Lerneinheit 03: Community-Participation

The case of saving water- Colored Water? Participation in Agricultural Water Conservation

Objective: This activity allows the learners to approach agricultural water use by utilizing data offered online. A close look on the underlying roles of water in this sector offers the chance to find specific targeted approaches to water conservation in agriculture.
Learning outcomes: The learners are able to use the basic functions of a Geographic Information System (GIS) as well as to analyze charts to extract information from these sources in a targeted way. Moreover, they are able to apply information gathered through geo-media to a specific question, use the internet to support findings, and utilize their gained knowledge for the purpose of assessment in a participative environment.
Previous knowledge: TThe students are supposed to have already dealt with the term 'participation.' Moreover, they need to know the term 'water use' and be able to use web-GIS and read charts to collect information. They also need to know the meaning behind the term 'virtual water.'
Duration: 90 minutes
Materials / Conditions: Internet access, resources listed below
Methods / Techniques:Using a GIS for information gathering, analyzing charts, explaining, internet research, reasoning
Learning subject: Citizenship/ Module 1: Community-Participation: The case of saving water / Level: Expert learning

---

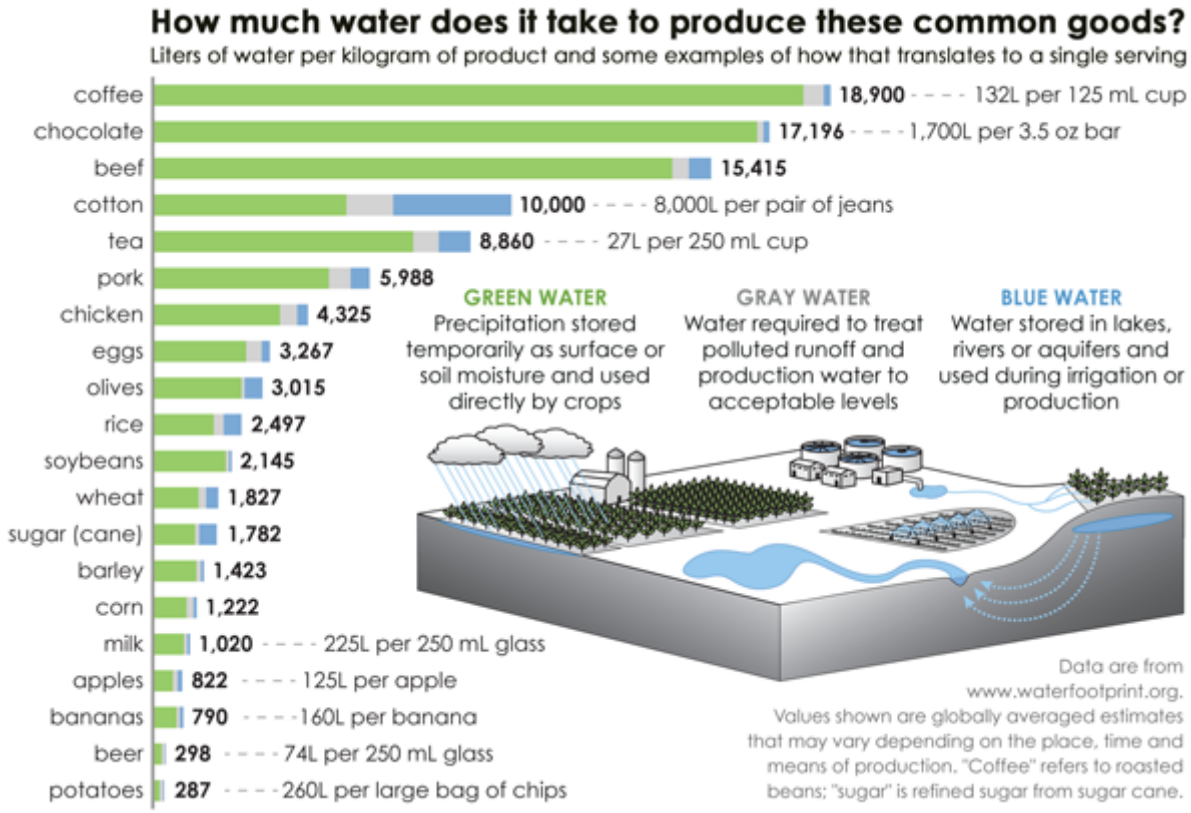
Introduction:
Virtual water needs to be taken into account when thinking about water use for the production of agricultural products. However, moving away from this rather superficial perspective there are more aspects that need to be considered. A closer look on them may help to find ways to conserve water.

