

# THE LEAP TO ELECTRIC

## A STEP ON THE PATH TOWARDS SUSTAINABLE TRANSPORT



WHAT MEASURES SHOULD DECISION MAKERS TAKE TO  
ACCELERATE THE END OF THE INTERNAL COMBUSTION ENGINE  
AND HASTEN THE ADOPTION OF ELECTRIC VEHICLES?

Greenpeace briefing based on research by the Ecologic Institute

A guide for policymakers

**GREENPEACE**

#cleanairnow



CAUTION  
DO NOT TOUCH THE CONTACT POINTS  
OR THE CABLE WHILE CHARGING  
OR THE CABLE WHILE PLUGGED INTO THE  
CHARGING PORT. ALWAYS USE THE  
CORRECT CABLE FOR CHARGING.  
SEE USER MANUAL FOR DETAILS.

ELECTRIC CAR WITH CHARGING  
CABLE IN FRANKFURT

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## OVERVIEW

When the IPCC report was released in 2018<sup>1</sup> the alarm it sounded was crystal clear — we have about a decade left to reverse course and double down on our global commitments to the Paris Climate Agreement or expect nothing short of an irreversible climate crisis to take hold in our communities. The moment is now for policymakers to prioritise and accelerate a clean energy transition if we're to have any chance of avoiding the most catastrophic effects of climate change.

The transport sector is currently responsible for over one quarter of Europe's CO<sub>2</sub> emissions — with 45% coming from road transport alone<sup>2</sup> — making it one of the most vital sectors to be addressed in the battle for a livable future. This means the last new passenger car with an internal combustion engine — including conventional hybrids — has to be sold by 2028 in Europe to have a fair chance of limiting global temperature rise by 1.5°C<sup>3</sup>.

Additionally, the urban air pollution created by diesel and petrol vehicles is having a direct impact on public health and mortality. Case in point — globally, four million children developing asthma every year<sup>4</sup> as a result of air pollution from cars and trucks — equal to 11,000 new cases a day. What has become abundantly obvious is that if we are to have thriving urban environments free from the health problems associated with air pollution and a wildy shifting climate, we have no choice but to eliminate fossil fuel vehicles from our roads and radically rethink our approach to the way we move around our cities.

Some of the most livable urban environments in the world have drastically limited the use of cars by creating vast and improved public transport networks and prioritised cycling, walking and micro-mobility infrastructure — with Copenhagen and Amsterdam being two such examples of a sustainable approach to urban mobility. While more and more cities and regions are establishing car restrictions (such as Low Emission Zones (LEZ), congestion charging or car-free zones), with some exceptions, national governments have been either resistant to committing to a rapid phase-out of the internal combustion engine or have been proposing dates that are often too late if we are to limit global warming to 1.5°C.

<sup>1</sup> The Intergovernmental Panel on Climate Change, "Global warming of 1.5°C", October 2018. [https://report.ipcc.ch/sr15/pdf/sr15\\_spm\\_final.pdf](https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf)

<sup>2</sup> Transport & Environment, "Roadmap to decarbonising European cars", November 2018. <https://www.transportenvironment.org/publications/roadmap-decarbonising-european-cars>

<sup>3</sup> German Aerospace Center Institute of Vehicle Concepts, "Development of the car fleet in EU28+2 to achieve the Paris Agreement target to limit global warming to 1.5°C", September 2018. [http://www.greenpeace.org/archive-belgium/Global/belgium/report/2018/20180907\\_GP\\_EUCarFleet\\_1.5.pdf](http://www.greenpeace.org/archive-belgium/Global/belgium/report/2018/20180907_GP_EUCarFleet_1.5.pdf)

<sup>4</sup> Achakulwisut, P., Brauer, M., Hystad, P., Anenberg, S. "Global, national, and urban burdens of paediatric asthma incidence attributable to ambient NO<sub>2</sub> pollution: estimates from global datasets", The Lancet Planetary Health, April 2019. <https://www.sciencedirect.com/science/article/pii/S2542519619300464?via%3Dihub>

With the state of our climate in serious peril, governments must focus on the transport sector and stop ignoring the elephant in the room. Initial solutions need to include a pathway for fewer cars, while improving and enhancing public transport infrastructure that is run on renewable energy, and policies that promote more robust walking, cycling and micro mobility solutions. A rapid transition to shared electric mobility should also be considered on the road to shifting our energy use — and if planned correctly, electric vehicles and sustainable energy use have the potential to go hand in hand<sup>5</sup>.

