



## Appendix 2

### Technology review of urine diversion components

Worldwide listing of suppliers for urine diversion squatting pans  
(for UDDTs or for urine diversion flush toilets)

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**Photos:**

See main document of technology review

**Important note:**





The tables of suppliers provided here are *not complete listings* but give only an indication of available products. If you spot errors or omissions, please contact us at [ecosan@giz.de](mailto:ecosan@giz.de). All information is provided to the best of our knowledge. In the brackets below each listing the date for provision of the information/last update of information is given. Please be aware that not all information is from 2011. An entry in this list does not imply a recommendation by GIZ. Costs are indicative only.

Additional photos are available in our photo collection on the internet (look for the sets on UDDTs, or use keywords "urine diversion", UDDT, squatting pan):  
<http://www.flickr.com/photos/gzecosan/collections>

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**Table 1.** Suppliers of urine diversion squatting pans for urine diversion dehydration toilets (in alphabetical order by country).





Manufacturer name	Urine-diversion squatting pan model name and photo <sup>1</sup>	Materials, indicative costs <sup>2</sup> and other information
<p>Burkina Faso: TCMP            Contact:            Bandé Abdulaye            Tel: +226-70705497                  +226-78841983            E: <a href="mailto:reseaucrepa@reseaucrepa.org">reseaucrepa@reseaucrepa.org</a></p> <p>Further info:            Karim Savadogo            Tel: +226-70391840                  +226-50366210/11            E: <a href="mailto:ksavadogo@yahoo.fr">ksavadogo@yahoo.fr</a></p> <p>(updated in 2011)</p>	<p>Squatting pan            2 hole + 3 hole            UD-seat inset            Water less            urinals (male/            female)</p> 	<ul style="list-style-type: none"> <li>• Material: mold is in fibre glass to make squatting pans in concrete (mold costs 38 EUR); squatting pans can also be in fibre glass</li> <li>• Used in large-scale Ecosan-UE project in Ouagadougou (2006 to 2009)</li> <li>• Indicative costs: Three hole squatting pan: EUR 30; two hole squatting pan: EUR 23; UD seat inset: EUR 23; waterless urinals : EUR 19</li> <li>• Units sold: ~ 315 units of the squatting pans (200 for Togo)</li> <li>• Countries sold in: Burkina Faso, Togo, Ghana and other West African countries</li> </ul>
<p>China: Liuzhou Hanhui Eco-san Equipment Co., Ltd            Contact:            Mr. Li Shusheng            Tel: +86 772 262 05 63            Fax: +86 772 399 81 35            E: <a href="mailto:lisan49100@sina.com">lisan49100@sina.com</a></p> <p>(updated in 2009)</p>	<p>Squatting pan</p> 	<ul style="list-style-type: none"> <li>• Material: sanitary porcelain or plastic</li> <li>• Sliding lid offers hands free operation</li> <li>• Indicative cost: EUR 6 for plastic version?</li> <li>• Number of units sold?</li> <li>• Countries sold in: China, Ukraine and other CIS countries (?)</li> </ul>
<p>Congo: CREPA Congo            Contact:            Samuel Adjety            Head of workshop:            Tel: +242 538 1512                  +242 669 7316            E: <a href="mailto:crepa_cncg@yahoo.fr">crepa_cncg@yahoo.fr</a></p> <p>(updated in 2011)</p>	<p>Slab for UDDT</p> 	<ul style="list-style-type: none"> <li>• Material: concrete</li> <li>• Awaiting further information</li> </ul>
<p>Ethiopia: Ethio Fiber            P.O. Box 6550            Addis Ababa            Ethiopia            E: <a href="mailto:ethfibre@ethionet.com">ethfibre@ethionet.com</a>            I: No website available</p> <p>Further contact:            Martin Oldenburg            E: <a href="mailto:info@otterwasser.de">info@otterwasser.de</a></p> <p>(updated in 2009)</p>	<p>Urine diversion            squatting pan</p> 	<ul style="list-style-type: none"> <li>• Material: glass fibre<sup>3</sup></li> <li>• Was supported by a PPP scheme with GTZ: GTZ paid for construction of the master form to incorporate GFK mats</li> <li>• Indicative cost: EUR 15</li> <li>• Numbers of units sold: 50</li> <li>• Countries sold in: Ethiopia</li> </ul>





<sup>1</sup> More photos are available in the GIZ-ecosan photo collection, see beginning of document for website link.

<sup>2</sup> Costs are without freight, for single units bought by individuals. Costs tend to be lower when higher number of units are ordered, and are also lower for traders compared to individuals placing orders.



<sup>3</sup> Manufacture requires more manual labour than ceramic toilets and is less automated (hence quality of workmanship can be variable) but allows for changes to be incorporated quite easily.

