Climate Policy Atlas V1: Metadata on policy support for electric vehicles

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Please note that the carbon tax and emissions trading data are via the World Bank Carbon Pricing Dashboard, and must be cited as such for subsequent analyses.

The data is to the best of our knowledge correct, but we do not assume any responsibility for any remaining data errors or publication mistakes.

# General information

These datasets contain detailed, machine-readable data on support policies for renewable energy and electric vehicles from the years 2000-2024 for Germany, Greece, Ireland, and France. The work was performed by Silvia Weko, Puru Malhotra, Aksornchan Chaianong, Ioannis Milioritsas, Dogukan Günkördü, Franziska Bold, Johannes Weiß, Daria Lebedeva, and Johan Lilliestam, during 2024-2026.

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The data is to the best of our knowledge correct, but we do not assume any responsibility for any remaining data errors or publication mistakes. Should you find errors or have data to fill gaps, please contact [climatepolicyatlas@nfdi4energy.org](mailto:climatepolicyatlas@nfdi4energy.org). If you would like to give feedback on a policy for correction or update in future versions of the data, please reference the serial number provided in the column “serial\_number”.

# About the data

## Data sources

The data are derived from publicly available sources. Data on electric vehicle support policies from 2000-2024 was gathered using publicly available sources including Climate Policy Radar, Climate Policy Database, the IEA, RES-legal.eu, World Bank, OECD, IRENA, relevant national ministries, industry bodies, and other websites.

Information about the source of each individual observation can be found in the column “source”. Data from secondary sources include original source URLs, some of which are no longer valid. When possible, we have replaced these broken links with the archived version from the Internet Archive Wayback Machine.

## Data overview: time, jurisdictions, and technological scope

**Time:** We record data for the years 2000-2024.

**Jurisdictions:** The datasets focus on national policy instruments. They do not include higher-level policies like the EU level or lower-level policies like the federal states or cities.

**Technological scope**: The datasets cover policies that support electric vehicles and electric vehicle charging. The following technologies are included:

Table 1: Technologies included in the datasets

|  |  |  |
| --- | --- | --- |
| **Data type** | **Technologies included** | **Technologies excluded** |
| Electric vehicles | Plug-in hybrid electric vehicles (PHEV)  Battery electric vehicles (EV)  Charging infrastructure | Fuel-cell/hydrogen vehicles, hybrid vehicles that are not plug-in hybrids  Two and three-wheelers (scooters, e-bikes etc.)  Heavy-duty vehicles like trucks, vans, taxis, buses |

We also record information on policies when they apply to multiple different kinds of technologies. For example, some vehicle support policies technically apply to all vehicles, but only those with lower emissions levels receive benefits (which tend to be EVs and PHEVs).

Unless otherwise stated, policies apply to new vehicles and vehicle purchase rather than rental.

A note on scope: we focus on passenger cars that are used by private persons. We also record information on support schemes to encourage the use of electric passenger vehicles by companies and local government, but this is not the focus of our work.

## Scope: which policy instruments are recorded?

For policy support data, our focus is on public policies, which we define as “efforts made by governments to alter aspects of their own or social behavior in order to carry out some end or purpose and are comprised of complex arrangements of policy goals and policy means” (Howlett, 2014, p. 282).

In terms of policy means, we look at policy instruments: the specific policy measures by which the government aims to achieve its objectives. Within this category, we have gathered information on both economic and regulatory instruments. We define an economic instrument as a policy instrument that hands out or takes away material resources while the addressees are not obligated to take the measures involved (Bemelmans-Videc et al., 2011). At this time, we do not gather data on information policy instruments or voluntary policy instruments.

We focus on the following specific instruments which influence the expansion of electric vehicle use:

