The Impact of Removing Fuel Subsidies in the Jakarta Region of Indonesia

Final Discussion Paper

April, 2015

Low Carbon Support Programme to Ministry of Finance, Indonesia

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Preface

This Discussion Paper was prepared by Dr. Kodrat Wibowo of the University of Padjajaran as a sub-consultant to the United Kingdom Low Carbon Support Programme to the Ministry of Finance Indonesia. Work occurred in close collaboration with the Center for Climate Change and Multilateral Financing Policy (PKPPIM), Fiscal Policy Agency (BKF), Ministry of Finance of the Republic of Indonesia under overall leadership of its Director Dr. Syurkani Ishak Kasim, management supervision by Dr. Syaifullah and Bp Suharto Haryo Suwakhyo, with the lead counterpart being Bp. Bara Ampera with supporting team members being Adisti and Vina Damayanti and initial support and guidance from Dr. Joko Tri Haryanto. The strong support and involvement of PKPPIM officials in undertaking this study is gratefully acknowledged. Management of the study within the LCS Programme was undertaken by Paul Butarbutar.

Disclaimer

Inquiries Regarding this Discussion Paper

Any inquiries regarding this Discussion Paper or other reports of the LCS Program may be addressed to enquiries@lcs.or.id.

Acronyms

APBN	Annual national budget of Central Government
BIA	benefit incidence analysis
BKF	Fiscal Policy Agency in MOF
BKTB	city integrated busway
BRT	bus rapid transit
PKB	marginal rate for taxing motor vehicles
CO	carbon monoxide
FPL	Food poverty line
GDRP	Gross Domestic Regional Product
GHG	green-house gases
HC	Hydrocarbons
HDI	Human Development Index
IO	Input – Output (Tables)
kl	kilo-litres
LCS	Low Carbon Support Programme to Ministry of Finance Indonesia
LFPR	labour force participation rate
mkl	million kilo-litres
MOF	Ministry of Finance
MOM	month on month
MRT	mass rapid transit
MTI	Indonesian Transport Society
NFPL	non-food poverty line
NOX	Nitrogen oxides
PKPPIM	Centre for Climate Change Financing and Multilateral Policy in BKF, MOF
PL	poverty line
PM	particulate matter
PSU	primary sampling unit
Rp	Indonesian Rupiah
SIM	drivers licence
SO2	sulphur dioxide
SUSENAS	National Socio-economic Survey
TDL	base electricity tariffs
TNKB	motor vehicle plate number
USU	ultimate sampling unit
YOY	Year on year

Executive Summary

This final report (report) on "The Impact of Removing Fuel Subsidies in the Jakarta Region of Indonesia" assesses the impact of earlier proposed fuel subsidy cuts in the Jakarta area upon the living costs and purchasing power of people in Jakarta, especially of the low-income group. The report aimed to assist government, both central and local, to develop suitable programmes to support those who would bear the negative impacts of fuel subsidy cuts. Moreover, the study assesses the potential reduction of the fuel subsidy burden on the national budget and estimated Greenhouse Gas (GHG) emission reductions as an outcome of the implementation of policies to remove subsidies.

Recently the national energy sector has continuously experienced challenges in the use of fossil fuels because of the strong increasing trend in its consumption, especially in the Jakarta area for transportation and mobility purposes. At the same time, domestic oil production has not fulfilled the oil demand and moreover, the capacity of the roads in Jakarta have reached saturation point, not to mention the problems of pollution and environmental decay that eventually have led to alarming levels of acute congestion.

In an effort to overcome the problem, the central government has developed policies to reduce and even more to eliminate subsidies on the types of fuels such as gasoline and diesel. However, it is realized that negative impacts of these policies may be borne by the people of Jakarta and surrounding areas, especially those in low-income groups.

The Government of Jakarta in late 2013 / early 2014 had proposed to cut fuel subsidies in the Jakarta area, in order to encourage the use of public transport. By cutting the subsidy then car owners would have to buy the fuel at non-subsidized prices, thus increasing their travel costs. To reduce their travel costs people could be expected to shift to public transport and leave their vehicles at home. The Government of Jakarta proposed then to use the saving on fuel subsidies to be invested in infrastructure projects, such as MRT, monorail, liquefied gas stations, and other priorities.

The main objectives of the study were:

1) To assess the impact of the proposed fuel subsidy cut in Jakarta, with possible extension to Bogor, Depok, Tangerang and Bekasi (Bodetabek) area, especially on low income groups, to analyze the impact on the national budget, and to analyze potential GHG emission reductions due to the potentially less use of private vehicles; and

2) To propose recommendations to mitigate the impact of fuel subsidy cuts on low-income groups and for potential use of budget savings due to fuel subsidy cuts.

In terms of methodology the study mainly used a Benefit Incidence Analysis (BIA) approach for fuel subsidies in order to map the relationship between the GoI fuel subsidy allocated in Jakarta Area and the distribution of household income levels based on analysis of the Annual National Social Economic Surveys (SUSENAS). SUSENAS is a series of large-scale multi-purpose socioeconomic surveys initiated in 1963-1964 and fielded every year since. Since 1993 the SUSENAS surveys have covered a nationally representative sample typically composed of 200,000 households.

The SUSENAS core questionnaire is designed to represent up to district level and hence is appropriate to be used in this BIA analysis allowing analysis of whether the fuel subsidy that is purported to help poor people has been well-targeted or was still in need of review. It is important to note, for reasons of data availability in SUSENAS, this study needed to limit the definition of fuel to only gasoline with exclusion of diesel / solar, kerosene; and LPG consumption. Nevertheless, the highest subsidy spending has been devoted to gasoline.

The main conclusions of the study are:

1) By Jakarta household's classification with 5 levels of income groups, it is estimated that per capita expenditure for the lowest income group in was less than half a million rupiah per year; while, the richest group's per capita expenditure was about 5.5 times higher than the poorest. The gap is even wider when using the ratio of per capita expenditure (Rp/month) with estimates that each person from the richest group on average consumes 8.8 times more than person in the poorest group.

2) The amount of fuel consumption of the richest group was around 8 (eight) times higher than the poorest group. Moreover, households' fuel expenditure increases along the groups of income in the same direction as total expenditure but with higher progressivity.

3) The richest groups' fuel expenditure share to total expenditure is slightly higher than that of the poorest group as the rich have more access to vehicles and the fuel to operate them. Since fuel expenditure is categorized as non-food expenditure and the contribution of non-food commodities to the inflation rate and Poverty Line in Jakarta has recently become larger, this study indicates that the poorest income group obviously suffer most from inflation increases.

4) The distribution of energy subsidies in Jakarta favours the richest group over the poorest group. The poorest households do receive the full amount of the subsidy since they consume no (non-subsidized) pertamax. However, the Jakarta richest households still benefit from larger subsidies than the average premium subsidies earned by all households. The size of premium subsidy gained by the richest was 2.6 times higher compared to amount obtained by the poorest.

5) The Jakarta poorest income group bear the largest burden of fuel price increases by having immediate effects that involve lower purchasing power compared to other groups. It is even worse because the tendency is regressive favouring the richest groups. Comparing rising fuel costs to non-food expenditures, the poorest group suffered more in relation to their non-food expenditures than the richest ones, which are also significant for decreasing the poorest groups' spending portions on their education and health.

6) When the inflation rate is taken into account to calculate intermediate and long-term impacts, this study shows that the poorest group becomes more disadvantaged since as depicted in the immediate impact analysis, the richest will still bear a relatively lower cost in relation to their spending capacities.

7) Holding everything else constant, the simulation shows that reducing fuel consumption by raising fuel prices will reduce carbon emissions by potentially significant amounts, as well as further reducing the national budget amount allocated for Jakarta fuel subsidies.

8) The estimate of progressivity of fuel subsidies on average household's consumption levels in Jakarta provides a more assuring picture that the fuel subsidy will still most benefit the richest group, whatsoever, even with policies to set fixed amounts of fuel subsidies per litre of fuel consumed. Since the richest group consumes more fuel than the lowest group, the fixed amount of subsidy per litre of fuel consumed will still benefit the rich most because the portion of subsidy enjoyed by the richest is almost 4 (four) times larger than one enjoyed by the poorest group.

9) Higher prices of subsidized premium fuel in Jakarta will increase poverty levels and worsen income inequality. However, the expected growth rate of poverty is not as high as many claim will happen, with the magnitude of increase in the poverty rate only occurring at less than 1%. On the other hand, the Gini coefficient simulations indicate that income inequality in Jakarta will in fact, be slightly improved if energy-subsidies that benefit the richest groups are reduced or eliminated altogether.

The main recommendations of the study are:

1) The short and medium-term solutions to mitigating the impact of rising fuel prices in Jakarta are to improve existing mass transportation systems (Busways, KRL, etc.) and to develop more advanced, integrated, affordable, and environmentally friendly modes of mass transportation. These solutions will be more effective if supplemented also by the reform of energy policy and the development of alternative energy options such as Liquefied Gas Fuel, Bio-Diesel, Methanol and their supporting facilities and regulations.

2) As a supplement to (1), there must be growing public awareness generated to divert the use of private vehicles to public transport. This needs to involve Central Government, Local Government and the various elements of society ranging from educational institutions, agencies / community organizations, including the Jakarta Transportation Council, and others to raise awareness and pride about using public transport.

3) To develop mechanisms of incentives and disincentive to influence Jakarta people's behaviour; both businesses and the labour force so that they conduct their economic activities in more environmentally friendly ways.

4) To maximize major basic public service programmes in Jakarta: health, education, and housing which are capable of providing a safety net from the negative impact of fuel price increases that reduce the level of purchasing power and increase the level of poverty in the society.

5) To optimize existing cooperation and collaboration with other autonomous regions bordering the Jakarta Area (Jabodetabek) in harmonizing rules and policy efforts related to the control of inflation and population migration.

6) To optimize Jakarta's personal income tax revenue primarily in upper and middle-income groups; and from high value-added taxes for commodities and services directly related to fuel consumption, as well as local taxes that heavily emphasize consumption or production activities of the community that result in negative externalities.

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1. Introduction

The Government of Jakarta in late 2013 / early 2014 proposed to cut the fuel subsidy in Jakarta area, in order to encourage the use of public transport. By cutting the subsidy car owners would have to buy the fuel at non-subsidized prices, thus increasing their travel costs. To reduce travel costs, people could be expected to shift to public transport and leave their vehicles at home. The Government of Jakarta proposed to use the savings on fuel subsidies for investment in infrastructure projects, such as MRT, monorail, liquefied gas stations, and others.

In 2013 the Government of Jakarta procured more than 300 new buses to be used for bus rapid transit (BRT); the buses started operations in January 2014. It was planned to procure another 1,000 new buses in 2014. These new buses are expected to improve the service of BRT, so that more people will be willing to shift from using private vehicles to public transport.

The expected immediate effect of this policy is the reduction in the number of vehicles operating on the road, thus reducing traffic congestion, which means also reducing GHG emissions from fuel usage. Also, the introduction of fuel subsidy cuts would help to reduce pressure on the national budget due to the reduction in the fuel subsidy.

There is no current information available on the impact of such policy on the living costs of Jakarta people, especially of the low income groups. Therefore, a study is required in order to evaluate the impact of the fuel subsidy cuts on low income groups, so that government could provide necessary support to them in case this policy would finally be implemented.

To provide such information, the Centre for Climate Change Financing and Multilateral Policy (PKPPIM) in the Fiscal Policy Agency of the Ministry of Finance (MOF) proposed this study as part of its work in developing appropriate fiscal policies and financing arrangements to address the issues of climate change.

The consultant appointed by LCS for this study worked very closely with: (i) the Centre for Climate Change Financing and Multilateral Policy (PKPPIM) in the Fiscal Policy Agency of MOF; and (ii) core members of the UK Low Carbon Support (LCS) Programme to the Ministry of Finance. One public stakeholder outreach events was held in January 2015.

The study focused on assessing the impact of the proposed fuel subsidy cuts in the Jakarta area on the living costs of people in Jakarta, especially of the low-income group, so that Government could develop suitable programmes to support them. Moreover, the study also assessed the potential reduction on fuel subsidy burden in the national budget and Greenhouse Gas (GHG) emissions reductions as outcomes of the implementation of this policy.

1.1 Study Objectives

i. To assess the impact of the proposed fuel subsidy cut in Jakarta, with possible extension to Bogor, Depok, Tangerang and Bekasi (Bodetabek) areas, especially on low income groups, to analyze the impact on the national budget, and to analyze potential GHG emission reduction due to the potentially less use of private vehicles; and

ii. Propose recommendations to mitigate the impact of fuel subsidy cuts on low-income groups and the potential use of budget savings due to fuel subsidy cuts in Jakarta and with possible extension to the Bodetabek area.

1.2 Approach and Method of Study

This study was supported by PKPPIM who worked closely with the consultant in the provision of necessary information and data. The assignment team consulted widely with relevant areas of the Indonesian Government and key stakeholders.

This study employed mainly a Benefit Incidence Analysis (BIA) for fuel subsidies in order to map the relationship between the GoI fuel subsidy allocated in the Jakarta area and the distribution of the household income level resulting from analysis of the Annual National Social Economic Survey (SUSENAS). SUSENAS is a series of large-scale multi-purpose socioeconomic surveys initiated in 1963-1964 and fielded every year since. Since 1993 the SUSENAS surveys have covered a nationally representative sample typically composed of 200,000 households. Each survey contains a core questionnaire which consists of a household roster listing gender, age, marital status, and educational attainment of household members, supplemented by modules covering about 60,000 households that are rotated over time to collect additional information such as health care and nutrition, household income and expenditure, and labour force experience.

The purposes of SUSENAS surveys[1] are among others to estimate household expenditure for national accounts; to study the general structure of household incomes / expenditures; to study income/expenditure patterns of disadvantaged groups, including pensioner households, single parent households, etc. and to study income/expenditure disparities among socio-economic groups; for general poverty and / or income distribution studies

The geographic coverage of the survey is national except for certain areas in conflict. The Primary, Secondary and Ultimate Sampling Units are enumeration area/district, block and household respectively. The survey is stratified by geographical regions (provinces), rural / urban, administrative districts. Households/Consumption Units, Income Units, Family Units were stratified using the following criteria based on household expenditure class.

The sampling frames for the Primary Sampling Unit (PSU) and Ultimate Sampling Unit (USU) were the list of Census blocks and a separate listing exercise respectively. Primary Sampling Units (PSU) was selected using probability proportional to size and Ultimate Sampling Units (USU) was selected using systematic random sampling. The sample size was 62.720 households or other units. The overall response rate for the survey was 99 %. Errors/biases were minimized by using an updated sampling frame, an increased sample size; and improving training methods.

