

CHAPTER IV

ANALYSIS

IV.1. Analysis of Initial System

The initial system of Paris Metro will be divided into some categories :

1. Station

The station of paris metro is good enough because it could serves the whole paris area and there are a lot of lines eventhough it is complicated.

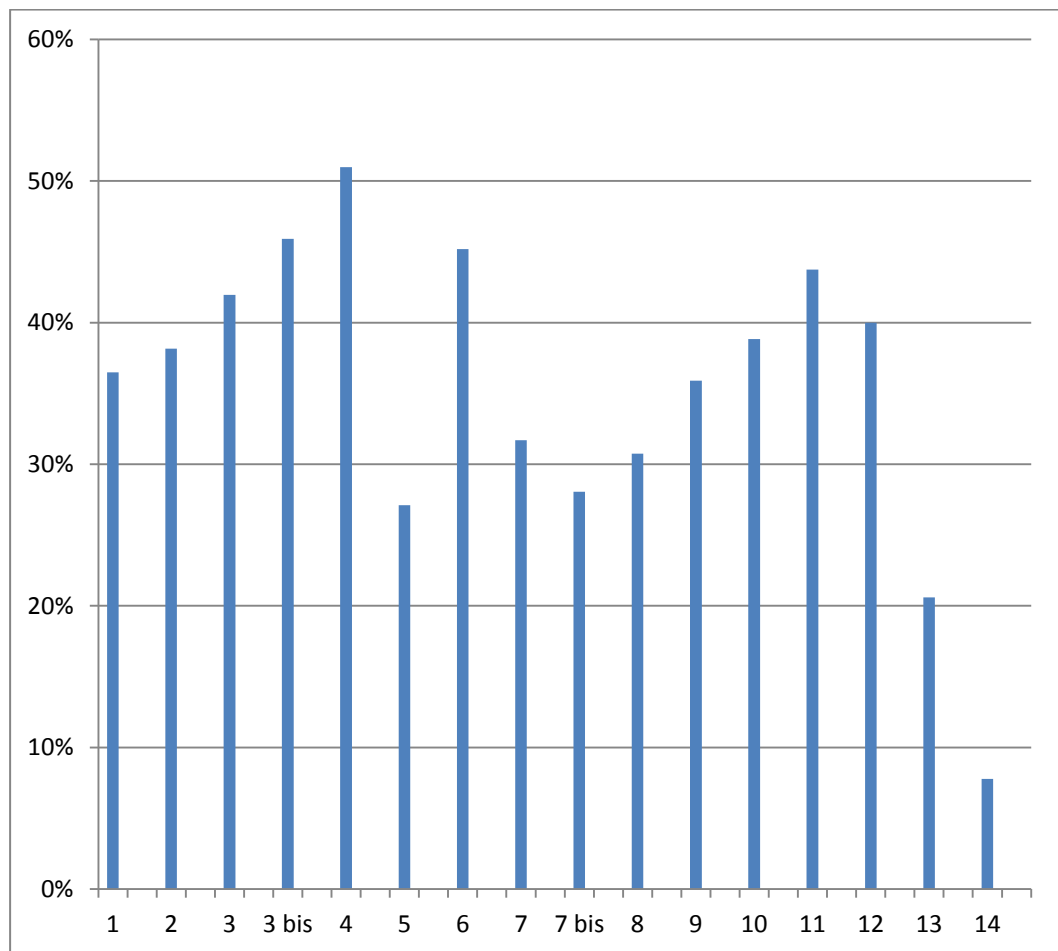
The station serves the customer starts from the ticketing. There are sufficient ticketing machines in every station and then the customer is going to the entrance gate and there are a lot of entrance gate so there is not queueing. The customer will be served by a lot of sign and map so that the customer can easily take a decisions where they are going. The stations can be assumed clean since the customer will stell feel satisfied. The only problem in the station is that the station has some issues regarding to the security of the stations. There are a lot of robbery issues around there.

2. Train

For the train system, the most important things to the customer is that the customer is the punctuality of the train. The researcher feels that the train has a good punctuality. The customer will get into the train and the train itself is clean enough so that there is no problem regarding the cleanliness of the train. The only problem for the train by the observation that being done by the researcher is Paris Metro should do socialisation to the customers or commuters that all of them should being stand-up if there is somebody who is old or pregnant woman coming. This is important to educate the customers that they should know who really need to be sit on the chair. This way of socialisation will not being affect to only a certain passenger with their disability but will also increase the standard of social sensitiveness of Paris person in front of the foreigners since there is a lot of tourists in Paris.

IV.2. Analysis of time consumption

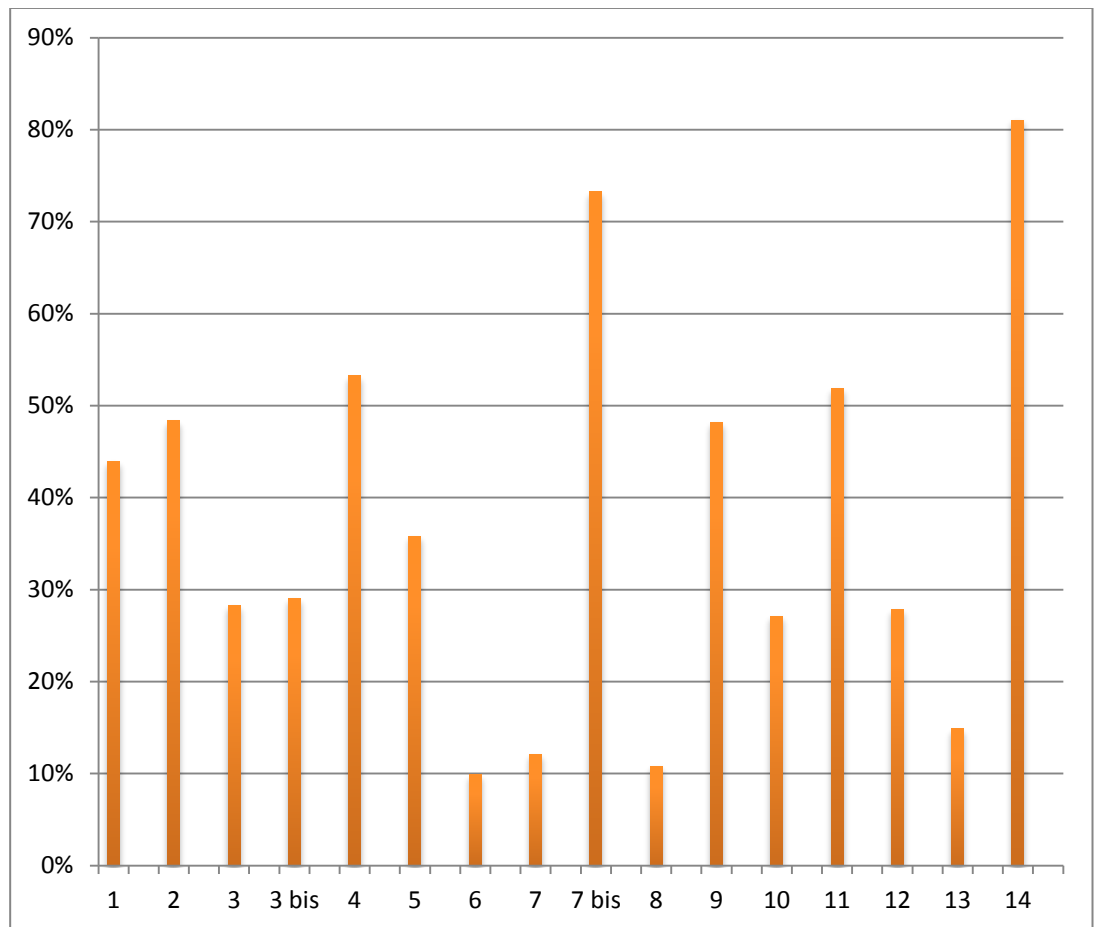
The proposed approach makes a smaller time consumption for the train to pass from 1 station to another station. The time saving from line 2 to line 14 can be seen from Appendix A until Appendix O. The time saving result can be used by the planner to simulate the a new time schedule so that the time schedule of the train can be adaptize to another transportation time such as bus. This is important so that the passengers will have a good connectivity time. The time saving itslef could be affect to the customer satisfaction and it will be higher during the peak hours since there is a lot of commuters at that time. The time saving on each line can be seen on the Picture IV.1



Picture IV.1 Time Saving Diagram

IV.3. Analysis of energy consumption

The proposed approach makes a less energy consumption for the train to pass from 1 station to another station. The energy consumption saving from line 2 to line 14 can be seen from Appendix A until Appendix O. The less energy consumption is the less electricity that will be use. The less electricity will be affect to the carbon emission, CO₂ emission and less money expenses. This is very important nowadays since we have 2 issues recently which is global warming and crisis within the european country. The energy consumption saving on each line can be seen on the Picture IV.2

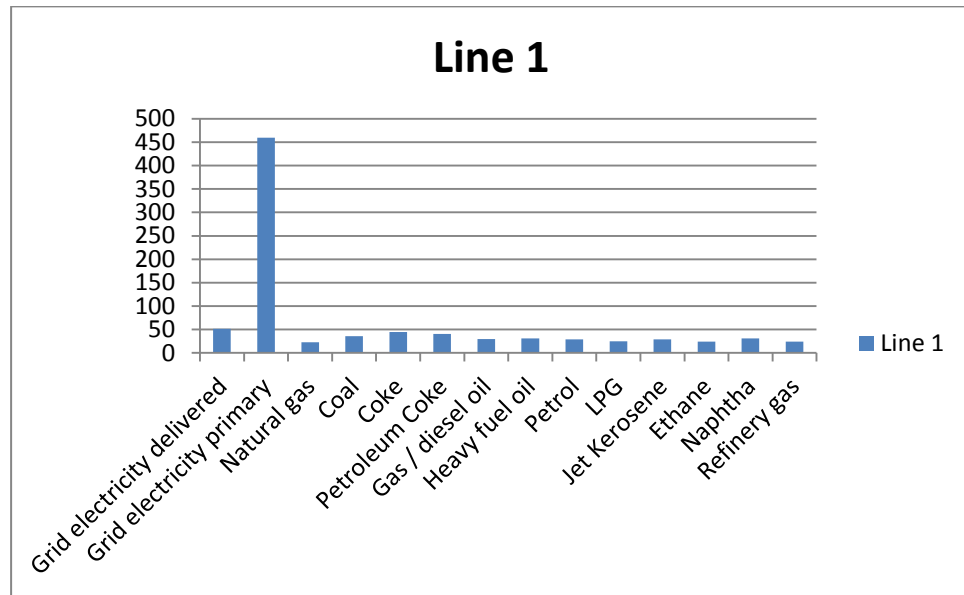


Picture IV.2 Energy Saving Diagram

IV.4. Analysis of carbon emission

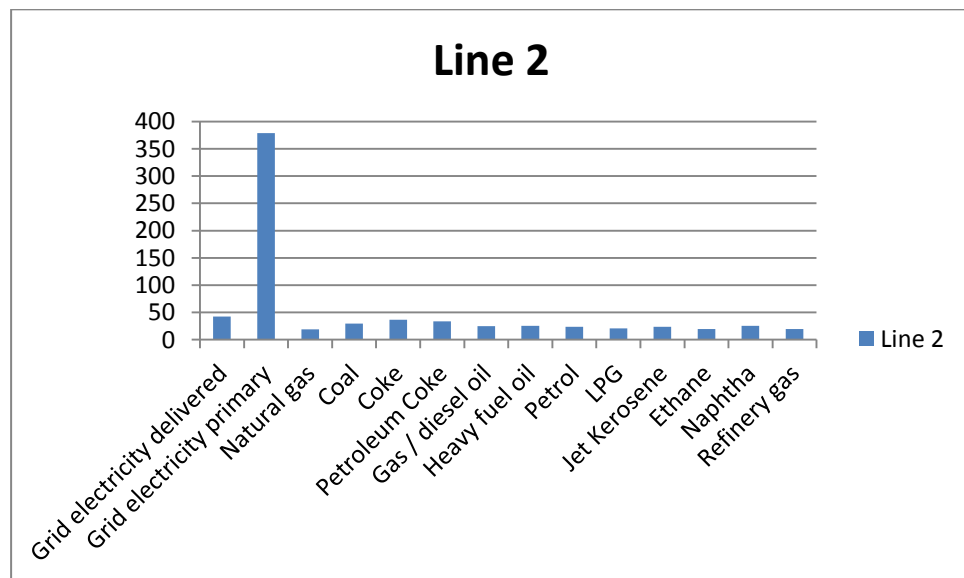
The lower carbon emission depends on the less energy consumption. It also depends on the power plant source. There are several power plant that being use as the comparement such as natural gas, coal, coke, petroleum coke, gas/ diesel oil, heavy fuel oil, petrol, LPG, jet kerosene, ethane, naphtha, and refinery gas.

