Groasis Technology
compared to
drip irrigation
for landscaping purposes

note: this model does not take into account the full cost of a project, just the differences between using Groasis Waterboxes and drip irrigation.

This document is a template with assumptions
Please ensure that the assumptions are correct for your specific project

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Remarks
Groasis Technology in comparison with drip irrigation
The project duration is 50 years as treeprojects (vines, olives,avocados, dates, etc.) always are longterm projects
All costs independent from use of Groasis waterboxx or drip irrigation that are equal have not been accounted in this document, so this document does not show all costs of tree plantations
As an example: the cost for a warehouse is not calculated, as for both systems one needs a warehouse
This means that this document cannot be used as a template for tree planting calculations. It focuses only on the financial differences caused by the use of the Groasis Technology compared to drip irrigation

Note: if column C in tab 'assumptions' states 1/0, complete calculation tab lines as following: Yes = 1, No = 0

Input	unit	single value
PROJECT GENERICS		
Project duration	years	50
Project size	ha	7.550
Number of trees per hectare	trees/ha	500
inflation rate (cost only)	%	3%
starting year		2011
PROJECT PREPARATION		
costs of reversed osmosis plant	EUR/m	5.000.000
how many hectares per reversed osmosis plant	ha/well	7.550
costs of digging grooves for main tube per meter	EUR/m	1
meters groove per ha	m/ha	100
costs of main tube per meter incl. connection to electric valves	EUR/m	10
drip irrigation tube costs per meter	EUR/m	1,25
number of tubes per hectare	tubes/ha	20
length of tubes per ha	m/ha	2.000
liters of water per tree per year	l/tree/yr	1.500
price of water per liter	EUR/l	0,002
price of pump(s) incl. installation for 7550 ha	EUR	200.000
electricity network per 7550 ha incl. installation	EUR	500.000
electric valves incl. installation per ha	EUR/ha	250
rows per electric valve per ha	rows/valve/ha	5
rows per ha	rows/ha	20
computer system incl. tools	EUR	250
hectares per computer	ha/computer	7.550
size of water pump(s)	kW	500
water pump costprice per kW	EUR/kW	0,10
pump hours per year for 7550ha	hrs/yr	2.000
Tractor hours to install drip irrigation per ha	hrs/ha	2
capillary drill cost	EUR	35.000

Asset replacement info

drip irrigation tube life	yrs	12,5
drip irrigation tubes to be replaced in years		13, 26, 38
electric valve life	yrs	12,5
electric valves to be replaced in years		13, 26, 38
water pump life	yrs	25
pump to be replaced in years		26
computer system life	yrs	25
computersystems to be replaced in years		26
main tube system life	yrs	50
main tube system to be replaced in years		-
Number of planting holes per capillary drill over life time	holes/drill	1.000.000
Number of planting holes in project	holes	3.775.000
Number of additional capillary drills needed	drills	4
PROJECT PLANTING		
life time of planting with waterboxx	yrs	50
number of replanting with waterboxx over project lifetime		-
life time of planting with drip irrigation	yrs	25
number of replanting with drip irrigation over project lifetime		1
tractor cost incl. driver for drilling planting holes	EUR/hr	50
planting holes per hour		120
costs per man hour	EUR/hr	4
planting minutes per tree including assembling waterboxx	min/tree	8
planting minutes per tree drip irrigation	min/tree	6
man hours to install drip irrigation tubes per row	hr/row	2
man hours to install electric valves per row	hr/row	1
minutes per tree removing waterboxx after one year	min/tree	4
Groasis waterbox ownership model		purchase
Costs of waterboxx (incl. transport)	EUR/box	12
Residual value of waterbox	%	90%
Number of years to use the waterboxx	yrs	10
planting material selected for project		seed
costs of planting material for waterboxx from seed	EUR/seed	0,20
costs of planting material for waterboxx from cutling	EUR/cutling	0,30
costs of planting material for waterboxx from cutling plus graft	EUR/cutling+graft	1,00
costs of planting material for drip irrigation from seed	EUR/seed	0,75
costs of planting material for drip irrigation from cutling	EUR/cutling	1,00

