



Gender Assessment in Urban Transportation Case Study: Semarang City, Indonesia

Submitted: 26 December 2016
Accepted: 24 February 2017
Available Online: 28 February 2017

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Abstract

What and why transportation, climate change, and gender are connected? What is the implication of transportation policy, program and plan (PPP) to gender equality and vice versa? This article aimed to construct it in the context of urban transportation in Semarang City where transportation contributes more than 50% of GHG emissions. This research investigated the relation of transportation, climate change, and gender by interviewing and exploring transportation users through a multistage random sampling. The respondents are divided into urban zones namely inner, suburb, and outskirt with a balanced number of men and women respondents in order to give equal information. The results showed three interesting findings. First, women and men have different travel patterns. Women's preference for travelling implies more efficient energy consumption. Second, women have a higher dependency on public transport than men due to their limited transportation access (ownership and use). At the household level, men have a dominant role in determining transportation mode, type, and ownership of private vehicles. It influences the choice of transportation mode and the way women ride vehicle. Third, the differences of travel pattern and transportation between men and women implied to GHG emissions contribution. Participation of women in the design of transportation policy, program, and the plan will give a better impact on the transportation system and climate change as well as for women access to transportation.

Keyword: climate change; gender; Green House Gases; transportation

1. Background

Relation between transportation and climate change occurs because transportation generates GHG emission as the cause of climate change. Some studies show transportation contribution from combustion of fossil fuel that produces CO₂ and other GHGs. Transportation contributes 90% of CO₂ emission and 75% GHGs in developing countries (IPCC, 2006; Yevdokimov, 2010). Besides, climate change impacts, such as sea level rise, flooding, and landslides have influenced transportation system.

Relation between climate change and gender as well as transportation and gender are mostly triggered by different social construction between men and women. Gender is understood as a concept that refers to the different roles and responsibilities between men and women that are socially constructed, and could change in different time and culture. Those differences and changes could be generated by social, culture and family condition (Nigerian Environmental Study and Canadian International Development Agency, 2011). Consequences of those social differences give different impacts to both men and women including in climate change and transportation. Climate change and transportation influence differently between men and women. In respond to both issues, men and women also act differently.

Where is the intersection of the three issues in the real activity in developing countries? Is different social construction always associated with inequality? This research constructs it in the context of urban

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transportation in Semarang City where transportation contributes more than 50% of GHG emissions. In order to reduce emission from transportation, the city government has launched some transportation policy, program and plan (PPP). What is the implication of those PPP to gender equality and vice versa? If the city government integrates gender into transportation PPP, what will be the consequence for GHG emissions reduction?

Many studies have analyzed the relationship between climate change and transportation sector. These studies have been conducted primarily from the perspective of transportation's contribution to global warming through combustion of fossil fuels, which releases carbon dioxide (CO₂) and other greenhouse gases (GHGs) into the atmosphere.

Far less attention has been paid to the consequences of potential climate changes for transportation infrastructure and operations. For example, rejected rising sea levels, flooding, and storm surges could swamp marine terminal facilities, airport runways near coastlines, subway and railroad tunnel entrances, and roads and bridges in low-lying coastal. (Yevdokimov, 2010)

In the report Indonesia Energy Outlook 2010, the future final energy demand will be dominated by demand from industrial sector (47.3%), followed by transportation sector (29.8%) and households (14.1%), with respective growth of each sector as follow; industry 6.2%, transportation 6.1%, 2.2% of households, and commercial 4.9%. In the last 10 years, energy consumption in transportation sector increased by an average of 5.8% per year from 129 million Barrels of Oil Equivalent (BOE) in 1999 to 226 million BOE in 2009 (Data and Information Centre of Ministerial Decree of Energy and Mineral Resources of Republic Indonesia, 2010).

From the results of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, IPCC (2007a) stated that transportation is responsible for GHG emissions where three-quarters of GHG from transportation come from road transport. Over the past decade, emissions of GHG from transportation have increased as the fastest rate than any other energy using sector (IPCC, 2007b). This discussion also mentioned that according to IPCC (2007a) GHG emissions should be lowered 50% - 85% in 2050 to halt global warming. GHG reduction from transportation sector requires strategies such as increasing vehicle efficiency, lowering the carbon content of fuels, and reducing vehicle miles of travel. Public transportation can be one part of the solution to reduce transportation sector's contribution to GHG emissions.

Public transportation produces significantly less GHG emissions per passenger mile than private vehicles. For example subways produce 75% less in GHG emissions per passenger mile than an average single-occupancy vehicle. While bus is able to produce 32% less GHG than the people who drive private vehicles alone (Hodges, 2009).

