



E-CO Energi

E-CO Energi is one of Norway's leading energy groups. Its core business is the ownership and management of hydroelectric power stations. E-CO Energi is owned by the municipality of Oslo. The other operations are organised under the auspices of E-CO Vannkraft and Oslo Lysverker.

E-CO Vannkraft is one of Norway's largest hydropower producers

With a mean annual production of 9.2 TWh, E-CO Vannkraft is one of Norway's largest hydropower producers. We own and operate 28 power-production facilities in southern Norway, including Norway's third-largest power station, Aurland I.

All E-CO's facilities are controlled from a power centre in Gol. The interaction between the power centre, planned maintenance and production planning helps ensure optimal utilisation of the available reservoirs.

Besides these facilities, E-CO Vannkraft is part owner of Oppland Energi, Opplandskraft DA, Vinstra Kraftselskap DA, Embretsfosskraftverkene DA and Norsk Grønnekraft AS.

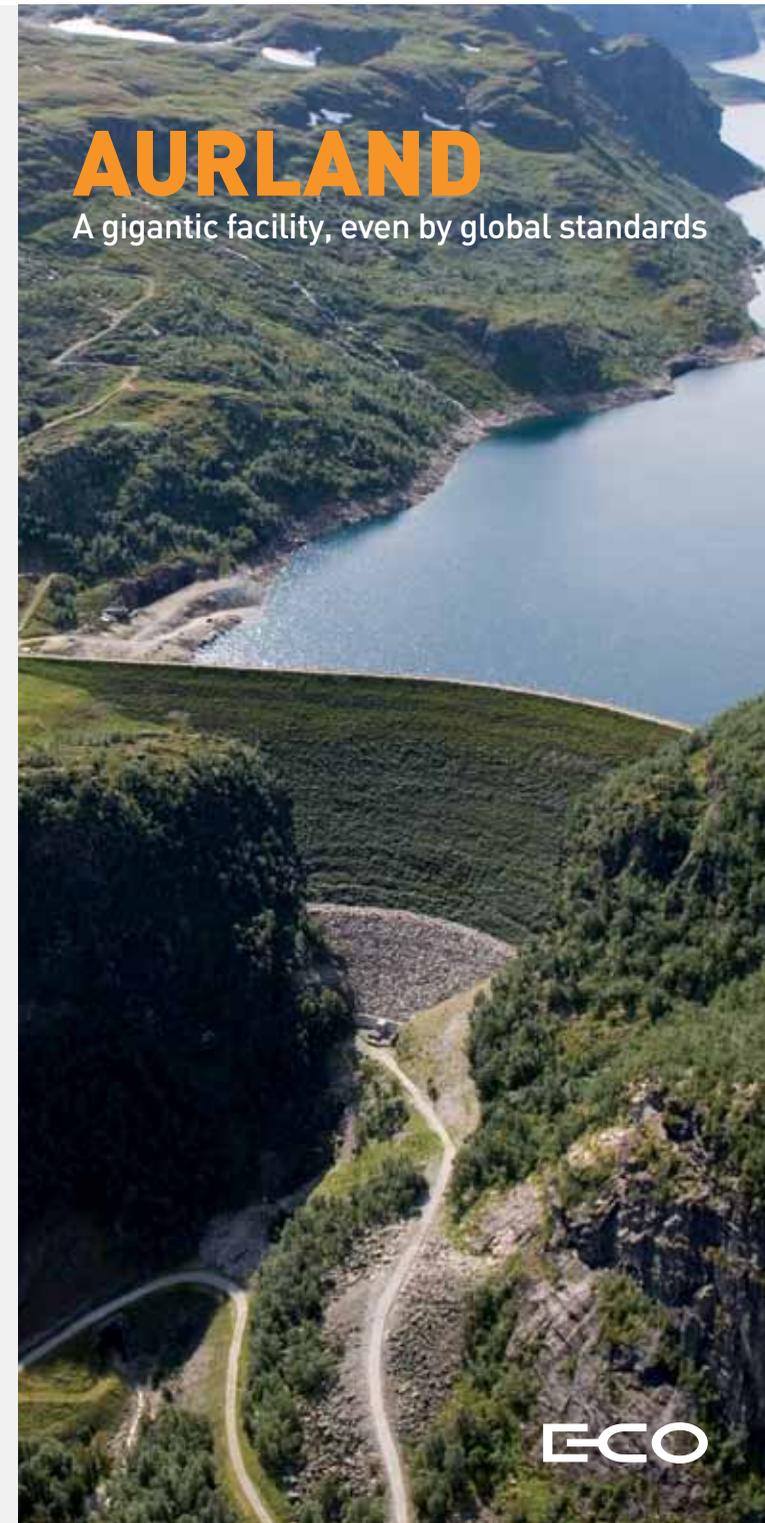
		AURLAND I	AURLAND II	AURLAND III
Catchment area	km ²	56	339 92	92
Inflow	mill. m ³	79	560 171	145
Reservoir capacity	mill. m ³	196	10 189	448
Length of service tunnel	km	3.0	9.8 14.8	3.8
Head	m	840	110 480	400
Installed output	MW	3x280	2x51.5 72	2x135
Average production	GWh/year	2015	178 218	350/281
Max absorption cap.	m ³ /sec	96	68 15	79
Generators	MVA	3x300	2x35/80	2x150
Transformers	kV	420/15.5	380/66/9.5	420/15.5/7.75
Construction start (year)		1969	1979	1975
Constr. start/finish (years) /upgr.		1989/2007	1983	1979
		VANGEN	REPPA	LEINAFOSS
Catchment area	km ²	140	15	244
Inflow	mill. m ³	158	25	416
Reservoir capacity	mill. m ³	3	17	11
Length of service tunnel	km	5.4	0.6	0.5
Head	m	55	400	55
Installed output	MW	38	9	3.4/1.4
Midlere produksjon	GWh/year	105	24	23
Max absorption cap.	m ³ /sec	80	3	10
Generators	MVA	35	10	3.8/1.6
Transformers	kV	68/6	68/4.3	22/6.6
Construction start (year)		1974	1980	1993
Constr. start/finish (years)		1980	1983	1994