Input	unit	single value
costs of planting material for drip irrigationfrom cutling plus graft	EUR/cutling+graft	2,00
first time planting with waterboxx	year	1
first time planting with drip irrigation	year	1
amount of water put in waterboxx after planting	l/waterboxx	50
ANNUAL MAINTENANCE		
man hours of maintenance of drip irrigation tubes	hr/ha/yr	10
FINANCIAL STRUCTURE		
Cost of capital	%	7%

Key Indicators		Waterboxx	Drip Irrigation
Net Present Value (NPV)	million EUR	(13,49)	(369,32)
Internal Rate of Return (IRR)	%	N/A	N/A
Capital employed	million EUR	(4,86)	(53,09)
Financing need	million EUR	(51,56)	(1.755,45)
Payback (break even)	years	50	50
Water requirements over project lifetime	million liters	188,75	283.125,00

Net present value (NPV) is the total present value of a time series of cash flows; it measures the excess or shortfall of cash flows, in present value terms, once financing charges are met. NPV is an indicator of how much value an investment or project adds for the investor; it is an indicator of the value or magnitude of an investment.

The internal rate of return (IRR) is a rate of return used to measure and compare the profitability of investments. The internal rate of return on an investment is the annualized effective compounded return rate that can be earned on the invested capital; it is the interest rate at which the costs of the investment lead to the benefits of the investment. This means that all gains from the investment are inherent to the time value of money and that the investment has a zero net present value at this interest rate. IRR is an indicator of the efficiency, quality, or yield of an investment.

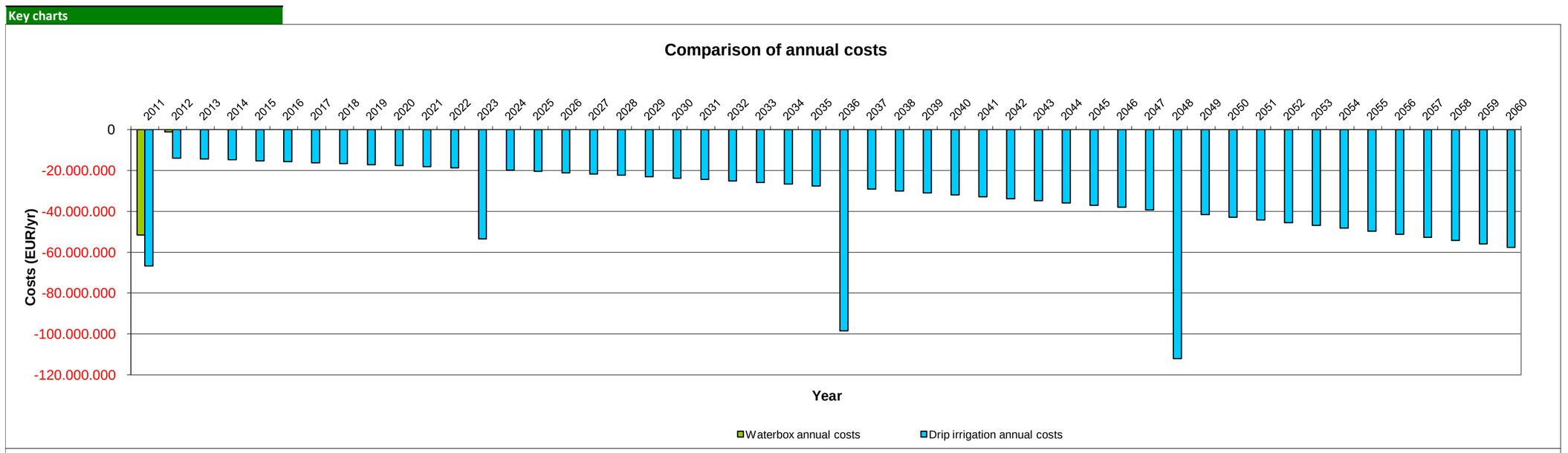
Capital employed represents the capital investment necessary for the project.

