TØI Report
365/1997

Road Safety in Africa

Appraisal of Road Safety Initiatives in Five Selected Countries in Africa

by Terje Assum

ISSN 0802-0175
ISBN 82-480-0018-4

Oslo, October 1997

Tittel: *Road Safety in Africa - Appraisal of Road Safety Initiatives in Five Countries*
Forfatter: Terje Assum

TØI rapport 365/1997
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53 sider
ISBN 82-480-0018-4
ISSN 0802-0175

Finansieringskilde: The Norwegian Consultant Trust Fund, administrert av The World Bank, Washington DC, USA

Prosjekt: O-2281
Prosjektleder: Terje Assum

Emneord: Trafikksikkerhet
Vegtrafikk
Program
Tiltak
Afrika

Sammendrag:
Antall drepte i trafikken i Afrika har økt med 350 prosent fra 1968 til 1990. Økningen ventes å fortsette med den økende vegtrafikken hvis ikke mottiltak settes i verk. Hovedgrunnen til de høye trafikkulykkestallene er den økte vegtrafikken kombinert med mangel på trafikksikkerhetstiltak. Forutsetninger for å redusere trafikkulykkene er politisk prioritet, finansiering, iverksettelse samt oppfølging og evaluering. Det finnes potensiale for finansiering nasjonalt ved å bruke ideer og hjelpemidler utviklet i andre land, men løsningene må være gjennomførbare og mulig å finansiere. Det er stort behov for politisk engasjement og støtte for et akseptabelt trafikksikkerhetsnivå. Administrasjons-kompetansen må bedres og korrupsjon må begrenses. Utviklingsprogrammer i vegsektoren bør ha integrert trafikksikkrhetstiltak som forutsetning for finansiering fra utviklingsmidler.

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Financed by: The Norwegian Consultant Trust Fund, managed by the World Bank, Washington DC, USA

Project: O-2281
Project manager: Terje Assum

Key words: Traffic safety
Road traffic
Policy
Countermeasures
Africa

Abstract:
Road fatalities in Africa increased by 350 per cent from 1968 to 1990, and further increase is expected, unless counteraction is taken. The core causes of the high number of road accidents are the increased road traffic and lack of accident countermeasures. Requirements for reduction of road accidents are political priority, funding, implementation and monitoring and evaluation. There are potentials for substantial domestic resources for road safety purposes, using concepts and instruments pioneered in other countries, but solutions must be seen to be justified and affordable. There is a great need for political commitment and support for an acceptable level of road safety, and to improve management capabilities and curtail corruption. Donor organizations can play an important part in promoting appropriate road safety efforts by including road safety as an integrated aspect of their support to the road sector.

Language of report: English

Rapporten kan bestilles fra:
Transportøkonomisk institutt, biblioteket,
Postboks 6110 Etterstad, 0602 Oslo
Telefon 22 57 38 00 - Telefax 22 57 02 90
Pris kr 150,-

The report can be ordered from:
Institute of Transport Economics, the library,
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Price NOK 150,-

Preface

Road accidents are an increasing problem in Africa. To identify measures that may lead to reduction in road fatalities, injuries and material damage on the roads of Africa, the World Bank initiated a project called «Appraisal of Road Safety Initiatives in Five Selected Countries in Africa». This is the draft final report from this project. The project was financed by the Norwegian Consultant Trust Fund, administered by the World Bank, Washington DC, USA. The World Bank's task manager has been Mr. Thor Wetteland, transport engineer, who has supported the project work from the early stages of planning to thoroughly commenting on the draft report. Mr. Stein Lundebye of the World Bank has also given valuable comments.

Mr. Bjørn Gildestad of the Nordic Consulting Group, Oslo, Norway, has collected the data from Benin and the Côte d'Ivoire, in cooperation with Mr. Tossou A Calixte of Benin and Mr. Zoro Bi Nagoné of the Côte d'Ivoire. The author has collected the data from Kenya, Zimbabwe and Tanzania in cooperation with Mr. Meleckidzdeck Khayesi of Kenya and Mr. Dat Chinsen of Zimbabwe.

In addition to the above people the author wishes to express his gratitude for the help received from

Mr. Gekonge, Chairman of the National Road Safety Council, the Ministry of Public Works and Housing, Kenya,
Mr. S. A. Sizya and Mr. C. Chiduo, the Road Safety Unit, the Ministry of Works, Communication and Transport, Tanzania,
Mr. Mukundu and Mr. Brudefors, the Ministry of Transport and Energy, Zimbabwe,
and Mr. B.K. Steinset, the Public Roads Administration, Norway.

The author also wishes to thank Mr. Richard Muskaug for advising on the project, commenting on a previous version of the report and for assistance in the final stages of the report.

Last, but not least, the author wants to express his sincere thanks to the respondents who received Mr. Gildestad and him, taking the time and effort to answer our questions.

Oslo, October 1997
Institute of Transport Economics

Knut Østmoe
Managing director

Rune Elvik
Senior research officer

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TØI report 365/1997
Author: Terje Assum
Oslo 1997, 53 p*ages English language*

Summary

Road Safety in Africa - Appraisal of Road Safety Initiatives in Five Countries.

Introduction

The World Bank has requested the Institute of Transport Economics, Norway, to carry out an appraisal of the road safety situation and road safety work in 5 African countries. Benin, the Côte d'Ivoire, Kenya, Tanzania and Zimbabwe were selected for the appraisal. The overall objective of this evaluation is to identify key measures that may lead to sustained reduction in fatalities, personal injuries and material damage from road accidents in Africa. The data were collected through visits to the five countries. A report on the road safety situation of each country was sent to the authorities responsible for road safety in each country, and their comments have been incorporated into the final report. A preliminary version of this report was presented at the Third African Road Safety Congress.

Road safety development in Africa

The number of road fatalities in Africa has increased by 350 per cent from 1968 to 1990. This increase can be expected to continue with the increase in motor vehicles, unless action is taken. Although the rate of people killed and injured in road accidents relative to the population in most African countries has not yet reached the same level as Europe and North-America, the rate of people killed and injured relative to the number of motor vehicles is extremely high in most African countries. During the latest five years, the number of motor vehicles has increased by 21 to 63 per cent, road accidents by 15 to 70 per cent, fatalities by 28 to 57 per cent and injuries from 27 to 89 per cent in the five countries. Pedestrians and public transport passengers are the largest groups among the fatalities, about 30 - 40 percent each. In 1990 the accident risk for buses and taxis in Kenya was four times that of cars and light vehicles.

Review of road safety programs and activities

The responsibility for road safety is shared by 5 - 7 ministries. All five countries have a national road safety council, founded between 1972 and 1995. The objectives of the councils are good, but implementing road safety measures seems difficult. The councils face deficient funding.
All five countries, except Zimbabwe, have a national road safety program. The Zimbabwe Traffic Safety Board has a program for its own activities, but this program is too limited to be considered a national road safety program. Kenya is the only of these countries to have implemented a road safety program, which was in effect during the 1980's. Most activities established under the 1980 road safety program seem to have ceased after the end of the Finish assistance. In Tanzania a comprehensive road safety program was presented in 1996, but it is still pending for Cabinet approval.

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All five countries have accident data systems. Three countries admit that an unknown share of the accidents is not recorded. The definition of a fatality varies from dead on the road to dead up to 30 days after the accident.

Road planning and construction seem to be working relatively well. Foreign assistance is common. Road infrastructure is given first priority, and safety problems seems to be relegated to second level. The road engineering measures, such as roundabouts or speed humps, generally known to reduce accidents, are likely to have the same effect in developing countries as in highly motorized countries.

Most countries face problems in financing road maintenance, and road safety aspects may be compromised. Road signs are stolen or damaged, and the replacement is costly and rarely carried out. Donors seem to have taken more interest in road maintenance lately, making better possibilities also for executing road safety measures as part of road maintenance. The priority given to road safety aspects in road planning and maintenance, seems to some degree to reflect the priority of the donors rather than that of the recipient countries.

There is some road safety publicity in all five countries. Most countries have deficient budgets for publicity. The road safety information campaigns are not evaluated, and their effect on road accidents is unknown. Two countries have compulsory driver training in private driving schools, and three countries have no compulsory driver training. All five countries seem to face corruption with respect to driver testing and issuing of licenses, leading to unskilled drivers on the roads. Forged licenses are also a problem in some of the countries.

Some countries have mandatory vehicle inspection for all motor vehicles and some countries for public service vehicles only. The inspection of public service vehicles seems to be deficient.

Four of the five countries have some traffic education of school children, but there is a question of whether it reaches all schools and all children.

The basic legislation necessary for road safety work is established in all countries, though amendments are needed to some extent. These take long time to make.

All five countries have speed limits, in urban areas from 50 to 60 km/h, and in rural areas from 80 to 120 km/h. Zimbabwe seems to be improving speed limit enforcement after the recent introduction of the highway patrol, but the fines are too low to prevent speeding effectively. In Tanzania the police claim that speed limits are enforced to a certain extent, but there is a shortage of vehicles and equipment. The same problem exists in the Côte d'Ivoire and Kenya. In Benin speed limits are not enforced.

Drinking and driving is a problem in all five countries. In Kenya and Tanzania it was difficult to ascertain whether there is a legal limit, and if so,

what it is. The enforcement of drinking and driving rules is difficult, because of shortage of equipment.

Pedestrians and passengers of public service vehicles are the largest groups of accident victims, and seat belts may not be as important in these countries as in countries with a high number of passenger cars. But the mandatory installment of seat belts is important when the number of cars is increasing. The enforcement of seat belt wearing does not seem to be a priority for the police in those countries where belt wearing is mandatory.

Enforcement of traffic rules is a problem in these countries. The police lack training, vehicles and equipment. The police are reported to accept bribes, but the extent is unknown.

Pedestrians are a major victim group. More action to reduce pedestrian accidents is needed, and so is research on how to solve the pedestrian accidents in Africa.

Emergency medical services are supplied, but scarcely outside the major cities.

Relatively speaking, the accident recording systems, the road engineering and the legislation seem to be the activities that are functioning best. Legislation and engineering are important measures, and further extension and improvement of these measures still have a potential for reducing accidents. Organizational changes, funding, legislation amendments and enforcement are the most difficult activities to implement.

In most of the countries the road safety activities are financed through government grants. This financing is inadequate, especially for the activities outside road engineering, although these activities are much less expensive than those within engineering.

The foreign assistance for road safety work varies considerably between the countries. The 1985 evaluation of the Kenya road safety program pointed out that the training of national counterparts is a fundamental objective of any aid funded project in a developing country.

Measures for sustained reduction of road accidents

Causes of road accidents are usually classified as pertaining to road, vehicle and human factors. Though the need for developing and evaluating countermeasures for accidents particular to Africa should not be neglected, there is no doubt that the main problem in Africa is the *implementation* of accident countermeasures rather than a shortage of possible road accident countermeasures that could be effective under African conditions, if implemented.

There are several conditions to sustainability in road safety work:
- Competence
- Political priority
- Funding
- Implementation
- Organization
- Monitoring and evaluation
- Time

Of these conditions political priority, funding, implementation as well as monitoring and evaluation seem to be the most important. Road safety has a funding potential as anyone who can afford a motor vehicle, can also afford a few dollars a year for safety purposes, paid as a fuel levy, an annual vehicle licensing fee, or a motor insurance fee. The problem is the political priority to impose such taxes on vehicle owners and to organize it so that is not used for other purposes.

More knowledge of effective countermeasures exists now than 30 to 50 years ago, when Western Europe and North America faced road safety problems similar to those found in Africa in the 1990's. But the implementation of road safety measures may take more time in Africa than elsewhere. Economic resources are more scarce, and a number of claims compete for these resources. Also in North America and Northern Europe the implementation of road safety measures has taken time. But there is reason to be impatient, as every year more people are killed and injured on the roads.

Most effective countermeasures cost money, increase travel time or restrict individual freedom. These side effects will cause opposition to the countermeasures, and opposition takes time to overcome. Politicians will be reluctant to implement measures that meet with opposition. Political priority is needed to implement effective road safety measures. Political priority can only exist when both a certain share of the population and the politicians feel convinced that road safety measures give more benefits than their costs.

Monitoring and evaluation is necessary at all steps of a road safety policy or program, to make sure that the proper action is actually carried out or that necessary adjustments are made. The results from monitoring and evaluations can be fed back to decision makers and the road users as a basis for more road safety action.

Possible action to improve the political priority is awareness campaigns directed both at the decision makers and the people, emphasizing the costs or road accidents and the potential for accident reduction and savings. Motor insurance companies, health institutions, NGOs and media should be used to convince politicians to implement and the people to accept road safety measures. Effective demonstration projects should be used. Donor countries, having extensive experience in road accidents and countermeasures, should put pressure on any country receiving assistance for roads projects to include road safety programs. African and regional cooperation in the field of road safety should be stimulated.

