# The morality of driving Personal motor vehicles in Ethiopia: an ethical analysis of risk imposition

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## 1 INTRODUCTION

In many low-income countries, car ownership is increasingly contributing to higher motorisation level in cities and urban areas (El Deeb, 2022; Gorham et al., 2017; World Bank, 2021). Unfortunately, current policymaking, as well as academic and public debate in these countries neglect the many ethical implications of the growing motorization. One major ignored ethical and public health issue is that of road fatalities and injuries. Every year over 1.35 million people are killed and between 20 to 50 million are injured due to road traffic crashes (WHO, 2018). About 93% of road fatalities are happening in low and middle-income countries despite the fact that they only account for half of registered motor vehicles in the world (WHO, 2018).

As compared to developed countries, a motor vehicle in low-income countries is over a hundred times more likely to be involved in a fatal road crash (Gary & Dieter, 2012, p.1). Moreover, while vehicle occupants are the major victims in developed countries, in low-income countries it is pedestrians and other unprotected road users who are gravely over represented in fatalities and injuries (WHO 2018). In addition to road crash risks, growing motorization is also associated with other health and environmental problems such as air and noise pollutions (Gary & Dieter, 2012; Kebede et al., 2022; World Bank, 2021; Yilak A Kebede, 2021). These different transport related externalities are known also to disproportionately affect the poor and mostly disadvantaged groups (El Deeb, 2022; Kumie et al., 2021; Pratt et al., 2015; Rentschler & Leonova, 2022). Despite the abundance of moral problems associated with car driving, the issue has received little interest from moral philosophers (Fahlquist, 2009; Hansson, 2014; Husak, 2006; Ori, 2014, 2020; Smids, 2018). The neglect by philosophers in general, and those in low-income countries in particular, to the many moral issues posed by car driving is quite surprising given the nature of road safety problems in these countries. The purpose of this paper is, partly, to fill this gap by discussing the moral implications of risk impositions from car driving in a low-income country context. Most importantly, the paper aims to assess and analyse the nature and moral acceptability of risk imposition from personal car driving in low-income countries. In particular, we will use a model of ethical analysis developed in (Hermansson & Hansson, 2007) and further developed in Hansson (2017a, 2018) to analyse the morality of risk imposition from car driving in Ethiopia.

Our analysis shows that personal car driving involves a morally questionable risk impositions in which some stakeholders who decide on the risk and directly benefit from it, impose significant risk of harm on others who rarely have a say in the decision contributing to the risk imposition nor benefit from the risk involuntarily imposed on them. Those who are unfairly exposed to risks of fatalities and injuries from car driving are mainly groups that are already socially and economically disadvantaged. Therefore, risk impositions from car driving contributes to other pre-existing inequities in the society. We argue that the notion of residual obligations can be used to, partly, account for the current unfair risk impositions from car driving in Ethiopia. Residual obligations arise when due to conflicting primary obligations an agent is required to override one or more of his obligations to promote others (Hansson & Peterson, 2001). The risk imposition from car driving gives rise to conflicting of moral obligations. On the one hand, individual road users have different prima facie rights, such as the rights not to be exposed to risk of harm caused by others, and the right to work and development[1]. These rights are associated with corresponding prima facie obligations for

[1] ‘‘A 2007 study by UNICEF and the Ministry of Labour and Social Affairs suggested that there were

others. For example, others have the obligation to refrain from exposing individuals to involuntary risks of harm that endanger their lives and health. Moreover, states, municipalities and cities have an obligation to make sure that individuals are not harmed, can move around city, can work and develop. On the other hand, individuals have a prima facie rights to use cars for mobility, for work and development. Correspondingly, societies have the obligation promote these rights and refrain from preventing unjustified restrictions on car use. From risk impositions associated with car driving the different prima facie rights and corresponding obligations come into conflicts and some trade-offs are needed. It seems current transport policy planning in many low income countries, accepts the trading of individuals' prima facie rights not to be exposed to risk of harm by others, for the transport and development related advantages of car driving. This compromise of the right of road users should not mean that individual road users' prima facie rights not to be exposed to harm is cancelled. Nor does it mean that those who decide on and benefit the most from the risk imposition have no moral obligation towards those who continue to face unfair harm and risk imposition from car driving. Rather, the overriding of individual road users' prima-facie rights not to be exposed to involuntary risk from car driving, gives rise to important residual obligations on different stakeholders, primarily on those who determine the nature of the risk in the road system through their decision-making powers and those who benefit the most from the risk imposition from car driving. In this paper, we identify five residual obligations that such actors can promote to account for the negative implications of safety trade-offs in road transport. These includes the ''obligations to improve'' the road system by promoting effective risk reducing strategies and measures, ''obligation to fair compensation'' for those harmed, ''obligations to communicate'' with affected stakeholders, ''obligations to search for knowledge' to better understand the nature and magnitude of the risk imposition and ways of addressing it, and ''obligations to bring about attitudinal change''. In line with Hansson's and Peterson's theory, we argue that the conscious identification and promotion of these different but interrelated obligations in road transport and safety work could contribute towards an equitable and morally acceptable risk imposition in the road system.

The remainder of this paper is structured as follows. In Section 2, we will briefly discuss the nature of road safety problems in Ethiopia and the risk distribution among different road user groups. In section 3, we present a model of ethical analysis that we will use as an analytical framework. In section 4, we analyse risk imposition from car driving in Ethiopia based on the analytical framework. We also show in this section that major ethical theories lack a practically feasible solution to the moral dilemma that arises from the risk imposition. In section 5, we present the notion of residual obligations and show how it can help promote a fair risk

about 60,000 children in street situations in the capital.''
https://www.unicef.org/ethiopia/media/3021/file/Situation%20and%20access%20of%20Children%20and%20Adults%20Briefing%20Note.pdf

Moreover, the streets in major cities in Ethiopia harbour a large number of street venders who do their business very close to fast moving vehicles. It is believed that there are currently over 80, 000 streets venders in the capital alone.
https://ethiopianbusinessreview.net/pirates-of-addis/#:~:text=Currently%2C%20there%20are%20close%20to,to%20places%20for%20affordable%20goods.

imposition from car driving in Ethiopia. Section 6 contains the conclusion where we briefly discuss policy implications.

## 2 ROAD CRASHES AND THE MAGNITUDE OF ROAD SAFETY RISKS IN ETHIOPIA

It is difficult to give an accurate description of road safety problems in Ethiopia as crash data collection suffers from severe under reporting (Abegaz et al., 2014; UN, 2019). According to government statistics, road traffic deaths in Ethiopia have more than doubled between years 2007-2018 from 2,161 to 4,597 (UN, 2019). Between 2016 and 2018, about 14,194 fatalities, 22,647 serious injuries and 21,159 minor injuries occurred in Ethiopian roads (Federal Police Commission, 2019 in UN 2019). However, the WHO (2018) estimates that the fatalities from road crashes could be six times more than what official government statistics states due to problematic data collection and under reporting of crashes. Even if the statistics from the Ethiopian government is complete and reliable, it shows that road traffic crashes a major public health concern for the country.

In terms of road user groups, major risk exposed stakeholders are pedestrians and car occupants. In 2018, 1 513 pedestrians were killed, while 2, 734 were seriously injured (UN 2019, p.6). Pedestrians constituted the second largest vulnerable road user group in the country, accounting for up to 33 % of fatalities in 2018 (ibid). However, pedestrians are the leading risk exposed groups in major cities where motorization is high. For instance, in Addis Ababa pedestrian deaths account for 80% road traffic fatalities. In the same year, car occupant fatalities accounted for over 50% of road crash fatalities in the country. In particular, passenger deaths constitute the largest share of road traffic deaths on interstate highways. A very important aspect of passenger fatalities and injuries is that it often affects the most economically active segment of the Ethiopian society. Nearly 60% of passenger deaths in 2018 were people between the ages of 18-50 (UN, 2019). Drivers are yet another group of road users affected by road fatalities and injuries. In 2018, there were 100 driver fatalities and 786 serious injuries in Ethiopian road system. Accordingly, fatal and serious injuries for this group accounts for 15% and 10% of the total fatalities and serious injuries in the country respectively.