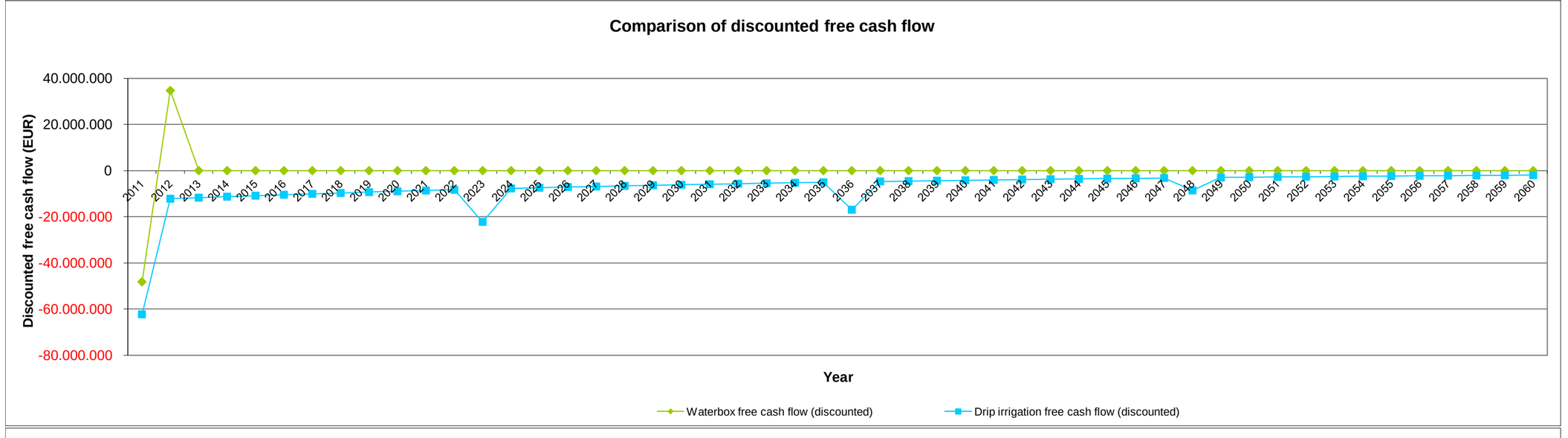
Maximum project finance needed during project duration

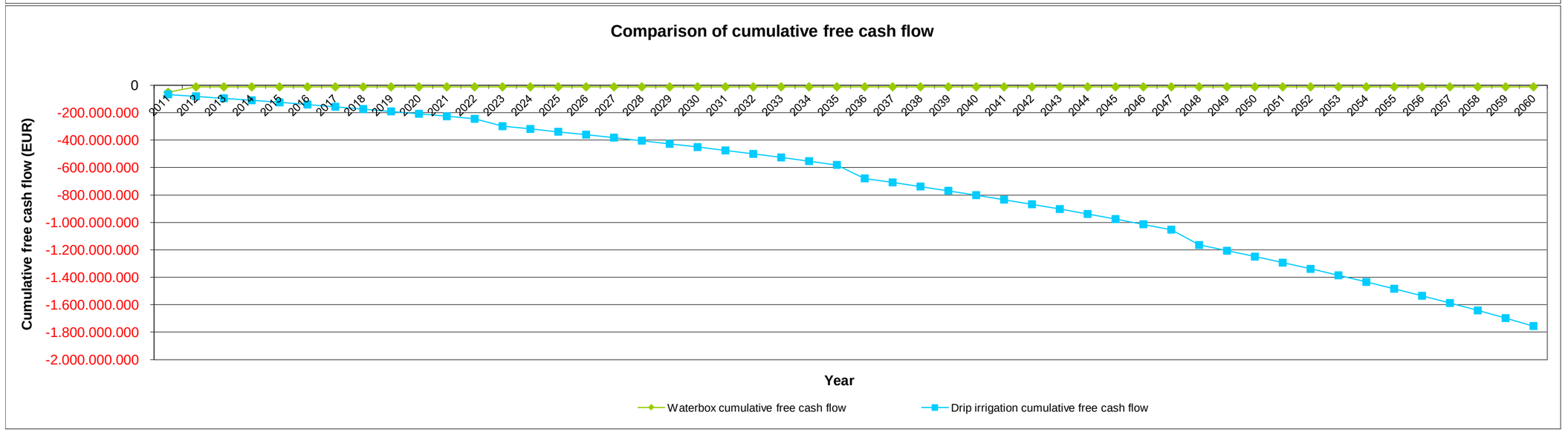
Payback period refers to the period of time required for the return on an investment to "repay" the sum of the original investment (capital employed).