Table 2. Types of policy instruments recorded

|  |  |
| --- | --- |
| **Economic instruments** | |
| Policy instrument name | Definition |
| Grant | A grant is a fiscal incentive where the government provides non-repayable funding for specific purposes. For EVs, we record 2 sub-types: purchase grants and installation grants. |
| Tax incentives | A tax incentive is a fiscal incentive where the government reduces or exempts selected activities, goods or actors from taxes. These include subcategories such as tax exemptions, tax deductions (including accelerated depreciation), tax reductions, tax credits and tax returns. |
| Feebate | A feebate or bonus-malus scheme imposes additional fees on a high-emitting technology and provides rebates for low-emitting technologies. An emissions "null-point" is set, where the buyer gets neither a bonus nor a malus. The idea is that the system would be neutral on public finances. |
| Soft loan | A soft loan is an economic policy instrument where the government provides loans for at preferential conditions to lower financing costs. |
| Tender with support | An auction is an economic instrument that allocates resources based on a bidding competition. These resources may be a financial (for example, an auction with a feed-in tariff) or other resources such as access to land. For example, a government may publish a tender for the construction of 6,000 EV charging points and then award contracts to companies with favorable conditions. |
| Product retirement premium | A retirement premium for emissions-intensive products used by consumers such as fossil fuel vehicle swap or scrappage schemes. |
| Fee decreases or exemptions | Fiscal incentives where the government supports mitigation activities by reducing or exempting green activities from existing fees or charges (such as exempting EVs from paying highway tolls). |
| Emissions trading systems | A greenhouse gas emissions trading scheme (also called carbon markets) is a trading scheme wherein governments issue tradable emissions certificates, often combined with a fixed emissions cap (overall or set on specific actors), thereby setting economic incentives to reduce emissions. We record only mandatory cap-and-trade schemes that include emission from transportation. |
| Carbon taxes | A carbon tax is a tax on carbon or other greenhouse gas emissions, measured in CO2 equivalent values. By increasing the cost of carbon-intensive transport, carbon taxes indirectly support EVs. |
| **Regulatory instruments** | |
| Ban | A ban is a regulatory policy instrument that forbids an activity, technology or product because of its environmental harms. This can include phase-downs (which aim at reduction) or phase-outs (which aim at elimination). |

**NOTE**: Policy names do not always correlate with actual instruments: a country might call a grant a “bonus”, “premium” or even a “business model” in the source text. We use the above definitions from the [Climate and Energy Policy Ontology](https://github.com/OpenEnergyPlatform/ClimateEnergyPolicyOntology) to categorize instruments, and note the name of the policy in the policy name column whenever possible.

### When are instruments not recorded?

We record instruments that would be expected to have an impact on investment decisions for new electric vehicles. Policies are not recorded if they only apply to a small sub-group of actors. We focus on policies that apply to larger actor groups, such as a grant policy where SMEs are eligible for loans (rather than rural SMEs with 20 employees or less). We do not record grants or programs restricted to schools, public servants, or government buildings.

We focus on general passenger vehicle policies and exclude programs targeting specific transport niches. This includes incentives limited to sub-groups such as taxis, buses, trains, scooters, or boats.

## Correctness and completeness of data

We have aimed for the data to be as complete and correct as possible, but errors may still occur. We do not assume any responsibility for any remaining data errors or publication mistakes. If you see something that may be incorrect in the dataset, please write to us directly at [climatepolicyatlas@nfdi4energy.org](mailto:climatepolicyatlas@nfdi4energy.org) with the serial number of the observation.

There are some cases where we are reasonably sure that a policy exists, but are uncertain about details. For example, the German KfW provides loans at favorable rates for companies installing chargers (a “soft loan”) which is valid for 10 years. However, we do not know the precise interest rates as the KfW does not share this information. We would record this as follows:

Table 3: Recording instruments with missing information

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **year** | **country** | **measure** | **loan\_interest\_rate** | **loan\_duration** | **notes** |
| 2020 | Germany | soft loan | NA | 10 years | The yearly interest rate was recorded by the EU in the source as 1.03 %, but it varies daily and according to market conditions and is determined by the KfW when the loan is recorded. |

In other cases, we know some details of a policy but not all of them. For example, we might know about a grant to purchase electric vehicles that existed, but not all the details for every year. Here is how we would record it if:

* In the year 2016 the policy was introduced, but we couldn’t find any more details on it.
* In the year 2017, the previous grant (level unknown) was raised to EUR 1000. There was a cap on how much a recipient could get, but we don’t know how much it was.
* In the year 2018, there was a cap of EUR 3000 per recipient.
* In the year 2019, the government removed the cap.
* In the year 2020, the grant program was cancelled.

Table 4: Recording instruments with missing information

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **year** | **measure** | **policy\_change** | **what\_changed** | **level** | **level\_currency** | **level\_unit** | **cap\_possible** | **cap\_level** | **cap\_currency** | **cap\_unit** |
| 2016 | grant | yes | introduced | NA | NA | NA | NA | NA | NA | NA |
| 2017 | grant | yes | grant increased, cap increased | 1000 | EUR | per installation | yes | NA | NA | NA |
| 2018 | grant | yes | cap increased | 1000 | EUR | per installation | yes | 3000 | EUR | per recipient |
| 2019 | grant | yes | cap removed | 1000 | EUR | per installation | no | NA | NA | NA |
| 2020 | grant | yes | cancelled | NA | NA | NA | NA | NA | NA | NA |

# Variables common for all policy instruments

## Policy instrument type

**Measure:** The policy instrument as listed in Table 2 (i.e., grant, soft loan, tax incentive, etc.).

**Instrument\_subtype:** further details on the instrument: for example, if it is a tax deduction that applies to VAT, a ban that phases out ICE vehicles, etc.