Instruction:
1.) Use the interactive map on http://www.fao.org/nr/water/aquastat/maps/World-Map.WithA.Twith_eng.htm to find out and state how much (in 😵 of the total water withdrawal in Cabo Verde is used by agriculture..
2.)The knowledge of the proportion of agricultural water withdrawal is not enough to understand water use in agriculture.
a)Take a look at the graphic in M1 to explain the relevance of green, blue, and grey water for and its influence on the value from 1.
b)Pick one agricultural product produced in Cabo Verde from M1 to explain which role green, blue, and grey water play in its production process. Give an example for each color. You may use the

internet and M2 to search for more information on the products.

3. Assess the following statement: ‘Knowledge about green, blue, and grey water can help to participate effectively in conserving water in agricultural production processes.’ Give reasons for your answers.

Resources:
M1:



altered from:
http://www.earthmagazine.org/article/virtual-water-tracking-unseen-water-goods-and-resources (10.08.2016)

Possible results / Results:
1.)
The color assigned to Cabo Verde on the map and the legend reveal that (more than) 87.82 % of the total water withdrawal in Cabo Verde are withdrawn by agriculture. A click on the area representing Cabo Verde reveals that 90.91 % of the total water withdrawal are withdrawn by agriculture.

2.)
a)The value of water withdrawal by agriculture can be ascribed to the water involved in the production of agricultural goods which becomes invisible to the consumer. The amount of water involved in the production processes of commodities, also called virtual water, can be subdivided into three parts: green, blue, and grey water. These terms refer to the water from precipitation (green), the water withdrawn from natural reservoirs (blue), and the water needed to treat polluted runoff (grey). All of these aspects have to be considered and added up to explain and receive the value 90.91 % as mentioned in 1.

b)Commodities from the graphic which are produced in Cabo Verde on a considerable scale comprise

- coffee
- cotton
- sugar cane
- milk
- potatoes

Examples of useful internet sources:

- http://faostat3.fao.org/browse/area/35/en
- http://www.caboverde-info.com/eng/Identity/Historia/Agriculture-at-Santiago-and-Fogo
- http://www.trabocca.com/portfolio/cape-verde-sustainable-coffee-project/
- http://atlas.media.mit.edu/en/profile/country/cpv/

Due to the number of products there are multiple ways to solve the task. All results should, nevertheless, involve the following points:
• relation between green, blue, and grey water and the production process of the respective commodity
• one practical example of green, blue, and grey water each
e.g. cotton:
green water: precipitation stored in the soil
blue water: water involved in irrigation with a pivot system
grey water: water needed to treat the runoff polluted with fertilizer

3.)Knowledge about green, blue, and grey water can actually help to participate in water conservation effectively. Even though the knowledge alone does not ensure effective actions, it serves as a theoretical basis to approach the field of saving water in practice. While water assigned to the term ‘green water’ cannot practically be saved, it can be used efficiently though. One way to use green water efficiently is to grow crops that do not need much water. This can help to grow more crops using the same amount of water. However, knowledge about the respective crops is fundamental for this approach. Blue water can be saved by using efficient irrigation methods, that is, methods which provide exactly the amount of water needed for optimal growing. This ensures that no water is wasted. Another approach which allows to save grey water is avoiding fertilizer that pollutes the water running off. This can be achieved either by not using fertilizer at all or by searching for less harmful alternatives. Thus, knowledge about green, blue and grey water can trigger effective measures to conserve water.

Related activities:

Author:
Jan Biersack