The SUSENAS core questionnaire is designed to represent up to district level, hence it is appropriate to be used in this BIA analysis. In the estimation of the number of person or users who are beneficiaries of government spending on fuel subsidies, the steps described below were used. In each step, wherever needed we explicitly state and explain the assumptions involved. The main steps were:

[1] This discussion is heavily based on the SUSENAS description at ILO website http://www.ilo.org

i. Calculating the amount of fuel subsidy allocated by the government in Jakarta Area (in Rupiah);

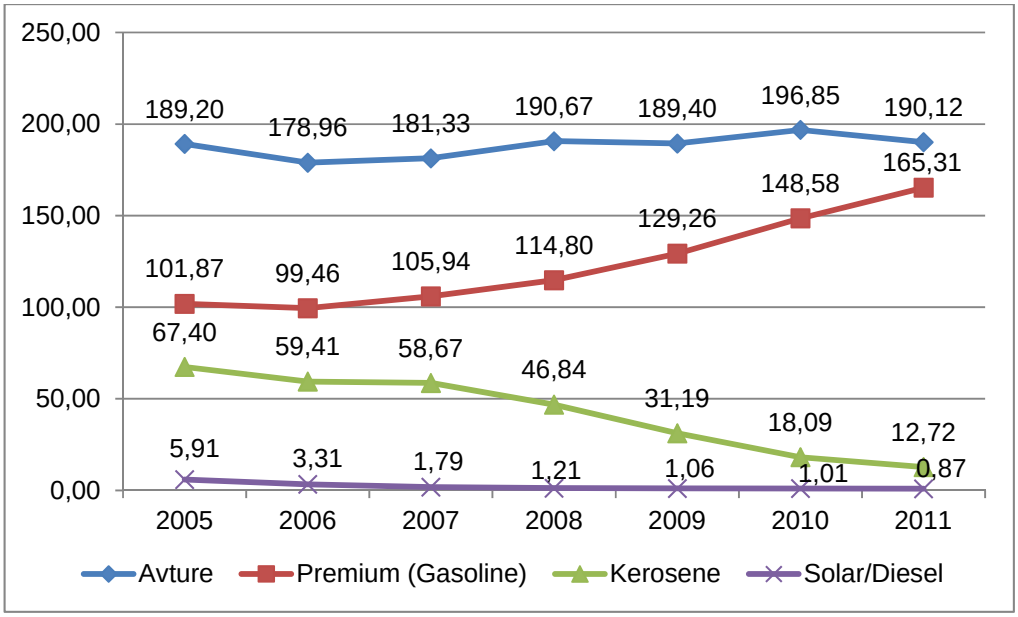
ii. Calculating the total number of households according to SUSENAS methodology and classifying household based on income groups, i.e. five classes ranging from the lowest to the highest class (the poorest to the richest);

iii. Computing the "unit cost" of fuel subsidies by dividing the amount of the fuel subsidy by the number of households;

iv. Multiplying the unit costs by the number of households in each income group; and

v. Doing analysis based on the results.

At the final step it is possible to figure out whether the fuel subsidy that is intended to help poor people is already well-targeted or still needs to be reviewed. It is important to note, for reasons of data availability in SUSENAS, this study needs to limit the definition of fuel to only gasoline, so excluding solar, kerosene, and LPG consumptions. Nevertheless, the actual data from 2005 to. 2011 indeed showed that fuel expenditure for public transportation was dominated by consumption of gasoline (Figure 1). Thus, the subsidy in this research refers to gasoline consumption.



Source: Indonesian Ministry of Energy and Mineral Resources, Statistics of Energy, 2011

Figure 1: Energy Consumption by Types in Indonesia 2005-2011 (Mil. Barrel)

Since there are variations in fuel consumption for each household, we have modified the unit cost measurement to take into account the amount of gasoline consumption (in litres). Therefore, the unit cost in this study is equal to the amount of total fuel subsidy in a year divided by the amount of gasoline consumed, regardless the level of household. Then, in doing step 4 of this analysis, we are be able to map the distribution of the fuel subsidy by multiplying the adjusted unit cost with the number of households in each income group level,

and then multiplying them with the amount of fuel consumed by each household in each income group.

1.3 Stakeholders' Input and Discussions

During the course of the study consultant held one public stakeholder discussions, broadly advertised and open to all interested stakeholders, both from within Government and from outside.

2. Facts of Jakarta and Literature Review

2.1. Jakarta at Glance

DKI Jakarta is the capital city with an average elevation of 7 meters above sea level, located at position 6° 12' south latitude and 106° 48' east longitude. The total area of DKI Jakarta according to Provincial Governor's Decree No. 171/2007 is 662.33 km^2 and a sea area of 6,977.5 km^2. DKI Jakarta has no less than 110 islands scattered in the Thousand Islands District, and about 27 rivers / canals / channels utilized as source of drinking water, fisheries, and urban businesses.

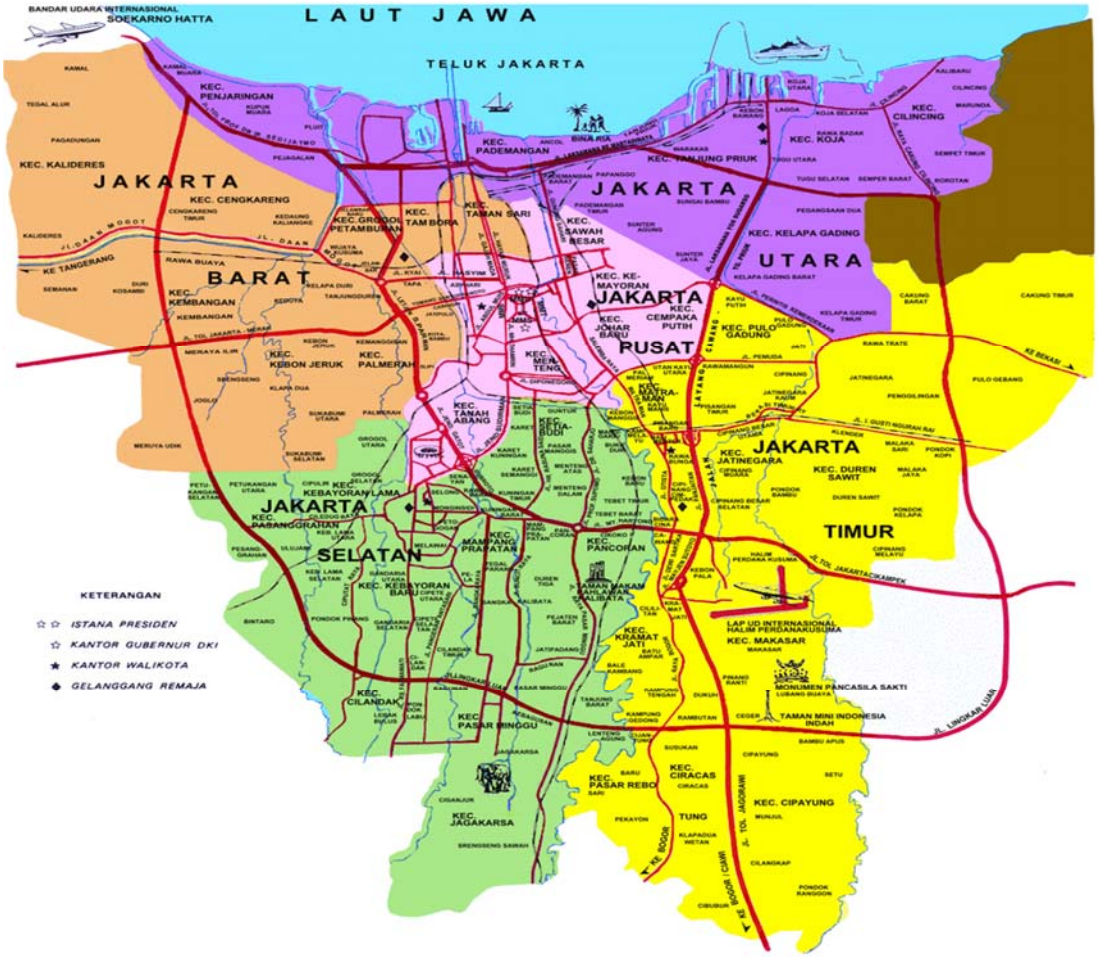
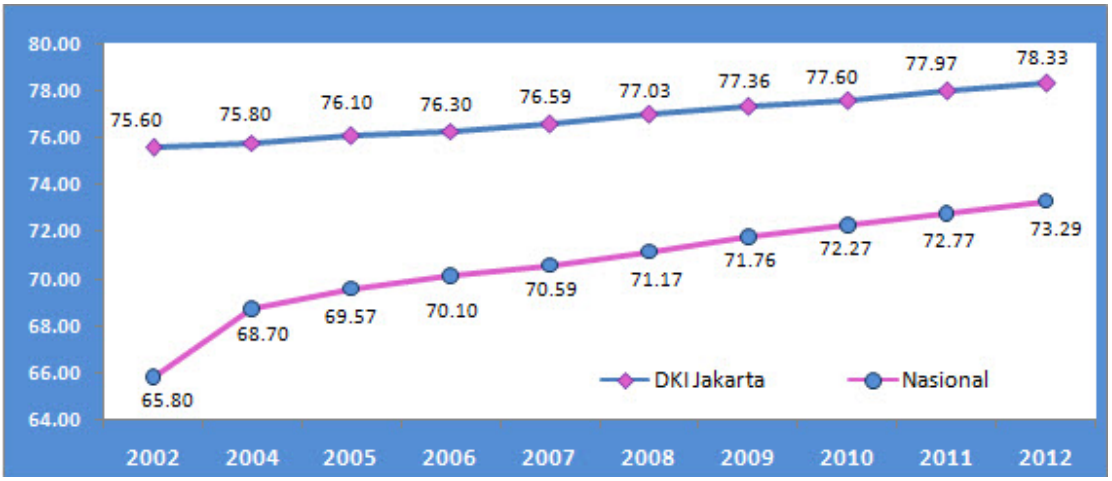


Figure 2: Map of Special Region Capital City Jakarta Area

2.1.1. Human Development Index (HDI)

By common knowledge, the main objective of development is to create an environment that allows people to enjoy a long life, to acquire knowledge, and to have a decent standard of living. Human development-orientation places people as the ultimate goal of development and not as a development tool. The Human Development Index (HDI) is an indicator world-wide used to classify whether an area is developed, developing or underdeveloped and also to measure the impact of economic policies on quality of life. The development of human development in Jakarta can be seen from the Human Development Index (HDI), which shows an increasing trend in the past five years. Nationally the Jakarta HDI ranks 1 among other provinces. The HDI Jakarta in 2007 amounted to 76.6 and rose to 77.6 in 2010. In 2011 HDI Jakarta reached 77.97, which was much higher than the national HDI level of 72.60. In 2012, Jakarta's HDI again rose to 78.33 showing that the human development quality in Jakarta is superior compared to other provinces.



Source: Bappeda DKI, Jakarta

Figure 3: Human Development Index of Jakarta and National, 2002-2012

The impressive HDI performance in Jakarta is supported by a superior quality of human resources in the city, especially reflected in life expectancy, the average length of schooling, and the literacy rate which is higher than the national average. This situation is understandable in view of Jakarta having a unique position as the capital of the country and also as the centre of economic development in Indonesia. Jakarta is the centre of social and cultural activities with a variety of the best facilities in Indonesia in the fields of education, culture, sports, and health facilities.

Table 1: Human Development Index of Jakarta by Its Composites, 2002-2012

Composite Variables	2010	2011	2012
Life Expectancy	73.2	73.35	73.49
Illiteracy Rate	99.13	99.15	99.21
Years Schooling	10.93	10.95	10.98
Per capita Expenditure (in Thousand IDR)	628.67	632.17	635.29
HDI	**77.6**	**77.97**	**78.33**
Short Reduction Fall		1.66	1.6

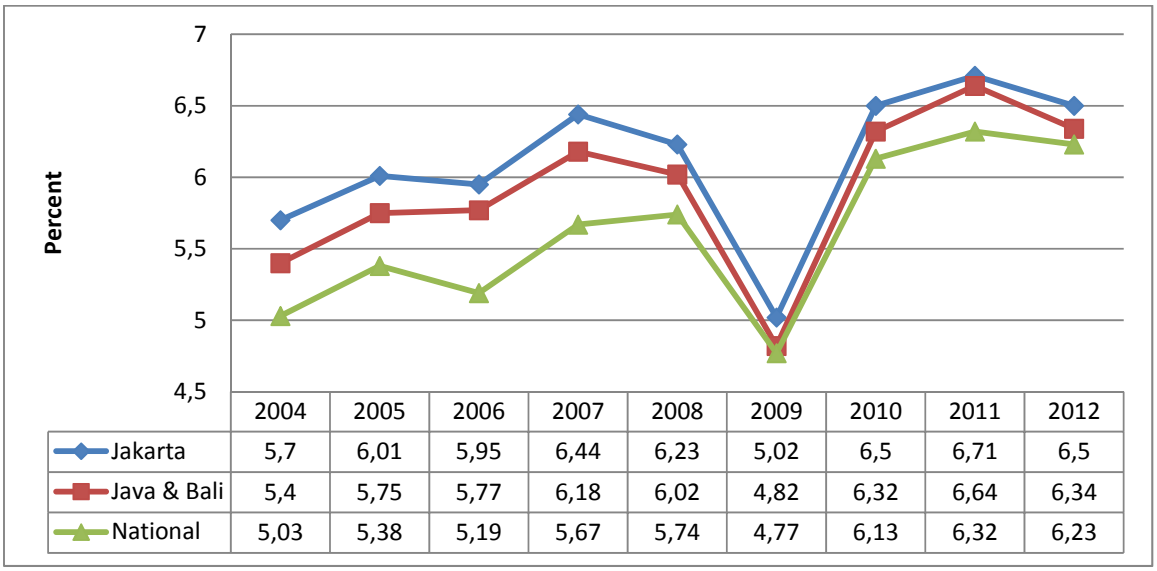
Source: Bappeda DKI, Jakarta

Life expectancy of Jakartans increased fro 73.35 years in 2011 to 73.49 years in 2012. The increase in life expectancy showed an increased level of public health in Jakarta Similarly superiority is achieved in other variables: the literacy rate increased from 99.15 % to 99.21 % and the average length of school increased from 10.95 years to 10.98 %. Various government policies, both central and local levels, such as policy for implementation 9-year compulsory education, the provision of the School Operational Cost (BOS) and Education Operational Costs (BOP) provides a substantial contribution to this achievement, in addition to increasing the educational facilities in Jakarta.

2.1.2. Economic Growth and Human Development Index

Economic growth in Jakarta is driven by investment performance, but it is also accompanied by consumption that remains strong. Relatively stable security and political conditions were two factors that have been able to create conducive conditions for business and investment in Jakarta. Jakarta in 2012 saw GDRP growth of 6.5 % a bit slower compared to 2011. Based on constant price GDRP Jakarta in 2012 amounted Rp 499.8 trillion, an increase of Rp 77,6 trillion compared to 2011 that was Rp 422.2 trillion. While Jakarta GDRP (current prices) in 2012 amounted Rp 1,103.7, rose by Rp 121.2 trillion compared to 2011 that was Rp 982.5 trillion. The economic growth in 2013 experienced slowdown to reach 6.11%, lower than the projected growth target of 6.9 %. This slowdown was influenced by *"not fully recovered"* global economic conditions. On the other hand, economic productivity was weakened by pressures due to rising prices of fuel that triggered all prices to rise in general, including the price of raw and intermediate materials.

Table 2: Comparison between Economic Growth of Jakarta, Java & Bali, and National Level, 2004-2012 (in Percent)



	2004	2005	2006	2007	2008	2009	2010	2011	2012
Jakarta	5,7	6,01	5,95	6,44	6,23	5,02	6,5	6,71	6,5
Java & Bali	5,4	5,75	5,77	6,18	6,02	4,82	6,32	6,64	6,34
National	5,03	5,38	5,19	5,67	5,74	4,77	6,13	6,32	6,23

Source: Bappeda DKI Jakarta, 2014

Jakarta is obviously the key service city reflected from the structure of its economy measured by GDRP by sector (activities). Approximately, 71.5% of GDRP in Jakarta, 2012 came from tertiary sectors (trade, finance, services, and transportation), while 28 % came from the secondary sectors (manufacturing, construction, and electricity - gas - water); while there was only 0.5% from the primary sectors (agriculture and mining).Jakarta with a unique position as the capital of the country and also the centre of economic development in Indonesia experiences economic growth that is typically faster than Java-Bali Island and national economic growth on average as shown in Table 2.