Transportation is a traditionally male-dominated sector, both from the employment point of view and for the values which are embedded. In transportation especially, women have a different travel pattern than men and characterized into inequality. Women have less access to transportation compared to men. Women travel is more related to reproduction and taking care task. In Metropolis Network Conference, Peters (2006) stated that women have inequality in accessing transportation and in making decision related to transportation. Domination of men than women in transportation could be simple referred to participation in transportation related jobs.

At same time, it is widely recognized that gender sensitive issues are many and highly relevant. Currently gender sensitive in transportation has been widely recognized by many parties (UNECE, 2013). According to Peters (2001), transportation planners, geographers, economists and policy makers all over the world have increasingly recognized that the differences in travel and activity patterns between men and women are a central and recurring feature in transportation systems. There is a complex relationship between transportation/mobility and gender.

. . . to date, transportation policies have been geared primarily to the needs of men. As a result, women at the local level continue to struggle every day to overcome the adversities of inefficient local transportations stems designed according to the needs of male wage earners and their journeys to work. (Peters, Gender and Transport in Less Developed Countries a Background Paper in Preparation for CSD-9, 2001)

Currently, transportation policies consider more to the needs of men than women. Transportation can make a difference in improving the productivity of women and increase gender equality. Transportation has an important role to contribute for economic growth, sustainable social development through the improvement of health and education services, employment, the exchange of information, and social

cohesion. Therefore, the World Bank recommend to pay more attention to women related needs in transportation.

Transportation can make a big difference in increasing women's productivity and promoting gender equality. In addition to its major contribution to economic growth, transportation plays a crucial role in socially sustainable development by broadening access to health and education services, employment, improving the exchange of information, and promoting social cohesion. Yet, claims the World Bank, little attention appears to have been paid to women's needs in transportation development projects worldwide. (Word Bank in Yevdokimov, 2010)

According to Peters (2006) women have unequal access and decision making to transportation. In addition, the transportation behavior of women is different from men. Some of these differences may be due to differences in personal behavior, temperament, and abilities. However, of all these factors, the most influential is power of men and women's responsibility for reproductive and caretaking tasks. In the social conditions in which roles and responsibilities are distributed more balanced and equal among men and women, the difference in transportation behavior is less. Therefore, gender mainstreaming is started to be integrated as one of the objectives in transportation planning, policy, and decision making in order to achieve transportation patterns that consider gender and to reduce inequalities in transportation access.

Based on the analysis results that developed countries have decided to integrate a gender perspective in transportation (Queirós & Costa, 2012). This means that public transportation should consider the liability associated female household tasks (domestic responsibility) that ultimately lead to different needs for transportation such as; time, destination and age of public transportation users. A few women, especially elderly drive personal vehicles so that they have a higher dependency than men.

Making transportation policy more responsive to the needs of women requires developing a structured approach to understanding their needs, identifying instruments to address those needs, analyzing the costs and benefits of those instruments, and establishing an appropriate policy framework (UNECE, 2009). Transportation policies also need the participation of women in all stages of planning and designing for transportation investment. Government, NGOs, community organizations, and women's groups should be identified and involved in the transportation planning.

2. Study Area

2.1 Existing Condition of Transportation in Semarang City

The development of Semarang City metropolitan is agglomerating into surrounding areas namely to Ungaran, Demak, Kendal, and Grobogan. It has brought a lot of implications. Implications in the transportation sector become important because the impact of the movement towards the inner city is no longer able to be accommodated by the available modes and infrastructure. This problem arises because the development of Semarang and surrounding areas that tends to shaped by uncontrolled land use change, the development of non-transportation activities around the transportation infrastructure (such as trade, parking, and office) that reduces road capacity, and mixing of traffic flows between cities and within cities has resulted in low transportation services (Nugroho, 2009).

Semarang as one of big cities in Indonesia also has experienced with vehicle high growth. Traffic congestion is frequently observed at rush hours in almost all intersection even under normal conditions. It is not only due to the lack road condition but also due to the increase of vehicles. Semarang public transportation (bus and microbus) has grown by an average of -5.94% while private vehicles (car and motorcycle) of 2.00%. The demand of private vehicles for motorbike and low car vehicle are supported by accessible loan system with a small down payment. Public transportation of passengers are currently declining while in contrary private vehicles passengers are increasing. If this condition continues to happen, the infrastructure will be no longer accommodate all the available vehicles, in addition to that, there will be a massive waste both waste fuel (fuel oil) and other waste due to inefficient use of private vehicles for low load factors (Nugroho, 2008).

Many of transportation studies have been done in Semarang city. Prabowo in Azis (2011) stated that motorcycle as private vehicle mode is still the main choice for people in Banyumanik sub-district, and people preference of motorcycle reaches 93 % compared to other transportation modes. The proportion of public transportation just has a preference as 2 %.