An African Road Safety Initiative

At the conclusion of the 3rd African Road Safety Congress, April 1997, an African Road Safety Initiative was proposed. The objective was to improve the road safety situation in Africa by increasing awareness of the decision makers, politicians and the public, to increase the motivation and commitment of top-level decision makers and politicians and develop better information systems and increased action by international organizations. Such an initiative can use the competence and capacity for road safety work that already exists in several African countries, improving and expanding this capacity in cooperation with international experts.

1. Introduction

1.1 Background

The road accident situation in developing countries is worsening, and the increasing number of road accidents with fatalities and serious personal injuries is a serious problem. While regions such as Western Europe and North America have succeeded in checking and even reversing the road accident trend, the number of road accident fatalities in Africa went up by over 350 per cent from 1968 to 1990 (Dhliwayo, 1997). Conversely, in the developed countries the number of persons killed declined after 1970. Road accidents cause in addition to human suffering, economic costs equivalent to approximately 2 per cent of GNP for developing countries (Dhliwayo, 1997), including extensive use of scarce medical facilities for treatment of accident injuries and use of limited foreign exchange for replacement vehicles and spare parts. Road accidents ranked as number 12 as a cause of death and number 11 as a cause of years of life lost in Sub-Saharan Africa in 1990, and are expected to be number two cause of lost disability-adjusted life years in developing countries by 2020 (Murray and Lopez 1996).

The Southern Africa Transport and Communications Commission (SATCC), in consultation with the Norwegian Institute of Transport Economics (TØI) has produced a number of working papers which highlight new approaches aimed at improving traffic safety in the eleven countries of Southern Africa Development Community (SADC) (See Appendix 1). These papers emphasized traffic accidents as a major health problem in the SATCC countries, and that this problem may be mitigated by well designed and committed implementation of traffic management measures as done in the Nordic Countries. These papers provided frameworks and guidelines for improved traffic laws, highway codes, traffic signals, road marking manuals, and how to improve driver skills and general awareness of traffic safety.

With the objective to combat the deteriorating road safety situation in Africa, the United Nations Economic Commission for Africa (UNECA), together with other international organizations, organized the First African Road Safety Congress in Kenya in 1984 and the Second African Road Safety Congress in Ethiopia in 1989. The Third African Road Safety Congress was arranged in South Africa in 1997, where a preliminary version of this report was presented.

Little is known about what impact the two preceding congresses have had on the traffic situation in Africa, in particular in countries that tried to implement the recommendations forwarded in 1984 and 1989. The World

Bank has therefore decided that a traffic safety evaluation be carried out in a few selected Sub-Saharan countries. The countries selected for evaluation are Benin, the Côte d'Ivoire, Kenya, Tanzania and Zimbabwe.

1.2 Objectives of the evaluation

The World Bank has requested the Institute of Transport Economics, Norway to carry out an appraisal of the road safety work in five selected African countries: Benin, the Côte d'Ivoire, Kenya, Tanzania and Zimbabwe. The primary objective of the evaluation is to identify the key measures that may lead to sustained reduction in the number of road accident fatalities and personal injuries as well as reduction of material damages caused by road accidents in African countries.

The specific objectives of the study are:

a) to assess the core causes of the high accident rates in African countries and the resulting high loss of lives and property,

b) to assess requirements for a gradual and sustainable reduction of the high rate of accidents, loss of life and property to levels comparable to those in developed countries,

c) to assess how management capabilities of relevant public and private sector agencies may be strengthened to facilitate appropriate planning, programming and implementation of the necessary road safety programs,

d) to assess how adequate, secure and sustainable financial resources for road safety programs may best be mobilized and managed,

e) to assess how best to raise the awareness level of road safety among policy makers, the road users and the general public, to facilitate the formulation and implementation of appropriate strategies aimed at promoting traffic safety.

1.3 Study execution

The information and data for the project were collected through visits to the five countries during January through March 1997. Each country was visited twice. Local consultants and two data collectors, one for the three English-speaking East-African countries and another for the two French-speaking West-African countries carried out interviews with people involved in road safety work.

Apart from the statistics on road accidents and motor vehicles, most of the information collected in this project is of a qualitative nature. It is therefore difficult to analyze the information and conclude in an exact way.

The report on the road safety situation of each country included in the project was sent to the national road safety council and the ministry responsible for road safety in each country, and their comments have been incorporated into the final report.

The project terms of reference provided financing for 20 person-weeks of expatriate consultants and 20 person-weeks for local consultants, i.e. on the average four plus four weeks per country, including the analysis of the data, presenting the findings at the Third African Road Safety Congress and writing the final report.

2. Road traffic and accidents in the selected countries

2.1 Motorization

Table 1. Number of motor vehicles, population and motor vehicles per one hundred people in five African countries and Great Britain. 1995

	Benin	Côte d'Ivoire	Kenya	Tanzania	Zimbabwe (1994)	Great Britain
Motor vehicles	138,044*	199,937	435,893	252,000	470,556	25,369,000
Population (millions)	5.4	14.4	26.2	29.7	11.5	56.8
Motor vehicles per one hundred people	2.6	1.4	1.7	0.8	4.1	44.7

* Including an estimated number of 100,000 motorcycles and mopeds

Statistics on the number of vehicles may be unreliable, as new vehicles are registered, but many countries face problems in keeping records of vehicles that are no longer used.

Zimbabwe, having the highest density of motor vehicles, has less than one tenth of the vehicle density of Great Britain. The vehicle density of Benin would be considerably lower if the estimated number of motor cycles was not included.

Data on traffic volumes are not available in these countries. Figures have been calculated for some countries, but they may be calculated in different ways in different countries, making comparisons between countries unreliable. Such statistics are consequently not included in this paper. However, for Kenya, some data are available on the amount of road traffic (Gekonge 1996, table 1.11). These data are shown in table 2.

Table 2. Million km driven by vehicle type and year. Kenya

Year	Cars and light goods vehicles	Buses and taxis	Lorries	Total
1983	1668	116	612	2396
1984	1926	132	654	2712
1985	1996	151	726	2873
1986	2227	152	722	3101
1987	2921	198	908	4027
1988	3198	225	1012	4435
1989	3522	245	1099	4866
1990	3745	259	1166	5170

The total number of km driven has more than doubled from 1983 to 1990.

Table 3. Five-year growth rates in motor vehicles in 5 African countries. Per cent

	Benin	Côte d'Ivoire	Kenya	Tanzania	Zimbabwe
Motor vehicles	61	63	31	27	21

Table 3 shows that the number of motor vehicles has increased considerably during the latest five years in the selected countries.

2.2 Road accident situation

Table 4. Number of road accidents, fatalities and injuries, fatality and casualty rates in 5 African countries and Great Britain. 1995

	Benin	Côte d'Ivoire	Kenya	Tanzania	Zimbabwe (1994)	Great Britain
Road accidents	2,342	4,650	12,960	13,767	9,150	230,376
Fatalities	321	575	2,617	1,663	1,274	3,621
Injuries	2,082	16,700	22,993	12,625	16,140	306,885
Fatalities per 10,000 motor vehicles*	23.3	28.8	60.0	66.1	27.0	1.4
Casualties# per 10,000 motor vehicles*	174	864	587	567	370	122
Fatalities per 100,000 inhabitants	5.9	4.0	10.0	5.6	11.1	6.4
Casualties# per 100,000 people	44.5	120.0	97.7	48.1	151.4	546.7

* Including an estimated number of 100,000 motorcycles and mopeds in Benin
\# Casualties = fatalities + injuries

The figures given in table 1 must be interpreted cautiously, as both the number of accidents and injuries, as well as the number of vehicles and inhabitants are not accurate. Definitions may also vary, both with respect to fatalities, e.g. dead on the road or dead within a certain period of time, and the number of motor vehicles, including motorcycles and mopeds or not. Disregarding possible errors, the road accident risk, expressed as fatalities per 10,000 vehicles is highest in Tanzania and Kenya, about 60, which is about twice the rate of the other countries. Excluding the motorcycles and mopeds from the number of motor vehicles in Benin, the fatality/vehicle rate is even higher than in Tanzania and Kenya.

Casualties per 10,000 vehicles are highest in the Côte d'Ivoire, and Kenya and Tanzania being about equal, then Zimbabwe, and Benin the lowest. The public health problem, expressed as fatalities per 100,000 inhabitants is highest in Zimbabwe and Kenya, about 10, which is about twice the rate of the other three countries and that of Great Britain.

Table 5. Five-year growth rates in road accidents, road fatalities and road injuries in 5 African countries. Per cent

	Benin	Côte d'Ivoire	Kenya	Tanzania	Zimbabwe
Road accidents	70	-32	15	36	46
Road fatalities	47	-5	41	57	28
Road injuries	89	34	35	27	48

During the latest five years, the numbers of motor vehicles, road accidents, fatalities and injuries have increased considerably in all five countries, except for the Côte d'Ivoire, where the number of road accidents and fatalities have decreased. Considering the fact that the number of motor vehicles has increased by 63 per cent and the number of injuries has increased by 34 per cent during the same period in the Côte d'Ivoire, the decreases stated in road accidents and possibly in fatalities may be due to incomplete statistics. With the possible exception of the Côte d'Ivoire, the fatality and injury growth rates are alarmingly high.

2.3 Nature and characteristics of the road safety problem

Statistics on fatalities and injuries by road user group are not available in Benin and the Côte d'Ivoire. Table 6 shows that for Kenya, Tanzania and Zimbabwe passengers and pedestrians are the most frequent road user groups among the fatalities, being about the same percentage of the fatalities. Among the injury victims, the passengers are the largest group.

Table 6. Fatalities and injuries by road user groups in Kenya, Tanzania and Zimbabwe. Per cent

	Kenya (1995)		Tanzania (1995)		Zimbabwe (1994)	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
Drivers	11	10	6	5	23	20
Passengers	34	55	41	58	34	44
Motorcycles	2	2	2	3	6	3
Cyclists	9	7	11	10	2	10
Pedestrians	44	26	40	24	35	23
Total	100	100	100	100	100	100
No of fatalities	2,617		1,663		1,274	
No of injuries		22,993		12,626		16,140

The situation in the Côte d'Ivoire is claimed to be similar to that of the three countries in table 6, whereas motorcycle drivers and passengers are said to be the two most frequent victim groups in Benin, where the motorcycles seem to have the same passenger transport function as the minibuses in the other countries. By and large this means that public service vehicle passengers and pedestrians are the main victim groups in all five countries. These findings are in line with other descriptions of the road accident situation in developing countries (Ross et al, 1991). This is a situation different from most industrialized countries where drivers of private passenger cars make up the largest victim group and the passengers of these

cars the second largest group. This difference indicates that the optimal accident countermeasure mix to be applied in Africa may be different from that of the industrialized countries. Even though a wealth of knowledge on road safety measures and their effects exists in the industrialized countries, the difference in types of accidents may create a need for developing special road safety measures for African countries.

Data on variations in road accidents within countries by time of day, week and year as well as by geography were not available in these countries. Consequently, such variations will not be analyzed in this project.

In the tables above the road accident rates or risk are calculated as the number of fatalities or casualties to the number of vehicles. The traditional way of calculating such risk in developed countries is the rate of fatalities or injuries to the road traffic, i.e. the number of km driven. However, such data are not available for these countries, except for Kenya, as shown in table 2.

For the years 1983 through 1990, accident risk is computed as accidents per million vehicle km for light goods vehicles, for buses and taxis and for lorries (Gekonge 1996, Table 1.11). Table 7 below summarizes these statistics.

Table 7. Accidents per million vehicle km by vehicle category and year. Kenya

Year	Cars and light goods vehicles	Buses and taxis	Lorries
1983	2.66	5.88	1.69
1987	1.36	6.08	1.38
1990	1.13	4.89	1.05

Table 7 shows considerable differences in accident risk between the vehicle categories. These differences are likely to have been even greater if casualties had been used in stead of accidents, as buses and taxis are likely to have more casualties per accident than the two other vehicle categories. The importance of public service vehicle accidents, shown in table 6, is confirmed by table 7. Despite the 15 per cent increase in the number of road accidents in Kenya during the latest five years, shown in table 5, there is still a considerable decrease in accident risk for all three vehicle categories over these years shown in table 7.

2.4 Comparisons with other countries

In table 4 above, the accident, fatality and casualty rates of the five countries are shown together with the same rates of Great Britain. The difference in fatality/vehicle rate between the five countries and Great Britain is striking. Tanzania's rate is 47 times higher than the British rate and Benin's rate is almost 17 times higher. Great Britain has one of the lowest fatality/vehicle rates in the world, but the fatality/vehicle rates for Western Europe and North America are in the range from 1 to 5 (The United Republic of Tanzania, 1996, Figure 17b).

Table 8. Fatality rates in 5 African countries and in India, Malaysia, Xinjiang province China, Mexico, Chile, Russia and Great Britain.

