Strategia Netherlands

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**ASSIGNMENT**

1. **Explain six major non-domestic use of water.**
2. **Irrigation**

Irrigation of agricultural lands accounted for 70% of the water used worldwide. In several developing countries, irrigation represents up to 95% of all water uses, and plays a major role in food production and food security. Future agricultural development strategies of most of these countries depend on the possibility to maintain, improve and expand irrigated agriculture. On the other hand, the increasing pressure on water resources by agriculture faces competition from other water use sectors and represents a threat to the environment. Water is a resource that may create tensions among countries down and upstream. Irrigated agriculture is driving much of the competition since it accounts for 70-90% of water use in may be of these regions **(2019), irrigation Water.**

1. **Industrial use**

Manufacturing and other industries use water during the production process for either creating their products or cooling equipment used in creating their products. According to the United States Geological Survey (USGS), industrial water is used for fabricating, processing, washing, diluting, cooling, or transporting a product. Water is also used by smelting facilities, petroleum refineries, and industries producing chemical products, food, and paper products. Large amounts of water are used mostly to produce food, paper, and chemicals **(USGS), Centers for disease Control and prevention) CDC 24/7: Saving lives and protecting people.**

In many industries water is essential. Some industries use piped water supplied from water treatment plants while others draw the water themselves from underground sources and treat it on site for use. The water may be used either as part of the production process or as an ingredient, where water is one of the components of the product, for example in a soft-drink plant. In the production process, it can be used for cooling, washing, diluting, boiling or cooking, transportation of raw materials (for example, moving potatoes in a food factory), and as a cleaning agent.

1. **Mining use**

Mining activities use huge amounts of water in processing ore to extract minerals. Use of water in the mining industry shares many of the characteristics of other industrial uses but it has some distinctive features that make it worth considering in further detail. The mining sector is a large industrial user that is growing rapidly. Mining includes mineral extraction (including coal), petroleum, gas, and quarrying. Most water is used in arid or semi-arid regions where water is scarce and there are few competing users such as agriculture and towns. The sector can be the largest water user and even a key water supplier. The industry mostly supplies itself with water that is often regulated separately from the water entitlement system or water supply utilities that provide for other users. Much of the water is extracted to dewater mines or is a by-product of extraction and can be acidic and contain toxic amounts of metals or other pollutants. It is often discharged to the environment, with controls placed on its quality, but in arid regions the discharges may be sufficient to detrimentally alter the natural flow regime. Alternatively, extracted water is disposed of in evaporation ponds**, (2010),Water in mining and industry).**

1. **Use in power generation**

Some of the rivers have enormous potential for generating hydroelectric power (HEP). HEP uses the energy from moving water and converts this to electrical energy. The development of HEP has transformed energy supply in recent years and more schemes are under construction or planned. However, it is important to realise that in HEP the water is not used in the sense of being consumed, because after passing through the HEP plant the water continues on its path in a river channel. Another way is by use of geothermal energy, in which energy is being derived from the heat of the Earth**.** This process involves drilling down into hot layers of underground rock and using this heat to convert water into steam, which is then used to drive generators to produce electricity

1. **Aquacultural use**

Water can also be used in aquaculture, which is the farming of aquatic organisms such as fish, crustaceans and molluscs for food. Fish farming obviously needs water for the fish to live in. In this case, water is used to hatch fish eggs under controlled conditions, and the fish are grown to maturity in tanks or ponds, before being sold for food.Fish farming is only one aspect of aquaculture. Aquaculture water use is water associated with raising creatures that live in water such as finfish and shellfish for food, restoration, conservation, or sport. In many lakes, rivers, and reservoirs around the country, recreational fishermen enjoy catching fish that have been raised in fish ponds and released to natural waters. Aquaculture production occurs under controlled feeding, sanitation, and harvesting procedures primarily in ponds, flow through raceways, and, to a lesser extent, cages, net pens, and closed-recirculation tanks.

As the demand for seafood has increased, technology has made it possible to grow food in coastal marine waters and the open ocean. Aquaculture is a method used to produce food and other commercial products, restore habitat and replenish wild stocks, and rebuild populations of threatened and endangered species.

Water use in its broadest definition should include all of the water needed to produce an aquaculture crop. However, some of the water introduced into aquaculture production units subsequently is discharged and available to downstream water users. In cage and net pen culture, water simply passes through production units and only a small quantity is removed in biomass at harvest. Brackish water or seawater availability usually is not diminished by coastal aquaculture. Therefore, the greatest concern should be consumptive water use by freshwater aquaculture, for this reduces the volume of water available for other beneficial uses. The volume of water consumed per unit of aquaculture product would be a helpful variable, for it would allow estimates of the economic value of water in aquaculture. Hydrologic Features of Production Units the main types of aquaculture production units **(2005) Water use in aquaculture Claude E. Boyd1**

1. **Recreational use**

Water plays an important role in recreational activities and here again it is not consumed in the process of its use. Boat trips are popular on many of the Lakes and several resorts have been built on their shores. While recreational water refers to rivers, lakes and coastal waters, People use recreational water for activities like swimming, surfing, water skiing, white water sports, underwater diving, sailing, boating and shellfish gathering. (2019), Environmental Health Indicators New Zealand, about recreational water quality and health, Massey University, University of New Zealand.

