

CAR-FREE DAYS

A proven and popular measure to
reduce Europe's dependence on oil



CleanCities



This briefing was written by the Clean Cities Campaign, a campaign hosted by Transport & Environment, using data compiled by Ricardo¹ and survey data provided by Kantar Public².

Lead authors: Martin Baierl
Design: Laura Yates, laurayates.co.uk

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Acknowledgements

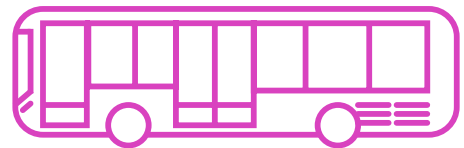
The Clean Cities Campaign would like to express their gratitude to Ricardo Energy & Environment for the data collection and analysis.

The Clean Cities Campaign is solely responsible for the content of and the views expressed in this document.

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- 1 Ricardo is a global sustainability consultancy, helping clients solve some of the world's most complex environmental challenges. It provides governments, public agencies and businesses with leading analysis, advice and data on a range of environmental issues.
 - 2 Kantar Public is a global consulting and research business, providing public policy services to government, the public sector, and corporations

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Executive Summary

In the light of the planned EU/UK embargo on Russian oil, the ongoing energy crisis and the climate emergency, many people can agree there is an urgent need to reduce Europe's fossil fuel consumption. The question is how to do it.

The Clean Cities Campaign believes that car-free days are one of the most effective ways to rapidly reduce oil consumption in the short term. Born of necessity in the 1950s, car-free days have become popular events, encouraging citizens to re-discover their cities by walking, cycling or using public transport.

Our new research shows that they are a popular measure across the board – our poll shows the majority of people in five major European cities are in support.

We are also launching our new analysis into the effect of car-free days, which estimates that one single car-free day implemented in major European cities could save between **534 and 932 thousand barrels of oil**. One weekly car-free day in all major EU and UK cities could therefore **reduce the annual oil consumption from urban transport in Europe**

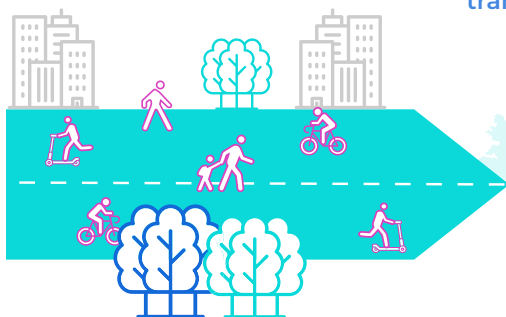
by around 3 to 5%. This equals **0.63% to 1.10% of the EU's total annual oil consumption**, or the annual oil demand of the three Baltic states Estonia, Latvia and Lithuania. This is not an insignificant sum: our research shows that this is as good – if not better – than working from home three days a week.

One car-free day a week will reduce oil consumption from urban transport in Europe by around 3 to 5%

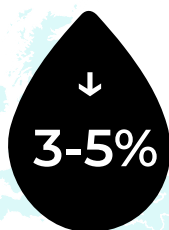
The Clean Cities Campaign believes the implications of these results are clear; cities should quickly introduce regular car-free days at least until the energy crisis is over. Governments should coordinate initiatives and include car-free days in their energy saving plans for the upcoming winter (and beyond). The EU should encourage and support car-free days more ambitiously, going beyond the annual European Mobility Week.

This short-term measure should be complemented by policies and investments to encourage active and shared mobility, from providing better and cheaper public transport to boosting walking and cycling in cities. Only decisive and sustained efforts at all levels can put cities on a path towards zero-emission mobility by 2030, which is needed for the overall decarbonisation of the economy and to achieve net zero emissions by 2050.

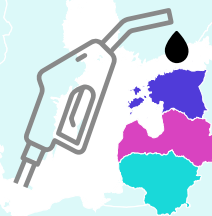
One weekly car-free day across all major EU and UK cities...



...could reduce the annual oil consumption from urban transport in Europe by



– equivalent to the annual oil demand of Estonia, Latvia and Lithuania...



...and as good – if not better – than working from home three days a week.



