

# **A “Grand Coalition”?**

## **Climate, Trade and Water**

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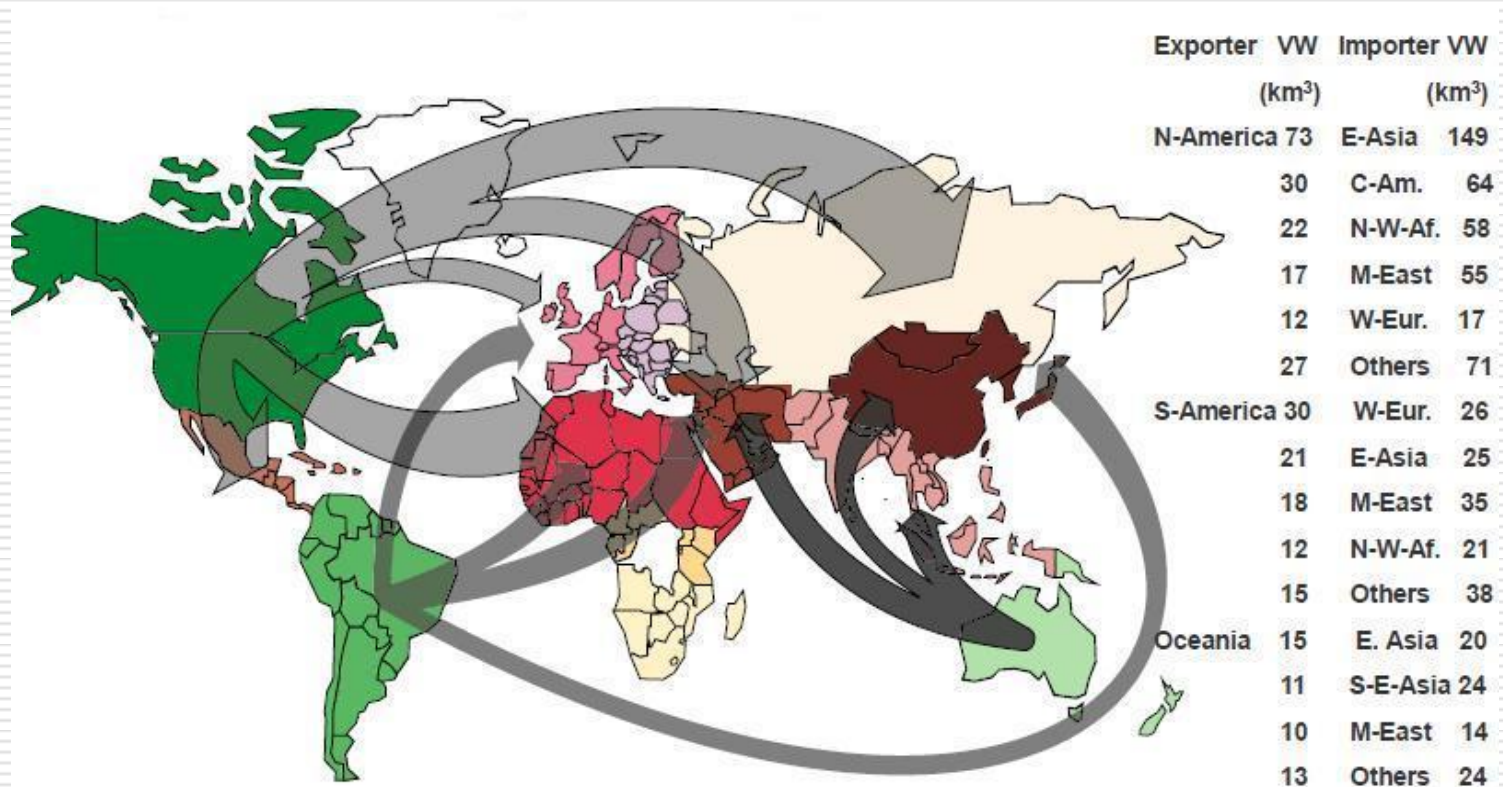
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Groupe d'Economie Mondiale at Sciences Po