Country	Fatalities per 10,000 motor vehicles	Fatalities per 100,000 inhabitants
Benin	23.3 *	5.9
Côte d'Ivoire	28.8	4.0
Kenya	60.0	10.0
Tanzania	66.1	5.6
Zimbabwe	27.0	11.1
India	131.2	6.7
	27.5 *	
Malaysia	16.7	25.1
	7.2 *	
Xinjiang, China (1992)	82.0	8.0
	54.0 *	
Mexico	4.7	6.2
Chile	15.1	12.5
Russia	11.0	22.4
Great Britain	1.4	6.4

* Including motorcycles and mopeds in the number of motor vehicles.

For India, Malaysia, Mexico and Chile the figures are taken from the International Road Federation 1995. Figures for the latest year available are used. Figures for Xinjiang are taken from Muskaug (1995). Figures for Russia are taken from Kuznetsov, 1997

In table 8, the fatality rates for the five countries and those of some developing countries in Asia and Latin-America are shown. Comparisons between countries in such rates are difficult, both because definitions - dead on the road vs. dead within 30 days after the accident, including motorcycles and mopeds among the motor vehicles - and the quality of registration may vary considerably between countries.

The fatality/vehicle rate is higher for the African countries, except for India and China, when two-wheelers are not counted among the motor vehicles. The fatality/population rates of the five countries are in the same range as India, China, Mexico and Chile, but considerably lower than that of Malaysia and Russia. These two countries, which may be in a stage of motorization between Great Britain and Africa, have a much greater public health problem. The question is whether the African countries will have to reach fatality/inhabitant rates of the level of Russia or Malaysia, before serious action is taken.

2.5 Main findings

The fatality/vehicle rates of the five selected countries are alarmingly high compared to countries outside Africa. Pedestrians, passengers of public service vehicles and possibly drivers and passengers of motor cycles are the main victim groups. The main victim groups may change as the number of passenger cars and possibly the numbers of motor cycles and bicycles grow, but the number of motor vehicles per 100 people will not reach a European level for many years to come. Pedestrians and public service vehicle passengers are likely to remain the main victim groups for a long time.

3. Review of Road Safety Work and Activities

3.1 The institutional framework

Ministries involved in road safety work

In the five countries the responsibility for the road safety work is shared by a number of ministries, in Benin 6 ministries, in the Côte d'Ivoire 7 ministries, in Kenya 6 ministries, in Tanzania 7 ministries and in Zimbabwe 5 ministries. The number of ministries involved in the road safety work, reflects the many aspects of this field, engineering, education, enforcement, emergency medical services and finances, and this situation is not unique to Africa.

The coordination of all the different aspects of the road safety work between the ministries and government bodies involved seems to be more or less a problem in all countries. There is also a certain amount of disagreement between the ministries as to where the main responsibility of road safety work should be.

Benin
The ministries involved in road safety activities in Benin are the following:

The Ministry of Public Works and Transport (MTPT), whose responsibilities are co-ordination of all activities regarding road safety and the National Centre of Road Safety (CNSR), which is a directorate belonging to this ministry.

The Ministry of the Interior, Security and Territorial Administration (MISAT), whose responsibilities are regulation of road traffic within urban areas (police), road traffic controls and intervention in case of road accidents.

The Ministry of Health, whose responsibilities are emergency services and medical care in hospitals of injured persons.

The Ministry of National Defense whose responsibilities are control of road traffic and intervention in case of accidents, mainly in rural areas (Military police - Gendarmerie).

The Ministry of Finance whose responsibility is the insurance of vehicles through the National Society of Insurance (SONAR), the only insurance company in the country (public).

The Ministry of National Education whose responsibility is the education of school children in road traffic safety issues.

Difficulties are experienced in the co-operation between ministries. It is often not straightforward to establish the responsibility of costs regarding the organization of road traffic controls connected with actions and campaigns. Responsibilities are not well defined, who is in command of who when different agencies participate in road traffic controls.

Insufficient material resources, cars, motor cycles, radars, communication equipment like radios and telephones are also a problem.

The Côte d'Ivoire

The ministries involved in road safety activities are the following:
The Ministry of Economic Infrastructures (The Delegated Minister charged with Energy and Transport), whose responsibilities are the definition and follow up of road safety policy, the OSER, the Office for Road Safety, planning and implementation of road construction, and rehabilitation and maintenance financed through ordinary government budgets.

The Ministry of Defense whose responsibilities are the enforcement of road traffic legislation, through the military police (gendarmerie) and organization of emergency services through the fire brigades.
The Ministry of Interior Security whose responsibility is the enforcement and control of road traffic legislation through the police corps (in towns).

The Ministry of Health whose responsibilities are the treatment of victims of road traffic accidents in public hospitals and the organization of emergency services through SAMU, which is a self sustained ambulance service, demanding payment for services rendered.

The Ministry of Primary Education whose responsibility is the education of school children in road safety.

The Ministry of Trade who has the responsibility (together with the Ministry of Transport) for SICTA, the company charged with technical control of vehicles. SICTA is a private company functioning on basis of cost-covering charges for services.

The National Bureau of Technical and Development Studies (BNETD), reporting directly to the President's office, has the responsibility for road planning and construction involving budgets based on co-operation with international agencies etc., i.e. at present practically all new construction of roads.

The different ministries are not co-operating very well. Co-ordination is often difficult when a large number of agencies and persons participate in committees etc. Communication is slow and frequently subject to bureaucratic restrictions.

Co-operation between the police and the Road Safety Office (OSER) on preparation of road accident statistics is often slow and onerous. The police has no obligation to release statistics. Police and gendarmerie use different forms for collecting information on accidents. OSER does not dispose of sufficient equipment and manpower capacity to collect, treat and analyze the statistics in an efficient way.

Police and fire brigades experience difficulties with collaboration at accident sites. Police usually arrives late, and the fire brigade has to do police work, like directing traffic, in the meantime. This work obstructs an effective evacuation of the people injured.

SICTA, the private company in charge of technical control of vehicles has never been subject to control from the ministries.

Kenya
The main responsibility of the Ministry of Public Works and Housing (MPWH) in this field is road construction and maintenance. Road safety is part of the consideration when roads are constructed and maintained. The Road Safety Unit, which is the secretariat of the National Road Safety Council, is within the MPWH. Even the chairman of the NRSC is employed by this ministry.

The road safety activities and responsibilities of the Ministry of Transport and Communication (MTC) lies within the usage of roads. Activities are such as education of road users, radio and TV programs and other media. There seems to be some disagreement between the MPWH and the MTC as to the main responsibility for road safety work.

There is a problem of coordination between these two ministries. The chairman and the secretary of the NRSC report to the Permanent Secretary of the MPWH. The PS of the MTC would also like to instruct the chairman and the secretary, but he has to go through the PS of the MPWH. This causes some friction.
There is also a disagreement between the Kenya Revenue Authority and the Ministry of Transport and Communications about the Registrar of Motor Vehicles Department and its annual revenue of about Sh. 4.8 million (almost 1 million USD).

Traffic education is the responsibility of the Ministry of Education.
The police report to the Office of the President.

Tanzania
7 ministries are involved in road safety work in Tanzania. These are
The Ministry of Works, whose responsibilities are planning program, axle

load control, traffic engineering, road infrastructure
The Ministry of Communications and Transport, whose responsibilities are licensing of vehicles and the National Institute of Transport, NIT
The Ministry of Home Affairs, whose responsibilities are enforcement, vehicle testing and accident recording.
The Ministry of finance, whose responsibility is vehicle registration and issuing of driver licenses after the police has tested the candidates.
The Ministry of Health, responsible for treatment of the injured
The Ministry of Information and Broadcasting, whose responsibility is public awareness
The Ministry of Education, whose responsibility is the road safety curriculum for schools.

There seems to be possibilities for improvement in the cooperation between the ministries. The program proposing organizational changes in the road safety work may actually have made the coordination more difficult, as there is disagreement concerning the suggested transfer of responsibility for the secretariat of the National Road Safety Council and for the vehicle inspection from the police to the Ministry of Works. How to improve the cooperation between the ministries involved, is difficult to say, but a pending situation, like disagreement over a proposed change, is probably worse than the situation before the change was suggested or after the possible implementation of the change.

Zimbabwe

The ministries involved in road safety work in Zimbabwe are primarily the Ministry of Transport and Energy and The Ministry of Home Affairs through the police. The Director of Roads is involved, but he is part of the Ministry of Transport and Energy. The Ministry of Education is responsible for traffic education of school children and the Ministry of Health for the emergency medical services and hospital treatment of accident victims. The Ministry of Justice, Legal and Parliamentary Affairs is responsible for the legislation and amendments to the Road Traffic Act.

Table 9. Ministries involved in road safety work by country

Benin	**Côte d'Ivoire**	**Kenya**	**Tanzania**	**Zimbabwe**
Public Works and Transport	Economic Infrastructures	Public Works and Housing	Works	Transport and Energy
Interior, Security and Territorial Administration	Defense	Transport and Communication	Communications and Transport	Home Affairs
Defense	Interior Security	Ministry of the President	Home Affairs	Justice, Legal and Parliamentary Affairs
Health	Health	Health	Health	Health
National Education	Education	Education	Information and Broadcasting	Education
Finance	Trade	Kenya Revenue Authority		

Table 10. The National Road Safety Council - Institutions involved by country and year of establishment*

Benin 1986	**Côte d'Ivoire** 1995	**Kenya** 1982	**Tanzania** 1977	**Zimbabwe** 1972
Public Works and Transport	Defense	Public Works and Housing	Works	Transport and Energy
Finance	Interior	Transport and Communication	Communications and Transport	Home Affairs
Works	Justice	Ministry of the President	Home Affairs,	Education and Higher Education
Justice	National education	Education	Information and Broadcasting	Justice, Legal and Parliamentary Affairs
Health	Infrastructure	Health	Prime Minister's Office	Insurance Council of Zimbabwe
Industry	Transport	Attorney General's Office	National Institute of Transport	Bus company
Interior, Security and Territorial Administration	Health	Nairobi City Council	National Insurance Corporation	Other private businesses or organizations
Trade	Works and public sector	University of Nairobi	British Petroleum	
National Education	Economics and finance	Automobile Association of Kenya	Chakuwa Jali (organization for accident victims)	
		Kenya Transport Association	National Lottery	

**The name of this body varies between the countries*

The National Road Safety Council

All five countries have a national road safety council, even if their names, their history and their responsibilities vary. The Zimbabwe Traffic Safety Board was started in 1972, whereas in the Côte d'Ivoire the National Road Safety Council was established in 1995.

The councils seem to have some problems in common. Their objectives are good enough, but most of them seem to have some problems when it comes to the implementing of road safety measures.

The councils have 9 to 22 members. The rather large number of members makes meeting difficult. In Kenya, the council does not meet unless all 22 representatives are able to attend, a rule leading to few meetings. In other countries the representatives will send their deputies or even lower officers without decision making capacity, making the council unable to make decisions. Some councils are part of a ministry and may have a conflict of loyalty when disagreeing with the ministry they belong to. Most councils have problems with shortage of funding.

The secretariat of the road safety council

The road safety councils have a secretariat, but the organizational situation varies. In Benin, the Côte d'Ivoire and Kenya the secretariats are the road safety units within a ministry. In Kenya the unit has two employees. In Zimbabwe the Council has its own secretariat with a rather large staff. In Tanzania the traffic police rather than the road safety unit within the ministry responsible for road safety, is the secretariat of the Council.

3.2. Road safety activities

The road accident data system

Accident recording systems produce annual road accident statistics. Benin and the Côte d'Ivoire have manual accident data systems. The other countries have partly or fully computerized systems. All countries use police data as the source. Several countries have problems in having the police send the accident reports to the central compiling unit in due time. Kenya and Tanzania claim that all injury accidents are included in the statistics, because a police report is needed for insurance purposes. Benin, the Côte d'Ivoire and Zimbabwe admit that an unknown share of the accidents is not recorded. This is a common problem in road accident statistics, e.g. in Norway it is estimated that only 36 per cent on the road accidents with personal injuries are reported to the police and included in the statistics (Borger 1991). The definition of a fatality varies from dead on the road to dead some time after the accident.

Road engineering

Road planning and construction produce new roads, and seem to be working

rather well in all countries. Foreign assistance is common in road planning. Road infrastructure is given first priority, and safety problems seem to be relegated to second level in planning. Standards and guidelines for road design are usually those of the home country of the expatriate experts. Zimbabwe reports that although compromises have to be made for funding reasons in using international guidelines, road safety standards are never compromised. Speed reducing devices such as humps are used in most countries, especially close to schools.

The road engineering measures, such as roundabouts or speed humps generally known to be accident reducing (Elvik, Vaa and Østvik, 1989). Whether they will have the same effect in developing countries as in highly motorized countries where the research is done, is unknown, but they are likely to do so, because they influence physical forces or road user behavior directly.

Most countries have problems in financing road maintenance, and road safety aspects may be compromised. All five countries have problems with theft and damage of road signs and the costs of replacing them.

