Reykjavík Energy

District heating utilities, hot water supply, water quality and water levels in low-temperature geothermal fields 2024

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LJÓSLEIÐARINN
REYKJAVIK FIBRE NETWORK

ON POWER

VEITUR

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Cover photo: Íris Eva Einarsdóttir

Reykjavik Energy and subsidiaries' area of operations

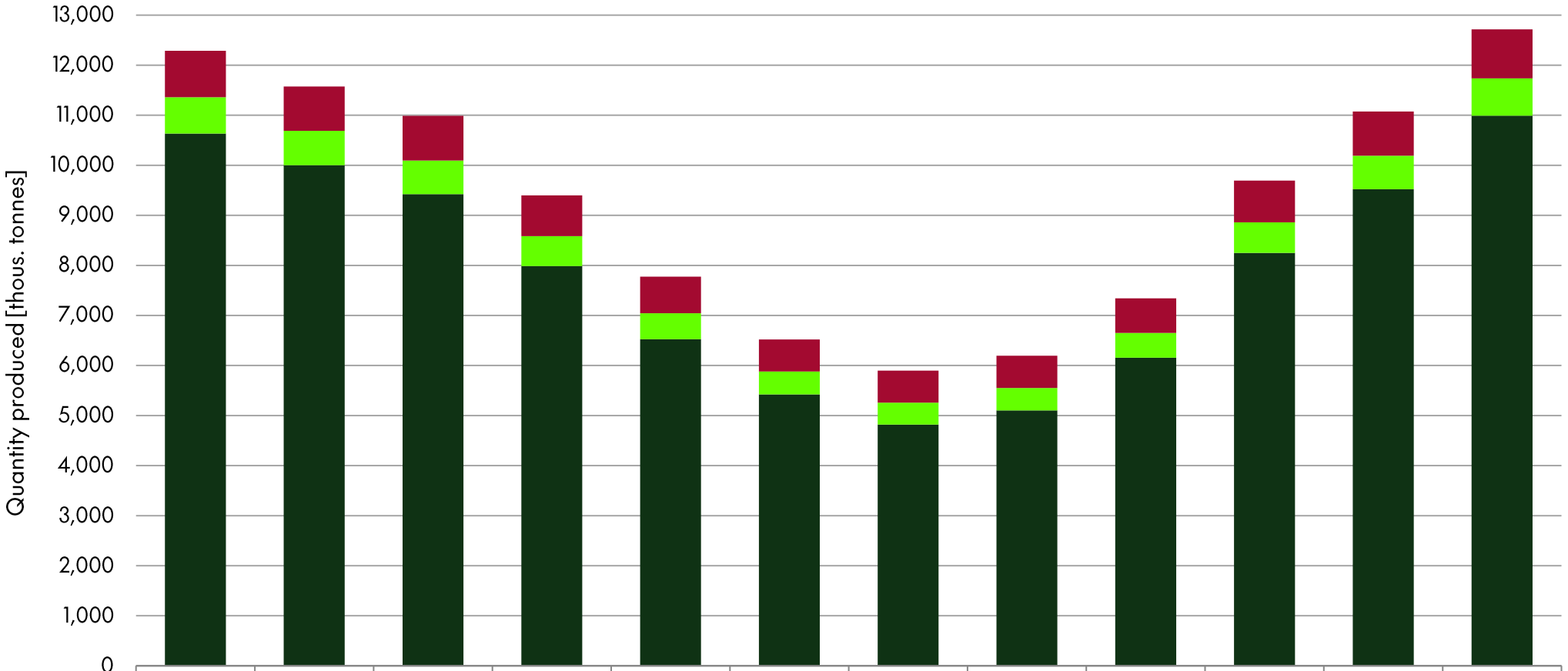
District heating utilities of Veitur Utilities 2024

Veitur's heating utilities with quantities of water produced, comments and improvements. Some actions were undertaken in West and South Iceland to ensure the operability of district heating utilities. Numbers in table are rounded to the nearest thousand tons.