Introduction

The need to reduce oil consumption and how cities can help



Photo: Nabeel Syed / Unsplash

Europe's dependence on (Russian) oil

Russia's invasion of Ukraine has made Europe's dependence on fossil fuels crystal clear. Not only are oil, gas and coal driving the climate emergency and generating toxic air pollution that is responsible for more than 300,000 premature deaths per year³ in Europe, they are also a threat to peace and economic stability.

Despite the ongoing shift to renewable energy sources, the EU is still highly dependent on oil and gas for its energy needs. Oil is still the number one source of energy in Europe, representing 34.5% of all available energy in the EU in 2020⁴, and 31.2% of all energy consumed in the UK in 2020.⁵ This is all the more problematic as more than one in four barrels of oil consumed in Europe were supplied by Russia in 2021.⁶

One in four barrels of oil consumed in Europe were supplied by Russia in 2021

The European Union has adopted an embargo of 90% blocking Russian oil imports as part of its sixth sanction package to come fully into effect by early 2023.⁷ Yet, in the first 100 days of the Russian invasion of Ukraine, EU countries spent in excess of 46 billion euros on Russian oil.⁸

The role of transport...

Transport is at the heart of this challenge. In Europe, it consumes the largest share of oil among all economic sectors – exactly two thirds (67%)⁹. For the transport sector as a whole, road transport accounts for 72% of total oil consumption.¹⁰ Therefore reducing our oil demand rests on changing the way we move around, and where possible, moving less. This can be achieved by switching to cleaner modes of transport and electrifying the vehicles that cannot be replaced.

3 European Environment Agency 2021a
4 Eurostat 2022b
5 BEIS 2022
6 European Commission 2022a

7 European Commission 2022c
8 CREA 2022
9 Share of EU total oil consumption (excluding biofuels) for road, rail, air, water and other transport, including international flights and shipping, Eurostat 2022a
10 Eurostat 2022a

...and cities

With more than 70% of Europe's population living in urban areas¹¹ and urban mobility representing 23% of the EU's total transport emissions,¹² cities play a critical role in helping to curb Europe's addiction to fossil fuels. We have already seen that many cities are at the forefront of addressing transport's dependence on oil, rolling out active travel, public transport and electric mobility improvements. As part of the European Mission on Climate-Neutral and Smart Cities, 100 cities have pledged to go climate-neutral by 2030.¹³ Cities can go further in cutting our dependence on Russian oil.

Car-free days as a primary measure to reduce oil consumption

In the context of the ongoing energy crisis, the International Energy Agency (IEA) recently proposed a '10-point plan to cut oil use', all of which

relate to transport.¹⁴ One of the measures put forward is setting up a weekly car-free Sunday in cities. The IEA believes this is among the most effective measures.¹⁵

This Clean Cities Campaign briefing uses new research to show how car-free days can be a quick and simple measure to reduce oil consumption in cities.

The fuel saving potential of car-free days is analysed for four key cities (Brussels, London, Greater Manchester and Prague). These results are then extrapolated to provide an estimate of savings across all major European urban areas.¹⁶

In addition, we provide the results of a representative city survey, showing strong support for car-free days amongst residents of five major European cities: Barcelona, Brussels, London, Paris and Warsaw.



Car-free Sunday, Paris, 2022. Photo: Gilbert Sopakuwa

11 European Commission 2021c
12 European Commission 2021a
13 European Commission 2022b

14 International Energy Agency 2022
15 Amongst the selected measures put forward in the IEA's 10-point plan to cut oil use, car-free Sundays are the fourth most effective measure out of ten.
16 For the EU, major cities were defined as urban nodes in the proposal for the review of the EU's Trans-European Transport Networks (TEN-T). For the UK, these were defined as all cities with more than 200,000 inhabitants.

Car-free days are an effective way to quickly reduce oil use



Car-free day, Netherlands, 1973. Photo: Anefo/ National Archives, CCO

The roots of car-free days: Born of necessity

Car-free days are nothing new. During the Suez crisis, Switzerland, Belgium and the Netherlands all mandated a limited number of car-free Sundays in the winter of 1956/57 to prevent fuel shortages.