Donors seem to have taken more interest in road maintenance lately, a fact that should make more room also for road safety in road maintenance. As a possible consequence of increased donor interest, road maintenance including black spot improvement, seems to be improving. Pot holes are filled and roads are being resurfaced to a larger degree than before, even if the road maintenance still leaves a lot to be desired.

The priority given to road safety aspects in road planning and maintenance, seems to some degree to reflect the priority of the donors rather than that of the recipient countries.

Road safety publicity

There is some road safety publicity in all five countries. Most countries have a road safety week every year, or some other regular publicity activities. Most countries have deficient budgets for publicity. The objective of the road safety publicity seems to be the changing of road users' attitudes and thus their behavior. Publicity is generally not used to create acceptance for restrictions such as speed limits and enforcement or to create demand for better road safety by asking whether people need to accept the road accidents or questioning whether the authorities take the responsibility and the action necessary to reduce the accidents. The extent of road safety publicity varies, but the people who are working with it, seem to overestimate the impact of this publicity a bit. Other people interviewed doubt that most road users will even notice the publicity or the road safety weeks.

The research on road safety publicity shows a great variation as to effect. Information or publicity alone is generally considered having a rather limited effect, but publicity may be effective when used together with other

road accident countermeasures such as speed enforcement (Elvik, Vaa and Østvik, 1989). As the contents, form and amount of the publicity may vary tremendously, and the effects are likely to depend on social and cultural factors, research results from highly motorized countries cannot be considered valid for other countries. .

Driver training and testing

Benin and the Côte d'Ivoire have compulsory driver training in private driving schools. Kenya, Tanzania and Zimbabwe have no compulsory driver training, but claim that most people get some training from driving schools. All five countries seem to have problems with bribery in driver testing and issuing of licenses, leading to the risk of getting unskilled drivers on the roads. Forged licenses are also a problem in some of the countries. Zimbabwe seems to have solved this problem by issuing metal driver's licenses.

Research on driver training in motorized countries tends to find little or no effect on accidents (Elvik, Vaa and Østvik, 1989). As the contents, form and amount of the training may vary tremendously, and the effects are likely to depend on social and cultural factors, research results from highly motorized countries cannot be considered valid for other countries.

Vehicle inspection

Benin and the Côte d'Ivoire have mandatory annual vehicle inspection for all motor vehicles and Kenya, Tanzania and Zimbabwe have mandatory inspection for public service vehicles only. Nevertheless, in the Côte d'Ivoire only 50 per cent of the vehicles are actually inspected.

Although the public service vehicles are a very important category, the inspection of these vehicles seems to be deficient in at least two ways. Because these vehicles drive long distances, annual inspection may be too infrequent. There is also the problem of good spare parts being put into the vehicle when it goes for inspection and then taken out again after the inspection, to be used for the next vehicle to be inspected. To solve this problem, road side inspection in addition to inspection in the inspection centers will be necessary. Although privately owned vehicles are not as common as in Europe, mandatory inspection of such vehicles above a certain age, should be considered in the countries where it is not yet mandatory.

Research on mandatory vehicle inspection in motorized countries tends to find little or no effect on road accidents (Elvik, Vaa and Østvik, 1989). However, as the economic basis for maintaining vehicles and the availability of spare parts are likely to be different in motorized countries and in Africa, vehicle inspection may have another impact on road safety in Africa.

Traffic education of school children

Traffic education of school children is going on in all countries, except Tanzania. In some countries it is part of the curriculum, whereas in other countries it is an option for teachers interested. Lack of funding may limit the number of schools that are reached by the traffic education efforts of the programs. The education seems to emphasize road signs, which may not be the most important aspect, considering the fact that the lack of road signs is a problem in the five countries.

Legislation and enforcement

The basic legislation necessary for road safety work is established in all countries, though amendments are needed to some extent. Several countries have proposed amendments to their Road Traffic Act pending for approval by Cabinet or Parliament. The time it takes to make amendments and have them enacted, seems to be a problem.

Table 11. Speed limits, km per hour, in urban and rural areas, blood alcohol concentration (BAC) limit and seat belt rules by country.

Speed limit	Benin	Côte d'Ivoire	Kenya	Tanzania	Zimbabwe
Urban	50	55	50	50	60
Rural	90	80/120	100	100	120
- buses		90	80	80	80
- heavy goods vehicles		75	80	80	80
BAC limit %	0.08	0.08	No limit ?	0.08?	0.08; 0.15
Seat belts					
Installed	Not mandatory		Not mandatory		Mandatory in front seats
Wearing	Not mandatory	Mandatory	Not mandatory	Mandatory in front seats	Mandatory in front seats

Speed limits

All countries have speed limits. The limits in Zimbabwe are somewhat higher than normal standards, especially in urban areas. In the other countries the speed limits are reasonable. All five countries have problems enforcing the limits. As speed limits are scarcely signed and the signs are often stolen, drivers caught for speeding in urban areas may claim that they could not know the speed limit.

Zimbabwe seems to be improving on speed limit enforcement after the recent introduction of the highway patrol, having a staff of some 60 officers. According to the Zimbabwe Traffic Police all major roads are patrolled every day, on weekends even by night. The highway patrol got 20 more motorcycles and 20 more vehicles in February 1997. The low fines are, however, a problem, especially for the enforcement of the speed limits for the public service vehicles.

In Tanzania the police claim that speed limits are enforced to a certain extent, but there is a shortage of vehicles and equipment. The same problem exists in the Côte d'Ivoire and Kenya. In Benin speed limits are not enforced.

Drinking and driving

Drinking and driving is a problem in all countries. In Kenya and Tanzania it was difficult to ascertain if there is a legal limit, and if so, what it was. Even high ranking road safety officers were unsure, a fact indicating that the BAC limit is probably not known to drivers in general and rarely enforced.

The enforcement of drinking and driving restrictions is difficult, because the equipment is missing to a great extent. When breathalyzers are not legally accepted as evidence, the suspects of drinking and driving will have to be taken to a doctor for a blood alcohol test. The drivers will often refuse to have a sample taken, or sufficient time has passed for the drivers to become sober. The police officers are therefore not motivated to enforce drinking and driving rules.

Drunk drivers can of course be stopped for other offenses to the traffic act and be prosecuted for careless or reckless driving.

Seat belts

Seat belts have proven effective in protecting drivers and passengers of passenger cars against death and serious injuries when a road accident happens. Considering the fact that pedestrians and passengers of public service vehicles are the largest victim groups in the countries studied in this project, seat belts may not have the same importance in these countries as in countries with a higher number of passenger cars. On the other hand, after the liberalization of the economies the number of passenger cars has increased and can be expected to increase further. The mandatory installment of seat belts is important when the number of cars are increasing. The enforcement of seat belt wearing does not seem to be a priority for the police - even in countries where it is mandatory.

Enforcement problems

Enforcement of traffic rules in general seems to be a problem in all countries. The police lack training, vehicles and equipment. In all five countries there are reports on the police accepting bribes from traffic offenders, although it is difficult to assess the extent of this problem. In Benin and the Côte d'Ivoire the corruption in enforcement is admitted to be a major problem in road safety work even by representatives of government bodies.

In Kenya the Automobile Association has suggested publicly that citizen groups be established to monitor police enforcement to avoid bribery. The accepting of bribes seems to be problem not only with the police officers enforcing the rules on the road, but also with their superiors and even the magistrates. In Zimbabwe the police complain about the fines being so low that people just do not care if they are fined, and it seems to take a long time to increase the fines.

Pedestrian accident countermeasures

Pedestrians are a major road accident victim group in most African countries. There is no easy solution to this problem. The risk factors contributing to these accidents are many, such as high speed of motor vehicles, drivers not observing pedestrians or not respecting their rights in crossing streets and roads, poor visibility at night, drunk drivers as well as drunk pedestrians, careless drivers and careless pedestrians. Children under a certain age cannot be expected to take care of themselves, and adults, both drivers and parents have a responsibility to protect children from road accidents.

Pedestrian crossings are introduced, but not respected. Signs are stolen, and zebra stripes are worn out and not repainted. In Zimbabwe and possible other countries there are pedestrian crossings on roads with 80 km/h speed limits. Raised pedestrian crossings reduce speed and accidents, but are not introduced in these countries yet.

Speed humps are applied in towns and cities. These are efficient in reducing speed and accident risk, as much as 50 per cent (Elvik, Vaa and Østvik, 1989), but if too high and not signed, they may make drivers lose control especially at night when they are difficult to spot. This effect is minor compared to the accident reducing risk. In some residential areas in Lusaka, Zambia, local people have extended the humps on to the shoulders of the street, to prevent car drivers from avoid the humps by driving on the shoulder, a clear indication that the speed humps are popular among the residents.

Pedestrians have priority when crossing on green light at robots, but turning drivers may be concentrating more on other drivers than on the pedestrians.

In towns and cities there are problems of the sidewalks being occupied by street vendors, forcing the pedestrians into the streets, and pedestrian

vendors coming on to the streets to sell their goods when the cars stop for a red light.

Pedestrian bridges are built, but unless well planned and constructed, they may be unattractive to the pedestrians. Pedestrian bridges may also be the sites of petty crime, and people may prefer to cross on the road to avoid this problem.

More action to reduce pedestrian accidents is needed, and so is research on how to solve the pedestrian accidents in Africa. Pedestrian and child safety in urban areas was studied in Kenya and Egypt (ECA, 1997), and that project could be the basis for further research on pedestrian problems and countermeasures against pedestrian accidents.

Specific action to reduce pedestrian accidents is described in chapter 4.

Road safety research

There is some road safety research in all five countries, but no systematic road safety research is undertaken. In some countries there is research within the road safety council, in others within the police or a university. Evaluation of road safety activities is needed in all five countries, see point 5.10, to check whether they have the same effects as similar measures in other parts of the world. Research is also needed on road safety problems that are special to Africa, like the public service vehicle accidents. Such research should be undertaken by an independent research institution, e.g. a university. There is competence for road safety research in these countries, but the funding and the organization are the problems.

Emergency medical service

Emergency medical services are supplied, but they are a problem outside the major cities. Some countries have private ambulance systems, even helicopter rescue, that will help people who are able to pay for the service. In Zimbabwe the private emergency services are said to come to accidents without considering if the victims are able to pay for the service.

In Benin the police have the authority to require vehicles to transport accident victims. In the Côte d'Ivoire the fire brigade is responsible for the transport of road accident victims. This seems to be working well in the cities where there is a fire brigade.

Otherwise injured people have to rely on the help of «good Samaritans» passing by, for transport to hospital. Except for the Côte d'Ivoire, where people seem to be reluctant to be involved in helping out in accidents, people passing by accident scenes, seem to be helpful in providing transport to hospital. Poor telecommunications is a problem in calling for help.

Though most countries have hospitals spread out over the country, all hospitals do not have doctors on call or the equipment needed to treat badly injured people. Payment for the medical service may also be a problem.

Overall countermeasure implementation

Relatively speaking, the accident recording system, the road engineering and the legislation seem to be the areas that are functioning best. But as legislation and engineering are important measures, further extension and improvement of these measures still have a potential for accident reduction, maybe even to a greater degree than those measures that are functioning less well. Because engineering measures are effective and not controversial, and their costs can be included in road construction and maintenance costs, these measures may be easier to implement than most other measures.

Organizational changes, the providing of funding, legislation amendments and enforcement seem to be the most difficult activities to implement, probably because they may easily conflict with other interests. Possible action to improve countermeasure implementation is described in chapter 4.

3.3 Road safety programs

There are more differences than similarities as to road safety programs in the five countries. In Benin and the Côte d'Ivoire the road safety programs are the road safety components of the World Bank restructuring programs for the transport sector. In Kenya, a road safety program existed in the 1980's, and a cabinet memorandum recommending accident countermeasures to be taken in the future was made in 1991. In Tanzania an extensive road safety program was presented in 1996. In Zimbabwe there is no national road safety program, but the Zimbabwe Traffic Safety Board has a five-year program for its own activities.

Benin
A road safety program consisting of 3 projects was conceived in 1995. These projects make up the road safety part of the Transport Sector Programme, which has been initiated with assistance from the World Bank.

The projects comprise:
1. Creation of a data bank for road accidents statistics.
2. Implementation of an awareness and education program.
3. Strengthening of the centers for technical control of vehicles.
   Lack of funds has been the main obstacles to realization of the road safety program.

The Côte d'Ivoire
The Road Safety Programme was completed in 1989. The program will be implemented within the frame of the Transport Sector Plan which is now

under negotiation with the World Bank. Different donor agencies will be approached for financing.

The main goals and activities of the program as of today are:

1. Improve the efficiency of technical control of vehicles.
2. Oblige buses to install a special speed reduction equipment.
3. Improvements regarding the deficient ways in which vehicles now are controlled by police and military police (gendarmerie).
4. Creation of a professional driving license (now there is one uniform license).
5. To arrange for equipment and human resources at the Office for Road Safety - training center for driving school teachers and professional drivers.
6. Revision of the regulations of the driving schools.
7. Reorganization of the Office for Road Safety.
8. Formation of 3 traveling road commissions for "control of controllers."
9. Launching of national and regional awareness campaigns for road safety.
10. Treatment of black spots.