Total water requirements - Waterboxx filled in year 1 only, drip irrigation has regular water supply to trees

Key charts







WATERBOXX SCENARIO

annual inflation (costs)				1,030	1,061	1,093	1,126	1,159	1,194	1,230	1,267	1,305	1,344	1,384	1,426	1,469
annual inflation (revenues)				1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
project active yes/no				1	1	1	1	1	1	1	1	1	1	1	1	1
year of operation				1	2	3	4	5	6	7	8	9	10	11	12	13
Cash flow	**Units**		**Total**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
PROJECT PREPARATION COSTS																
capillary drill cost	EUR		36.050	36.050												
capillary drill replaced? Yes/No				0	0	0	0	0	0	0	0	0	0	0	0	0
replacement of capillary drill	EUR		-	0	0	0	0	0	0	0	0	0	0	0	0	0
PROJECT PLANTING COSTS																
waterboxx planting? Yes/No				1	0	0	0	0	0	0	0	0	0	0	0	0
tractor cost incl. driver for planting holes	EUR		1.620.104	1.620.104	0	0	0	0	0	0	0	0	0	0	0	0
tree planting cost including assembling waterboxx	EUR		2.073.733	2.073.733	0	0	0	0	0	0	0	0	0	0	0	0
Costs of waterboxx	EUR		46.659.000	46.659.000	0	0	0	0	0	0	0	0	0	0	0	0
costs of planting material for waterboxx	EUR		777.650	777.650	0	0	0	0	0	0	0	0	0	0	0	0
price of water for initial water in boxes	EUR		388.825	388.825	0	0	0	0	0	0	0	0	0	0	0	0
waterboxx removal? Yes/No				0	1	0	0	0	0	0	0	0	0	0	0	0
cost of removing waterboxx after one year	EUR		1.067.973	0	1.067.973	0	0	0	0	0	0	0	0	0	0	0
TOTAL COSTS	EUR	-	52.623.335	#########	-1.067.973	0	0	0	0	0	0	0	0	0	0	0
REVENUES																
sale of used capillary drill	EUR		21.000	0	21.000	0	0	0	0	0	0	0	0	0	0	0
sale of used waterboxxes (if purchase option selected)	EUR		40.770.000	0	40.770.000	0	0	0	0	0	0	0	0	0	0	0
TOTAL REVENUES	EUR		40.791.000	0	40.791.000	0	0	0	0	0	0	0	0	0	0	0
FREE CASH FLOW	EUR	-	11.832.335	#########	39.723.027	0	0	0	0	0	0	0	0	0	0	0
DISCOUNTED FREE CASH FLOW	EUR	-	13.486.951	#########	34.695.630	0	0	0	0	0	0	0	0	0	0	0
CUMULATIVE FREE CASH FLOW	EUR	-	11.832.335	#########	#########	#########	#########	#########	#########	#########	#########	#########	#########	#########	-11.832.335	-11.832.335	-11.832.335