Children are also among the most affected groups. Road crashes are the leading cause of fatal child injuries in Ethiopia (Li et al., 2018). One study on 1019 accidents involving children in Addis Ababa reported that, a total of 125 child deaths, 510 severe injuries and 384 in light injuries occurred between 2010 – 2014 (Cherie & Bayray, 2014).

It is also the case that the majority of fatal and serious injuries occur on newly built asphalt roads (UN 2019). Many fatalities and serious injuries happening interstate highways often involve public transport vehicles and trucks (ibid). There were 1 324 fatal injuries, 35.42% of total fatalities, associated with buses. The second largest vehicle types involved in fatal injuries are passenger cars accounting for 22.9% of fatalities (UN 2019, p. 6)

## 3. ANALYTICAL FRAMEWORK

In this section we present a model of Ethical Risk Analysis presented in Hermansson and Hansson (2007) and further developed in Hansson (2017a, 2018). This model is based on the assumption that there are ‘‘three fundamental, distinct but compatible, forms of direct involvement that people have in a risky situation, namely, those of being risk-exposed, a beneficiary…, and a decision maker’’ (Hansson 2018, p.1822). Risk exposed are those groups who are directly or indirectly exposed to a risk caused by decisions and actions taken by themselves or others. Decision Makers in relation to risk exposure are those who knowingly or

unknowingly make decisions that leads to risk exposure for themselves or others. Beneficiaries in relation to risk exposure are those who directly or indirectly gain from the risk being taken (ibid). Assessing the nature of these stakeholders and their corresponding roles in relation to risk distribution is important in identifying the ethical aspects of a risk management problem and in the analysis of the moral acceptability of risk impositions (ibid). Moreover distinguishing between these different roles makes it easier to accurately describe the pertinent differences in powers, interests, and vulnerabilities, which is necessary for an ethical analysis (ibid). For instance, ‘‘it is important for the ethical analysis to know if two, or perhaps all three of these roles are filled by the same persons, if, for instance, the risk-exposed are the same (or partly the same) people as the beneficiaries, if the risk-exposed are themselves decision-makers, etc. It is also important to know if one of these groups is in some way dependent on one of the others, if, for instance, the risk- exposed are economically dependent on the decision maker’’ (Hermansson and Hansson 2007).

An ethical analysis using this model proceeds in three steps. In the first step, we identify and categorize relevant stakeholders into their appropriate roles in relation to the risk exposure. Simply put, we identify the beneficiaries, decision makers and risk exposed is in relation to a given risk exposure. The second step of the model involves identifying ethically problematic roles and role combinations. In the third and final step, an ethical analysis of the risk imposition is conducted using ethical theories and other morally relevant considerations such as individual interests, rights, justice, and power relations.

According Hansson (2018), seven different roles and roles combinations can be identified in situations where risk imposition takes place. Table 1 below briefly presents these seven risk roles.

| | **Stakeholder roles** | **Evaluation** |
|---|---|---|
| **1** | Only Beneficiary | Stakeholders having this role benefit from the risk imposition but have no role in decision making related to the risk exposure and they are not exposed to the risk. This role is usually morally problematic as there usually is a group who is risk exposed. |
| **2** | Beneficiary and decision makers | Stakeholders having this role decide on the risk and benefit from the risk imposition. However, they are not themselves risk exposed. This role is very problematic since stakeholders having this role not only decide on the nature of risk exposure but also benefit by exposing others to risks |
| **3** | Only a decision maker: | Stakeholders having this role are neither beneficiaries not risk exposed. Nonetheless, they decide on the risk. Such roles are often held by neutral agents such as law makers, |
| **4** | Risk-exposed and beneficiary: | Stakeholders having this role are both risk exposed and beneficiaries. However, they are not decision makers concerning the risk exposure. This is often problematic role combination when risk exposed are not capable of making rational decisions for himself |

| | | |
|---|---|---|
| | | or herself or when rationally capable individuals are excluded from decision-making. |
| **5** | Risk-exposed, beneficiary, and decision maker: | Stakeholders having this role are risk-exposed, beneficiaries from the risk exposure, and decision makers. Such a role may not be problematic as long as the risk pertains to an autonomous and mentally capable agent who also makes the decision to expose herself to the risk. However, this is not relevant in the case of risk imposition from car driving because the risk imposition is not just on individuals as other are also significantly affected. |
| **6** | Risk-exposed and decision maker: | Stakeholders having this role are risk exposed and they decide to take the risks. However, they are not beneficiaries from the risk imposed on them. |
| **7** | Only risk-exposed: | Such stakeholders are only risk exposed. They are neither decision makers nor beneficiaries from the risk imposition. This is a highly problematic risk role. |

Table 1. Seven potential stakeholder roles in relation to risk exposure. Adapted from Hansson (2018)

Section four below identifies stakeholders and their corresponding role combinations in relation to risk exposure from car driving in Ethiopia. This will be followed by an ethical analysis of identified stakeholder roles.

## 4. STAKEHOLDERS AND THEIR ROLES IN RELATION TO RISK EXPOSURE FROM DRIVING CARS IN ETHIOPIA

As discussed above, personal car driving is associated with significant risks for oneself and others. Similar to many human induced risks, risks from car driving are taken and imposed on others to reap the benefit that car driving bestows. Such benefits from car ownership and driving may range from direct transportation benefits for the individual car owners and passengers to long-term economic development of a country. Some may value car ownership and driving for it confers social status (Steg, 2005; Van and Fujii, 2011). It is also the case that different actors have various decision-making roles regarding the risk imposition from car driving. The discussion below uses the seven risk roles identified in Hansson (2018) to identify relevant stakeholders, their roles and role combinations in relation to risk exposure from car driving in Ethiopia.

### 4.1 ONLY BENEFICIARY

As far as the knowledge of the researcher is concerned, no actors could be identified that only benefit from risk imposition from car driving in Ethiopia without also having any of the other risk roles. Therefore, this role may be irrelevant in the moral analysis of the risk imposition.

### 4.2 BENEFICIARY AND DECISION MAKER

Stakeholders with this role combination are actors who ‘‘decide on the risk, and gain from it being taken, but they do not take the risk themselves’’ (Hansson 2018, p.1824). Such stakeholders that have decision-making and beneficiary roles, without themselves being exposed to risks from car driving in Ethiopia may include local and foreign actors. Locally, governments, car producers and assemblers, car importers and brokers, car owners who themselves do not drive are some relevant stakeholders. Foreign actors, on the other hand, may include national governments, car manufacturers, and exporters. These local and international actors influence the nature of risks in the Ethiopian road system through their decision-making powers and actions. Among others, their decisions influence the nature and safety of vehicles available on the local market and the safety road infrastructures. Moreover, these actors benefit from revenues from car trade and taxation. For instance, the Ethiopian government levies heavy taxes on vehicles, which for some types of cars goes up to 500% the original purchasing price. For another example, according to a recent study, the European Union (EU), Japan, and the United States of America (USA), exported 14 million used light duty vehicles (LDVs) between 2015 and 2018, primarily to developing countries in Africa, Asia and Central America (Baskin et al. 2020). The study also showed that vehicles exported are mostly used vehicles with major problems in quality and safety. For instance, from 35,000 vehicles exported from the Netherlands to West Africa in 2017-2018, the majority ‘did not have a valid roadworthiness certificate at the time of export. Most of them were between 16 and 20 years old and fell below Euro4 vehicles emission standard’’ (Ibid, p.5). The study also states that only few exporting countries have restrictions on the quality of used vehicles exported. Car exporting countries, therefore, benefit from the export of most dangerous vehicles for both human health and the environment.