Information on the cost of the program is not yet available. It is nevertheless assumed that various sources of financing will be needed. The World Bank, the African Development Bank, France etc. will be approached. It is supposed that financing can be arranged soon, and definitely within 3 years.

The World Bank's priority is concentrated on 4, 5 and 7 and to allow for more liberalized import of used spare parts with less customs duties (under 1). Additionally it is stressed that the success of measures against corruption (corrupted police officers) very much depend on political will.

The vehicle control was privatized in 1990, but it still seems to be a need for a more efficient vehicle control.

It has been decided to introduce the speed limiters, but further action to realize this decision has not been taken.

A study on reorganization of the Office for Road Safety (OSER) has been commenced. With a more independent status it is envisaged that OSER will be granted own sources for funds. Primarily it is expected that OSER will benefit from a larger share of the insurance tax, which now constitutes 1,25% on the profit of the insurance companies. OSER has also proposed to introduce a tax on spare parts (contrary to the World Bank's opinion).

Traveling commissions intended to reduce police corruption, have been introduced. Their effect is, however, doubtful, as they seem to have taken to control of road users.

Financing is requested for implementation of more costly initiatives.

Kenya

The Kenya road safety program of 1980 (Ministry of Transport and Communications et al, Kenya, 1980), supported by Finland, proposed organizational measures, enforcement, an accident investigation committee, the development of training of drivers, vehicle inspection, road planning and maintenance, first aid training, information and education, and road safety research. The objective of the project was to improve road safety in Kenya.

The Kenya road safety program came to an end in 1991. As part of the conclusion of this program the National Road Safety Council prepared a Cabinet Memorandum on recommendations on measures to be taken to enhance safety on Kenyan roads. This memo recommends the following 24 countermeasures:

1. The education of children
2. The driving curriculum be reviewed immediately
3. PSV driving licenses be issued on the basis of competence based on attendance of a special course
4. Facilities be established for training of driving school instructors
5. Role of inspector of driving schools and officer-in-charge of driver testing unit be separated
6. Funds be made available for more media, education, and information public campaign
7. Road maintenance budgets be increased vis-à-vis new road development to enable road safety measures be undertaken
8. Funds be allocated to increase capacity of congested roads and correction of dangerous spots and construction of by-passes
9. Pedestrian facilities be provided as a priority in urban areas
10. Standardizing engine sizes for buses and lorries to facilitate denial of licenses to import large engines
11. WHO safety requirements for imported vehicles be made mandatory
12. Design for PSVs be reviewed and Kenya Bureau of Standards approval be sought to enhance safety and comfort. Discourage use of open vehicles to ferry people.
13. Speed governors be introduced in all PSVs in a systematic manner
14. To amend the Act on vehicle inspection to include inspection of private vehicles and to license competent private persons to inspect private vehicles of over 5 years old, once a year before annual road licensing is granted.
15. The Traffic Act be amended to put all PSVs at par with respect to routes and consequential strengthening and expansion of Transport Licensing Board with authority to oversee the operation of PSVs
16. Special teams be set up to withdraw licenses for certain offenses if and

when the Minister deems necessary
17. Fines be made instant for minor offenses and the Police to be authorized to collect and use the money to strengthen their activities
18. To set up a fund to be called National Road Safety Fund for use by NRSC in its activities.
19. The Council Secretariat be strengthened through recruitment of professionals
20. The present Council be trimmed to a maximum of 10 members
21. A special steering committee to the Council be formed, consisting of permanent secretaries of the Ministry of Transport and Communications and the Ministry of Public Works and the Commissioner of Police
22. To start negotiations with the financial institutions with a view to increasing the repayment period for PSV operators
23. To start special courses for PSV drivers
24. To encourage PSV owners to employ and retain PSV drivers by pegging issuing of Transport Licensing Board licenses, and insurance on the name of drivers and conductors and by payment of benefits stipulated in the Kenya Labour Laws

The present status of this memorandum is unsettled. It seems, however, that the memorandum is still a proposal, pending for Cabinet approval almost 6 years later. The reason given, after several probes, was that some of the proposals are controversial. Part of the implementation problem seems to be that the PSV operators act as a pressure group, even if they do not have a formal organization.

Tanzania

An extensive road safety program was ready by July 1996 (United Republic of Tanzania, 1996). The program comprises all areas of road safety, and, if implemented, it should have a great potential for reducing the road accident problem of Tanzania. The program was, however, not yet approved by government by February 1997.

The main objectives and activities are described in the program, which is available. The objectives are:

1. «To establish a road safety organisation capable of managing a multi-sectoral integrated approach to the road safety problem with long and short term plans.»
2. «To increase the quality of life in Tanzania by preventing accident occurrence and by minimizing the consequences of road accidents.»
3. «To prolong the life of the road network through effective vehicle and axle load control.»

Under each objective several goals are described, in total 14 goals, and a great number of activities to reach these goals, are described. A budget is proposed, supported by domestic sources. Financial assistance is proposed for short and medium term activities.

Expatriate experts are involved on short term basis - the amount of involvement is described in the program.

Zimbabwe
The Zimbabwe Traffic Safety Board has a five year program, concerning the activities of the board. Activities included in this program are:

1. Traffic accidents/totals/rate reduced by 15%.
2. Traffic safety information education presented to two million Zimbabweans, 20% of the present population.
3. Reduced strain on medical services.
4. Replace vehicles and other equipment purchased in 1996.
5. The teaching of traffic safety presented to twenty five thousand teachers.
6. Draft another five year programme under the light of experience gained for the years 2001 to 2005 if the present plan has been successfully implemented, if not roll it.
7. Cycle training is presented to ten thousand pupils, who attend rural schools.

Although the ZTSB's five-year program has an ambitious goal of 15 per cent accident reduction, the means to attain this goal are limited to the information and training activities of the boards head office and local offices. The program covers too few aspects of the whole road safety area to be considered a national road safety program, and mixes national and organizational goals. The program is not to be presented for government approval. Establishing an extensive national road safety program comprising all aspects of road safety, would be an important objective for the ZTSB.

The road safety programs - status of implementation

Benin and the Côte d'Ivoire are trying to establish financing for their road safety programs. Even if the road safety program of the Côte d'Ivoire was completed in 1989, the implementation is still waiting for funding. Negotiations with the World Bank about the Transport Sector Plan, of which the program is a part, are going on at present.

Kenya is the only country of the five included in this project, to have implemented a road safety program. During the Kenya road safety program a number of measures were implemented. When the assistance from Finland came to an end in 1991, the National Road Safety Council came up with a cabinet memorandum suggesting a new road safety program for Kenya (Finnida 1992, Appendix 6). This program is still waiting for Cabinet approval in early 1997. Several activities established under the 1980 road safety program seem to have ceased after the end of the Finish assistance.

In Tanzania the road safety program is still pending for Cabinet approval. The Cabinet cannot approve of the program until it is presented to them, and the Cabinet paper on the program is waiting for the comments from the National Road Safety Council which has not yet had the program presented

for discussion. Why such an important matter as a national road safety program has not been discussed in the Road Safety Council more than half a year after it was ready, is not easy to say. The reason may be that some of the proposals in the program are controversial, and consequently the program is being retained to avoid the realization of these proposals.

The Zimbabwe Traffic Safety Board is implementing its own five-year program, but limited resources pose a severe problem for the implementation.

Short and long term effects of the road safety program

It is always difficult to assess the effects of a road safety program, because in practice it is impossible to know what the number of accidents and casualties would have been without the program. When the number of motor vehicles or the number of km driven are increasing rapidly, an extremely effective program would be needed to reduce the number of accidents and casualties.

However, if the program is effective, a reduction in the accident rate, i.e. fatalities or injuries to the number of vehicles or to the number of km driven should be expected. The rate of fatalities to 10,000 motor vehicles was not reduced considerably during the Kenya road safety program. The fatality rate of the years right before the program started, 70 - 80, has, however, not been reached again. (Gekonge 1996, table 1.3) The number of accidents per million vehicle km was reduced from 2.55 to 1.13 from 1983 to 1990, a possible effect of the program.

On the other hand, when the road safety program includes the improvement of the accident data system, there is a risk that the improvement of this system will lead to more accidents being recorded, a fact which may easily be misinterpreted as a real increase in accidents.

A possible way of measuring the effects of road safety activities is through changes in road user behavior, like lower speed or less drinking and driving. The countries in this project have no such data. A road safety research program could produce driver behavior data.

In Zimbabwe, however, the traffic police officer interviewed, claimed that the drivers have recently started warning each other about speed checks by flashing their headlights, an indication that the drivers now see a real risk of being stopped by the police for speeding.

Zimbabwe has a lower rate of fatalities to the number of motor vehicles than the other East-African countries in the project. It seems likely that the relatively favorable road safety situation of Zimbabwe is due to their road safety work being better organized and possibly a longer tradition for road safety work.

Road accident statistics being not too reliable and no countermeasures evaluated, it is almost impossible to say whether the differences in fatality or injury rates are due to differences in road safety efforts or other factors.

3.4 Financing and foreign assistance

In most of the countries the road safety activities are financed through government grants. This financing is inadequate in all the countries in the project, especially for the activities outside the road construction and maintenance. The paradox is that the road safety activities outside the road engineering sector are much less expensive than those within engineering. In Benin the road safety work is partly financed by vehicle inspection fees, covering more than the costs of vehicle inspection itself. But still, Benin is also looking for international assistance to finance road safety initiatives.

In Tanzania the road safety program was to be supported by Norway. Some donor financing was planned, but user fees were proposed to support the regular road safety activities and to become the long term financing. The user fees in question are levies on third party insurance premium, an annual road safety levy paid by vehicles owners, fees for vehicle inspection, driving schools, driver licensees etc., a proportion of the roads fund and a proportion of the road offense fines. An amendment to the Road Traffic Act has recently been presented to the Cabinet, to the effect that the fuel levy is only used for road purposes.

In Tanzania there is a roads fund, financed by a levy on fuel, securing an increase in the fund proportional to the increase in traffic. A percentage of the roads fund could be used for road safety work as well, even the part of the road safety work that is not related to road building and maintenance, as these parts of road safety work are inexpensive compared to the road construction and maintenance. Licensing and vehicle inspection can be financed by user charges to the license candidates and the car owners.

In Zimbabwe there is as yet no dedicated road fund. The revenue from the fuel levy goes directly to government. The annual revenue from the fuel levy is 20 million US $. A dedicated road fund is proposed. There is also a fee on vehicle licensing that could be used for road safety purposes.

Amount and type of foreign assistance received

The foreign assistance for road safety work varies between the countries.

Benin
There has been a limited international assistance in road safety in Benin. In 1986, at the inception of CNSR there was assistance from the World Bank to purchase of equipment and other infrastructure in particular connected to the vehicle control function.

The cost of this program was about 60 million FCFA (at that time 1,2 million FF) of which 35 million FCFA (0,7 million FF) for equipment. The World Bank's exact contribution is not known, but it was largely limited to purchase of and training in use of equipment. The assistance was deemed necessary and positive from the government's point of view, as it made possible creation of the CNSR.

The World Bank support was mainly to purchase equipment for vehicle control in 1996. There is now a need for replacement of outdated and damaged equipment. The team visited the control posts in Cotonou and Bohicon. In Cotonou the control is functioning and equipment is available. In Bohicon only the car headlights were controlled, the only equipment existing at the station. The problem seems to be training and motivation of the staff, as a number of controls could have been performed without much sophisticated equipment and facilities.

The Côte d'Ivoire

The international assistance to road safety activities has until now consisted of a gift from the Japanese Government of audio-visual equipment to OSER in 1993 in addition to engagement of consultants for preparation of studies.

A Road Safety Programme was prepared in the National Transport Plan (1989), financed by the World Bank under the Structural Adjustment Programme. A French institute was charged with the task. The cost of this work amounted to 30.000-40.000 USD. The present OSER reorganization study will cost 30.000 USD.

Kenya

From 1979 through 1991 a road safety program was supported by Finland. This was supposedly the first road safety program in Africa, receiving foreign assistance. The 5th phase of the program, covering the years 1989-91, totaled the amounts of 5.5 million FIM (approximately 1 million US $) and 3.56 million KES (0.7 million US $) (Finnida 1992).
The five phases of the program were:

I. 1979 - 80 Preparatory phase, including a seminar in Kenya,
II 1980 - 81 Preparing a program of countermeasures
III 1981 - 85 Start of the implementation of the program with Finnish technical assistance
IV 1986 - 88 Practical training and documentation
V 1988-91 Strengthening of sectors in which progress was still required, black spot reduction and further practical training

The program, published in 1980, comprised all major fields of road safety work (Republic of Kenya, 1980). One Finnish project manager was based in Kenya, and four short-term Finnish experts were involved in the program.