1. **Briefly describe the important roles that water plays in the human body.**

Water plays important role in human body compared to food because it enhances the general functioning system of the body. The human body is made up of approximately 60% water, the brain is 75% water and blood is 83% water. We are continually losing water over the day through urine, sweat and in our breath as vapor **(2016) Beauty and Go**. However, this water has to be replaced, as the body cannot store water. In fact, the human body can last weeks without food but only days without water; water is absolutely important to life. While water is essential to human life, it plays significant role in various ways highlighted below:

* Acts as a delivery system, taking nutrients to cells and removing waste:
* Forms the base of many bodily fluids such as blood and saliva
* Regulates body temperature
* Forms fluid surrounding joints
* Needed for the for digestion, helps in softening and dissolving food components, keeps skin hydrated
* Essential for normal bowel movements and preventing constipation

1. **List the types of people who are most vulnerable to waterborne diseases. Explain your answers why and how to overcome the diseases.**

The types of people that are vulnerable to waterborne diseases are as follows:

1. **Infants and young children**

For children, the chances of survival dwindle in the absence of these essentials. Every day, 6,000 children die of water-related diseases. Young children are the first to get sick and die from waterborne and sanitation-related illnesses including diarrheal diseases and malaria. While overcoming those diseases is possible, safe water, adequate sanitation and good hygiene practices are essential for young children to survive and thrive – to be healthy and to flourish both physically and mentally. They are also complementary. Provided together they reduce health risks for young children and their families far better than each component alone. Infants are most vulnerable to diarrheal illnesses when weaning begins, sometimes as early as 1 to 2 months of age. Infants are most vulnerable to diarrheal illnesses when introduced to fluids and foods as they are weaned from breastfeeding to a mixed diet. Families can help reduce waterborne and sanitation-related illnesses with basic hygienic practices. Combining hand washing, food protection and household hygiene reduces infant diarrhea by 33 per cent. Safer excreta disposal cuts the incidence of childhood diarrhea by 37 per cent. The simple act of washing hands with soap can reduce diarrheal diseases among adults and young children by 42 to 47 per cent**, (2004) UNICEF. Child survival Fact Sheet: Water and Sanitation**

1. **Older people**

Elderly are susceptible to waterborne diseases because of lack of proper care in terms of good hygiene and sanitation practices and they may have their immune system worn out with age. In order to prevent these waterborne diseases, older people need to be placed under good care by ensuring that food and water are free from contamination and their personal hygiene is well taken care of by the caregivers.

1. **People whose immune system is debilitated by diseases such as HIV/AIDS are susceptible to waterborne diseases.**

Contaminated water, lack of sanitation, and poor hygienic practices in homes of PLHIV increase the risk of diarrhoea, which can result in increased viral load, decreased CD4 counts, and reduced absorption of nutrients and antiretroviral medication**. (2015),The impact of water, sanitation, and hygiene interventions on the health and well-being of people living with HIV: a systematic review.**Therefore, in order to overcome those diseases, it needs at household level provision of safe water handling, providing improved sanitation and other best hygiene practices and other hygiene interventions.

1. **Suppose that inhabitants of a village obtain water from a spring. What advice would you give to the users about the prevention of contaminants entering the spring?**

In case the Users of a certain location have access to spring water source only without any other available safe water source, I will advise them to prevent contaminants from entering the spring through doing number of activities. Springs can be protected by installation of a spring tapping, a spring box and an adequate drainage system. Additionally, a surface water drainage ditch, dug above and around the spring area, diverts surface water runoff from polluting the source. If the area around a spring intake is unstable or exposed to erosion, then gabions or dry stone masonry can be used to stabilize the area, **(2019), Marco Bruni seecon international gmbh), Dorothee Spuhler (seecon international gmbh),Water Source protection.**

No matter what type of spring you have developed, it is critical that you remove potential sources of contamination from the spring's drainage area (the area upslope of the spring discharge point). Surface water draining into that area should be redirected and all activities should be limited within the drainage area. If livestock are present, fences should be used to keep animals from contaminating the drinking water supply. In fact, many roadside springs that are located on public property may already undergo disinfection to ensure that the source is safe for consumption. Any roadside spring that is being used as a drinking water supply should be tested for total coliform bacteria. These springs should only be used as a source of drinking water if they have been tested and found to be bacteria free. When it comes to the health and safety of your family, never assume that a water supply is safe for drinking. **(2017), Spring Development and protection.**

1. **The following are pollution sources. Give two specific pollutants for each source.**
2. **A residential area:**
3. Human waste from open defecation
4. Wastewater from kitchens and bathrooms.
5. **Agricultural activities:**

* Pesticides and fertilizers from chemicals
* Contaminated water used for irrigation

1. **An uncontrolled landfill site:**

* Solid waste from wood, paper, plastic, broken furniture, glass, grounded cars, obsolete electronic products, and hospital and market waste.
* Agricultural wastes arise from waste materials generated from animal manure, crop, and farm remains

1. **Urban surface water run-off**

* Motor oil, heavy metal and trash from Storm water
* Eroded sediment from construction projects.

**References**

1. Lenntech.B.V (2019), irrigation Water.
2. United States Geological survey, Centers for disease Control and prevention) CDC 24/7: Saving lives and protecting people.
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4. Claude E. Boyd1 (2005) Water use in aquaculture
5. (2016) Beauty and Go
6. Unicef, (2004),Child survival Fact Sheet: Water and Sanitation
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8. Marco Bruni, seecon international gmbh, Dorothee Spuhler, seecon international gmbh)(2019)
9. Stephanie S. Clemens Spring (2017), Article, Development and protection.