Utility	Production field	No. of wells	Annual production thous. tons	Annual production l/s	Comments	Improvements
Capital area						
Capital area	Laugarnes	10	4,959	157	Field rested for part of summer	
	Ellidaar	8	2,739	87	Field rested for part of summer	Tracer test 2024
	Reykir	22	13,666	433	Field rested for part of summer Wholesale to Mosfellsbaer	
	Reykjahlid	12	14,079	446	Field rested for part of summer Wholesale to Mosfellsbaer	New pumps in 3 wells
	Nesjavellir	21	37,323	1,184		
	Hellisheidi	47	22,067	700		
West Iceland						
HAB	Deildartunga hot spring	1	4,869	154		
	Wells at Baeir	2	336	11		
Skorradalur	Well in Stora Drageyri	1	244	8		
Munadarnes	Well in Munadarnes	1	193	6		
Norðurardalur Utility	Wells at Svartagil	3	474	15		
	Well at Bifrost	1	65	2		
Stykkisholmur	Wells in Stykkisholmur	2	886	28	One injection well and back-up power	
South Iceland						
Hveragerdi	Wells in Hveragerdi	4	1,340	42	Steam utility and closed-circuit systems.	Unnið að úrbótum á varmaskipti
Olfus	Bakki II	1	352	11		
Thorlakshofn	Bakki I	2	1,625	52		
Austurveita	Wells in Gljufurarholt	3	532	17		New well drilled for lukewarm water production
Grimsnesveita	Wells in Ondverdarnes	3	1,997	63		
Hlidarveita	Wells at Efri-Reykir	1	490	16	Sale of utility prepared	
Rangarveita	Wells at Kaldarholt	2	2,487	79		Work on production capacity and prepare research to provide hot water
	Wells at Laugaland	3	742	24	One injection well and back-up power	

Hot water supplied by Veitur Utilities per month in its distribution area in 2024

Granting everyone access to a hot water utility with negligible outages is one of the prerequisites for the health of residents and flourishing economic activity in a modern society, as stated in the Sustainable Development Goals (SDGs) of the United Nations.



	January	February	March	April	May	June	July	August	September	October	November	December
South Iceland	928	886	893	813	730	639	639	644	691	835	885	980
West Iceland	726	685	673	599	518	459	440	448	494	608	669	746
Capital area	10,633	10,003	9,423	7,986	6,526	5,422	4,819	5,103	6,157	8,251	9,521	10,990

Chemical analyses of hot water in the capital area 2024

By analysing the chemical properties in wells, it can be monitored how production fields react to utilization.

	Unit	Laugarnes RV-10	Elliðaar RV-39	Reykir MG-25	Reykjahlid MG-33	Nesjavellir Upphitað grunnvatn	Hellisheii Upphitað grunnvatn
Date		5.3.2024	26.1.2024	25.1.2024	25.1.2024	3.10.2023	2.10.2023
Sample no.		2024-5030	2024-5013	2024-5012	2024-5009	2024-5082	2024-5078
Water temp.	°C	131.6	81.6	92.2	92.1	80	80
Flow rate	L/s	16.01	37.5	35.4	80	-	-
pH (acidity)		8.76	9.66	9.90	9.77	8.48	8.72
CO_2	mg/kg	-	-	26.4	28.3	50.0	28.0
H_2S	mg/kg	0.42	0.02	0.75	1.60	0.41	0.30
SiO_2	mg/kg	158.9	63.1	98.0	104.3	42.9	28.2
Na	mg/kg	59.0	-	39.0	-	19.0	7.9
K	mg/kg	2.40	0.80	0.80	1.10	2.82	1.10
Ca	mg/kg	3.11	3.27	2.39	1.79	9.92	4.79
Mg	mg/kg	0.003	0.013	0.0070	0.0160	5.07	2.74
Fe	mg/kg	0.010	0.024	0.012	0.024	0.008	0.007
Al	mg/kg	0.198	0.119	0.151	0.184	0.097	0.036
SO_4	mg/kg	27.7	12.3	14.7	16.7	-	-
B	mg/kg	0.070	0.019	0.041	0.053	0.112	0.013
Dissolved O_2	µg/kg	0	200	0	0	0	0

