

MEASURING LOSSES IN SUGAR SUPPLY CHAIN: A BRAZILIAN CASE STUDY

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When one delivers the sugar in bulk from an origin to a certain destination, a series of physical losses (quantitative and qualitative) can be observed. Such physical losses imply, directly and indirectly, monetary losses. This article aims at measuring physical losses (quantitative and qualitative) in the supply chain of bulk sugar, from the moment the product output leaves the production units to the exporting vessel. Different loss indicators (real losses, breaking technical and contractual retention), related to the different stages of sugar logistics (road and rail transport, transshipment and port operations in the terminals), were accounted. From field research, interviews and database obtained with representative agents of the sector, it was possible to characterize the logistic processes in handling flows with selected export destinations and also to identify differences in infrastructures according to the agents involved. It was also possible to understand the procedures and particularities involving the weighing of vehicles in each logistics step and to visually identify the various types of physical losses in logistics operations, as well as the existing handling care in cases involving loss minimization. In the case of sugar originated in the State of São Paulo, the percentage of total export losses, which ranged from 0.233% to 0.533%, with an average of 0.283%. Specifically for the multimodal corridor, the range of total losses varied from 0.583% to 1.179%, with an average of 0.752%. For flows of Minas Gerais, through the road mode, the levels of total losses ranged from 0.255% to 0.555%, with an average of 0.305%. In the case of multimodal options, intervals ranging from 0.576% to 1.173% were observed, with an average of 0.745%. It was thus demonstrated

that it is not possible to establish a single indicator to "loss", beginning with the difference in the concepts involved (if it is an actual physical loss or if it concerns to technical breaks or deductions, negotiated between agents over the logistic operations). Anyway, it is certain that the losses in export logistics chain significantly affect the sugar sector, as they fall on a number of economic indicators involving the opportunity cost of lost sales, additional logistical costs and possible effects on extra taxation.