A significant portion of deaths and injuries in Ethiopia occur in newly built asphalt roads because the design of these roads nudges drivers to speed (UN, 2019). Since these roads are primarily built to facilitate car travel, their design often ignore the nature of vehicles in the country, and the vulnerability of different groups of road users (ibid). Therefore, it can also be argued that the decision by international actors, such as the World Bank and International Monetary Fund, and foreign governments to fund road infrastructure developments that does not give due consideration to the safety of road users is partly contributing to increased risk of road crashes in Ethiopia.

### 4.3 ONLY DECISION MAKER

Such actors are decision makers who are ‘‘neither exposed to the risk nor recipients of its associated benefits’’ (Hansson 2018, p.1825). Such actors are often impartial actors tasked with the role of balancing the interests of the risk-exposed and the beneficiaries (ibid). Moreover, such actors can be ‘‘entrusted with protecting the interests of a person who carries both the risk and the benefit but cannot make the decision herself’’ (ibid). In the case of the risk imposition from car driving in Ethiopia, some actors can be identified who through their decision making powers could influence the risk in Ethiopia’s road systems. This may include, among others, local and international institutions working in public health (such as the WHO, the Ethiopian ministry of health and similar regional and local institutions), federal and regional lawmakers, lawmakers in countries that export cars to Ethiopia.

### 4.4 Risk Exposed and beneficiary

Some stakeholders could be identified that are both risk exposed and beneficiaries from the risk exposure but without having no decision making roles. These actors may include pedestrians, and children. In Ethiopia, pedestrians are disproportionally over represented in road fatalities and injuries. In some cities such as Addis Ababa, 80% of road fatalities are pedestrians. In addition, pedestrians in major cities are exposed to air and sound pollution as they walk next to highly polluting motor vehicles. Nonetheless, it is not clear if there is any direct benefit pedestrians get from the risk exposure. However, one may say that pedestrians are indirect beneficiaries from taxes and revenues collected from car owners and driving since these revenues will ultimately be used to fund public projects that benefit the society in general. Therefore, even if the current states of affairs is unfair towards pedestrians it could be argued that everyone will eventually benefit because car driving will ultimately contribute to the economic development of the country. However, this position begs some important questions. First, while some stakeholders, such as car owners, get the direct benefit now, it is not clear why the benefits for pedestrians has to be secured in the future. Moreover, it is not clear when and how the promised benefits to currently risk exposed pedestrians are to be realized. Second, in cases where the risk materialises into harm, it is not clear how those pedestrians killed and seriously injured will ever be beneficiaries from future economic development. Therefore, even if car driving will ultimately contribute to economic development, it does not remove the fact that the current states of affairs in terms of risk distribution is unfair towards pedestrians and other unprotected road users. Thirdly, current socio-economic and human costs of road crashes in low-income countries is very high and it will continue to cost these countries more unless effective and efficient measures are taken to prevent fatal and serious injury crashes. Although it is difficult to capture the actual costs of road crashes due to under reporting, studies estimate that the socio-economic costs from road crashes for middle and low-income countries accounts for over 2% of the national GDP (Wijnen, 2021; Wijnen & Stipdonk, 2016). Moreover, road crashes have major impacts on household income, unemployment, home ownership, divorce rate, and income gaps for surviving victims of road-crashes.[2] Therefore, it could be argued that reducing the human and socio-economic costs to pedestrians associated with car crashes will be an efficient way of promoting economic development in these countries. A recent study by the World Bank shows that reducing fatal and injury crashes "would enable countries to attain substantial increases in economic growth and national income, while leading simultaneously to clear welfare gains" (World Bank 2017, p.6). According to the study, countries that do not invest on road safety could loss between 7 and 22% in potential per capita GDP growth over a 24-year period (World Bank, 2017). In general, pedestrians are exposed to risks from an activity that they share no direct benefit from. Moreover, given that the majority of pedestrians in major cities have low-income, they might not have the economic means to afford a proper health care in case of harm from road crashes and cope with other socio-economic difficulties that might arise. Therefore, risks of harm from car driving further exacerbates the socio-economic position of this group of road users.

Children are another major risk exposed groups, as road crashes are also the leading cause of child injury deaths in Ethiopia. Children are risk exposed both in their potential as unprotected road users and car occupants. For children that are unprotected road users, the risk-benefit distribution may be similar to the case of pedestrians discussed above. However, some children are risk exposed in their capacity as car occupants. Given the nature of road transport and vehicle safety in Ethiopia children using car travel as regular means of transportation face higher risk of getting involved in a fatal or serious injury crash. In contrast to child pedestrians,

[2] https://blogs.worldbank.org/transport/road-crashes-have-more-impact-poverty-you-probably-thought

children using car travel might be direct beneficiaries from car driving and the different advantages that it provides.

These actors, although disproportionally over represented in road fatalities and injuries, are often ignored in transport decision-making (UN 2019, WHO 2018). In many low-income countries, including Ethiopia, Pedestrians, cyclists, children, the youth, women and people with disabilities have not been able to influence the nature of road infrastructure design and vehicles safety policies in such a way that their interests are taken into account. In other words, these groups are exposed to risks that are decided by and primarily benefits others.

In general, two groups of stakeholders could be identified that may have the three risk roles combined. These are car owners and adult car occupants. In particular, this may include car owners that are themselves drivers, hired drivers, and other passengers. These actors differ in terms of their decision-making roles, risk exposure, and the benefits they get from car driving.

Car owners have important decision-making roles in relation to risk exposure in the road system and their choices have important implications not only for their safety but also for others sharing their vehicles and the road system. While the majority of drivers choose to buy and operate old used vehicles that pose significant health risks to others, some vehicle owners may drive the safest vehicle for car occupants and other road users. Although accurate data is lacking it could be assumed that while some car owners may just have one car and merely use it for commuting and other basic services, others may own many cars. Moreover, it is common that some owners extract profit by providing transport and other services using their personal vehicles. In general, the type, number and purpose for which owners use their cars are important factors to consider in the analysis of the morality of risk impositions from car driving in low income countries.

Since car owners freely choose to buy and drive, and because they are the direct beneficiaries from driving, one may argue that the risk they take is morally unproblematic. Even if car owners do make the choice to own a car and they are direct beneficiaries, it does not really mean that they also agree and choose to take fatal and serious injury risks. It is reasonable to assume that those who drive a car do so for its mobility and other associated benefits and not for the risk involved with driving. The problem is that they just had no other safer alternative than choosing to drive a very risky car in a very risky travel environment. If car owners could secure the mobility and other benefits associated with car driving without the associated risk of losing their lives and limbs, they most probably would go for such an option.

Moreover, although car owners are important decision makers with regards to the nature of the cars they choose to buy and operate, their decision to buy a car, especially those unsafe cars, might be influenced other factors. For instance, it could be the case that people are forced to buy and use cars due to the unavailability of safer and efficient public transportation alternatives, which is a major problem in Ethiopia[5]. Moreover, in Ethiopia and many low income countries the decision to buy unsafe vehicles is primarily associated with weak purchasing power and lack of foreign currency (Edinger, 2018). Even when one buys a vehicle that is said to be safe on an African vehicle market, evidence shows that safer cars available on

[5] It is also the case that economic factors are pushing factors as many who buy personal motor vehicles do so to generate income. Although the authors could not find a study in Ethiopia, it may also be assumed that many who choose to own car in Ethiopia choose to do so because car ownership is viewed as a special status symbol.

developing countries vehicle market are not safe enough compared to the same brands sold in other parts of the world.[6]

Nonetheless, risks from car driving rarely only affect single individuals, as there are usually risks associated for other road users, which become even higher when the vehicles are old and lack necessary safety features. Although empirical data is lacking, it might be reasonable to assume that the majority of personal cars in Ethiopia are used also by families, close relatives and friends. It is also common in low income countries to use personal motor vehicles to provide transport services. It is also the case that drivers provide voluntary lift services to people in need of transportation, especially during rush hours when public transportation is lacking. Over the life time of his or her car an owner may provide voluntary transport services to a significant number of individuals. In general, the nature and safety of cars owners choose to buy have significant impact on the nature of risk imposition for different groups of road users.