While the use of electric vehicles (EVs) contributes to vastly better air quality in cities, currently a large proportion of electricity is still generated by fossil fuel and nuclear power plants. For e-mobility to be clean, it has to be powered by 100% renewable energy. Lastly, as we chart a path to a low carbon future, the growing demand for electric vehicle components — such as batteries — must not cause or increase other environmental problems and human rights abuses.

With new research done by the Ecologic Institute in Germany, this briefing provides a framework for policymakers to better understand the most effective ways to facilitate the rapid switch from conventional to electric vehicles, as a substantial step towards a clean and livable future.

## WHAT POLICY MEASURES HAVE BEEN IMPLEMENTED TO HELP ACCELERATE THE UPTAKE OF ELECTRIC VEHICLES?

NAME OF THE MEASURE	EVALUATION CRITERIA			
	Effectiveness to incentivise EV purchases	Ease of administration	Affordability for governments	Consistency with other policy goals
EV quota for car companies	👍 👍 👍	👍	👍 👍 👍	👍 👍 👍
Bans of diesel and petrol cars	👍 👍 👍	👍 👍 👍	👍 👍 👍	👍 👍 👍
Public and private procurement provisions	👍 👍 👍	👍 👍 👍	👍 👍	👍 👍
Grants for the purchase of EVs	👍 👍	👍 👍	👍	👍 👍
Tax benefits during EV purchase or registration	👍 👍	👍 👍	👍	👍 👍
Tax benefits for electric company cars	👍 👍	👍 👍	👍	👍 👍
Tax benefits during ownership of an EV	👍	👍 👍	👍	👍 👍
Free parking for EVs	👍	👍 👍	👍 👍	👍
Access to bus lanes for EVs	👍	👍 👍	👍 👍 👍	👍
Charging: financial support and requirements	👍 👍	👍	👍 👍	👍 👍 👍
Source: Ecologic Institute.	LEDGEND: Low = 👍 Medium = 👍 👍 High = 👍 👍 👍			

<sup>5</sup> International Renewable Energy Agency, "Innovation outlook: Smart charging for electric vehicles", 2019. [https://irena.org/-/media/Files/IRENA/Agency/Publication/2019/May/IRENA\\_EV\\_smart\\_charging\\_2019\\_summary.pdf](https://irena.org/-/media/Files/IRENA/Agency/Publication/2019/May/IRENA_EV_smart_charging_2019_summary.pdf)

The aim of this report has been to analyse ten existing financial and non-financial measures from across the world that have had a direct impact on the increased uptake of EVs and to better understand which measures have been most effective in transitioning away from the internal combustion engine. While assessing each measure, the report sought to gauge how successful a measure was by asking 4 key questions:

- Did it incentivise someone to purchase an EV?
- Was it easy to execute?
- Was it cost-efficient for governments to adopt and implement?
- Lastly, did it align with the overarching goal of reducing traffic?

## **MEASURES ASSESSED:**

### **1. EV QUOTA FOR CAR COMPANIES**

Governments oblige car companies to produce a minimum quota of EVs and non-compliance can be subject to a penalty fee.

### **2. BANS OF NEW INTERNAL COMBUSTION ENGINE CARS**

Banning internal combustion engine cars — both diesel and petrol — encourages the development, production, and purchase of EVs and/or the use of alternative methods of transportation.

### **3. PUBLIC AND PRIVATE PROCUREMENT PROVISIONS FOR EVS**

Procurement is the process when a company or public administration buys goods and services whilst ensuring they get the best value for money, often promoting sustainable practices. In many countries, the public sector is a very powerful procurer, making green or sustainable public procurement rules an impactful method in substantially increasing the market for EVs.

### **4. GRANTS FOR THE PURCHASE OF EVS**

EVs are currently still more expensive than internal combustion engine cars, so access to grants can make them more affordable, specifically addressing a key factor for buyers of lower-end EVs.