The carbon emission saving for line 1 can be seen on the Picture IV.3



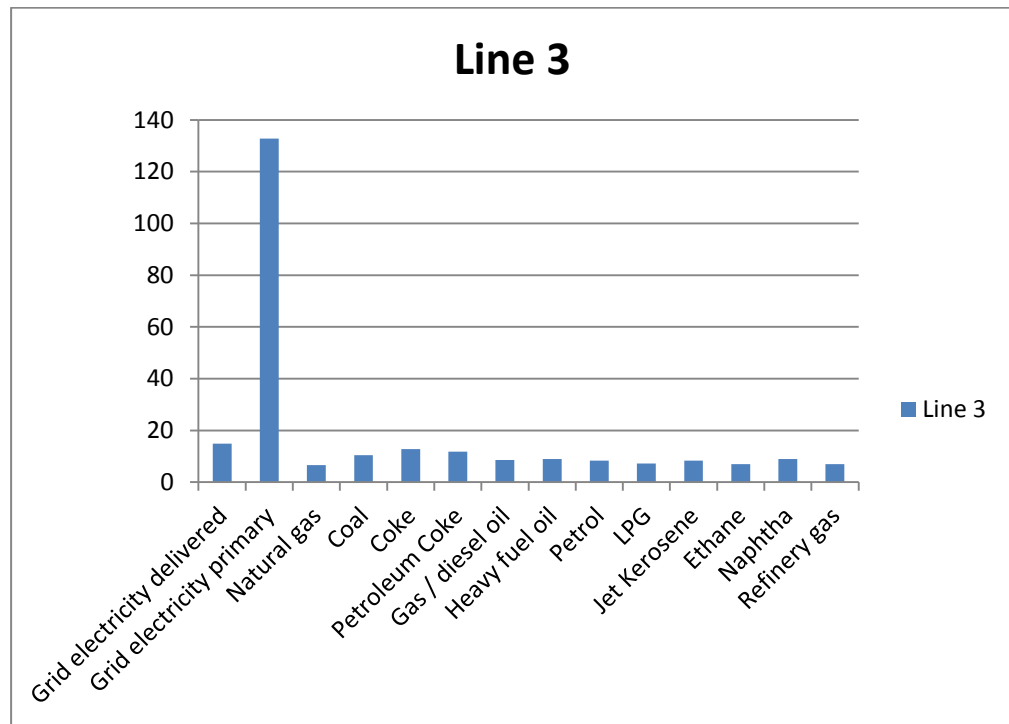
Picture IV.3 Carbon Emission Saving Line 1

The carbon emission saving for line 2 can be seen on the Picture IV.4



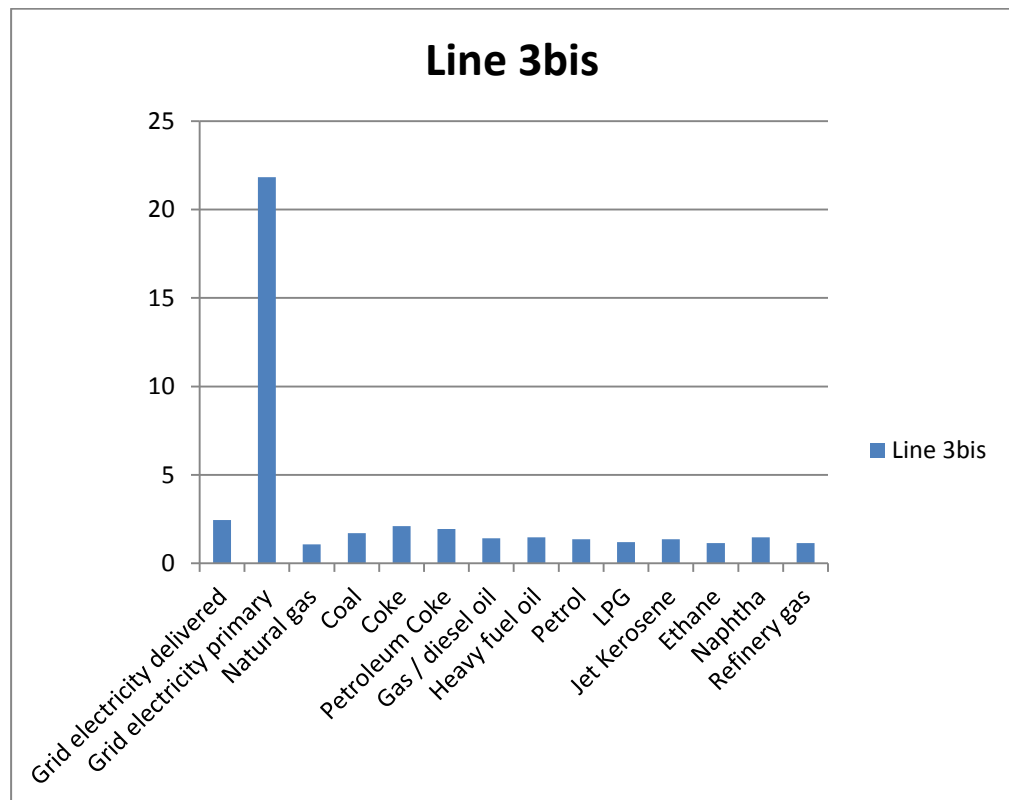
Picture IV.4 Carbon Emission Saving Line 2

The carbon emission saving for line 3 can be seen on the Picture IV.5



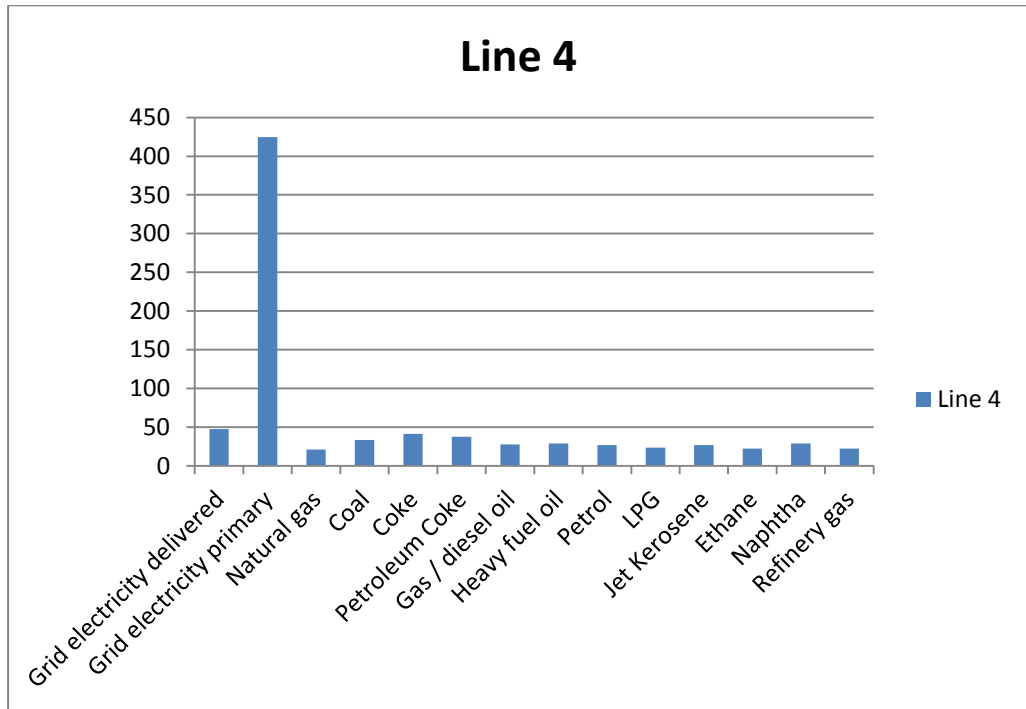
Picture IV.5 Carbon Emission Saving Line 3

The carbon emission saving for line 3bis can be seen on the Picture IV.6



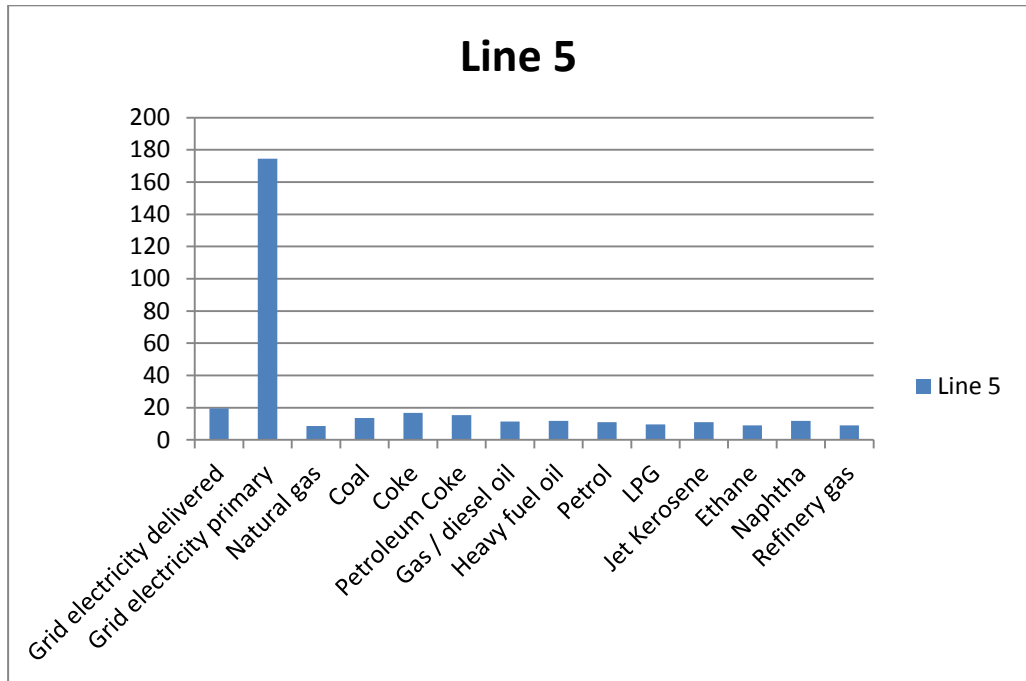
Picture IV.6 Carbon Emission Saving Line 3bis

