

New method to build a PIOT without disposals to nature by merging data from a MIOT and from natural resource primary inputs: the brazilian copper PIOT case.

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In 2012, the new UN national accounts handbook established the Physical Input-Output Table (PIOT) framework as the backbone for the new system of environmental and economic accounts. However, very few PIOTs have been built to date, mainly due to the heavy data requirements.

Therefore, any contribution, either to ease data requirements or provide simple but robust estimates, might help rekindling the interest on this framework.

The objective of this paper is to develop a new method to build a robust estimate of a PIOT with low data requirements.

The method uses the national monetary input-output table as a basis to calculate a unitless structure. Then, such structure is re-adjusted and turned into a physical structure by applying the natural resource primary inputs in quantity flows. The latter data can be gathered from the environmental accounts. This method differs from previous methods in that no specific data on yield ratios for any process are required (usually provided by expert estimates or LCA data). The advantage is the extremely low data requirements and the disadvantage is that the PIOT does not represent the wastes and emissions generated by the production process, since this information is not present in the original MIOT. A case study for the copper sector in Brazil will be developed.

The resulting IOT is a PIOT consistent with the national production structure but with a different structure than the original MIOT, i.e. with different technical and total requirements matrices. Thus, the new PIOT represents the production structure in physical units of the materials that are embedded in final goods only, not of all materials consumed and partially disposed as wastes or emissions.

This PIOT, although incomplete, is a stepping stone towards developing quick estimates of the physical structure, which can be latter expanded to estimate wastes and emissions.