



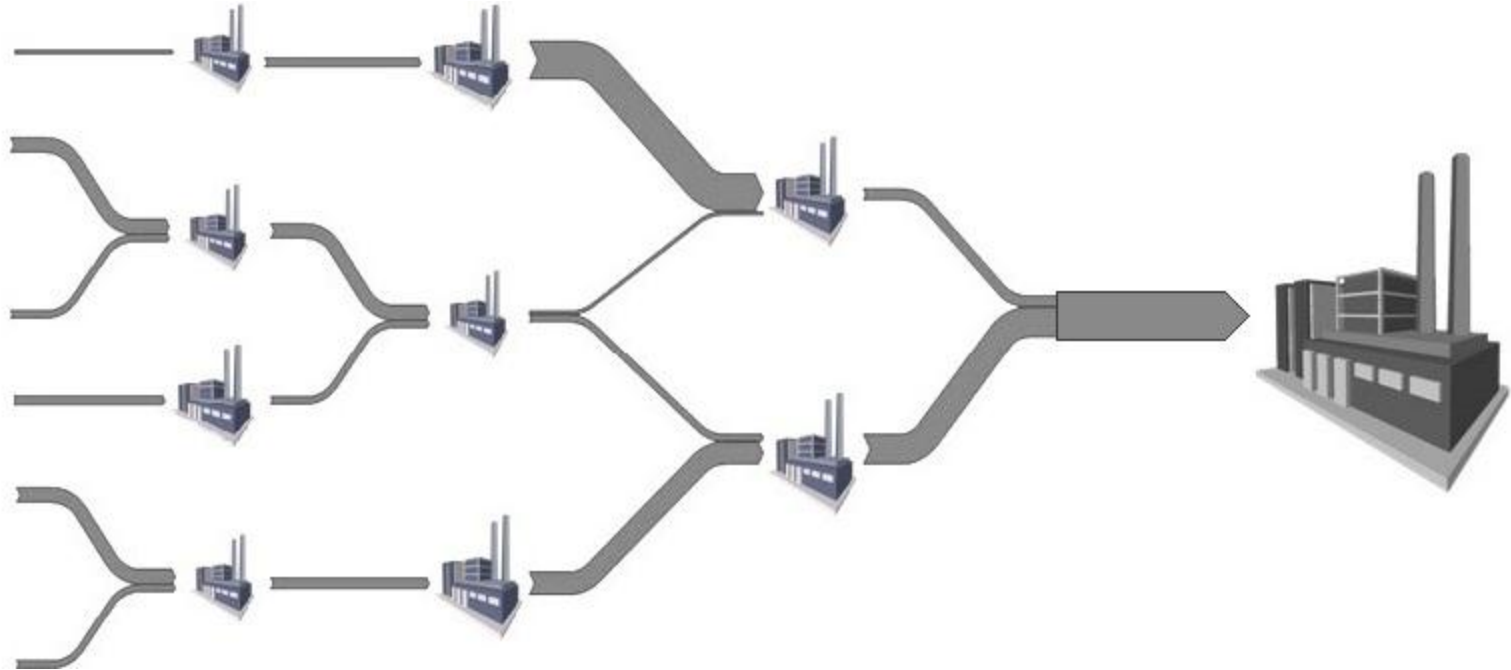
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