**Assignment 7**

1. **Describe the particular challenges of providing WASH services in urban settings arising from each of the following factors.**

According to World Health Organization (WHO) report of 2018 on **Health, environment, and sustainable development “CITIES AND URBAN HEALTH”**

Rapid expansion of low and middle-income cities has increased health risks on multiple fronts. Air pollution, road traffic congestion, and lack of safe spaces for walking, cycling and physical activity all contribute to rising death rates from stroke, heart disease, cancer, respiratory illness and injuries. **Poor urban sanitation and waste management perpetuate transmission of vector-borne and infectious diseases such as diarrheal and TB.** People living in substandard housing are more prone to health impacts from heat waves, cold, and extreme weather. And many poor urban households still rely on smoky biomass and coal cooking stoves, whose particles are both a source of indoor air pollution as well as of emissions of black carbon, a short-lived climate pollutant. There is urgent need for action on urban health issues as the world’s urban population doubles by 2050.

**According to World Health Organization and UNHABITAT report of 2016 global report on urban health: “equitable healthier cities for sustainable development” BARRIERS TO HOUSEHOLD INVESTMENT IN IMPROVED WATER AND SANITATION”**

**Many cities, especially those in developing countries, suffer from inadequate supply of improved water and sanitation. Building such infrastructure is costly and may involve numerous technical, bureaucratic and legal constraints.** However, even in places where the water and sanitation network exists and it is technically feasible to connect to it, there may be demand constraints that limit people’s access to these services. Understanding the underlying factors that affect demand for urban services is a necessary first step in the design of the most suitable incentive mechanisms to improve access. **Evidence from different country contexts suggest that many families and households in developing country cities do not want to invest in improved water and sanitation, even if they could afford it (213,214). Many urbanites are also migrants who are temporary or transient and are even less likely to invest in their houses.** **People may simply lack the money or willingness to pay for the service, may have a poor understanding of the benefits and costs of those services or may not be fully aware of the health costs of current options, partly because such information was not communicated to them (214).** **A common situation is that people who do not have legal property rights to their dwellings**, **often-informal settlers, are not motivated to make major improvements to them.** They see no reason to invest in homes if they are not the recognized owners. Evidence in Latin America has shown that, in fact, households with insecure property rights are less likely to invest in improvements or to use their house as collateral for a loan to invest in improvements. While strengthening property rights in urban slums has shown to have a significant effect on residential investment, it has also created other problems. Once land rights are granted, the poor may resell the land to wealthier people (215), and then create new slums elsewhere, perpetuating the problem of poor water and sanitation.

* + - * 1. **Increasing population size**

**ANSWER:**

Growth of Urban areas comes with economic opportunities attracting migrants who rapidly adds to the initial population of the urban area. When WASH services in an urban area is planned without projection of its economic growth that creates opportunities that will attract migrants to the urban area, the existing WASH services will be stressed and or break down especially when funding for services is limited or not available. This situation will become very challenging to urban planners, administrators and politicians.

* + - * 1. **The diverse nature of the urban community**

**ANSWER:**

Urban populations are always diverse with different educational backgrounds, socio-economic status, customs, cultures, religion, and nature of work, life style and physical ability. This factor influences the levels of utilizing WASH services in the urban setting. The cohesiveness and sense of belonging of that urban community also determines the level of care given to vulnerable groups (peri-urban and slum dwellers) who requires equitable and efficient WASH service as a basic human right. Equitable and efficient WASH services provision can therefore become a big challenge to the service provider.

* + - * 1. **Infrastructure required for WASH services**

**ANSWER:**

Provision of wash services in towns always require infrastructure that cost lots of money. WASH infrastructures takes long to build with very long-term recovery of the initial capital cost. WASH infrastructure needs highly skilled human resource to build and needs materials that might need to be import into the country requiring hard currency that might not readily be available. With little tax payer’s money, providing WASH services will pose a challenge to urban authorities without grants from central governments, loans or donations from external donors.