1,513	1,558	1,605	1,653	,702	1,754	1,806	1,860	1,916	1,974	2,033	2,094	2,157	2,221	2,288	2,357	2,427	2,500	2,575
1,000	1,000	1,000	1,000	,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
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2024	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335

2,652	2,732	2,814	2,898	2,985	3,075	3,167	3,262	3,360	3,461	3,565	3,671	3,782	3,895	4,012	4,132	4,256	4,384
1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
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33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
2043	**2044**	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**	**2056**	**2057**	**2058**	**2059**	**2060**
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335	-11.832.335

DRIP IRRIGATION SCENARIO

annual inflation (revenues)			1,0300	1,0609	1,0927	1,1255	1,1593	1,1941	1,2299	1,2668	1,3048	1,3439	1,3842	1,4258	1,4685	1,5126
project active yes/no			1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
year of operation			1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cash flow	**Units**	**Total**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
PROJECT PREPARATION COSTS																
costs of reversed osmosis plant	EUR	5.150.000	5.150.000													
costs of digging grooves	EUR	777.650	777.650													
costs of main tubes	EUR	7.776.500	7.776.500													
drip irrigation tube costs	EUR	19.441.250	19.441.250													
price of pump	EUR	3.110.600	3.110.600													
cost of electricity network	EUR	7.776.500	7.776.500													
cost of electric valves	EUR	1.944.125	1.944.125													
computer system incl. tools	EUR	258	258													
Tractor hours to install drip irrigation	EUR	777.650	777.650													
Drip irrigation tubes replaced? Yes/No			0	0	0	0	0	0	0	0	0	0	0	0	1	0
Cost for replacement of drip irrigation tubes	EUR	139.612.692	0	0	0	0	0	0	0	0	0	0	0	0	30.601.306	0
Electrical valves replaced? Yes/No			0	0	0	0	0	0	0	0	0	0	0	0	1	0
Cost for replacement of electric valves	EUR	16.692.822	0	0	0	0	0	0	0	0	0	0	0	0	3.658.852	0
Pumps replaced? Yes/No			0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cost for replacement of pumps	EUR	6.512.906	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Computer system replaced? Yes/No			0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cost for replacement of computersystems	EUR	539	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Main tube system replaced? Yes/No			0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cost for replacement of main tube system	EUR	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROJECT PLANTING COSTS																
Planting? Yes/No			1	0	0	0	0	0	0	0	0	0	0	0	0	0
tree planting cost drip irrigation	EUR	4.811.753	1.555.300	0	0	0	0	0	0	0	0	0	0	0	0	0
man hours to install drip irrigation tubes	EUR	3.849.402	1.244.240	0	0	0	0	0	0	0	0	0	0	0	0	0
man hours to install electric valves	EUR	1.924.701	622.120	0	0	0	0	0	0	0	0	0	0	0	0	0
costs of planting material for drip irrigation	EUR	9.022.037	2.916.188	0	0	0	0	0	0	0	0	0	0	0	0	0
ANNUAL MAINTENANCE COSTS																
price of water for drip irrigation	EUR	1.315.747.258	11.664.750	12.014.693	12.375.133	12.746.387	13.128.779	13.522.642	13.928.322	14.346.171	14.776.556	15.219.853	15.676.449	16.146.742	16.631.144	17.130.079
cost of electricity for pump	EUR	175.432.968	1.555.300	1.601.959	1.650.018	1.699.518	1.750.504	1.803.019	1.857.110	1.912.823	1.970.208	2.029.314	2.090.193	2.152.899	2.217.486	2.284.010
cost of maintenance of drip irrigation tubes	EUR	35.086.594	311.060	320.392	330.004	339.904	350.101	360.604	371.422	382.565	394.042	405.863	418.039	430.580	443.497	456.802
TOTAL COSTS	EUR	- 1.755.448.203	-66.623.490	-13.937.043	-14.355.155	-14.785.809	-15.229.384	-15.686.265	-16.156.853	-16.641.559	##########	##########	##########	##########	##########	##########
TOTAL REVENUES	EUR	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FREE CASH FLOW	EUR	- 1.755.448.203	-66.623.490	-13.937.043	-14.355.155	-14.785.809	-15.229.384	-15.686.265	-16.156.853	-16.641.559	##########	##########	##########	##########	##########	##########
DISCOUNTED FREE CASH FLOW	EUR	- 369.324.422	-62.264.944	-12.173.153	-11.718.082	-11.280.023	-10.858.340	-10.452.421	-10.061.676	-9.685.539	-9.323.462	-8.974.922	-8.639.411	-8.316.442	##########	-7.706.274
CUMULATIVE FREE CASH FLOW	EUR	- 1.755.448.203	-66.623.490	-80.560.533	-94.915.688	-109.701.497	-124.930.881	-140.617.146	-156.773.999	-173.415.557	##########	##########	##########	##########	##########	##########

