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# Cost Sheet for Rain- and Floodwater Harvesting

## Harvesting

### Construction, Operation, and Maintenance of Rainwater Harvesting Facilities: Greenhouse

*Information based on the CuveWaters Project facilitated in the Cuvelai-Etosha Basin in central-northern Namibia.*



Federal Ministry of Education and Research

Institute for Social-Ecological Research



TECHNISCHE UNIVERSITÄT DARMSTADT

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IN COOPERATION WITH



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#2 Rectangular Underground Tank

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#8 Extension services in horticulture and irrigation with special reference to rainwater harvesting in Namibia

#9 Cost Sheets for Rain- and Floodwater Harvesting

# Cost Sheet for Rain- and Floodwater Harvesting - Greenhouse

## Preface

„CuveWaters – Integrated Water Resources Management in central-northern Namibia” is a joint research project of German and Namibian partners funded by the German Federal Ministry of Education and Research (BMBF). Main research partners are the Institute for Social-Ecological Research (Frankfurt, Germany) and the Technische Universität Darmstadt (Darmstadt, Germany). Partners in Namibia are for example the Ministry of Agriculture, Water and Forestry (MAWF) and the Desert Research Foundation of Namibia (DRFN), the project furthermore closely cooperates with One World Consultants (OWC) from Kenya. CuveWaters has developed different technologies for water supply and sanitation in central-northern Namibia, ranging from groundwater desalination to rain- and floodwater harvesting (RFWH) as well as sanitation and water-reuse. Between 2009 and 2013 different pilot plants were constructed at different places all over central-northern Namibia.

This cost sheet is part of a broad offer of information material on rain- and floodwater harvesting in Namibia. Beside this document, the “CuveWaters Rain- and Floodwater Harvesting Toolkit” promotes the extension of RFWH in northern Namibia and other water scarce regions. This document succeeds a series of rain- and floodwater harvesting manuals for Namibia which form the basis for RWH extension:

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For more information on organisational, institutional and other general aspects of rain- and floodwater harvesting please have a look in the "CuveWaters Rain- and Floodwater Harvesting Toolkit":  
<http://www.cuvewaters.net/Toolkits.112.0.html>

For more information on the CuveWaters project please visit <http://www.cuvewaters.net>

Alexander Jokisch

Technische Universität Darmstadt

Darmstadt, 26.10.2015

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# Cost Sheet for Rain- and Floodwater Harvesting - Greenhouse

## About

Cost Sheet for Rain- and Floodwater Harvesting

Construction, Operation and Maintenance of Rainwater Harvesting Facilities: Greenhouse

CuveWaters – Integrated Water Resources Management in Namibia

2015

This manual is also available on <http://www.cuvewaters.net/Toolkits.112.0.html>

For more information on Rainwater Harvesting in Namibia please contact

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# Material Cost Sheet Greenhouse

Size: 120 m<sup>2</sup>

The following list shows material that is required for the construction of a greenhouse made of steel tubes. Some of material may be required during the operation of a greenhouse or maintenance reasons and repair work. If construction with wood is preferred, material and tools list have to be adjusted accordingly.

	Material	Description	Price per Unit (in N\$)	Quantity Required
1	Round Steel Tubes	38 mm x 1.6mm	130	43
2	Bolts		4	80
3	Nuts		0,70	80
4	Washers		0,55	80
5	Builders Line	0,85 x 100m,70LBS	25	1
6	Cement	32.5R, 50kg	95	2
7	Sand		30	0,3 m <sup>3</sup>
8	Stone Concrete	19mm 0.5cbm	550	1
9	Gate Mesh	900 x 1800 x 32 x 75mm	290	1
10	Gutter	0.5 x 100 x 125mm x 6m	350	5
11	Gutter Brackets Square Purlin	125 x 100mm	15	15
12	Gutter Downpipe	100 x 75mm x 2.7m x 0.4mm	110	3
13	Gutter Square	3.6m x 100 x 75 x 0.4mm	100	1
14	Wire Nails	75mm x 3.55mm, 1kg	15	15
15	Neo Industrial Aluminium Paint	1l	110	4
16	Transparent Plastic Sheet	for Roof	5000	1
17	Gum Poles	CCA 50/75mm x 2.4m	40	4
18	PVC Junction	SV Plain 110mm x 90°	80	1
19	PVC Down Pipe	110mm x 5m	95	1/2
20	Roofing Screws & Washer	90mm (100pp)	35	3
21	Shade Cloth	40% 3m (running meter)	45	55 m
22	Timber Purlin	50mm x 76mm x 6m (4pcs)	465	2



23	Timber Brandering	38mm x 50mm x 6m (9pcs)	540	1
24	Twine Sisal	1 Ply 500gr	26	2
25	Welding Rods	2.5mm 1kg	85	2
26	Blades Hacksaw	32TPI HSS	20	1

## Tool Cost Sheet Greenhouse

Size: 120 m<sup>2</sup>

The following list shows tools that are required for the construction of a greenhouse made of steel tubes. Some of tools may be required during the operation of a greenhouse or maintenance reasons and repair work.

	Tools	Description	Price per Unit (in N\$)	Quantity Required
1	Spade		105	1
2	Hand Saw	550mm	105	1
3	Hammer Claw	500gr	170	2
4	Spirit Level	Aluminium 600mm	80	1
5	Bucket, builders	12l	45	1
6	Pliers, combination		50	2
7	Bit	HSS 10.5mm	20	1
8	Bit	HSS 9.5mm	20	1
9	Bit	HSS 7mm	20	1
10	Brush	75mm	60	2
11	Builders Square		55	1
12	Screwdriver	6x100mm	18	1
13	Tape Measure	5m x 25mm	40	2
14	Saw Hacksaw Frame		45	1
15	Positioning Tool	4m		
16	Welding Unit	(equipment of welding specialist)		
17	Soldering Unit	(equipment of welding specialist)		