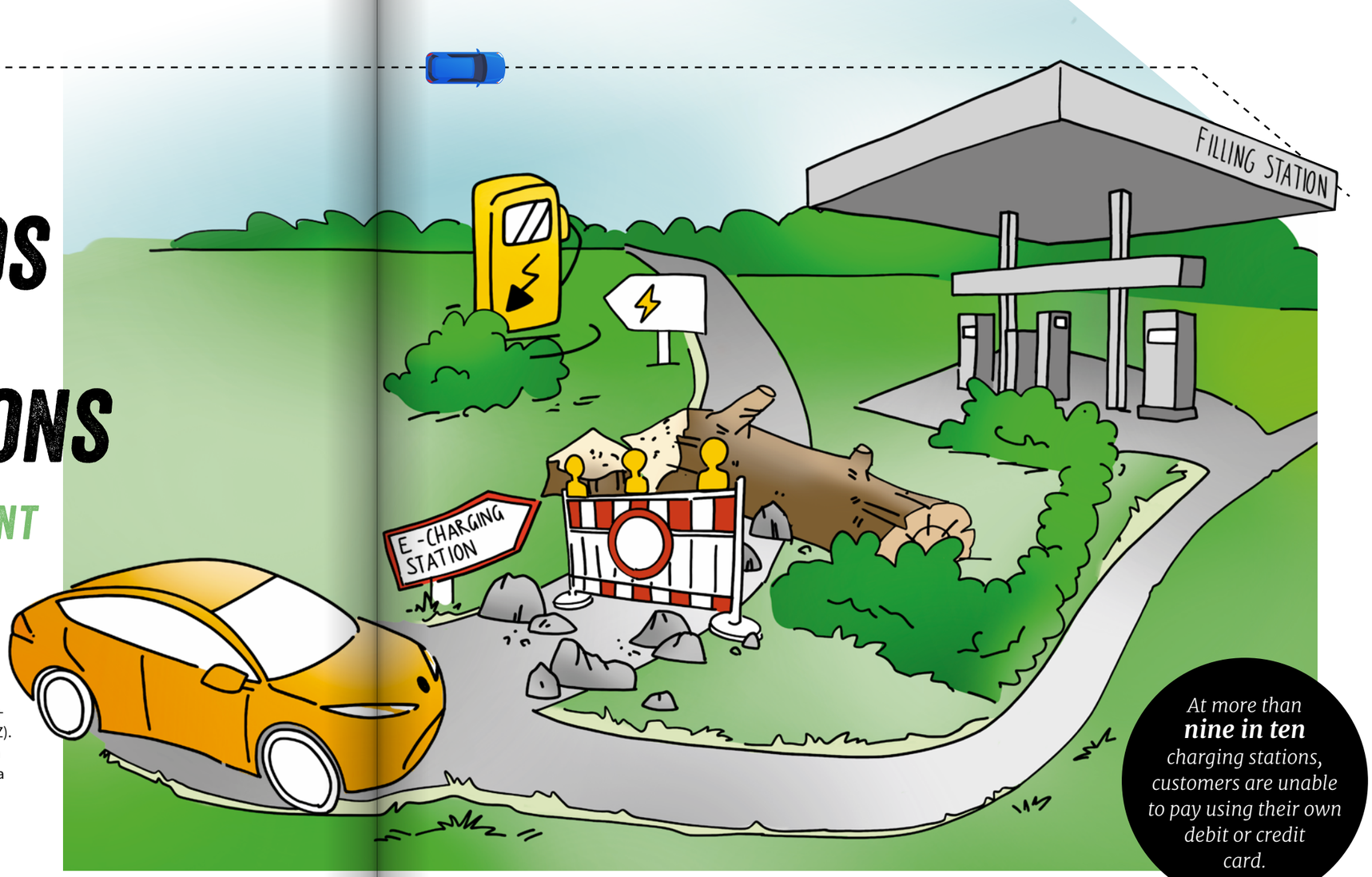
Case study on e-mobility in Europe

PAYMENT CHAOS AT EUROPE'S CHARGING STATIONS

CONVENTIONAL CARD PAYMENT MOSTLY IMPOSSIBLE



Topping up electric vehicles in Europe is a game of chance. At more than nine in ten charging stations, customers are unable to pay using their own debit or credit card. This is one of the findings of a case study conducted by KANTAR on behalf of the "Initiative Deutsche Zahlungssysteme" (IDZ). More than two-thirds of future electric vehicle drivers in selected European countries would prefer to pay for charging spontaneously and without data collection using their own bank card[6]. In practice, however, consumers at public electric charging stations in Europe are forced to use closed-loop payment systems that often involve proprietary charging cards, apps or websites requiring prior registration. The IDZ and other players are joining forces to demand a consumer-friendly solution at the European level.

