

Payback Time

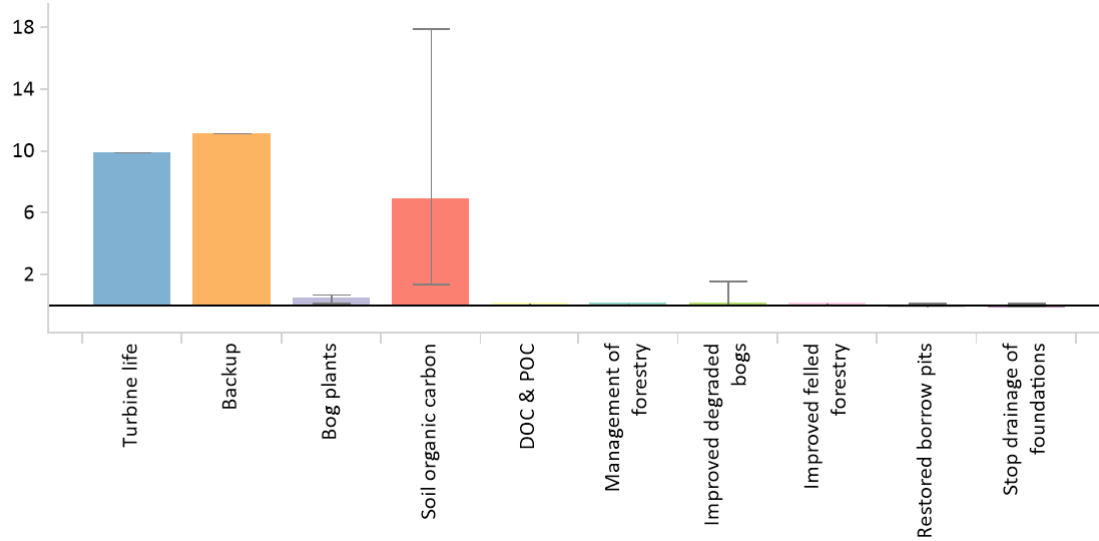
Payback Time
Payback Time - ChartsInput Data

1. Windfarm CO2 emission saving over...	Exp.	Min.	Max.
...coal-fired electricity generation (t CO2 / yr)	271,345	261,295	351,744
...grid-mix of electricity generation (t CO2 / yr)	74,791	72,021	96,951
...fossil fuel-mix of electricity generation (t CO2 / yr)	132,723	127,808	172,049
Energy output from windfarm over lifetime (MWh)	14,747,022	14,200,836	19,116,510
Total CO2 losses due to wind farm (tCO2 eq.)			
2. Losses due to turbine life (eg. manufacture, construction, decommissioning)	Exp.	Min.	Max.
3. Losses due to backup	109,827	109,827	109,827
4. Losses due to reduced carbon fixing potential	122,892	122,892	122,892
5. Losses from soil organic matter	4,399	1,205	7,756
6. Losses due to DOC & POC leaching	75,734	16,514	234,398
7. Losses due to felling forestry	18	0	298
7. Losses due to felling forestry	0	0	0
Total losses of carbon dioxide	312,871	250,438	475,172
8. Total CO2 gains due to improvement of site (t CO2 eq.)			
8a. Change in emissions due to improvement of degraded bogs	Exp.	Min.	Max.
8a. Change in emissions due to improvement of degraded bogs	0	0	-22,458
8b. Change in emissions due to improvement of felled forestry	0	0	0
8c. Change in emissions due to restoration of peat from borrow pits	-446	0	-2,237
8d. Change in emissions due to removal of drainage from foundations & hardstanding	-790	0	-2,696
Total change in emissions due to improvements	-1,236	0	-27,391
RESULTS			
Net emissions of carbon dioxide (t CO2 eq.)	Exp.	Min.	Max.
Net emissions of carbon dioxide (t CO2 eq.)	311,635	223,047	475,172
Carbon Payback Time			
...coal-fired electricity generation (years)	1.1	0.6	1.8
...grid-mix of electricity generation (years)	4.2	2.3	6.6
...fossil fuel-mix of electricity generation (years)	2.3	1.3	3.7
Ratio of soil carbon loss to gain by restoration (not used in Scottish applications)	61.31	0.60	No gains!
Ratio of CO2 eq. emissions to power generation (g/kWh) (for info. only)	21.13	11.67	33.46

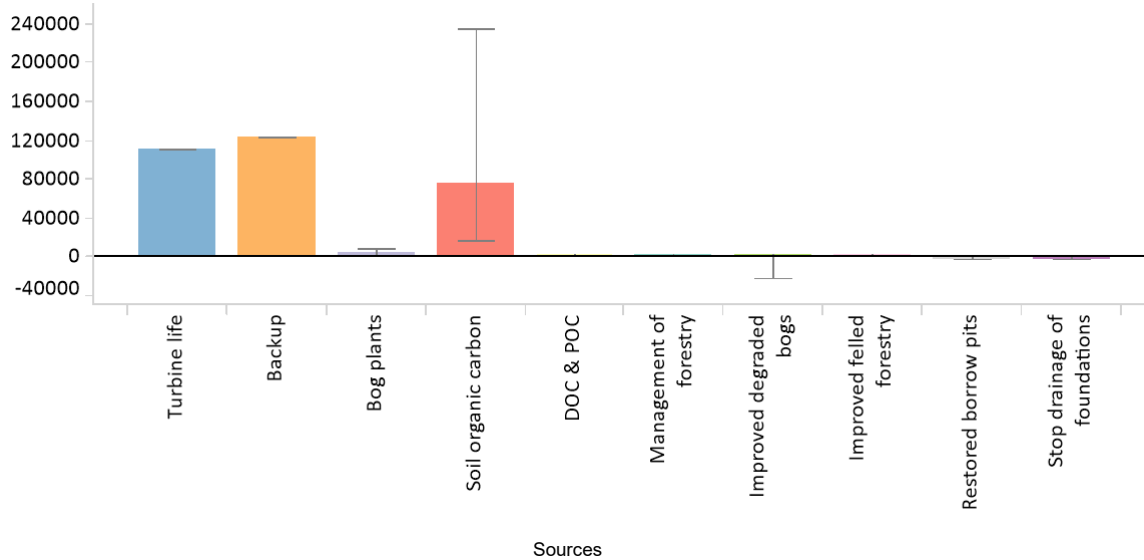
Payback Time - Charts

Payback Time
Payback Time - ChartsInput Data

Carbon payback time (months) using fossil-fuel mix as conterfactual



Greenhouse gas emissions (t CO2 eq.)



Proportions of greenhouse gas emissions from different sources

