State the advantages and disadvantages of **direct electricity generation** (photovoltaic and fuel cells) compared to using steam turbines.

|  |  |  |
| --- | --- | --- |
|  | **Advantages** | **Disadvantages** |
| **Photovoltaic cells** | Produce no pollution (such as greenhouse gases) during operation.  Renewable (requires no ongoing fuel).  Low maintenance costs. | Cost (expensive to produce).  Unreliable (depends on sunlight). |
| **Fuel cells** | Little-to-no pollution during operation.  High energy efficiency.  No moving parts (therefore silent operation and minimal maintenance). | Cost (expensive catalysts and high purity fuels required).  May require hazardous fuels (explosive or corrosive).  New technology lacks infrastructure to support its use (e.g. refuelling points for hydrogen cars). |