

**Global Environment and Its Dynamics 2E / Threshold in Environmental Dynamics**  
**Homework for Winter Vacation 2019**

This lecture mainly provides recent issues of global energy, particularly underground resources such as coal and oil, but one of the most urgent issues along with energy issues is "freshwater issues". It is indispensable that freshwater is sufficient not only for the human race's lives but also for the maintenance and preservation of the present natural environment such as vegetation and animals. Concerning only on the human race lives, water is more important than the energy which has alternative sources.

About two-thirds of the Earth's surface is covered by water, and there are about 1.4 billion cubic kilometres of water on the Earth. However, freshwater is only 2.5% of the total water amount of the Earth, and most of it exists as solid (glaciers and ice sheets) in both polar regions. In addition, most of the available freshwater onshore exists as groundwater. Accordingly, freshwater which we can use easily, such as rivers and lakes, accounts for only 0.01% of the total water amount on the Earth (about 100,000 cubic kilometres).

Japan is relatively rich in water resources. However, there are many countries with scarce water resources in the world. In particular, countries that have to share a single source of water, such as international rivers, have even begun to be in conflict for water resources.

With the world' situation of freshwater resources above-described in mind, I would like to request you to measure how much freshwater you use personally for a day. Further, I would like you to consider and summarise what we shall take personal countermeasures to sustain global freshwater resources in the future. Concrete method to carry out this homework is as below-stated.

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During this winter vacation period, please select three days during which you spend almost ordinary life (days without travel or special events), then please fill out your water usage of each item on the separated sheet for each day. Except for the cases of direct drinking of freshwater as a liquid including tea, soft drinks, etc., please specify the criteria and method for calculation and estimation of the freshwater usage in the other items. Finally, please write down the total amounts of freshwater usage for the three days, and consider and summarise your personal opinion on the sustainable use of freshwater resources in the future on the basis of your three-day experience and investigation.

In addition, when you eat imported foods such as the Australian biscuits, for example, the amount of the freshwater which was needed for the growth of the grain used to make biscuits in Australia should be added. Further, the amount of the freshwater needed to grow the grains eaten by the animals should be added when you eat imported meat such as Aussie beef.

However, these are quite complicated and can be ignored in this homework.

When making out this homework, please print out the attached forms and submit them in handwritten English. The submission deadline and place is 8:45 am of the 8th of January 2020 in the classroom E10. If you have any questions, please contact me by e-mail below.

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**Examples for the “Remarks” of the Sheet 2**

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Direct drinking: water, coffee, tea, soft or alcoholic drinks

Cooking: boiling, washing vegetables, etc.

Washing (tableware): dishwashing, etc.

Washing (clothing): by hand washing, washing machine, etc.

Bathing (shower): bathing, taking a shower, etc.

Skin caring, etc.: teeth brushing, making-up, face cleaning, etc.

Toilet: no examples needed.

Cleaning (indoor): cleaning the rooms, kitchens, etc.

Cleaning (outdoor): cleaning house walls, bicycles, etc.

Gardening: watering to the garden plants

Other (specify): car washing, swimming pool, snow removal, etc.

School/Course: \_\_\_\_\_ Student ID Number: \_\_\_\_\_

Name: \_\_\_\_\_ (日本人学生は漢字か仮名で)

Q: Please write down the total amounts of freshwater usage for the three days, and consider and summarise your personal opinion on the sustainable use of freshwater resources in the future on the basis of your three-day experience and investigation.

A:

<b>School/Course:</b>	<b>Student ID Number:</b>	<b>Name:</b>
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**DAY 1 (Date: \_\_\_\_\_ )** *Please fill in the specifics in the "remarks"*

Item	Amount (L)	Estimation Method (specify)	Remarks
Direct drinking			
Cooking			
Washing (tablewear)			
Washing (clothing)			
Bathing (shower)			
Skin caring, etc.			
Toilet			
Cleaning (indoor)			
Cleaning (outdoor)			
Gardening			
Other (specify)			
<b>Total</b>			

**DAY 2 (Date: \_\_\_\_\_ )**

Item	Amount (L)	Estimation Method (specify)	Remarks
Direct drinking			
Cooking			
Washing (tablewear)			
Washing (clothing)			
Bathing (shower)			
Skin caring, etc.			
Toilet			
Cleaning (indoor)			
Cleaning (outdoor)			
Gardening			
Other (specify)			
<b>Total</b>			

**DAY 3 (Date: \_\_\_\_\_ )**

Item	Amount (L)	Estimation Method (specify)	Remarks
Direct drinking			
Cooking			
Washing (tablewear)			
Washing (clothing)			
Bathing (shower)			
Skin caring, etc.			
Toilet			
Cleaning (indoor)			
Cleaning (outdoor)			
Gardening			
Other (specify)			
<b>Total</b>			