Manufacturer name	Urine-diversion squatting pan model name and photo <sup>1</sup>	Materials, indicative costs <sup>2</sup> and other information
<p>Ethiopia: Tabor Ceramics Products Share Company Awassa, Ethiopia E: <a href="mailto:taborceramic@ethionet.et">taborceramic@ethionet.et</a></p> <p>(updated in 2009)</p>	<p>Squatting pan "turkish ecosan toilet"</p> 	<ul style="list-style-type: none"> <li>Material: ceramics</li> <li>2-hole squatting pan</li> <li>Was supported by a PPP scheme with GTZ: GTZ provided material to manufacture the moulds (gypsum)</li> <li>Units sold: 50</li> <li>Indicative unit cost: EUR 25</li> <li>Countries sold in: Ethiopia</li> </ul>
<p>India: Mythri Sarva Seva Samithi (NGO which obtains its pans from a private supplier) Contact: Anselm Rosario Waste wise resource center c/o Mythri Sarva Seva Samithi 200 B, 1<sup>st</sup> floor, 6<sup>th</sup> cross, HAL 3<sup>rd</sup> stage, New Thippesandra, Bangalore-560075 Tel:+ 918025273941/ 41523790 Tel/Fax: +918025255543 E: <a href="mailto:msss@vsnl.com">msss@vsnl.com</a> I: <a href="http://www.msss.in">www.msss.in</a> <a href="http://www.ecosanindia.org">www.ecosanindia.org</a></p> <p>(updated in 2011)</p>	<p>Squatting pan</p> 	<ul style="list-style-type: none"> <li>Material: glass-fibre reinforced plastic or PVC</li> <li>"3 in 1 model" – meaning it has a separate outlet for anal cleansing water</li> <li>Number of units sold is not available.</li> <li>Indicative cost: EUR 25 (inclusive of tax)</li> <li>Countries sold in: India (transportation cost to destination is calculated but bulk orders reduce transportation and manufacturing cost)</li> </ul>
<p>India: Shital Ceramics Works (State of Gujarat) Contact: Jayesh Sompura + 91-9825069666 E: <a href="mailto:shitalcera@yahoo.com">shitalcera@yahoo.com</a> <a href="mailto:jayesh63in@yahoo.co.in">jayesh63in@yahoo.co.in</a> I: <a href="http://www.ruralsanitation.net/">http://www.ruralsanitation.net/</a></p> <p>(updated in 2011)</p>	<p>Eco San Indian style</p> 	<ul style="list-style-type: none"> <li>Material: ceramics (PVC faecal cover and nozzle)</li> <li>"3 in 1 model" – meaning it has a separate outlet for anal cleansing water</li> <li>Indicative cost: EUR 30</li> <li>Number of units sold: 1000</li> <li>Countries sold in: Yemen, India, Afghanistan, Africa, Germany</li> </ul>
<p>India: EEDS NGO Energy, Environment and Development Society (EEDS) Contact: Ajit Kumar Saxena Email: <a href="mailto:eeds@rediffmail.com">eeds@rediffmail.com</a>, <a href="mailto:eedsngo@gmail.com">eedsngo@gmail.com</a> <a href="mailto:saxena.ajitkumar@gmail.com">saxena.ajitkumar@gmail.com</a></p> <p>(updated in 2011)</p>	<p>3-hole ecosan pan</p> <p>2-hole ecosan pan</p>  <p>3-hole ecosan pan</p>	<ul style="list-style-type: none"> <li>Material: lightweight concrete, in various colours</li> <li>Indicative costs: <ul style="list-style-type: none"> <li>Onsite casting 3-hole ecosan pan (local cast: EUR 16 (INR 1000) including squatting plate</li> <li>Squatting type pre-casted - micro concrete/fly ash 3-hole ecosan pan: EUR 2 (INR 130)</li> <li>Squatting type pre-casted - micro concrete /fly ash 2-hole ecosan pan: EUR 1.5 (INR 100)</li> </ul> </li> <li>Number of units sold: 60 (excluding own consumption and local group requirements)</li> </ul>