In the midst of the 1973/74 oil crisis, 10 countries in Europe¹⁷ introduced car-free Sundays as a reaction to the oil embargo imposed by the members of the Organization of the Petroleum Exporting Countries

(OPEC). This put 'Car-Free Sundays' in the collective memory and established the measure as an effective way to reduce oil consumption.

From restriction to popular events

Since the 1990s, national campaigns, for instance in the UK, France and Germany, have helped establish car-free days in cities. The European Commission also endorsed and even funded the idea in 1999¹⁸, before making it a Europe-wide event in 2000.

¹⁷ Austria, Belgium, Denmark, Germany, Greece, Italy, Luxembourg, Switzerland, Netherlands and the United Kingdom

¹⁸ European Commission 1999



Brussels car-free day, 2019. Photo: Quentin Guyot / Clean Cities Campaign

Often organised on World Car Free Day on 22 September each year, these events encourage citizens to re-discover their city by walking, cycling or using public transport. Brussels and Paris are among the cities that have introduced car-free days which allow citizens to enjoy their cities without the usual noise, air pollution and danger created by motorised traffic.

Organised as large-scale events on Sundays with free or cheaper public transport and activities for all ages throughout the day, car-free days aim to show how quality of life can be improved. They also raise awareness of the environmental impact of cars in cities and promote sustainable urban mobility.

A measure that can be implemented rapidly

Car-free days generally take place within a clearly defined area (such as the city centre, main roads or the entire municipality) and over a specified period of time (e.g. one day).

As they do not require infrastructure to be built or complex regulations to be put in place, car-free days can be implemented in the very short term at comparatively low cost. This is particularly important in times of crisis.

Benefits of car-free days

▶ Reduced fuel consumption

Car-free days were initially put in place to curb oil demand. The next section of this briefing will quantify this effect. Reducing oil consumption means both saving money and reducing greenhouse gas emissions.

▶ Improved air quality

During the 2021 edition of the Brussels car-free day, the levels of nitrogen dioxide (NO₂) decreased by 86% around the EU quarter compared to a normal Sunday.¹⁹ NO₂ is one of the most dangerous pollutants primarily emitted from diesel and petrol engines.

At the same time, a reduction in nitrogen oxides (NO_x) has been also identified in a literature review on the effects of car-free days. The results for other pollutants such as particulate matter were less clear.²⁰ For PM2.5 and PM10, road transport is a significant contributor, but background pollution from other sources and air pollution from neighbouring areas can still negatively affect air quality even during a car-free day.

▶ Reduced noise pollution

During the Brussels 2021 car-free day, the reduction in noise pollution from road traffic meant that it was half as loud (-10dB) near motorways, and still 20% quieter (-3dB) on less busy roads in the city.²¹ In most cities, road traffic is the number one source of noise pollution,²² and so a reduction in the number of cars leads to a significant drop in noise levels in urban areas.

▶ Increased levels of physical activity

By providing a safe and pleasant environment, car-free days and related events encourage residents to walk and cycle. Studies suggest that they lead to higher levels of active mobility, reducing premature mortality and morbidity.²³

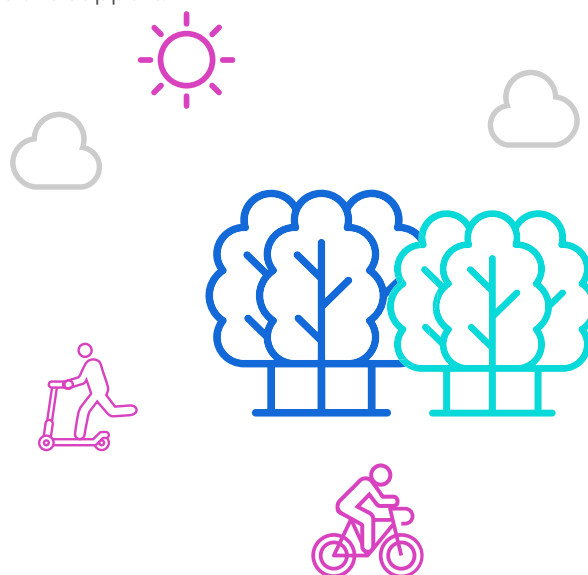
▶ Economic benefits

Research shows that the economic benefits also outweigh the costs. In 2019, the roads of an area of the City of London were opened up for Londoners to enjoy during World Car-Free Day. Transport for London (TfL) estimated that similarly large road closures would require around £500,000 – £800,000.²⁴ 95% of this budget was reinvested locally and visitors spent an additional £700,000 with local businesses.²⁵ The fuel savings, together with the health and environmental benefits, make car-free days pay for themselves.