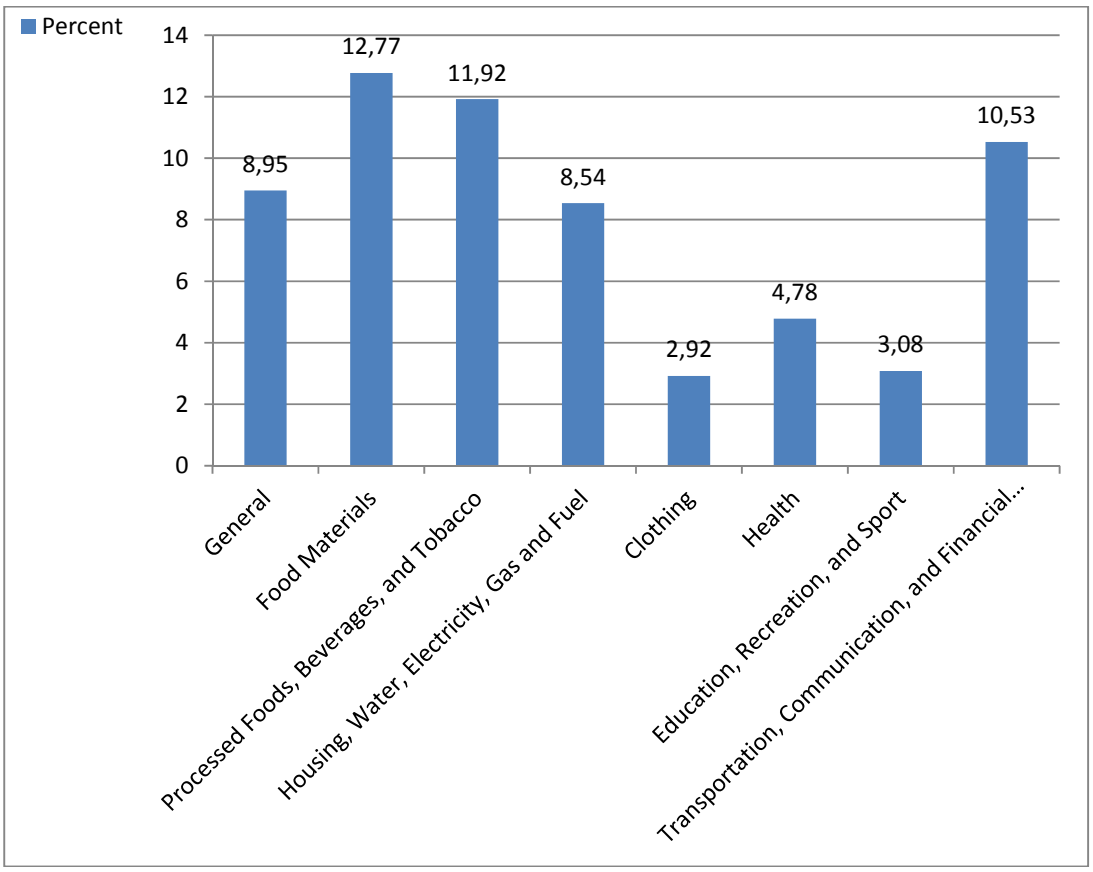
Looking at the distribution of GDRP by expenditure for the year 2012, the largest component of household consumption accounted for 56.9%, slightly decreased from 57% in 2011 and lower than it was targeted at 57.4% in the RKDP 2012. The second largest contribution is in the export component of 56.2%, increased from 55.1% in the previous year. Finally, the smallest contribution of 9.5% was government consumption that was lower than 9.9 % in 2011. Jakarta's GDRP (current prices) had increased, from USD 62.5 million in 2007 to USD 110.46 million in 2012.

2.1.3. Inflation

In the last five years, the Jakarta inflation rate has typically been under the national level, except in 2008 which was slightly higher than the national level. Inflation in 2013 was 8.38%, twice as high as the 4.52% in 2012 (*yoy*). The Central and Provincial Government have launched several policies since 2010, among others: the cost of driving licenses (SIM), Vehicle registration certificates, Motor Vehicle Plate Numbers (TNKB) and Books of Owning Vehicles - which spurred higher inflation rates. Within the period 2010-2013 the Central Government raised base electricity tariffs (TDL), raised non-taxable income (PTKP), that

implicitly raised inflation from the demand side. Another thing that is also influential was relatively bad weather conditions, which cannot be easily predicted. The rainy season and prolonged wet and dry conditions caused the agricultural sector to be not yet fully operational, even in some areas causing crop failures, and further increasing the cost of food productions and their market prices.

Recent data shows that in December 2014, prices in Jakarta experienced inflation of 2.74 % (*mom*). The all expenditure basket index saw increases of: food, beverages, cigarettes and tobacco (5.01%); transport, communication and financial services (4.25%); food stuffs (3.41%); housing, water, electricity, gas, and fuel (1.58%); clothing group (0.57%); education, recreation, and sport (0.55%); and health (0.14%). Commodities contributing inflation were among others: gasoline (0.4052%); transportation in the city (0.2761%); red chili (0.2337 %); rice with side dishes (0.1999%); electricity tariff (0.1781%); rice (0.1308%); air transport (0.1276%); noodles (0.0906%); inter-city transportation (0.0772%); household fuel (0.0565%); clothing (0.0549%). Inflation in December 2014 was mainly caused by rising prices for processed food, beverages, cigarettes and tobacco (Figure 3).



Source: Bappeda DKI, Jakarta

Figure 4: Contributions to Jakarta Inflation by Commodities, December 2014

2.1.4. Gini Coefficient

The Gini coefficients in Jakarta during the period 2007-2011 were relatively stable. This indicates that Jakarta's income distribution was relatively unchanged until recently. On average, income inequality in Jakarta was in the category of low inequality: 0.38 in 2010 and 0.41 in 2011. This claim was also supported by data inequality using World Bank criterion stating that the 40% of lowest-income population in Jakarta receive around 17% of total Jakarta's GDRP. This implied that somehow, the development in Jakarta also has benefited its population in lower to middle income group.

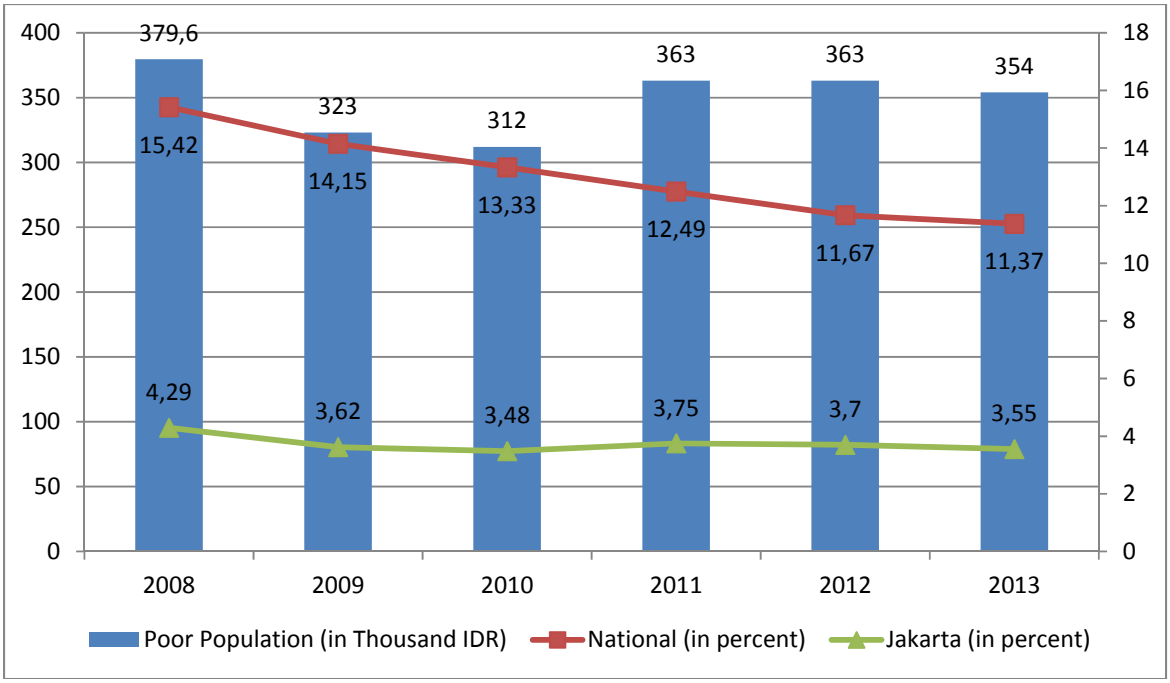
Reducing the level of income inequality is one of the efforts to realize the vision of the development of Jakarta. Societal welfare is a main goal to be achieved. One of the Jakarta Government's efforts to narrow income disparity is to take measures to increase the productivity of the population, especially the poor, with some programmes of health, education and trainings.

2.1.5. Poverty

At the macro level, the size of the number of poor people is measured by the poverty line (PL), defined as the number of Rupiah required to meet the minimum needs of food and non-food, representing the average expenditure per capita per month.

Along with inflation, the poverty line (PL) in Jakarta continues to show an increasing trend. Since 2009, the PL in Jakarta reached over Rp 300,000 per capita per month. In September 2011, PL was calculated Rp 368,415 per capita per month, which consisted of food poverty line (FPL) of Rp 236,934 (64.31%) and non-food poverty line (NFPL) of Rp 131,481 (35.69%). Food commodities which had greatest impact on the PL were rice, cigarettes, eggs, instant noodles, and chicken meat. Non-food commodities which had greatest impact on the PL were the cost of housing, transportation, education, and electricity. In response, the Government of Jakarta performed a variety of integrated and sustainable programmes, so that since 2009 the number of poor people in Jakarta has reduced to around 4% of total population.

During the period 2008-2013, poverty in absolute terms in Jakarta always decreased. The percentage of poor people in Jakarta during the period 2008-2013 has always been lower than the average percentage of the national poverty level. In 2013 the percentage of poor people in Jakarta was 3.55% which clearly remains below the level of the percentage of people poor national average which is 11.37%.



Source: Bappeda DKI, Jakarta

Figure 5: Poverty Line (in thousands IDR) and Percentage of Poverty in Jakarta Compared to National Level, 2008-2013

However, more recent data shows a different picture: the number of poor people (and percentage of poverty) in Jakarta tended to increase. In September 2014 the number of poor people (and percentage of poverty) amounted to 412.79 thousand people (4.09%), an increase of 18.81 thousand, compared to March 2014 (393.98 thousand people (3.92%)), or an increased of 41.09 thousand, compared to September 2013 (371.70 thousand people (3.72%)).

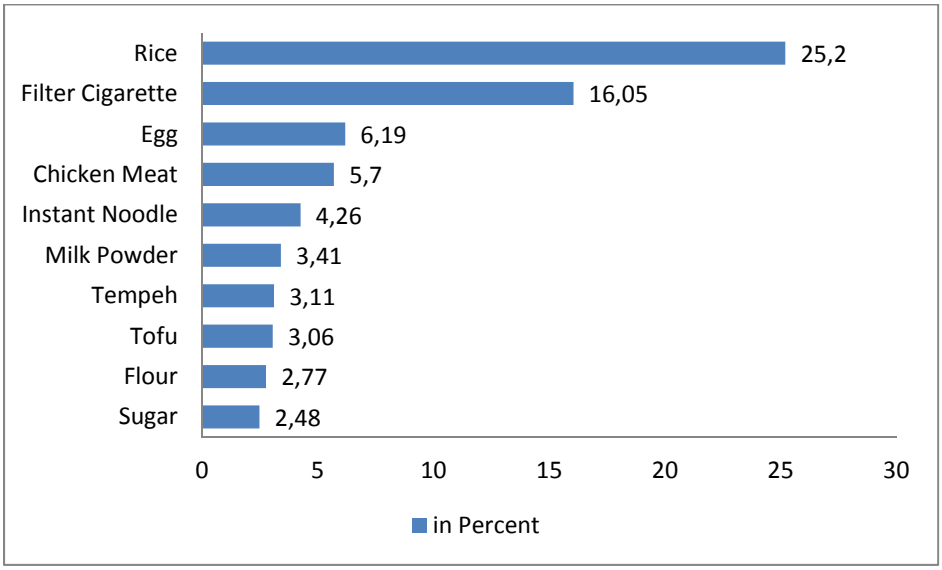
Table 3: Poverty Line, Amount of Poor Population, and Percentage of Poverty in Jakarta, September 2013-March and September 2014.

Month, Year		Poverty Line (IDR/capita/Month)			Population in Poverty (000)	Percentage of Poverty (in %)
		Food	Non-Food	Total		
September, 2013		278,706	155,615	434,322	371.7	3.72
	Portion	*(64.17%)*	*(35.83%)*	*(100%)*		
March, 2014		290,030	157,776	447,797	393.98	3.92
	Portion	*(64.77%)*	*(35.23%)*	*(100%)*		
September, 2014		287,543	162,017	459,560	412.79	4.09
	Portion	*(64.75%)*	*(35.25%)*	*(100%)*		

Source: SUSENAS, September 2013, March and September 2014

During September 2013 - March 2014 - September 2014, Jakarta's PL rose by 2.63 % from March to September 2014 (Rp 447,797 per capita per month to Rp 459,560 per capita per month) and increased by 5.81 % from September 2013 to September 2014 (Rp 434,322 per capita per month to Rp 459 560 per capita per month). With regard to the component of the Poverty Line (PL), which consists of the Food Poverty Line (FPL) and Non-Food Poverty Line (NFPL), it appears that the role of food commodities has been greater than the role of non-food commodities (housing, clothing, education, and health). However, during the period from March to September 2014, FPL contribution to the PL experienced a slight decline by 0.02 points.

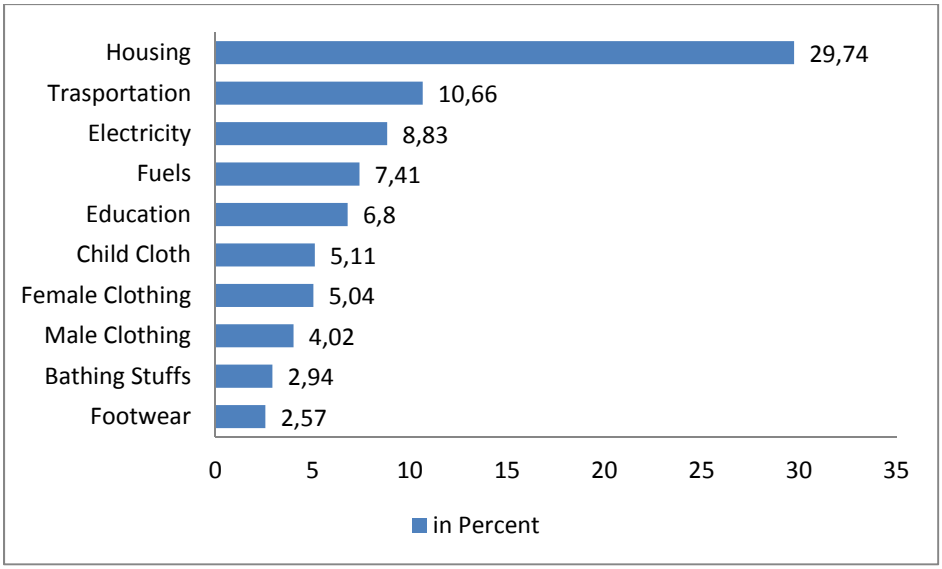
The most important food commodity for the poor people is rice (Figure 5). In September 2014, the contribution of rice expenditure to the FPL amounted to 25.20 %. Besides rice, other basic commodities having significant influence on the poverty line were filter cigarettes (16.05 %), eggs (6.19 %), chicken (5.70 %), instant noodles (4.26 %), milk powder (3.41 %), tempe (3.11 %), tofu (3.06 %), and sugar (2.48 %).



Source: BPS Jakarta, December 2014

Figure 6: Ten Commodities with Major Contribution on Food Poverty Line September 2014

On the other hand, the most important non-food commodity for the poor people is housing (see Figure 6). In September 2014, the contribution of housing expenditure on NFPL amounted to 29.74%. Besides housing, other non-food commodities having considerable influence on the poverty line were transportation (10.66 %), electricity (8.83%), fuel (7.41%), education (6.8%), children's clothing (5.11%), female clothing (5.04%), male clothing (4.02%), and bath stuffs (2.94%), and footwear (2.5 %).



Source: BPS Jakarta, December 2014

Figure 7: Ten Commodities with Major Contribution on Non-Food Poverty Line, September 2014

2.1.6. Unemployment Rate

More than 65% of the working age population (aged 15 years and above) in Jakarta were included in the employment category of the labour force during 2009-2011. During that period, the labour force participation rate continued to rise, namely from 66.6% to 69.36%. At the same time the level of employment in Jakarta from 2009 to 2011 also continued to increase. It was characterized by an increase in the percentage of the working age population that increased from 87.85% in 2009 to 89.2% in 2011. The high percentage of employment opportunities also meant that Jakarta's open unemployment rate continued to decline, although still above 10%, which was 10.80% in 2011, lower than 11.05% in 2010. The services sector employment in Jakarta has exceeded 75% of the total working population and increased to 80.05% in 2011.