### **5. TAX BENEFITS DURING EV PURCHASING**

Governments can make EVs more attractive by providing reductions or even full exemptions of taxes that are applicable at the point of purchase. This includes reduction or exemption from the value added tax (VAT) or of the one-time registration tax.

## **6. TAX BENEFITS FOR ELECTRIC COMPANY CARS**

Companies offer cars to their employees as extra remuneration on top of the salary. Many governments apply a tax on the private use of company cars and the tax rate usually depends on different criteria including engine power, fuel type and/or CO2 emissions. As company cars are often leased for a limited time and then sold on the used car market, exemptions or rebates on these taxes can help create a more affordable secondary market for EVs.

## **7. TAX BENEFITS DURING OWNERSHIP OF AN EV**

In many countries, car owners have to pay annually for having a car, which is in use on public roads. The tax is called 'circulation tax', 'ownership tax' or 'road tax'. Countries apply this tax based on a wide set of criteria but mainly related to engine power and/or CO2 emissions. Many countries offer tax exemptions or rebates for EVs including the United Kingdom and France.

## **8. FREE PARKING FOR EVS**

Regional and local governments can offer free parking to EV drivers. Most cities combine free parking with reserved areas charging stations for EVs. While the financial and time-saving benefits can be quite helpful in certain cities, this could potentially create an uptake in personal vehicle use when public transport or biking would be just as simple and preferential from a climate perspective.

## **9. ACCESS TO BUS LANES FOR EVS**

Regional and local governments often allow EVs to use bus lanes and other special lanes, which can substantially reduce commuting time. The approach, however, only works for early-movers and a limited number of EV drivers in a city. Additionally, more and more EVs on the street will result in traffic jams that expand to special lanes, blocking buses that should pass unhindered.

## **10. WITHOUT CHARGING INFRASTRUCTURE, NO SUPPORT SCHEME WILL BE EFFECTIVE**

EVs run on rechargeable batteries and potential EV purchasers look for a good charging network, yet infrastructure investors need a certain amount of users to want to invest. To overcome this chicken-and-egg problem, many governments subsidise the build-up of charging infrastructure. Standardisation of chargers is key in this context as there are different charging modes, connection cases and plug types available on the market.

## REPORT RECOMMENDATIONS: WHAT MUST DECISION MAKERS CONSIDER FOR WIDESPREAD EV ADOPTION AND IMPLEMENTATION?

This report should be considered as one part of a larger roadmap for decision makers, helping to guide them through a successful transition away from petrol and diesel cars to one that bolsters urban policy and promotes a radical and sustainable shift in urban mobility.

### HERE ARE 6 KEY TAKEAWAYS:

#### **1. PRESCRIBING THE USE OF EVS OR PHASING OUT INTERNAL COMBUSTION ENGINE CARS IS MOST EFFECTIVE**

Governments can oblige car companies to produce a minimum quota of EVs; they can completely ban internal combustion engine cars and use public and private procurement provisions to stipulate the use of EVs. These legal requirements have the highest rating in terms of their overall effectiveness, as well as their affordability for governments and consistency with other policy goals — if these requirements are set at an ambitious level.

#### **2. WIDESPREAD CHARGING INFRASTRUCTURE IS CRUCIAL**

A reliable network of charging stations is still missing in most countries and without good charging infrastructure, any additional incentive or regulatory measure will have little impact on the uptake of EVs. By supporting an early build-up of charging infrastructure through subsidies or via public and private partnerships, government decision makers have a clear avenue to impact the adoption of EVs and should prioritise standardising infrastructure on a national and international level.

#### **3. ANY SUPPORT SCHEME MUST BE RESPONSIVE TO RAPID CHANGES IN THE ELECTRIC MOBILITY SECTOR**

The EV market is developing rapidly with advances in battery and vehicle technologies, along with car restriction measures. Innovations and large-scale market introduction have shown to reduce EV prices. Governments that offer financial and non-financial incentives need to adjust any support to EVs to reflect market developments. Financial incentives should reflect price differences between internal combustion engine cars and the electric alternative.

#### **4. COMBINING MEASURES AND SEQUENCING THEM OVER TIME IS KEY FOR INDUCING FULL MARKET TRANSFORMATION**

Analysis shows that countries with a mix of support measures (such as Norway) have been most successful at quickly ramping up the widespread adoption of EVs. Governments should thus consider a mix of policy measures which should also reflect where the market is at in each region:

A.) For early adopters, governments can open bus lanes and provide separate parking spaces with charging stations. Early public procurement provisions that prescribe e.g. an EV quota for new purchases of public authorities is in line with the role model function of the public sector, can push up market penetration and can positively influence public perception.