Manufacturer name	Urine-diversion squatting pan model name and photo <sup>1</sup>	Materials, indicative costs <sup>2</sup> and other information
<p>India – Prakash Ceramic (State of Gujarat) Vagadia Road, Thangadh 363530 Tel.: +91(02751)220856 Mobile: 9825231856 Fax No.:+91(02751)220859 E : <a href="mailto:prakasceramic@yahoo.in">prakasceramic@yahoo.in</a></p> <p>(updated in 2009)</p>	<p>EcoPan and RuralPan</p>  <p>Washset</p>	<ul style="list-style-type: none"> <li>• Material: ceramics</li> <li>• 2-piece Model: urine diversion squatting pan and washset for anal washing</li> <li>• Indicative cost: EUR 5 (including ecopan and washset for anal washing).</li> <li>• Units sold: not known</li> <li>• Countries sold in: India</li> </ul>
<p>Ivory Coast: APAP (Atelier de Polyester et des Arts plastiques)</p> <p>Artisan: Tioye Be 04 BP 64 Abidjan 04 Tel: +225 0740 2614</p> <p>Further contact Bernard Comoe 16 bp 783, Abidjan 16 Tel: +255 5030747 + 255 1282148 E: <a href="mailto:bcomoe@yahoo.fr">bcomoe@yahoo.fr</a></p> <p>(updated since 2011)</p>	<p>Squatting pans (polyester and concrete)</p> 	<ul style="list-style-type: none"> <li>• Materials: fibre glass, polyester, concrete</li> <li>• Indicative costs: <ul style="list-style-type: none"> <li>◦ UD squatting pan in fibreglass: EUR 22</li> <li>◦ UD seat in concrete: EUR 23</li> </ul> </li> <li>• <b>Units sold: not known</b></li> <li>• Countries sold in: Ivory Coast, Ghana</li> </ul>
<p>Kenya: Kentainer Contact: Elizabeth Mutua Embakasi Rd. Off Airport North Road, Nairobi T: +254-20 2519098/9 Mob: 0720981243/ 0733981243 E:<a href="mailto:elisabeth_mutua@kentainers.co.ke">elisabeth_mutua@kentainers.co.ke</a> I: <a href="http://www.kentainers.com">www.kentainers.com</a></p> <p>(updated since 2011)</p>	<p>Urine-diverting squatting pan (for double vault UDDT)</p> 	<ul style="list-style-type: none"> <li>• Material: plastic</li> <li>• Squatting pan for double-vault-UDD toilet (two holes for faeces)</li> <li>• Production was initiated through PPP project between Kentainer and GTZ</li> <li>• Indicative cost EUR 32 for squatting pan incl. two lids and urine pipe</li> <li>• Units sold: not known</li> <li>• Countries sold in: Kenya</li> </ul>
<p>Mali Contact: Mr Boubacar Coulibaly Bamako Tel: (00223) 66 91 66 19 E:<a href="mailto:crepamali@reseaucrepa.org">crepamali@reseaucrepa.org</a></p> <p>(updated in 2009)</p>	<p>Three hole squatting pan</p> 	<ul style="list-style-type: none"> <li>• Material: ferro cement</li> <li>• 3-hole squatting pan (3<sup>rd</sup> hole for anal waswhater)</li> <li>• Indicative cost: EUR 15</li> <li>• Units sold: not known</li> <li>• Countries sold: Mali</li> </ul>

Manufacturer name	Urine-diversion squatting pan model name and photo <sup>1</sup>	Materials, indicative costs <sup>2</sup> and other information
<p>Moldova: ApaSan Swiss water and sanitation project  Contact:  Nelli Cuturubenco  Str. A1 Mateevici 23, bloc A  MD-2009, Chisinau  E: <a href="mailto:info@apasan.md">info@apasan.md</a>  I: <a href="http://www.apasan.md">www.apasan.md</a></p> <p>(updated in 2011)</p>	<p>Squatting pan</p> 	<ul style="list-style-type: none"> <li>Material: impact resistant polystyrene plastics</li> <li>Sliding lid offer hands free operation</li> <li>Indicative cost: EUR 30</li> <li>Units sold: <b>awaiting information</b></li> <li>Countries sold: Moldova</li> </ul>
<p>Nepal: Kayo Fiber Glass  Udyog, Kathmandu  Contact:  Name: Manoj Siddi  Email: <a href="mailto:kayo@wlink.com.np">kayo@wlink.com.np</a></p> <p>Further contacts:  Nam Raj Khatri  E: <a href="mailto:namray@enet.com.np">namray@enet.com.np</a>  Han Hijnen  E: <a href="mailto:hanheijnen@gmail.com">hanheijnen@gmail.com</a></p> <p>(updated in 2009)</p>		<ul style="list-style-type: none"> <li>Material: fibreglass</li> <li>In Nepal so far 1000 ecosan UDD toilets have been constructed since 2000<sup>4</sup>.</li> <li>Indicative cost: <b>awaiting information</b></li> <li>Units sold: <b>numbers not available from supplier</b></li> <li>Countries sold in: Nepal</li> </ul>
<p>Peru: Aguaecosan  Contact:  Juan carlos calisaya  Tel: +51-990-320877  E:  <a href="mailto:jcalizaya@aguaecosan.peru.com">jcalizaya@aguaecosan.peru.com</a>  I: <a href="http://www.aguaecosanperu.com">www.aguaecosanperu.com</a></p> <p>(updated in 2011)</p>		<ul style="list-style-type: none"> <li>Material: fibreglass</li> <li>Includes sink with 2 drain</li> <li>Indicative cost: EUR 27</li> <li>Units sold: 61</li> <li>Countries sold: Peru</li> </ul>
<p>Uganda: Crestanks Ltd.  P.O. Box 11381  Kampala  Plot No 86/96, 6th Street,  Industrial area  T: 256-41-235470/348973  256-772-766574  F: 256-41-234184  E: <a href="mailto:janet@crestanks.co.ug">janet@crestanks.co.ug</a>  I: <a href="http://www.kentainers.com">www.kentainers.com</a></p> <p>(updated in 2009)</p>	<p>LS-100-EKO  Urine-diverting  squatting pan</p> 	<ul style="list-style-type: none"> <li>Material: PET</li> <li>Toilet slab with urine diverting squatting pan</li> <li>hole for vent pipe included</li> <li>Size for LS 100: 121 x 106 x 11 cm (length by width by height)</li> <li>Indicative cost: EUR 70</li> </ul> <p>The following information applies to <u>all models</u> in this range:</p> <ul style="list-style-type: none"> <li>15% discount possible if linked to gtz PPP projects</li> <li>Number of units sold: information not disclosed by supplier</li> <li>Available also in Kenya, Tanzania, Ethiopia, Rwanda, Southern Sudan and Burundi but for different costs (applies to all models in this range)</li> </ul>