Labor conditions in Jakarta in August 2014 showed a better picture than in August 2013, indicated by a decrease in the Rate of Open Unemployment. During this period, the Open Unemployment Rate in Jakarta fell by 0.16% (8.63% in 2013 to 8.47% in 2014). In addition, the Jakarta's labor force in August 2014 also decreased by 125.80 thousand workers, compared to February 2014, and decreased by 45.46 thousand people compared to August 2013. Residents who worked in August 2014 decreased by 44.47 thousand people compared to February 2014 and decreased by 33.87 thousand people compared to August 2013. While the number of unemployed in August 2014 decreased by 81.33 thousand people from February 2014, and decreased by 11.59 thousand people compared to August 2013.

The Labor Force Participation Rate (LFPR) is the total labor force divided by the population aged 15 years and above. Over the period of August 2013 to August 2014 Jakarta's LFPR decreased by 1.18% for Workers who work under normal working hours (<35 hours a week).

During this period, there were declines in underemployed workers by 24.72 thousand people (16.97%) and part-time workers by 9.22 thousand people (2.61%).

Table 4: Jakarta's Population above 15-years Old by Major Activities, 2013 - 2014

Items	Units	2013		2014	
		February	August	February	August
1 Labour Force	000 peoples	5,127.48	5,108.94	5,189.28	5,063.48
Worked	000 peoples	4,633.22	4,668.24	4,678.84	4,634.37
Unemployed	000 peoples	494.26	440.70	510.44	429.11
- Non Labour Force	000 peoples	2,384.58	2,427.48	2,387.41	2,537.99
- Population above 15 yrs. old	000 peoples	7,512.06	7,536.42	7,576.69	7,601.47
2 Labour Force Participation Rate	%	68.26	67.79	68.49	66.61
3 Open Unemployment Rate	%	9.64	8.63	9.84	8.47
4 Temporal Workers	000 peoples	533.96	499.53	517.04	465.59
Semi Unemployment	000 peoples	285.07	145.66	65.85	120.94
Part-time Workers	000 peoples	248.89	353.87	451.19	344.65

Source: BPS Jakarta, December 2014

The jobs structure of the Jakarta's working population in August 2013 and August 2014 did not change, where trade, social services, and the financial industry in sequence,were still the largest contributors to employment in Jakarta. Data in August 2014 compared to August 2013 showed a decrease in the amount of labor working in the social services sector of 70.43 thousand people (5.67%), and in the trade sector of 26.84 thousand people (1.63%) and the financial sector of 2.70 thousand people (0.58%).

Table 5: Jakarta's Working Population above 15 yrs. Old by Sectors, 2013 – 2014 (in Thousand Peoples)

Sectors	2013		2014	
	February	August	February	August
Agricultures	50.12	15.63	101.58	27.01
Industry	621.89	667.96	685.49	669.03
Construction	166.64	180.09	199.59	219.25
Trades	1,679.40	1,645.12	1,628.86	1,618.28
Transportation, Storage, and Communication	440.64	428.60	420.22	435.79
Financing	527.43	464.98	495.85	462.28
Community Services	1,107.54	1,242.74	1,120.98	1,172.31
Others	39.58	23.13	26.26	30.43
Total	4,633.24	4,668.25	4,678.83	4,634.38

Source: BPS Jakarta, December 2014

In August 2014, employment in the manufacturing sector increased, compared to the level in August 2013. The increase also occurred in the construction sector amounting to 39.16 thousand people (21.74 %), the industrial sector 1.07 thousand people (0.16 per cent) and other sectors (mining, electricity, gas and water) of 7.30 thousand people (31.56 %). Labor force increases also occurred in the transportation, storage, and communication sectors.

2.2. Road Congestion

Transportation in Indonesia is dominated by private transport such as the use of motorcycles and private cars. Jakarta as the capital city of Indonesia with a huge population cannot be separated from the urban transportation problems of congestion. On average, daily used of vehicles in Jakarta is around 5.5 million, consisting of 98% private vehicles serving 44% of trips and 2% public transport vehicles serving 56% of trips. Some of the congestion problems existing in Jakarta are caused by several factors:

1) Congestion is caused by the use of vehicles especially motorcycles and private cars;

2) The high number of private vehicle ownership, due to easy access and cost of buying vehicle, especially motorcycles;

3) The lack of public interest in using public transport, due to weak public transport system and the level of security; and

4) The number of vehicles is too large compared to the existing road supply.

There are about 747 points of congestion spread throughout Jakarta. The concentration of the main bottlenecks is in Central Jakarta where a number of both government agencies and private institutions are located. Such institutions contribute to congestion in Jakarta because of the number of existing employees the majority of whom use their personal vehicles to go to work. One area which dominates the congestion in this central area is Monas Area.

According to the Directorate of Traffic Jakarta Police, the growth of vehicles is increasing by 24 % each year, but the development of roads grows by only 0.01 % per year. While the number of trips in Jakarta until recently reached 20.7 million per year, which is not comparable to roads capacity. The length of roads in Jakarta is only 7,650 km and 40.1 km wide or just 0.26% of the total area of the city. Congestion hour variation in Jakarta also has occurred, in 2012 congestion occurred after off office hour to 21:00 pm, and current congestion occurs until 22:00 pm.

Also from the same data source, the number of vehicles in Jakarta from January to December 2013 had reached 16,043,689 units. The details are as follow:

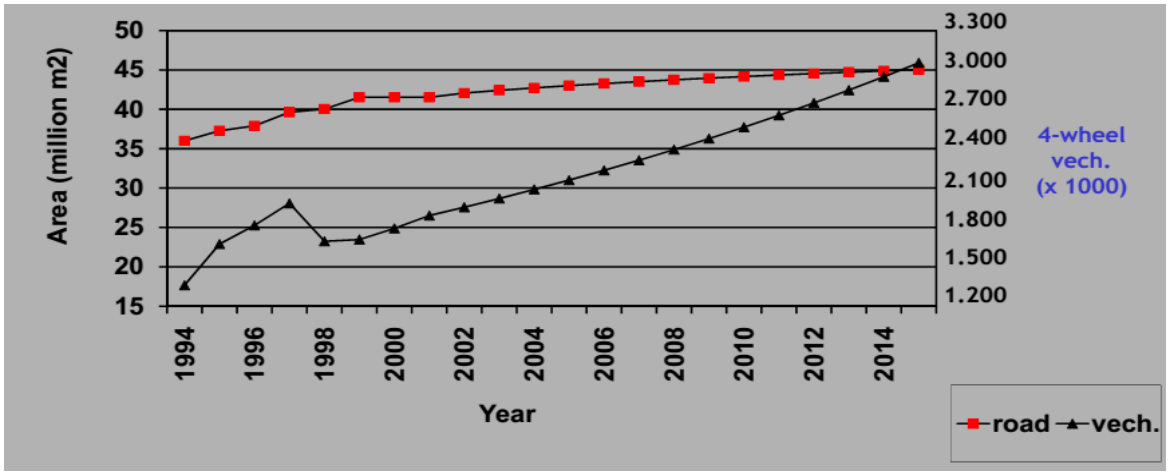
1) 11,929,103 units of motorcycles;
2) 3,003,499 units of cars;
3) 360,022 units of bus;
4) 617,635 unit of freight trucks/cars; and
5) 133,430 units of special vehicles.

Total number of vehicles had increased by 9.8 % compared to the year 2012 (14,618,313 units).

The Indonesian central, provincial, and local governments seem not to have consistency in addressing the existing congestion problems in Jakarta. There is a major recent contradiction, when the Governor of Jakarta made diligent attempts to bring many models of public transportation reform and to increase the interest of public to use public transport, but on the other hand the Indonesian central government issued a policy regarding Low Cost Green Cars (LCGC), that will likely increase the number of cars circulating in the city.

The solutions offered by the Jakarta government until now can be said not to have significantly broken through to solve the bottlenecks. Various models of transportation are offered ranging from Busways, City Bus Integrated Busway (BKTB), and ongoing process of building the Mass Rapid Transit facility, but have not yet had major impact in reducing road congestion in Jakarta. Congestion is caused by many factors such as many complaints from the public regarding the quality and quantity of existing public transport. The Jakarta government continues to pursue improvements and still aims to accommodate the needs for proper public transportation in Jakarta.

However, the problem of congestion in Jakarta is not only about addressing mass transportation because if we do not address other sectors then all transportation policies and measures taken cannot be achieved optimally. Therefore, we need to have a solution that can provide a larger breakthrough effect to the problem of congestion in Jakarta. The main cause of traffic congestion is the number of motor vehicles, especially private motor vehicles with higher mobility (use) in terms of space and time, while the condition and growth of the road network is not balanced by the increase in the number and mobility of vehicles available. Data of the Jakarta Transportation Agency in 2007 showed only an increase in road length of less than 1% per year, while the increase in the number of vehicles is on average 11% per year. Illustration of comparison between the extensive growth in the number of vehicles and the road capacity in Jakarta is presented in Figure 7.



Source: Directorate of Traffic Police Jaya, February 2008

Figure 8: Comparison between Growth of Total Vehicles and Roads area in Jakarta, 1994-2014

With an average growth of 9% per year in Jakarta and 12.2% in the region Jabodetabek (Jakarta, Depok, Tangerang, and Bekasi) the number of vehicles continues to increase each year (See Table. 6 and Table. 7). We can expect that this growth may become more severe if we include another area like Bogor into the picture. Although the number of new vehicles from 2004 to 2007 showed a decrease, the total number of vehicles continued to grow. The reason is because of the sum of old vehicles plus new vehicles. Thus the high number of vehicles today, cannot be separated from the contribution of the number of vehicles accumulatively.

Table 6: Number of Motor Vehicles in Jakarta. 2003-2007

Year	Amount			New Vehicle						Yearly Growth (%)
				Amount of Car		Amount of Motorcycles		Total		
	Car	Motorcycle	Total	Yearly	Daily	Yearly	Daily	Yearly	Daily	
2003	1,908,012	2,202,637	4,110,649							
2004	2,016,237	2,534,480	4,550,717	108,225	297	331,843	909	440,068	1,206	10.70
2005	2,110,249	2,887,172	4,997,421	94,012	258	352,692	966	446,704	1,224	9.80
2006	2,161,653	3,242,090	5,403,743	51,404	141	354,918	972	406,322	1,113	8.10
2007	2,218,380	357,622	2,576,002	56,727	155	337,532	925	394,259	1,080	7.30
Average				77,592	213	344,246	943	421,838	1,156	8.98

Source: Directorate of Traffic Police Jaya, February 2008

Table 7: Number of Motor Vehicles in Jakarta, Depok, Tangerang, and Bekasi (areas under Jakarta Police Jurisdiction), 2003-2007

Year	Amount			New Vehicle						Yearly Growth (%)
				Amount of Car		Amount of Motor		Total		
	Car	Motorcycle	Total	Yearly	Daily	Yearly	Daily	Yearly	Daily	
2003	2,310,806	3,310,318	5,621,124							
2004	2,450,219	3,940,700	6,390,919	139,413	382	630,382	1,727	769,795	2,109	13.70
2005	2,575,373	4,602,852	7,178,225	125,154	343	662,152	1,814	787,306	2,157	12.30
2006	2,657,430	5,309,261	7,966,691	82,057	225	706,409	1,935	788,466	2,160	12.30
2007	2,753,792	5,974,173	8,727,965	96,362	264	664,912	1,822	761,274	2,086	10.60
Average				110,747	304	665,964	1,825	776,710	2,128	12.23

Source: Directorate of Traffic Police Jaya, February 2008.

In response to these conditions, some studies estimate that if there is no change in the balance between the growth in the number of vehicles and the road network, then from 2014 there will be stagnation of traffic in Jakarta due to very acute congestion.

The most updated data from The Castrol-Magnatec Stop-Start Index 2014[2] published by British motor-oil company Castrol, used GPS data to calculate the frequency of stop-start driving among motorists across the globe. Drivers in Jakarta made 33,240 stop-starts annually, the study found, while drivers in Surabaya made 29,880. Motorists in Istanbul, Turkey, which took the number two spot on the index, registered 32.520 stop-starts annually; while drivers in Mexico City, number three on the list, recorded 30,840 stop-starts on average. Following are the worst 9 stops-starts traffic:

1. Jakarta, Indonesia (33,240);
2. Istanbul, Turkey (32, 520);
3. Mexico City, Mexico (30,840);
4. Surabaya, Indonesia (29,880);
5. St. Petersburg, Russia (29,040);
6. Moscow, Russia (28,680);
7. Rome, Italy (28,680);
8. Bangkok, Thailand (27,480); and
9. Guadalajara, Mexico (24,840).

Traffic congestion has led to a huge loss not only material but also non-material. According to Indonesian Transportation Society (MTI) losses due to traffic congestion in Jakarta had reached Rp.8.3 trillion per year, on average, which consists of loss of vehicle operating costs Rp.3 trillion, the health impact Rp. 2.8 trillion, and time costs of Rp. 2.5 trillion, not to mention the extra costs of social impacts such the decline in the quality of social urban communities. This situation certainly contradicts the very nature that transport should improve the lives of people, not the reverse where transport causes declines in the quality of life of the public.

Box 1: Progressive Taxes on Vehicle Ownership

Starting in October 2014, the Jakarta City government has raised the marginal tax rate of motor vehicles (*Pajak Kendaraan Bermotor,* PKB) for its citizens. The regulation has been passed by local parliament in PERDA No. 8/ 2010 on PKB which passed parliament, July 2014. In the PERDA, there are 4 calculation formulae of the increase in marginal tax rate for motor vehicles. Tax for the first vehicle ownership that was originally 1.5% of the sale value of motor vehicles (NJKB) rises to 2% or increased by 33.3%. PKB for second vehicle which was initially 2% of NJKB rises to 4% or increased by nearly 100%.

For the 3rd vehicle originally rates of 2.5% of NJKB rises to 6%, increased by 140%. While PKB vehicle 4th and so on, which was originally 4% rises to 10% of NJKB or increased by 150%. In the formula, the Jakarta Government is expected to acquire an additional increase in revenue (PAD) to Rp 1.6 trillion in just three months (October-December 2014). In 2012, PKB accounted for about Rp 4.6 trillion for Local Owned Revenue of Jakarta, assuming the number of motor vehicles amounted to 4,780,893 units.

The Jakarta Parliament Commission Chairman stated that the purpose of such progressive tax rate is mainly increasing the Jakarta's PKB. In addition, it is also intended to reduce the level of currently increasing congestion in Jakarta. Progressive rate increase of PKB is said to be part of a package of transport sector reform programme along with the development policy of Mass Rapid Transportation (MRT), Monorail, Trans-Jakarta and Electronic Road Pricing (ERP). At the same time, the Jakarta Government will also review the policy of the parking rates and various other areas of fiscal policy.

[2] http://thejakartaglobe.beritasatu.com/news/jakarta-worlds-worst-traffic-gridlock/

Being aware of the traffic congestion in Jakarta today and its impact on our existence as the Capital of the State of Indonesia, it is necessary to find a unified and comprehensive solution for solving the problem of traffic congestion in order to support the smooth operation of government as stipulated in Law No. 29, 2007 about The Provincial Government of Jakarta As The Special Capital Of The Republic Of Indonesia, and realize the objectives of road transport as stipulated in Law No. 22 of 2009 about Road Traffic and Transportation.

