Abstract. In this paper, we consider a generalized Kähler-Einstein equation on Kähler manifold $M$. Using the twisted $\mathcal{K}$-energy introduced by Song and Tian, we show that the existence of generalized Kähler-Einstein metrics with semi-positive twisting $(1, 1)$-form $\theta$ is also closely related to the properness of the twisted $\mathcal{K}$-energy functional. Under the condition that the twisting form $\theta$ is strictly positive at a point or $M$ admits no nontrivial Hamiltonian holomorphic vector field, we prove that the existence of generalized Kähler-Einstein metric implies a Moser-Trudinger type inequality.