MINI Cooper E and FIAT 600e top Green NCAP's new Sustainability Ratings

LEUVEN, BELGIUM – It's the question on many drivers' minds: how eco-friendly is my car? Answering it has never been easy – until now. For the first time, the introduction of Green NCAP's whole-life assessment of new vehicles means consumers can see and compare the true environmental impact of cars throughout their life and compare their real-world efficiency, range, and charging capability. Green NCAP tested and compared 12 popular cars under this new rating regime to illustrate the vastly different impact they make on the environment.

New, extensive testing by Green NCAP, designed to better reflect the real-world use of today's cars, assesses the impact of weight, compares efficiency in warm and cold weather, and considers the hidden harmful emissions of tyres and brakes. More significantly, the revised star rating system now completely incorporates Life Cycle Assessment (LCA) data, making it the first vehicle sustainability rating system in the world to assess a car's environmental impact over the course of its lifetime – from 'cradle to grave' and allowing a true comparison between all types of powertrains. For drivers of electric vehicles, Green NCAP also includes a complementary, new Driving Experience assessment that includes charging and cabin heating characteristics, among others.

Taking top spot for their overall Sustainability Rating are two models with a history rooted in mindful motoring. The **MINI Cooper E** and **FIAT 600e** can be traced back to the post-war era when affordability, frugality, and versatility greatly influenced the cars we drove, and few proved as popular as the 1955 FIAT 600 and 1959 MINI. The pair went on to mobilise millions of people around the world. Generations later, their spiritual successors continue to show that small cars can be perfectly formed.

MINI Cooper E and FIAT 600e set the sustainability standard

In Green NCAP testing, the MINI Cooper E achieved a top score of five stars, with an overall score of 97 percent, while the FIAT 600e was also awarded five stars after achieving a score of 96 percent. Both models benefit from having a modestly sized battery with an installed capacity of 40.7 kWh for the MINI and 54 kWh for the FIAT, respectively. This reduces emissions during the manufacturing process and keeps the cars' weight to a minimum, which in turn benefits driving efficiency and places less strain on the tyres and brakes. In real-life testing, the MINI used 15.0 kWh/100km on the mixed road route in warm weather, and the FIAT consumed 15.5 kWh/100km.

However, there is a trade-off for having a smaller battery: both cars have a limited autonomy, especially in cold weather – a factor that is reflected in their respective driving range gradings. On a mix of road types (urban, rural, and highway) in warm weather, the MINI's real range is estimated to be 268 km (166 miles) and the FIAT's 340 km (211 miles); in cold winter weather, they can fall to 184 km (114 miles) and 225 km (140 miles), respectively.

Running the pair of small electric cars close is **Citroën's ë-C3**, which also achieved a five-star rating, with a score of 91 percent. However, electric cars aren't the only approach to reducing a driver's impact on the environment. The **Hyundai i20**, a petrol-powered supermini, achieved a rating of three-and-a-half stars and a score of 60 percent, while the **BMW 1 Series** petrol scored 59 percent – creditable results for conventional internal combustion vehicles.

Life Cycle Assessment shows the environmental impact of cars from 'cradle to grave'

It's easy to imagine how a car causes pollution while it is being driven. But it's harder to appreciate the emissions caused when a car is built and when it reaches the end of its life and must be recycled. These hidden emissions, derived through Life Cycle Assessment calculations, are now included in Green NCAP's Sustainability Rating.

The Life Cycle Assessment accounts for raw material extraction, vehicle production and battery manufacturing, distribution, direct tailpipe emissions, the supply of the propulsion energy consumed during operation, routine maintenance, and finally the end-of-life recycling and disposal impact. To allow for a general comparison between cars, the analysis assumes a vehicle lifetime of 16 years and an estimated mileage of 240,000 km, while using current forecasts about the changing average energy mix of the 27 EU Member States.

To further fine-tune the LCA result, consumers can use **Green NCAP's Life Cycle Assessment Interactive Tool**. This allows users to select a single car or compare several models, choose the country where the vehicle will be driven, and receive an even more accurate prediction of its lifetime environmental impact, based on the nation's typical energy mix or a renewable energy mix.

Driving Experience: How well does a car suit your needs?

As part of its new Driving Experience assessment, Green NCAP shows how a car performs in different settings and scenarios. It means consumers can see, for example, how fuel- or energy-efficient a car is when driving around town or on rural roads, on highways, or even a mix of all three. All are rated for consumption in both warm weather and the cold, an important distinction given how the driving range of a battery can be significantly reduced in winter driving conditions.

