

Full Cost Calculation/Estimation of Vegetable Production for Polar Permaculture

Setup		
Growing Container	Nr. of units	1 Unit(s)
	Gross area per unit	29,7 m ² /Unit
	Net area per unit	28,4 m ² /Unit
	Total gross area	29,7 m ²
	Total net area	28,4 m ²
	Growing Area	62,4 m ²
Greenhouse	Gross area	28,4 m²
	Share of construction area	5 %
	Net area	27,0 m ²
	Transparent Surface	30,0 m ²
	Utilization of net area for growing	90 %
	Growing Area	24,3 m ²
Systems		
Economic Frame Conditions		
Capital related Cost		
Total investment cost for Growing Container, Greenhouse & Shipping		268 067 €
Total annual capital cost for Growing Container, Greenhouse & Shipping		15 614 €/a
Operation related Cost		
Total annual operation related cost		64 816 €/a
Demand related Cost		
Total annual demand related cost		15 850 €/a

Other Cost		
Total annual other cost		886 €/a
Economic Revenues		
Total annual weight of produced vegetables		4 324 kg/a
Total annual Yield Revenues of Growing Container Unit(s) and Greenhouse		117 395 €/a
Other Revenue Sources		0 €/a
Economic Balance		
Annual Cost		
Capital related Cost		15 614 €/a
Operation related Cost		64 816 €/a
Demand related Cost		15 850 €/a
Other Cost		886 €/a
Total annual Cost		97 166 €/a
Specific Full Cost per m ² Growing Area		1 121 €/a per m ²
Revenues		
Total annual Yield Revenues of Growing Container Unit(s) and Greenhouse		117 395 €/a
Other Revenue Sources		0 €/a
Total Revenues		117 395 €/a
Specific Revenues per m ² Growing Area		1 354 €/a per m ²
Annuity		20 228 €/a

Invest	268 067 €
Specific Invest per m ² Growing Area	3 093,- €/m ²
Annual Cost (without Capital related Cost)	81 552 €/a
Annual Revenues	117 395 €/a
ROI	7,5 Years

CO₂ equivalent Emissions	
Energy Supply	
Total annual Electricity Demand	48 945 kWh/a
Supplied by the Local Grid	95 %
Supplied by own PV	5 %
Specific Carbon Footprint of Electricity in Svalbard	
Electricity from Local Grid produced with coal (100% CO ₂ allocation)	800 (g CO ₂ e)/kWh
CO ₂ allocation for the co-generated heat	300 (g CO ₂ e)/kWh
Remaining CO ₂ allocation for the co-generated electricity	500 (g CO ₂ e)/kWh
Electricity from own PV	85 (g CO ₂ e)/kWh
Energy related CO₂e Emissions	
Total Energy related CO ₂ e Emissions	23 457 (kg CO ₂ e)/a
Specific Energy related CO ₂ e Emissions per m ² Growing Area	271 (kg CO ₂ e)/a per m ²
Specific Energy related CO ₂ e Emissions per kg of produced vegetable	5,4 (kg CO ₂ e)/kg of vegetable