

Sufficiency

Mobility transformation in Paris

University of Flensburg

Submitted to: Prof. Dr. Frauke Wiese

Submitted by: Fynn Mertner

Matriculation number: 555194

Abstract

This analysis assesses whether the already in place and future policies of the Parisian administration are contributing to a sustainable and sufficient way of life in Paris. The problem is solved by a quantitative approach regarding CO₂ emissions and the modal split. Based on the emission calculation and modal split analysis the positive impact of the policies becomes evident. The emissions by traffic are dropping in the city center as well as in the suburbs. Also, the percentage of trips by cars is shrinking. But the overall impact on energy savings and to reach the other self-set targets is limited.

Table of Contents

Abstract	II
Figures	IV
Graphs	IV
1 Introduction	1
2 Policies in place	2
2.1 Policies to come	2
3 Effects and Trends	3
4 Discussion	5
5 Conclusion	6
Bibliography	7

Figures

Figure 1: Traffic limited zone: Paris Centre and Saint-Germain	3
Figure 2: Future green belt	3

Graphs

Graph 1: Average trips with data from Omnil, p. 6	4
Graph 2: Data from Chambre régionale des comptes Île-de-France 2022, p. 28.....	4
Graph 3: Data from Chambre régionale des comptes Île-de-France 2022, p. 28.....	5

1 Introduction

With a warming climate extreme weather events are more likely to occur. This summer huge parts of Europe were hit severely by a heat wave in July. 73 out of 101 French départements have had the second highest alert level in the mid of July even though the heat wave already moved east (Aboulwafi 2022). When living in a vast and densely populated city heat waves like the one mentioned can become even more difficult to handle. This is because most cities are built and used in a way that neither heat nor any emitted greenhouse gases can escape easily (TomTom n.d.). So, big Cities have a special incentive to act fast and efficient to protect the people.

This analysis concentrates on the example of Paris. In 2004 the City started with the local tackling of climate change with 2007 being the year the first plan and data was accounted for, published and ratified (Cosnard 2022). Since then, more reports were published with updated plans and data. This resulted in the following Milestones: In 2020 the greenhouse gas emissions and the energy consumption should be down by 25%, while the production of renewables (RE) should be up by 25% (cités territoires gouvernance 2013). In 2030 the first parameter of carbon emissions should drop by another 20% while energy consumption should go down by 15%. Additionally, 45% of energy consumption should come from renewables. Base year for these milestones is 2004.

This paper will concentrate on the topic of traffic in greater Paris, including the suburbs and possible positive impacts of policies already in place. In order to do this, the following two questions will be worked with:

- 1. To what extend have policies regarding the mobility sector already shaped a more sufficient way of life in Paris?**
- 2. Will future policies extend and consolidate the set trends?**

One parameter for this analysis is an own calculation of the development of the CO₂-emissions in the mobility sector and the impact on the carbon footprint of the City of Paris. The other is the kilometers per person and the development of the modal split will be evaluated. First, the impact of policies already in place will be described. Afterwards, policies and possible impacts to come are outlined. Third, the own calculation assesses these policies in regards to the development of CO₂-emissions followed by the modal split and kilometers per person. The findings will then be discussed and analyzed. A short conclusion will close the text. This analysis contains quantitative research as well as qualitative parts.

2 Policies in place

Since 2004 a lot of action has been taken regarding traffic. In the following, a few of the implemented and future actions will be introduced.