* + - * 1. **Governance, in particular the process through which resources for improving WASH services are allocated and utilized.**

**ANSWER:**

Urban planners, Administrators and politicians always prioritize funding for areas of the elite, rich and middle class who do not only criticize the government for poor service delivery but demand improved services because they pay taxes. When the government finds itself in this situation, the victims are always the peri-urban and slum dwellers who are less represented, poor, less educated and not knowing their rights. The poor, less educated and ignorant are always preoccupied with their daily income for survival yet they are the majority of taxpayer. If any little funds are allocated to implementation or improvement of WASH services in the section of the urban area occupied by the poor majority, in most cases the funding is inadequate or there is no proper utilization and accountability of the funds meaning part of the funds are corrupted.

Water supply sub-sector is always a priority to other sub-sectors like sanitation, waste management and sensitization of communities. The priorities of the elite, rich and middle class who can afford to construct flash toilets, septic tanks and can dispose their solid waste at the periphery of the slums areas voiced their priorities that are different from the priorities of poor majority.

**2. What are the major health risks from?**

**a- open defecation**

**According to World Health organization’s Diarrheal diseases fact sheet of 2 May 2012 edition**, Diarrheal disease is the second leading cause of death in children under five years old, and is responsible for killing around 525 000 children every year. Diarrhea can last several days, and can leave the body without the water and salts that are necessary for survival. In the past, for most people, severe dehydration and fluid loss were the main causes of diarrheal deaths. Now, other causes such as septic bacterial infections are likely to account for an increasing proportion of all diarrhea-associated deaths. Malnourished children who have impaired immunity as well as people living with HIV are most at risk of life-threatening diarrhea.

Diarrhea is usually a symptom of an infection in the intestinal tract, which is cause by a variety of bacterial, viral and parasitic organisms. Infection is spread through contaminated food or drinking water, from eating without washing hands before eating and or from person-to-person because of poor hygiene practice.

**Open defecation is implicated in a formidable range of endemic infections – not only associated with several diarrheal Illnesses, but also tropical enteropathy, malabsorption of nutrients in the gut, ascaris, tapeworms and other intestinal parasites, hookworm, the hepatitis’s, liver fluke, schistosomiasis, trachoma and zoonosis. Because of these, infant and child malnutrition and stunting are aggravated**. **Community Lead Total Sanitation (CLTS) opens up the possibility of tackling and mitigating all of these bad effects on human health.** **Community Lead Total Sanitation (CLTS) focuses on total behavior change and sanitation transformation of communities to eliminate open defecation that will contribute to the wellbeing and enhancing the dignity not just of the better off in towns and cities, but of all women, children and men even in the deep rural.**

**ANSWER:**

Yes, major health risk from open defecation include:

1. Flies sit on the feaces in the open and then fly to rest on food and water contaminating it with disease causing pathogens before being eaten or drunk. Domestic animals like pets and birds like chicken can eat or get in touch with feaceas in the open and transmit disease-causing germs to human food, water and even contaminate food eating or preparation containers.
2. The other major risk is that when it rains, all feaces are wash in to rivers or water sources that people drink or bath in. This results in people ingesting diseases causing pathogens in the water they drink or accidently swallow during bathing.
3. Domestic animals get in touch with human feaces in the open containing pathogens that cause diseases. These animals then carry home those pathogens to contaminate our water, food or eating utensils.

**b- Allowing food waste and litter to accumulate in a ditch**

**According to the National Environmental Agency (NEA) 3R (Reduce, Reuse and Recycle) edition LOVE YOUR FOOD “WASTE LESS. SAVE MORE”,** Food waste accounts for about 10 per cent of the total waste generated in Singapore in 2017. Out of the 10% waste food produced in Singapore, only 16 per cent of it is recycled. The rest of it is disposed of at the waste-to-energy (WTE) plants for incineration.

The amount of food waste generated in **Singapore** has increased by about 40 per cent over the past 10 years. This percentage is expected to increase with our growing population and economic activity. Besides the effort required for collecting and disposing it, **food waste contaminates recyclables and compromises recycling efforts. It may also encourage produce odor nuisance issues and vermin proliferation if not managed properly.** Therefore, there is a need to manage food waste holistically. Reducing food wastage, redistributing unsold or excess food, and recycling/treating food waste are important components of our national waste management strategies to work towards Singapore becoming a Zero Waste Nation under the Sustainable Singapore Blueprint 2015.

