$$\begin{cases} \dfrac{dq}{dt} = S(P(q), q) - D(P(q)), & \text{both } S \text{ and } D \text{ are} \\[2mm] \dfrac{dp}{dt} = -\alpha S(P(q), q) + \beta D(P(q)) & \text{rates, } \geq 0 \end{cases}$$