The policy for sustainable mobility dates back to 2001. Till 2018 700 km of bicycle paths have been built. Additionally, 23,600 self-service bicycles for hire were added. For electric car-sharing 1,100 stations have been built (City of Paris 2020, p. 7). In addition to an extended car sharing network a lot of strict speed limits were established: A maximum of 70 km/h on Ring roads and a speed limit of 30 km/h on most of the other streets in the center of Paris (Cosnard 2022). In 2017 the first Low Emissions Zone (ZCR) was established to keep out highly polluting vehicles from the inner center of Paris (City of Paris 2020, p. 26). Since 2016 the right side of the Seine is completely closed for vehicles. This has opened the possibilities for a new park to be created, the “Parc Rives de Seine”. It is one of many examples where cutting of places for vehicles people were able to gain back control over their city and make it more livable (Allgemeiner Deutscher Fahrrad-Club e.V. 2020, p. 4 ff.). The public transport sector also was extended and 24 km of new tramlines were added (City of Paris 2020, p. 7). One of these Tram-projects, the newly built T3, was able to reduce traffic by 50% on the Boulevards des Maréchaux, one of the circular inner-connecting roads of Paris. Also, several subway lines were extended (van Eeckhout/Krempp 2016). During the Corona lockdowns of 2020 and 2021 the Parisian city council took further action: 50 km of bike lanes were added on the main axis of traffic. For example, the Rue de Rivoli is now only open for public transport and bikes. The whole of Paris now has around 1000 km of bike lanes (Allgemeiner Deutscher Fahrrad-Club e.V. 2020, p. 4 ff.).

2.1 Policies to come

After the steps that have already been taken this chapter concentrates on future policies.

The most important one is the phase out of diesel-powered vehicles in 2024, that of petrol-powered ones in 2030 for a zero-petrol city in 2030. To reach this target the ZCR will be extended onto the metropolitan area of Paris outside of the Center. To ensure the compliance an automated penalty and monitoring system will be installed (City of Paris 2020, p. 26). A first step will be a strict ban for nonessential thru-traffic in 2024. The area for this can be seen in the figure below:



Figure 1: Traffic limited zone: Paris Centre and Saint-Germain (City of Paris 2022)

100,000 vehicles pass through this area daily and it is expected that the ban will have the effect of cutting traffic in the dense city center by 55% (Cleaver 2022) .

A second major undertaking will be the transition of the ring-road into a so-called green belt which will be finished in 2030.



Figure 2: Future green belt (City of Paris 2022a)

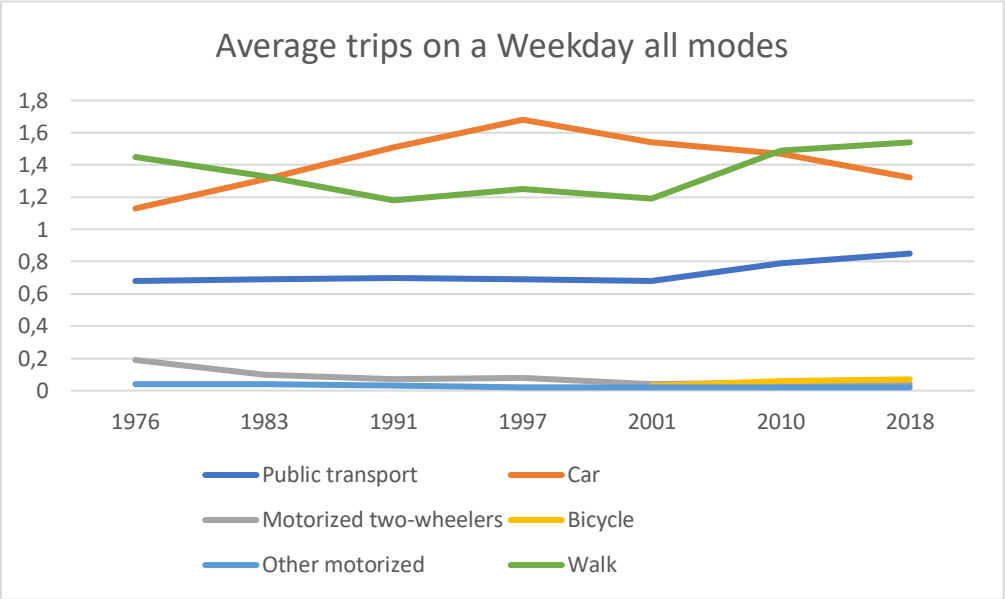
First individual mobility will be cut down in numbers. Public transport will then be extended to connect more people outside of the city center. Additionally, Nature will be given more space to transform the area and improve the quality of live. One step here are the 45,000 trees that will be planted till 2024.

3 Effects and Trends

After looking at the policies that are already in action the following concentrates on the effects that already arose and the ones that might occur.

