This article will expose the necessity for a sustainable planning and decision support framework for transport infrastructure assessment. This will be operationalized through a set of planning criteria and scenario alternatives, which is assessed in the SUSTAIN decision support system (SUSTAIN-DSS) model. A part of the decision support framework will be tested in a case study in Denmark, concerning the problem of congestion on the current bridge crossing Roskilde Fjord in the city of Frederikssund. This article suggests including in a combination both reference class forecasting and quantitative risk analysis as well as sustainable planning criteria in the assessment of the project uncovering new solutions. Thereof the decision support model reveals large potential for the inclusion of planning criteria if the overall objective of development toward a sustainable transportation system is adopted. The SUSTAIN-DSS model rests upon multi-criteria decision analysis and planning workshops in order to combine the use of qualitative and quantitative assessments. This article stresses the necessity of revising current planning paradigms such as cost-benefit analysis (CBA) but also to make clear definitions of the criteria planned for, in order to achieve a sustainable transport system. This alternative approach proves that with relatively small changes in objectives, sustainable development within transport planning can be reached.