**ANSWER:**

Yes, major risks from allowing food waste and litter to accumulate in a ditch are:

1. The major health risk from allowing food waste to accumulate in a ditch is that food decomposes and will attract flies, cockroaches and vermin that will carry harmful pathogens to human food and water.
2. Allowing waste food to accumulate in a ditch decomposes producing odor that pollutes the air.
3. Littered broken food containers can store water that will become a perfect place for vector like anopheles’ mosquitos to breed. When anopheles’ mosquitos carrying parasites bite people, the mosquitos inject the parasites into the human blood vessels that attacks human liver causing malaria.
4. Accumulated litter can also cause physical injury to family members especially children when the litter are sharp.

**c- Not washing hands before eating.**

**According to UNICEF** statement on the occasion during the celebrations of the global handwashing day on the 15/10/2011, Handwashing with soap is the most effective and inexpensive way to **prevent diarrheal and acute respiratory infections**. The diarrhoeal and acute respiratory infections take the lives of millions of children in developing countries every year. Together, they are responsible for the majority of all child deaths. Yet, despite its lifesaving potential, handwashing with soap is seldom practiced and difficult to promote.

**According to the World Health Organization**, Diarrhea is define as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual). Frequent passing of formed stools is not diarrhea, nor is the passing of loose, "pasty" stools by breastfed babies.

Diarrhea is usually a symptom of an infection in the intestinal tract, which is cause by a variety of bacterial, viral and parasitic organisms. Infection is spread through eating contaminated food or drinking water, **from eating or handling food without washing hands with clean running water and soap** and or from person-to-person because of poor hygiene practice.

**According to The National Center for Biotechnology Information (NCBI) advances science and health,** “**Disease Control Priorities in Developing Countries. 2nd edition” Chapter 25.** Acute respiratory infections (ARIs) are classified as upper respiratory tract infections (URIs) or lower respiratory tract infections (LRIs). The upper respiratory tract consists of the airways from the nostrils to the vocal cords in the larynx, including the paranasal sinuses and the middle ear. The lower respiratory tract covers the continuation of the airways from the trachea and bronchi to the bronchioles and the alveoli. ARIs are not confined to the respiratory tract and have systemic effects because of possible extension of infection or microbial toxins, inflammation, and reduced lung function. Diphtheria, pertussis (whooping cough), and measles are vaccine-preventable diseases that may have a respiratory tract component but also affect other systems; they are discussed in chapter 20.

Turning handwashing with soap before eating and after using the toilet into an ingrained habit could save more lives than any single vaccine or medical intervention, cutting deaths from diarrhea by almost half and deaths from acute respiratory infections by one-quarter. A vast change in handwashing behavior is critical to meeting the Millennium Development Goal of reducing deaths among children under the age of five by two-thirds by 2015.

Global Handwashing Day focuses on children because not only do they suffer disproportionately from diarrheal and respiratory diseases and deaths, but research shows that children – the segment of society so often the most energetic, enthusiastic, and open to new ideas – can also be powerful agents for changing behaviors like handwashing with soap in their communities.

**ANSWER:**

1. Not washing hands with safe running water and soap before eating is one of the most critical times to wash hands and prevent the ingestion of disease causing pathogens. The major risk from eating with unwashed hands is that when the hands are use to pick safe food, the disease causing pathogens are swallowed together with the food in to human stomach causing sicknesses.
2. Not washing hands with safe running water and soap before breastfeeding or feeding babies can result in the babies swallowing disease-causing germs left on the nipple of the mother’s breast and hands. These germs will cause diarrheal Illnesses and severe respiratory infections to the baby.

**Briefly explain how these risks could be reduce.**

**ANSWER:**

1. **Risk from open defecation** can be reduce when people are collectively convinced that disease-causing pathogens are found in human feaces and when they ingest their own, family members or other people’s feaces, they ingest disease-causing pathogens and will become sick of several diseases.

When people realize that they are spending their hard-earned money on treating preventable diseases.