The people living in the metropolitan Area of Paris take 3.8 trips per day with a distance of 18 km. But there are differences between the central part of the city and its' outer suburbs: In the central part the

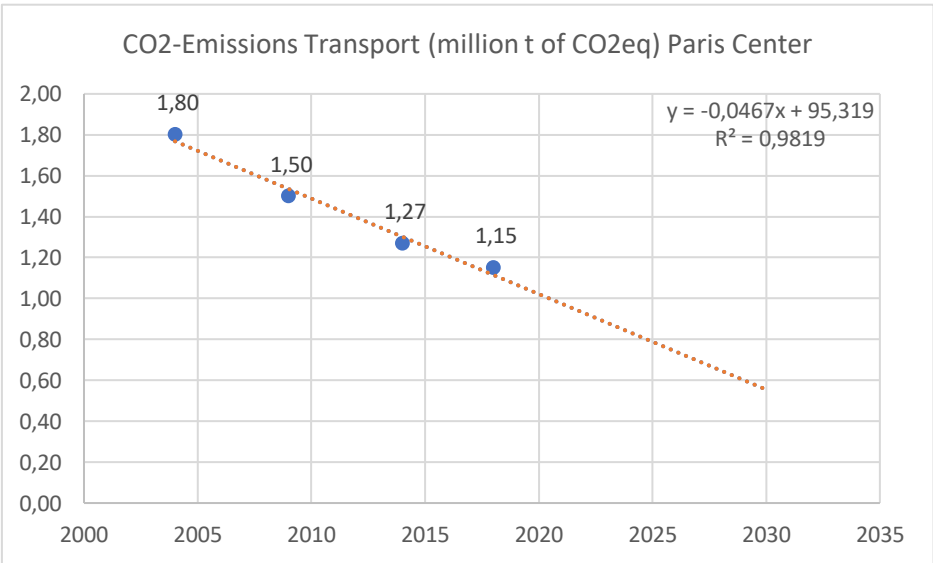
average number of Trips is 4.3 while the distances are the smallest with 12 km. In the outer suburbs the average distance is 24 km (Omnil 2020, p. 13–14).



Graph 1: Average trips with data from Omnil, p. 6

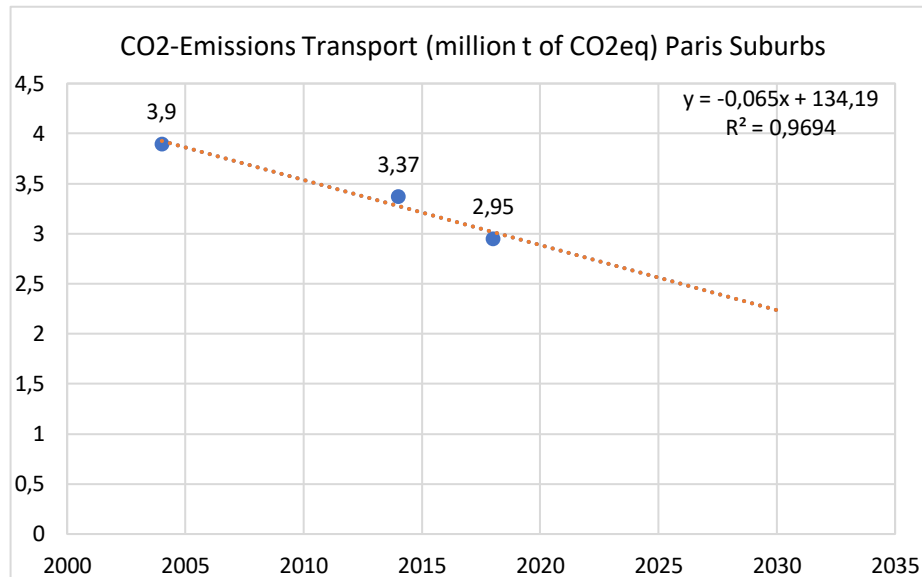
Visible in graph 1 the mode split of Paris and its’ suburbs has and is changing: Although the total number of trips is growing the choice of how to get from point a to point b is developing. Cars are being used less since the beginning of the 2000s. Walking is now the most attractive choice for Parisians with 40% (apur 2021, p. 3). Also visible is the small proportion of bicycles. But it’s share rose around 21% since the beginning of the 2000s (Omnil, p. 6). Additionally, the number of vehicles per household sank from 0.52 in 1990 to 0.39 in 2017. Walking and Public transport seem to grow in attractiveness (apur 2021, p. 4).