The carbon emission saving for line 4 can be seen on the Picture IV.7



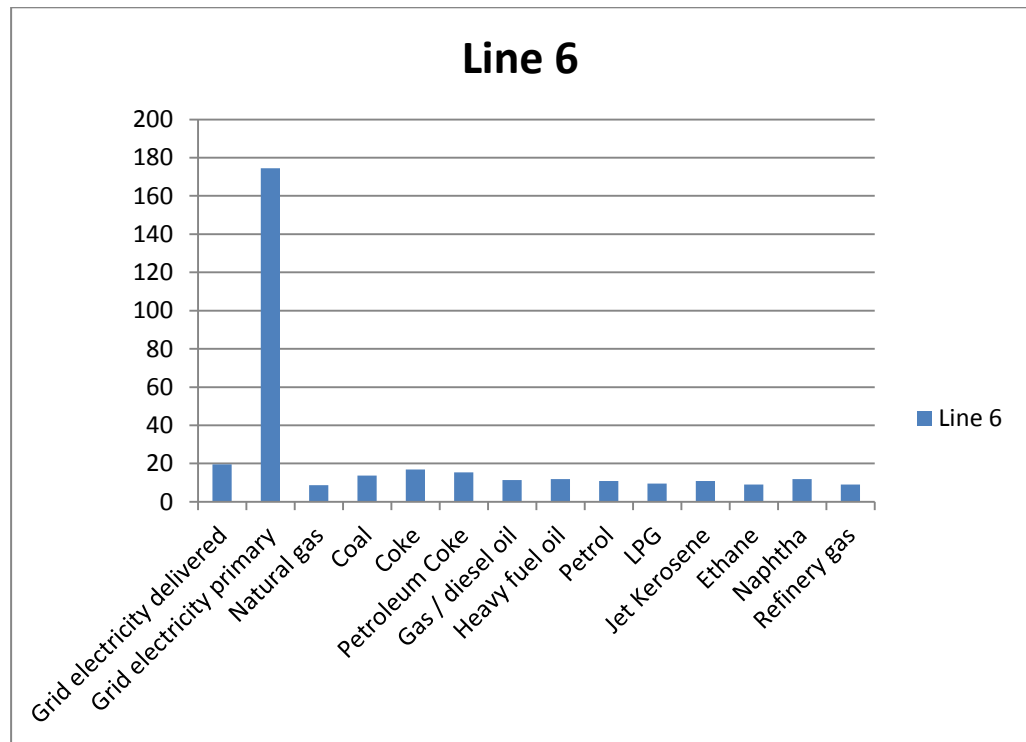
Picture IV.7 Carbon Emission Saving Line 4

The carbon emission saving for line 5 can be seen on the Picture IV.8



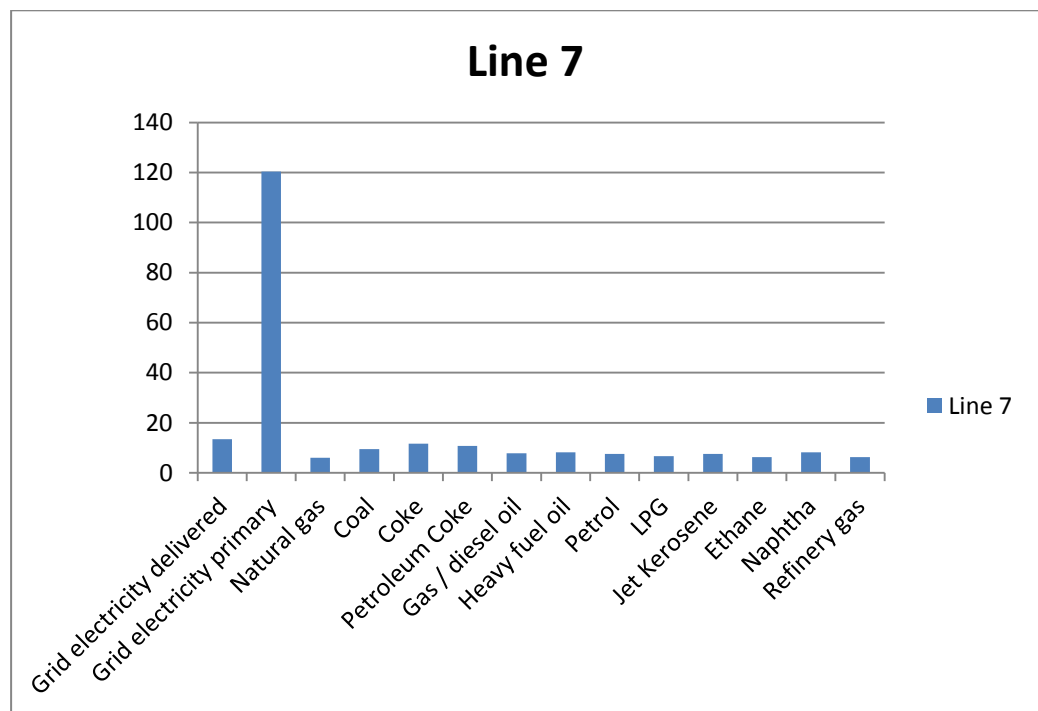
Picture IV.8 Carbon Emission Saving Line 5

The carbon emission saving for line 6 can be seen on the Picture IV.9



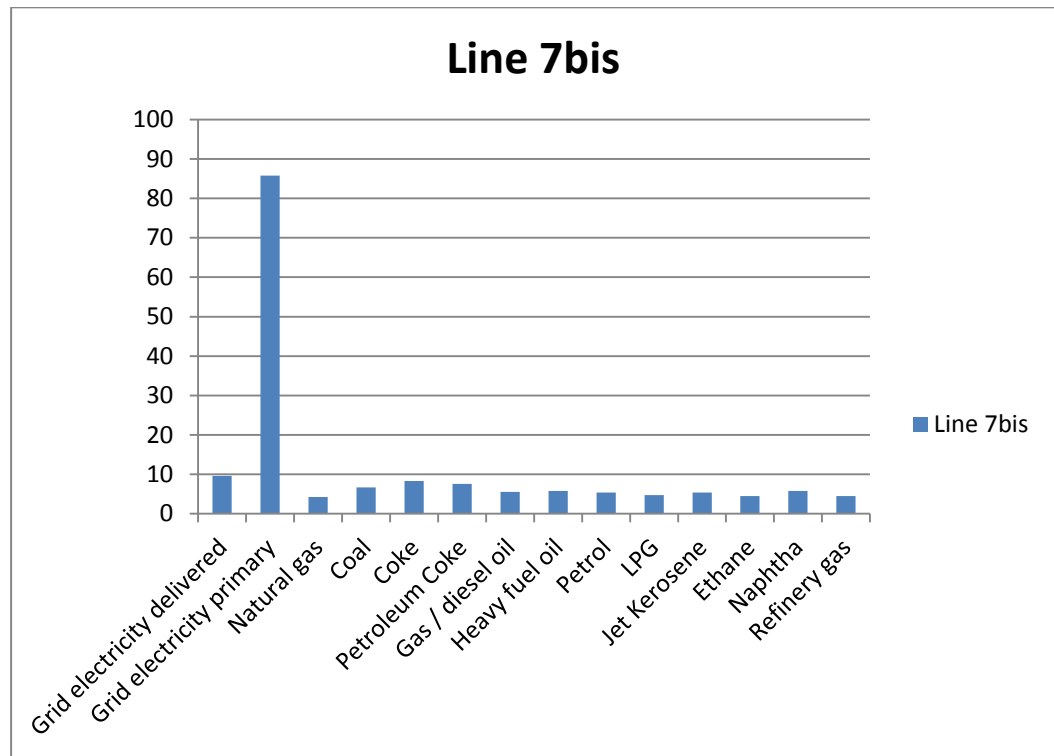
Picture IV.9 Carbon Emission Saving Line 6

The carbon emission saving for line 7 can be seen on the Picture IV.10



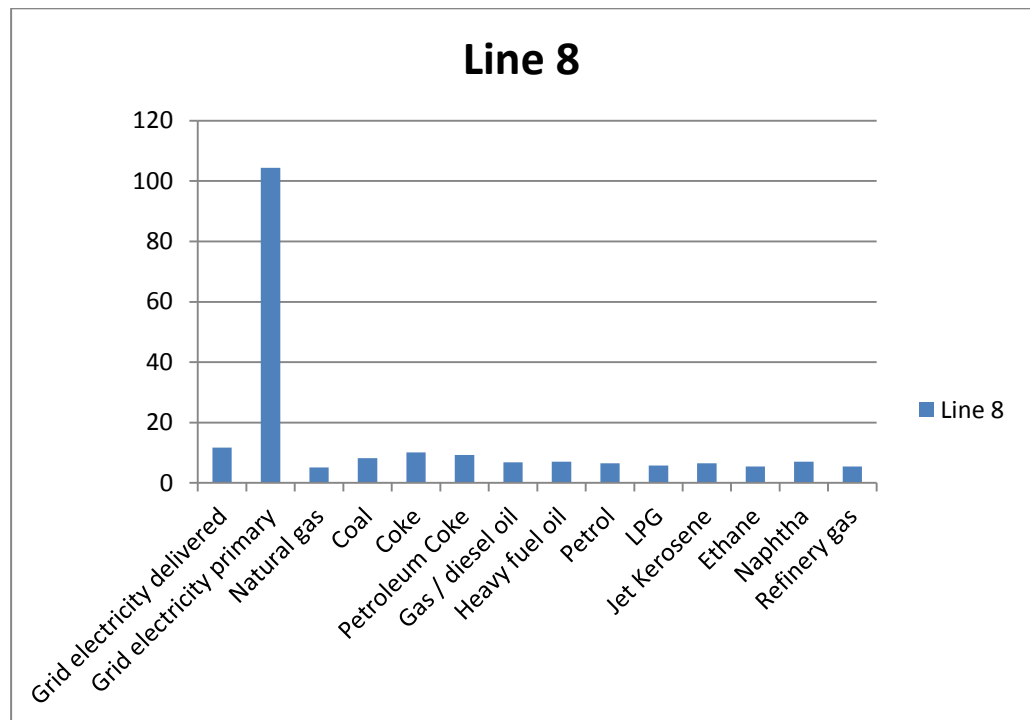
Picture IV.10 Carbon Emission Saving Line 7

The carbon emission saving for line 7bis can be seen on the Picture IV.11



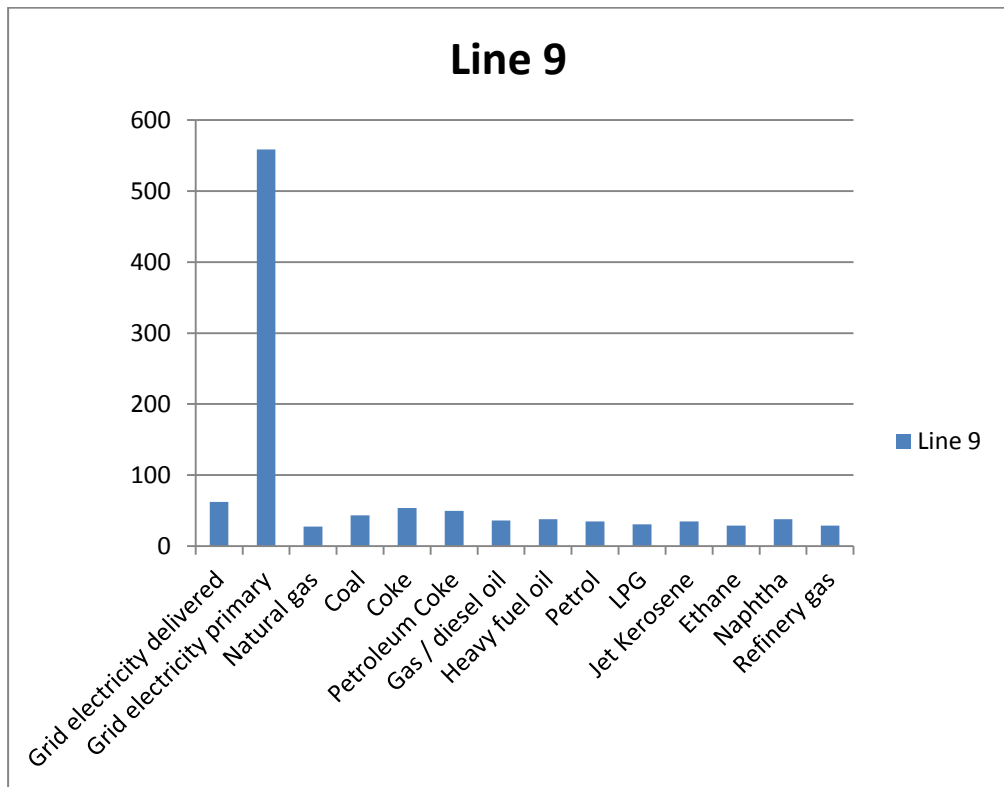
Picture IV.11 Carbon Emission Saving Line 7bis