The 5th phase, 1989-91, of Kenya road safety program received approximately 1 million US$ from Finland and Kenya financed about 100,000 US$.

Tanzania

The road safety cooperation between Tanzania and Norway started in 1993. By July 1996 a proposal for a National Road Safety program was finished, covering all relevant aspects of road safety, written by a group of local consultants. Cabinet approval of the road safety program is a condition for further road safety action implying organizational changes. However, further work in the fields of axle load control and establishing the accident data system have proceeded without waiting for the approval of the program.

The assistance from Norway was handled through the Ministry of Works. Considerable problems have arisen in documentation of accounting of the money first donated from Norway for local purposes in the road sector program. These problems, which are often encountered in international assistance, have delayed the transfer of money from the NORAD to local funds for several years. Accounting and auditing are not done properly and in time. For these reasons Norway considered closing down the road program, of which the road safety program is a part. The World Bank has also refused to replenish local funds for the same reasons with the consequence that breathalyzers for the police were not purchased. But the World Bank representative is optimistic as to solving the accounting problems.

Zimbabwe

Zimbabwe has received some foreign assistance for vehicle inspection and for police activities. These assistance projects have ceased.

There is foreign assistance in road construction, from Sweden, Kuwait, the African Development Bank ADB and from the World Bank for maintenance. Some projects are finished, and some new are started. There has not been much interest in road safety from the donors, but there is a new trend to include environment and safety.

Getting detailed quantified information on the financial resources involved in the foreign assistance, seemed difficult, as the people involved change frequently, both with the donors and the recipients.

Training of national counterparts and road safety officers

The 1985 evaluation of the road safety program in Kenya pointed out that the training of national counterparts is a «fundamental objective of any aid funded project in a developing country» (Ministry for Foreign Affairs, 1985, p. 48). It says further: «An area of glaring deficiency deserving strong criticism in the existing safety programme has been that virtually no effort

has been put into training local counterpart staff to take over...» «Consequently, the evaluation team would recommend that an extension period of 2 years be considered.....During this period the consultants should be specifically required to complete the training of the local engineers and produce working manuals etc. as required in order to be able to have a locally staffed RSU and Secretariat function by the end of the two year period.» (ibid. p. 49).

The road safety program in Tanzania, supported by Norway, emphasizes the training of counterparts. «The assistance is to take the form of advisory role to the national officers responsible for various programme components. All parties are to strive for effective technology transfer in the shortest possible time. Study tours for the national staff to countries with experience in road safety programmes should be integrated into their on the job training programmes.» (The United Republic of Tanzania, 1996 p. 97). However, the training of counterparts planned for this program emphasized technical know-how and expertise. The problems encountered so far seem to indicate that management training is necessary as well. In the continued program the training of management skills is likely to be even more emphasized.

In Zimbabwe some police officers and vehicle inspectors have received training overseas. In Zimbabwe training of traffic police officers was organized about 15 years ago, using US traffic police officers as lecturers.

Status after foreign experts have left

In Kenya, the road safety work «died a natural death after the Finnish support was concluded» according to one respondent. Whether «natural» or not, most of the road safety work started during the road safety program of the 1980's has more or less ceased. The problem seems to be a combination of lack of resources, financial as well as human, and lack of political priority. The final evaluation report on the program concludes (Finnida, 1982, page 25) «.....The next big step in order to improve road safety situation in Kenya is the change in the views of decision-makers to accept road safety as a priority in order to stop the unnecessary waste of life on Kenyan roads.....Maybe the most important factor in successive (Here is probably meant *successful.* Author's comment) road safety work is that it has the support of the decision makers. Without this support it can be impossible to implement some of the most effective road safety countermeasures.»

In Zimbabwe the training of vehicle inspectors and police officers seems to have some lasting effect.

For the other three countries it is too early to say what will happen after the experts have left.

3.5 Strengths and weaknesses in road safety work

Strengths

The basic legislation needed for road safety work exists in the five countries. The basic knowledge about effective road safety measures is also there among most people working within road safety. These people are also aware of the scope of the problem.

The basic elements of road safety work, such as accident recording systems, road engineering, publicity, driver training and testing, enforcement, vehicle inspection, traffic education of school children, emergency medical services, and road safety research, exist in all countries. All five countries also have some sort of a national road safety council. This means that the organizational basis is also in existence.

Of the activities mentioned above, road engineering seems to be best organized. Even if the road safety aspects of these activities are not always given a high priority, there is a good basis for improvement in this field.

All countries have some sort of road safety programs or plans, though at different stages of realization, with the possible exception of Zimbabwe, where the Zimbabwe Traffic Safety Board has a plan with an ambitious national goad, but the means to attain it are the board's own activities which are far too limited. On the other hand, Zimbabwe is the most advanced country in implementation of road safety work, and therefore the country least in need of an extensive plan.

Weaknesses

Implementation

The implementation of road safety measures is a great problem in all five countries with the possible exception of Zimbabwe. The implementation problems are due to a number of factors.

Lack of political concern, interest and priority

It takes resources to solve the road accident problems, and the authorities must be willing to put time, money and effort into solving the problem. The main problem seems to be the lack of political concern, interest and priority. It is, however, almost a truism that when road safety measures are not implemented, other priorities are stronger. «The lack of support by politicians and officials in some African countries is jeopardising the attempts of scientists to promote traffic safety effectively», Pretorius and Mulder (1997) claim in their paper «An integrated approach towards traffic safety management, development and implementation» presented at the 3rd African Road Safety Congress.

The low priority may be due to a lack of understanding of the scope and severity of the road accident problem among high level politicians with the power to make decisions. This problem is probably greater within the ministries not directly responsible for road safety, but who are responsible for matters conflicting with important road safety measures, like financial and legislative matters.

It should, however, not be forgotten that road accidents are not the only problem in these countries. A number of other problems like unemployment, poverty, crime, aids and other diseases, lack of education are all competing for scarce funding and political concern. Even if road accident countermeasures are potentially profitable, action in other sectors of society may be even more profitable.

Feedback to decision makers
One reason for lack of political concern is the lack of feedback to responsible decision makers. Although the five countries have accident recording systems, the compilation and dissemination of road accident statistics are slow and poor. More detailed information on accident costs, effects of accidents countermeasures, potential for accident reduction and economic savings, actual implementation of countermeasures, etc. is almost non-existent, and if existent, not easily available.

The value of life
Some respondents claimed that the value of life is low in Africa, because many Africans have faced war, famine and fatal diseases. What is a few people killed in a road accident if you have seen several hundreds die in the battlefield or in a massacre? If the low value of life is an important cause for lack of concern, the latter may take time to change.

Funding
In all but one country there are problems with adequate financing of road safety work. If lack of understanding is the cause of this problem, it is likely to be in the Ministry of Finance rather than in the Ministry of Transport or Public Works, as the Ministry of Finance sets the limits of grants to each ministry, but is not in touch with the road accident problem.

Corruption

Corruption seems to be a widespread problem that also affects road safety. It is a difficult problem to solve, and nothing much is possible when the system is corrupt. Poor management is closely related to corruption. Implementation of measures and activities is difficult when management is poor. Corruption and poor management are general social problems rather than road safety problems. The first step towards solutions to these problems will be to realize that they exist.

Frustration
When people working in road safety find that the necessary measures are

not implemented for some reason, that the adequate funding is not provided, that the necessary amendments to the Road Traffic Act are not enacted, etc., they may easily become frustrated and lose interest, even if they were enthusiastic in the beginning. As expressed by one of the interviewees: «It is very frustrating to know what to do, but not having the resources required to do so.»

The belief in education and information

The belief in the effect of education and information alone may be somewhat exaggerated compared to what international road safety research literature can tell about the effects of these measures. Kenya is trying to improve road safety by «voluntary compliance» to road traffic rules, according to several respondents. The achievement of a reasonable degree of compliance on a purely voluntary basis, would be unique. On the other hand, when even the civil servants working in road safety are not sure about the blood alcohol concentration limits or what are the legal speed limits, more information and education are clearly needed.

The political power of the Road Safety Council

The road safety councils or boards in the five countries seem to have a rather weak political position in all countries. Some countries have proposed organizational changes to reinforce the council, but these amendments seem to be difficult to enact.

4. Key measures for sustained reduction of road accidents

4.1 Knowledge on core causes and their environment

The direct causes of road accidents are the same in Africa as anywhere else, i.e. the strong physical forces of motorized traffic are not adequately controlled. Thus, when Africa has higher road accident/vehicle rates than other parts of the world, why are the physical forces of motorized traffic more poorly controlled in Africa than elsewhere? Whereas in North America and Western Europe the potential growth in road accidents caused by the increase in motor vehicles, has been counterbalanced by effective road safety programs implementing a number of road accident countermeasures, most African countries have not yet been able to do so.

There is a chain of causes from the inadequately controlled forces bringing about each accident to the institutional, political, economic and social reasons behind this inadequacy. To simplify this chain of causes, two levels of causation, the accident level and the societal level, are shown in figure 1. For each single accident one factor or a combination of factors may be established as a cause. Such causes or factors are usually classified as pertaining to the road, the vehicle or the road user.

Road factors
Even if the African road network is expanding fast, and even the maintenance standard has started improving lately, there is a great potential for improvement in the safety standards of the roads, e.g. the design of junctions, the installation of guardrails, the amount and design of road furniture, space and crossing possibilities for pedestrians, road lighting etc. Although road factors are rarely judged to be the main accident cause, because road users are supposed to adjust their behavior to the road conditions, improved road safety standards are often effective in reducing road accident risk. As pointed out earlier, road construction and maintenance are working relatively well, but safety is not the highest priority in this field in most countries.

Vehicle factors
To ensure roadworthiness of motor vehicles standards for newly imported or produced vehicles as well as standards for technical conditions of vehicles in use are required. In poor countries safety standards may be compromised because safety equipment, spare parts and maintenance work cost money. A country that does not set and enforce vehicle standards, is likely to get vehicles imported that cannot be sold in countries with higher standards. As mentioned public service vehicles are important to road safety in most

African countries. Their roadworthiness seems to leave a lot to be desired, such as protection of passengers in case of an accident, maintenance of brakes, steering and tires, control of maximum speed etc.

Human factors

Human factors are often claimed to be the most important road accident cause. Driving too fast, driving under the influence of drugs or alcohol, other reckless driving, not paying attention to other road users, overloading vehicles with goods and people, driving too long hours, etc. are undoubtedly important causes of road accidents.

Whether road, vehicle or human factors or a combination are the main causes of road accidents, are a matter of discussion and judgment. The main point is, however, that no matter what kind of cause is considered the main one, there is no simple relation between the cause and the countermeasure, as discussed below.

Accident problems important to Africa

The pedestrians and the public service vehicles passengers make up 70 - 80 per cent of fatalities and injuries on the road in these countries, as described in chapter 2. Measures should be taken to protect these road user groups first. But such measures are poorly developed in motorized countries, and those that are developed may not work in the same way in Africa. Implementation of known measures against these accidents, including thorough evaluation that could indicate further improvement, as well as a research program on the accident situation of these road users and possible countermeasures are therefore needed.

Protecting public transport passengers

The public transport operators and drivers are limited groups, to which special attention should be paid. If not already there, requirements should be made as to the drivers' age, training and testing, blood alcohol concentration and hours of driving as well as to the organization of public transport. The requirements should be enforced, and fines should be high enough to counter the profit made from overloading and maximizing the number of trips. However, the economic incentives making unsafe and illegal public transport profitable, should be looked into and possibly changed.

More frequent regular inspection of the public service vehicles as well as random road side inspection of them to avoid special spare parts being used for inspection only, may also help. Requirements as to the construction of public service vehicles for the protection of the passengers in case of an accident, should also be made. If several countries establish the same requirements, the manufacturers would be more likely to comply.

Tanzania introduced mandatory speed governors or speed delimiters for public service vehicles as of March 1997. The long term effect of this measure should be monitored. Zimbabwe has tried the same measure, but it

is said to be a failure, because the speed governors are too easily manipulated. Better speed governors could be developed or only vehicles with a certain maximum speed should be approved of as PSVs. The European Union has recently introduced a requirement for speed delimiters heavy vehicles. If this is effective in reducing speed, the European standard for speed delimiters could be adopted.

The public transport is organized and operated differently in Africa than in Europe or North America. Knowledge on how to reduce these accidents is therefore not easily available, and needs to be developed.

Protecting pedestrians

Pedestrians are the other major victim group. The pedestrian accident problems in Kenya are described by Khayesi (1997) in a paper called «Walking to injury and death», presented at the 3rd African Road Safety Congress and by ECA (1997).