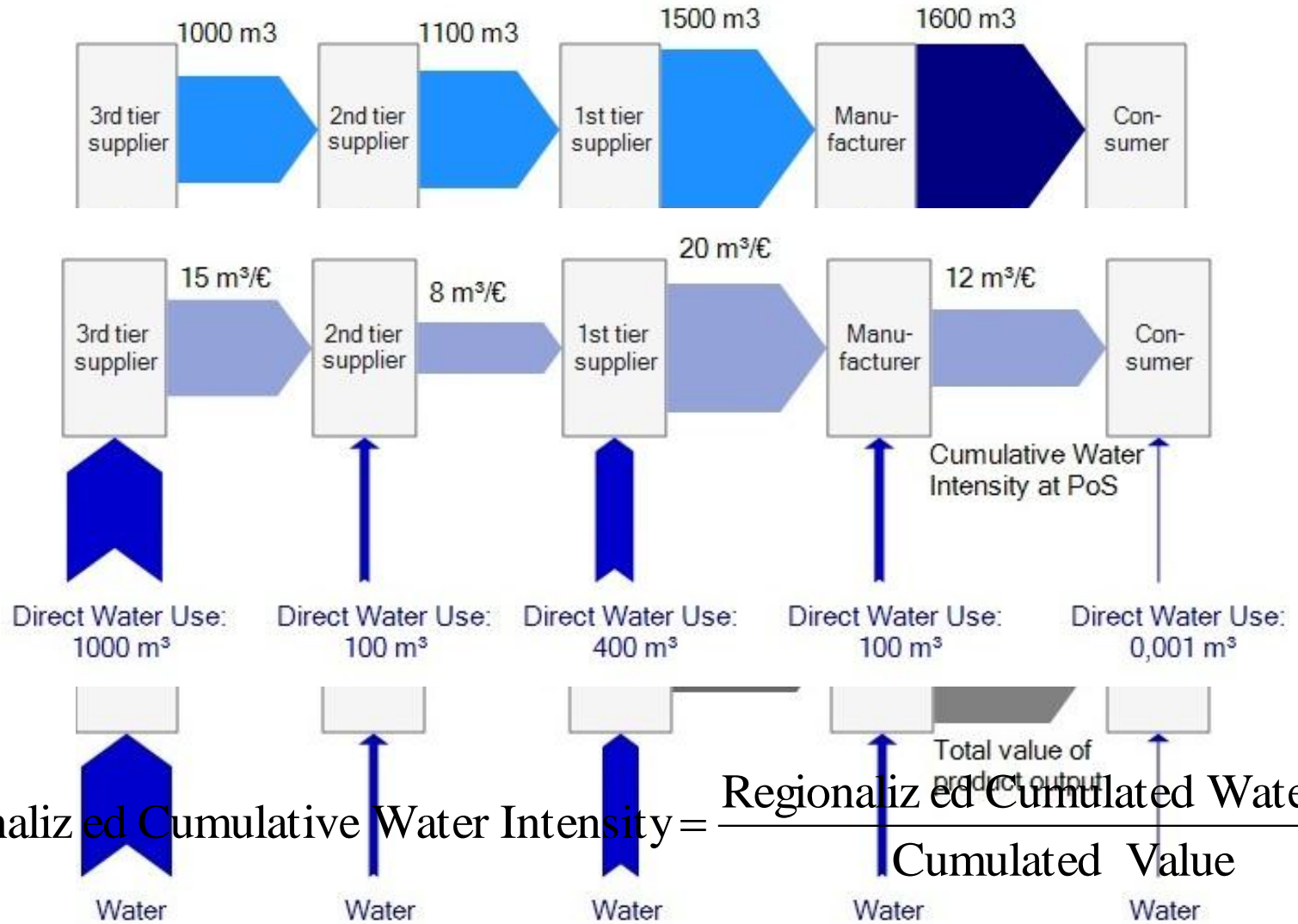
A low-effort approach to determine water use from cradle-to-grave