The carbon emission saving for line 8 can be seen on the Picture IV.12



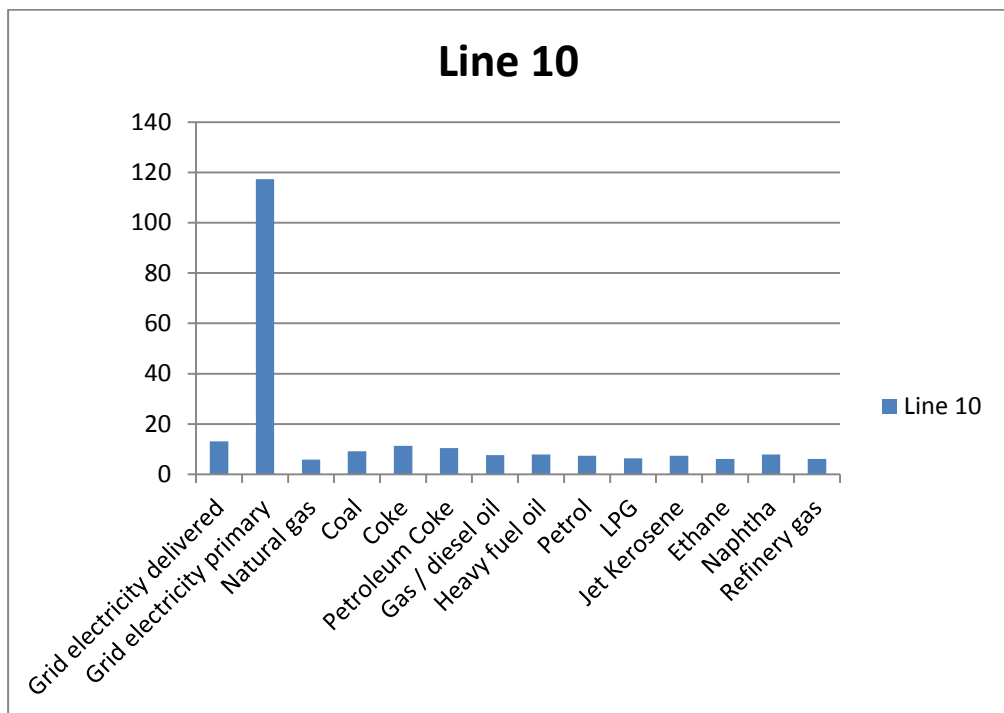
Picture IV.12 Carbon Emission Saving Line 8

The carbon emission saving for line 9 can be seen on the Picture IV.13



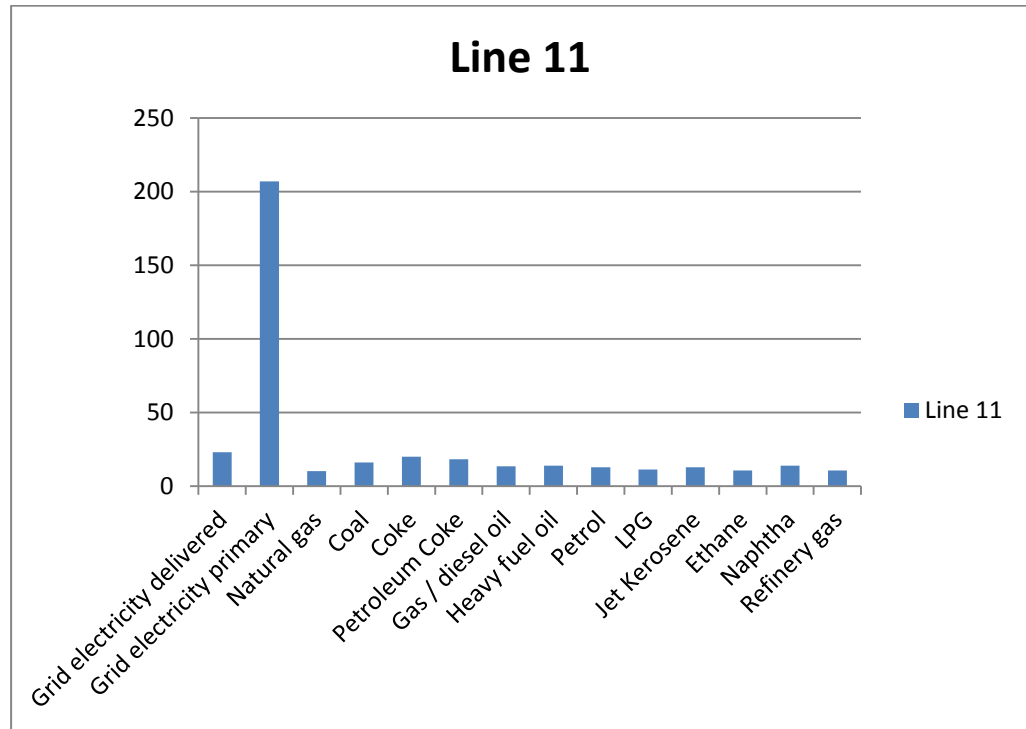
Picture IV.13 Carbon Emission Saving Line 9

The carbon emission saving for line 10 can be seen on the Picture IV.14



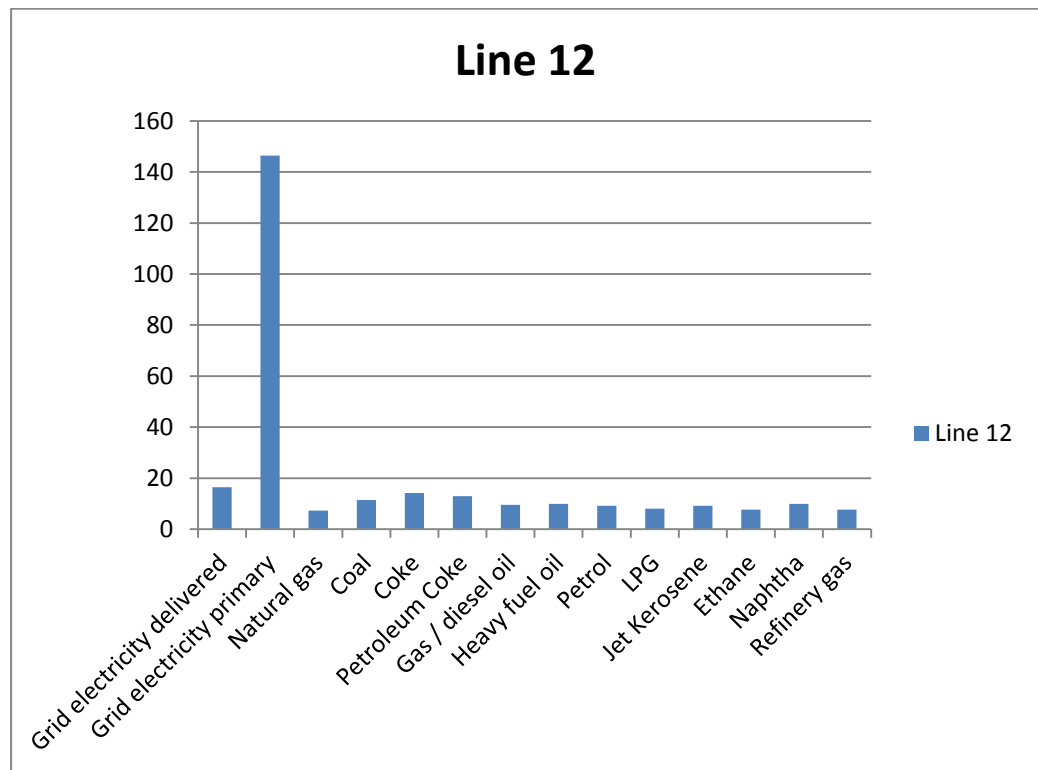
Picture IV.14 Carbon Emission Saving Line 10

The carbon emission saving for line 11 can be seen on the Picture IV.15



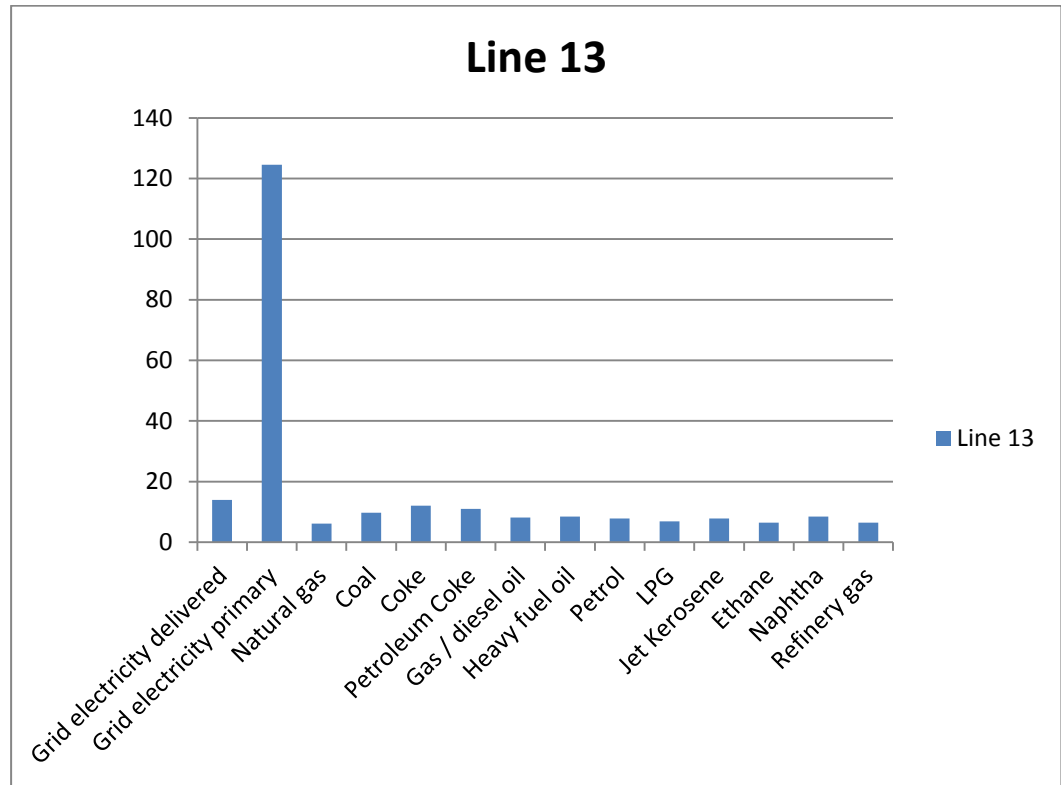
Picture IV.15 Carbon Emission Saving Line 11