After looking at the Way of how Parisians move now follows the development of CO2 emissions in the traffic sector.



Graph 2: Data from Chambre régionale des comptes Île-de-France 2022, p. 28

With the help of policies mentioned in chapter 2 the emissions of traffic in the city center of Paris sank from 1,8 million tons of CO₂eq to 1,15 million tons of CO₂eq. The trend is clearly that emissions will sink further in the next years. A visible cut can be expected in 2024 with the vast new ZCR stopping thru-traffic of the center. A similar trend can be seen in the outer parts of Paris:



Graph 3: Data from Chambre régionale des comptes Île-de-France 2022, p. 28

As journeys take longer on average the emissions are higher on average. Also, the trend for emissions to get less is not as steep, since walking and public transport is less of an attractive option than in the city center. The ongoing increase of restrictions will probably lead to a small increase of emissions in 2024 for the same reason they go down in the inner city.

In conclusion, the movements of Parisians are increasing, also because of the increasing numbers of people living in Paris, but the emissions are clearly being put down by the restrictions and trends unfolding themselves.

4 Discussion

After the analysis of data in the last chapter, chapter 4 concentrates on the evaluation and classification of the insights gained.

The first thing that comes to mind is the small number of data points. The city of Paris published its' first climate action plan in 2007 with data from 2004. Since then, only three new reports, every five years, with reevaluated data were published. To have a real deep and detailed look into the development of emissions and the impact of taken measures more regular data points are needed, for example every two years. In 2019 plans were in the making for installing carbon dioxide monitors (France 24 2019). But the ongoing Corona crisis seems to have put this project on hold.

Also, the data published was faulty. In 2022 the Parisian regional accounting chamber published a paper with reevaluated data for the reference year of 2004. This Paper laid open that the emissions were around 4 million tons higher. Especially the transport sectors emissions were underestimated. But the transport sector was still responsible for most of the 20% of emissions savings since 2004 (Chambre régionale des comptes Île-de-France 2022, p. 18–19). A clearly positive sign for a more livable city. This impression is further amplified by the changing modal split with cars being used less and less and public transport, walking and bicycles being on the rise.

Yet, this analysis reaches its' limits fast. The traffic by plane was not analyzed but is responsible for a far bigger emission output than the traffic on the road, 7,6 million tons of CO₂eq (Chambre régionale des comptes Île-de-France 2022, p. 28). Here also is a big opportunity for a deep dive and further analysis. In each published analysis emissions by air traffic seem to go down. On the other hand the number of passengers leaving or coming to Paris via Charles de Gaulle and Orly airport is on the rise constantly and significantly till 2019 and the Corona epidemic (Group ADP n.d.).

Third and last Paris was only able to almost reach its' self-set targets with emissions. The savings of energy only amount up to 5% without traffic and the energy generation of renewables was only at 18,4% in 2018 (L'info durable 2022). So, in the future the focus has to be spread further in order to reach the target for 2030.

5 Conclusion

By restricting individual transport and putting people and not cars first Paris has clearly made progress. Especially in the Corona lockdowns the administration was able to give parts of the city back to pedestrians and cyclists. Afterwards some streets were not reopened again for car users. The coming restrictions will consolidate this development. As the administration has tried to include the public opinion the chances of success are high. The city will become greener with much better air and a high number of parks and places blocked for cars. But to really bring change to peoples live the administration has to set a new focus as said in chapter 4. Air traffic is and will be a huge problem in the future. By working together with other cities and the EU the focus has to be to establish a vast network of fast travelling long distance trains in order to reduce the number of flights. Also, the emissions and energy consumption o the housing sector must be reduced significantly.

