A Comprehensive Introduction to Water Footprints

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Professor in Water Management – University of Twente – the Netherlands
Scientific Director – Water Footprint Network

www.waterfootprint.org
Signs of global water pollution
Transparency along the supply chain

- **Feed crop cultivation**
  - Direct water footprint
  - Indirect water footprint

- **Livestock farming**
  - Direct water footprint
  - Indirect water footprint

- **Food processor**
  - Direct water footprint
  - Indirect water footprint

- **Retailer**
  - Direct water footprint
  - Indirect water footprint

- **Consumer**
  - Direct water footprint
  - Indirect water footprint
What is Water footprint?
If think of that of a cup of coffee…

Material Production: 10.08L (84%)
Container Production: 1.44L (12%)
Product Processing: 0.24L (2%)
Transport Retailing: 0.12L (1%)
Usage: 0.12L (1%)
Discharge Recycle: 0.0L (0%)

Total water 12L…
Components of a water footprint

- Direct water footprint
  - Green water footprint
  - Blue water footprint
  - Grey water footprint

- Indirect water footprint
  - Green water footprint
  - Blue water footprint
  - Grey water footprint

Water withdrawal
Return flow

The traditional statistics on water use

Water consumption
Water pollution

[Hoekstra et al., 2011]
The green and blue water footprint in relation to the water balance of a catchment area

[Hoekstra et al., 2011]
Hoekstra & Chapagain, 2008
Water footprint of EU’s cotton consumption (blue water)

[Hoekstra & Chapagain, 2008]
Water required for Fast Foot

- Beef bawl: Regular
  - Price: 280円
  - Calorie: 710kcal
  - Water: 1,890L

- Hamburger A:
  - 2 * Regular Small French fry
  - Price: 268円
  - Calorie: 745kcal
  - Water: 2020L

- Hamburger B:
  - 1 * TERIYAKI burger Medium French fry
  - Price: 430円
  - Calorie: 911kcal
  - Water: 530L

- SOBA Needle
  - Price: 300円
  - Calorie: 377kcal
  - Water: 750L

- UDON Needle
  - Price: 290円
  - Calorie: 341kcal
  - Water: 120L
ウォーターフットプリントの品目比較

<table>
<thead>
<tr>
<th>品目</th>
<th>リットル</th>
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<tbody>
<tr>
<td>paper(A4)</td>
<td>10</td>
</tr>
<tr>
<td>Tea(1 cup)</td>
<td>20</td>
</tr>
<tr>
<td>Bread(1 piece)</td>
<td>30</td>
</tr>
<tr>
<td>Orange</td>
<td>40</td>
</tr>
<tr>
<td>Apple</td>
<td>50</td>
</tr>
<tr>
<td>Beer(1 glass)</td>
<td>60</td>
</tr>
<tr>
<td>Industrial commodity($1)</td>
<td>70</td>
</tr>
<tr>
<td>Wine(1 glass)</td>
<td>80</td>
</tr>
<tr>
<td>Coffee(1 cup)</td>
<td>90</td>
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<tr>
<td>Egg</td>
<td>100</td>
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<tr>
<td>Milk(1 glass)</td>
<td>200</td>
</tr>
<tr>
<td>Hamburger</td>
<td>2400</td>
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<tr>
<td>T-shirt</td>
<td>2700</td>
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<tr>
<td>Maize</td>
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<td>Barley</td>
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<td>Goat</td>
<td>380</td>
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<td>Pork</td>
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<td>Cheese</td>
<td>400</td>
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<tr>
<td>Millet</td>
<td>410</td>
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<td>Sheep</td>
<td>420</td>
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<tr>
<td>Beef</td>
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</table>

注)紅茶(250ml 煎茶3g) パン(30g) ビール(250ml) コーヒー(125ml 煎豆7g) ミルク(200ml) 砂糖(サトウキビ製)
世界全体の平均値。農畜産物の単位は原資料ではkgであるが日本の小売価格単位の100gに換算した。
<table>
<thead>
<tr>
<th>Country/region</th>
<th>National water footprint (Gm$^3$/year)</th>
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<tbody>
<tr>
<td></td>
<td>from the perspective of production</td>
<td>from the perspective of consumption</td>
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<tr>
<td>Australia</td>
<td>91</td>
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<td>54</td>
<td>146</td>
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<td>Jordan</td>
<td>1.8</td>
<td>6.3</td>
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<td>USA</td>
<td>750</td>
<td>696</td>
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</tbody>
</table>

Traditional statistics on water use, but then restricted to water withdrawal

WF within a nation

WF of national consumption

[Hoekstra & Chapagain, 2008]
Water footprint per capita

Global average water footprint
The water footprint of a consumer

[Hoekstra, 2008]
The water footprint of a retailer

The traditional statistics on corporate water use

[Hoekstra, 2008]
The water footprint of a food processor

[Hoekstra, 2008]
Reference:
1. Water Footprint network HP
   http://www.waterfootprint.org/
2. 公益財団法人 地球環境センター 資料 （2010）
   http://gec.jp/gec/jp/Activities/pr/fy2010/kouza/kouza20101204.pdf/