2.3 Energy Consumption in Jakarta for Transportation

Pertamina noted that Jakarta citizens are the most wasteful users of fuel oil (BBM). Subsidized fuel consumption in Jakarta in May 2012 surpassed 36% of the total national quota. Pertamina also said that the Jakarta Premium quota in 2012 was 1.5 million kilo litres. However, until May 2012, there were already 818.369 kilo litres or more consumed, more than half of the quota has been used up while there were still 8 (eight) more months to go. Nationally, the realization of subsidized fuel consumption in 2012 had reached 14.15 million kilo litres. This figure means that the consumption of 7.4 % as of April had already over quota. Without control measures, the consumption of subsidized fuel that year was expected to reach 44.1 million kilo litres. Originally, the 2012 National Budget (APBN) set a quota of subsidized fuel for only 37.5 million kilo litres. However, in the APBN-P (National Budget Change) 2012 national budget, subsidized fuel quota had been increased to 40 million kilo litres.

The Jakarta Acting Governor Basuki Tjahaja Poernama in 2013 was planning to free up Jakarta from subsidized fuel by 1 January 2015. Through the regional regulations (PERDA), in effect immediately, all General Gas Station that operates in Jakarta would be prohibited from selling subsidized fuel with sanctions revoking the operating license of the gas stations that do not follow this PERDA. This idea became controversial whereby some pros and cons reminded the Jakarta Government to formulate that policy carefully and comprehensively to avoid possible unproductive negative effects. In general, the same questions occurred: will all vehicles passing in Jakarta be affected by the policy; is there any discrimination between private vehicles and public transportation?

Controversy over Jakarta's plans to eliminate subsidized fuel is actually not new. The idea of freeing Jakarta from distribution of subsidized fuel was actually considered as a form of long-time resistance against government policies that were never consistent in addressing the issue of fuel subsidy, environmental and health issues. The idea was radical in a country where not many leaders dared to resist the long-time grip of existing energy subsidies policy. Usually many policymakers actually called things contrary to the public interest pretext small, despite the fact that from the results of various studies, the largest beneficiaries of fuel subsidy are the middle class society as private car owners. The Minister of Finance (MoF) expressed support for this idea, but suggested that there is a need to coordinate between the governments vertically, so that the mechanisms will be formulated properly and precisely. In the perspective of the national budget, Jakarta's plan of removing subsidized fuel distribution would cause a tremendous impact, given up to 2013; Jakarta was recorded as one of the areas that had suffered over quota use of subsidized fuel each year, despite the fact that the national quota of fuel was regularly exceeded. In 2012 alone, for example, Jakarta Provincial listed as having the most extravagant consumption to exceed quota by 37.40%, followed by West Java with 24.30%, Kalimantan 20.70%, Riau Islands 19.70%, Banten 16.20% and 16%

for South Kalimantan. The public had already acknowledged that fuel subsidies had already become a burden to the national budget every year.

In the 2013 national budget, the fuel subsidy was set at Rp 199.9 trillion, while in the National Budget Plan 2014, the central government and the Parliament had agreed on the amount of fuel subsidy for Rp 210.7 trillion; in addition to electricity subsidies of Rp 71.4 trillion making massive energy subsidies reaching Rp 282.2 trillion in 2014. With weakening of the rupiah against the US dollar that still continues to occur, the cost of subsidies became a big issue. Various measures have also been conducted by the government with restrictions and limitation on the use of subsidized fuel among government agencies: the prohibition of gas stations selling subsidized fuel, alternative fuel development as well as various forms of other efforts but all ended up not giving optimal results.

The overall mechanisms and such policies had not been able to touch the main issue. By regulation, the issue of fuel subsidy contained in the Act No. 22 Year 2001 about Oil and Gas Article 8, paragraph 2, which states that the government must ensure the supply and distribution of fuel oil (BBM), which is a vital commodity and dominates the life of the people in the entire territory of the Republic of Indonesia. The scope of authority and the mechanism for setting the type, volume, price of fuel and commercial business areas stipulated in Presidential Decree No. 71 Year 2005 about the Supply and Distribution of Certain Type of Fuel and Government Regulation (PP) No. 36 Year 2004 about The Downstream Oil and Gas. Related problems and setting restrictions on the volume of fuel, as set in Presidential Decree No. 15 Year 2012 about Consumer Retail Price and User Type Specific Fuel in Article 5, paragraph 1 and 2 as well as Article 6, 7 and 8. According to Law 19 Year 2012 about the National Budget 2013, the government is also required to make arrangements for subsidized fuel to be sold gradually so that allocations can be accomplished with the right volume and fit the target.

Obviously for economic rationality and efficiency purposes the fuel subsidy policy was not well targeted considering that this policy encourages consumption of energy which exceeds the quota and harms national fiscal capacity.

Effective from 18 November 2014, the government implemented an Rp 2,000 per litre increase to the fuel price. With this increase, a litre of subsidized gasoline (Premium) and diesel (Solar) were Rp. 8,500 and Rp.7,500 respectively. Furthermore effective from January 1, 2015, the subsidy for Premium gasoline was removed and a fixed subsidy of Rp 1,000 (less than 10 US cents) per litre on diesel was implemented. Since then, the prices of retail gasoline and diesel have dropped to Rp 7,600 per litre (a 10.6% drop from the initial price of Rp 8,500) and Rp 7,250 per litre (a 3.3% drop from the initial price of Rp 7,500 per litre. The long-awaited policy was actually aligned with the momentum of plunging international oil prices. From 2013 to early 2015, Nymex and Brent prices dropped between 45% and 49%. It is worth highlighting that market consensus now believes that global oil prices will not rebound to levels of US$100 per barrel, at least prior to 2018.

The 2015 national budget showed that the sensitivity of oil prices to fiscal balance was around Rp 3.5 trillion to Rp 4.4 trillion for every US$ 1 of oil-price decline, coming from a bigger declining amount in the spending side compared to the revenue side. Thus, the combination of lower oil prices and subsidy removal will be positive for the revised 2015 budget. Bank

Mandiri's economic team calculated that the fuel-subsidy burden would drastically fall to Rp 25 trillion in 2015 from its initial target of Rp 276 trillion, saving around Rp 251 trillion.[3]

Previously, gasoline subsidies have accounted for 62% on average of total fuel consumption (gasoline accounts for on average 26 million kilo litres per year). While, Diesel subsidies accounted on average for 35% of total fuel subsidies (diesel usage is on average 16 million kilo litres per year). Such savings generate a huge reallocation opportunity for more efficient and productive spending. In the longer term, fiscal conditions will likely be more sustainable as the amount of fuel subsidies becomes more predictable. The only variable that will affect the fixed-subsidy scheme is fuel consumption, while the exchange rate and oil prices will become irrelevant.

The aim of having a healthier budget by removing fuel subsidies is to support better economic performance. Government spending is one of the sources of higher economic growth (another major source comes from private investment). Various studies estimated that the pace of national budget disbursement will also be improved in 2015 and could support the 2015 government's economic growth target of 5.8 %.

2.4. Major Pollutants Produced by Motor Vehicles

This section provides information about the pollution that comes from motor vehicles, with the hope that the reader will be aware that this important issue needs to be addressed urgently. The main pollutants from motor vehicles are: Compounds Particulate (PM), hydrocarbons (HC), Nitrogen Oxide (NOx), Carbon Monoxide (CO), Sulphur Dioxide (SO2), hazardous air pollutants (toxic/poisonous), and Green House Gases.

• Particulate Matter (PM)

PM or particulate compound is a mixture of solid particles and liquid droplets found in the air. Exposure to PM may cause respiratory tract irritation, coughing, difficulty breathing, reduced lung function, aggravate asthma, chronic bronchitis, irregular heartbeat, non-fatal heart attack, as well as some types of cancer.

• Hydrocarbons (HC)

HC reacts with NO when exposed to sunlight to form ground level ozones, the primary material in the formation of smog (smoke-fog, mist with a mixture of smoke and other atmospheric pollutants). Although, ozone is an important compound in the upper atmosphere, however, at the ground, this compound may cause irritation to the respiratory system, causing coughing, choking, and reducing lung capacity.

• Nitrogen Oxides (NOx)

Ambient Air Quality Standards Environmental Protection Agency (EPA) of the USA using NO2 as an indicator of the presence of NOx in significant amounts. The results of a recent study linking the effects of short-term exposure to NO2, ranging from 30 minutes to 24 hours, with a variety of respiratory system effects, including swelling of the human respiratory tract in healthy individuals as well as an increase in respiratory symptoms in people with asthma.

[3]http://www.thejakartapost.com/news/2015/01/07/analysis-fuel-subsidy-removal-positive-move-begin-new-year.html

• Carbon Monoxide (CO)

CO is a toxic compound that is odourless and colourless. In low concentrations, CO can cause fatigue to healthy people, or chest pain in people who have heart disease. In high concentrations it may cause impaired vision and coordination, headaches, dizziness, confusion, and nausea. In a very high concentration it can be more fatal. In a closed room, exposure to CO can give symptoms such as flu, which this condition will disappear after exiting the room.

• Sulphur Dioxide (SO_2)

SO_2 is a compound that is easy to react. Recent research linking short-term exposure to SO_2, ranging from 5 minutes to 24 hours, with a variety of respiratory system disorders such as bronkhokonstriksi (narrowing of the bronchi in the lungs) and increased asthma symptoms. This effect is important, especially when patients are active asthma (e.g., exercise or play).

• Hazardous air pollutants (toxic / poisonous)

Materials chemistry of these pollutants has been linked to birth defects, cancer, and other serious illnesses. In America, government environmental organizations, the EPA estimates that the country's toxic air emitted by cars and trucks - including benzene, acetaldehyde, and 1,3-butadin - is half the cause of all cancers is caused by air pollution.

• Greenhouse Gas (GHG)

Motor vehicles also emit pollutants, such as carbon dioxide (CO2) emissions that contribute to climate change.

To overcome the problem of congestion and pollution caused by automobiles, the need for cooperation between government and society. The government needs to actively improve the services of public transport so that the public is increasingly motivated to use public transport than private vehicles. On the other hand, people also need to actively support the government by choosing public transport as the main option, or use more environmentally friendly vehicles, such as cycling.

2.5. The Theory of Subsidies

Subsidies are defined as a payment from a government to a person or company. Many subsidies are indeed provided in that form, as grants or, more generically, as a direct payments. The WTO definition is more comprehensive and can be summed up as follows: A subsidy is a financial contribution by a government, or agent of a government, that confers a benefit on its recipients. Subsidies are distinguished in two forms, namely subsidies in the form of money (cash transfer) and subsidies in the form of goods or unnatural subsidies (in kind subsidy).

The context of subsidies is an important issue in economic development history. A subsidy for a good or service changes its price, and therefore changes the amount of consumption. Subsidies may be introduced to correct some market failure – for instance, if there are positive spill-overs to research and development which mean that those agents performing the research do not accrue all of the benefits, then they will produce a suboptimal amount of research; a subsidy can compensate them to do more research such that the socially efficient amount occurs (Holton, 2012).

Whilst subsidies can be appropriate and useful policy, economists are concerned with inefficient subsidies, which cause situations where prices do not correspond to the overall cost to society of producing or consuming a little more or less of the good or service. Subsidies can create an inefficient allocation of resources, because consumers pay for goods and services at lower than the market price, and then there is a tendency for the consumers to not spare in consumption of goods that are subsidized.

2.5.1. The Impact of Fossil-Fuel Subsidies

The subsidies policy can be justified if overall social welfare is increased. This situation occurs when the social gain or environmental improvement exceeds the economic cost. But, experience in many countries provide evidence that the net effects of subsidies are negative. In other words, overall social welfare would be higher without subsidies. This may be the case if the rationale for the subsidy is invalid, for example, because too much emphasis is put on a particular policy goal to the detriment of others. The way in which the subsidy is applied may also be ineffective. Even where the net benefits are positive, energy subsidies may not be the most efficient way of achieving policy goals.

There are economic arguments for removing fuel subsidies. Some say that fuel subsidies are not efficient as they result to distortions in the economy; and are also inequitable as the rich people receive more of the benefits than the poor. Studies have shown that fuel subsidies are ineffective in fuelling economic growth or in ensuring equitable distribution of income. In fact, most of the studies suggest that fuel subsidies hamper economic growth and undermine the principle of equity, and therefore should be reduced if not washed out completely. The following paragraphs and Table 8 summarise the types of economic, environmental and social impacts of fossil fuel subsidies (Ellis, 2010).

2.5.2. Economic Impacts

The main economic impacts of fossil-fuel subsidies are:

- *Subsidies can increase energy consumption and reduce incentives for energy efficiency.* Subsidies that reduce prices for consumers promote higher consumption of energy, and reduce incentives to use energy efficiently. Subsidies that reduce production costs for producers reduce producer incentives to minimize costs and increase efficiency;

- *Subsidies can decrease foreign exchange revenues*. Subsidies that encourage greater consumption reduce export opportunities for fossil-fuel-producing nations and revenues from those lost exports;

- *Subsidies are a drain on government finances* through direct financial transfers from government budgets, government expenditures on infrastructure or research and development or reduced government income from taxation. This can lead to fiscal deficits and debt accumulation;

- *Subsidies can increase countries' dependence on imports*. Subsidies that increase fossil-fuel consumption in non-fossil-fuel-producing countries increase those countries' dependence on imports;

- *Subsidies undermine investment in alternative energy sources and alternative energy technologies.* By increasing consumer demand for fossil fuels, or decreasing production costs for producers, subsidies distort the market and reduce investment in alternative energy sources or alternative energy technologies that are potentially more efficient or less environmentally harmful;

- *Subsidies encourage energy-intensive production at the expense of labor.* Subsidies that lower prices for consumers can result in a concentration of economic activity on energy-intensive production, perhaps at the expense of labour-intensive production;

- *Subsidized fuels are used for purposes for which they were not intended*. By lowering prices for certain fuels, subsidies can result in misuse of those fuels for purposes that were not intended;

- *Subsidies can lead to shortages or costly rationing systems.* Subsidies that lower prices for consumers but also lower returns to producers can lead producers to produce less or export more, resulting in shortages or the requirement for rationing systems;

- *Subsidies can promote smuggling and corruption*. Subsidies that lower prices for consumers but also lower returns to producers can encourage smuggling of the fuels to countries where prices are higher.

2.5.3. Environmental Impacts

Fossil-fuel production and consumption have a wide range of environmental impacts. The main impacts include:

- ***Greenhouse gas emissions.*** Fossil-fuel consumption is a key contributor to global GHG emissions;

- ***Local air pollution*****.** Fossil-fuel combustion produces pollutants including sulfur dioxide, nitrogen oxides and particulates, which are released into the atmosphere and can cause long- and short-term health impacts as well as damage to structures, agriculture and natural environments;

- ***Water pollution*****.** Fossil-fuel production and consumption can lead to water pollution through many avenues, including tanker accidents and oil spills, water pollution from runoff and leaching from tailings and coal washeries, and water contamination from flooding of closed mines that eventually contaminates groundwater;

- ***Landscape destruction*****.** Fossil-fuel extraction often contributes to landscape destruction, particularly in the case of coal mining; and

- ***Depletion of non-renewable fossil-fuel stocks*****.** Subsidies that accelerate fossil-fuel consumption accelerate this depletion of non-renewable resources.

2.5.4. Social Impacts

The main potential social impacts of fossil-fuel subsidies are considered to be:

- *Subsidies may benefit the rich more than the poor*, who spend more money on energy and have greater access to energy than the poor. Even when the rate of energy consumption by the poorest quintiles increases as a result of subsidies, the wealthy derive larger absolute benefits from lower energy prices;

- *Subsidies may reduce energy available to the poor* because in an artificially low-price environment, producers may have little incentive to produce or supply more, and a higher percentage of what is produced may be consumed by the rich;

- *Subsidies often do not target types of energy that would be more beneficial to the poor.* Subsidies may favour larger capital-intensive projects, such as dams or power plants, at the expense of local labor-intensive means of providing energy services. Power plant and dam construction can displace or create negative environmental impacts that primarily affect poor communities, while not improving their access to energy;

- *Subsidies may divert government money that could be more effectively directed to social programmes*, such as healthcare, free education, food coupons or targeted cash transfers; and

- *Fossil-fuel consumption and production produce local emissions that cause many health effects* that impact the poor in particular, due to their more limited choices regarding where they live.

Moreover, the following table summarises evidence of the kinds of economic, environmental and social effectsof the energy subsidies, including fuel subsidies from the country case studies (UNEP, 2003).