The carbon emission saving for line 12 can be seen on the Picture IV.16



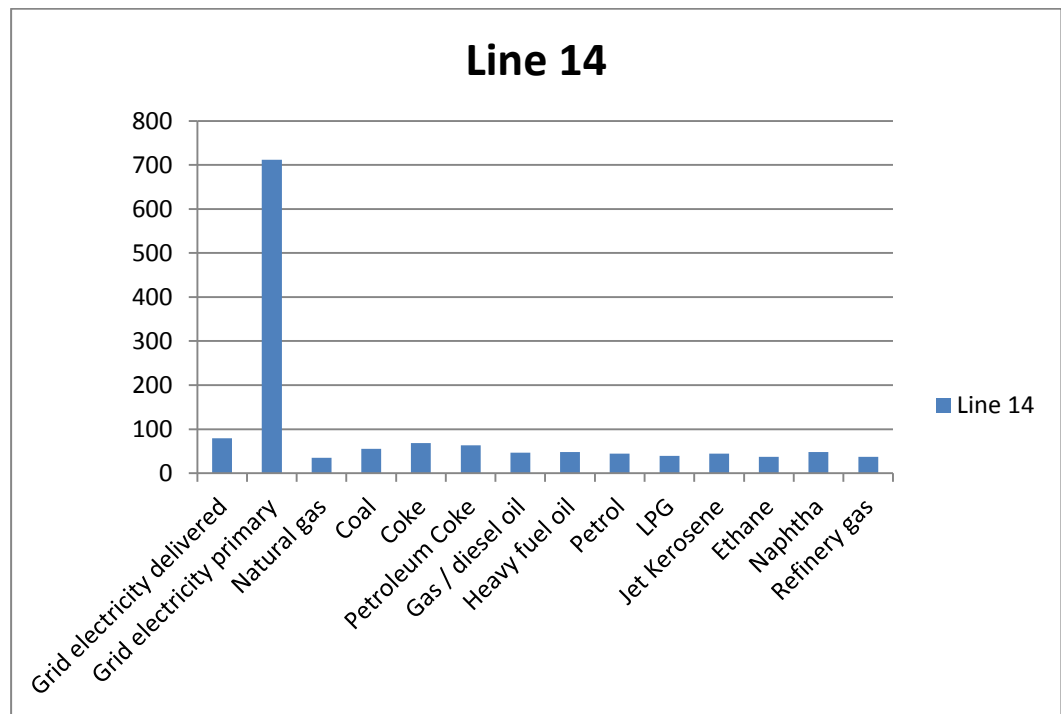
Picture IV.16 Carbon Emission Saving Line 12

The carbon emission saving for line 13 can be seen on the Picture IV.17



Picture IV.17 Carbon Emission Saving Line 13

The carbon emission saving for line 14 can be seen on the Picture IV.18

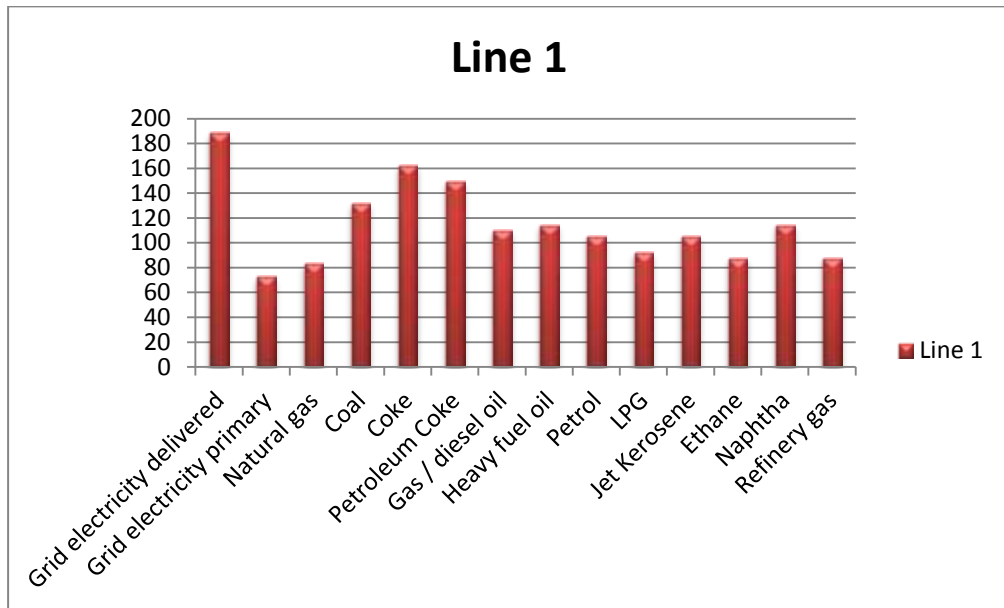


Picture IV.18 Carbon Emission Saving Line 14

IV.5. Analysis of CO₂ emission

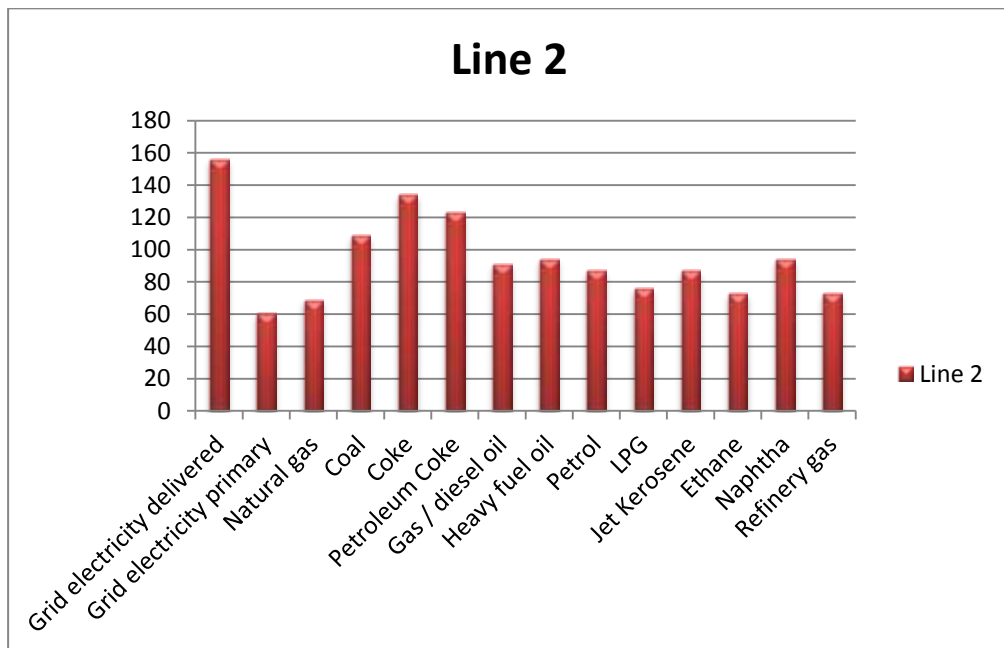
The lower carbon emission depends on the less energy consumption. It also depends on the power plant source. There are several power plant that being use as the comparement such as natural gas, coal, coke, petroleum coke, gas/ diesel oil, heavy fuel oil, petrol, LPG, jet kerosene, ethane, naphtha, and refinery gas.

The CO₂ emission saving for line 1 can be seen on the Picture IV.19



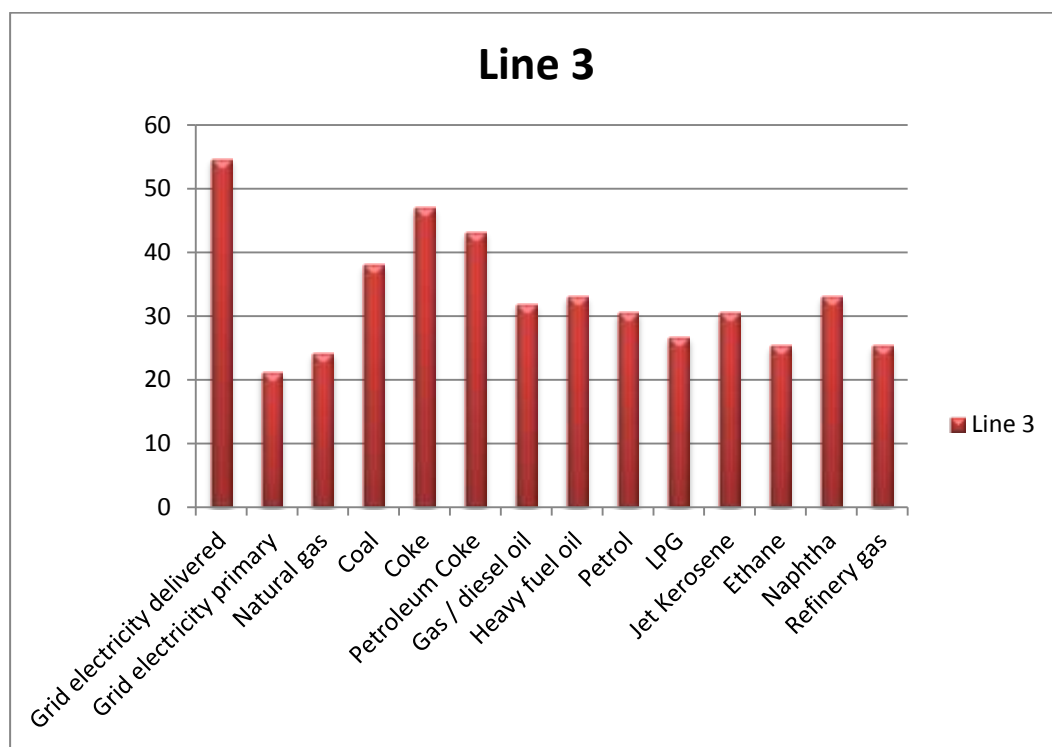
Picture IV.19 CO₂ Emission Saving Line 1

The CO₂ emission saving for line 2 can be seen on the Picture IV.20



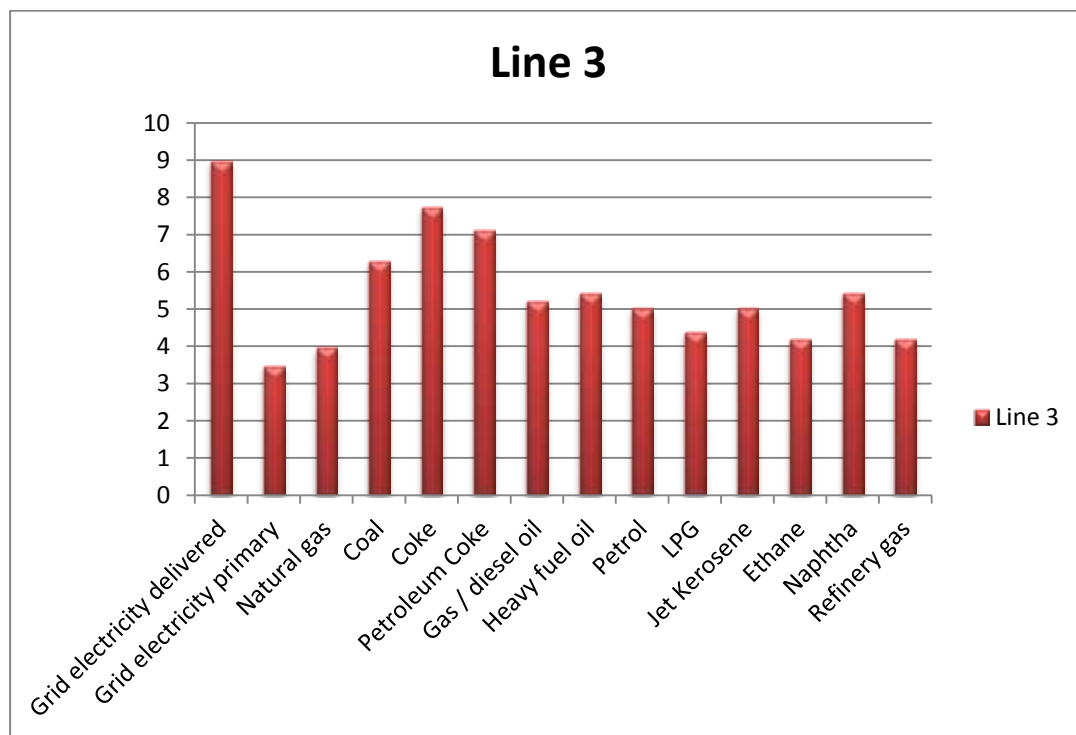
Picture IV.20 CO₂ Emission Saving Line 2