▶ Additional benefits

Beyond these more tangible benefits, car-free days are also considered to improve social interaction and cohesion, and to contribute to an improved quality of life in cities, by opening up public space and providing opportunities for interactions between residents.

As illustrated, car-free days have clear benefits, ranging from the main and immediate effect of fuel savings to the many co-benefits from reduced car use. The magnitude of its benefits depends on their organisation, implementation and public support.²⁶



19 Bruxelles Environnement 2021
20 Glazener et al. 2022
21 Bruxelles Environnement 2021
22 European Environment Agency 2021b
23 Nieuwenhuijsen and Khreis 2016

24 Mayor of London 2022
25 Mayor of London 2020
26 Glazener et al. 2022

Estimating the fuel savings potential of car-free days – Clean Cities Campaign’s new research

A new analysis, commissioned by the Clean Cities Campaign and carried out by global sustainability consultancy Ricardo, estimated the impact that car-free days would have on oil consumption in European cities. The underlying technical report ‘Quantifying the benefits of car-free days and home working in European Cities’ produced by Ricardo has been published alongside this briefing. As explained in the previous section, the main impact of car-free days is the reduction of car use and the resulting decrease in fuel consumption.

Definition and assumptions

The research quantified the fuel saving potential of one car-free day per week in European cities. A car-free day was defined as a day where the entire metropolitan area is closed to private car traffic, but not to van, truck or bus traffic. Typically, public vehicles continue to operate and exemptions are available for some citizens based on need (e.g. for people with reduced mobility).

The impact of large-scale car-free days on private car use and therefore fuel consumption will always depend on city-specific circumstances as well as the way such a car-free day is implemented locally, and will hence be subject to a certain degree of uncertainty. In addition, some trips might simply take place at another time or place instead. To reflect this uncertainty around the actual reduction in car traffic from a car-free day, two scenarios were analysed: one with a lower estimate (70%) reduction of car use, and another one with an upper estimate (90% less car use).

In order to put the results in context, we also assessed the impact of home working. This policy can also be implemented at short notice as shown

during the pandemic and it has also been put forward in the 10-point plan of the International Energy Agency (IEA). The details of this estimation can be found in the accompanying technical report.

Methodology

The impact of car-free days on fuel consumption has been calculated for a shortlist of four cities in the EU and UK, comprising Brussels, London, Greater Manchester and Prague. This shortlist was led by an initial literature review to identify cities with relevant data, and cities from different parts of Europe were chosen to make the results as representative as possible. The results for these four cities were further extrapolated to estimate the potential overall benefits from implementing similar measures throughout the EU and the UK. For this purpose, the calculated average savings were applied to all major cities²⁷ in the EU and the UK.

Data sources

Data was sourced from official national/local government sources where possible and where available, the most recent pre-2020 year was used. Priority was given to data that was local, and which included time series indicating consistency and accuracy of data capture.

For further details regarding the assumptions, methodology and data sources used in this study, the technical report produced by Ricardo can be downloaded on the website of the Clean Cities Campaign.

²⁷ For the EU, major cities were defined as urban nodes in the proposal for the review of the EU’s Trans-European Transport Networks (TEN-T). For the UK, these were defined as all cities with more than 200,000 inhabitants.

Main results

The lower and upper estimate of the impact of one car-free day is presented by type of day for the four cities and the extrapolated results for the EU + UK cities are given below:

	Weekday		Saturday		Sunday	
City	Upper	Lower	Upper	Lower	Upper	Lower
Brussels	7.5	5.9	6.3	4.9	5.1	3.9
London	31.7	24.7	28.3	22.0	25.5	19.9
Greater Manchester	19.1	14.8	17.0	13.2	15.4	11.9
Prague	8.2	6.4	6.2	4.8	5.7	4.4
All major EU + UK cities	932	725	780	607	678	534

Source: Calculations by Ricardo on behalf of the Clean Cities Campaign

The implementation of car-free days on weekdays yields a stronger reduction in oil use due to typically higher vehicle use on working days but also comes with more important implementation challenges.