Pure power. Pure value creation.
www.e-co.no

AURLAND

A gigantic facility, even by global standards



Old culture meets new

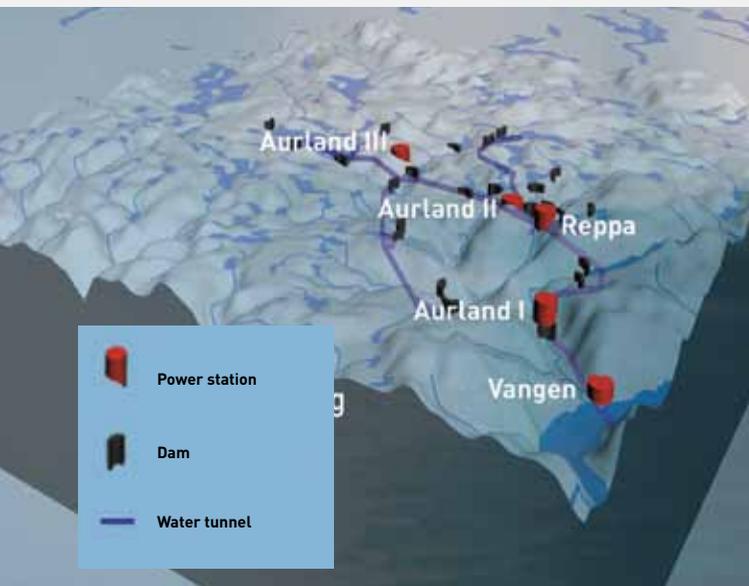
Norway's hydropower has been developed by people with a time perspective completely different from what we have today. These pioneers from Norway's past thought 50 years ahead. They thought in terms of what we might call 'the infinite future'. The power stations built by these people have generated electricity more or less continuously since start-up and some plants have been in operation for nearly 100 years.

All energy production leaves a footprint on the environment. For example, hydropower production encroaches on the environment during construction. Nowadays, construction work is carried out carefully to allow nature to recover rapidly once a facility has been completed.

