

## Case 1: From Iron Ore to cars

The chain from ore to car requires a lot of transport and logistics, whereby different transport modalities are involved. Iron ore is mined among other locations in Brazil and is imported through the port of Rotterdam. In turn the ore is transported to the steel manufacturing plants in Europe.

Converting iron ore into steel takes place among others in the Ruhr region in Germany where the first operation takes place in a blast furnace. The liquid steel from the blast furnace is then processed in a steel factory.

For this case we assume that the blast furnace is located at ThyssenKrupp in Duisburg, Germany. The liquid steel is then transported about 40 km to the steelworks in Bochum. The steel mill in Bochum subsequently manufactures and provides the steel in coils to the Fiat factory in Turin, Italy. Much information about these processes can be found on the web. Go looking for this information and answer the following questions:

- Make schematically clear which transport streams are necessary for the process from ore to car by drawing up a supply network diagram.
- Indicate in this transport network diagram (ore to car) the main logistic and SCM principals you think is applicable, like storage, warehousing, stock, JIT, etc.
- For each part of the transport chain (ore to car) indicate the required transportation mode. Give the reasons for the choice of modality. In answering this question all transport modalities need to be discussed.
- Find out what other commodities are important in the blast furnace process (there are two) and indicate which modality is likely to be used for the transport of them.
- To what extent would the transport process (ore to car) differ if the steel could be manufactured at Corus in IJmuiden, the Netherlands?
- Find out which two major terminals in the port of Rotterdam are specialized in the transshipment of ore. What are the functions of these terminals?
- Iron ore is shipped from Brazil to Rotterdam with the bulk carrier "Berge Stahl". What's so special about this ship? What are the logistic advantages of using such a ship?
- The transport process is constantly looking for ways to reduce costs. Scaling up to create economies of scale is one of the possibilities to achieve this. How can you scale up in the discussed transport chain?
- At the end of the chain, the car must be produced. Except for steel in the production of cars, many components, parts and supplies are needed. With the delivery of these components intermodal transport can be used. Give a definition of intermodal transport and give an example of the use of intermodal transport for the car manufacturing industry.
- Draw up a consumer response diagram as illustrated in picture 2.18 in syllabus 3 for the steel to car buyer. Where do you think the decoupling point of car manufacturing takes place?
- Indicate at the end of the case report all the resources you have consulted, i.e. referencing.