### **Climate Change Policies and the World Trading System: the Challenges Ahead**

**FERDI, IDGM, IDDRI**  
**Paris**  
**June 24, 2011**

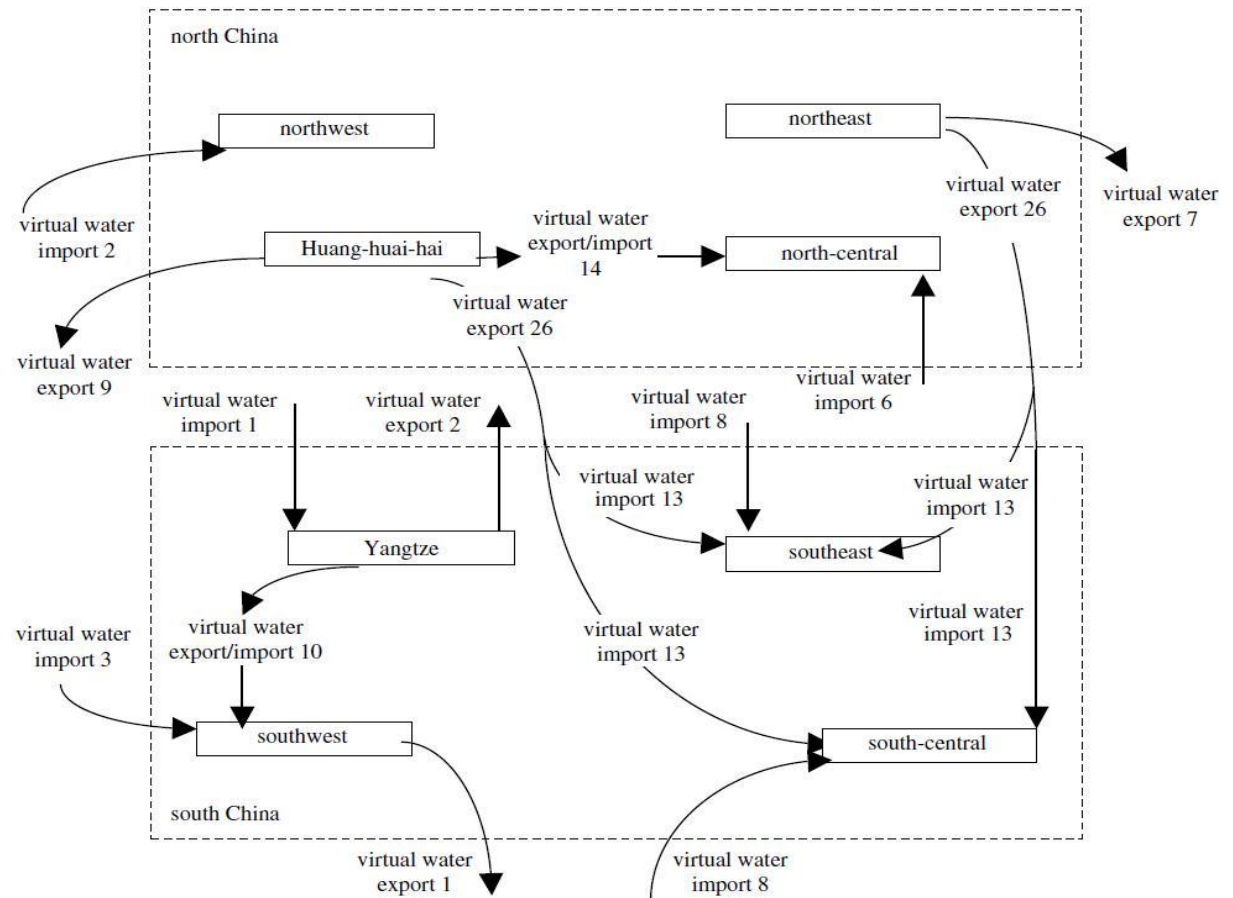
# The water case: world situation

- World virtual water trade flows (Hong Yang 2006, EAWAG) Virtual Water: volume of freshwater used to produce a good, measured at the place where the good is actually produced.

