====== Lerneinheit 03: Community-Participation: The case of saving water Using the Knowledge of Virtual Water in Agriculture

**Objective**: The learners are supposed to work critically with the given data in order to get to the core of the topic: water consumption and water scarcity. They are supposed to use the knowledge of virtual water to understand its implications for water conversation.
**Learning outcomes**: The learners are able to describe diagrams and analyze them critically. Moreover, they are able to use online resources like Storymaps to extract and apply information to a specific problem, contributing them in a decision making process.
**Previous knowledge**: The learners are supposed to have already dealt with the term 'participation.' Moreover, they need to know the terms 'water use' and 'water consumption' as well as their meanings.
**Duration**: 90 minutes
**Materials / Conditions**: Internet access, resources listed below
**Methods / Techniques**: Describing and analyzing charts, using story maps, explaining, assessing
**Learning subject**: Citizenship/ Module 1: Community-Participation: The case of saving water / Level: Advanced learning

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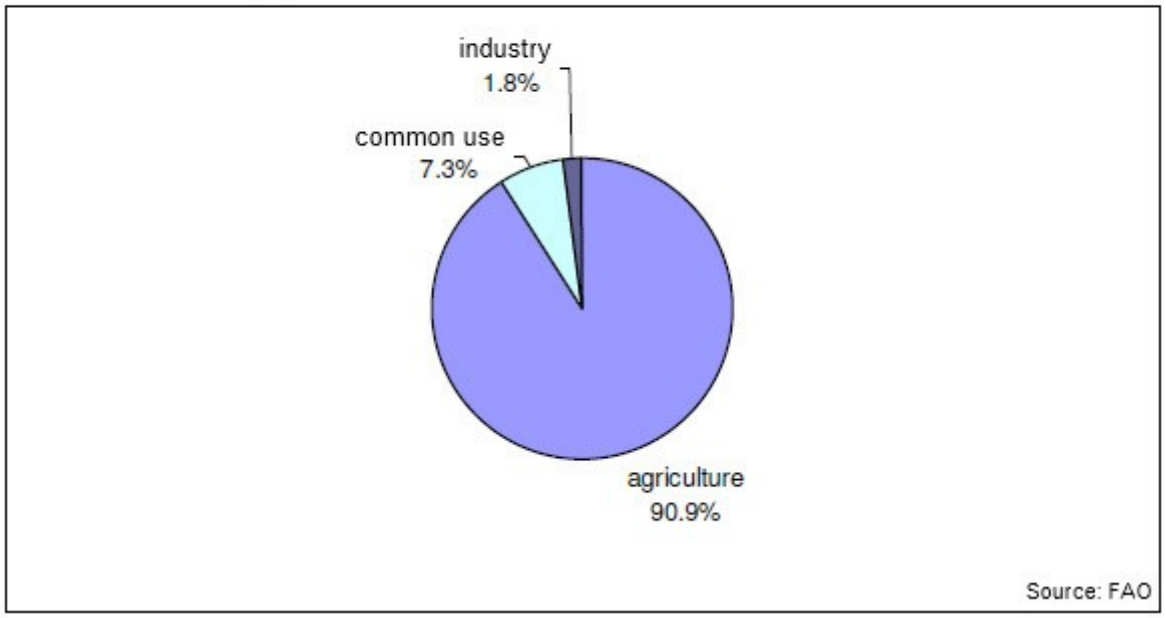
**Introduction**:
Water consumption plays an important role for many aspects of everyday life. Especially for agriculture it is of vital importance since it is one the basis of agricultural production. Focusing on its different uses in this sector allows to give thought to ways to conserve it.

**Instruction**:
1.)
a) Describe what you can see in the graphic in M1.
b) Focus on agricultural water use and list three instances in which water is needed in agriculture.
2.)
a)Analyze the graphic in M1 critically regarding which information it offers you and which information it withholds.
b)Take a look at the story map on http://arcg.is/2b84j8u and explain the relation of water use and virtual water in agriculture.

3.)Imagine you had to give advice to a farmer who wants to save water. What would you recommend him/her? Use your knowledge about virtual water and agricultural production to develop a plan for respective measures.

**Resources**:
M1:

FIGURE 1
**Water withdrawal in Cabo Verde**
Total: 27.9 million m³ in 2000




*altered from:* http://www.fao.org/nr/water/aquastat/countries_regions/cpv/index.stm (08.08.2016, modified)

**Possible results / Results**:
1.)
a)The graphic shows a pie chart which is divided into three sectors, a big one and two smaller parts. The title reveals that it deals with water withdrawal in Cabo Verde while the subtitle says that the total water withdrawal in Cabo Verde was 27.9 million m³ in 2000. Captions for each sector of the pie chart reveal that 90.9 % of the total water withdrawal account for agricultural use, 7.3 % account for common use, and 1.8 % account for industrial use.

There are different ways to solve the following tasks. The results below serve as examples.
b)Water can be used in agriculture for

- irrigation,
- feeding animals,
- processing raw agricultural products.

2.)
a)The chart reveals that 27.9 million m³ of water were withdrawn in Cabo Verde in 2000. Furthermore, it reveals how much of the total withdrawn water is used by agriculture, for common use, and by industry giving information about the respective proportions of water use in these sectors. What it does not reveal, however, is what exactly the water is used for in the different sectors, that is, for which purposes it is used. It does not offer any information about how efficiently the water is used either. In addition to lacking information about the origins of the values, it does not offer any information about the implications and consequences of these values..

b)Each commodity produced in agriculture requires water for its production process which is why water use is the basis of agricultural production. All the water that is used in order to receive an agricultural product is consolidated in the term ‘virtual water’, the water hidden behind the physical

appearance of commodities. However, not each product requires the same amount of water which has an effect on the value indicating the amount virtual water of a product. Thus, the magnitude of water use determines the amount of virtual water hidden in a product.
3.)For the production of different agricultural goods, you need different amounts of water. This is why you should consider the crop type you want to raise. If you want to reduce the amount of water involved in the production of your commodities, you can choose a crop type that does not need much water to be raised. If you have already chosen a crop you want to raise and still want to save water, you can also try to use the water involved in the production more efficiently. In this case you should think about an appropriate and efficient irrigation method for your purposes. Moreover, try to avoid runoff as much as possible. In order to do this, you should collect information about the respective crop and the water required for growing. You should, nevertheless, water it sufficiently to avoid withering and decreasing soil quality. If your soil is too dry, water cannot infiltrate properly and runs off. These are basically the aspects you can focus on in order to ensure efficiency in agricultural production in Cabo Verde reducing the amount of virtual water.

**Related activities**:

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