Worksheet Module 4 Week 3C: Design technology systems for water recovery

1. What should be the treatment objectives in terms of organic, nutrient and pathogen reduction?

2. What suitable technologies are available locally for the proposed RRR intervention?

3. What is the level of performance and efficiency of the proposed technology?

4. Are there resource constraints related to labour, land, energy or other factors of production?

5. Are the required technologies, finance, regulations and incentive mechanisms available to support timely repair and maintenance?

6. Design your wastewater treatment system:

- Calculate wastewater inflow (m3/d) $\frac{Average\ water\ consumption}{1000\ (L/m^3)} \times Number\ of\ persons \times 0.8$

- Determine the influent characteristics:

PARAMETERS	CONCENTRATION (mg/L) *
Total solids	
Suspended solids	
Dissolved solids	
Organic Matter, BOD_5	
COD	
Total Nitrogen	
Phosphorus	
E. coli	

- Reference:

PARAMETERS	CONCENTRATION (mg/L) * RANGE	CONCENTRATION (mg/L) * TYPICAL IN DEVELOPING COUNTRIES
Total solids	700 - 1350	1100
Suspended solids	200 - 450	350
Dissolved solids	500 - 900	700
Organic Matter, BOD_5	250 - 400	300
COD	450 - 800	600
Total Nitrogen	35 - 60	45
Phosphorus	4 - 15	7
E. coli	10^6 – 10^9 (org/100ml)	10^7 (org/100ml)

- Determine the effluent characteristics:

PARAMETERS	CONCENTRATION (mg/L) *
Value of SS (mg/L)	
BOD (mg/L)	
Nitrogen (mg/L)	
Phosphorus (mg/L)	
E. coli (org/100mlL)	

- Select the treatment technology:

- Determine size of each step: Volume (m3) and surface (m2) $\frac{Volume\ (m^3)}{Depth\ (m)} = Surface\ (m^2)$