Challenge



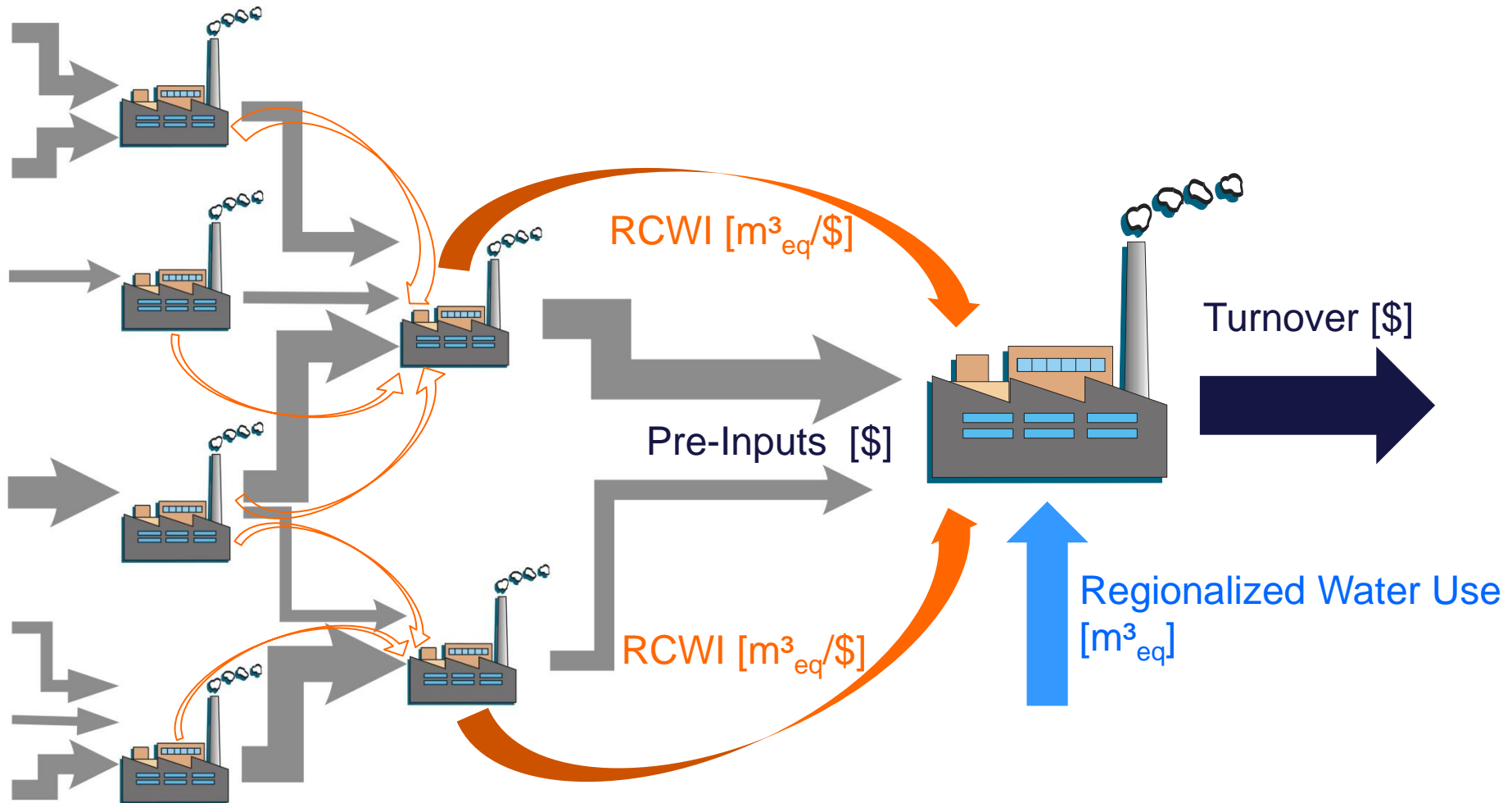
Collection of Data?