At more than ***nine in ten*** *charging stations, customers are unable to pay using their own debit or credit card.*

In many European countries, topping up spontaneously is impossible or is not customer-friendly. The payment process in many places is complicated and involves various barriers. This is one of the findings of a survey of the payment options offered by 61 charging station operators with a total of almost 30,000 publicly accessible charging stations in twelve European countries (Germany, the Netherlands, Italy, France, Austria, Sweden, Portugal, Spain, Poland, Slovenia, the Czech Republic and Greece). The survey covered operators in urban (40) and rural (21) regions.

CLOSED-LOOP PAYMENT SYSTEMS DOMINANT IN EUROPE

55 of the charging station operators surveyed only offer closed-loop payment methods, such as proprietary charging cards, apps or websites that require prior registration. To receive a charging card, customers typically have to conclude a contract with the operator. Of the 59 charging station operators that offer payment using a charging card issued by them or one of their roaming partners, only 32 also include a static QR code on their charging stations to guide customers' smartphones to a website where they can pay once they have entered their payment details. This well-meaning service is susceptible to abuse because fake QR codes can be stuck over the original codes, allowing fraudsters to guide consumers to bogus websites and gather sensitive data or even intercept payments.

50 charging station operators also offer a proprietary charging app, although some of these require prior registration or a corresponding login before customers can begin the charging and payment process. Regardless of whether they use an app or a website, these payment processes are complicated and involve effort and barriers for consumers. In any case, drivers of electric vehicles need to have a smartphone and a stable Internet connection. The market research also found that apps and websites are often only provided in the respective national language and are rarely available in English, making it even harder for consumers to access the charging infrastructure. Furthermore, it was found that, in the vast majority of cases, the price per kilowatt-hour or per charge is significantly higher when paying by debit or credit card via an app or a website than when topping up with a proprietary charging card. This makes spontaneous charging especially unattractive for drivers of electric vehicles.

Only six of the charging stations surveyed – two in France and one in each of Germany, Austria, Sweden and Poland – allowed spontaneous payment by inserting a debit or credit card into a card terminal or using contactless payment.

SIMPLE, STANDARDISED PAYMENT METHODS THROUGHOUT EUROPE ARE CRUCIAL TO ACCEPTANCE OF E-MOBILITY

Broad-based acceptance of e-mobility in society depends on electric charging stations offering standardised, easily understandable and, above all, easy-to-use payment solutions. When it comes to topping up their electric vehicles, consumers need a reliable, well-developed charging infrastructure with conventional payment options like the ones they use at traditional filling stations or when paying for their everyday shopping – whenever their battery level requires it, and without having to search, book in advance, or make a detour. The results of the survey underline the familiar demands made by various players, including the German banking industry associations, leading municipal organisations in Germany, the ADAC, the German Federal Association of Electronic Cash Network Operators (BecN) and IDZ. Together, they are calling for spontaneous payment by debit and credit card via a payment terminal to be established as a minimum requirement for electric charging stations throughout Europe as part of the legislative process on the "Alternative Fuels Infrastructure Regulation" (AFIR).

6 Representative online survey of car owners conducted by infas quo on behalf of IDZ in Germany, France, Greece, the Netherlands, Poland, Sweden and Slovenia between September and November 2021. SOURCE

DRIVING BY ELECTRIC VEHICLE IN EUROPE

HOW DO DRIVERS TOP UP AND PAY FOR CHARGING IN NEIGHBOURING EUROPEAN COUNTRIES?

Netherlands

With more than 91,000 publicly accessible charging points, the Netherlands has one of the most advanced charging infrastructures in Europe. Even here, however, the conditions for spontaneous charging leave a lot to be desired: In addition to closed-loop payment using a proprietary charging card from the operator or one of its roaming partners, none of the four charging station operators included in the survey offered a link to the operator's website for customers to enter their own credit card details, let alone a card terminal for them to pay using their own debit or credit card. In other words, consumers are faced with the choice between a charging card issued by the operator or app-based payment. Furthermore, one of the charging stations surveyed did not provide details of the available payment options in the app and did not show the price per kilowatt-hour at the charging station.