When people are convinced that not defecating in the open brings valuable changes into their personal lives, families, community wellbeing, children’s performance in school and economic situation, they will accept to construct, use latrines and adapt positive practices that reduces the prevalence of WASH related diseases.

1. **Risk from food waste and litters** can be reduce by practicing the **3R. Reduce** waste from food you produce, buy and eat. **Reuse** remaining food by either keeping it in a refrigerator or giving it away to others who can use it and **Recycle** or compost waste food to produce high quality fertilizer for food production. **Reduce** the use of plastic paper/bags for carrying food or cans from packed food, **Reuse** plastic paper/bags use for carrying food and **Recycle** all plastic paper/bags and cans. Composting and reuse of all food and organic waste. Recycling and or disposal of all solid waste in to a communal collection point to be dispose into a landfill or recycled can prevent vectors from breeding nearby.
2. **Risk from not washing hands before eating** can be reduce by practicing hand washing with safe running water and soap or ask before eating to minimize chances of ingesting disease-causing pathogens.

**3- Describe three specific challenges posed by peri-urban areas and slums for improving access and utilization of WASH services.**

**ANSWER:**

1. The peri-urban and slum areas are in most cases not demarcated areas with residential plots, proper roads and provisions for public places. Demarcation of the peri-urban and slum areas is a fundamental requirement for towns or municipal authorities to plan and extend WAS services to its squatters. These communities do not have legal rights to the land they live on for them to demand services like other urban areas. This situation denies them WASH services.
2. The land where peri-urban and slum dwellers squat on is limited for them to construct latrines even if some of them would want to. Sometimes materials are not available or not affordable for the peri-urban and slum dwellers if they need it. Skills to construct latrines and knowledge on the benefits from good sanitation and hygiene practices are lacking.
3. The peri-urban and slum dwellers are always economic migrants from different villages with different backgrounds, understandings, customs, traditions, cultures and believes. This factor influences their positive or negative sanitation and hygiene practice. They are the unskilled and casual work force in the urban areas with less or no consistent income. They are generally poor to pay for or consider paying for WASH services as a priority than to their other needs. Most of them have the concept of coming to town to make money and return to the village to invest their savings.

**4. Explain three challenges associated with engaging stakeholders in planning and implementing urban WASH projects.**

According to **World Health Organization and UNHABITAT report of 2016 global report on urban health: “equitable healthier cities for sustainable development “COORDINATED SYSTEM-WIDE SOLUTIONS ARE NEEDED AND POSSIBLE”**