The CO₂ emission saving for line 3 can be seen on the Picture IV.21



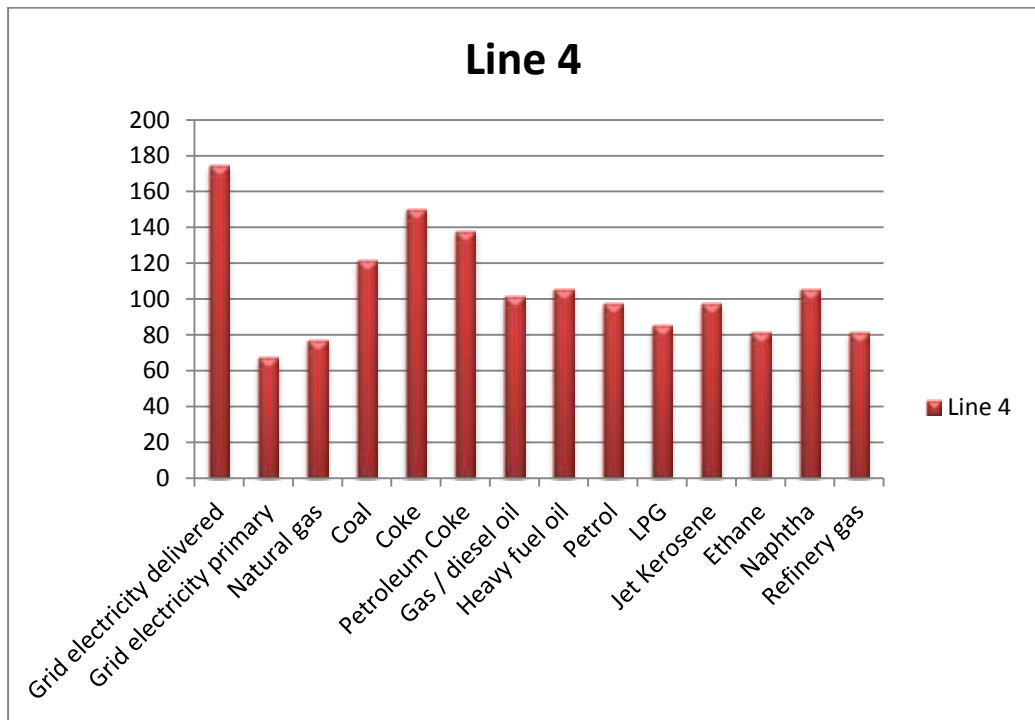
Picture IV.21 CO₂ Emission Saving Line 3

The CO₂ emission saving for line 3bis can be seen on the Picture IV.22



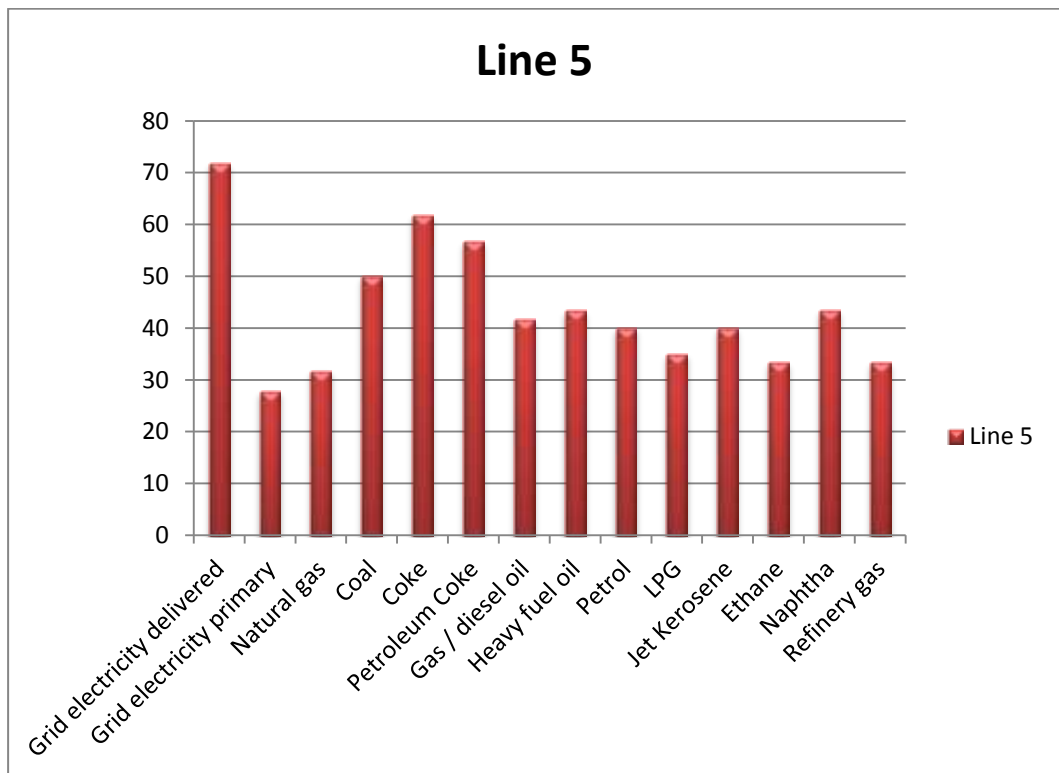
Picture IV.22 CO₂ Emission Saving Line 3bis

The CO₂ emission saving for line 4 can be seen on the Picture IV.23



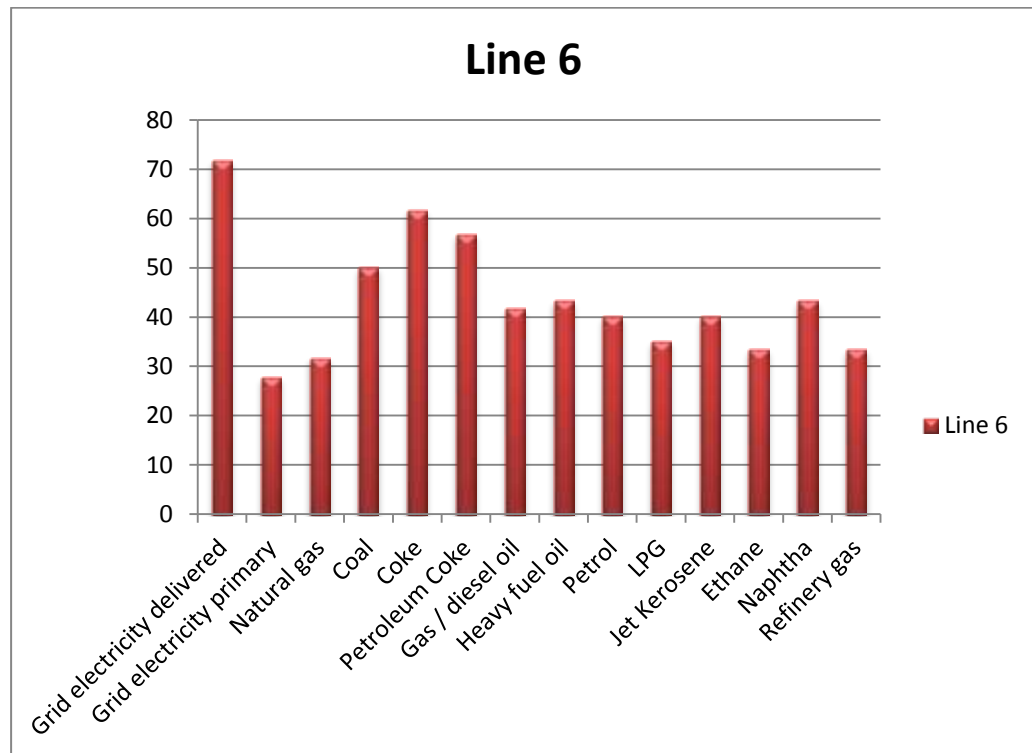
Picture IV.23 CO₂ Emission Saving Line 4

The CO₂ emission saving for line 5 can be seen on the Picture IV.24



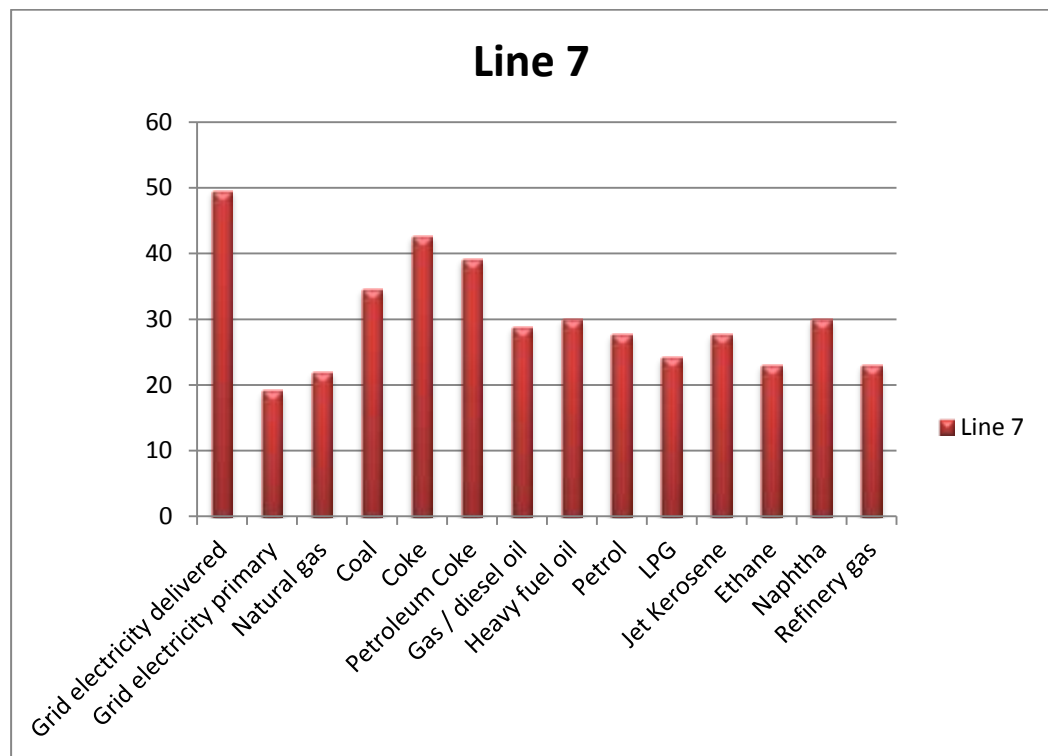
Picture IV.24 CO₂ Emission Saving Line 5