B.) A combination of an EV quota for car companies and financial support to EVs at the lower-end of the price range can trigger large-scale market introduction. The financial benefits reduce the prices of EVs, thus tackling a crucial barrier that prevents middle-income households from buying EVs. The EV quota can start low but it clearly signals policy trends to car companies.

C.) Government might phase-out any conventional diesel and petrol car thus shifting the passenger vehicle market to zero emissions.

#### **5. FINANCIAL BENEFITS FOR EVS ARE MOST EFFECTIVE WHEN COMBINED WITH DISINCENTIVES FOR INTERNAL COMBUSTION ENGINE CARS**

Governments can increase the effect of financial support to EVs when they penalise internal combustion engine cars at the same time. Increasing taxes on high-polluting cars in combination with grants and/or exemptions from taxes for EVs can close the financial gap between internal combustion engine cars and their electric alternative. This combination rewards consumers buying clean technology and disadvantages those buying polluting technology.

#### **6. FINALLY, CAR PURCHASERS MIGHT NOT BE FULLY AWARE OF FINANCIAL BENEFITS AND OTHER INCENTIVES.**

Information and guidance about EV measures should be easily accessible and simple to understand to ensure maximum usage.



## GREENPEACE RECOMMENDATIONS

We see electric vehicles as an important step towards a fossil free future, yet by no means should they be viewed as the end-all-be-all on the pathway towards finding sustainable mobility solutions.

European governments must provide a binding regulatory framework to ensure that the sales of fossil fuel cars — including conventional hybrids — are stopped by 2028, and certain nations will have to go even further in order to address the unfolding climate emergency.

### **NATIONAL AND CITY GOVERNMENTS NEED TO ELIMINATE THE NEED FOR CARS AND DRIVE DOWN THE OVERALL NUMBER BY:**

- Prioritising the improvement and extension of public transport networks run on renewable energy, improve and extend cycling and walking infrastructure, and increase infrastructure to support the safe uptake of micro mobility solutions.
- Implementing car restricting measures — such as ultra low emissions zones, kilometer tolls, tax measures and incentives, etc. Legal requirements have the highest rating in terms of their overall effectiveness in getting diesel and petrol cars off the road — if these requirements are set at ambitious levels. They are also affordable for governments and remain consistent with environmental policy goals.

### **FOR ELECTRIC VEHICLES TO BE ABLE TO DEVELOP THEIR FULL POTENTIAL AND BEST CONTRIBUTE TO AN ENERGY TRANSITION, POLICYMAKERS NEED TO ENSURE THAT:**

- Renewable energy based electricity expands fast enough to cover the additional power demand by electric vehicles, in line with a 100% renewable energy goal.
- Grids and other infrastructure are adapted to ensure EV batteries can store energy to be used when renewables (solar, wind) are producing less energy.
- Car sharing is encouraged, individual car ownership discouraged.
- Battery recycling is made mandatory everywhere, while car and battery companies invest in research for more sustainable alternatives to current battery technologies.
- Batteries must become more durable (ie greatest number of charge cycles possible) and better designed so that they are easy to refurbish (for reuse) and to recycle at ultimate end of life (so materials are re-used).
- When virgin materials are absolutely unavoidable, there must be traceability and transparency of the supply chain and purchasers must insist that mining operations adhere to stringent international environmental and human rights best-practice standards. There must be no materials from deep sea mining operations in the supply chain.

Finally, policymakers need to make sure that car companies stop producing diesel cars immediately and phase out the production of petrol cars (including hybrids) in line with the 2028 date. They also need to invest in new EV models — affordable, downsized and with low energy-consumption (also to limit the size of the battery needed) — along with developing new business models, shifting toward the provision of mobility services within the context of shared electric mobility, in order to rapidly bring down car ownership and hence the overall car stock.

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It needs solutions. It needs change. It needs action!**

**This briefing is based on research commissioned by Greenpeace Germany  
The original research done by the Ecologic Institute can be found here.**