**Name:** The name of the policy instrument (in the original language and/or English). For example: in the case of tax exemptions, these are usually recorded in the yearly budget, so the column value for “name” would be “Budget 2008”, “Budget 2010”, etc. In other cases, the policy instrument has a common name by which is it is referred to, such as “Sustainable Energy Authority of Ireland (SEAI) Grant Scheme”. This is just to indicate to a data user that all cells with “Budget 2008” or “Sustainable Energy Authority of Ireland (SEAI) Grant Scheme” are related, in case they need to look more closely at them for analysis.

## Year and Month

**Start\_year and start\_month:** These variables represent when a policy was introduced. For example, a policy that comes into force on April 1st, 2000 would be recorded as Year (2000) and month (April).

In some cases, a policy may also have retrospective impacts: for example, a law is published in January 2020 which affects how businesses can report their 2019 taxes. We would still record this as (2020, January) and then in the notes add the information that this also applies retrospectively.

**End\_intended and Start\_intended:** Some policies are originally slated to end earlier and then are extended; others may be passed into law, but will not yet come into effect until a future year. This information is included in End\_intended and start\_intended.

## Affected technologies

For each policy instrument, we describe what kind of technology is impacted (Technology\_type). The possible entries for renewable energy are listed in Table 3.

Table 5: List of technologies in the policy dataset

|  |  |
| --- | --- |
| **Technology\_type** | **Definition** |
| Charging infrastructure | Equipment and hardware used to provide electrical energy for the recharging of electric vehicle batteries |
| Electric vehicles | Also known as Battery Electric Vehicles (BEVs); vehicles that run entirely on electricity stored in rechargeable battery packs and have no internal combustion engine. |
| Plug-in Hybrid Vehicles | Vehicles that use both a rechargeable battery pack (which can be plugged into an external power source) and an internal combustion engine to provide propulsion |
| ICE vehicles | Internal Combustion Engine vehicles; conventional vehicles that rely solely on the combustion of fossil fuels (such as gasoline or diesel) for power. |
| Hybrid vehicles | Vehicles that combine a conventional internal combustion engine with an electric propulsion system. |
| Multiple | More than one of the above technologies is supported, but it is not possible to differentiate how support is divided between technologies. Further information may be available in the Technology\_type\_multiple column. |
| All vehicles | A broad category encompassing all vehicle types (ICE, Hybrid, Plug-in, and Electric) as defined by the source data, including technologies for which we do not gather data |

Sometimes policy instruments will cover multiple technologies, without differentiating between support levels or quotas for different technology types (such as a grant for both electric and hybrid vehicles). In such cases, we record this as “multiple” under Technology\_type. Further information about the combination of technologies supported when the value is “multiple” is recorded in the Technology\_type\_multiple column.

In some cases, there are additional technology-specific requirements for eligibility. For example, some countries may only grant support to electric vehicles if it is recently purchased or to charging infrastructure if it is located in a rural area. These requirements are recorded in the column “Technology\_requirement”, naming of the requirement is taken from the source.

Table 6: Illustration: multiple technology types and technology requirements

|  |  |  |
| --- | --- | --- |
| **Variable name** | **Description** | **Values** |
| Technology\_type\_multiple | When multiple technologies are supported without a clear differentiation of support levels | EV + hydrogen, EV + PHEV, Charging and storage infrastructure, etc. |
| Technology\_requirement | A technology-specific requirement for support eligibility | vehicle scrappage and purchase, specific vehicle weight, may not use diesel, new vehicles, in suburban and rural areas, etc. |

## Policy change and What changed

The entry “Policy\_changed” is a binary variable, and is either “yes” or “no”, indicating that a policy did or did not change in a particular year (Table 5). Policy change is recorded for the year that a change was enacted, not when it was decided.

The entry “policy\_changed\_detail” describes how the enacted policy change affected the policy instrument for one of the variables we collect. For example, if a new policy was introduced, if a policy was cancelled, extended, support levels were increased or reduced, etc. There is no coding scheme for the values in this column; it is simply an annotation to help make the data-set more accessible for users.