2.2 Green House Gases Emission in Semarang City

Transportation significantly relates to climate change, especially in the GHG emissions from the combustion of fossil fuels. In Semarang, GHG emissions from the public sphere in 2010 reached 1,956,332.45 tons CO₂ and estimated to increase up to 3,286,026 tonnes CO₂ in 2015. GHG sources in Semarang City shown in Figure 1. Figure 1 shows that the largest sector contributing to this emission is

transportation which produced more than 50% of total CO₂ with the major source of gasoline usage. Considering the increasing trend of motor vehicles, GHG emissions from road transportation is very important to be noted and monitored. With high growth in vehicle, the transportation sector is becoming more important in the future.

In Semarang City Climate Change Strategy (Government of Semarang City, 2013), GHG emissions reduction in transportation sector is mitigated by three main activities namely through improving management of fuel use, traffic management, as well as the management and capacity of mass transit. GHG emission reduction target up to 31,500 tons of CO₂ in 2020, with most obtained from the shift to energy sources with lower emissions mainly diesel to biodiesel. Energy sources shifting are depending on national government policy. The effort made by the city government is to encourage distributors to provide biodiesel compared to diesel. In addition, significant effort is also made to improve the management and public transportation capacity by providing more additional buses and corridors in Bus Rapid Transit (BRT), rejuvenation of public transport, and the development of a disincentive for the use of private vehicles. For the next steps, the city government will develop progressive parking tariff, three in one, and car free day policies.

Each climate mitigation action has been studied its impacts or consequences from gender aspects during the preparation process of climate change strategies. However, the study was done quickly so it has not revealed in detail the consequences of mitigation action from transportation sector to men and women. Through this study, it is expected to explain the consequences of mitigation action from transportation sector to men and women and formulate adequate policy responses.

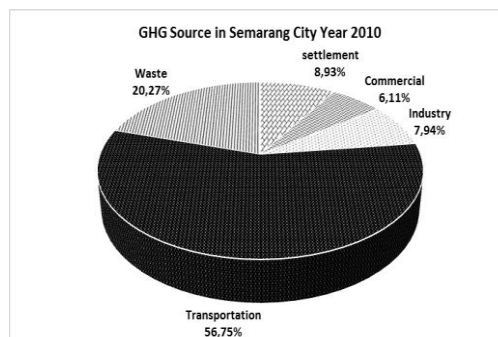


Figure 1. GHG Source in Semarang City (Source: Government of Semarang City, 2013)

3. Methodology

This research is conducted using multistage random sampling with a balance number between men and women respondents in order to give equal information. Multistage random sampling is applied by dividing urban zones of Semarang based on inner, suburb, and outskirts category. The selected sub-districts are Semarang Tengah (inner), Gajah Mungkur (suburb) and Tembalang, Pedurungan, as well as Banyumanik (outskirts) as shown in Figure 2. Those selected districts represent a different social economic characteristic that is expected to accommodate travel pattern of Semarang.

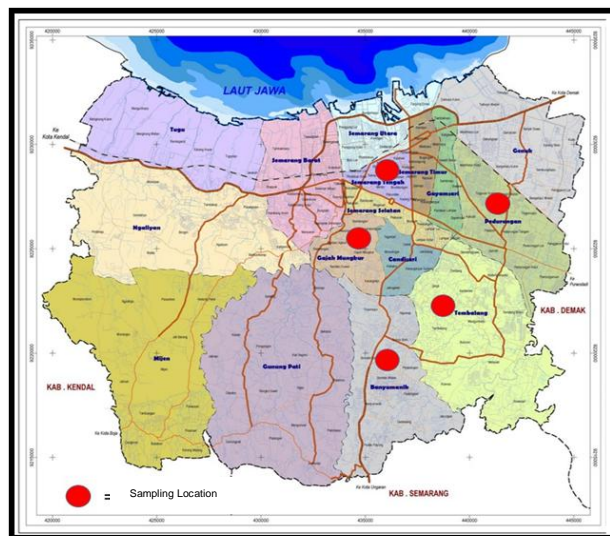


Figure 2. Map of Sampling Area in Semarang City (Source: Field Observation on Development Planning Agency of Semarang City, 2013)

This research uses primary and secondary data. Primary data are collected from the sample by interview. Number of sampling is six respondents for each selected district that consists of three men and three women. Total samples are 30 respondents. Data and information are used to answer the following questions:

- How (different) is travel pattern of men and women in urban transportation in Semarang City? This pattern covers travel purpose, time preference, distance, route, with whom, and its implication to mode selection.
- How (different) is the access to own and to use transportation mode between men and women?
- How women and men participate in transportation decision making process?