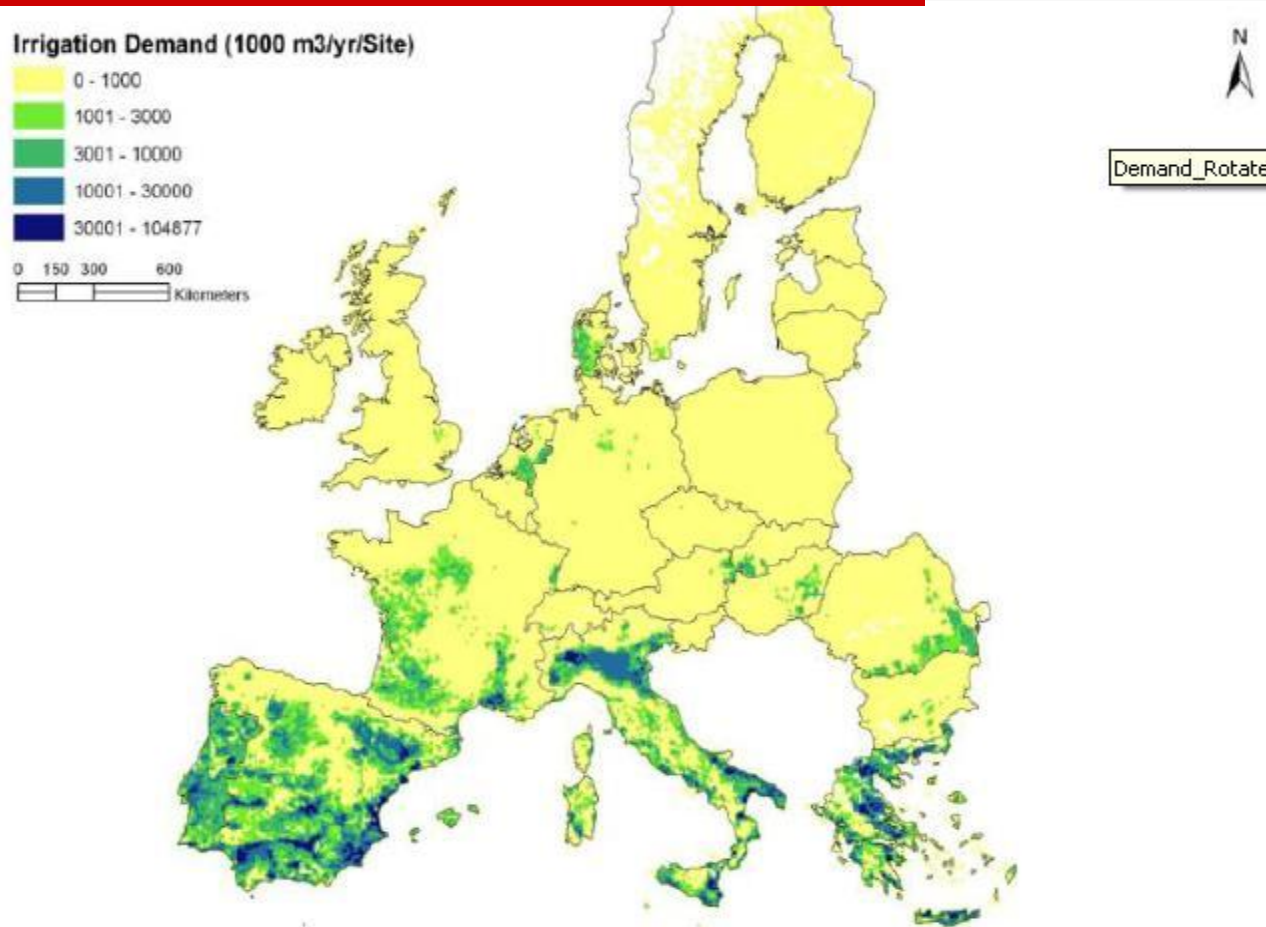


# The water case: China

- Source: Ma, Heekstra, Wang, Chapagain and Wang, 2005
- Three features of China:
- Loss of arable land (wind)
- Change in demand for food: higher income plus changing tastes.
- International VW increasingly important for China.