The “change” variable refers to events that were not already part of the policy. For example, the German EV purchase grant was originally slated to end in 2019, but was then extended. The decision in 2018 to extend the policy end year to 2025 constitutes a change. If a policy was originally scheduled to end in 2019 and did so, we record policy\_changed “yes” and then in the details about the change “policy ended”. This is different from a cancellation.

Sometimes a new policy document is published without changing the instrument for which we are recording data. For example, EV purchase subsidies that apply to “new” vehicles will include a definition of what is “new” (purchased within some date range). An updated policy document might have a different date range because it is published a year later, but it has the same exact grant amount and effect. As long as the policy instruments themselves do not change, such observations are recorded as “no”.

We do not register policy changes that do not affect any of the variables in the dataset.

Table 7: Summary of the policy change entries

|  |  |  |
| --- | --- | --- |
| **Variable name** | **Description** | **Values** |
| policy\_changed | Whether the policy changed or not in a given year | yes, no |
| policy\_changed\_detail | Note on how the policy changed | introduced, cancelled, ended, support level increased, support duration changed, cap increased, etc. |

## Sources, notes, and CPDB policy identifier

We gather original data from various sources including Climate Policy Database (CPDB), Climate Policy Radar (CPR), the IEA policies and measures dataset, information requested from the EU on energy support schemes, and more. In case we record a policy instrument from a policy identified in CPDB, we record CPDB’s policy identifier and policy title. The variable CPDB\_identifier is the original CPDB identifier, plus a year value (i.e., for CPDB policy 211000789 for the year 2016, this is recorded “211000789\_16”). A blank space does not necessarily indicate that there is not an equivalent CPDB observation, as in some cases the information was from a different source and we did not check all observations for CPDB equivalency.

## Actors and budget

**Actors:** Some policies specify which actors are eligible, excluding others: for example, a tax break which is only for SMEs. Other policies may have multiple conditions: for example, they give different support rates according to both the vehicle type, and actor type – low-income households tend to get higher grants. In these cases, we record the actor for whom this policy applies. We use the definition that is provided by the policymaker – if they say the policy is only for SMEs, we do not double-check what that definition is. We only record the actor if this is specifically mentioned in the policy; otherwise, this is left blank.

**Budget:** If information is available, we record information on the total budget for the policy instrument. This is recorded in the columns “Government\_budget” and “Government\_budget\_currency”.

# Variables common for most policy instruments

## Support level and conditions

Many policies have conditions about what support levels different technologies are eligible for. For example, some countries only provide support for installations under a certain size; or they have different grant rates for smaller or larger businesses. We illustrate how these conditions work with 3 cases.

**Case 1: One condition.** A country will only grant a purchase grant of EUR 4000 to electric vehicles up to EUR 60000 in price. This would be recorded as follows:

Table 8: Recording instruments with one condition

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tech\_type | Condition\_max\_1 | Condition\_unit\_1 | level\_1 | instrument\_level1\_unit |
| Electric vehicle | 60000 | EUR | 4000 | EUR purchase price |

**Case 2: Different group conditions.** A country has multiple conditions, so that different groups receiving different levels of support. For example, a country may have several possible levels of grant subsidies for different gCO2/km emissions: EUR 2500 for vehicles that emit under 50 gCO2/km, or EUR 1500 for installations between 51-104 gCO2/km. This would be recorded as follows:

Table 9: Recording instruments with multiple conditions for different groups

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Condition\_min\_1 | Condition\_max\_1 | Condition\_unit\_1 | lvl\_1 | instrument\_lvl1\_unit | Condition\_min\_2 | Condition\_max\_2 | Condition\_unit\_2 | lvl\_2 | Level\_2\_unit |
| 0 | 50 | gCO2/km | 2500 | EUR | 51 | 104 | gCO2/km | 1500 | EUR |

**Case 3: Multiple conditions.** Another possibility is that to receive a grant, several different conditions must all be fulfilled. Taking the example of purchase subsidies for plug-in hybrid vehicles in France, the vehicles must fulfill BOTH these conditions if they are to receive the EUR 2000 purchase bonus:

* Condition 1: Vehicle price of EUR 50,000 or less, AND
* Condition 2: Vehicle range of 50 km

We record this as in the table below. The level of support is only recorded in level\_1, and level\_2 is left blank. Details on the unit (i.e., EUR vehicle price, km vehicle range) are recorded in the sections Condition\_1\_notes and Condition\_2\_notes.