Also in industrialized countries pedestrian safety has been given a low priority compared to drivers and passengers of private cars. Consequently, the knowledge of how to reduce pedestrian accidents is limited. Moreover, protecting pedestrians from road accidents is more complex than protecting most other road user groups. Mandatory training, enforcement or physical protection of the pedestrians can only be applied to a very limited degree. Reducing pedestrian accidents can mainly be done by countermeasures directed at the drivers, such as speed control, speed calming devices, and raised pedestrian crossings. Reflective tags for the pedestrians have potential for reducing pedestrian accidents during darkness. Trinca et al (1988) point out the need for developing pro-pedestrian vehicle exteriors to reduce pedestrian accidents in developing countries. The situation of pedestrians may also be somewhat different in African countries than in industrialized countries. Sidewalks in urban areas are often occupied by street vendors, and drivers do not seem to pay respect to the rights of pedestrians.

There is no single measure that can reduce pedestrian accidents considerably. A project on child and pedestrian safety in Cairo and Nairobi (ECA, 1997) proposes policies and measures for improving the traffic safety for these groups, in terms of a comprehensive road safety program including 12 main fields of action and more than 80 specific countermeasures. Based on this proposal a shorter list of high priority countermeasures to be implemented and evaluation, could be the next step towards improved pedestrian safety in Africa.

Knowledge of countermeasures

With the exception of accidents particular to Africa, there is a wealth of knowledge on how to improve road safety, on the road accident countermeasures. The Tanzania Road Safety Programme (United Republic of Tanzania, 1996) describes such countermeasures in detail. Ross et al (1991) describe the countermeasures pertaining to the road, the newly revised, forthcoming Norwegian Road Safety Handbook (Elvik, Mysen and Vaa, 1997) describes more than 100 countermeasures pertaining to the road, the vehicle as well as to the road user. Jacobs and Baguley (1995) describe a strategy for improving road safety in developing countries in five categories: engineering and planning, vehicle safety, education and training, as well as enforcement. Trinca et al (1988) describe in their book «Reducing Traffic Injury - A global challenge» what needs to be done in five categories: exposure control, crash prevention, behavior modification, injury control and post-injury management.

Level	**Causes**	**Action**
Accident	* Road user behavior * Road standard * Vehicle standard	* Road accident countermeasures
Societal	* Amount of traffic * Lack of implementation * Lack of political concern and priority * Corruption * Lack of funding and other resources	* Action to improve implementation * Action to increase political priority

Figure 1. Accident causes and counteraction

The countermeasures described in the road safety literature are mostly developed in the motorized parts of the world, and their effects have been studied there. Consequently, these measures may not be optimal for African road accident problems or their effects may not be the same in Africa. To the extent that African road accidents are different from those of the developed countries, this is right. Countermeasures to reduce public transport and pedestrian accidents need to be developed. On the other hand, there is reason to believe that countermeasures such as speed control, vehicle inspection, and elevated pedestrian crossings can be effective in reducing these accidents also. Though the need for developing and evaluating countermeasures for accidents particular to Africa should not be neglected, there is no doubt that the main problem in Africa is implementation of accident countermeasures rather than the conventional road accident countermeasures not working in Africa.

However, with the exception of a chapter on the historical overview of the development of road safety institutions in Trinca et al., the above authors do not describe what needs to be done on the societal level, where lack of implementation rather than lack of possible countermeasures is the problem. This is a problem of management rather than road safety, and parts of it pertains not only to road safety but to many sectors of African society.

Pretorius and Mulder (1997) propose «An integrated approach towards traffic safety management, development and implementation», integrating the road safety action and the management action. They recommend development of implementation plans, containing the steps initialization, evaluation of the implementation process and operations. Continuous evaluation and adjustments are important parts of the implementation process.

4.2 Requirements for a sustainable reduction of road accidents

To reduce road accidents during times of motor traffic or motor vehicle growth, effective road accident countermeasures have to be implemented at a rate counterbalancing the potential growth in road accidents caused by the increased road traffic. The easiest way to provide such counteraction in countries with scarce human and economic resources might be to provide expatriate know-how and international funding. This solution, however, raises at least two problems. Firstly, it would mean foreign management of a whole sector, which is contrary to principles of national independence. Secondly, as the experience of the Kenya road safety program has shown, there would be a great risk that the road safety work would collapse after the eventual withdrawal of expatriate know- how and funding. The key question in road safety in Africa is therefore how to create a sustainable reduction in road accidents, i.e. sustaining the road safety work after foreign assistance has come to an end. How can efforts and achievements be sustained after the assistance is closed off?

There are several conditions to sustainability in road safety work:
- Competence
- Political priority
- Funding
- Implementation
- Organization
- Monitoring and evaluation
- Time

Time
Even in North America and Western Europe the implementation of road safety measures has taken time. The seat belt was developed in the 1940's and 1950's (Trinca et al. 1988), and was made mandatory in front seats in the 70's and in the rear seats in the 80's in Scandinavia.

More knowledge of effective countermeasures exists now than 30 to 50 years ago, when Western Europe and North America faced road safety problems similar to those found in Africa in the 1990's. But the implementing of road safety measures may take more time in Africa than elsewhere. Economic resources are more scarce, and a number of claims compete for these resources. Moreover, as education is on the average lower, and widespread motorization is in its beginning, there is no option but to take some time. Training, reorganization and creating political concern take time

The Botswana road safety program may be an example of how much time it takes to establish, implement and see the results of effective road safety action. The discussions about assistance in this field started in 1983. The first implementation started in October 1985 and continued until June 1995. The fatality/vehicle rate reach a peak of 42.12 in 1989, and has been reduced to 32.58 in 1994. The fatalities/population rate increased until 1993 and decrease for the first time in 1994 (Svensson, 1997).

Although road safety work may take time to produce results, there is reason to be impatient, as every year that passes means more people killed and injured on the roads.

Competence

Knowledge about effective road safety measures is a requirement for a reduction in road accidents. For the reduction to be sustainable, the people who are going to work permanently in the road safety field must be provided nationally. Some of these people have most of the knowledge and skills required for this kind of work, and others will need a certain amount of training. The ministries responsible for road safety seem to have highly qualified staffs, some of them having up-to-date knowledge on road safety work. A high turnover among the civil servants in this field seems to be a problem, but road safety training seems to be provided rather easily.

Management skills may be a greater problem. The evaluation of the Kenya program pointed out the training of counterparts as a key issue. In the new road sector program that the NORAD is trying to set up in Tanzania, management training will be included. But providing management skills is likely to be more difficult than providing the road safety competence, as efficient management depends on the whole organization, rather than the skills of a few people.

Training in solving conflicting interests may help speed up implementation of road safety measures.

Implementation of road accident countermeasures

Why is implementation of countermeasures more difficult in Africa? One

answer is scarce resources - economic and human. Another answer is the early stage of motorization in Africa, which is quite similar to early stages of motorization in other parts of the world. Some of the implementation problems are particular to the road safety area, and some are of a more general nature.

Problems in implementation special to road safety

Trinca et al (1988) describes a set of factors which operated during the early years of motorization in the motorized countries. Some of these seem relevant for the present African situation:

* The incorrect conception that to the extent that crashes were caused by deficient and/or reprehensible behavior, the solutions must lie chiefly in behavioral change.

* The dominance of the «behavioral cause - behavioral cure» view meant that the road, traffic and vehicle engineering professions and institutions were slow to accept accountability for the traffic safety impact of their activities.

* There was little coordination between the road construction, traffic management, law enforcement, public health, post-crash management and public health agencies primarily because there was no belief that the problem required an integrated, system-wide approach.

According to Trinca et al, these problems underpinned a «mature» approach to traffic safety, built on rationality, limited objectives, systems approach, cost effectiveness and pilot testing and evaluation.

Moreover, as research on accident costs is not carried out in these countries, the full costs of road accidents are not known. Although road accident statistics are compiled, and the media report on road accidents and fatalities every day, politicians responsible for countermeasures know neither the full scope of the problem nor what can be gained from implementing effective countermeasures. During periods of high motor vehicle growth, almost any road safety action may seem futile, because the total number of road accidents is likely to increase for several years after the implementation of the countermeasures.

Finding measures that cause few political problems in implementation may be a challenge. The road engineering measures are usually not politically controversial, with the possible exception that they may be costly. This may be the reason why these measures seem to be better implemented than others.

General implementation problems

Problems such as conflicts between ministries responsible for road safety,

the lack of political concern, the shortage of funding, the lack of ability to organize user fees for funding, low efficiency in civil service, corruption, etc., are described previously. These are management, economic and social problems rather than road safety problems, and road safety is hardly the only sector facing such problems in developing countries. The knowledge of how to solve these problems seems to be considerably less developed than the knowledge on road safety countermeasures. But the basic problem seems to be the lack of political concern and priority. Supposedly, if there is political concern, the other problems can be solved at least to a certain degree. The basic questions are therefore, why is there no political concern for road safety and how to create this concern? Some answers to this question are given in chapter 4.3 below.

Organization of road safety work

Efficient organization of the road safety work, especially in civil service, is a condition of implementation of accident countermeasures.

Corruption seems to be a problem in these countries. A condition to abolish corruption is increasing the salaries of civil servants to a level that enables them to make a living from their legal income. A higher salary may also make civil servants who are not in a position to accept bribes, work more efficiently, as they will not need extra jobs or businesses to feed their families.

As road safety is presently a minor field with limited possibilities for making a career, the turnover of civil servants is often high, which means that new civil servants will have be trained in road safety aspects rather often. Making better career possibilities within the road safety field, could reduce the need for training and increase the competence.

Cooperation with other sectors facing similar problems, may help, e.g. management training seminars, as well as cooperation with expatriates trained in more efficient civil service. Transparency and accountability in government management are principles being tried out in other sectors. So are incentives for good results. Parts of the road safety work, like vehicle inspection, could be privatized, as it is in the Côte d'Ivoire. Better paid civil servants may also be an improvement. Management training has already been mentioned as being at least as important as road safety training.

Organizing the road safety policy and work according to the «integrated approach towards traffic safety management, development and implementation» (Pretorius and Mulder, 1997) could be worth trying.

Monitoring, evaluation, dissemination and research

As pointed out by Pretorius and Mulder (1997) evaluation is necessary at all steps of a road safety policy or program, to make sure that the proper action is actually carried out or that necessary adjustments are made. In the new

road safety policy of the European Union, monitoring and evaluation is the first of the three high priority areas (Preston G, 1997)**.** The monitoring and evaluation must include a system for collecting and analyzing road accident data to follow closely the accident trends. As such systems are established in all five countries included in this project, such information systems will not be discussed in detail. But there are indications that some accidents go unreported, and that the statistics compiled are not always reliable. Consequently, continuous monitoring and improvement of the accident data systems are required.

Accident trends cannot be expected to decrease quickly during times of increasing road traffic, and the implementation of the first few countermeasures cannot be expected to have an impact of the total number of accidents. To ensure that the accident reduction will eventually be attained, the implementation of accident countermeasures must also be monitored and fed back to responsible authorities. Furthermore, the accident reducing effect of the countermeasures implemented must be evaluated, to make sure that they are worth the money spent, and the effects should be reported back to responsible authorities as well as to the road users to improve attitudes towards road safety action. The evaluation of measures implemented will help develop measures fit to solve parts of the road accident problem particular to Africa or to single countries.

To conclude whether a road safety activity has been effective in a specific setting, evaluation is needed. This evaluation of the results must be carried out according to standard social science methods, i.e. before-and-after studies with control groups, so that the effect can be established and attributed to the activity in question. Moreover, there is also a need for process evaluation. Especially if no effect is found, the question always arises, why is there no effect. To answer this question the process from the initial decision made to the implementation of all details needed, must be investigated to see which element or elements in the process did not work. An example may illustrate the case:

Speed delimiters for public service vehicles were recently introduced in Tanzania to reduce the number of accidents involving these vehicles. On the other hand, the public transport industry is strongly opposed to these delimiters. Are the delimiters reducing accidents sufficiently to be worth the opposition from this industry and the enforcement and inspection required to maintain the delimiters in effect? Preferably, a countermeasure such as this should be introduced on an experimental basis in some parts of the country first, to see whether the relevant type of accidents is reduced more in those parts than in other. That way, an accident reducing effect can be estimated, and if it is found significant, the countermeasures can be introduced permanent for the whole country. But what if there is no difference, or there are more accidents in the districts with the countermeasure than in those without, which is not too seldom the case? To be able to say why such a thing has happened, the activities carried out must be studied in detail. Were the speed delimiters really installed? Did the transport operators or drivers manipulate the delimiters? Do they drive

faster in built-up areas to catch up for the extra time spent driving more slowly outside built-up areas?

Some parts of the road accident problems are special to Africa, like the heavy accident burden put on pedestrian and public service vehicle passenger. Though speed humps are installed in several African cities, the effect on pedestrian accidents in the local area is usually not known. There is need for research on the pedestrian accidents and the effect of possible countermeasures.

This report indicates that an important problem of road safety work in Africa is organizing effective and sustainable implementation of road safety activities. The research and evaluation should consequently include studies on the problems of implementation of road accident countermeasures in addition to the accident reducing effect they may have, once they are established.