# The water case: even Europe...



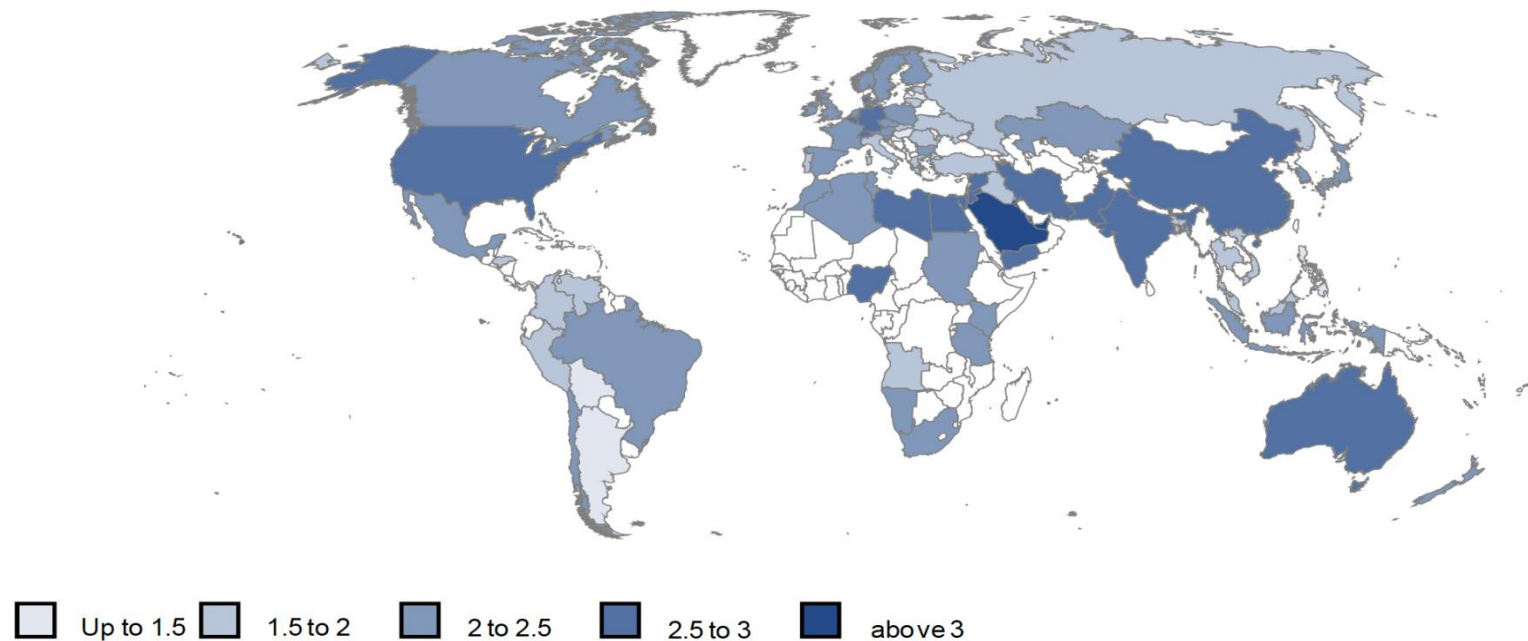
□ Source:  
JRC 2008

# The water case: requires euros 500 billions of investment every year

- Includes water for households use (Source: Deutsche Bank Research)

## Results of the scoring model: Middle east countries lead the field

Scoring points based on DBR scoring model

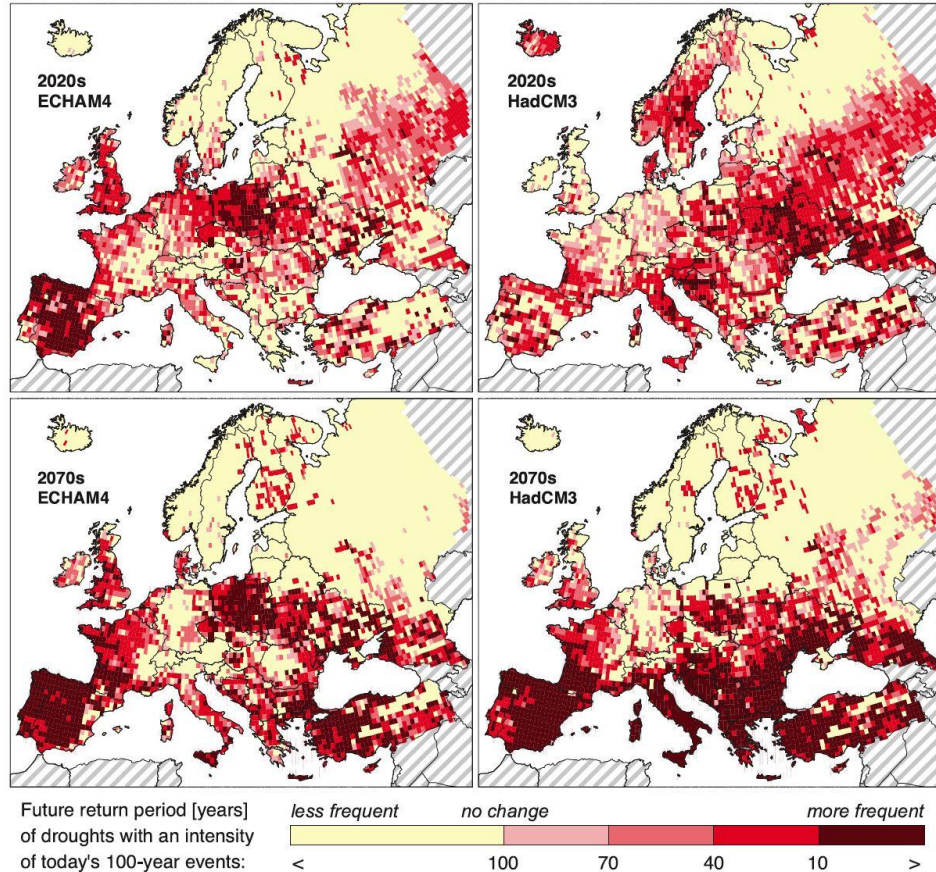
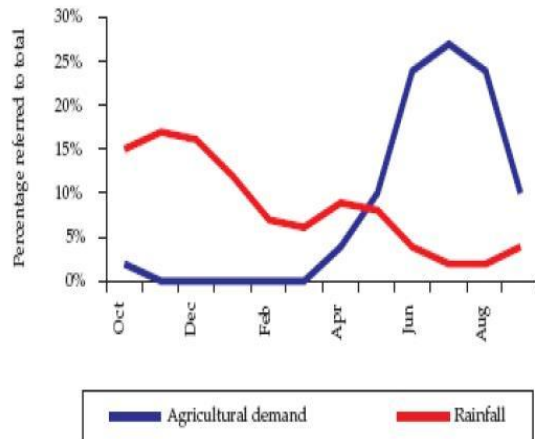