Table 10: Recording instruments with multiple conditions that must be fulfilled

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Condition\_min\_1 | Condition\_max\_1 | Condition\_unit\_1 | lvl\_1 | lvl\_1\_currency | Condition\_min\_2 | Condition\_max\_2 | Condition\_unit\_2 |
| NA | 50000 | EUR | 2000 | EUR | 50 | NA | km |

**Note:** this is also the case for policies with technology requirements. For example, if people only get their EV bonus if they also install a charger, the cell Technology\_requirement should be filled in as “home charger installed” and both conditions must apply to receive the EUR 4000 grant.

**Multiple\_conditions\_attributes:** To signal to the data user the difference between Case 2 (different levels of support for different groups) and Case 3 (conditions that must all be met to receive support), we fill in the cell “Multiple\_conditions\_attributes”. Case 2 would be filled in as GROUP and case 3 as ALL. For Case 1, this column is marked NA (not applicable).

So far, we have collected data by adding instrument conditions and levels as needed: most do not have more than 2, and very few have more than 5. However, there are a few exceptions for this. For example, the French Feebate scheme for electric vehicles. While it began in 2008 with 4 vehicle classes with different fees and rebates depending on their emissions intensity, by 2021 there were 72 vehicle classes (Kessler et al., 2023). We therefore record this as follows:

* Condition\_1: the lowest value of all the classes
* Condition\_2: the value for which there is neither a fee nor a levy
* Condition\_3: the highest value for all the classes.

## Support levels: currency and percent

In the policy instruments described above, support levels are determined by setting a specific currency price per unit. Monetary data usually represents the support paid per unit during a calendar year. Entries that concern monetary support are recorded as listed in the source, which is usually the local currency and then converted to Euros (if relevant). When policies and their support levels change during the year, we record this information in a new row. For example, if an existing EV purchasing grant is increased in March 2020, it would be recorded as follows:

Table 11: Currency support levels

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **start\_year** | **start\_month** | **policy\_change** | **level\_1** | **level\_1\_unit** |
| 2019 |  | no | 1000 | EUR per vehicle |
| 2020 | January | no | 1000 | EUR per vehicle |
| 2020 | March | yes | 2000 | EUR per vehicle |
| 2021 |  | no | 2000 | EUR per vehicle |

Other support instruments instead set a threshold of support. For example, in grant instruments the government may reimburse up to 30% of the total investment cost of a project. We record this as ‘30’ in level\_1, and then give information on the % type detail in level\_1\_unit.

Table 12: Currency support levels

|  |  |  |  |
| --- | --- | --- | --- |
| **measure** | **Technology\_type** | **level\_1** | **level\_1\_unit** |
| grant | Charging infrastructure | 30 | % project cost |

In some cases, a range is given for the support percent (i.e., 50-70%) without any clear conditions for what ranges of support depend on which conditions. If there is no information on conditions, we record the highest support percent available in the “level” column and add further information in notes. The exception to this is if there is a different support amount between regions, in which case we record the average and add further information in notes.

Below is a summary table of the different kinds of support levels, and how they are recorded. The common **“level\_”** identifier records the level of support as described in the policy documents.

Table 13: Support level variables

|  |  |  |
| --- | --- | --- |
| **Variable name** | **Description** | **Sample values** |
| level\_1 | The amount of support granted | Numeric |
| level\_1\_currency | The currency in which the support level was originally recorded (often the national currency of the country) | EUR, DEM, FRF, etc. |
| level\_1\_unit | The unit that is granted the level of support | kWh, tCO2 equivalent, kWp, kW, tCO2, kWh, per project, % of investment, etc. |
| level\_2 | as above | as above |
| level\_2\_unit… | as above | as above |

## Support cap

**The cap** is the maximum amount of support that will be given in total. For example, grants may be capped at some percent of total investment or currency amount. In some cases, we were able to find information that a cap exists but not the actual limits, which we therefore record in the column “cap\_possible” as “yes”.

The cap differs from level, in that level is always the per unit amount (Euros per vehicle, % of project financed).