France

The likelihood of encountering a charging station that allows payment by debit or credit card using a card terminal is higher in France's major cities than in the rest of Europe. Of the five urban charging stations investigated, two allowed contactless payments by Carte Bleue, the French debit card, directly at the charging station. However, tourists not in possession of the debit card have to pay using an app or by following a website link. According to the operator, there are 1,500 such charging stations on French roads. The models surveyed each have one charging point. Assuming them to be standard models, these charging stations thus account for less than three percent of France's charging infrastructure. There is less acceptance of card payments in rural areas than in cities. None of the four charging stations surveyed allowed spontaneous charging and payment via a card terminal. Consumers without the right charging card for the respective operator can follow a link to the provider's website and enter their credit card details in order to pay for charging at six of the eight stations surveyed. The public charging infrastructure in France encompasses a total of 54,700 charging points. One interesting observation is that the charging infrastructure in Paris is especially geared towards e-scooters. Many charging stations offer a separate charging rate for this new form of urban mobility.

Germany

Although Germany rivals the Netherlands for Europe's most developed charging infrastructure with around 62,700 public charging points, it is almost impossible for customers to pay at charging stations using their own debit or credit card. The survey included ten charging station operators in Germany, only one of which allows customers to pay directly at the charging station via a contactless terminal using the girocard, the German debit card. The operator in question accounts for just a small proportion of the charging infrastructure: 66 charging stations and 138 charging points. Another operator says it is fitting contactless card terminals to some of its fast charging stations. It has around 150 stations on German roads, each with two charging points. Between them, these two providers account for a vanishingly small proportion of the around 4,600 charging stations belonging to the ten German operators included in the survey. Another problem is illustrated by one of the charging stations investigated: Customers using a proprietary charging card pay EUR 0.35 per kilowatt-hour, whereas customers without a charging card who have to use an Internet-based payment method and enter their credit card details on a website or in an app are faced with a rate of EUR 0.79 per kilowatt-hour – a form of price discrimination that is detrimental to the consumer.

20.200

Charging points in Sweden

Sweden

With a total of 20,200 publicly available charging points, Sweden is well placed in a European comparison. However, only one of the five charging station operators surveyed allows customers to pay for charging at a terminal using their own debit or credit card. The operator in question says that it has around 450 charging stations. As there are some differences in the models of charging station used, it is difficult to estimate the number of charging points compared with the country's charging infrastructure as a whole. Four of the five charging stations investigated only offer closed-loop payment systems, and only two of them allow customers to follow a link to a website in addition to paying with a charging card or via an app. One feature of note is that some parking providers in Sweden allow customers to top up their electric vehicles in public places such as train stations or department store car parks. While they have to pay for parking in most cases, charging at these locations is still free.

92.000

Charging points in the Netherlands

2.700

Charging points in Poland

62.700

Charging points in Germany

2.300

Charging points in the Czech Republic

54.700

Charging points in France

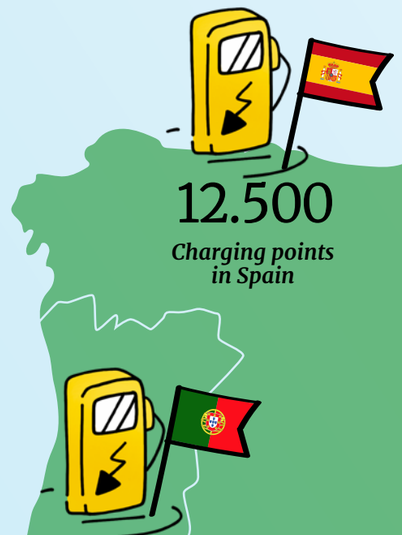
Poland

In Poland, one of the four charging station providers surveyed allows customers to pay for charging by presenting their debit or credit card at a contactless terminal. There are only nine of these charging stations in the country, all located at railway stations in major Polish cities. They only allow debit or credit card payments using the terminal, with no sign of closed-loop payment systems. Although this model represents best practice, it clearly underlines the fact that, as in other countries, payment by debit or credit card is a rarity in Poland. By contrast, debit and credit card payments are not possible at three of the four charging stations investigated. Two charging stations restrict payment to a proprietary charging card or an app in which customers are required to enter their debit or credit card details. Furthermore, the information on all four charging stations in the latest country study was only available in Polish, making it particularly hard for tourists to use them. With around 2,700 publicly available charging points, Poland is one of the countries where the public charging infrastructure is least developed.

Czech Republic

There are around 2,300 publicly accessible charging points in the Czech Republic. With almost 1,000 charging points, the two charging station operators included in the survey account for just under half of this infrastructure. Both operators accept proprietary charging cards and allow users to enter their own credit card details on a dedicated website. However, neither provider offers information in languages other than Czech, so foreign drivers are likely to find it confusing to use their charging stations. Neither of the Czech operators provides card terminals so that users can pay directly at the charging station using their own debit or credit card. The price information for one operator is unclear and inconsistent (with different information at the charging station and on the website), while charging with the other operator costs more if you do not possess a proprietary charging card and have to pay using other methods instead.