1,5580	1,6047	1,6528	7024	1,7535	1,8603	1,9161	1,9736	2,0328	2,0938	2,1566	2,2213	2,2879	2,3566	2,4273	2,5001	2,5751	2,6523	2,7319	2,8139	2,8983
1,000	1,000	1,000	,,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
2025	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	44.939.049	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	6.512.906	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	539	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	3.256.453	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2.605.162	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1.302.581	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	6.105.849	0	0	0	0	0	0	0	0	0	0
17.643.981	18.173.300	18.718.499	19.280.054	19.858.456	20.454.210	21.067.836	21.699.871	22.350.867	23.021.393	23.712.035	24.423.396	25.156.098	25.910.781	26.688.104	27.488.747	28.313.410	29.162.812	30.037.697	30.938.827	31.866.992	32.823.002
2.352.531	2.423.107	2.495.800	2.570.674	2.647.794	2.727.228	2.809.045	2.893.316	2.980.116	3.069.519	3.161.605	3.256.453	3.354.146	3.454.771	3.558.414	3.665.166	3.775.121	3.888.375	4.005.026	4.125.177	4.248.932	4.376.400
470.506	484.621	499.160	514.135	529.559	545.446	561.809	578.663	596.023	613.904	632.321	651.291	670.829	690.954	711.683	733.033	755.024	777.675	801.005	825.035	849.786	875.280
##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	-98.426.825	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	-98.426.825	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########
-7.418.189	-7.140.874	-6.873.925	-6.616.956	-6.369.593	-6.131.478	-5.902.263	-5.681.618	-5.469.221	-5.264.764	-5.067.951	-16.948.656	-4.696.121	-4.520.565	-4.351.572	-4.188.896	-4.032.302	-3.881.562	-3.736.457	-3.596.776	-3.462.317	-3.332.885
##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########

2,9852	3,0748	3,1670	3,2620	3,3599	3,4607	3,5645	3,6715	3,7816	3,8950	4,0119	4,1323	4,2562	4,3839
1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1	1	1	1	1	1	1	1	1	1	1	1	1	1
37	38	39	40	41	42	43	44	45	46	47	48	49	50
2047	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**	**2056**	**2057**	**2058**	**2059**	**2060**
0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	64.072.338	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	7.660.823	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
33.807.692	34.821.923	35.866.581	36.942.578	38.050.855	39.192.381	40.368.152	41.579.197	42.826.573	44.111.370	45.434.711	46.797.753	48.201.685	49.647.736
4.507.692	4.642.923	4.782.211	4.925.677	5.073.447	5.225.651	5.382.420	5.543.893	5.710.210	5.881.516	6.057.961	6.239.700	6.426.891	6.619.698
901.538	928.585	956.442	985.135	1.014.689	1.045.130	1.076.484	1.108.779	1.142.042	1.176.303	1.211.592	1.247.940	1.285.378	1.323.940
##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########
0	0	0	0	0	0	0	0	0	0	0	0	0	0
##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########
-3.208.291	-8.572.847	-2.972.902	-2.861.766	-2.754.784	-2.651.801	-2.552.669	-2.457.242	-2.365.382	-2.276.957	-2.191.837	-2.109.899	-2.031.024	-1.955.098
##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########	##########