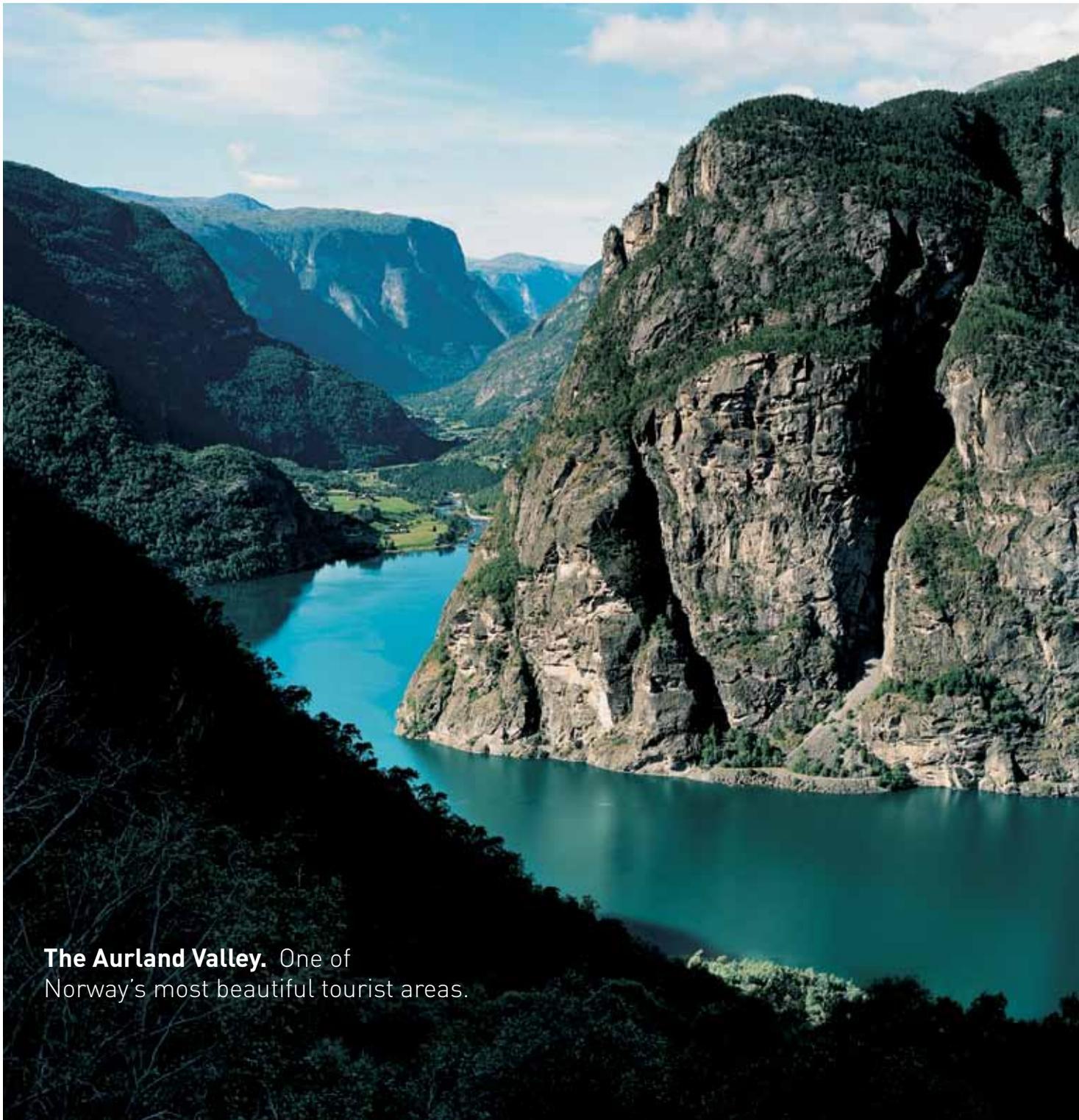
Hydropower technology may be more future-oriented now than ever before. Hydroelectricity is clean green power - clean to make and clean to use. Not least, it is created in a clean natural environment. The future depends on green power. That is what makes hydropower eternal.

New technology generates new power

The proportions of hydropower production plants may seem enormous. They are! But hydropower production is based on technology, and technology never stands still. Expanding and enhancing the efficiency of existing plants has tremendous potential. Simply by optimising the hydropower stations currently in existence, we can boost production by up to 10 per cent. However, such developments are dependent on political support.



-  Power station
-  Dam
-  Water tunnel



The Aurland Valley. One of Norway's most beautiful tourist areas.

The dramatic majesty of the mountains immediately captures the eye of first-time visitors to Aurland. Each year, countless tourists come here to experience nature at its best.

Aurland holds vast water resources thanks to the numerous freshwater lakes that dot the highlands. The area also offers high waterfalls. The exploitation of these water resources has made Aurland one of Norway's most affluent municipalities.

The development of hydropower began in Aurland in the summer of 1969. Aurland had no roads at that time, so road construction was the first order of business. More than 160 km of service roads were built through extremely difficult terrain. Where it was not possible to build a road, an entirely new tool was used: The helicopter.

The hydropower project in the Aurland Valley is an elegant network of dams, tunnels and power stations. The same water is used repeatedly as it passes through the various power stations on its way down from the highlands to the bottom of the fjord.

The project was gigantic, even by global standards. It included 37 mountain lakes, and called for the construction of 11 dams and 11 stream intakes. When all five power stations were completed in 1989, they produced a total of 2.6 TWh. This accounts for nearly 30 per cent of E-CO's current aggregate annual production.

The Aurland Valley is still a gem of Norwegian nature, largely thanks to the efforts of environmentalists. The panoramic views remain the same, and visitors as well as the locals can enjoy the scenery as before.

Fishing is good in the regulated watercourses. E-CO's own fish farm in Aurland stocks 30 000 sea trout and 10 000 salmon each year. The Aurland Valley proper bears few signs of one of the largest power developments Norway has ever seen.



Expertise passed on to the oil industry

The raindrops that fall on Aurland's panoramic highlands are converted into the energy required to maintain our modern lifestyle. Paradoxically, our mountains are also our production sites. The power stations here in Aurland are still among the most successful development projects in modern times.

However, these development projects were to prove even more important for Norway. The expertise acquired there was actually parlayed into a valuable Norwegian export. The knowledge and expertise developed in working with concrete and mountain technology turned out to be fundamental to Norway's petroleum industry, which was initially based on cast concrete platforms.



Prior to the development project, the Aurland Valley was completely without roads.



Today the valley features an elegant network of dams, tunnels and power stations.