abstract We present a new analysis of the ionizing emissivity ($\dot{N}_{ion}$, s^{-1} Mpc^{-3}) for galaxies during the epoch of reionization and their potential for completing and maintaining reionization. We use extensive SED modelling – incorporating two plausible mechanisms for the escape of Lyman continuum photon – to explore the range and evolution of ionizing efficiencies consistent with new results on galaxy colours (β) during this epoch. We estimate $\dot{N}_{ion}$ for the latest observations of the luminosity and star-formation rate density at $z < 10$, outlining the range of emissivity histories consistent with our new model. Given the strong UV colour-magnitude relation found in high-redshift galaxies, we find that for any plausible evolution in galaxy properties, red (brighter) galaxies are less efficient at producing ionizing photons than their blue (fainter) counterparts. The redshift and luminosity evolution of β leads to two important conclusions. Firstly, the ionizing efficiency of galaxies naturally increases with redshift. Secondly, for a luminosity dependent ionizing efficiency, we find that galaxies down to a rest-frame magnitude of $M_{UV} \approx -15$ alone can potentially produce sufficient numbers of ionizing photons to maintain reionization as early as $z \sim 8$ for a clumping factor of $C_{Hii} \leq 3$.