Two major groups of car occupants' are drivers and passengers. Although the proportion of drivers and passengers killed and injured from road crashes is low in major cities, i.e compared to other groups of road users such as pedestrians, these two groups of road users are significantly represented in deaths and injuries in the country. These groups are also those who reap the most direct benefits associated with car driving. Concerning drivers, it might be necessary to distinguish between drivers who are themselves owners of vehicles and drivers who are merely hired to drive cars owned by others. Hired drivers, similar to drivers who also own the car they drive, are both risk exposed and beneficiaries. Hired drivers get direct benefits, such as salaries and other advantages, from their employment[7]. On the other hand, car owners get transportation benefits and other financial profits if they also provide transport services with their cars. Car owners may have economic costs such as taxation, costs for repair and services, and mandatory insurance costs that may not be expected from hired drivers. In case of car crashes, the life and injury costs will be for hired drivers involved in crashes. As far as the knowledge of the researchers is concerned, there is no available data showing how many of the drivers killed and injured while driving personal cars were hired drivers or themselves owners of the vehicles.

Car occupants in personal automobiles are usually families and friends. As such, some car occupants, such as adult family members, could influence the nature of vehicles they chooses to purchase and drive. Unlike car owners and their families, other car occupants, such as hired drivers, may not influence the nature and safety of vehicles they occupy. As compared to car owners whose decisions determines the nature and safety of vehicles they buy and operate, the decision making role of hired drivers is primarily related to actual driving.

### 4.6 Risk exposed and Decision makers

Concerning risk exposure from car driving in Ethiopia, this combination of risk roles seems to be irrelevant as no actor could be identified that is risk exposed and decision maker while not benefiting from the risk.

[6] https://www.youtube.com/watch?v=UL_2MdSTM7g

[7] Due to low salaries and bad employment conditions, it is common in Ethiopia and other low-income countries, for drivers to earn extra money by, for instance, transporting more people and goods than legally allowed or over the accommodating capacity of the cars they drive. As a result, they often impose an elevated risk of harm on others

### 4.6 ONLY RISK EXPOSED

As far as the knowledge of the researcher is concerned, no actors could be identified that are only risk exposed without having any other roles. Therefore, this role may also be irrelevant in the moral analysis of the risk imposition.

| | **Roles** | **Stakeholders** | **Moral Evaluation** |
|---|---|---|---|
| **1** | Only Beneficiary | None | Irrelevant |
| **2** | Beneficiary and Decision maker Persons | Car exporting countries, local Manufacturers, car importers, Car owners (who are themselves not drivers), etc. | Problematic as these actors benefit from risk imposed on others |
| **3** | Only Decision maker | Law makers, politicians, (on both the exporting and importing sides), etc | Problematic as these actors have historically ignored road crash risks. |
| **4** | Risk-Exposed and Beneficiary | Children (car occupants), pedestrians, | Problematic role as these are disproportionately impacted by risks from road crashes. Moreover, these stakeholders are usually ignored in transport decision making. |
| **5** | Risk-Exposed, Beneficiary, and Decision maker | Car owners, drivers, adult car occupants | May not be problematic only as long as the risk pertains to an autonomous and mentally capable agent who also makes the decision to expose herself to the risk. However, this is not relevant in the case of risk imposition from car driving because the risk imposition is affects others. |
| **6** | Risk-Exposed and Decision maker | None | Irrelevant |
| **7** | Only Risk-Exposed | none | Irrelevant |

Table 2. Stakeholders' and their corresponding roles in relation to risk imposition from car driving in Ethiopia.

## 5. AN ETHICAL ANALYSIS OF RISK IMPOSITIONS FROM CAR DRIVING IN ETHIOPIA

Driving a car imposes significant risk of harm on others (Hansson, 2014; Husak, 2006; Ori, 2014, 2015; Smids, 2018). Despite this, many philosophers present the risk of harm from driving a car as an example of a morally acceptable risk imposition (Smids, 2018). Even philosophers who assert that car driving imposes morally unacceptable risk impositions on others do not argue against the practice of owning and driving a car per se (Husak 2006). I believe this is, in part, because in many of the developed countries where these philosophers are situated, car is a technology accessible to the majority and this empirical evidence has important implications for the morality of owning and driving a car in developed countries[8] [9]. Since most individuals and households own, and drive a car they are both beneficiaries from car driving but also involved in reciprocal risk impositions as many others also own and drive cars. Therefore, for many, driving risks seem ''acceptable because these risks are the result of a (democratic) agreement about risks and benefits that is viewed as working for the benefit of all'' (Smids 2018, p.206)[10]. Hansson proposed a principle of acceptable risk imposition in which a risk imposition is justified if they are components of a system of "exchanged" risk exposures that are advantageous to all those involved (Hansson 2003, Hansson 2018). As an example, he writes ''… by driving a car, you expose your neighbour to a small risk of being hurt in a car accident. If your neighbour also drives a car, then you are subject to a similar risk. Under the assumption that driving a car is useful for both of you, it can be advantageous for both of you that you are both allowed to do so'' (Hansson 2018, p.1827).

If we take the above definition of justifiable risk imposition, then we may reasonably say that car driving in Ethiopia is morally problematic because risk from car driving is not a fair and a mutually beneficial exchange of risk in which the majority of people are involved. The reciprocity in benefits and risk imposition is lacking because cars are not technologies easily accessible to the majority of people as they are in industrialized countries. Instead, cars have historically been unaffordable for the majority of the people in Ethiopia and many low-income countries. Moreover, given Ethiopia and many other low-income countries lack the technological and financial capability, it is less likely that they will produce cars accessible to the majority of people at affordable prices. This means that the distribution of car ownership across socio-economic classes will most likely remain the same for the coming decades even if

[8] As an example, Hansson (2017b, p.53) presents cars as examples of technologies that were ''first only available for a wealthy minority but have increasingly become accessible to larger parts of the world's population.'' Similarly, (Davis & Obree, 2020, p.2) view the private motor car as an emancipator that provided individual and collective freedom of movement as the majority of people have been able to own cars.

[9] I do not mean to discount the fact there are other factors that contribute to the acceptance of car driving than the fact that their wider availability.

[10] The fact that cars are accessible to the majority of people in developed countries and the resulting reciprocity in risks and benefits from car driving, however, does not mean that there are no ethical issues associated with car driving in developed countries. Issues of equity and fairness in the distribution of benefits and burdens associated with car driving are just the tip of the iceberg when it comes to moral issues associated with car driving.

motorization will continue to increase[11] [12] (Ibid). Therefore, car ownership will continue to be a privilege a few are entitled to enjoy while imposing significant risk of harm on the majority. Since driving imposes a substantial risk of harm on others, and not everyone has equal access to car driving in many low-income countries, car driving in general is an unjust and morally problematic practice. In general, as long as cars continue to be luxury technologies affordable only by few, risk imposition from car driving will continue to be part of an inequitable social system in which the majority of people are unfairly exposed to risks they neither are beneficiaries from nor voluntarily agreed to take. To use terminologies from Hansson (2017b), car is a type of technology not only *creating permanent advantage for a privileged minority* but also one *creating permanent disadvantages for underprivileged groups* such as the economically poor who can't afford to own vehicles, and pedestrians, children and the disabled who historically have lacked proper representation in decision making processes in the country.

