Answers

Module 1: Physical supply and use tables

Exercise 1: Soda City
1. How much water does the electricity industry (ISIC 35) abstract from the environment?
   322 million meters cubed (322,000,000 m3)
2. How much water do households receive from other economic units?
   36 million meters cubed (36,000,000 m3)
3. How much water does the water supply industry (ISIC 36) distribute to users?
   119 million meters cubed (119,000,000 m3)
4. How much water do the “other” industries (ISIC 38, 39, 45-99) return to the environment?
   Zero (0)
5. Which industry uses the 2nd greatest amount of water?
   The water supply industry (144,000,000 m3)
6. Which group of industries consumes the 2nd greatest amount of water?
   Other industries, ISIC 38, 39, 45-99 (11,000,000 m3)
7. In the manufacture of soft drink, the industry that consumes the most water, how do you think the water was consumed?
   The water is incorporated into the products - that is the bottles of soft drink. Water consumption is the water that is evaporated, transpired or incorporated into products.
### Physical use table

#### From the environment

1. Total abstraction (=1.a+1.b = 1.i+1.ii)
   - 1.a Abstraction for own use
   - 1.b Abstraction for distribution
   - 1.i From inland water resources:
     - 1.i.1 Surface water
     - 1.i.2 Groundwater
     - 1.i.3 Soil water
   - 1.ii Collection of precipitation
   - 1.iii Abstraction from the sea

2. Use of water received from other economic units
   - of which:
     - 2.a Reused water
     - 2.b Wastewater to sewerage
     - 2.c Distributed water

3. Total use of water (=1+2)

#### Within the economy

4. Supply of water to other economic units
   - of which:
     - 4.a Reused water
     - 4.b Wastewater to sewerage
     - 4.c Distributed water

5. Total returns (= 5.a+5.b)
   - 5.a To inland water resources
     - 5.a.1 Surface water
     - 5.a.2 Groundwater
     - 5.a.3 Soil water
   - 5.b To other sources (e.g. sea water)

6. Total supply of water (= 4+5)

7. Consumption (3-6)

Note: grey cells indicate zero entries by definition.

### Physical supply table

#### Within the economy

4. Supply of water to other economic units
   - of which:
     - 4.a Reused water
     - 4.b Wastewater to sewerage
     - 4.c Distributed water

5. Total returns (= 5.a+5.b)
   - 5.a To inland water resources
     - 5.a.1 Surface water
     - 5.a.2 Groundwater
     - 5.a.3 Soil water
   - 5.b To other sources (e.g. sea water)

6. Total supply of water (= 4+5)

7. Consumption (3-6)

Note: grey cells indicate zero entries by definition.
1. How much water does agriculture (ISIC 01) abstract from the environment?

   **186 million meters cubed (186,000,000 m³)**

2. Of the water abstracted by agriculture (ISIC 01) how much is from groundwater?

   **62 million meters cubed (62,000,000 m³)**

3. In Northville, who supplies the wastewater to the sewerage industry (ISIC 37)

   *Households and other industries (ISIC 38, 39, 45-99)*

4. How much water do households receive from other economic units?

   **21 million meters cubed (21,000,000 m³)**

5. How much water could potentially be supplied as reused water by the sewerage industry (ISIC 37) rather than be returned to the environment?

   **17 million meters cubed (17,000,000 m³)**

6. If the sewerage industry (ISIC 37) was to supply reused water to other industries (ISIC 38, 39, 45-99) with 5,000,000 m³ of reused water, in what column and line would the supply be recorded?

   *Line 4.a (supply of reused water), column for sewerage industry (ISIC 37). Line and column subtotals and totals would also have to be adjusted.*

7. If other industries (ISIC 38, 39, 45-99) were to use 5,000,000 m³ of reused water, in what column and line would the supply be recorded?

   *Line 2.a (use of reused water) in the column for other industries (ISIC 38, 39, 45-99). Line and column subtotals and totals would also have to be adjusted.*

8. Why do you think the water supply industry consumes 69,000,000 m³ of water, the second most of all of the industries or households in Northville?

   *In Northville, the use of open channels to supply water to agriculture, mentioned in the introduction to water supply and use in Northville, leads to the evaporation of water. These losses are not shown directly in the supply use tables but are included in the consumption by the water supply industry (ISIC 36). Water consumption is the amount of water evaporated, transpired or incorporated into products.*
**Exercise 3: Green Port**