Per person, the savings of one car-free day amount to 0.40 to 1.20 litres of oil. Implemented throughout all major European cities²⁸, one car-free day per week would correspond to the following savings in yearly total oil consumption:

	Weekday		Saturday		Sunday	
	Upper	Lower	Upper	Lower	Upper	Lower
All major EU + UK cities	1.10%	0.86%	0.93%	0.72%	0.80%	0.63%

Source: Calculations by Ricardo on behalf of the Clean Cities Campaign

At the European level (including the EU and the UK), the savings of one weekly car-free day equate to 0.63% to 1.10% of the EU's total oil consumption in 2019 or 28 to 49 million barrels per year out of a total annual consumption of 4,398 million barrels, depending on the day of the measure, the city, and the assumed effectiveness of the measure. While the figures may sound small at first (Germany alone used more than 800 million barrels in 2019²⁹), the amount saved is roughly equivalent to the entire annual oil consumption of the three Baltic countries Estonia, Latvia and Lithuania.³⁰

Urban mobility is responsible for around 23% of transport emissions and energy use in the European Union.³¹ A weekly car free day would therefore reduce annual fuel consumption from urban transport by around 3 to 5%.

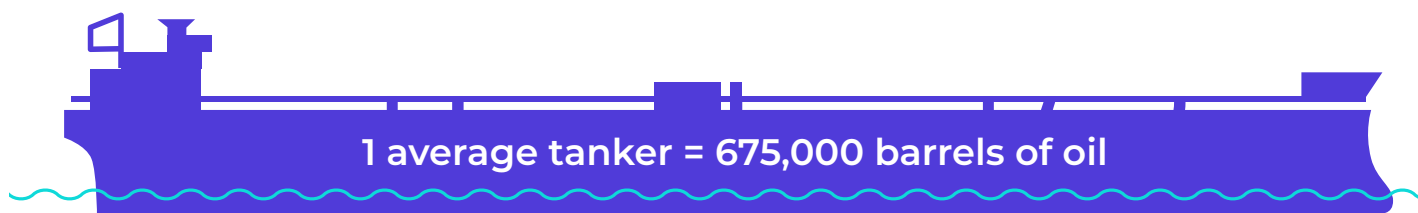
More effective than working from home

Our research further shows that a weekly car-free day can be more effective than working from home three days a week. In fact, working from home three days a week would result in estimated savings of between 0.46% (assuming 40% of the workforce is doing so) to 0.69% (for 60% of the workforce working from home) of total oil consumption. In other words, one single car-free day a week is as good – if not better – at curbing oil consumption in Europe as working from home for three days a week.

The savings of one weekly car-free day equate to 0.63% to 1.10% of the EU's total oil consumption in 2019

The combined oil savings from a weekly car-free day, if implemented over an entire year and throughout major European and UK cities, are considerable. A typical medium-sized oil tanker, such as AFRAMAX vessels, can carry between 500,000 to 800,000 barrels of crude oil. Assuming an average tanker capacity of 675,000 barrels, the annual savings equal between 41 and 72 oil tankers' worth of crude oil per year.

One weekly car-free day across all major EU and UK cities could save up to 72 tankers of oil per year



245m long, or the length of 61 small cars

29 BP 2022

30 BP 2022

31 European Commission 2021b

A majority of people support car-free days in European cities, our new survey finds

The effectiveness of any measure to reduce oil consumption depends also on the support amongst the population. In the context of Russia's invasion of Ukraine and the energy crisis in Europe, car-free days have been proposed by the International Energy Agency (IEA) as a way to reduce oil consumption. Yet, data on public support for car-free days as a regular event (as opposed to a one-off annual event) has not previously been available.

Clean Cities Campaign has commissioned the first research into public attitudes into regular car-free days, in collaboration with Kantar Public, the organisation behind the 'Eurobarometer' surveys for the European Commission. The representative survey was conducted in June 2022 amongst 1,000 residents in each of the following five European cities: Brussels, Barcelona, Paris, London and Warsaw. The

62% of respondents supported one car-free day per week in their city.

results have been weighted by gender and age to be representative of the respective city population.