Table 8: Summary of Findings of Country Case Studies: Main Effects

Country/region	Types of subsidy assessed	Economic Effects	Environmental effects	Social effects
OECD	All types	Studies show that removing fossil-fuel subsidies would boost trade and economic Growth	Since most subsidies go to fossil fuels, removing them would reduce noxious and CO_2 emissions.	Significant short-term distributional effects, mainly due to impact on employment and household spending on energy.
Czech & Slovak Republics	All types	Subsidies have held back economic restructuring and hindered innovation,	Have exacerbated the harmful environmental	No detailed studies of social effects have been carried out even

Country/region	Types of subsidy assessed	Economic Effects	Environmental effects	Social effects
		resulting in high energy intensity and low energy efficiency.	effects of energy supply and consumption, including local and regional air pollution and CO_2 emissions	though household income-support is primary reason for subsidising energy
Russia	District heat	Large consumer subsidies, together with lack of metering and payment problems, cause waste and undermine investment and efficiency.	Removing electricity subsidies alone would cut CO2 emissions by 99 million tonnes, equivalent to a third of current power-sector emissions	Subsidy removal would raise cost of service to households, but would improve quality of service and enhance utilities' ability to extend and expand capacity.
India	Electricity	Subsidies encourage waste and hold back investment in power sector– a major constraint on economic development. Removing subsidies would trim demand in long run by 34%	Removing electricity subsidies alone would cut CO_2 emissions by 99 million tonnes, equivalent to a third of current power-sector emissions	Subsidy removal would raise cost of service to households, but would improve quality of service and enhance utilities' ability to extend and expand capacity
Indonesia	All Types	Net economic cost of subsidies to kerosene, diesel, gasoline and heavy fuel oil amounted to US$4 billion in 2001.	Subsidies exacerbate pollution, especially particulates and lead.	Reducing subsidies would free up resources to support the poor in more effective ways
Korea	All Types	Coal subsidies of around $500 million per year and large cross-subsidies in electricity and gas, together with the tax system, distort energy-use patterns.	Subsidies to coal and to industrial users of electricity and gas encourage over-consumption of fossil fuels and consequently boost emissions	Removal of coal subsidies would have serious economic and social consequences for mining communities.

Country/region	Types of subsidy assessed	Economic Effects	Environmental effects	Social effects
Iran	All Types	Subsidies cause inefficient energy use, are a major burden on public finances and have resulted in poor energy-sector performance.	Excessive energy use has aggravated local and regional pollution, a major public health issue	Mainly benefit higher income groups, which consume larger amounts of subsidised energy. But eliminating subsidies would have a dramatic impact on household budgets.
Senegal	LPG	Subsidies have successfully stimulated LPG use, bringing some economic benefits but at a significant financial cost.	Growth in LPG use has resulted in savings of about 70,000 tonnes of fuelwood and 90,000 tonnes of charcoal per year, relieving deforestation pressures and reducing pollution.	Subsidies have Improved household comfort standards and safety, and have enhanced incomes.
Chile	Oil and coal	The elimination of coal subsidies in 1995 was economically efficient. Removing remaining oil subsidies would incur only short-term economic costs.	The environment clearly benefits of subsidies reform in both cases through large reductions in CO2, particulate and CO2 emissions.	Removing oil subsidies completely would have a slightly larger negative impact on richer household incomes

Source: UNEP (2003)

3. Data Collection and Calculations

3.1. Data Collection

There are two main sources of data used in this research i.e. the National Socio-economic Survey (SUSENAS) for Jabodetabek area and the Indonesia's National budget (APBN) for years 2010 - 2012. The SUSENAS data was obtained from the Indonesia's Central Board of Statistics (BPS), while the APBN was compiled from the Ministry of Finance's publications.

The research employed a module version of SUSENAS panel data. The module SUSENAS is a detailed version of SUSENAS that focuses on expenditure, education, or health in each publication. Related to the objective of this research, data that is taken from SUSENAS and other macroeconomic data used is provided in the following table:

Table 9: Data Compiled from SUSENAS and other Macroeconomic Data

Module SUSENAS 2010, 2011, and 2012	Other data
Block I	***Ministry of Finance***
• Code of municipality / regency	• Actual fuel subsidy expenditure (APBN)
• Code of sub-district (kecamatan)	• Subsidy per litre
• Code of village (desa / kelurahan)	
• Urban / rural status (for DKI are urban only)	***Indonesia Statistics BPS***
• Census block number	• Size of Indonesia's population
• Household's block number	• Size of each city (Jabodetabek) population
• Household's sample number	
Block II	
• Size of household	
Block IV.2 (Non-food expenditure)	
• Household's housing expenditure	
• Household's fuel consumption (litre)	
• Household fuel's expenditure (Rupiah)	
Block IV.3	
• Amount of household's expenditure	
Weight	
• Individual sample weight	

3.1.1 Calculations

Step 1. Calculating the amount of fuel subsidy per person for years 2010 s.d. 2012

The amount of fuel subsidy per person (Rp) is obtained by dividing the APBN's actual expenditure on fuel by the population size:

$$fusp = \frac{APBN\ fuel\ subsidy\ expenditure}{population\ of\ Indonesia} \quad \text{(1)}$$

Where:

fusp : fuel unit subsidy per person (Rp)

Step 2. Identifying fuel's user

Identifying fuel's user is useful to get general information about the size of fuel consumption and fuel expenditure in each city. Based on information from Block II and Block IV.3 in module SUSENAS, number of fuel users can be identified based on its residence by using STATA software. For each city, we calculate total consumption and total expenditure for fuels as follows:

$$cfc_{i,y} = \sum_{h=1}^{n} hhfc \quad \text{(2)}$$

$$cfe_{i,y} = \sum_{h=1}^{n} hhfexp \quad \text{(3)}$$

while, per capita fuel's consumption and per capita fuel's expenditure are:

$$fc_{i,y} = \frac{cfc_i}{pop_i} \quad \text{(4)}$$

$$fe_{i,y} = \frac{cfe_i}{pop_i} \quad \text{(6)}$$

where:

cfc : city's fuel consumption (litre)
hhfc : household's fuel consumption (litre)
cfe : city's fuel expenditure (Rp)
hhfexp : household's fuel expenditure (Rp)
hhsize : number of household
pop : size of population
i : City
n : 1,…,n each represents household's number
y : year

Step 3. Aggregating households based on income group

In order to analyze the distribution of fuel, a Benefit Incidence Analysis of fuel is done. The objective is to see whether fuel is consumed more by poorer or richer households.

Firstly, we classify household's income into 5 classes based on expenditure basis. The data is obtained from Block IV.3 module SUSENAS. The 1st class represents the lowest income group. Then, for each group, we calculate the amount of fuel consumption and fuel expenditure as follows:

$$gfc_{j,y} = \sum_{j=1}^{n} hhfc \quad \text{.....(7)}$$

$$gfe_{j,y} = \sum_{j=1}^{n} hhfexp \quad \text{.....(8)}$$

$$gf_{j,y} = \sum_{j=1}^{n} hhxhhsize,\ hhfc \neq 0 \quad \text{.....(9)}$$

Where:

gfc : fuel consumption per household group (litre)

gfe : fuel expenditure per household group(Rp)

gf : number of fuel user (individual), if the amount of consumption greater than zero

j : 1,…,5 each represents households income group

y : year

Step 4. Multiplying the unit cost by the beneficiaries

To obtain the magnitude of the subsidy, we multiply the unit cost of fuel by the number of beneficiaries of fuel as follow:

$$bgfc_{j,y} = gfc\ x\ fusp \quad \text{.....(10)}$$

where:

bgfc : amount of subsidy to each household group

j : 1,…,5 each represents households income group

y : year

We also use another measure to calculate the magnitude of subsidy by multiplying the consumption of fuel by the amount of subsidy per litre:

$$sgfc_{j,y} = gfc\ x\ fsl \quad \text{.....(11)}$$

where:

sgfc : amount of fuel subsidy to each household group (Rp)

gfc : fuel consumption per household group
fsl : amount of subsidy per litre (Rp)
j : 1,…,5 each represents households income group
y : year

Step 5. Calculating the Progressivity of Subsidy

The progressivity of subsidy is calculated by dividing the fuel subsidy by household's expenditure.

$$progf = \frac{sgfc}{hhfexp} \quad \text{.....(12)}$$

where:

progf : progressivity of the subsidy (%)

Step 6. Calculating the budget share of the fuel related consumption

The budget share is calculated by dividing household's expenditure on fuel related items by total household's expenditure.

$$hfbs = \frac{hhfexp}{hhexp} \quad \text{.....(12)}$$

where:

hfbs : household fuel budget share (%)

Step 7. Measuring the direct impact of subsidy cut and removal

The direct impact of fuel subsidy cut and removal are obtained by multiplying the budget share for fuel times the percentage increase of fuel price. We then calculate the increase of fuel prices based on historical data to get the average fuel price increase.

3.1.2 Assumption Setting and Data Handling

Calculating steps 1 to step 7, involved challenges due to data availability problems. There is no official publication about the amount of subsidies for Premium and Pertamax before year 2013, therefore calculation of subsidy per person as stated in step 1 must be done by retrieving data from available related sources and by setting some assumptions. Moreover, SUSENAS data does not distinguish consumption of Premium and Pertamax separately. Instead, it gives total rupiah amounts of those two kinds of fuel in one basket. Further details of the calculations are explained below.

To calculate the amount of fuel subsidy per litre during 2010-2012, we use subsidy data for 2013. Based on the Fiscal Note and National budget (Nota Fiskal and RAPBN) data, the value

of subsidy for fuel was Rp 199.85 trillion, of which Rp 83.5 trillion was allocated for premium subsidy. At the same time, the amount of the PSO premium quota was 30,770 mkl. We assume that the volume of total premium subsidy equals the quota. Then, by dividing the value of subsidy by its quota volume, we get the rupiah of subsidy per litre was Rp 2,714.

However, before the year 2013, we cannot get the break-down of fuel subsidies by type. Instead, it is a bulk of fuel subsidy value that consists of premium, kerosene, diesel and LPG. Therefore to calculate the amount of subsidy of premium per litre we add up the difference of Premium's price during 2012 and 2013 to the amount of premium subsidy in 2013. The price of fuel remained fixed at Rp 4,500 from 2008 to the first quarter of 2013, before it rose to Rp 6,500 in June 2013. Therefore, we assume that the value of subsidy per litre for 2010 up to 2012 was Rp 4,714 or equals to Rp 2,714 subsidies plus the Rp 2,000 differences in price during the two periods.

Apart from the per litre fuel subsidy, SUSENAS module data did not provide separate consumption amounts for Premium and Pertamax meaning that we cannot directly obtain the amount of premium subsidy received by each group of beneficiaries. For this purpose, we considered two options of calculation.

- First, employing data of gasoline consumption at national level for certain periods from available publication and then combining it with SUSENAS data at the same level. Based on the Fiscal Policy Agency (BKF), Ministry of Finance data[4], the volume of gasoline (Premium) consumption during 2011 was 24.54 mkl. By calculating the volume of consumption of Premium and Pertamax basket in SUSENAS module for the same year and adopting the amount of 24.54 mkl into the module's consumption, we can obtain the proportion of Premium in the basket. Then we could use this share to calculate the consumption for DKI Jakarta level; and

- Second, using the share of premium to total fuel sales in 2011. According to the International Institute for Sustainable Development (IISD) report, that compiled data from Media Indonesia (2012) and Kompas (2012), the volume of Premium (RON 88) sold during 2011 was 25.5 mkl, Pertamax (RON 92) sale was 1.4 mkl and total fuel sale including diesel but excluding Pertamax Plus (RON 95) was 41.4 mkl, since the sale volume of Pertamax Plus was not published. By summing up the volume of Premium and Pertamax selling, we can obtain the share.

There are two possible drawbacks from such methods, i.e. it might be underestimated, particularly for Pertamax consumption. It is obvious that the majority of Pertamax users are concentrated in Jakarta, especially those who are in the middle upper or the highest level of income groups. Therefore, applying the national share equally into each income group with first method could result in a calculation bias. However, this might be not the final share to be used in any further study, since it would be better to obtain the real composition of DKI Jakarta's share of Pertamax vs. Premium consumption through compiling many sources of publication. Applying the second method could also potentially have a bias since the Pertamax Plus consumption data is missing.

Finally, this study only takes a direct impact analysis of fuel subsidies and puts aside indirect impact analysis that needs more comprehensive data such as Input-Output (IO) tables. In

[4] Global Subsidies Initiative (GSI) and International Institute for Sustainable Development (IISD) bulletin, Ed.1, Vol.1, March, 2014.

general, more steps to be taken in the future are still needed to have better analysis where we can employ more comprehensive analysis with methods that are able to relax all assumptions that limit the current study results.

4. Results

By combining the secondary data from Pertamina UPMS II and SUSENAS, 2012, we are able to estimate the amount of volume of energy consumption by user group and by types of energy fuel. Table 10 shows that premium and diesel are the two fuel types consumed by the majority for Industry and transportation purposes. Regarding the subsidized fuels like premium and diesel, in 2012 there were a total 4,282,882 kilo litres for the purpose of transportation.

Table 10: Distribution of Energy Based on Porpuses in Jakarta (Kilo Liters), 2012

Fuel type	Household	Industry	Transportation
Premium	-		2,953,744
Kerosene	131,927	5,939	-
LPG	2,138,353		
Bio Mass	4,414		
Diesel	-	140,364,337	1,329,138
Diesel oil	-	11,837,716	

Source: Pertamina UPMS II and BPS, 2012

From the SUSENAS data analyses, we estimate the average monthly expenditure of households in Jakarta in 2012 was about Rp 5.5 million. With average household members of 3.5 persons per household, we then calculate per capita expenditure at the same period equals to Rp.1.57 million per month or Rp 18.9 million per year. This amount was close to Jakarta Minimum Wage in 2012 which was Rp 1,529,150 per month.[5]

Table 11. Household's Expenditure and Expenditure Ratio, 2012

Expenditure's Class	Total Expenditure (Rp/mth)	Food Expenditure (Rp/mth)	Non-food Expenditure (Rp/mth)	Per capita Expenditure (Rp/mth)	Expenditure's Ratio to the Lowest Group (%)	
					Household	Per Capita
1	2,281,523	1,258,265	1,023,258	477,063	100	100
2	3,155,509	1,659,293	1,496,217	728,483	138	153
3	4,008,145	1,967,538	2,040,607	1,099,715	176	231
4	5,879,725	2,360,707	3,519,018	1,679,909	258	352
5	12,537,651	3,053,943	9,483,708	3,900,772	550	818
Average	5,565,583	2,058,790	3,506,793	1,574,909		

Source: Author's calculation based on SUSENAS

[5]http://regionalinvestment.bkpm.go.id/newsipid/ekonomiumrd.php?ia=31&is=45.

It is estimated that per capita expenditure for the lowest income group in Jakarta was less than half a million rupiah per year, while, the richest group's per capita expenditure reached Rp 3.9 million. Table 11 shows that the gap between the richest and the poorest in 2012 was very wide. Using the total household expenditure, the expenditure portion of the richest households was about 5.5 times higher compared to the poorest. The gap was even wider when we use the ratio of per capita expenditure (Rp/month) resulting with estimate that each person from the richest, on average, spends 8.8 times more than persons in the poorest group.

It is worth noting from Table 12 that for the richest group the fuel expenditure share to total expenditure is larger than for the poorest group though the richest income was also larger than the poorest. In terms of share, the average consumption of fuel was almost 4 % of total expenditure, or 6 % from the non-food expenditure. Table 12 also shows that the share follows the normal distribution pattern. The middle class spent more compared to the richest and the poorest group.

The worse picture can be seen (Table 11) from the big gap between the amount of monthly non-food expenditure of the richest to the poorest income group (Rp 9,483,708 compared to only Rp 1,023,258). As the contribution of non-food commodities to the inflation rate and the Poverty Line in Jakarta was getting larger recently, this wide gap shows that the poorest income group obviously suffered most from inflationary pressures. Based on SUSENAS, 2012 data, the Jakarta household's fuel consumption on average was about Rp 210,452 per month. By assuming that the household number in Jakarta is 2,325,973 units[6] we can estimate that total fuel consumed by Jakarta households in 2012 was 5,118,164,028.12 litres, exceeding the total quota set by Pertamina which was only 4,282,882,000.00 litres (see Table 10). Since this study only focuses on premium consumption while the total quota set included solar, then we see how large the over consumption of energy in the Jakarta Area was.

