# Appendix D: Socio-Technical Checklist

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| **Fault** | **Possible cause** | **Control measures** | **Remedy** |
| **(1) Structural tank defects causing water or gas leaks** | The tank was damaged during installation and/or construction. | Ensure certified installation and construction and/or appropriate sign–off of the tank delivery | Undertake certified defect repairs. |
| Digester was constructed or installed incorrectly. |
| **(2) No digestate overflowing from the *ABP6*** | Debris in the inlet or inspection risers (e.g. plastic bag) | Correct operations and maintenance regular checks for inorganic material. | Remove inorganic material |
| Debris blocking the outlet (e.g. plastic bag). | Correct operations and maintenance regular checks for inorganic material. | Remove inorganic material |
| Leak in the structure | As per (1) |  |
| Blockage from overloading | Review loading rates on product datasheet | Ensure that design volumes are entering the system. |
| Not enough water going into the system causing solidification within tank | Review loading rates on product datasheet | Add water to within design volumes |
| **(3) Effluent backing up sewer pipes or overflowing out of inlet riser** | Inorganic debris in inlet chute riser or excessive solid volumes in inlet riser. | Correct operations and maintenance – regular checks for inorganic material.  Review loading rates on product datasheet | Remove debris and ensure correct volumes entering system. |
| Solid or inorganic debris blocking outlet | Review loading rates on product datasheet | Ensure design volumes are entering the system |
| **(4) Leak in the gas line** | Incorrect installation and/or construction | Ensure that the line is installed and/or constructed to specification, not close to vegetation growth and with no possibility of trapping condensation water. Ensure that components are operated and maintained correctly, weathered components replaced. | Contact specialist |
| Damaged or broken pipes through vegetation growth into the joints. |
| Perished or corroded components | Regular inspections to replace damaged corroded or perished components. |
| **(5) Blockage in gas line** | Water trapped in pipe. This is usually evidenced by variable flame at the burner | Ensure that the gas line is not bent causing a “U” water trap in the line, ensure that water traps are checked and emptied regularly | Contact specialist |
| Effluent backing up pipe | Ensure that scum or protein froth build up has not entered the pipe at the gas outlet. |
| **(6) Blockage or leak in the sewer line** | Incorrect installation and/or construction | Ensure that the line is installed/constructed to specification, not close to vegetation growth and with no possibility of trapping water. Ensure that components are operated and maintained correctly, and weathered components replaced. | Contact plumber |
| Damaged or broken pipes. |  | Regular inspections to replace damaged; broken or perished components. |
| Incompatible material lodged in the line | User education. Put up toilet sign supplied. | Contact plumber |
| **(7) Reduction in burning time** | Severe cold weather, one can expect less gas production in the winter months. See product datasheet. | Review loading rates on product datasheet | Ensure only correct amount and type of raw material enters the digester at different times of the year |
| Build up of in-organic material in the tank (sand, grit etc) causing the capacity to reduce | Review User Manual for avoiding inorganic materials being loaded into the ***ABP6*** |
| Blockage, restriction, leak in gas pipe | Check for leaks, blockages. | Replace or repair components |
| **(8) General malfunctioning of the burner** | Burner parts dirty or corroded (food often falls into gas outlets, jets get blocked with carbon). | Clean (wire brush) appliance regularly | Clean appliance carefully and gently |
| Using an incorrect appliance. | Use only a purpose-built biogas appliance. | Replace appliance if necessary. |
| **(9) Irregular flame** | Incorrect gas/air mixture. | Ensure correct control of the air/gas mixture on the appliance. | Confirm correct control of the appliance. |
| Combustibility of gas insufficient. | Do a pH test to ensure an optimal environment for methane producing bacteria (pH = 6-8) exists within the digester. | Ensure correct environment for methane producing bacteria. |
| **(10) Flame far from the burner** | Pressure too high. |  | Adjust gas valve. |
| Deposition of carbon on the nozzle. | Clean nozzle. |
| Air/gas ratio incorrect at appliance. | Adjust air/gas ratio on the burner |
| **(11) Flickering Flame** | Water in the pipe. See (5) | Check the gas pipeline/water trap for trapped water (if one exists) | Ensure that there is no water in the gas line and the water is removed from the water trap. |
| **(12) No gas pressure at the appliance (but pressure in the reactor)** | Stop valve(s) closed | Open stop valve(s) | Confirm all required valves are open and repair/replace components if necessary. |
| Leak or blockage in the gas pipe line between the *ABP6* and the burner | Check for gas leaks or blockages throughout the gas line on leaking joints/couplers or on broken pipes or perished flexi hoses. Caused by sand or tree roots obstructing pipes, or water in the pipe (check for sufficient downhill gradient or the water trap) | Repair and replace as necessary |
| **(13) Poisoning of the digester bacteria by toxic substance** | Toxic substances (such as acid cleaner) entering the system through sewer or grey water pipes or through contaminated feedstock | Erect appropriate signage to prevent toxic substances entering the system.  Use only bio-degradable detergents or pesticides.  Check for diseased livestock. | Stop toxic substances entering the system, introduce fresh uncontaminated feedstock.  If biology is completely dead the system should be pumped out and re-commissioned. |
| **(14) Foul odour or change of colour of digestate** | Incorrect pH – raised above 8 or below 6. The biological activity within the system is out of balance. | Ensure that only prescribed types and volumes of feedstock are used.  Do pH tests monthly and check for contamination by toxic substances. | If the pH is below 6, add new and fresh feedstock.  If problem persists contact a specialist. |
| **(15) Not enough gas** | Too little loading |  | Increase loading to designed input |
| Incorrect feedstock |  | Change feedstock to designed feedstock. Check and adjust pH. |
| Lack of liquids impeding hydraulic flow |  | Increase liquid input  Ensure that water is not leaking out of the structure |
| Too much liquid diluting the mixture |  | Decrease liquid input |
| Gas leaking from tank or pipes | See above |  |
| Scum build-up in the reactor (gas cannot penetrate scum layer and reach the gas storage area). | See above |  |
| **(16) Scum formation within the tank** | Incorrect raw material feedstock being used. Scum can form within the reactor, restricting or stopping the gas from bubbling up into the Gas Riser; instead, the gas will bubble out of the Inspection Riser | Ensure that only prescribed (wet, fresh and non-fibrous) raw material feedstock is used. | Contact a specialist to break up and remove scum  Remove Gas Cap and performance maintenance |