Corrigendum

Corrigendum to "Combining Facility Location and Routing Decisions in Sustainable Urban Freight Distribution under Horizontal Collaboration: How Can Shippers Be Benefited?"

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In the article titled "Combining Facility Location and Routing Decisions in Sustainable Urban Freight Distribution under Horizontal Collaboration: How Can Shippers Be Benefited?" [1], there were typing errors in the "Problem Formulation" section. These should be corrected as follows:

In Section 3.2, the sentence "Our problem is defined on an undirected, weighted, and complete graph" is corrected to "Our problem is defined on a directed, weighted graph".

Indices l and h were incorrectly interchanged in 2 equations. In equation (5), the term $x3_{ihj}$ should be replaced by $x3_{ilj}$. In equation (6), the term d_{ilj} should be replaced by d_{ihj}

$$
\begin{aligned}
\min \mathrm{ECON} = &\sum_j H_j * y_j + \sum_k \sum_j L_j * f_{(kj)} \\
&+ \sum_k \sum_j \mathrm{FCT} * N_{(kj)} + \sum_j \mathrm{FCV} * R_j \\
&+ \sum_k \sum_j N_{(kj)} * C_{(kj)} + \sum_j \sum_i C1_{ji} * x1_{ji} \\
&+ \sum_j \sum_i C2_{ij} * x2_{ij} + \sum_i \sum_l \sum_j C3_{il} * x3_{ilj}.
\end{aligned}
\tag{5}
$$

$$
\begin{aligned}
\min \mathrm{ENVR} = &\sum_k \sum_j d_{kj} * \left[\left[\left(E_{(T_{\mathrm{full}})} - E_{(T_{\mathrm{empty}})} \right) * \frac{f_{(kj)}}{T\mathrm{cap}} \right] + \left[E_{(T_{\mathrm{empty}})} * \left(N_{(kj)} \right) \right] \right] \\
&+ \sum_p \sum_j \sum_i d_{ji} * \left[\left[\left(E_{(V_{\mathrm{full}})} - E_{(V_{\mathrm{empty}})} \right) * \frac{U_{(pji)}}{V\mathrm{cap}} \right] + \left[E_{(V_{\mathrm{empty}})} * x1_{ji} \right] \right] \\
&+ \sum_p \sum_i \sum_h \sum_j d_{ihj} * \left[\left[\left(E_{(V_{\mathrm{full}})} - E_{(V_{\mathrm{empty}})} \right) * \frac{U_{(pihj)}}{V\mathrm{cap}} \right] + \left[E_{(V_{\mathrm{empty}})} * x3_{ihj} \right] \right] \\
&+ \sum_i \sum_j d_{ij} * \left[E_{(V_{\mathrm{empty}})} * x2_{ij} \right].
\end{aligned}
\tag{6}
$$

The correct formulas for equations (17), (18), and (20) are

$$\sum_{\substack{i \in I \bigcup\{j\} \\ i \neq l}} x3_{ilj} = w_{lj}, \quad \forall l; j, \tag{17}$$

$$\sum_{\substack{h \in I \bigcup\{j\} \\ h \neq i}} x3_{ihj} = w_{ij}, \quad \forall i; j, \tag{18}$$

$$\left(\sum_{j} U_{pji} + \sum_{j} \sum_{i \neq h} U_{phij} \right) - \sum_{j} \sum_{i \neq l} U_{pilj} = \sum_{j} q_{(ip)} * w_{ij}, \quad \forall i; p. \tag{20}$$

These updates do not affect the results of the article.

References

[1] H. Ouhader and M. El Kyal, "Combining facility location and routing decisions in sustainable urban freight distribution under horizontal collaboration: how can shippers be benefited?" *Mathematical Problems in Engineering*, vol. 2017, Article ID 8687515, 18 pages, 2017.