policies and measures. SafefITS was financed by International Road Transport Union (IRU).

5.   The road safety model "Safe Future Inland Transport Systems (SafeFITS)" aims to facilitate knowledge based transport policy decision making related to road casualty reduction. The primary objective was assist governments and decision makers to decide on the most appropriate road safety policies and measures in order to achieve tangible results in improving road safety, in both developed and developing countries. The model would be based on historical road safety data and relations between several road safety parameters and it is expected to provide information on results of different road safety scenarios based on the chosen policies and measures.

II.   Development of SafeFITS

6.   The research and development nature of SafeFITS and the relative rarity of global research projects dealing with predictions of the outcomes of road safety strategies imposed the necessity for project implementation in phases. Each phase was a separate research and development project and only after completion of the given phase — based on that phase's deliverables — was the Project Steering Committee able to decide on the direction of the continuation of the project implementation.

7.   The project development is divided into four phases: Phase I explored and analysed existing road safety modelling and causalities; Phase II developed a draft model framework and described road safety causalities to be used for developing policy scenarios for road safety; Phase III will develop a draft model and application/user interface; Phase IV will test the model and verify it by pilot tests.

8.   Phase I resulted with a literature review of road safety studies and projects, a list of statistical requirements and a draft conceptual framework for the model. Phase II resulted in a conceptual framework (of three SafeFITS modules), data requirements and a list of the most relevant relations/causalities to be included in SafeFITS. Phase II concluded that deterministic models were unsuitable and that statistical models based on a robust database

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[3]   United Nations, 2011
[4]   Financed by the United Nations Development Account.

of road safety indicators could be the most appropriate solution. Phases I and II were finalized in 2016.

9.   The critical and the most complex phase of the SafeFITS project, Phase III started in May 2016. Building on the results of Phases I and II, Phase III[5] would deliver:

- A SafeFITS database on road safety indicators (i.e. fatalities and injuries, performance indicators, road safety measures, etc.) for all UN countries. This will be used for estimating global causalities in the future, with the development of new statistical models. The consultant collected robust data on road safety for all relevant countries, which was a prerequisite for further development of Phase III.

- The SafeFITS statistical models of global causalities that estimate on the basis of the database of road safety indicators, allowing 'intervention', 'forecasting' and 'benchmarking' analyses.

- The three SafeFITS modules that serve the following in road safety policy analysis:

  - An 'intervention analysis' module allows the user to, i.e. forecast the safety effects of a specific road safety measure or intervention for a given country in the short to mid-term time period, all other things kept constant.

  - A 'forecasting' module allows the testing of combined scenarios of interventions (measures and programmes) at a national level.

  - A 'benchmarking' module allows comparison of the road safety outcomes in relation to the basic road safety indicators between countries. This should lead to an identification of the priority areas in which country should focus - to improve its road safety outcomes.

10.   The current development of the SafeFITS model and the existing experience on road safety analysis and forecasting led to the identification of several challenges:

- The relationships between indicators and road safety outcomes are complex and not deterministic. Literature suggests that an indicator (economy, transport demand, measure or intervention, etc.) may vary considerably in different countries and at different time periods, and there may be several conditions that affect and modify the magnitude and type of the relationship between indicator and road safety outcome. The problem is multidimensional, and the transfer of known national causalities to a global context is not recommended.

- Existing knowledge on causalities is incomplete: very few results are available for several key indicators. Most of the existing causalities identified from literature are from developed countries, and it is 'highly unlikely' that these estimates can be transferred to developing or low-income countries.

- There is lack of data on several indicators and road safety outcomes at global level. There are very few databases, with related global road safety data and performance indicators, and these databases show limitations due to lack of data for several countries, i.e. developing countries. For example, safety performance indicators, which are known to significantly associate with road safety outcomes, are very partially available, even for developed countries.

11.   In order to meet the objectives of the project, an appropriate analysis methodology is required to address the main challenges of the project. The main approaches adopted in the SafeFITS are:

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[5] Ongoing in December 2016.

- A methodology is developed to take into account as many dimensions of the problem (road safety outcomes and indicators) as possible.

- The SafeFITS model will estimate future causalities, based on original statistical data analyses, taking into account existing data for all United Nations countries.

- For that purpose, an original database was created, with data from different international sources for 129 countries.

- The model would be applicable in developing and developed countries.

12.   Based on the robust data set, the consultant prepared several draft models that connect road safety indicators and outcomes. The processes of validation and calibration are ongoing. It is expected that preliminary results will be available at the beginning of 2017.

III.   The next steps

13.   Once the SafeFITS model has been verified, a roundtable would be organized with road safety professionals (renowned representatives of academia and practitioners) as peer review. It is planned for the first part of 2017.

14.   In the next steps, the implementation of the model and the preparation of user interfaces will take place:

- Implementation of the SafeFITS modules, linking of the background components (data base) and related user interfaces.

- Development of web-based user-friendly interfaces, allowing the user to select the suitable data to use, specify the model parameters (different scenarios) and examine the model outputs, both in tabular/text and graphical forms.

- Documentation of all components of the SafeFITS model, aimed at guiding the user to use the system effectively within the scope of its design.

- Interface testing, based on a number of well-defined use cases, which will ensure that the SafeFITS model can be easily used by the end-users.

15.   The updated draft SafeFITS model will be tested and assessed in pilot tests of a few selected countries (in 2017) and seek synergy with the United Nations Development Account funded 'Strengthening the national road safety management capacities of selected developing countries and countries with economies in transition' project; to bring added value by testing and prioritizing the Road Safety Performance Review recommendations. Based on the test results, the model parameters will be again calibrated and adjusted.

16.   After the pilot tests and adjustments, the full operation phase would start and the SafeFITS model would be available to the public. Annual or bi-annual revisions of all SafeFITS components (database and statistical models) should take place, in order to incorporate any new developments in the road safety field.

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