Source: World Bank



# Combining climate and water

- Combining water with climate usual constraints (below) and possible climate changes (right)
- Trade emerges as a powerful insurance scheme.



# Common problem, friends and foes

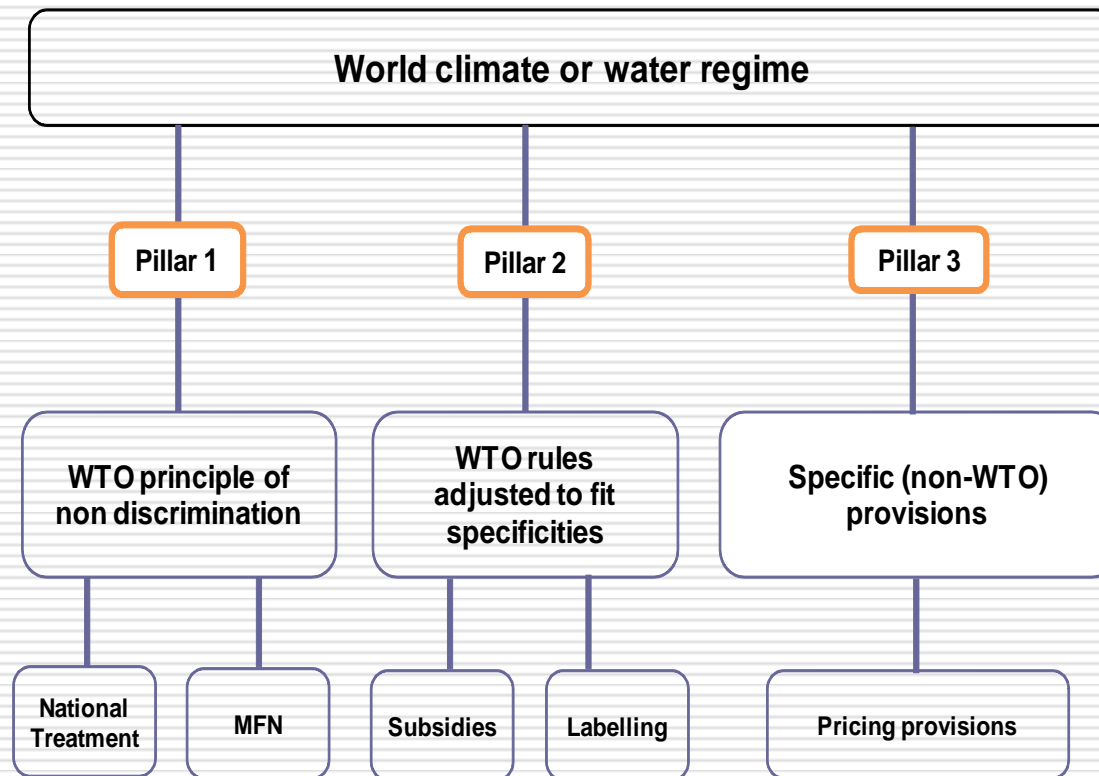
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|  | Climate  | Trade                  | Water  |
|--|--|------------------------|--|
| <b>Common problem</b>  |  |                        |  |
| public good  | world  | world                  | local/world  |
| instrument   | tax/price  | tax (tariff)           | tax/price  |
| optimal level  | positive but unknown   | zero and known         | positive but unknown                                 |
| one world/multilateral   | multilateral (COPs)  | multilateral (WTO)     | not yet clear,<br>(only regional level)              |
| <b>Common foes (interests opposed to an economically sound solution to the problem)</b>  |  |                        |  |
|  | steel, chemicals, etc.   | steel, chemicals, etc. |  |
|  |  | farmers                | farmers  |
| <b>Common friends (interests favoring an economically sound solution to the problem)</b> |  |                        |  |
|  | exporters of clean goods<br>and countries developing<br>comp. advantages | exporters              | 'efficient' farm exporters<br>(water costs included) |