4. Result and Discussion

4.1 Different Travel Pattern

Travel pattern in this discussion covers purposes, distances, routes, time preferences and with whom to travel. The main issue is to examine how transportation mode selected by either men or women considering purposes, distances, routes, time preferences and with whom to travel. The discussion is not only focus on single relations aspect but also by complex relations between each aspect. The complexity of each answer is to be higher because there is no answer that can stand alone. All responses are influenced by the context of other aspects, for example, transportation mode choice is influenced by the destination, distance, route and travel partners. When distance and route are changed, the preference of transportation mode also could change even for the same purpose.

In general, there is a tendency that men and women have different mode preference, regardless of influencing factors such as destination, distance, route, and with whom to travel. Most of women respondents have a high dependence on public transport. Women use public transportation regularly for their daily activities, i.e., for working, studying or shopping. Only few of female respondents do not use public transport. Those who do not use public transportation usually choose a motorcycle / car as a mode of transportation.

In contrast to women, no man uses public transportation regularly. They use public transportation only on certain conditions like travelling very far or the weather conditions do not allow for riding a motorcycle. In some other aspects, travel patterns between men and women are similar. From overall aspects being investigated, there are several different issues between men and women on the travel pattern that affect mode preference, which in turn has consequences to GHG emissions.

4.1.1 Distance of Travel

Distance in this study is categorized into four categories namely very close, near, far, and very far away. The distance category is determined by the opinion of each respondent so that distance opinion among respondents is not always the same.

As mentioned in the previous section, the perception of distance (far or near) between men and women is different. Men describe distances with a journey undertaken for hours at a distance of hundreds of kilometers that makes tired and not possible to use motorcycle. Women describe far with something closer as the distance beyond the usual routine for trips taken (such as working, studying, or shopping). So what are the implications of mode preference?

For men's preference, very close, near, and far distance (can be taken approximately 2 hours), the majority of them prefer to use the motorcycle. Even for very long distances, there are still respondents prefer to use a motorcycle with reason of efficient in terms of time and cost. Only a few of men prefer to walk for a very close distance.

"Of course I consider distance. If it is near I prefer to use motorcycle. if it is far but it can be reached in 2 hours, I keep using motorcycle. I will change the mode if I go with family for far distance" (Abi, man, 27 years, Stonen).

"If it is far of course it will affect my mode (mode preference). If it is a far distance traveling, my body is a bit tired. Then I usually use public transportation. Nevertheless if it is a near distance traveling, I prefer to use motorcycle" (Sofa, man, 21 years, Banyumanik).

For women, they prefer to walk for a very close distance due to laziness for looking their motorcycle and parking area, tariff for parking, and more efficiency. For near and far distances, women have a variety of preferences. Some prefer to use public transportation, bike, car or bus, but for the distance traveled by 2 hours, women respondents choose to use public transportation and avoid using motorcycle. The main reasons of changing mode preference based on distance are tired, comfortability, and safety.

"If it is far, I prefer to use travel (shuttle). Shuttle will pick me up and drop me to my destination. It is ok even though I spend more money" (Titi, woman, 54 years, Banyumanik).

Transportation pattern according to distance of traveling is shown in Table 1. From the perspective of climate change, women's preferences are more likely to reduce GHG emission because the emissions per kilometer of public transportation is of selected mode is lower than men preference. For example, bus produces GHG emissions 32% lower than private vehicles per kilometer.

Table 1: Transportation Pattern According to Distance of Traveling

Sex	Close	Near	Far	Very Far
Men	Mostly keep using motorcycle	Use motor, car (only a few respondent) No one prefers public transportation	Some prefer car, public transportation and motorcycle	Public transportation, Some keep using motor, private car or rent car
Women	Mostly keep walking	Most of respondents prefer to use public transportation (Bus, <i>angkot</i> , taxi), other prefer to use motorcycle / car	Few respondents keep using motorcycle. The other use public transportation (travel, bus, train), or car (if go with family)	All respondents prefer to use public transportation, car and rent car

Source: Field Observation, 2013

4.1.2 Route of Travel

In general, there are no differences between men and women in the purpose of travel whether the purpose is singular or plural. The difference is more due to the age of the respondents and type of activities (routine/ non-routine). Young respondents (aged school/ college) generally do multiple goals (college/ school - play - do home work), without considering gender. Young respondents have allocated more time so that they can do other activities outside of their routine activities. While adult respondents with routine activities as well as a fixed route, generally prefer to do a single trip. This is because they have less free time allocation and chose to use their time to rest.

“For going to college, I prefer to take a single trip from house directly to collage (By *angkot*) because I am afraid I come late” (Mira, Woman, 21 years, Perum Gardenia).

“Directly to my destination, If my destination for shopping, I will go for shopping directly so If I am going to go to work” (Muarofah, Women, 43 years, Semarang Tengah).

"Mostly multiple trips" (Respondent mostly uses private car) (Heppy, Woman, 25 years, Tembalang).