Table 14: Summary of different data entries for caps

|  |  |  |
| --- | --- | --- |
| **Variable name** | **Description** | **Values** |
| cap\_possible | Indicates whether the policy had a cap beyond which no further support is paid | yes, no |
| cap | The numeric cap amount | Numeric |
| cap\_unit | The unit of the cap | % vehicle purchase price, % vehicle cost, EUR, etc. |
| cap\_notes | Any further information on the cap |  |

Sometimes there are policies that set an overall cap: for example, a policy where electric vehicles with emissions between 21-128 gCO2/km get a rebate of 2500 EUR, and from 129 gCO2/km and higher get a rebate of 5000 EUR, but the cap for both is set at 50% vehicle price. This would be recorded as follows:

Table 15: Recording caps

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Tech\_type | Condition\_min\_1 | Condition\_max\_1 | level\_1 | Cmin2 | Cmax2 | l2 | cap | cap\_unit |
| Electric vehicles | 21 gCO2/km | 128g CO2/km | -2500 EUR | 129 gCO2/km | NA | -5000 EUR | 50 | % vehicle purchase price |

However, sometimes there are installations that differ. In the example above, if there were a cap of 30% vehicle purchase price for the lower emission level and 50% vehicle purchase price for the second category, this would be recorded as follows:

* Cap\_possible = yes
* (no amounts recorded)
* In notes: cap for 21-128 gCO2/km is 30% vehicle purchase price, cap for 129 gCO2/km and higher is 50% vehicle purchase price.

**Note:** The cap is NOT the total budget of the program; or the budget that will be spent per year. Budget per year is recorded in the column “government budget”, and information on the total budget can be added in the notes section.

# Details on electric vehicle policy support instruments

The research was gathered by hand with a research team using the follow process:

* Establishing an overview of which policies are likely to be in force in each country in the IEA and Climate Policy Database (as well as EU subsidies data). This allowed us to look closely at new laws and regulations passed by the government that could have influenced the existence of policy instruments and their level of support.
* Searching the websites of relevant national institutions for further details on specific policy instruments (i.e., in the case of loans in Germany, the website of the KfW; or the national Irish budget which is published on the government website yearly).
* In some cases where information was difficult to find, we also looked at the websites and reports of industry associations, such as the French solar association: <https://franceterritoiresolaire.fr/>, as well as news sites, think tanks and other online sources.

## Policy instruments for electric vehicle support

### Grant

Grants include different instruments whereby the government pays part of the cost of a renewable installation or a vehicle. For example, under a purchase grant, part of the investment cost of an electric vehicle is subsidized, while under an installation grant, part of the cost of charging infrastructure is subsidized. In both cases, the amount paid by an individual or company, and thus the effective project cost, is reduced. For grants, the most relevant data is on the level and the cap.

**NOTE:** if there are grant ranges without information on the conditions (i.e., “grant between 50-60% of investment cost), then we record the highest amount, and record the range in the notes.

### Feebate

Feebates are policy instruments that combine fees and rebates to influence investment choices. Products or activities with emissions above a defined benchmark are subject to a fee, while those with emissions below the benchmark receive a rebate. In the context of vehicles, feebates increase the cost of carbon-intensive options and reduce the cost of low-emission alternatives, without requiring additional public expenditures.

This is especially relevant for France and its Bonus/Malus system, where the government shifts the financial burden of subsidies away from the state and onto buyers of high-polluting cars. Each year, the "malus" becomes increasingly stringent, applying to vehicles starting at lower CO2 emission thresholds while also incorporating a weight-based tax to further discourage the purchase of heavy, inefficient models.

### Soft loans

With soft loans, the government (or other government body) provides loans at preferential conditions. In most cases, this is a lower interest rate than the market would provide, to lower the financing costs of new projects.

Table 16: Variables that apply only to soft loans

|  |  |  |
| --- | --- | --- |
| **Variable name** | **Description** | **Values** |
| loan\_interest\_rate | The interest rate for the loan | Numeric |

Often, institutions do not report information on their loan interest rates and how they change over time. Therefore, some loan data is merely indicative that the policies exist but we do not know their precise conditions.

### Tender with support

Government tenders for which investors put bids, which may be awarded some amount of support. For example, a government may publish a tender for the construction of 6,000 EV charging points and then award contracts to companies with favorable conditions.

Tenders may include a maximum level of support that a bidder can ask for. This is recorded in the “cap” column in the dataset. The outcome of the auction (weighted average support price that bidders will receive) is recorded under level\_1.

We record each tender individually, including the name of the auction under “policy\_name”. If a country has multiple auctions per year, these will be recorded separately.

Table 17: Variables that apply only to auctions

|  |  |  |
| --- | --- | --- |
| **Variable name** | **Description** | **Values** |
| tender\_amount\_tendered | The amount of units auctioned | Numeric |
| tender\_amount\_contracted | The amount of units contracted | Numeric |
| tender\_amount\_units | The units of the tender | charging points |

**NOTE:** Sometimes there is a policy which allows auctions to take place, but there has not yet been an auction. In that case we still record that the policy existed (policy change = no), but we do not include any details on auction and write (“no auctions this year”) in the notes section. This is how we might record if Ireland held auctions in 2011 and 2013, but not in 2012.