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# Climate, water and trade 'sister' institutions: an overview focusing on water

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# Climate, water and trade ‘sister institutions’

## Adjusting WTO rules: taxes

- ❑ Is there a need for carbon border taxes (different from carbon tariffs and carbon conditional measures)?
- ❑ Not sure, but not dramatic as well (the case of value added taxes).
- ❑ But, if yes, it is key to define well the tax rate as well as the tax asset.

|                                | Units                | Domestic<br>producer | Foreign<br>producer | Border tax definition based on |          |            |
|--------------------------------|----------------------|----------------------|---------------------|--------------------------------|----------|------------|
|                                |                      |                      |                     | trade                          | specific | ad valorem |
| 1. carbon tax (specific)       | \$ per ton of carbon | 60                   | 6                   | 60                             | 60       | --         |
| 2. carbon content              | tons per widget      | 10                   | 20                  | 20                             | 10       | --         |
| 3. carbon total tax per widget | \$                   | 600                  | 120                 | 1200                           | 600      | 510        |
| 4. price per widget [a]        | \$                   | 10000                | 8500                | 8500                           | 8500     | 8500       |
| 5. carbon tax (ad valorem)     | percent              | 6.0                  | 1.4                 | 14.1                           | 7.1      | 6.0        |
| 6. price per widget [b]        | \$                   | 10600                | 8620                | 9700                           | 9100     | 9010       |

# Water and trade economics: a story in comparative advantages

- Source: Le Vernoy, 2010. (HO=Heckscher-Ohlin model of international trade).

Table A: Water, land and labor endowments and factors intensities (2000)

|               | Endowments (HO)     |                         |                 | Factor intensities (HO) |                             | Productivity (Ricardo)                    |
|---------------|---------------------|-------------------------|-----------------|-------------------------|-----------------------------|---|
|               | (1)                 | (2)                     | (3)             | (4)                     | (5)                         | (6)                                       |
|               | Renewable water [a] | Uncategorized labor [b] | Arable land [b] | Water per workers       | Water per Ha of arable land | Wheat productivity relative to France [c] |
| Brazil        | 8233                | 77                      | 58              | 106                     | 142                         | 1,8                                       |
| Canada        | 2902                | 16                      | 46              | 183                     | 63                          | 1,7                                       |
| China         | 2830                | 737                     | 133             | 4                       | 21                          | 0,7                                       |
| United States | 2071                | 141                     | 175             | 15                      | 12                          | 0,9                                       |
| India         | 1908                | 402                     | 163             | 5                       | 12                          | 1,9                                       |
| Mexico        | 457                 | 34                      | 25              | 13                      | 18                          | 1,2                                       |
| Japan         | 430                 | 68                      | 4               | 6                       | 108                         | 0,8                                       |
| France        | 204                 | 26                      | 18              | 8                       | 11                          | 1,0                                       |
| Egypt         | 87                  | 19                      | 3               | 5                       | 29                          | 2,0                                       |
| Israel        | 2                   | 2                       | 0,3             | 1                       | 7                           | 3,7                                       |

Notes: [a] International Labor Organization of the United Nations. [b] Food and Agriculture organization of the United Nations. [c] Ratio of each country water requirement for wheat production to the one of France. If the ratio is above one then the country has a lower productivity than France (and vice versa).

# Thank You for Your Attention

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