Table 12: Household's Fuel Consumption, 2012

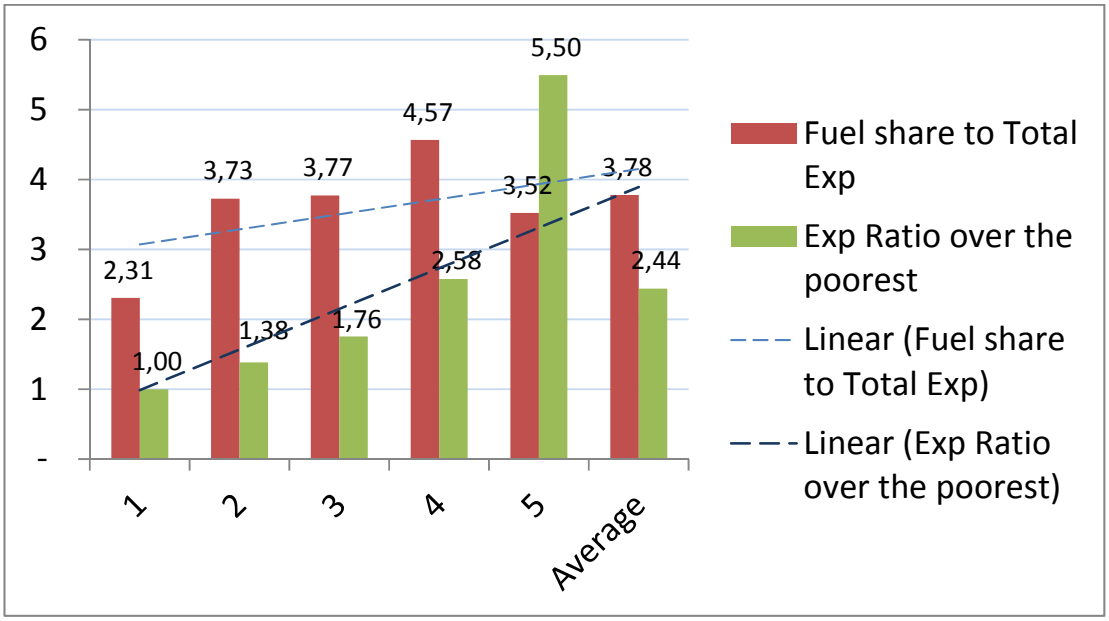
Expenditure's Class	Fuel Expenditure (Litre/mth)	Fuel Expenditure (Rp/mth)	Fuel Share to Total Expenditure (%)	Fuel Share to Non-food Expenditure (%)
1	19.41	52,653	2.31	5.15
2	25.33	117,568	3.73	7.86
3	25.46	151,278	3.77	7.41
4	40.84	268,624	4.57	7.63
5	72.33	441,813	3.52	4.66
Average	37.21	210,452	3.78	6.00

Source: Author's calculation based on SUSENAS 2012

From Table 12, it can be seen that the Rp. amount of fuel consumption of the richest group was around 8 (eight) times higher over the poorest group. However, this amount is comprised of Premium and Pertamax expenditures in total. While, for the lowest income group, it is

[6] World Bank (2014), Jakarta Case Study Overview, Climate Change, Disaster Risk And The Urban Poor: Cities Building Resilience For A Changing World. http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1306291319853/CS_Jakarta.pdf

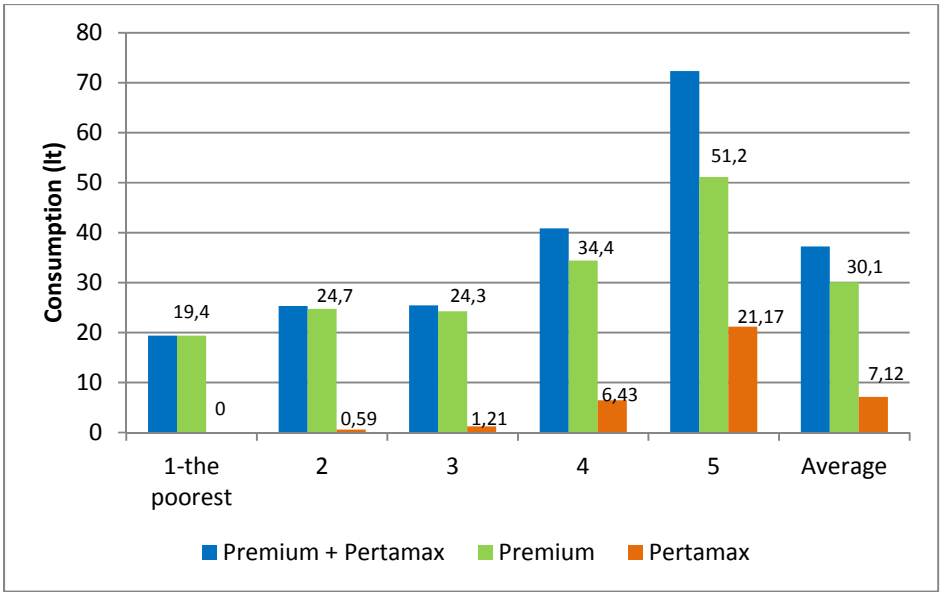
obvious that Pertamax consumption is zero. Figure 8 shows that the Jakarta households' fuel expenditure increases along the groups of income in a similar direction with total expenditure but with higher progressivity.



Source: Author's calculation based on SUSENAS 2012

Figure 9: The Progressivity of Jakarta Households' Fuel Expenditure by Income Group, 2012

Since there is no exact official data about the consumption of premium and pertamax respectively, we employ the assumptions that: (i) the consumption of pertamax of each class is progressively increasing by 10; and (ii) the poorest group's consumption of pertamax is zero litres. Based on these two assumptions, the consumption for each class is shown in Figure 9, showing the average consumption of pertamax in Jakarta was about 7 litres or 20% out of total pertamax plus premium consumption; implying that the consumption of subsidized fuel (premium in this case) greatly exceeded the consumption of Pertamax which was not subsidized; even the richest may choose to consume subsidized fuel (premium) instead of pertamax since the price of premium is cheaper.



Source: Author's calculation based on SUSENAS, 2012

Figure 10: Consumption of Pertamax and Premium (in Litres), 2012

The monthly average fuel consumption of the 4th class was about 34.4 litres of premium and 6.4 litres of pertamax (15.7%). While the richest consumed 51.2 litres of premium and 21 litres of pertamax each month (29%). The richest class's consumption of premium was even higher compared to the poorest class since the middle up and the richest usually has more than one car, the new car may uses Pertamax, but the old ones they have are unlikely to use Pertamax, instead of Pertamax, they will consume premium.

Table 13: Amount of Fuel Subsidy and Premium Quota at National Level

	2011	2012	2013	2014
National fuel subsidy (billion Rp)	165,161	137,000	199,850.6	194,900
National premium subsidy (billion Rp)	79,780	107,250	83,500	68,800
National PSO's premium quota (million litre)	23,190.5	24,410	30,770	32,460
Premium price (in Rp)	4,500	4,500	6,500*	6,500

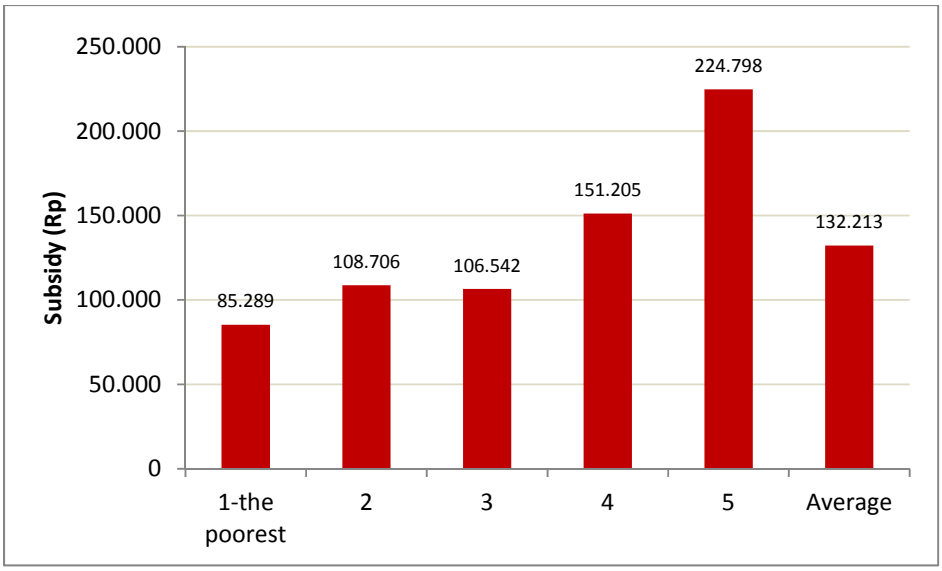
Note: * starting June 1, 2013

Source: Pertamina, various publications, author's calculation and estimates.

During 2012, the premium price was Rp.4,500/litre. The price remained the same until March, 2013. As is depicted from Table 13, the size of national fuel subsidy in 2012 was Rp 137 trillion. Among them, 107 trillion was allocated for premium subsidy. With the PSO's premium quota set at 24,410 million litres, the amount of subsidy per litre in 2012 was Rp 4,393. It means that the economic price of premium in 2012 was Rp 8,893. Respectively, the amount of subsidy per litre of premium for each year 2011, 2012, 2013, and 2014 are estimated to be Rp 3,440 of Rp 7,940 per litre, Rp 4,393 of Rp 8,893 per litre, Rp 2,713 of Rp 9,214 per litre, and Rp 2,119 of Rp 8,620 per litre. Reducing the fuel premium price to Rp 6,500 on January 2015 after it hit Rp 9,800 in December 2014 suggests that the Government still implicitly subsidizes (through Pertamina) the premium price by a significant amount, though

international oil prices have fallen sharply from the second half of 2014 so lessening the amount of implicit subsidy provided.

At the same time, the volume of Jakarta's PSO premium quota over the national quota was 0.0997 %. Therefore, the amount of fuel subsidy for DKI Jakarta for 2012 equals to Rp10.695 trillion. Applying this amount of Jakarta fuel subsidy to the average household consumption for premium results in an estimate that the monthly average subsidy per household living in Jakarta in 2012 was Rp 132,213. Figure 9 shows that the distribution of the subsidy in Jakarta favours the richest group compared to the poorest group. The poorest households of course received the full amount of that subsidy since they consume no pertamax. The monthly subsidy amount of Rp 85.289 applied to the poorest is easy to make sense of since the poorest are most unlikely to have vehicles. However, the Jakarta richest households, in fact, benefited from larger subsidies than the amount of the average premium subsidy. The size of premium subsidy gained by the 5th expenditure class was 2.6 times higher compared to amount obtained by the 1st expenditure class.



Source: Author's calculation

Figure 11: Amount of Fuel Subsidy by Household's Income Group, 2012

4.1. Immediate Impact

The aim to improve people's welfare through easy and better access to public services and the belief that the fuel subsidy was a poor policy brought greater pressure for fuel subsidy removal. This was the first issue faced by the new elected President Joko Widodo. By applying the premium's economic price of 2012, which was Rp 8.893, the average fuel's costs borne by households in Jakarta at average was Rp 342,665 each month and the new Government sought to eliminate this burden.

Using the naïve assumption that there is no inflationary effect of the subsidy, Table 14 shows that the immediate impact of applying a Rp 8,893 premium price results in purchasing power dropping by almost 2.4 % on average. The poorest group proportionally bears the largest amount of this lower purchasing power compared to other groups. It is even worse because

the tendency is regressive toward the richest group. Comparing the cost to non-food expenditure, the poorest group spent a higher 13.5% of their non-food expenditures on fuel compared to 7.5% for the richest group. This accordingly, reduces the poor groups' capacity to spend on their education and health needs. The richest group with much larger income suffers to a lesser extent with only 7.03% of their non-food expenditures going on fuel (which was lower than the average (9.77%).

Table 14: Cost of Subsidy Borne by Households

Class	Fuel's cost born by households due to subsidy reduce (Rp/mth)	Ratio of fuel cost to non-food expenditure after subsidy removal (%)	Household's purchasing power after subsidy reduce (Rp/mth)	Difference in purchasing power (%)
1	137,941	13.48	2,196,234	-3.74
2	226,274	15.12	3,046,803	-3.44
3	257,821	12.63	3,901,603	-2.66
4	419,829	11.93	5,728,520	-2.57
5	666,611	7.03	12,312,853	-1.79
Average	342,665	9.77	5,433,370	-2.38

Source: Author's calculation

4.2. Intermediate and Long Term Impact

Beside the immediate impact, we considered further impacts, so called intermediate and long term effects, since the amount of subsidy on fuel is considered to actually and psychologically influence business behaviour by increasing prices on other goods and services in general; thus raising the inflation rate. There are three scenarios analysed in this study:

1. *Scenario 1: Premium price Rp 8,893/lt; Increase from initial price: Rp 4493.6/lt;*
2. *Scenario 2: Premium price Rp 6,500/lt; Increase from initial price: Rp 2,000/lt; and*
3. *Scenario 3: Premium price Rp 12,500/lt; Increase from initial price: Rp 8,000/lt.*

What expert studies have found about the fuel price impact on inflation varies. This study has insufficient resources to analyze the impact so it will utilize the result from recent studies which are as follows:

1. Arief Anshory Yusuf from LP3E a.k.a CEDS FE Unpad (2013): A 1% increase in fuel price will add 0.055% to national inflation;
2. Teguh Dartanto from LPEM UI (2005): Fuel price increase (Premium price rise by 32.6%, and other fuels rise ranging by 22.2% to 39.9%) brought about 0.9715% rise in overall price inflation; and
3. Deputy of Bank Indonesia Mirza Adityaswara (2014): A Rp.1,000 increase in fuel price will lead to 1.5% inflation.

Considering that the most updated and advanced methodology would be close to the real current conditions, this study decided to employ the result of LP3E Unpad scenario stated that a 1% increase in fuel price will lead to, on average, 0.055% increase on national inflation.

Table 15 provides the result of three simulations of the fuel subsidy impact on households' expenditure in Jakarta. By utilizing result of LP3E (2013) we are able to calculate percentage changes of prices, the national inflation rate, Jakarta's inflation rate, decreases in household expenditures, and the ratio of fuel costs to non-food expenditure.

Table 15: **Fuel Subsidy's Intermediate and Long-Term Impact on Jakarta Households' Expenditure Based on Three Scenarios**

Expenditure Class	Change from existing price (%)	National inflation due to fuel price (%)	Effect of national inflation to DKI (%)	DKI's additional inflation from the baseline (%)	DKI's total inflation due to fuel (%)	Decrease in expenditure (Rp/mth)	Ratio of fuel cost to Non-food expenditure (%)
Scenario 1: Premium price Rp 8,893/lt							
1	97.63	5.3	1.04	5.56	10.08	-230,019.86	22.48
2						-318,133.93	21.26
3						-404,095.45	19.80
4						-592,785.45	16.85
5						-1,264,028.02	13.33
Average						-561,114.09	
Scenario 2: Premium price Rp 6,500/lt							
1	44.44	2.44	1.04	2.53	7.05	-160,887.21	15.72
2						-222,518.53	14.87
3						-282,644.25	13.85
4						-414,623.32	11.78
5						-884,123.41	9.32
Average						-392,470.81	
Scenario 3: Premium price Rp 12,500/lt							
1	177.78	9.78	1.04	10.13	14.65	-334,174.36	32.66
2						-462,187.05	30.89
3						-587,072.51	28.77
4						-861,202.58	24.47
5						-1,836,388.16	19.36
Average						-815,190.21	

Source: Calculation based on SUSENAS, 2010, 2011, and 2012.