Table 18: Recording auction results

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| year | policy\_changed | what\_changed | Tech\_type | tender\_amount\_contracted | tender\_unit |
| 2011 | no |  | charging infrastructure | 50 | charging points |
| 2011 | no |  | charging infrastructure | 20 | charging points |
| 2011 | no |  | charging infrastructure | 80 | fast charging points |
| 2012 | no |  |  | NA |  |
| 2012 | no |  |  | NA |  |
| 2013 | yes | new auction held |  | 100 | fast charging points |
| 2013 | no |  |  | NA |  |
| 2013 | no |  |  | NA |  |

### Product retirement premium

Retirement premiums are policy instruments that incentivize the early replacement of emissions-intensive products used by consumers, such as fossil-fuel vehicles, through swap or scrappage schemes. For example, in France, a vehicle scrappage and purchase scheme allows consumers to retire an older, highly carbon-intensive vehicle and replace it with an electric or low-emission alternative. Retirement premiums are often differentiated by the type of actor, the cost of the vehicle, and its emissions intensity measured in g CO₂/km.

### Fee decreases or exemptions

Fiscal incentives where the government supports mitigation activities by reducing or exempting green activities from existing fees or charges. For example, in Greece there was a decreased user charge for parking for electric vehicles introduced.

### Tax incentives

Tax incentives are a type of fiscal incentive where the government reduces or exempts selected activities, goods or actors from taxes. For tax incentives, the most relevant data is on the level and conditions that must apply for exemptions.

There are several sub-types of tax incentives; the type is recorded in the column tax\_type. Below we include further information on the different types of tax incentives. **NOTE:** So far, we have only found tax reductions, deductions, and exemptions. However, we expect to also find the other types of tax incentives listed in the Climate and Energy Policy Ontology in other countries once we expand the dataset to further countries.

#### 7.1 Tax deductions

Tax deductions allow you to reduce the amount of gross income (or for companies, profits/value) you have to pay taxes on by subtracting certain costs from it. Accelerated depreciation is a subtype of tax deduction, where companies can write off their investments more quickly.

#### 7.2 Tax exemptions

Tax exemptions are when you do not pay taxes on certain streams of income. The difference to tax deductions is that in a deduction, you calculate your income/profits and then subtract your costs from it which makes your taxable income lower. An example of a tax exclusion would be that employees with EVs that are their company cars do not have to pay taxes on them as a benefit-in-kind.

#### 7.3 Tax reductions

Tax reductions lower the overall amount of taxes that actors pay on certain goods or services; or the amount of taxes that certain actors have to pay. This is often for consumable goods: for example, in many companies do not have to pay excise taxes/import duties or VAT on purchases.

### Bans

This regulatory instrument forbids an activity, technology or product because of its environmental harms. Our dataset includes **phase-outs** which are bans on technologies, substances and practices which aims to catalyze their decline to meet environmental sustainability objectives. For example, in 2017, France proposed a ban on the sale of fossil fuel vehicles. This was officially written into law in 2019, mandating that the sale of such vehicles will no longer be permitted after 2040. This is recorded as follows:

Table 19: Recording start\_intended

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **start\_year** | **Start\_intended** | **measure** | **Instrument\_subtype** | **name** | **Technology\_type** |
| 2019 | 2040 | ban | ICE phase-out | Mobility Guidance Law (LOI n° 2019-1428 du 24 décembre 2019 d'orientation des mobilités) | ICE vehicles |

### Carbon Taxes

Carbon tax data are downloaded from the World Bank Carbon Pricing Dashboard, and must be cited as such for subsequent analyses. The full dashboard is available at <https://carbonpricingdashboard.worldbank.org/about>. Carbon pricing is only recorded if it applies to the transport sector. In this case, it is coded as applying to “all vehicles” as its technology type.

### Emissions Trading

The instrument Emission trading indirectly supports electric vehicles, as it makes carbon-intensive transport relatively more expensive. We record data on mandatory cap-and-trade schemes. Data are from the World Bank Carbon Pricing Dashboard, and must be cited as such for subsequent analyses.

The ETS is only recorded if it applies to the transport. In this case, it is coded as applying to “all vehicles” as its technology type. Please note that Supra- or subnational emissions trading systems, such as the European Emission Trading Scheme are not included in this data, as they are not national-level policy instruments.

