It has been determined that the battery with the highest GWP effect was the battery with a total value of 158 g CO_2-eq/km, modeled with 1% PVDF + 0.5% Al_2O_3 electrolyte composition. Despite its high cycle efficiency compared to 1% PVDF added electrolyte, its low energy density (Table 5) of 1% PVDF + 0.5% Al_2O_3 the electrolyte cell is evaluated IS THIS WHAT YOU MEAN? as posing a high environmental risk. The battery modeled by using 1% PVDF + 0.5% SiO_2 electrolyte composition with a total of 83.5 g CO_2-eq/km has the lowest GWP effect. The high energy density and cycle efficiency obtained as a result of electrochemical tests made this battery environmentally advantageous. In order to better understand the GWP effects of batteries, it is important to examine the contribution of the process stages to the GWP. For this purpose, the contribution of the processes leading to the GWP results of each battery, is given on a percentage basis in Figure 2, Figure 3 and Figure 4.

Because of the battery use in a vehicle, the resulting GWP has been determined as 48 g CO_2-eq/km. The high usage effect compared to that of other batteries is due to the low cycle efficiency of the battery. For this reason, the extra power required to meet the charge-discharge losses is higher than that found in other batteries. Consequently, the amount of CO_2 emission per km increases. When Figure 2 is considered, it is understood that 88.5 g CO_2-eq/km of 104 g CO_2-eq/km emission originating from cathode active material production of 1% PVDF CO_2 emissions are caused by the electricity used for material production. The emission contribution from the use of lithium in the cells is 5.48 g CO_2-eq / km. It is observed that the emission resulting from the extra power required to meet the charge-discharge losses is the highest at 28.1% after the emission from production. The battery that is modeled according to 1% PVDF + 0.5% Al_2O_3 electrolyte composition, has lower energy density but higher cycle efficiency than the battery modeled with 1% PVDF electrolyte composition. Due to its lower energy density, more cathode active materials have been used in the production of the battery cell in order to meet the power required in the battery.