Given that car driving is associated with unfair risk impositions, what are the implications for car ownership and driving in low-income countries? Does it follow then that the morally right thing to do is to ban car driving? On the other hand, are there, may be, other morally relevant considerations that we should take into account that make the risk impositions from car driving morally acceptable even though it is unfair? Yet again, could there be another way out of the moral dilemma that car driving and the risk imposition associated with it give rise to? At this point, it is perhaps better to approach the problem of risk imposition from car driving from the perspective of the different major ethical theories.

From a Consequentialist point of view, the only morally relevant consideration is the results of one's actions and intentions. Human choices are not in themselves bearers of moral value. Rather the consequences of our actions and omissions determine their morality. However, Consequentialists differ in terms of the nature of the consequences they seek to promote and regarding the issue of whose consequence should be taken into account. According to one of the most influential Consequentialist schools of thought, Hedonistic Utilitarianism, the criteria for the moral goodness or rightness of an action is whether the consequence of that action brings the greatest happiness for the greatest number of people (Bennett, 2017). To apply this principle, we would need to first identify the consequences of the action in question, both positive (advantages) and negative (disadvantages) results for all people affected, and then aggregate individual results to compare how the total amount of happiness of the action fares against its total amount of pain. If the totality of happiness outweigh the totality of pain, then the action is morally right as long as there is no other option that could generate the same amount of happiness with lesser amount of pain. For a hedonistic utilitarian, it does not matter who receives the positive or negative results of an action and whether the recipients of any results have consented to receive the results.

Regarding the risk exposure from car driving in Ethiopia, therefore, a hedonistic utilitarian is primarily interested in determining if the current states of affairs in terms of risk distribution

[11] In Ethiopia the ''purchase price of vehicles, even those which are second hand, are typically upwards of $20,000. Vehicle purchase costs represent fixed costs of motoring, and after the associated duties and taxes are applied, these fixed costs are much higher than in neighbouring countries.'' (Gorham et al., 2017, p.12).

[12] For instance, according to (Gorham et al., 2017, p.17), ''Car ownership rates are projected to increase from 2.2 cars/1,000 population (2016) to just under 5 cars/1,000 population by 2035, representing a doubling of the car ownership rate within 20 years…Overall fleet size increases from 552 thousand vehicles (2015) to 1.68m by 2030, a growth of 300 %. The number of car vehicles is projected to grow from 219 thousand to 552 thousand by 2030, and to over 2 million by 2050''. Even if car ownership will increase, it will probably remain very small compared to the number of Ethiopian population.

promotes the happiness of greatest number of people. If the overall benefits of car ownership and driving outweighs the risks, then the current states of affairs is not necessarily morally problematic even if there are individuals unfairly exposed to significant risks from car driving. In fact, a risk imposition from driving a car might even be laudable as long as the total benefits gained by exposing others to the risk add up to a greater sum than the total risks (Hansson, 2018). From this perspective, increased motorization, although its risks and benefits are inequitably distributed, could have overall benefits that outweigh the risks and therefore a morally right policy choice. If we follow utilitarian logic, therefore, we could justifiably continue to expose individuals to current unfair risks as long as we can show the benefits to the society are greater than the costs. However, the utilitarian position gives rise to important ethical and methodological problems[13]. For For instance, death, injury, and property damage are potential consequences of car crash. We also know that car owners value car driving because of different advantages associated with it such as mobility, freedom, status and etcetera. A utilitarian would need to find a way to add all these consequences together to determine whether the total benefits outweigh the disadvantages. However, people find it problematic to compare deaths and injuries to property damages or to the mobility benefits. While the latter, for instance, can easily be assigned a monetary value, disadvantages such as deaths and injuries cannot be expressed in monetary terms. This leads to the problem of incommensurability for utilitarianism (Hansson, 2007; Hayenhjelm & Wolff, 2012). Moreover, the utilitarian position contradicts the commonly held view that human beings have certain prima facie rights, such as the right to life, respect and dignity, that cannot be violated, unless there is a justifiable ground to do so. According to this view, the mere fact that a majority benefits from a certain development project is not enough justification to allow the compromise of people's rights However, Utilitarianism views as unproblematic that injustice prevails as long the majority of people benefit sufficiently enough from it (Hermansson, 2007; van Wee & Roeser, 2013). The root source of these problems could be attributed to the fact that Utilitarianism assumes the interpersonal compensation of benefits and risks (Hansson, 2007; Hansson, 2004). The notion of interpersonal compensability means that ''a disadvantage affecting one person can be fully compensated for by an advantage of the same size that affects some other person (Hansson 2007, p.180).

It seems that Rights based and Deontological theories could account for some of the serious problems associated with Utilitarianism but perhaps at the risk of causing an even bigger problem on how to deal with the unfair risk imposition from car driving. These theories recognize, unlike Utilitarianism, that individuals are autonomous agents with certain inviolable rights, such as the right to life, and bodily integrity and that others have corresponding duties to refrain from violating these rights. From the perspective of these theories, human beings have the right not to be exposed to risk of harm by others and this cannot be simply overridden just because it promotes the interest of the majority (Hansson, 2018; Hansson & Peterson, 2001; Hermansson, 2007; Peterson & Hansson, 2004). Therefore, it could be said that these theories protect against the sacrifice of individuals and their interest to promote collective goals (Hermansson, 2007). Since car driving imposes an unfair and significant risk of harm on others, it violates peoples' invaluable rights, sabotages their interests and values. Moreover, by imposing risks on others, those who decide on and benefit from the risk imposition are transgressing their duty to respect and uphold other people's rights and autonomy. Therefore, from rights based and deontological perspectives, the risk imposition from car driving is morally unacceptable and the only morally acceptable solution is to prohibit car driving as long as the risk imposition persists or unless a safe road system is created in which road users are

[13] For more on methodological and ethical problems associated with the utilitarian risk analysis see Hansson, 2007; van Wee, 2012; van Wee & Roeser, 2013)

free from any risks. However, such a position leads to what is called the *problem of paralysis*, as it prohibits performing any action that involves risks on others (Hayenhjelm & Wolff, 2012). Therefore, similar to Utilitarianism, following rights and duty-based theories might lead to morally and practically problematic policy recommendations on how to address the problem of risk imposition from car driving in Ethiopia.

In general, Utilitarianism, Rights-based and Deontological theories lack practically feasible solutions on how to address the unfair risk imposition from car driving. Clearly, prohibiting car driving will not be in the best interest of individuals and the society. However, following Rights based and Deontological theories seem to lead us to this recommendation, because these theories do not allow involuntary risk impositions on others from car driving. It is also morally problematic to continue allowing the current unfair risk imposition and the sacrifice of individuals for the sake of promoting national interests. Nonetheless, this is what Utilitarianism would recommend us to do regardless of the unjust state of affairs associated with risk impositions from car driving. Given that major ethical theories seems to propose morally and practically questionable solutions on resolving the risk imposition from car driving, what other ways are available to make the risk imposition from car driving fair and morally acceptable? We believe that the notion of residual obligations could be used to partly resolve the moral dilemma that arises from risk imposition from driving cars.

## 6. RESIDUAL OBLIGATIONS TO THE RESCUE

Although the origin of the concept of residual obligations is attributed to the earlier philosophical works of W.D. Ross (1930), Bernard Williams (1973) and others, a systematic application of the notion of residual obligations to understand and analyse the moral obligations of those who impose risks on others was first proposed by Hansson and Peterson (2001). In general, residual obligations refer to special class of obligations that arise when it is impossible to uphold all of our moral obligations as a result we have to override some of them to promote others (Hansson & Peterson, 2001; Peterson & Hansson, 2004). As a simple example of residual obligation arising from a breach of moral obligations, suppose that X, due to a very urgent medical situation with a family member, is thinking of cancelling an appointment to meet a friend. If X chooses to cancel the appointment, then he overrides his primary moral obligation to go to the appointment. Even in this case, X may still be morally obliged to properly inform his friend about the cancellation of the meeting, and extend an apology for not making keeping his promise. These later obligations are known as residual obligations, and they arose due to the overriding of the primary obligation of X to go to the appointment. The basic idea is that broken or overridden obligations leave behind certain moral residues including residual obligations that the over rider needs to attend to (Hansson & Petersson 2001).