However, users of public transportation (which is mostly dominated by women) prefer to do a single trip rather than multiple. Their consideration is the time and practicality. If they do multiple trips by public transportation then it will take a long time and sometimes they have to move from one mode to the other mode. This study also doesn't not see that parenting role affects travel pattern in particular route. During the study it is not found parenting role such as taking the child influences travel pattern from single trip to multiple trips. Similarly, the parenting role is not a monopoly of women. Those travel patterns (single and multiple) do not show significant implications for mode preference so that relation to climate change cannot be described.

4.1.3 Purpose of Travel

Men and women have diverse purposes such as working, studying, shopping, sightseeing, and others (mainly to visit family). Respectively (both male and female) do the same type of trip but has a different intensity. Traveling purpose to work is more dominant in men than in women, while traveling purpose to shopping, women are more dominant. Only a few men travel to shopping. It is done by men to accompany his partner. However, the effects of parenting activities (e.g. dropping school) and the role of men and women are not differ in term of travelling.

From the composition of traveling between men and women can be seen that women have more domestic roles than men. It is indicated by the intensity of shopping that is dominated by women. Meanwhile, most women also have a role to work already. In this position, women have more burden because their domestic role is still inherent. This is an impact of social construction that domestic role is women's responsibility. It is unfair when women also work, domestic work does not necessarily become a neutral territory (which is shared between men and women).

How the preference of mode for each trip purpose? There is no fundamental difference that each destination has implications for the selection of different mode. The selection mode is more influenced by other factors such as travel distance and travel partner. Transportation pattern according to purpose of traveling is described in Table 2.

Table 2: Transportation Pattern According to purpose of Travelling

Sex	Transportation Pattern and Preference
Men	Purpose: school / collage, hang out, *shopping, visiting family men are more likely using private vehicles, especially motorcycles
Women	Purpose: school / collage, hang out, shopping, visiting family Have more domestic roles rather than men

* = mostly as a partner

Source: Field Observation, 2013

By ignoring the purpose of traveling, men are more likely to travel using private vehicles, especially motorcycles while women use more diverse modes as some respondents expressed the following quote:

“(Destination) doesn’t influence mode of transportation. I keep using motorcycles for my daily activities” (Robeto, man, Perumahan Walter Monginsidi).

“For my daily activities, whatever the purpose is, I use motorcycle. If I want to use public transportation I have to walk to the bus stop. It is so far (to the bus stop). So I prefer to go by motorcycle as fastest one” (Yodha, man, 32 years, Perum Gardenia).

Although the purpose of the trip doesn’t always implicate the mode preference, trip purpose remains one of the factors that influence the mode preference in general due to its association to distance. The purpose of working, shopping, and studying is usually not far away while visiting family, recreation and other purposes can be spaced far. For far distance travel (although the construction of the near and far different between men and women), respondents tend to use a private vehicle (car or rental car), and public transportation (buses, trains and shuttle).

“It depends on the purpose of traveling. For working, I usually ride a motorcycle, but if I go for hang out or recreation, I usually use rent car” (Gidion, Man, 45 years, Banyumanik).

Because the relationship between purpose of traveling and mode preference has no fundamental difference then the implications for GHG emission based on purpose of traveling cannot be explained. For all purposes, both men and women have their own pattern where women tend to use a variety of mode with more public transportation rather than men. Meanwhile, men are more likely to use motorcycle for all purposes.

4.1.4 Time for Travel

Time preference may have implications for traffic density. Time preference at certain hours is proved to greatly affect traffic. However, this study does not explore the hours that affect the traffic. The study focuses on a broader time preference, i.e. morning, noon, afternoon and evening. There are many factors that influence people to choose time for traveling. This study shows that men and women have a ranger for travel time from morning to night. Significant differences occur at night timing. Most of the men feel there is no problem with traveling at night while women are reluctant to travel above 09.00 PM as shown in the following statement.

“It depends on time. If it above 09.00 P.M, I am scared” (Ratna, woman, 22 years, Stonen).

“Somewhat I mind anyway because it is horror (if traveling at night), first, scary, deserted, fear of robbery. Second, it is dim lighting. Third, it's most horror (at night) there are demons or whatever that is scared, but I am more afraid of humans anyway” (Dewi, woman, 25 years, Pleburan).

Women objection to travel at night is caused by three reasons. First, women feel less safe if traveling at night. Generally they do not mind traveling as long as there is accompanying person at night, for example, a husband or other family members.

“Now, it is still risky for using public transportation at night” (Mira, woman, 21 years, Perum Gardenia).

Mira fear is reasonable considering traveling at night can increase risks. The news in the local media revealed that the crime occurred at night due to the condition of many roads deserted and dark. However, for women who have a job until the afternoon/ evening, they feel no objection to go out at night because it becomes their routine.