The **61 operators** *have around* **30,000** *publicly accessible charging stations throughout Europe*



Spain

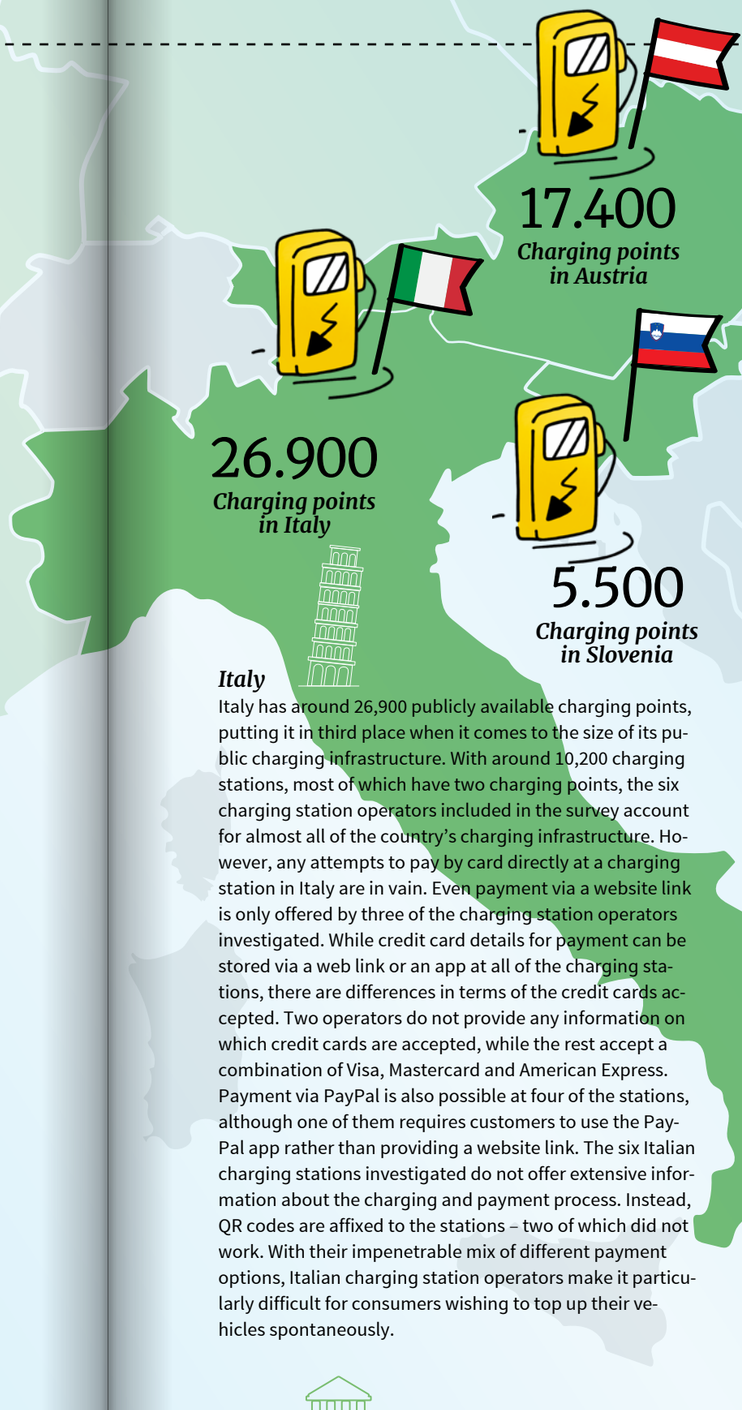
The charging infrastructure in Spain encompasses around 12,500 publicly available charging points. None of the charging stations included in this survey had a terminal allowing customers to pay using a debit or credit card. While all four charging station operators allow payment using a charging card or their proprietary app, only one linked to a website where customers can enter their own credit card details. After downloading the app and registering, it was possible to enter personal debit or credit card information and complete the payment process in the app. It was also notable that none of the four operators provided details of their electricity prices at their charging stations in a public and transparent fashion. Only one of the charging stations in the survey provided information in English as well as Spanish.