According to Hansson and Peterson, five different but interrelated residual obligations might arise in a situation where risk imposition leads to an overriding of individuals prima facie rights not to be exposed to the risk in question. These are obligations to compensate, communicate, improve, search for knowledge and bring about attitudinal change. First, if a risk imposition is associated with actual harm, then the risk imposers have a residual ‘‘obligation to compensate’’ those who are harmed. However, compensation is often too costly and inadequate to account for certain types of harms, for instance harms related to lose of life or natural habitat, and bodily injury. Hence, compensation may need to be supplemented by the promotion of other types of residual obligations. Second, risk imposers could also have the moral ‘‘obligations to communicate’’ to those imposed to the risk. The moral obligation to communicate involves the risk imposers’ responsibilities to inform the risk exposed about the nature of the risks, to listen to the risk exposed, and engage with them in a dialogue (Hansson & Petersson 2001, p.163). In

cases where the risk exposure materializes into an actual harm the obligation to communicate also involves the risk imposers ‘‘duties to express regret, and to apologies’’ (Hansson & Petersson 2001, p.163). Third, risk imposers may also have a moral obligation to take further actions to minimize risks and this is part of risk imposers’ ‘‘obligation to improve’’. In relation to this, Hansson and Peterson state that ‘‘the risk imposers right to impose others to risk is conditional on the situation on which some risk-associated benefit cannot be obtained otherwise. If new technology or other new circumstances make this sacrifice unnecessary, the right to impose others to risk ceases to be in force. Therefore, the risk imposer has an obligation to adopt risk-reducing measures when they become available’’ (ibid). Fourth, when there is little understanding regarding the nature of the risk, its underlying causes and on ways of minimizing the risk, risk imposers have an ‘‘obligation to search for knowledge’’. Last but not least, the attitudes of risk imposers towards the risk exposed and acknowledgement of their contribution for the risk exposure could party impact the moral acceptability of the risk imposition. If, for instance, the attitude of the risk imposers is characterized by the externalization of their contribution to others, and discrediting of legitimate concerns of those who are risk exposed, then it could negatively affect the moral acceptability of the risk imposition. Therefore, risk imposers have a moral ‘‘obligation to change their attitudes’’. According to Hansson and Peterson, a careful consideration of these risk related residual obligations is an essential component of what makes it morally acceptable to expose others to risk (Hansson & Petersson 2001, p.157).

As discussed above, the risk imposition from car driving creates a major moral dilemma. On the one hand, we take as valuable that people own and drive cars because of the various benefits associated with it. They have prima facie right to own and drive cars. On the other hand, individuals have prima facie rights not to be exposed to risks of harm by others and car driving seems to override this right because by driving a car one imposes others to significant risks of harm. In fact, we know for sure that thousands will actually be killed and injured if current states of affairs continues. Therefore, risk imposition from car driving involves a conflict between the values of safety and mobility. It seems in many places that the designers of the road system have accepted that both of these values cannot be promoted at the same time, i.e the current system allows the compromise of safety for the mobility benefits of car driving. Despite the unfair and significant risk impositions and harms associated with car driving, governments allow car driving and it is legal for individuals to drive even the most unsafe vehicle for other road users.

One way of justifying the current system is to say that the mobility and other benefits associated with car driving cancels out individuals’ prima facie rights not to be exposed to risk of harm by others. However, this position is unintuitive and leads us back to the problem we have discussed above with Utilitarianism. Even if it is allowed to drive cars and impose risks on others, it doesn’t mean that actors who decide on the nature of risk imposition and benefit from car driving have no obligation towards those unfairly risk exposed or to those who are harmed. Nor does it mean that the rights of those unfairly risk exposed is cancelled out by the government’s decision to continue to allow individuals to drive cars and impose the unfair risks on others. Rather, a better way to view the current states of affairs is that those who decide and benefit from the risk imposition from car driving are overriding of their primary moral obligations to respect and promote the rights of those unfairly exposed to the risks of driving. The overriding of primary obligations gives rise to various moral obligations that those who decide and benefit from car driving ought to promote to ensure an equitable and morally acceptable risk distribution. Accordingly, those who decide on the nature of the risk in the road system and benefit the most from car driving in Ethiopia have moral obligations to compensate, communicate, improve, search for knowledge regarding road safety risks and bring about

attitudinal change. In other words, we argue that the current unfair risk distribution from car driving in low income countries is due to, the failure of decision makers and beneficiaries from the risk imposition, in not properly and adequately identifying their various residual obligations that arise from the overriding of road users' prima facie rights not to be exposed to risk of harm by others.

### 6.1 OBLIGATION TO COMPENSATE THOSE UNFAIRLY EXPOSED TO RISKS OF DRIVING

The provision of fair compensation to victims of car crashes is one way of accounting for the current unfair distribution of risks and harms resulting from car driving. Therefore, it is important to look at the nature of compensation systems that Ethiopia is currently implementing. According to Proclamation No. 559/2008[14], every car owner in Ethiopia has to have a vehicle insurance against third party risks. The proclamation states that the third party insurance does not cover ''death or bodily injury to the insured person or member of the insured person's family; …death or bodily injury caused to a person hired by the insured person and occurred in the course of such employment…''. As per the proclamation, the insurance provides covers a financial compensation of up to and not more than (Ethiopian) Birr 40,000[15] in case of fatal injury, 15, 000 for bodily injury and Birr 100, 000 in case of property damage.

One could easily identify a number of problems associated with this compensation system. Among others, it is not clear how the stated amounts could account for the loss of life and bodily injury. The justifications as to how and why the lawmakers decided on these amounts are missing in the proclamation. Nonetheless, it is clear that for those unfairly killed and seriously injured from car crashes, no amounts of money could adequately and properly compensate for their losses. While material losses or damages can easily be compensated for with money or the provision of new materials, the same types of compensation might not be adequate for a loss of life and serious injury. Even in case of material damage or loss, people might have sentimental values attached to their material belongings and, therefore, neither monetary compensation nor the provision of a new material may account for their loss. Additionally, car driving imposes significant risks that might not necessarily lead to harm and there is no clear consensus on whether this types of risks should be compensated for (Hansson & Peterson, 2001). We believe that risk imposition from car driving, even when there is no physical harm involved, should be viewed as a form of harm. The fact that people know that they face significant risk of being hit by a car, could significantly affect their wellbeing. For instance, studies show that fear of motorised road traffic has resulted in parents and carers restricting children's freedom and independent mobility (Davis & Obree, 2020; Hillman et al., 1990; Kyttä et al., 2015; Lopes et al., 2014). As a result, awareness of a risk exposure may create fear in individuals and this in turn could lead them ''to take costly or difficult precautions to reduce the probability of the hazard occurring'' (Hayenhjelm & Wolff, 2012).