“I don’t mind anyway (go out at night), I think Semarang is safe at night” (Arum, woman, 26 years, Banyumanik).

Second, the absence of public transportation that operates in the evening as conveyed by some respondents. Operational hour of public transportation is usually only until the afternoon. So that, they who travels by public transportation are have to pay attention to operating hour.

“Yes, I consider time for travelling because I use public transportation. If it is already night, public transportation has been difficult in general. Nevertheless if someone accompanies me or I go with friend, then late night is oke” (Mira, Woman, 21 years, Perum Gardenia).

Third, some women expressed their objection to go out at night because they are women. This answer shows community treat woman who goes out at night as “not a good woman”. There is a norm that restricts women not to go out at night as a social construction that thrive in that local culture (Java).

In the context of climate change, the current transportation system is less hospitable, especially for women. Public transportation doesn’t operate at night then makes a difficulty for women who use more public transportation. Public transportation is also a risky option for women at night because it is not supported other infrastructure, e.g. street lighting. It is also dangerous for motorcycle riders. Consequently, traveling is mostly done during the day so that during the day the traffic is congested. Another alternative is to use private cars which cause more GHG emission.

4.1.5 Travel Partner

With whom people doing travel become one of consideration to choose transportation mode. Both men and women in general will consider with whom they travel when choosing transportation mode. If going alone, men tend to use motor bike while women use public transportation. All respondents, either men or women, will use (private or rental) car or public transportation (train or bus) when they are travelling with family because it is more comfortable as shown in Table 3. Another reason is using car will be more efficient and effective for multiple routes and purposes for family travelling.

“Yes it is clear; I will consider the appropriate mode transportation for my travel. I have said before, if I go with family it is enough with motor bike. I cannot go by motor bike, in case if I go with friends especially when the weather like this (rainy season). I should go by a car, right? I can borrow from friend that will be okay. If not, then I can rent a car. If I go with boss I will just follow him. Hahahaha (Laughing)” (Gidion, man, 45 years, Banyumanik).

“Well if I go with my children I will use motor bike, if I go with relatives sometimes I like to be picked up with car or sometimes go by taxi” (Titi, woman, 54 years, Banyumanik).

Table 3: Transportation Pattern and Preference according to Travel Partner

Sex	Transportation Pattern and Preference
Man	Men prefer to use cars/ public transportation as favorite mode for travelling with family/parents/in a group. Cars are favorite preference, whether private or rental car.
Woman	Women prefer to use cars, taxi or public transportation if on travel with family or in a group. Similar to men, cars are the favorite mode whether private or rental car.

Source: Field Observation, 2013

Looking at two selected options, between private car and public transportation, it could not be explained further in what situation respondent will use one of it. In term of climate change mitigation, the use of public transportation could reduce GHG emission. Nevertheless if private or rental cars are used optimally, the GHG emission per kilometer will low as well.

From all assessment toward transportation mode preference there are some facts that indicate the different pattern between men and women. Men in general prefer to use private vehicles (motor bike or car), while women tend to use public transportation. In climate change perspective, women travel pattern give consequences to lower GHG emission. Unfortunately, current public transportation condition is not supporting the need of women or even the user in general such as limited time of service, mode condition, supporting infrastructure, and time schedule.

4.2 Different Access to Transportation

Access is defined as a way how people get benefit to goods or services. In this research context, access is assessed in two terms namely ownership and usage because both are not always connected. To use does not always mean to own because goods or services can be used without having it. How different

women and men in accessing transportation (mode)? How then different access (if any) implies to climate change mitigation?

4.2.1 Access to Own

Firstly it needs to explain what the additional value of ownership is (in this case is transportation mode)? The main differences of ownership are on selling right and shifting the authority to own i.e. in the case of collateral. Within this context women have different access than men. Most of vehicle belongs to men. Therefore, many female respondents have less independency to access (own) vehicle. i.e. in the family that consist of husband, wife, and children the ownership of car is belong to the father (man). Husband (man) owns the car because he is socially constructed as the head of family. If they have several vehicles, the second priority is the son or people who buy or pay the vehicle (could be women).

The selection of mode type (when it was bought) is also affected by the social construction of ownership. Decision to choose is influenced by husband/ father and later on to the one who will use (could be women). In the case of independent children (who can buy by their own money), they have right to choose but role of father/ husband is still high as the head of family in the local cultural context. The implication to climate change mitigation is information related to efficient vehicle will give more influence to men since father/ husband has higher access to own. With other word, many women cannot decide to select efficient mode because of their status (as women).