The CO₂ emission saving for line 6 can be seen on the Picture IV.25



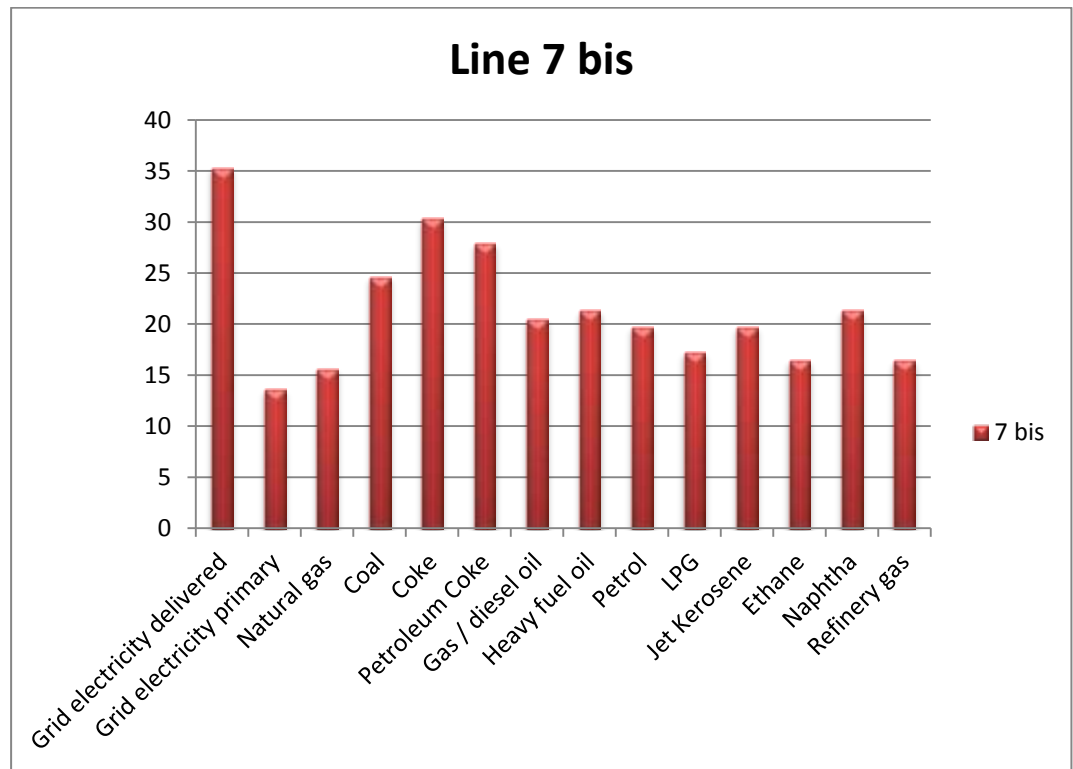
Picture IV.25 CO₂ Emission Saving Line 6

The CO₂ emission saving for line 7 can be seen on the Picture IV.26



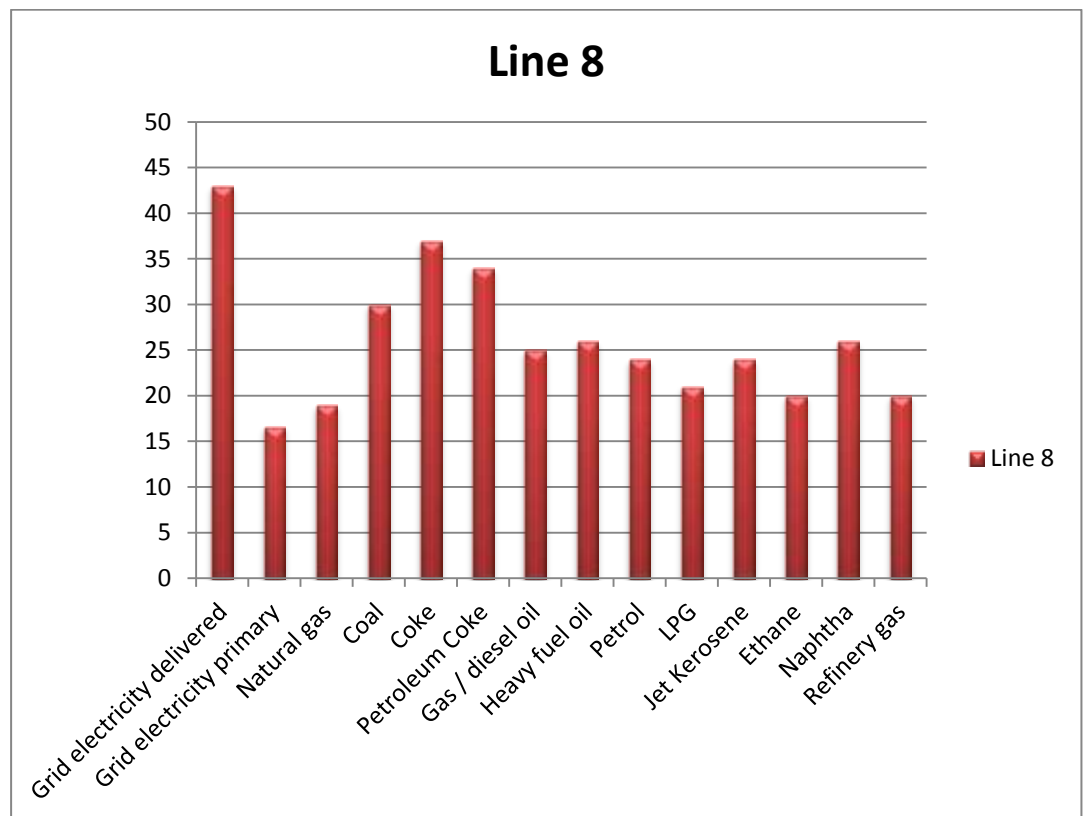
Picture IV.26 CO₂ Emission Saving Line 7

The CO₂ emission saving for line 7 bis can be seen on the Picture IV.27



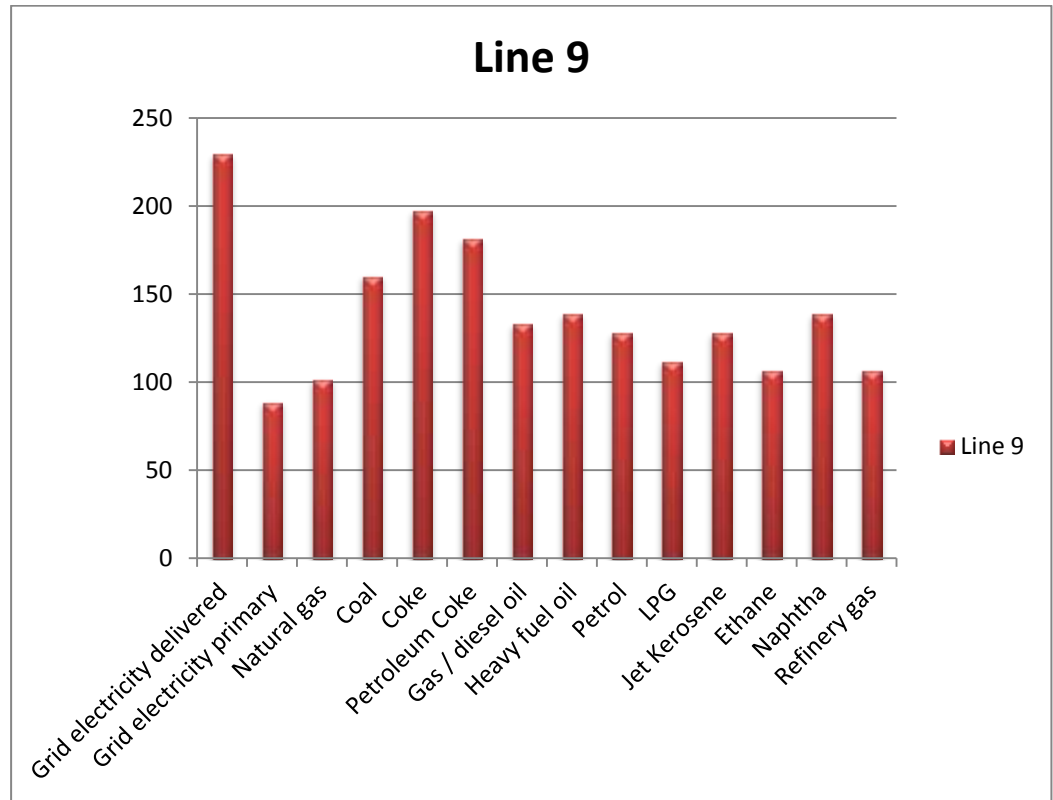
Picture IV.27 CO₂ Emission Saving Line 7 bis

The CO₂ emission saving for line 8 can be seen on the Picture IV.28



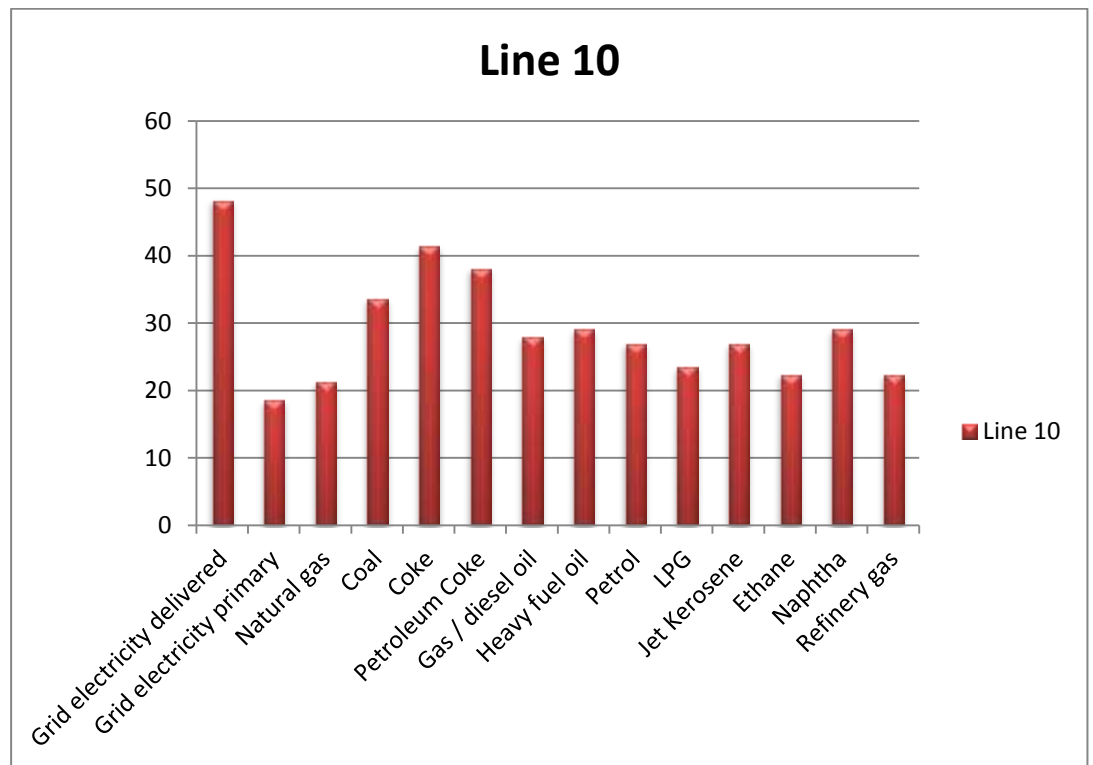
Picture IV.28 CO₂ Emission Saving Line 8

