Abstract. The linkage of production processes in manufacturing systems is a major issue affecting system’s performance. Such linkage is defined by the way material and information flows are established. A control policy in manufacturing systems imposes a particular pattern of information flow on the factory. Similarly, a specific implementation of transportation policies defines a pattern of material flow between two uncoupled processes. This paper studies the condition of material flow in KSC. Furthermore, through simulation, proper flow of material with the aim of achieving Company's development plan as well as increasing the production capacity from 2.1 to 4.2 million tons per year has been provided. For this, the exchanges among different units and various modes for transporting material among these units have been studied. Considering the hourly distribution of materials and the share of railway and road network in the material flow, four scenarios have been proposed. Based on the results obtained from the simulation model, the existing condition of material flow cannot meet the requirements of the development plan. Thus, in each scenario various solutions for improving the condition of material flow have been studied. Through studying the condition of material flow and identifying the bottlenecks, the first scenario has been selected as the practical one. According to the results an appropriate production plan cannot be achieved without increasing the capacity of the railway system. Moreover, some changes regarding the services provided by the servers have to be done in some units.