### Biogas Chinese fixed dome unit calculation

**Khartoum price**

<table>
<thead>
<tr>
<th>Biogas Unit calculations</th>
<th>10 m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>D=2.7, H=2.32, H'=1.22, F'=0.6, F''=0.5</td>
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</table>

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Unit</th>
<th>Cost of 1 unit volume excavated (SDG)</th>
<th>Total volume excavated</th>
<th>Cost of total volume excavated (SDG)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EXCAVATION</strong></td>
<td></td>
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</tr>
<tr>
<td>Digester excavation</td>
<td>m³</td>
<td>30</td>
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<td>3000</td>
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<tr>
<td>Outlet excavation</td>
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<td>Back filling</td>
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<tr>
<td><strong>CONCRETE WORK</strong></td>
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<tr>
<td>Digester sand leveling</td>
<td>m²</td>
<td>13.4</td>
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<tr>
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<tr>
<td>manhole cover + in out let &amp; fittings</td>
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<td><strong>TOTAL</strong></td>
<td></td>
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</tbody>
</table>
# Chinese FIXED DOME, AL- FASHIR PRICE

Biogas Unit calculations

| Items                          | 10m³ | D=2.7 H=2.32 H'=1.22 F'=0.6 F"=0.5 |

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Unit</th>
<th>Cost of 1 unit volume excavated (SDG)</th>
<th>Total volume excavated</th>
<th>Cost of total volume excavated (SDG)</th>
</tr>
</thead>
</table>

## EXCAVATION

- Digestor excavation: m³, 30m³, 130 SDG, 3900 SDG
- Outlet excavation: m³, 10m³, 130 SDG, 1300 SDG
- Backfilling: m³, 34 m³, 75 SDG, 2550 SDG

## CONCRETE WORK

- Digester sand leveling: m², 13.4 m², 20 SDG, 268 SDG
  - Bottom concrete: m³, 1.2 m³, 3417 SDG, 4100.4 SDG
  - Wall concrete: m³, 1.3 m³, 3417 SDG, 4442.1 SDG
  - Dome concrete: m³, 1 m³, 3417 SDG, 3417 SDG
- Outlet sand leveling: m², 7.1 m², 20 SDG, 142 SDG
  - Bottom concrete: m³, 0.7 m³, 3417 SDG, 2391.9 SDG
  - Wall concrete: m³, 1.13 m³, 3417 SDG, 3861.21 SDG
  - Rove concrete: m³, 0.75 m³, 3700 SDG, 2775 SDG

## SEALING

- Dofa Sealant Paint: m², 41.1 m², 120 SDG, 4932 SDG
- Dofa Sault Resistant Cote: m², 41.1 m², 30 SDG, 1233 SDG

## APPLIANCES

- Manhole cover + in out let & fittings: unit, 1 unit, 3000 SDG, 3000 SDG
- Gas burner room: //, 2, 1750 SDG, 3500 SDG
- In & out let dung and sludge collector: unit, 2, 300 SDG, 600 SDG
- Testing after feeding dung & Operation: //, 1, 10000 SDG, 10000 SDG

## TOTAL

Transportation from Khartoum to Fashir and Accommodation at Fashir: 40000 SDG

## TOTAL COST

92413 SDG

*It should be noted that the total cost DOES NOT INCLUDE TRANSPORTATION cost of our frame.
This would facilitate the modified Pusin in installation of the rest of biogas units at Fashir

**Using PUXIN frame** modified to be used for the fixed Chinese dome

<table>
<thead>
<tr>
<th>Biogas Unit calculations</th>
<th>10 m³</th>
</tr>
</thead>
</table>

**AL- FASHIR PRICE**

\[ D=2.7 \quad H=2.32 \quad H'=1.22 \quad F'=0.6 \quad F''=0.5 \]

<table>
<thead>
<tr>
<th>ITEMS</th>
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<tbody>
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The modified fixed dome is suggested to spare cost of transportation of our frame from Khartoum to Fashir

COST BREAKDOWN FOR ONE CUBIC METER OF CONCRETE, comparison between Khartoum and Fashir

<table>
<thead>
<tr>
<th>AGREGATE : SAND : CEMENT : SIKA = 4 : 2 : 1 : 0.5KG</th>
<th>Khartoum</th>
<th>Fashir</th>
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Alsonosy Biogas Unit maintenance and operation

<table>
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<th>Unit</th>
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<td><strong>Total cost</strong></td>
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Training

Atts will carry out training for people who will be held responsible for operation the biogas units. This could be done for two days after biogas operation and can later make monitoring for three months with frequent visits every two weeks if you request. The cost is 1,000 for each day excluding travel and accommodation. We can add these costs later as soon as we get the real cost.