Tracing iron flows by using the input-output framework

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The purpose of this study is to introduce an input output table of iron (FeIO) for substance flow analysis (MFA). The FeIO shows iron flows across sectors of virgin resource, materials, products, and secondary resources. In order to obtain an FeIO with a high degree of resolution, this paper introduces a non-survey method of compilation that is based on the currently available IO tables. This method is based on the material-compostion matrix provided by waste input-output model-material flow analysis (WIO-MFA). As an application of the FeIO, a new approach called main route analysis is proposed to draw a Sankey diagram for the most relevant route of iron flow for any given starting point and ending point. The main route analysis is expected to indicate the degree of fabrication. For illustration, we compiled a Japanese FeIO with 379 product sectors, 10 material sectors, 8 virgin resource sectors, and 4 secondary resource sectors. Finally, the Japanese FeIO is used to obtain the main routes of iron flow from iron ore to export and to obsolete iron scrap and from obsolete iron scrap to coated steel. Moreover, the degree of fabrication of products is clearly shown by this analysis.