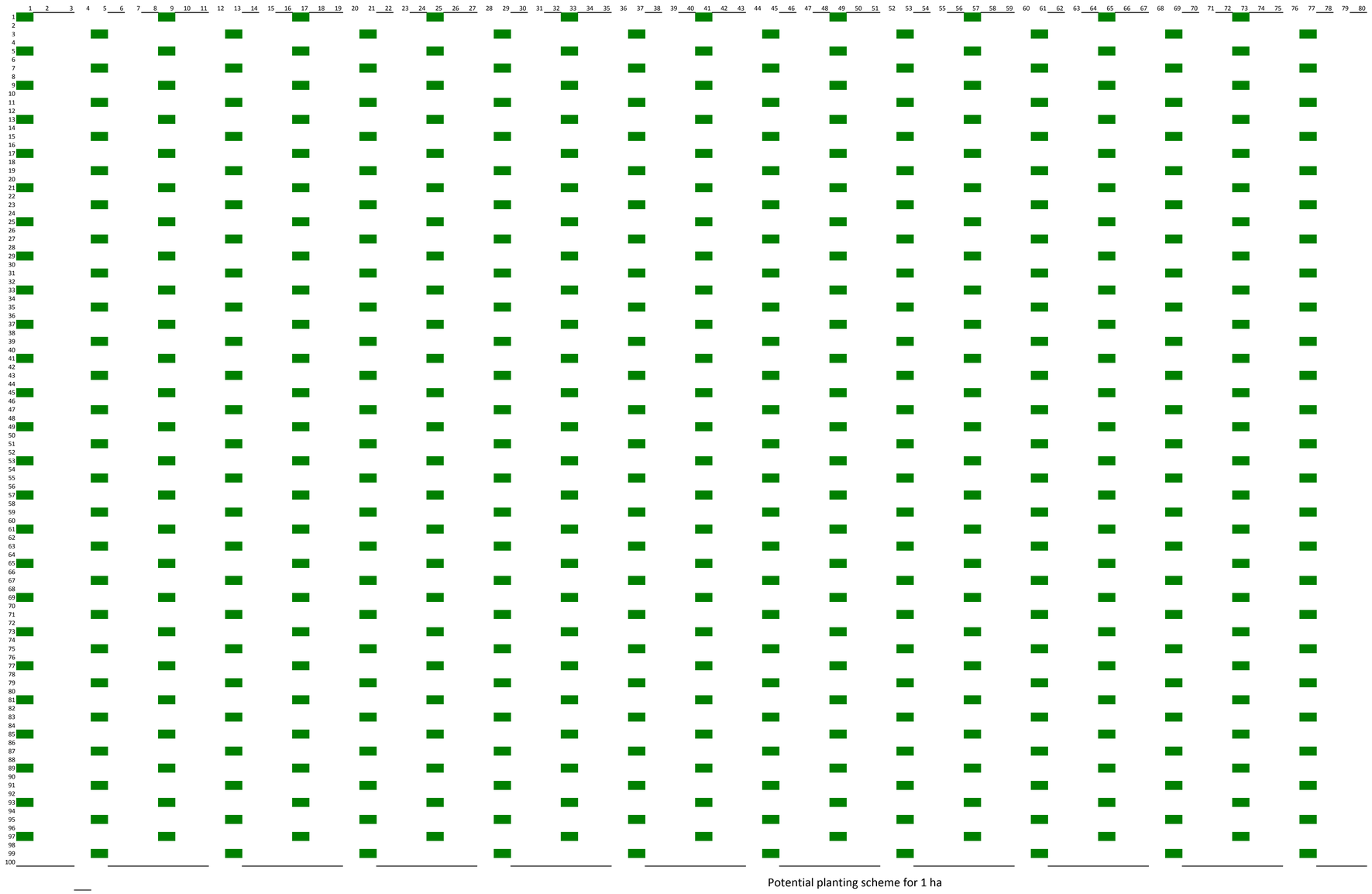
Risk analysis		
Groasis Technology		Drip irrigation
six year proven technology		thirty five year proven technology
if growing on rocks lower investment in soil		higher investment in soil
if growing on rocks lower interest costs on capital investment in soil		higher capital costs
No inflation of costs risk		inflation of costs risk
no risk of higher costs for energy		risk of higher energy cost
no risk of lack of availability of ground water		risk of lack of groundwater
no risk caused by political decisions		risk of political decisions
no risk on ban on use of groundwater		risk on ban on use of groundwater if cities have lack of water during periods of drought
no risk on brackish water problems		heavy use of drip irrigation may lead to brackish groundwater, already many areas world wide have been left for this reason
no risk on losing crop if use of groundwater is banned		risk of losing crop if irrigation is banned, this might happen with a severe drought when cities get priority. This might happen in the coming 100 years as a cause of climate change
no risk of rising prices of irrigation water		water price per liter will rise considerably, when price rises from 0,002 euro to 0,02 euro per liter (assumptions cell C23) the cost of water rises to 13bn euro (calc_dripirrigation cell c38). Drip irrigation production will result in an even bigger loss
No risk on soil salination		if irrigation water contains minerals and/or salt, over time the soil will be polluted and also too salted to produce and turn into unusable eternally. This is undoubtedly the case with water from natural sources with high mineral levels, from cleaned sewage water sources of produced from seawater through the reversed osmosis technology. Several formerly fertile zones in California have now been abandoned for this reason. Many cities in the Middle East start to replace the soil where trees are dying as raising the water gift doesn't help anymore. The certain capital loss caused by this reason is unimaginable high and cannot be solved others than by higher water gifts until the conductivity of the soil is higher than that of the roots. Once this level has been reached the plants will die because of draught even if the roots are surrounded by water. **See photo.**