Yet another problem of the current system of compensation is that it excludes important stakeholders, such as hired drivers, and children who are families of the insured person, who have no decision making roles with regards to risk exposure from car driving. As discussed in the previous section, these stakeholders are beneficiaries and risk exposed but with no decision-making roles concerning the nature of vehicles that car owners choose to buy. It is not clear from the proclamation what justified the exclusion of these stakeholders but it seems highly problematic. Also, if it is known that certain socio-economic groups of road users are

[14] https://www.associationofethiopianinsurers.com/sites/default/files/Proclamation/proc-559-vehicle-insurance-against.pdf

[15] Less than 700 Euros at current conversion rates.

disproportionately exposed to risks of harm, other ways of reducing the risk might have better appeal than continuing to allow the unfair risk exposure just because there is a compensation scheme (Hansson, 2018; Hayenhjelm & Wolff, 2012). Accordingly, although ensuring a fair compensation system is necessary when an involuntary risk imposition leads to harm, it is more desirable to create a road system that is effective in preventing pedestrian deaths and injuries on the long term than one that is effective in compensating for thousands of deaths and injuries.

Moreover, compensation would be too costly for a low-income country like Ethiopia as it involves paying large amounts of money every year to victims and in property damages. In addition to the economic costs, the use of compensation gives rise to important questions related to who should be responsible for compensating the victims. Given that road traffic crashes are a result of multiple causal factors, a system that holds only car owners responsible for compensating those harmed in road crashes might be morally problematic.

In general, ensuring effective and fair compensation system could partly help in creating morally acceptable risk imposition from car driving in Ethiopia. However, in case of harms resulting from car driving, a morally better option seems to be the promotion of pro-active interventions that are effective in eliminating the risks of fatalities and serious injuries. As long as effective interventions exist, a morally better way to address road deaths, injury and fear of road traffic would be to prevent these externalities than the provision of monetary compensation for losses that the compensation cannot account for. Therefore, compensation is not only incomplete but may also give rise to moral problems on the nature of compensation and what things needs to be compensated for.

### 6.2 Obligations to Communicate to the risk exposed

The risk imposers' obligation to communicate, as discussed above, involves obligations to inform, to listen, and to engage in a dialogue. It is a moral obligation of risk imposers to inform, to listen and engage with risk exposed road users, and to consider their views and interests in transport planning and decision-making.

Different stakeholders, including but not limited to individual car owners, drivers, governments, politicians, road safety practitioners, could have different obligations in this regard. For instance, local governments and road safety agencies may have the responsibility to inform the public, not just about the dangers for individual road users of behaving in the road system, but also about the nature, magnitude and implications of the many different risks of car driving. These actors should also hear their views on how to address risks and incorporate their values in the design and implementation of relevant policies and strategies. Road safety agencies could emphasis how road designs and vehicle safety aspects significantly contribute to risk of harm. In connection to this, similar strategies could be used as the so-called New Car Assessment Programs (NCAP) in many parts of the world, where vehicles available on the market are safety tested and their results made public to encourage the purchase of safer vehicles and discourage unsafe ones. Perhaps the awareness of these and related information could influence how the public perceives car driving and positively influence demand for safer cars and road designs. Currently, such communicative strategies targeting vehicle safety are not common in low-income countries (Abebe 2022).

The obligation to communicate is highly relevant for individual road users as well. For instance, suppose that Mr. X was driving an old used vehicles on a newly built highway connecting the capital city to a smaller town. The allowed speed on the highway is 80kmph and since there appears to be no other vehicles around, Mr. X took the liberty to drive at a speed of 120 khph. As he was passing through a small village, he hit a child who was jumping the highway fence to cross to the other side. Clearly, Mr. X is at fault as he is driving over the speed limit, and he

might be liable to compensate the child or her family in case of injury or death. Moreover, he might need to make a sincere apology to the victim's family and show feeling of remorse.

Even though the promotion of the obligation to communicate can be helpful in mitigating the unfairness of risk impositions, it also has its drawbacks. First, communication is desirable but often narrowly focuses on the promotion of acceptable road users' behaviour in the road system. Traditionally, road safety work in many countries emphasizes informative interventions that involves informing major risk exposed groups, such as pedestrians and children, about the risks in the road system and on the importance of safe behaviour (WHO, 2018). Different local and international actors provide road safety education and trainings to help road users navigate the road system safely in Ethiopia (Strategies, 2017). Therefore, it could be said that there has already been some manifestation of risk imposers' obligations to communicate. However, the educational interventions are known for primarily emphasizing the responsibility of individual road users in road crashes and rarely are information provided on the contributing role of vehicles and the road system design on the risk in the road system (Abebe, 2022). Moreover, as we have seen in section 2, in Ethiopia and many countries the interest of pedestrians, cyclists, children, disabled people are ignored in transport planning and road safety work. This partly indicates that there is also a gap in listening, engaging and taking the concerns of these affected road users seriously. Second, communicating the nature of risk in a road system and about safe behaviour in the road system may not be an effective way of promoting the safety of certain groups of road users such as children. Therefore, although better communication might be helpful, it however might be ineffective as compared to other ways available to reduce risks of harm in the road system such as the use of technical fixes to eliminate risk factors to children. As a result, we need to supplement our obligations to compensate and communicate, by promoting yet other residual obligations arising from the risk imposition, such as the obligation to improve the risk exposure by taking risk-reducing measures.

### 6.3 OBLIGATIONS TO IMPROVE PREVENTABLE FATAL AND INJURY RISKS

The obligation to improve safety of road users through the promotion of effective risk reducing measures could be more preferable than all other residual obligations in terms of its potential in making the risk imposition from car driving fair and morally acceptable. As stated above, the risk imposers prima facie right to impose others to risk is conditional on two factors. First, there should be no other way of attaining the benefit without imposing the risk (Hansson & Peterson, 2001). Second, when risk-reducing measures become available those who impose risk have the obligation to use the risk reducing measure to minimize the risk to others. The risk imposition from car driving seems to conflict with both of these requirements. First, it is not clear if, in Ethiopia, the benefits that one gets from personal car driving could not be attained through other less risky alternatives, such as the use of public transportation, and cycling. Determining this would require looking into, among others, the purposes for which people use their cars for, how necessary car driving is to accomplish the intended purposes, and if no other, less risky, means of transportation is available that car owners may use to accomplish the same purpose. Second, for most risks associated with car driving there are already technologies that could either eliminate the risk or significantly reduce it. For instance, over speeding and drunk driving are two major risk factors for road crashes in Ethiopia (UN, 2019). Speed limiters and alcohol interlocks are technologies that have proved very effective in preventing both speeding and drunk driving related problems respectively (Elder et al., 2011; Hydén, 2020; Radun et al., 2014). However, in majority of world countries and especially in low income countries such as Ethiopia, road safety work continues to ignore effective lifesaving interventions such as speed limiters and alcohol interlocks in particular and the role of vehicle safety in general (Hydén, 2020; UN, 2019).

Although it is difficult to provide a clear reason as to why road safety works continues to ignore these effective and efficient lifesaving interventions, it is believed that the traditional understanding of the causes of road safety problems and prominent decision-making tools in transport policy planning could have contributed to the problem. Traditionally, road safety problems are believed to be caused due to problematic road user behaviour in the road system and that other aspects of the road system such as cars and the road design were thought to be problem free (Belin, 2021, 2023; Belin et al., 2012; Johansson, 2009). This has led to the emphasis on improving road users' behaviours as a major way of addressing road safety problems while safety improvement work on other components of the road system was largely ignored (ibid). However, the traditional view on the causes and remedies of road safety problems has been found to be too narrow and ineffective in achieving significant safety improvement. As a result, currently successful road safety policies such as the Vision Zero, emphasize the importance of promoting a comprehensive understanding of the causes and remedies of road safety problems that is not merely limited to the role of individual road users but also gives equal consideration, perhaps even greater attention, to understanding the role of other system components such as road infrastructure, vehicle design, emergency medical services, data collection and transport management (Larsson et al.,2010). The basis for the emphasis on comprehensive and systems view of road safety problems is, partly, the realization from years of safety research that the other components of the road system previously neglected in road safety work, such as car and infrastructure designs, significantly determine the probability and severity of risks in the road system. For instance, unlike the traditional approach, Vision Zero is based on the assumption that more than 90% of road fatalities and injuries are caused due to defective road infrastructure design and vehicle safety problems and that these harms could be eliminated or reduced if improvements are made to these aspects of the road system (Johansson, 2009).

