One key approach for studying emerging technologies in the field of sustainability transitions is that of technological innovation systems (TIS). While most TIS studies aim at deriving policy recommendations – typically by identifying system barriers – the actual role of these proposed policies in the TIS is rarely looked at. In addition, often single policy instruments instead of more encompassing policy mixes are considered. We address these shortcomings by applying a more comprehensive policy mix concept within the TIS approach. In doing so we analyze interdependencies between the policy mix and the TIS by shedding light on the role of the policy mix for TIS functioning and performance as well as how TIS developments influence the evolution of the policy mix. We explore these interdependencies for the case of offshore wind in Germany, using data from event history analysis and expert interviews. We find highly dynamic interdependencies with reoccurring patterns of systemic problems and adjustments of the policy mix, which are fuelled by high policy mix credibility and supportive actors. Our study constitutes a first step incorporating the policy mix concept into the TIS approach, thereby enabling a better understanding of real dynamics occurring in TIS.