The CO₂ emission saving for line 9 can be seen on the Picture IV.29



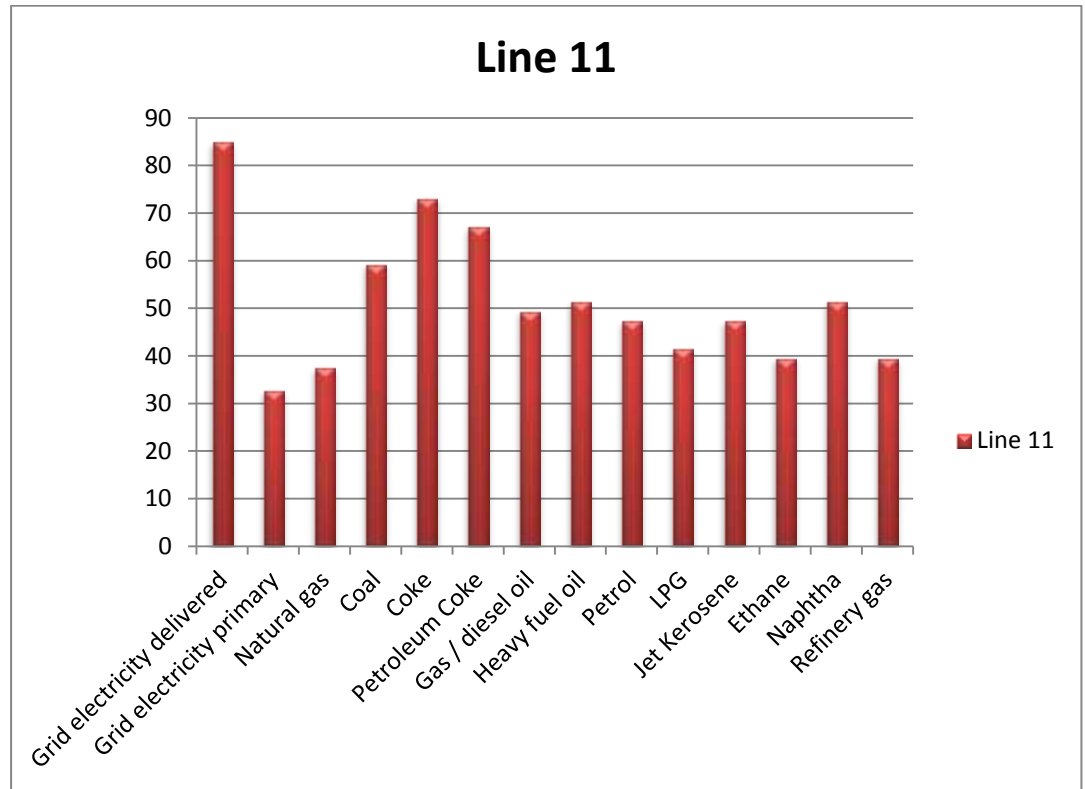
Picture IV.29 CO₂ Emission Saving Line 9

The CO₂ emission saving for line 10 can be seen on the Picture IV.30



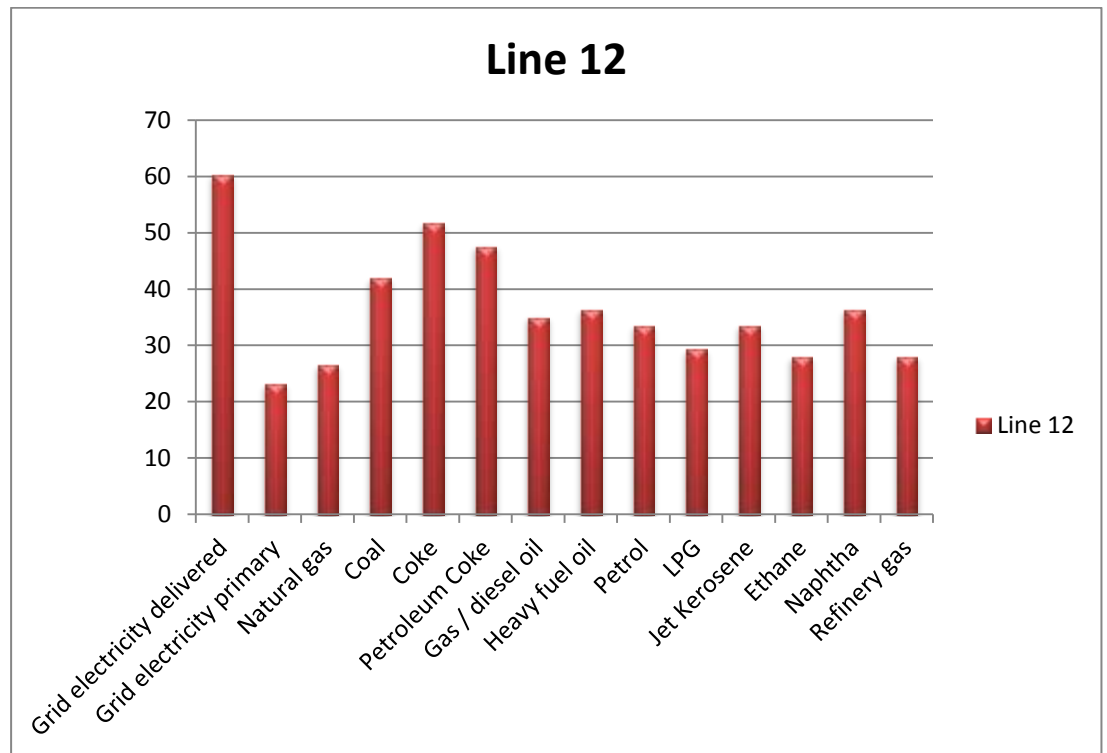
Picture IV.30 CO₂ Emission Saving Line 10

The CO₂ emission saving for line 11 can be seen on the Picture IV.31



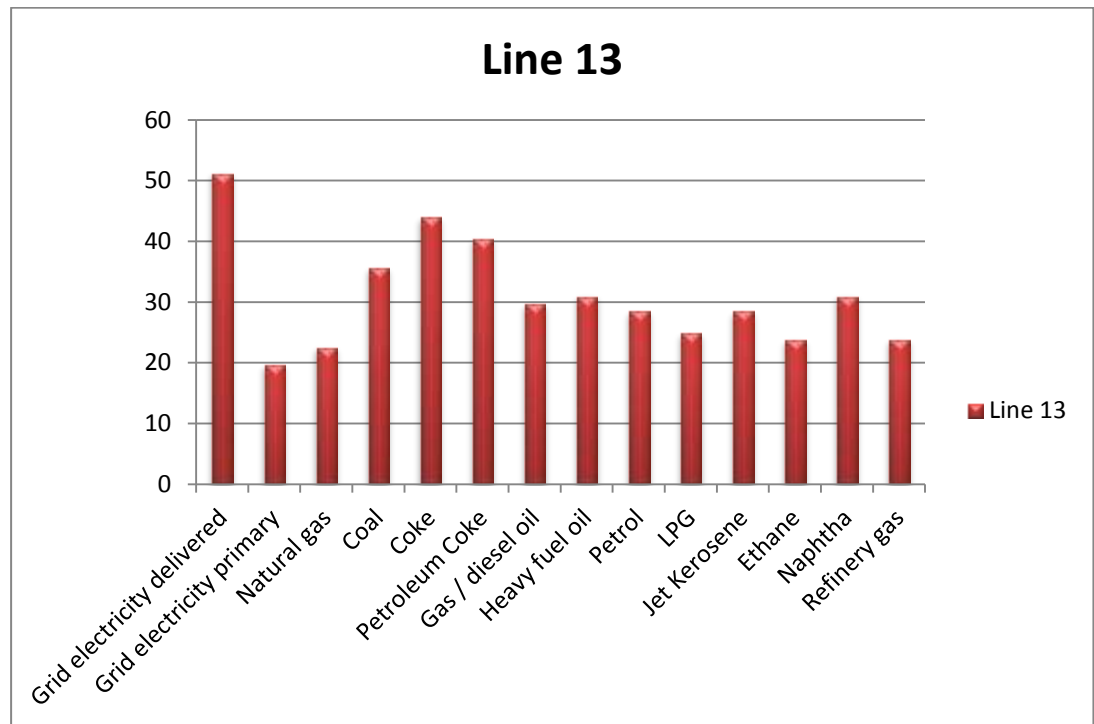
Picture IV.31 CO₂ Emission Saving Line 11

The CO₂ emission saving for line 12 can be seen on the Picture IV.32



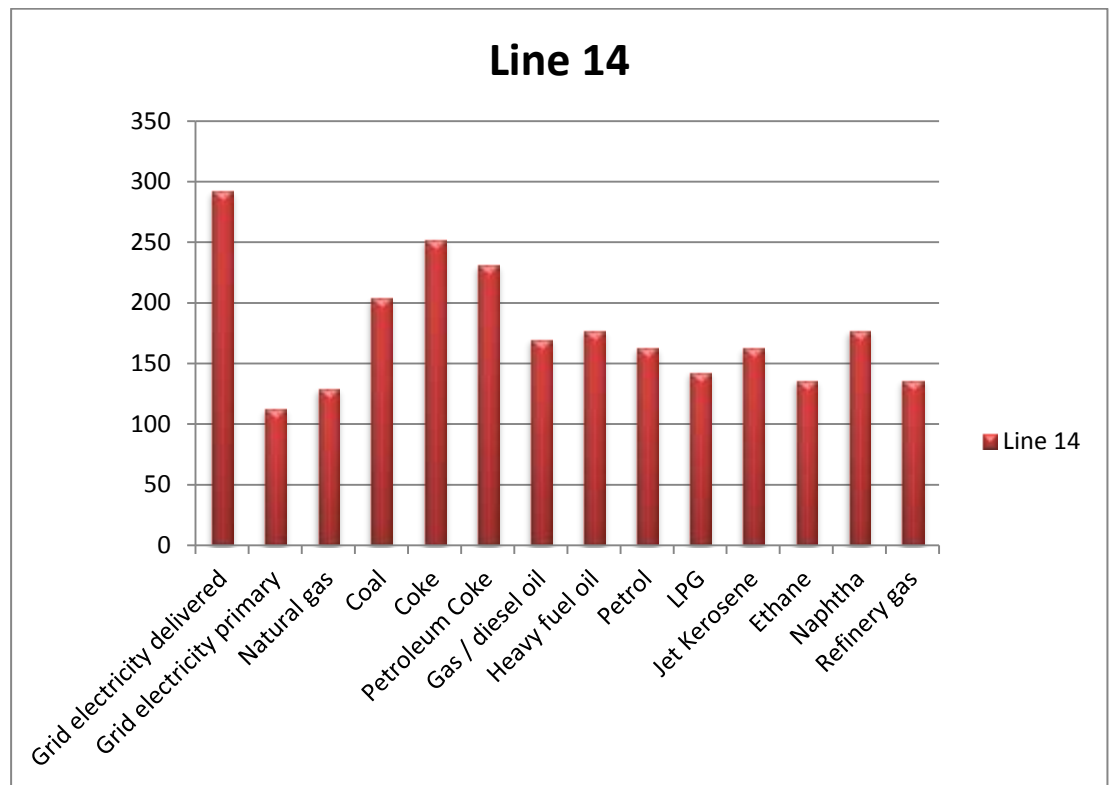
Picture IV.32 CO₂ Emission Saving Line 12

The CO₂ emission saving for line 13 can be seen on the Picture IV.33



Picture IV.33 CO₂ Emission Saving Line 13

The CO₂ emission saving for line 14 can be seen on the Picture IV.34



Picture IV.34 CO₂ Emission Saving Line 14