Portugal

The infrastructure in Portugal is also relatively undeveloped: With almost 4,000 publicly available charging points, the country is currently ranked in the bottom third in a European comparison. According to their own information, the four charging station operators surveyed account for more than half of all charging points in Portugal. None of the charging stations investigated allowed customers to pay for charging at a card terminal using their own bank card. Indeed, one of the operators only allows payment using a charging card, meaning that it is not possible to charge an electric vehicle at its charging stations without being in possession of a card issued by the operator. App-based payment is available at three of the four stations surveyed, although one of the apps requires an Android smartphone. Only one of the stations gives customers the option of simply following a link to a website where they can enter their own credit card details in order to make payment. Furthermore, information was only available in Portuguese at all four of the charging stations investigated, while two of the stations did not provide details of the current price per kilowatt-hour.

About the survey:

The results are based on a survey conducted by KANTAR on behalf of IDZ in May and June 2022. The countries included in the survey were Germany (10 charging station operators), Austria (9), France (8), Italy (6), Sweden (5), the Netherlands (4), Portugal (4), Spain (4), Poland (4), Slovenia (3), the Czech Republic (2) and Greece (2). The charging stations surveyed were located in cities (40) and rural regions (21). The selected countries include popular holiday destinations in Europe with different payment cultures and variations in terms of the maturity of their charging infrastructure. In all, the 61 operators have around 30,000 charging stations throughout Europe, most of which have 2 or 3 charging points per station. Information on the total number of charging stations was not available for four of the charging station operators included in the survey. The number of publicly accessible charging points in the countries surveyed can be seen on the website of the European Alternative Fuels Observatory (EAFO). The EAFO is the European Commission's key reference portal for alternative fuels, infrastructure and vehicles in Europe. The reference values for this case study are the figures for 2021.



Austria

In Austria, only one of the nine charging station operators surveyed allows customers to pay at a card terminal using their own debit or credit card. This operator represents something of a novelty because it only uses an open-loop payment method with conventional debit and credit cards. It does not allow for payment using a proprietary charging card, an app or a website for the use of Internet-based payment methods. According to the charging station operator, there are around 220 of these charging stations in Austria and most of them have two charging points. 440 charging points would be equivalent to around 2.5 percent of the 17,400 publicly accessible charging points in Austria. Seven of the nine charging stations investigated offer payment via a website link where customers can enter their credit card details or pay for charging via PayPal in addition to using their proprietary charging card technology. The remaining charging station provider only allows for payment via charging card and app.

Italy

Italy has around 26,900 publicly available charging points, putting it in third place when it comes to the size of its public charging infrastructure. With around 10,200 charging stations, most of which have two charging points, the six charging station operators included in the survey account for almost all of the country's charging infrastructure. However, any attempts to pay by card directly at a charging station in Italy are in vain. Even payment via a website link is only offered by three of the charging station operators investigated. While credit card details for payment can be stored via a web link or an app at all of the charging stations, there are differences in terms of the credit cards accepted. Two operators do not provide any information on which credit cards are accepted, while the rest accept a combination of Visa, Mastercard and American Express. Payment via PayPal is also possible at four of the stations, although one of them requires customers to use the PayPal app rather than providing a website link. The six Italian charging stations investigated do not offer extensive information about the charging and payment process. Instead, QR codes are affixed to the stations – two of which did not work. With their impenetrable mix of different payment options, Italian charging station operators make it particularly difficult for consumers wishing to top up their vehicles spontaneously.

Slovenia

Slovenia is home to around 5,500 publicly accessible charging points. Here, too, proprietary charging cards and apps seem to be the norm. None of the three charging station operators investigated offers a card terminal. One of the charging stations allows users to pay on the operator's website without prior registration. One of the three operators provides a link to a website where users can pay by entering their debit or credit card information. Slovenia also has one charging station where it is cheaper to use a charging card issued by the operator. Users must pay a fee in order to start charging. This costs EUR 0.50 when using the charging card – but EUR 1.00 when paying via the app or entering debit or credit card details on the website. The language barrier can also be problematic in Slovenia: Only two operators also provide information in English at their charging stations, while the third requires users to navigate the charging process in Slovenian.

Greece

The Mediterranean holiday destination has the least developed charging infrastructure among the countries surveyed, with around 600 publicly accessible charging points. With 340 charging stations, most of which have two charging points, the charging station operators included in the survey account for almost all of Greece's charging infrastructure. The two charging station operators investigated in Greece only offer payment using a proprietary charging card or an app. There is no option to pay by following a link to a website, never mind using a card terminal. One of the two charging stations in the survey provided information in Greek and English, while the other only offered information in Greek. Details of the price per kWh were only available at one of the two charging stations.