Residents were asked to what extent they support or oppose a number of potential measures, including the introduction of car-free days. The response to the question "To what extent do you support the introduction of one car-free day per week in your city?" is summarised in the table below.

On average, **62% of respondents supported one car-free day per week in their city.** Only one in five respondents opposed the measure and one in six neither support nor oppose the measure or do not have an opinion on the issue. Levels of support vary between cities due to the local context and circumstances, but in each city, a majority backs the introduction of a weekly car-free day.

Table 3. Support for the introduction of one car-free day per week in your city

	Total*	Brussels	Barcelona	Paris	Warsaw	London
Strongly support	32%	28%	28%	36%	39%	31%
Somewhat support	29%	30%	32%	29%	26%	30%
Neither support nor oppose	15%	14%	19%	12%	13%	17%
Somewhat oppose	10%	9%	10%	11%	9%	8%
Strongly oppose	12%	17%	9%	11%	11%	10%
Don't know	2%	2%	2%	2%	2%	3%

Source: Opinion poll carried out by Kantar Public on behalf of the Clean Cities Campaign

* Percentage figures in the table are rounded to reflect the degree of precision based upon the number of respondents. Any differences between totals and sums of components are due to rounding.

Conclusions and policy recommendations: We need car-free days now

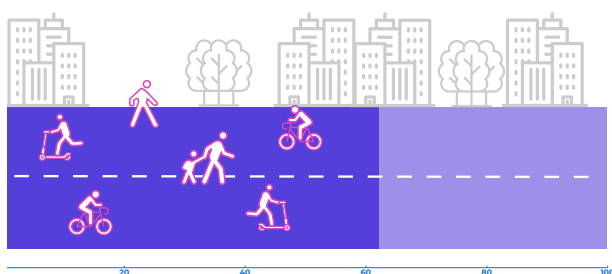
The Clean Cities Campaign believes that car-free days have the potential to reduce Europe's dependency on oil and should therefore be implemented as part of a set of measures to reduce European demand for (Russian) oil.

One weekly car-free day in major European (EU27 and UK) cities could, on its own, reduce total oil consumption by 0.63 to 1.10% depending on the day chosen and the way the measure is implemented. Considering only the oil consumption for urban mobility, this represents a 3–5% reduction.

The ability to quickly implement car-free days also makes them an efficient and cost-effective measure suitable for short-term implementation.

As the results of the representative city survey show, there is broad popular support for car-free days. A majority of people in each of the polled European cities support this measure.

62% of residents in major European cities back the introduction of a weekly car-free day



The Clean Cities Campaign believes the implications of these results are clear:

Cities should

- ▶ Adopt regular car-free days,
- ▶ Incentivize the use of public transport and active mobility³²,
- ▶ Set a clear path towards only zero-emission transport by 2030, especially by introducing zero-emission zones.

Governments should

- ▶ Coordinate and support car-free days across their territories,
- ▶ Use public funds in a targeted manner, e.g. for cheaper public transport and boosting walking and cycling,
- ▶ Create the frameworks for the transition to zero-emission transport in cities,
- ▶ National governments should include car-free days in their energy saving plans for the upcoming winter (and beyond).

The EU should

- ▶ Continue to encourage and support car-free days, going beyond the annual European Mobility Week,
- ▶ Include zero-emission transport goals as a key part of the revised regulation on Trans-European Transport Networks.

In light of the illustrated effectiveness and wide support of car-free days, the Clean Cities Campaign calls on decision makers at all policy levels to introduce, facilitate and encourage car-free days in major cities to help curb oil consumption and foster the transition to a zero-emission mobility in European cities.

³² Suggestions on how to incentivize these can be found in the following briefing: Clean Cities Campaign et al. 2022

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Find out more

The Clean Cities Campaign is a European coalition of organisations hosted by Transport & Environment. Together, we aim to encourage cities to transition to zero-emission mobility by 2030, encouraging European cities to become champions of active, shared and electric mobility for a more liveable and sustainable urban future.

www.cleancitiescampaign.org
info@cleancitiescampaign.org

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