Bibliography

- Aboulwafi, Nadia (2022): *Extreme Temperaturen und viele Brände*, Online:
<https://www.tagesschau.de/ausland/europa/hitzewelle-europa-103.html> [27.07.2022]
- Allgemeiner Deutscher Fahrrad-Club e.V. (Hg.) (2020): *InnoRAD Factsheet Paris im Wandel*.
Innovative Radverkehrslösungen auf Deutschland übertragen, Berlin, Online:
<https://www.adfc.de/artikel/radnetze-fuer-paris> [15.07.2022]
- apur (Hg.) (2021): *Mobility changes in Greater Paris*. Historical trends, current and emerging
developments, Online: [https://www.apur.org/en/our-works/mobility-changes-greater-paris-
grand-paris-historical-trends-current-and-emerging-developments](https://www.apur.org/en/our-works/mobility-changes-greater-paris-grand-paris-historical-trends-current-and-emerging-developments) [29.07.2022]
- Chambre régionale des comptes Île-de-France (Hg.) (2022): *CONCESSION DE LA DISTRIBUTION DU
GAZ ET LUTTE CONTRE LE RECHAUFFEMENT CLIMATIQUE*, Online:
<https://www.ccomptes.fr/system/files/2022-06/IDR2022-21.pdf> [29.07.2022]
- cités territoires gouvernance (Hg.) (2013): *Le Plan Climat de Paris*, Online:
https://www.citego.org/bdf_fiche-document-1342_fr.html [27.07.2022]
- City of Paris (Hg.) (2020): *PARIS CLIMATE ACTION PLAN*, Online: [https://www.paris.fr/pages/paris-
pour-le-climat-2148/](https://www.paris.fr/pages/paris-pour-le-climat-2148/) [27.07.2022]
- City of Paris (2022): *Paris crée une zone apaisée dans le centre de la capitale*, Online:
[https://www.paris.fr/pages/paris-cree-une-zone-apaisee-dans-le-centre-de-la-capitale-
20426#quel-sera-le-perimetre](https://www.paris.fr/pages/paris-cree-une-zone-apaisee-dans-le-centre-de-la-capitale-20426#quel-sera-le-perimetre) [15.07.2022]
- Cleaver, Kaanii Powell (2022): *Paris, France Will Be a Car-Free City in 2024*, Online:
<https://www.motorbiscuit.com/paris-france-car-free-city-2024/> [15.07.2022]
- Cosnard, Denis (2022): *Changement climatique : la Ville de Paris rate ses objectifs*, Online:
[https://www.lemonde.fr/politique/article/2022/05/19/changement-climatique-la-ville-de-
paris-rate-ses-objectifs_6126865_823448.html](https://www.lemonde.fr/politique/article/2022/05/19/changement-climatique-la-ville-de-paris-rate-ses-objectifs_6126865_823448.html) [27.07.2022]

France 24 (2019): *CO2 monitors new weapon in Paris climate fight*, Online:
<https://www.france24.com/en/20191022-co2-monitors-new-weapon-in-paris-climate-fight>
[29.07.2022]

Group ADP (n.d.): *Traffic of Paris Aéroport and Groupe ADP airports*, Online:
<https://www.parisaeroport.fr/en/group/finance/investor-relations/traffic> [29.07.2022]

L'info durable (2022): *Climat: la Ville de Paris avance mais n'atteint pas ses objectifs selon un rapport*,
Online: <https://www.linfodurable.fr/climat-la-ville-de-paris-avance-mais-natteint-pas-ses-objectifs-selon-un-rapport-32318> [28.07.2022]

Omnil (Hg.): *Resultats detailles Enquête Globale Transport 2018*, Online:
<https://www.omnil.fr/spip.php?article259> [29.07.2022]

Omnil (Hg.) (2020): *Enquête Globale Transport 2018 Premiers résultats. Premiers résultats*, Online:
<https://www.omnil.fr/spip.php?article229> [29.07.2022]

TomTom (n.d.): *Paris traffic*, Online: https://www.tomtom.com/en_gb/traffic-index/paris-traffic/
[27.07.2022]

van Eeckhout, Laetitia/Krempp, Guillaume (2016): *Bilan carbone de Paris : des progrès encore insuffisants*, Online: https://www.lemonde.fr/planete/article/2016/07/13/bilan-carbone-de-paris-des-progres-encore-insuffisants_4969085_3244.html [29.07.2022]