4.2.2 Access to Use

People who use the vehicle will gain direct benefit from the use of the vehicle. Is the effort to get benefit from vehicle different between men and women? This study showed a significant difference. There are differences accesses to use private vehicle in a family although it does not happen to all respondents. Men tend to be easier to access private vehicle whether the vehicle belong to him or not. For example, Yani (wife/ mother, 35 years) states that her family, which consists of a husband and children, only her husband and son that can use vehicle (2 motors). For day-to-day activities, Yani is picked up by her husband and son but for solo travel she uses public transportation. Another example comes from Mira (female, 21 years). Her family consists of father, mother and two brothers. Her younger brother has access to use the motor bike, but she is not allowed to use the motor bike because she is a woman. Mira is prohibited to use a vehicle because the family argues women have a poor driving abilities compared to men, especially in the use of motorcycles.

“I want to learn to drive motor but father prohibits me because he believes that women reflects is bad. This condition will be more risky if accident occurs while using private vehicle. If (I were) man, father will allow me to learn driving motor bike or car. Woman cannot learn to drive motor bike but for driving car is still allowed” (Mira, female, 21 years, Perum Gardenia).

Social construction that women are not as capable as men in driving apparently causes injustice to women. The social construction ultimately affects the psychology of women in driving. Most of the women have an aversion to drive both a motor bike and cars so they prefer to use public transportation or ask someone else to pick up. They are reluctance because of afraid and not confident to drive on the highway.

“I am afraid (to drive) especially in busy street. So I prefer to use public transportation” (Agnes, female, 21 years, Plamongan sari).

“Actually I want ride/drive motor/car by myself, but I am so scare. I have seen car accident. So, I am not brave to drive on the street” (Ratna, Female, 22 years, Stonen).

The other psychological impact is women become more obedient to regulations. Women have a higher level of compliance compared to men. None of woman respondent stated they ride a motorcycle/car without a driving license. In contrast to women, some man respondents drive vehicles despite having no driving license.

“I have no driving license yet because I am still 15 years. It is okay. If there is a police, I do not worry, just go ahead” (Bima, male, 15 years, Kertanegara).

Driving license? (I) do not have. Hahaha (laughing), I have no time to apply driving license (but he still use motor bike every day)” (Anto, Male, 23 years, Banyumanik).

"I have no driving license and have been punished by police" (but he still use motor bike every day for his activities)" (Edo, male, 17 years, Kertanegara).

4.3 Participation in Transportation Decision

Participation in decision making is divided into two scopes which are within the family and government policy. Within the family scope, decision-making is for example; choosing transportation mode to be used and the selection of vehicles type to buy and decisions on access to own. The decision, which is making in community scope, can determining role in the development of the public transportation system or in transportation policy.

4.3.1 Decision Making in Family

Decision-making process at family level represents power relations between men and women. Decision-making process seems like access to own and to use mode. There are also several variations in determining what mode that will be used for travel. Who makes the decision for transportation mode? First is father/ husband, this group dominates the responses. The reason is in most cases father is the driver. Further to that, husband/father is also the head of family as constructed in the local culture. Secondly, it is decision by discussion. Before traveling, usually family members will discuss beforehand what mode will be used. Issues to be considered are distance and with whom the travel will be. Thirdly, it is by the children. Some respondents said that children determine the mode of transportation to follow their wants. The *fourth* is the minor answer that decision is made by wife and no further reason.

"Well we will discuss together, we discuss based on the budget (allocated), if we use this mode then the cost will be this amount" (Gidion, male, 45 years, Banyumanik).

"Usually by discussion, if going to Surabaya (for example) the choice is by train, airplane or car. From our discussion result we decide to use car. So, it is discussion between parents and children" (Arum, female, 26 years, Banyumanik).

From this information, the role of the men is dominant (compared to women). This dominance becomes a long series of interlocking processes. Man is socially constructed as head of families who works and supports a family. Although woman (wife) can work, the man is still the head of the family and always a priority that has more rights in ownership. As a head of family, man is regarded as the buyer of the vehicle so that he has the right to choose and own a family vehicle. Son or wife has the opportunity to choose or own a vehicle if they are buyers of such vehicles (bought with their own money). These proprietary rights then support the decision in the use of vehicles (access to use). In addition, the social construction that women have lower ability to drive has shrunk women access. When the man drives the vehicle, he also has the right to determine what will be ridden.

4.3.2 Participation in Transportation Policy

Before discussing about the differences role of men and women in influencing city policy in transportation, it needs to be clarified how men and women see the urban transportation system in Semarang. In general, there are no differences opinion between men and women about transportation in Semarang city. They judge transportation system in Semarang is still poor.

Transportation mode is less secure and comfortable. Laili (female, 26 years) said that she had inconvenient experience with public transportation. The door of the bus was broken and the bus was also broken down.

"The door is dropped/ off, finally the bus was broken down for hours, even though the door was tied by rope. I feel not comfort for sure, besides the bus has no AC" (Laili, female, 26 years, Jl. Pedagan).