Scenario 1 starts with removing subsidy resulting in an increase of 97.63% in Premium Price to become *Rp 8,893/lt.* Using the result from LP3E (2013), thus national inflation will rise by 5.37%. Taking the contribution of Jakarta's Inflation rate to the national rate, Jakarta's inflation rate becomes 10.08%. This raise in Inflation will have an impact on decreasing households' monthly expenditure ranging from Rp 230,019.86 decrease in the poorest group to Rp 1,264,028.02 in the richest one, on average all household groups' expenditure/month

decrease by Rp 561,114.09. The poorest group will proportionally bear the largest decrease, resulting in the ratio of fuel costs to non-food monthly expenditures to rise to 22.48% (compared to 13.48% under the immediate effect) while the richest with much larger income bear the lowest impact with a ratio of only 13.33% (compared to 7.03% under the immediate effect). This simulation results show that obviously the poorest will bear the largest proportional cost of inflation from increasing premium prices (reducing amount of fuel subsidy).

Respectively, simulation 2 and simulation 3 also produce similar pictures where the poorest will bear: –Rp. 160,887.21 decrease in their monthly expenditure and increasing ratio of fuel cost to non-food monthly expenditure of 15.72% (simulation 2); -Rp 334,174.36 decrease in their monthly expenditure and increasing ratio of fuel cost to non-food monthly expenditure of 32.66% (simulation 3). While the richest bear much lower negative impact with: -Rp 884,123.41 decrease in their monthly expenditure and increasing ratio of fuel cost to non-food monthly expenditure of 9.32% (simulation 2); -Rp 1,836,388.16 decrease in their monthly expenditure and increasing ratio of fuel cost to non-food monthly expenditure of 19.36% (simulation 3).

Note that under all three simulations the inflationary impacts will largely be of a one off nature and will work out of the inflation data over around 12 to 15 months with most price impacts felt in the immediate period of upward fuel price adjustment. Further, the estimates of impacts on expenditure assume that incomes do not rise at all in response to the one off inflationary impact.

Assuming that income levels are fixed and that there are no changes in the behaviour of the people of Jakarta in fuel expenditures, then the simulation results of the three scenarios above can be utilized to estimate how much fuel consumption can be saved by considering that raising subsidized fuel prices are indeed reducing purchasing power, especially reducing the portion of consumption of fuel to non-food monthly expenditure. Using the volume of Jakarta households' fuel consumption in 2012 (see Table 12) and simulation results (Table 15), then:

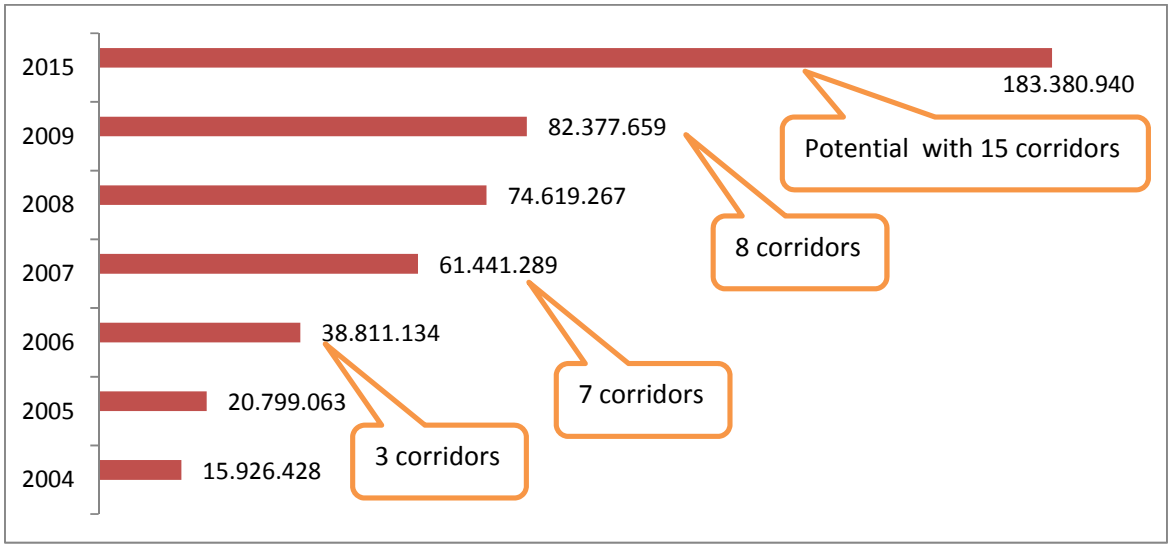
- if the price of subsidized premium rises to Rp 6,500/litre then the amount estimated of fuel that can potentially be saved in Jakarta is around 362,203,873.55 litres;

- if the price of subsidized premium rises to Rp 8,893/litre, then the amount of fuel that can potentially be saved in Jakarta is 517,248,015.80 litres; and

- if the price of subsidized premium rises to Rp 12,500/litre, then the amount of fuel that can potentially be saved in Jakarta is 750,835,833.05 litres.

The actual amount of fuel that can be saved could be even lower as a report of JICA (2004) states that 4% of Busway's users used to be private vehicles users; and Busway passengers have also significantly increased as shown in figure 11; and by the end of 2010, busway has served 4.2 million trips per year. However, on the other hand the demand for fuel in Jakarta and other major cities of the World is known to be quite inelastic especially given the limited supply of alternative public transport to shift to in the short term so in the intermediate term consumers may reduce other non-food expenditures while maintaining higher proportionate expenditure on fuel. In this sense the estimates of fuel savings in this report are likely to be at the extreme of maximum potential levels based on the somewhat unlikely assumption that

all impacts of higher fuel prices are reflected in reduced volumes of fuel usage, rather than in reductions in other forms of consumption or for those able to save through reductions in savings.



Source: Taufik Adiwianto, 2010[7]

Figure 12: Busway Transjakarta Passengers Increasing Trends

In the aspect of GHG, it is noted that each litre of premium produces 2.24 Kg of CO_2 emissions. Fuel consumption potentially saved resulting from 3 previous simulations will also improve the quality of air conditions in Jakarta since the simulation 1, simulation 2, and simulation 3 will have the potential to reduce carbon emission (CO_2) by, respectively: 811 million Kg, 1,158 million Kg, and 1,681 million Kg; The more expensive the fuel prices, the less carbon emissions.

Having reductions in Carbon emissions is not the only advantage of reducing and/or removing fuel subsidies in Jakarta. The National Budget burden can be significantly reduced by some amount of which Central Government could use it to compensate those who bear the negative impacts and/or allocate it for more valuable, productive and well targeted programmes. Assuming that the amount of premium subsidy in 2014 is Rp 2,119 as estimated from Table 13, the amount of national budget that can be save from only the Jakarta distribution area with premium price: Rp 6,500, Rp 8,893, and Rp 12,500 are respectively: Rp 767.5 billion, Rp 1.1 trillion, and Rp 1.6 trillion. Budget savings estimates of course ultimately depend on international fuel prices and foreign exchange rates. At current (April 2015) settings a premium price of Rp 8,893 per litre is close to the economic price and accordingly subsidies would be removed entirely if this price prevailed at current conditions. At current settings a premium price of Rp 12,500 per litre in April 2015 would be around Rp 3,500 per litre above

[7] Transjakarta Busway; Lessons Learned Behind the Contribution to Public Transport Reform in Jakarta: How to Improve Level of Service and System Efficiency, Presented in the 5th Regional EST Forum, Bangkok August 2010.

the economic price and would not only eliminate subsidy payments but would also if applied be akin to a levy or tax on fuel and would provide significant additional revenues to the budget.

Table 16: Progressivity of the Fuel Subsidy

Expenditure Class	Household's Premium Consumption (Lt)	Subsidy (Rp/lt)	Average Household subsidy (Rp. mth)	Progressivity of subsidy Benefit (%)
1	18.46	2,000	36,923.66	10.59
2	24.09	2,000	48,188.22	13.81
3	24.21	2,000	48,425.40	13.88
4	38.85	2,000	77,690.71	22.27
5	68.79	2,000	137,586.23	39.44
Total			348,814.22	

Source: Calculation based on SUSENAS, 2010, 2011, and 2012.

Furthermore, by calculating progressivity of the subsidy on average household consumption levels in Jakarta, it is found that the fuel subsidy will proportionally even more benefit the richest group, based on the assumption that the amount of subsidy is held constant at Rp.2,000/litre (see Table 16). Since the richest group consumes more fuel than the poorest group, the fixed amount of subsidy of Rp 2,000 will still benefit them more, because the portion of subsidy enjoyed by the richest is almost 4 (four) times largest than one enjoyed by the poorest group. The poorest group receives 10.6% of the total subsidy while the richest group receives 39.4% of the subsidy.

4.3. Impact on Poverty and Inequality

In addition to simulations carried out to look at the medium and long-term impact in Jakarta from changes in the amount of subsidized premium price due to the reduction and elimination of energy subsidies this study also simulates the impact of changes in the subsidized premium price variations on two aspects that are always presented as the major reasons of the pro energy subsidy policy in Indonesia: (i) poverty and (ii) income inequality (in this case is the Gini coefficient) in Jakarta.

Based on SUSENAS 2012 data we are able to calculate the Gini coefficient in Jakarta in 2012. With the help of data from the poverty line (PL) published by BPS and the distribution of income groups based on the expenditure from the SUSENAS analysis, we therefore can also estimate the level of poverty growth in Jakarta.

Table 17 presents the simulation results of three subsidized premium price scenarios to the estimated increase in the number of poverty level along with the value of the Gini coefficient as the end of result. It can be seen that higher price of subsidized premium in Jakarta will moderately increase poverty levels. However, the expected growth rate of poverty is not as great as many claim will happen. Assuming one certain basic value of the poverty level, the reduction of subsidies that lead to higher prices of subsidized premium will result in some impact on the severity of poverty and higher inequality. However, the magnitude of the increase in the poverty rate only occurs below a 1% change. In particular from Table 17:

- An increase in the price of Rp 4,500/litre to Rp 6,500/litre will only increase the poverty rate by 0.38% with the revised inequality Gini coefficient of 0.42871 (compared to the Jakarta Gini index in 2014 of 0.436); and

- Poverty is estimated to grow by 0.43% and 0.66% if the price of subsidized premium rises to Rp. 8.893/litre and Rp. 12,500/litre respectively, while inequality increases moderately to 0.43224 and 0.43239.

These results indicate that income inequality in Jakarta would in fact, be slightly improved if energy subsidies which are of greater benefit the richest group are reduced or eliminated altogether. Of course the results of this simulation comes from the assumptions that other factors determining the rate of inflation and incomes such as the exchange rate, investment, migration, growth; and monetary policies etc. are considered constant. Jakarta as the Capital City and the economic centre of activity becomes a magnet for the influx of people from outside Jakarta especially Bogor, Depok, Tangerang and Bekasi to seek income and a better life in Jakarta. The most updated BPS data showed that Jakarta's population is around 10 million at night and 11.2 million during the day, as many residents from neighbouring areas commute to Jakarta for work.[8]

Table 17: Impact Simulation of Fuel Price Change on the Poverty & Gini Index in Jakarta

Fuel Price (Rp/litre)	Growth of Poverty (%)	Gini
Based: 4,500	**Based Poverty Rate**	**Based Gini**
6,500	0.38	0.42871
8,893	0.43	0.43224
12,500	0.66	0.43239

Source: Calculation based on SUSENAS 2012 and BPS data various publications.

[8] Ibid.

5. Conclusions and Recommendation

5.1. Conclusions

i. By analysing Jakarta household's with a classification of 5 income groups, it is estimated that per capita expenditure for the lowest income group in Jakarta was less than half a million rupiah per year while, the richest group's per capita expenditure was about 5.5 times higher compared to the poorest. The gap was even wider when using the ratio of per capita expenditure (Rp/month) resulting in estimates that each person from the richest group, on average, consumes 8.8 times more than persons in the poorest group.

ii. The amount of fuel's consumption of the richest group is around 8 (eight) times higher than the poorest group. Moreover, Jakarta households' fuel expenditure increases along the groups of income in the same direction as total expenditure but with increasingly higher progressivity.

iii. The richest groups' fuel expenditure share to total expenditure is slightly higher than that of the poorest group as the rich have more access to vehicles and the fuel to operate them. Since fuel expenditure is categorized as non-food expenditure and the contribution of non-food commodities to the inflation rate and Poverty Line in Jakarta has recently become larger, this study indicates that the poorest income group obviously suffer most from inflation increases.

iv. The distribution of energy subsidies in Jakarta favours the richest group more than the poorest one. The poorest households receive the full amount of the subsidy since they consume no pertamax. However, the Jakarta richest households still benefit from much larger subsidies than the average premium subsidies earned by all households. The size of premium subsidies gained by the richest group, are 2.6 times higher compared to amount obtained by the poorest group.

v. The Jakarta poorest income group bears the largest costs of fuel price increases by having an immediate effect of lower purchasing power compared to other groups. It is even worse because the tendency is regressive compared to the richest group. Comparing the cost to non-food expenditure, the poorest group suffered more from reduced income for their non-food expenditures than the richest group, which are significant costs for the poor thus decreasing their spending capacities for other priorities such as education and health.

vi. When the inflation rate is taken into account to calculate intermediate and long-term impacts, this study shows that the poorest group suffers significantly since as depicted in immediate impact analysis, the richest will still bear a relatively lower cost in relation to their spending capacities.

vii. Holding everything else constant, the simulation shows that reducing fuel consumption caused by raising fuel price policy will have the effect of reducing carbon emissions by potentially significant amounts, as well as further reducing (or eliminating) the amount of national budget utilized for fuel subsidies in Jakarta.

viii. The estimate of progressivity of fuel subsidies on average household's consumption levels in Jakarta shows a more assuring picture that the fuel subsidies benefit the richest group the most, even with a policy of setting fixed amounts of fuel subsidy per litre of fuel consumed. Since the richest group consumes more fuel than the lower groups, the fixed amount of subsidy per litre of fuel consumed will still benefit more the wealthy, because the portion of subsidy enjoyed by the richest is almost 4 (four) times largest than that received by the poorest group.

ix. Higher prices of subsidized premium fuel in Jakarta will increase poverty levels and worsen measures of income inequality. However, the expected growth rate of poverty is not as high as many claim will happen, with the magnitude of increase in the poverty rate only occurring below the 1% level. On the other hand, the Gini coefficients demonstrate only small variations from the simulations indicating that income inequality in Jakarta may in fact, be slightly improved if energy subsidies that provide far more benefit the richest group are reduced or eliminated altogether.

5.2. Recommendations

i. The short and medium-term solutions to mitigate the impacts of rising fuel prices in Jakarta are to improve existing mass transportation systems (Busway, KRL, etc.) and to develop more advanced, integrated, affordable, and environmentally friendly modes of mass transportation. Obviously, these solutions will be more effective if supplemented also by the conversion of energy policy and the development of alternative energy options such as Liquefied Gas Fuel, Bio-Diesel, Methanol and their supporting facilities and regulations.

ii. As a supplement to (i), there must be exists a moral movement to facilitate growing public awareness to divert the use of private vehicles to public transport. Here the role of the stakeholders, ranging from the Central Government, Local Government, and the various elements of society ranging from educational institutions, agencies / community organizations, including the Jakarta Transportation Council, and others is important to raise awareness and pride of using public transport.

iii. To develop mechanisms of incentives-disincentives to influence Jakarta people's behaviour; both businesses and labour forces in conducting their economic activities in more environmentally friendly ways.

iv. To maximize the major basic public services programmes in Jakarta: health, education, and housing which are capable of being a safety net from the negative impact of fuel price increases that reduce the level of purchasing power and increase the level of poverty in the society.

v. To optimize existing cooperation and collaboration with other autonomous regions bordering Jakarta Area (Jabodetabek) in harmonizing rules and policy efforts related to control inflation and population migration.

vi. To optimize Jakarta's personal income tax revenue primarily in upper and middle-income groups and high value-added taxes for commodities and services directly related to fuel consumption, as well as local taxes that heavily influence consumption or production activities of the community that result in negative externalities.

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