Idea

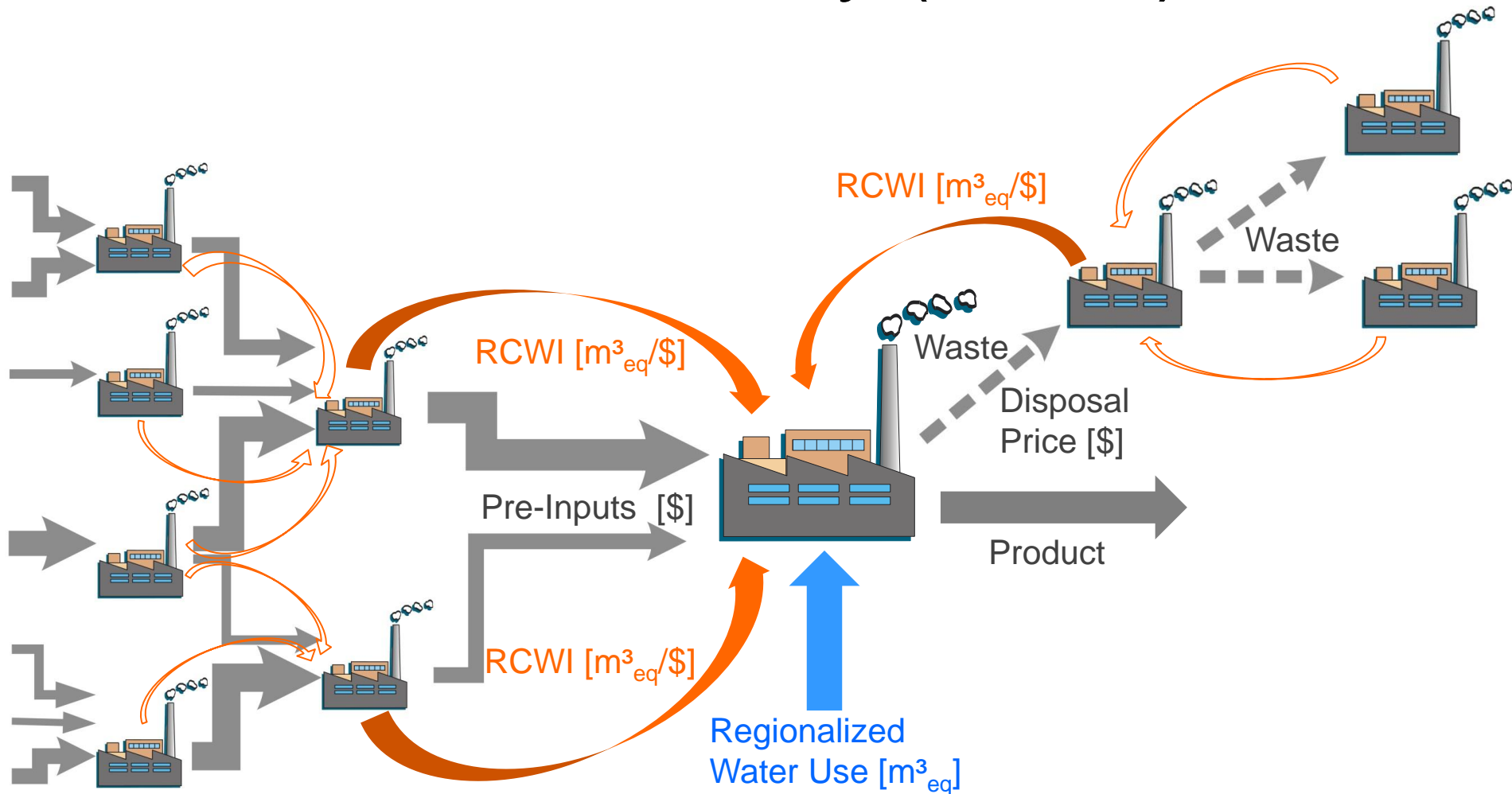


$$\text{Regionalized Cumulative Water Intensity} = \frac{\text{Regionalized Cumulated Water Use}}{\text{Cumulated Value}}$$

Regionalized Cumulative Water Intensity (RCWI)



Regionalized Cumulative Water Intensity (RCWI)



Calculation

$$\theta_{ri} = \frac{1}{T_i} \cdot \left[r_i \cdot W_i + \underbrace{\left[\sum_{j \in \{Supplier(i)\}} \theta_{rj} \cdot \sum_{k \in \{Supplier(j \rightarrow i)\}} p_{jik}^G \cdot q_{jik}^G + \sum_{j \in \{Disposer(i)\}} \theta_{rj} \cdot \sum_{k \in \{Disposal(j \rightarrow i)\}} p_{jik}^B \cdot q_{jik}^B \right]}_{\text{Indirect Water Use}} \right]$$

Supply Chain
Disposal Chain

θ_{ri} : RCWI of Company i

T_i : Turnover of Company i

r_i : Regionalization Factor for location of Company i

W_i : Water use of Company i

θ_{rj} : RCWI of Company j

q_{jik}^G : quantity of product k ("good") that Company i purchases from supplier j

p_{jik}^G : price of product k ("good") that Company i purchases from supplier j

q_{jik}^B : quantity of waste k ("bad") that Company i delivers to disposer j

p_{jik}^B : disposal price of waste k ("bad") that Company i delivers to disposer j



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