Given the challenges for small-scale private initiatives to invest in water and sanitation solutions and the systemic nature of water and sanitation services, well-coordinated system-wide solutions are needed to achieve efficiency and effectiveness on a broad scale. This involves coordination between the water and sanitation sectors, including public and **private providers**, along the chain of services within each sector, within the **affected community** and between relevant **national and local level policies**. Community level coordination is important in mobilizing the resources needed to invest in water and sanitation infrastructure and to ensure public health safety for all. To be effective, urban water and sanitation management has to be inclusive of all residents and areas, including the poor, and implemented within a citywide framework. When done well, it could provide a wide range of benefits, including longer lifespan, reduced morbidity and mortality, higher school attendance, lower health costs and less time and effort devoted to managing water and waste (214). In economic terms, it is estimated that combined water supply and sanitation interventions have a cost–benefit ratio of 4.3 (i.e. **an economic return of US$ 4.3 per US$ 1 invested**) at the global level, ranging from 2.0 in Oceania to more than 5.0 in LAC and East Asia (217). **Coordination failures, however, pose serious challenges to implementing community-wide solutions.** Not all individuals in the community may approve the development of water and sanitation services. **For example, small, private water service providers – tanker operators, private kiosk operators, household resellers, door-to-door vendors, and operators of small boreholes and private piped networks – have a vested interest in preventing the construction of formal network-based services**. Some of these provide good quality service under competitive conditions, but the price of water is usually much higher than that of the main water utility, and they are most often informal and unregulated providers. Even when new and improved solutions are implemented, they may not be sustained if no one takes responsibility for maintenance. There is evidence that community sanitation facilities are usually poorly maintained – and the failure of one affects many. Mismatches can also occur between demands for improve sanitation and the type of services provided, often resulting in unused or underused sanitation infrastructure. Coordination can be challenging, especially in urban areas. **In contrast to rural areas, urban settlements are often heterogeneous, both ethnically and in socioeconomic status, which hinders collective action. Longer-term residents may also find it difficult to motivate new settlers, especially transient migrants, or hold them accountable to investments, norms and rules**. Poor communities face the additional challenge of lacking the political influence to affect municipal decisions. Sanitary conditions in these communities may not be the priorities for policy-makers. **For larger-scale solutions beyond the household or community level, local and central government participation is necessary. Issues surrounding the accountability of elected representatives in poor neighborhoods then become very relevant. Despite the urban poor forming a sizable proportion of the population, this voting bloc has often been unable to leverage their political weight to gain improved public service delivery.** States should adopt the necessary measures to certify that water is universally guaranteed and affordable. Households must be able to afford a basic quantity of water for essential consumption. If the cost of water is above the financial availability of the poor, this will hinder universal access and the fulfilment of the right to the city for all. When water is unaffordable, consumption could decrease below the level of essential needs and result in serious health risks to the most disadvantaged (218). The public sector must, therefore ensure tariff schemes that protect the most disadvantaged from disconnections due to high prices associated with weak financial capacity, without jeopardizing financial sustainability of service providers (219). At the same time, subsidy policies can ensure access for the poor, served both by formal or informal providers. If the poor are willing to pay for improved drinking water quality, as is evidenced in some countries (220–222), volumetric rate of water service charge (instead of regressive lump sum water service charge) can be an important economic instrument and policy tool. It can increase efficiency in the water supply system by maintaining distributive justice, reduce wastage of water and ensure that the water provider has sufficient revenue to maintain safety (223). Despite formidable challenges, coordinated system-wide solutions to deliver safe water and sanitation are achievable and sustainable. They can be successful even in urban slums as seen, for example, in Nairobi. Over the last 10 years, Kenyan government ministries, development agencies and civil society have invested considerably in initiatives to improve sanitation in urban slums. Great improvements have been made in the provision of water and sanitation facilities with corresponding improvements in health outcomes (224). Between 2000 and 2012, the proportion of Nairobi slum households buying water from vendors decreased from 74.8% to 11.4%, and those accessing water through public taps increased from 2.7% to 59.3%. The proportion of slum households using flush toilets increased six fold from 7.3% to 46.2%, while households using traditional pit latrines decreased from 78.8% to 44.0% – an almost 50% decrease. These improvements in access to water and sanitation have been linked to declines in diarrheal diseases.

**ANSWER:**

1. **Personal interest:** Some stakeholder as small, private water service providers – tanker operators, private kiosk operators, household resellers, door-to-door vendors, and operators of small boreholes and private piped networks – have a stake in preventing the construction of formal network-based services. This group of people will oppose the planning and implementation of a pipe water project unless their concerns are address and alternatives are available for them to continue in the business.
2. **Knowledge:** In contrast to rural areas, urban settlements are often heterogeneous, both ethnically and in socioeconomic status, which hinders collective action. Longer-term residents may also find it difficult to motivate new settlers, especially transient migrants, or hold them accountable to investments, norms and rules. Stake holders from different educational background and or specializations who have some basic knowledge or theories will complicate the planning and implementation of a project unless their sectors benefits more from the resources allocated for that project.
3. **Corruption and politics:** Local government civil servants, politician, private sector and affected communities are all stakeholders in any urban WASH project. In most situations, the government officials and politicians demand kickbacks to support the planning and implementation of projects. Sometimes allocation of funds to the sector is influence by politics or directed to the areas settled by the elite, rich and the middle class. This neglects the areas settled by the poor urban majority who are part of the urban area. **For larger-scale WASH solutions beyond the household or community level, local and central government participation is necessary. Electing representatives from the poor neighborhood and holding them accountable by their electorate then become very relevant. Despite the urban poor forming a sizable proportion of the population, this voting bloc has often been unable to leverage their political weight to gain improved public service delivery.**