The same approach is applied to the car's driving range. Consumers can view the estimated range over the three individual road types or a combination of all three. It means those who predominantly commute to work on the highway (motorway) or drive mostly in town can obtain a realistic range prediction according to the environment and decide whether a car meets their specific needs.

Other areas that drivers of electric cars have to consider in winter include the benefits of pre-warming a cabin while the vehicle is plugged in. In large vehicles, this could add more than 100 km to their range. Green NCAP also evaluates how well a cabin is insulated – because, like having a well-insulated house, this can make it more efficient to run in both the winter and summer.

The hidden impact of mass

Over the past decade, increasing numbers of drivers have changed their petrol- or diesel-powered car for an electric alternative, believing them to be cleaner and greener.

But results from the first group of cars to be assessed according to Green NCAP's new, comprehensive testing methods show how environmentally impactful large, heavy electric cars can be.

The **Kia EV9** – a large electric SUV with seven seats, all-wheel drive, and a large 100 kWh battery – only achieved a three-star Sustainability Rating, with a score of just 56 percent. Green NCAP's tests show that its heavyweight (around 2.7 tonnes without passengers aboard) has a detrimental effect on energy required for production, energy efficiency when driving, and tyre and brake wear.

Another large, all-wheel drive, seven-seat SUV, the diesel-powered **MAZDA CX-80**, also saw its Sustainability Rating blunted by a combination of weight and a mild-acting hybrid system, resulting in a two-star rating and 34 percent score. It weighs 2.1 tonnes without occupants and suffers from low scores for tyre and brake abrasion and limited potential to recuperate energy while driving. Its LCA emissions are high, too.

By contrast, the smaller and significantly less consuming **Volvo EX30** (which only seats five) features a 69-kWh battery and weighs less than 1.8 tonnes. Its environmental impact is notably lower than the EV9's, earning it a high Sustainability Rating of four-and-a-half stars and a score of 89 percent. Although these models are not directly comparable, they illustrate how Green NCAP can help consumers make well-informed purchasing or leasing decisions when choosing their next car.

Other models assessed for their environmental impact include the **MAZDA CX-30**, **Mercedes EQE 350+**, **Renault Rafale**, and **Volkswagen Passat**. The full results for all 12 cars tested by Green NCAP can be viewed **here**.

Green NCAP: compare cars' environmental impact

Since it was founded in 1997, Euro NCAP has provided an independent platform for consumers to compare the safety of cars. At the same time, it has helped drive significant improvements in crash protection and accident avoidance.

Green NCAP, launched in 2019, serves to inform consumers about cars' sustainability and encourage the automotive industry to address all aspects of a vehicle's carbon footprint and polluting behaviour. The latest changes to its testing protocols and the introduction of Green NCAP's new Driving Experience grading are designed to account for the manufacturing

process and the increasingly complex user experience around electric cars. Its new, free-to-use website allows users to compare the Sustainability Rating of individual makes and models or browse by categories – such as superminis or SUVs. Over time, more vehicles will be independently assessed across all powertrain types, including petrol, diesel, hybrid, and fully electric.

Each car's Sustainability Rating is presented in a comprehensive report that can be browsed online or downloaded.

> As the need to tackle global warming becomes more pressing, so too does the need to decarbonise road-based transport. But, historically, it has been difficult for drivers to get a full and independent picture of a vehicle's true environmental impact over its lifetime. Green NCAP is concerned that consumers might be unknowingly 'eco posturing' – driving vehicles that have more of an impact on the planet than they think.
>
> Green NCAP is addressing this by providing the most comprehensive and updated overview of a car's carbon footprint, and showing how emissions, performance, and suitability can vary according to where and how it is made, just as much as the driving conditions.
>
> In much the same way that Euro NCAP has empowered consumers and transformed the safety of our cars for the better, we believe that Green NCAP can be both a helpful resource and a platform for driving sustainability improvements across the automotive industry.
>
> — Dr. Aleksandar Damyanov, Technical Manager Green NCAP

Vehicle	Green NCAP star rating	Overall score
BMW 1 Series	**3**	**59%**
Citroën ë-C3	**5**	**91%**
FIAT 600e	**5**	**96%**
Hyundai i20	**3½**	**60%**
Kia EV9	**3**	**56%**
MAZDA CX-30	**2½**	**44%**
MAZDA CX-80	**2**	**34%**
Mercedes-EQ EQE 350+	**4**	**70%**
Mini Cooper E	**5**	**97%**
Renault Rafale	**3**	**57%**
Volvo EX30	**4½**	**89%**
VW Passat (2024)	**3**	**55%**

Editor’s note

For full results, visit **www.greennncap.com** or **Green NCAP's newsroom** for journalists. For media information, please contact **Cordelia Wilson** at **media@greennncap.com**.

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