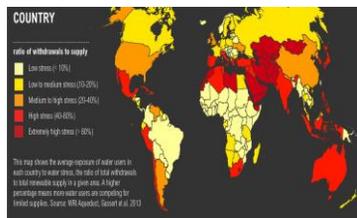
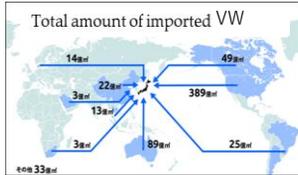


## Abstract

Virtual Water (VW) is a concept that refers to the amount of water required at the stage of producing agricultural products. Japan uses largest amount of VW in the world. However, Japanese don't know this situation. So, we made a short movie and proposes an application. Also, we gave a presentation to Dr. Cecilia Tortajada, a professor of the University of Singapore and she recognized the merit of our application. We want Japanese not only to know about VW but also to take an action to reduce our dependence on VW.

## Present Situation

Japan imports **64 billion tons** of VW annually from overseas. This is the largest number in the world.



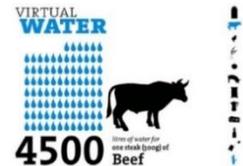
Even though Japan has water risks, people don't seem to know the fact. **high stress 40-80%**

→ IF some problems, such as natural disasters, draughts, heavy rain, or conflicts happen, both importing and exporting countries would suffer.

**Japan has a lot of water stress!**

## Why does Japan depend on VW so much?

- low food self-sufficiency rate  
→ as low as 40% on calorie basis
- Changes into meat-eating diet  
→ e.g.

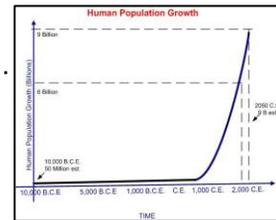


## Future risk

It is certain that water shortage will happen because of population growth. It will bring

- an increase of food production
- industrial development

⇒ Need much more water  
As far as water is limited, it cannot be used forever!



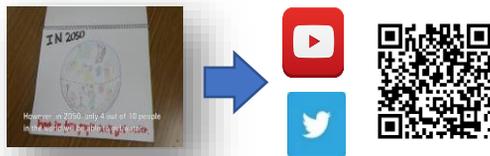
**We have to take some actions!**

## Study Purpose

We ourselves cannot reduce VW directly, but through our actions, we can help people raise awareness about VW and take some actions for the future.

### Action I

We made a **short movie** based on our experiment on the amount of water necessary to grow tomatoes. We posted it on YouTube and Twitter.



### Action II

We designed an example of **the app**.



↑ How our App will work

### What we need...

- To access an image recognition system to combine VW data
- To find someone who work together

## Consideration

We hope that people who see this short movie might try to **reduce the amount of water** used to grow crops. And we also hope that people who use the App might try **to become aware of using water and future risks**.

Our idea of the App is highly appreciated by specialists, such as a professor or a water journalist, and many people helped us to make it realized.

We would like to know more efficient ways to spread our action.



## Reference

Oki, Taikan (2008) "Virtual Water Trade," Water Science 52(5), pp.61-82. ([https://www.jstage.jst.go.jp/article/suirikagaku/52/5/52\\_61\\_pdf](https://www.jstage.jst.go.jp/article/suirikagaku/52/5/52_61_pdf)) (accessed December 4, 2018) (in Japanese). NPO Greens (<https://greenz.jp/2007/12/03/921/>), Ministry of the Environment ([https://www.env.go.jp/water/virtual\\_water/](https://www.env.go.jp/water/virtual_water/))