Though some estimates of road accident costs exist for Africa**,** these estimates are often general, superficial and outdated. More detailed, updated, national cost estimates may help enhance the political priority for road safety. Even if the value of human life may be considered low in countries with high unemployment**,** estimates of the health care costs or the health resources spent on road accident victims, may convince politicians to put efforts into road safety. The same thing goes for cost/benefit analyses of accident countermeasures, showing that some road accident countermeasures can be profitable. In only three years the Botswana road safety program saved accident costs, excluding human value, worth more than three times the money invested (Svensson 1997).

All road safety programs should include evaluations of the program activities. Even if the activities proposed have well documented, accident-reducing effects, the effects may be different in a different setting. If evaluation is not included, knowledge on how to improve road safety will not accumulate. Evaluation projects are costly, but carrying out road safety activities which have no effect on road accidents are even more costly.

Monitoring and evaluation are competence building activities, and will thus improve the competence of the people working within road safety. On a long term basis, monitoring and evaluation work could develop into competence centers for road safety and road safety research. The dissemination of monitoring and evaluation results to decision makers and the public at large should be emphasized.

The African road safety congresses have shown that the road accident problems are similar in most parts of Africa. An African road safety research program could help establish research on the above questions as well as others, and help disseminate the results throughout Africa. Evaluation and research should be carried out by institutions independent of those responsible for the road safety activities. All five countries have universities or other research institutions that are competent to carry out

evaluation projects and other road safety research, possibly with assistance from international experts or by «twinning» arrangements with overseas road safety organizations, e.g. TRL (UK), SWOV (the Netherlands), TØI (Norway), INRETS (France) or VTI (Sweden).

4. 3 Strengthening political commitment and support

The primary requirement for a sustainable reduction of the accident rate is that political concern, interest and priority be given to road safety work both by politicians and the people.

The conclusion of the evaluation of the Kenya/Finland Road Safety Project, 5th Phase (Finnida 1992, p.25) puts it this way: «Maybe the most important factor in successful road safety work is that is has the support of the decision makers. Without this support it can be impossible to implement some of the most effective road safety countermeasures.»

Reasons for lack of political commitment

To find ways to improve political commitment and concern, the reasons behind the lack of commitment may be discussed. In chapter 2.4 the fact that road accidents are not yet a great public health problem is pointed out. Most African countries face severe problems in many sectors of society and a general shortage of resources to solve these problems. Even the expected increase in road accidents may not get the political attention required, when other sectors have severe problems today. Within the transport sector, the political attention is focused more on solving the transport problems, rather than on the accident problem.

Unless accidents numbers are extremely high, road safety action is not in great demand from the people, because most people think that road accidents only happen to other people who behave recklessly. Politicians need support from the people, and the lack of demand for road safety action combined with strong opposition from pressure groups against restrictions, make road safety action difficult for politicians. NGOs have a part to play in convincing people and politicians that better road safety is both needed and possible.

Another reason may be that the real costs of road accidents and the potential benefit from countermeasures are not well known. When an unknown number of accidents go unreported and the cost of each accident is not known, there is no way the politicians could know the total loss.

A third reason may be the «behavioral cause - behavioral cure» view mentioned in chapter 4.1, which may make the decision makers think that information and education is a panacea to the road safety problems. A high ranking civil servant in Kenya state that the present policy was to solve the road accident problem by «voluntary compliance.»

Possible action

Politicians need support for their actions from the people. Consequently, political priority can only exist when both a certain share of the population and the politicians feel convinced that road safety measures give more benefits than they cost. Then the question is, how to create such beliefs? Awareness campaigns may be the answer, if they are emphasize the problem of road accidents both in terms of human suffering and in economic terms, and that road accidents can be avoided by implementing effective countermeasures. Furthermore, that these measure do have negative side effects such as restricting speed choice or extra costs, but they are worth it. Human life is worth a little more time spent traveling, not enjoying a drink before driving, the hassle of wearing a seat belt or giving up the freedom of choosing your own speed. The means to reduce the number of road accidents considerably are there, and we can apply them if we want to. Awareness campaigns directed at decision makers should preferably be based on cost/benefit analyses, showing that road safety action is profitable to society. Awareness campaigns directed at the people should emphasize the fact that road accidents can be reduced considerably if effective countermeasures are implemented. This way support for political action can be created.

Considering the experience from Kenya, it seems worth while to involve top politicians or other people with high public esteem, e.g. tribal leaders, academics etc., in the road safety programs to try and commit them to further road safely work. However, top politicians change in all countries. Even if the commitment of one or more politicians have been obtained, nobody knows who will be in charge of road safety in the years to come. On the other hand, if the politicians committed to road safety only move to other political fields, they may provide a possible alliance for strengthening the road safety priorities.

With increasing number of motor vehicles, motor insurance is an increasing market for insurance companies. Some countries have compulsory third-party insurance already, although the number of car owners that actually carry this insurance, may vary. Insurance companies could see a market for more insurance, if third party insurance is made compulsory in all countries and a better control of actual insurance is introduced.

The national health institutions may be used to raise political concern and priority for road safety. The ministries of health carry a large share of the costs for road accidents, and caring for road accident victims takes a large share of the hospital costs. The ministries of health would therefore gain from the implementation of effective road safety measures, whereas these measures represent costs and work but almost no gain to the ministries responsible for roads and road traffic.

Better knowledge of accident costs, the total loss to society incurred by road accidents and the potential benefit and economic gain from accident

countermeasures, may contribute to more political commitment. Accident costs estimated for neighboring countries could be used as a start, if national estimates are not available. But there is no doubt that national figures are more convincing than foreign figures. Countries that do not have national figures for accident costs and potential economic benefits from countermeasures, should have such estimates made by local universities and disseminated to the relevant politicians and civil servants.

The media and non-governmental organizations (NGOs) have an important part to play in pointing out the scope of the road accident problem and the fact that these accidents are to a large degree possible to prevent, thus putting pressure on the responsible authorities.

Making the national traffic safety board more independent of the ministry responsible for road safety, may enable this body to put more public pressure on the ministry. Another possibility is to establish an NGO for road safety in addition to the road safety board. Lundebye and Ellevset (1997) describe the role of the NGOs in road safety and claim that «governments, even if they do their best, can not manage this challenge (the road accidents) alone and therefore need the support of the society, including the NGOs....»

The donor countries have extensive experience in high road traffic volumes, the consequences in terms of accidents and the possible countermeasures against the accidents. When assistance to the road sector is provided for road construction or maintenance, the donors should put efforts into providing concern and knowledge about the drawbacks of road transport, such as road accidents. This is done to a certain degree already, but the emphasis seems to be more on the measures to be implemented, than on the political concern about the problem. Could the donors put more pressure on the local authorities in terms of showing what the consequences will be in a few years unless road safety action is taken? Requiring *sustainable* development of road safety may even be made a condition for any road sector assistance, as any development in the road sector is likely to increase traffic volume and speed and consequently the number of road accidents.

Political concern and priority for road safety can also be improved by regional seminars on road accidents and possible countermeasures in Africa. Cooperating with other countries with similar problems or countries more advanced in the implementation of countermeasures may stimulate the political interest.

Some conspicuous improvement of road safety may be needed to convince the road users and the politicians that something is done to reduce road accidents. Consequently, when specific countermeasures are implemented in the first part of a program, this implementation should be done as a concentrated demonstration project, showing the potential of road safety efforts. If an area or road with a high number of accidents is chosen for concentrated road safety efforts, a convincing example of road safety work could be the result. Such results would be of interest to media, to

politicians and for road safety people in other countries facing similar problems.

4.4 Sustainable financing

Funding is short in these countries, and international funding is in great demand. Funding may be provided internationally for a limited period of time and for special purposes, but the basic funding for road safety activities must be national. The present national funding is through government budgets or grants, but government funding may vary a lot from one year to the next, which may pose great problems for the stability of road safety work. User fees based on the road traffic, however, will be stable or even increase as the road traffic increases.

The Ministry of Finance in some countries do not want to earmark public revenue for special purposes. In principle, the parliament should decide upon the spending of public revenue, whatever source it comes from. In other countries there is agreement, in principle, to using e.g. the fuel levy for road maintenance purposes, but still the Ministry of Finance will spend some of the money for other purposes. It seems reasonable enough that revenue gained from the road users should be spent on road traffic, including reducing such negative consequences as road accidents. Levies on road traffic may be more acceptable to the road users, if the revenue can be shown to be spent for road purposes, including road safety measures.

Many respondents put the lack of resources as the main problem; if only the resources for better roads, more equipment and vehicles for enforcement, more education and information were available, road safety could be improved. However, as pointed out earlier, there is money in motorized traffic, and the potential for funding of road safety is there, as anyone who can afford a motor vehicle, can also afford a few dollars a year for safety purposes. Lundebye (1997) considers 3-5 US $ per vehicle per year to be adequate in Sub-Saharan countries. Rather than the resources themselves, the problem is the organizing of a sustainable system for collecting the possible revenue and securing that the revenue is spent on road safety. A fee on third party insurance premiums may be the best way to organize this revenue.

The Tanzania Road Safety Programme (United Republic of Tanzania, 1996) proposes a combination of user fees:

- a charge on third party insurance of the order of two to five per cent
- a road safety levy paid annually by vehicle owners
- programme fees (a proportion of fees for vehicle inspection, driving schools, driver licenses etc.)
- a proportion of the roads fund (which is based upon a fuel levy)
- a proportion of the related fines.

A similar combination of user fees and government agency funding is

proposed by Lundebye (1997). Financing based on such user fees could be implemented in any country, and is sustainable because it will increase with the road traffic.

4.5 Basic requirements to improved road safety in Africa

Though requirements to a sustain reduction of road accidents are plenty, this project has shown four requirements to be the most important in the present situation. These are:

- political concern and priority
- funding
- implementation
- monitoring, evaluation and research

Donors should emphasize these areas in any roads assistance program for Africa as a whole, subregions or single countries.

These four areas are interrelated. In the present situation they constitute a vicious circle. Political concern is low, because funding is seen as difficult problems. Thus implementation of countermeasures becomes difficult, and accidents continue to increase. Outside stimulation for one or more of the above areas, could turn the vicious circle into a positive one, as indicated in Figure 2. Increased political concern can bring about the organization of user fees for increased funding, which in turn will make implementation of countermeasures easier. When adequate countermeasures are implemented, the monitoring system will bring show favorable effects for road safety, and political concern will be further stimulated.

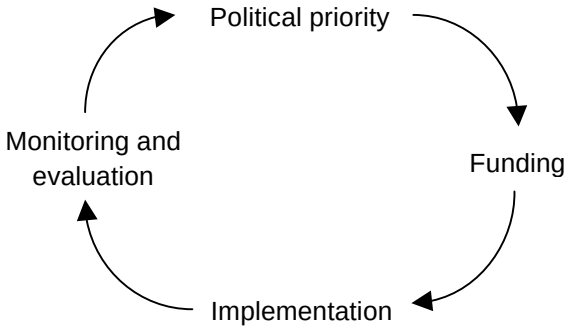

Figure 2. Relations between four high priority areas of action

5. Proposed agenda for an African road safety initiative

An African Road Safety Initiative

At the conclusion of the 3rd African Road Safety Congress in South Africa, April 1997, an African Road Safety Initiative was proposed. The objective of this initiative was to improve the road safety situation in Africa by increasing awareness of the decision makers, politicians and the public, to increase the motivation and commitment of top-level decision makers and politicians and develop better information systems and increased action by international organizations.

Road safety - a public interest and a government responsibility

In all countries road safety is primarily a public interest, and cannot easily be brought into the market economy. Even if parts of road safety work can be commercialized and financed by user fees, road safety must remain a government responsibility. This situation is similar to road maintenance, which has also been a great problem for African roads. A Road Maintenance Initiative (RMI) was launched in 1987 to improve road maintenance. To improve the road safety action within the government responsibility, the African Road Safety Initiative could be organized according to the same principles as the RMI (Heggie, 1995), which are user fees and businesslike management based on four «building blocks»:

- *ownership,* i.e. involve road users to win public support for more road safety action
- *financing,* i.e. secure an adequate and stable slow of funds
- *responsibility,* i.e. clarify who is responsible for what
- *management,* i.e. introduce sound business practices and strengthen management accountability

Four main areas of action

In chapter 4.5 four main areas for action are described,

- political concern and priority
- implementation
- funding
- monitoring, evaluation and research

These areas of action should be given the highest priority in the African Road Safety Initiative. e.g. through cooperation between African countries, both regionally and for the whole of Africa, dissemination and awareness

seminars, donor pressure and other actions as described in chapter 4.2.

Such an initiative can use the competence and capacity for road safety work that already exists in several African countries, improving and expanding this capacity in cooperation with international experts.

An African Road Safety Initiative would have to be financed by donors, at least in the beginning, but based on membership from African countries. If possible, incentives for road safety action should be part of this organization. The head office of the organization should preferably be based in Africa, to build African road safety competence.

An African road safety initiative such as this can contribute to reducing the accident level on African roads to a level similar to that of the already motorized countries.

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