### Physical use table

<table>
<thead>
<tr>
<th>Industry total</th>
<th>1-3</th>
<th>5-33</th>
<th>35</th>
<th>36</th>
<th>37</th>
<th>38,39</th>
<th>45-99</th>
<th>Total</th>
</tr>
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<td>From the environment</td>
<td>762</td>
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<td>0</td>
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<td>291</td>
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<tr>
<td>1.b Abstraction for distribution</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>24</td>
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<tr>
<td>1.i From inland water resources:</td>
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<td>0</td>
<td>466</td>
<td>24</td>
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<td>0</td>
<td>0</td>
<td>466</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
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<td>0</td>
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<tr>
<td>1.i.3 Soil water</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
<td>294</td>
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<tr>
<td>1.iii Abstraction from the sea</td>
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<td>30</td>
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<td>of which:</td>
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<td></td>
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<td></td>
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<tr>
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<td>0</td>
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<td>20</td>
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<tr>
<td>2.b Wastewater to sewerage</td>
<td>107</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>107</td>
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<tr>
<td>2.c Distributed water</td>
<td>382</td>
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<td>28</td>
<td>30</td>
<td>0</td>
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<td>382</td>
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<tr>
<td>3. Total use of water (=1+2)</td>
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<td>0</td>
<td>144</td>
<td>54</td>
<td>5</td>
<td>466</td>
<td>108</td>
<td>1271</td>
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Note: grey cells indicate zero entries by definition.

### Physical supply table

<table>
<thead>
<tr>
<th>Industry total</th>
<th>1-3</th>
<th>5-33</th>
<th>35</th>
<th>36</th>
<th>37</th>
<th>38,39</th>
<th>45-99</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the economy</td>
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<td>444</td>
<td>65</td>
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<td>0</td>
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<td>0</td>
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<td>of which:</td>
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<tr>
<td>4.a Reused water</td>
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<td>0</td>
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<td>20</td>
<td>0</td>
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<tr>
<td>4.b Wastewater to sewerage</td>
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<td>0</td>
<td>15</td>
<td>26</td>
<td>0</td>
<td>107</td>
</tr>
<tr>
<td>4.c Distributed water</td>
<td>382</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>382</td>
<td>0</td>
<td>382</td>
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<tr>
<td>5. Total returns (= 5.a+5.b)</td>
<td>153</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>153</td>
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<tr>
<td>5.a To inland water resources</td>
<td>80</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
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<td>9</td>
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<td>5.a.2 Groundwater</td>
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<td>0</td>
<td>0</td>
<td>71</td>
<td>0</td>
<td>0</td>
<td>71</td>
</tr>
<tr>
<td>5.a.3 Soil water</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.b To other sources (e.g. sea water)</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>73</td>
<td>0</td>
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<tr>
<td>6. Total supply of water (= 4+5)</td>
<td>662</td>
<td>0</td>
<td>597</td>
<td>65</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>662</td>
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<tr>
<td>7. Consumption (3-6)</td>
<td>609</td>
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<td>530</td>
<td>79</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>609</td>
</tr>
</tbody>
</table>

Note: grey cells indicate zero entries by definition.
1. In Green Port, which industries abstract water from the environment?

   Agriculture (ISIC 01), manufacturing (10-33), electricity (ISIC 35), water supply (ISIC 36), and other industries (ISIC 38, 39, 45-99). Households, while not an industry, also abstract water.

2. How much water does agriculture (ISIC 01) receive from other economic units?

   200 million meters cubed (200,000,000 m³). Of this 18 million is reused water from the sewerage industry (ISIC 37) and 182 million is from the water supply industry (ISIC 36).

3. From which industries do the other industries (ISIC 38, 39, 45-99) receive water?

   The water supply (ISIC 36), sewerage (ISIC 37) and electricity (ISIC 35) all supply water to other industries (ISIC 38, 39, 45-99).

4. How much additional water (i.e. more than is currently supplied) could be supplied as reused water by the sewerage industry (ISIC 37)?

   72 million meters cubed (72,000,000 m³), the amount currently discharged to sea.

5. What two water sources (i.e. abstractions from the environment) are used in Green Port that are not used in Soda City or Northville?

   Collection of precipitation by households and the abstraction of sea water for desalination by the water supply industry (ISIC 36).

6. Which industry or household uses the most water?

   The water supply industry (ISIC 36), which uses 466 million meters cubed (466,000,000 m³) of water. Consumption is only 15 million meters cubed (15,000,000 m³) because most water (380,000,000 m³) is supplied to other users and another portion (71,000,000 m³) is lost in distribution through leaky pipes to groundwater.

7. Which industry or household consumes the most?

   The agriculture industry (ISIC 01) (413,000,000 m³).

8. Of the total water use, what percentage is accounted for by:

   Total water use is 1,271 million meters cubed (1,271,000,000 m³), so:
   Collection of precipitation by households of 3,000,000 m³ is 0.24%
   Use of reused water (supplied by ISIC 37) is 20,000 m³ or 2% of total water use (1,271,000 m³)
   Supply of water used first for cooling by the electricity industry (ISIC 35) of 3,000,000 m³ is 0.16%
   Losses by the water supply industry (ISIC 36) of 71,000,000 m³ is 5.59%