Another potential explanatory factor for the failure to promote lifesaving interventions could be due to the influence of traditional decision-making tools such as cost benefit analysis. Cost benefit analysis is a major decision making tool in traditional transport planning and road safety work (Eliasson & Lundberg, 2012; Elvik, 2003; E. Hauer, 1994; Ezra Hauer, 2011; van Wee & Mouter, 2021). In these areas, CBA is used is to rank alternative public policies, programs and interventions in terms of their economic 'attractiveness' (Hauer 2011). It provides a way to identify investments that gives the most economic benefit to the society for a given budget (Eliasson & Lundberg 2012). From the perspective of cost benefit analysis, risk-reducing measures ought to be promoted only as far as the monetized benefits gained from promoting the measures exceeds the monetary costs of the interventions. This requires weighing safety benefits of life-saving interventions against other types of benefits for the society. Most importantly, it means that cost benefit analysis promotes safety improvement only to the extent that it is socio-economically advantageous (Belin, 2023). According to Belin, the presence among transport economists of the idea that there is an optimal number of fatalities that society should aim to prevent has been a major obstacle in the promotion of life saving road safety interventions and policies (Belin 2023).

### 6.4 OBLIGATION TO KNOW MORE ABOUT THE RISK

The best way to reduce risk exposure is to first know about the nature and magnitude of the risks involved. A better understanding of the risks and their causal mechanisms is important to design effective strategies to prevent or minimize them. Moreover, knowing the magnitude of the risk, who is most affected by it, who benefits from it, who determines the nature of the risk in the road system through its decisions is important for moral analysis of the risk impositions. Unfortunately, not much is known about the true magnitude and causes of road safety problems

in low-income countries due to poor crash data collection and huge gap in road safety research. Although road safety research over the past decades have considerably elevated our knowledge of the nature of risks associated with car driving, most of this knowledge is primarily from developed countries. A recent study on the nature of road safety research in low and middle countries, ‘‘estimated that slightly less than 10% of the entire body of road accident publications are linked to LMICs contexts’’(Haghani et al., 2022). The research also identifies that ‘‘when comparing the clusters of general and LMICs road safety research is that the sophistication of LMICs road safety research is limited. There are a limited number of themes and approaches that have been taken. For example, issues such as distraction and drowsiness are virtually non-existent in LMICs and advanced statistical techniques such as Bayesian approaches or heterogeneity models have only been implemented in a very limited number of applications…It appears that, unlike HICs, active safety technologies have not been the focus of attention in LMICs, which highlights the adoption of these technologies is going to be largely delayed or even inadequate since research provides the groundwork to develop adequate road safety policy. Whilst issues such as advanced driver support systems, intelligent transport systems and autonomous vehicles are common in global road safety research, these are virtually non-existent in the LMICs. We also noted a lack of qualitative studies in LMICs. A potential explanation for this is the difficulty that authors in LMICs have publishing this type of research in international journals that are generally edited by editors based in HICs’’ (Haghani et al., 2022, p. 17).

In general, knowledge is lacking in relation to the nature, causes, and remedies of road safety problems in low-income countries. In addition to lack of knowledge concerning risks and causal factors from car driving in low-income countries, crash data collection is also highly problematic and suffers from grave underreporting (WHO 2018). In the absence of adequate and complete crash data, it is difficult to have an understanding of the magnitude of the risk, and who are affected by it. The lack of adequate knowledge and problems with data collection give rise to residual obligations of those who decide and determine the nature of risk in the road system to search for knowledge. In particular, this gap calls for the obligation of governments, car producers, road transport planners, road safety practitioners, and researchers to promote road safety research in low-income countries and produce the much needed knowledge for road safety work. For instance, foreign governments and actors could promote road safety research, in particular on the effect on safety of the vehicles they export to low-income countries, and the safety of road infrastructures they fund. On the other hand, local governments and road safety agencies could identify research gaps, and promote effective and efficient data collection systems. The use of additional sources of crash data and the involvement of relevant experts, such as road designers, vehicle safety engineers and medical professionals, in crash investigations could provide ways to understand the nature and magnitude of risks in Ethiopian road systems.

### 6.5 OBLIGATION TO BRING ABOUT ATTITUDINAL CHANGE

Attitudinal obligations have special importance with regard to the risk imposition from car driving. Empirical studies on road users’ risk perceptions and their attitudes towards risk factors and traffic rule violations indicate that road users attitudes have major implications for road safety (De Pelsmacker & Janssens, 2007; Dinh et al., 2020; Geremew & Mahto, 2019; Iversen & Rundmo, 2004; Mamo & Haney, 2014; Sheykhfard et al., 2023). Although numerous examples could be stated with regards to individual road users behaviour and attitudes that has negative impacts on risk in the road system, we will identify two potential attitudinal problems related to decision makers and practitioners in working in road transport planning and safety work. First, because of the decades old emphasis in the traditional approach to road safety work on road users’ behaviour, there is a strongly entrenched attitude among road safety practitioners

and the public that road crashes are primarily caused by individual road users' errors and violations in the road system. As a result, it is believed that individual road users are the major causes of road crashes and, therefore, should have the ultimate moral and legal responsibility for safety. This attitude have had the unfortunate consequence of ignoring the role of other system components for road safety and the promotion of other effective ways of addressing road safety problems that can guarantee long term success. While countries that have achieved significant safety improvement over the past decades have been able to gradually bring attitudinal change with regards to the general understanding of the causes and remedies of road safety problems, it will be necessary to strive for similar changes in expert and public understanding of the causes and remedies of road safety problems in low-income countries.

Secondly, road transport planning and safety work has historically accepted the compromise of safety of road users for mobility benefits (M.-Å. Belin, 2023; M. Å. Belin et al., 2012; Tingvall & Haworth, 1999). As discussed above, this is partly attributable to the influence of utilitarian cost benefit analysis that has a very strong presence in transport decision making. As evidence from countries that achieved significant safety improvements indicates, attaining similar safety improvements might require abandoning the attitude that views safety compromises as acceptable price to pay for the mobility benefits associated with car driving. Fatalities and serious injuries are not necessary costs that low income countries should continue to pay for other benefits of the road system. Rather, the level of road fatalities and serious injuries in the road systems are the product of our choices as a political society regarding which values we should prioritize (Abebe et al., 2023). Therefore, attaining significant safety improvement might require the initial determination and willingness from decision makers and politicians to view road fatalities and serious injuries as morally unacceptable as long as effective lifesaving interventions are readily available.

## 7. CONCLUSIONS (TO BE DEVELOPED)

The risk imposition from car driving poses a major dilemma for policy makers. On the one hand, car ownership and driving is desirable as long as it contributes to the economic development of the country and meets individuals' needs for transportation. On the other hand, the current states of affairs involves unfair risk impositions as it overrides people's prima facie rights not to be exposed to risks by others. Moreover, thousands of peoples are killed and seriously injured every years due to road crashes. Therefore, it is also desirable that the current states of affairs is improved in such a way that the risks and harms from car driving are fairly distributed to make the risk imposition morally acceptable.

The currently existing systems, in Ethiopia and many other low-income countries, allows the compromise of people's prima facie rights to be free from risks they neither have consented to nor receive benefits from. Major ethical theories lack a morally convincing and practically appealing solutions to the dilemma that risk imposition from car driving gives rise to. We believe that applying the notion of residual obligation could partly provide a way to make the risk imposition from car driving in low-income countries equitable and morally acceptable. In particular, the unfair risk impositions from car driving in Ethiopia places special obligations on those stakeholders that determine the nature of risks in the road system and benefit from the risk imposition.

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