Beside transportation mode condition, low traffic awareness creates traffic jam and accident. Nowadays traffic jam is everywhere. Public transportation is not scheduled and often stopped very long to wait passengers.

"In our place (Semarang city) traffic awareness is still chaotic (low), this chaotic creates many effects (such as) traffic jam, accident, thus time (to travel) cannot be measured, delay and delay again. Transportation regulation is available but there is no implementation (law enforcement)" (Gidion, male, 45 years, Banyumanik).

Public transportation routes or lines also do not cover the housing residents. In terms of coverage, the spatial planning and control is also a problem because many new estates were built far outside the center of town. There are no public transportation lines or routes so that residents use private vehicles. Some residents claimed they do not choose public transportation because it is far from their place of residence. Not to mention the tariff issue is uncertain. These conditions make people reluctant to use public transport.

“The first we have to reduce traffic jam. I consider emission as well, besides it seems now people use cars because public transportation is less comfortable. Maybe if public transportation already comfort, people will shift to public transportation” (Sofa, male, 21 years, Banyumanik).

Who is most impaired by the poor condition of public transportation? Of course, women are the most disadvantaged. Look back at how the patterns and women's access to transportation mode. What can people do with this condition? Both men and women do not have access to participate in the formulation of transportation policy. They stated the government never involves them in determining transportation programs and related activities. Unless a man who worked as a journalist, he claimed to engaged in socialization or the delivery of information, rather than in terms of decision making. There is no difference access between men and women in the participation for transportation policy decision because there is no opportunity for being part of public transportation discussion.

“We (as) reporters are often involved in the discussion with government officials, we are not official/ government but our input is needed. When official read our report it can be used for improvement. It is indirect involvement” (Gidion, male, 45 years, Banyumanik).

5. Conclusion and Recommendation

5.1 Conclusion

This research found interesting facts on the differences of men and women on doing travel. It is a fact that men and women are socially constructed as different in context of their culture. Social construction implies to the behavior of travel that is shown especially in term of travel pattern and access while for participation in transportation decision is almost similar.

Women and men have different travel pattern either related to purpose, distance, route, or preference for time to travel. In term of purpose for doing travel, both women and men have various purposes but men travel purposes are dominated for working. Women still have strong relation to domestic roles that is represented by shopping. Most of women are treated unequally. Even though some of women are working but responsibilities related to domestic affair are still on them. The role on child caring that generated travel demand i.e. bring child to school, is no longer dominated by women. In term of travel distance, men construct distance more far than how women perceive distance. Men tend to use motor bike for very short until very far distance while women use various mode (walk, motor bike, and public transportation). Women prefer to use public transportation for near until very far distances. In term of time to travel, most of women reject to travel at night due to security, availability of public transportation, and *taboo* reasons. Women who travel at night are associated with 'naughty' women. In term of route and with whom to travel, men and women are similar. Based on the pattern, women preference gives implication to less energy consumption and therefore less GHG emission. Women have higher dependency to public transportation than men because their less access to own and use transportation mode. Women are socially constructed less capable to drive compared to men. This construction make women less confident for driving and at the same time push them to more respect the regulation.

In decision making, men dominate the decision to determine transportation mode that will be used and type of vehicle that will be bought. This role is supported by social role of men as head of family, and social construction that men are more capable in driving. Both men and women judge that transportation condition in Semarang is still inappropriate because their modes are not safe, comfort, on time and clear tariff. Women are more affected to the performance of public transportation because women use public transportation more than men. Both women and men in general are willing to use public transportation as long as city government could provide a comfortable, safe, reliable and with low tariff.

5.2 Recommendation

Considering the findings of this research, the city government of Semarang is suggested to improve transportation policies, program and plan on urban transportation system. Current policy to reduce GHG emission in transportation through increasing the capacity of public transportation (Bus Rapid Transit), rejuvenation public transportation, and improvement of traffic management will give benefit to women as the main public transportation users. These policies need to be improved further by additional issues as follow:

1. Expansion of routes to cover wider area, interconnectivity (because women travel are various), lower tariff, and fix schedule.

2. In order to reduce barrier to travel at night for women, it is necessary to develop supporting infrastructure namely bus stop in open area (easy to see), sufficient illumination, and security patrol. Illumination inside the bus is also necessary to support security inside the mode.
3. Women is recommended to be selected as promoter for safety driving and public transportation campaign since women have preference to use public transportation and have higher obedience to transportation rule and regulation. Selection of women will reduce social construction that women are less capable to drive, increase their self confident and reduce barrier for women to access transportation.

Acknowledgment

We highly acknowledge PAKLIM GIZ Indonesia for providing the funds for this study in Semarang City, the respondents for participating in this study and the field assistants for interviewing the respondents beyond project duration.

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