<sup>4</sup> At the beginning the pan was fitted in the slab itself. Then after urine diverting cement pan was produced in Kathmandu. Since 2005 (approx) fibre glass pans are being produced (for urine diverting wet toilet, i.e. faeces is flushed into pit and urine is utilised).

Manufacturer name	Urine-diversion squatting pan model name and photo <sup>1</sup>	Materials, indicative costs <sup>2</sup> and other information
(as above) (updated in 2009)	LS-180-EKO Urine-Diverting sub structure (incl. slab, chamber and steps) 	<ul style="list-style-type: none"> <li>• Material: plastic</li> <li>• Urine diverting slab inclusive chamber for urine/faeces and steps</li> <li>• Indicative cost: EUR 130</li> </ul>
(as above) (updated in 2009)	EcoPan 	<ul style="list-style-type: none"> <li>• Material: polyethylene</li> <li>• Size: 70 x 32 cm (length by width)</li> <li>• Indicative cost: EUR 10</li> </ul>

Additional notes:

1. **For India** see also the new Indian Sanitation Portal: <http://www.sanitationindia.org/org/>
2. **China:** see also this company: Beijing Zhongke Longtai Biotechnology Co. Ltd., Beijing  
Tel: +86 10 6265 05 96  
Fax: +86 10 6265 05 68  
E: [sales@zhongkelongtai.com](mailto:sales@zhongkelongtai.com)  
I: <http://www.zhongkelongtai.com/> (website in Chinese only)

**Table 2.** Suppliers of urine diversion squatting pans for flush toilets (in alphabetical order by country).

Manufacturer	Water-flushed UD toilet model	Materials, indicative costs <sup>5</sup> and other information
<p>China: EnviroSystems            Contact:            Jian Zhang            Tel: +86 10 8205 56 67            E: <a href="mailto:office@envi8.com">office@envi8.com</a>               <a href="mailto:j.zhang@envi8.com">j.zhang@envi8.com</a>            I: <a href="http://www.envi8.com">www.envi8.com</a> (in Chinese)            I: <a href="http://www.ecosan.cn">www.ecosan.cn</a> (in Chinese)</p> <p>(updated in 2009)</p>	<p>EnviroSystems</p> 	<ul style="list-style-type: none"> <li>• Material: sanitary porcelain</li> <li>• Separate bowls for urine and faeces</li> <li>• 0.2 L for urine flush, 6 L for faeces flush</li> <li>• Available as seated pedestal or squatting pan</li> <li>• Installed in the Beijing Olympic Forest Park, China<sup>6</sup></li> <li>• Indicative cost: only provided on request</li> <li>• Units sold: not disclosed by supplier</li> <li>• Countries sold in: China</li> </ul>

<sup>5</sup> Costs are without freight, for single units bought by individuals. Costs tend to be lower when higher number of units are ordered, and are also lower for traders compared to individuals placing orders.

<sup>6</sup> For case study description on this project: <http://www.susana.org/index.php/lang-en/case-studies/asia>



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