# Annex: all column names and definitions for the electric vehicle policy support instruments dataset

|  |  |  |
| --- | --- | --- |
| **Column** | **Short definition** | **Unique\_Values** |
| ISO\_code | The 3-letter ISO country code for which the data is gathered | DEU, FRA, GRC, IRL |
| start\_year | Year in which the policy changed | See dataset |
| start\_month | Month in which the policy changed | See dataset |
| End\_intended | When the policy originally planned to end | See dataset |
| Start\_intended | When a policy should come into effect | See dataset |
| measure | The policy instrument | See dataset |
| Instrument\_subtype | The subtype of policy measure if applicable | See dataset |
| name | The name of the policy (or policies) that create the instrument. | See dataset |
| policy\_changed | Whether or not the policy changed in a given year | no, yes |
| policy\_changed\_detail | Details on how the policy changed | introduced, support level increased, support duration changed … (see dataset) |
| Actors | The actor for whom this policy applies | Companies, Farmers, Landlords, Households, City Government, etc. |
| Technology\_requirement | A technology-specific requirement for support eligibility | See dataset |
| Technology\_type | Which technologies are supported by the policy | See dataset |
| Technology\_type\_multiple | When multiple technologies are supported without a clear differentiation of support levels | See dataset |
| multiple\_condition\_attributes | The condition attribute applies when the policy has multiple conditions. GROUP: Each regulation condition applies separately. ALL: All conditions must be met to receive support. | group, all |
| Condition\_maximum\_1 | The maximum level or amount for which support will be granted, under Condition 1 | numeric |
| Condition\_maximum\_2 | The maximum level or amount for which support will be granted, under Condition 2 | numeric |
| Condition\_maximum\_3 | The maximum level or amount for which support will be granted, under Condition 3 | numeric |
| Condition\_minimum\_1 | The minimum level or amount for which support will be granted, under Condition 1 | numeric |
| Condition\_minimum\_2 | The minimum level or amount for which support will be granted, under Condition 2 | numeric |
| Condition\_minimum\_3 | The minimum level or amount for which support will be granted, under Condition 3 | numeric |
| Condition\_notes\_1 | Any further notes on Condition\_1 | (see dataset) |
| Condition\_notes\_2 | Any further notes on Condition\_2 | (see dataset) |
| Condition\_notes\_3 | Any further notes on Condition\_3 | (see dataset) |
| Condition\_unit\_1 | The unit of Condition\_minimum\_1 and Condition\_maximum\_1 | kW, years, hours, kWp |
| Condition\_unit\_2 | The unit of Condition\_minimum\_2 and Condition\_maximum\_2 | years, kW |
| Condition\_unit\_3 | The unit of Condition\_minimum\_3 and Condition\_maximum\_3 | kW, kWh |
| level\_1 | The amount of support granted if Condition\_1 is fulfilled | numeric |
| instrument\_level1\_unit | The unit that is granted the level of support for Condition 1 | tCO2, per project… (see dataset) |
| level\_2 | The amount of support granted for Condition 2 | numeric |
| level\_2\_unit | The unit that is granted the level of support for Condition 2 | tCO2, per project… (see dataset) |
| level\_3 | The amount of support granted for Condition 2 | numeric |
| level\_3\_unit | The unit that is granted the level of support for Condition 3 | EUR |
| Government\_budget | The amount of funds allocated to this type of support | numeric |
| Government\_budget\_currency | Currency of the budget | EUR |
| cap\_possible | Indicates whether the policy had a cap beyond which no further support is paid | yes, no |
| cap | The numeric cap amount | numeric |
| cap\_unit | The unit of the cap | currency total budget, vehicle cost (see dataset) |
| cap\_unit\_notes | Notes on cap details | (see dataset) |
| tender\_amount\_tendered | The amount auctioned in a specific year | Numeric |
| tender\_amount\_contracted | The amount that was awarded through the auction (the sum of all winning bids in a year) | Numeric |
| tender\_unit | The unit of the tendered and contracted amount | charging points |
| loan\_interest\_rate | The interest rate for the loan | numeric |
| notes | Notes on the data | (see dataset) |
| source | Links to the sources of the data | (see dataset) |
| IEA\_name | If applicable, the name the IEA uses to refer to the policy | (see dataset) |
| CPDB\_code | Climate Policy Database policy identifier | (see dataset) |
| publication\_year | The year the policy document was published | numeric |
| publication\_month | The month the policy document was published | (see dataset) |

# References

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