Other capacities		
Groasis Technology		Drip irrigation
growing on rocks possible		growing on rocks not possible
sustainable - only in the first year water is used between 20 to 100 liters depending from the growing place		not sustainable - plants are eternally irrigated with scarce goundwater or expensive filtered water through reversed osmosis. Trees in cities in Middle East receive daily 60 to 100 liters per day. This is average 2,920,000 liters in 100 years. Vines receive between 800 to 1,400 liters per year per plant. This is average 110,000 liters per plant in 100 years. As soon as water is priced, this way of producing is outdated.
less fungicide use = less risk for personel		high fungicide use = higher risk for personel
higher product quality level		lower product quality level
higher sales price for the product because of better internal and external quality		lower sales price
eco label possible		eco label not possible
less complicated management		complicated management
less crop means less wear of machinery/ less use of energy/ less packing material/ lower transportcosts/ etc. / these differences in lower costs are not taken into account in this template		double crop means double wear of machinery/ double use of energy in warehouses/ double packing material/ double transportcosts/ etc. / these differences in higher costs are not taken into account in this template
less crop means necessity of smaller buildings and smaller refrigidator / these differences in costs are not taken into account		double crop means necessity of bigger buildings and bigger refrigidator / these differences in costs are not taken into account
applying waterboxx can be done with low educated people and as the work itself is light, with possibly with females		applying computerized high tech irrigation demands higher educated personel, so less chances for low educated people As applying the technology is heavy work, this work is less appropriate for females

Legend

25 trees per row
20 rows
500 trees total

Planting scheme (the grid below represents 1ha, 100m x 100m)



Potential planting scheme for 1 ha