Chemical analyses of hot water in South and West Iceland 2024

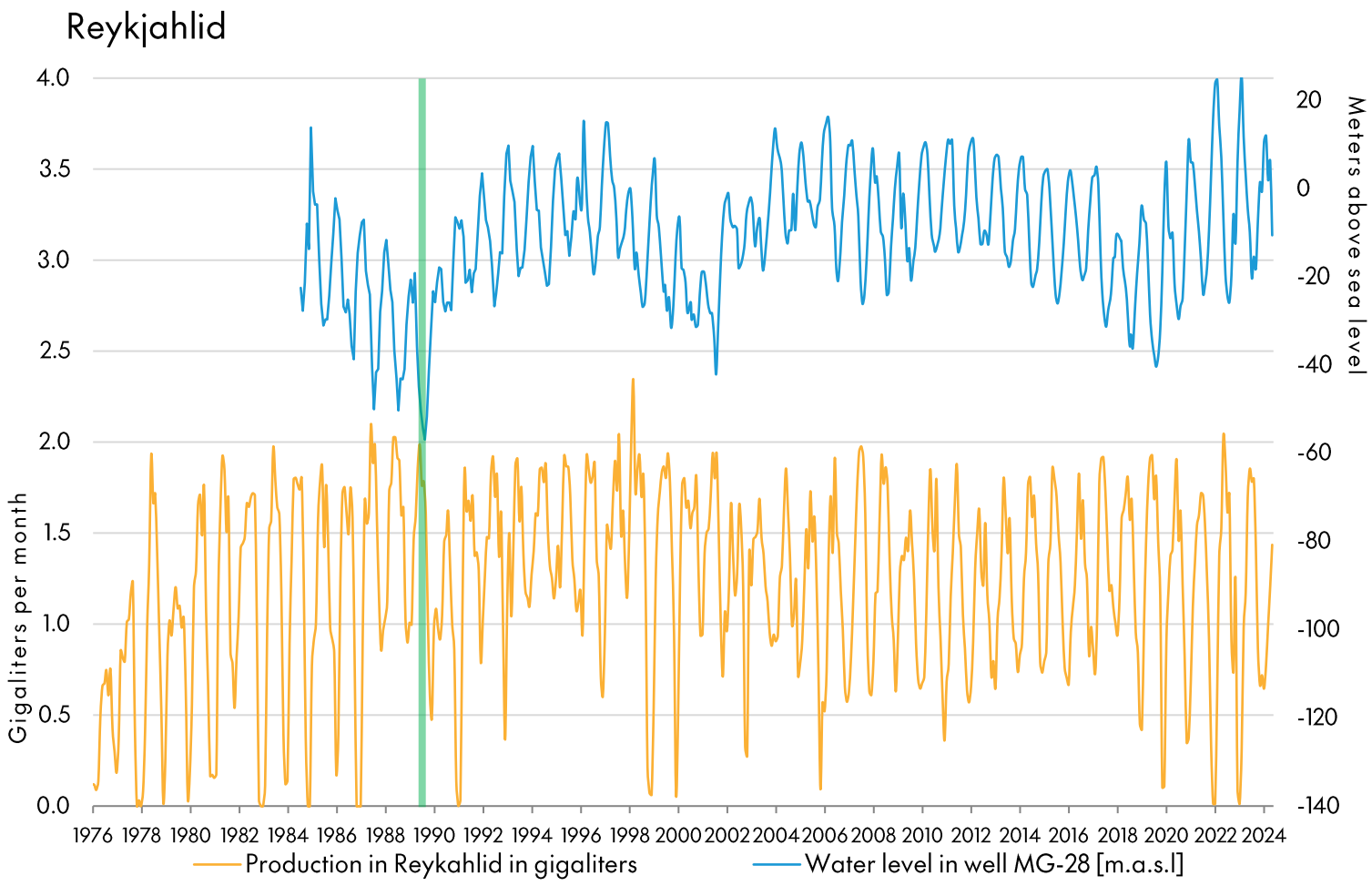
By analysing the chemical properties in wells, it can be monitored how production fields react to utilization.

	Unit	Akranes and Borgarfjördur heating utility		Rangá utility		Thorlaks-höfn utility	Ölfus utility	Austur-veita utility	Grimsnes utility*	Hveragerdi		Nordurár-dalur utility	Stykkis-holmur utility
		Deildartunga hot spring	BB-03	KH-37	LL-6	BA-01	EB-01	GH-4	ÖN-29	HS-08	HS-09	BI-3	HO-1
Date		9.1.2024	14.2.2024	1.3.2024	1.3.2024	9.2.2024	9.2.2024	5.1.2024	14.3.2023	20.11.2023	16.10.2023	9.1.2024	12.2.2024
Sample no.		2024-5004	2024-5024	2024-2026	2024-5027	2024-5018	2024-5016	22-5045	23-5120	2023-5271	2023-5240	2024-5003	2024-5019
Water temp.	°C	92.9	87.8	64.8	92.8	121.9	124.7	115.5	79.7	166.6	99.8	64.9	84.4
Flow rate	L/s	178.0	27.0	53.5	14.8	13.5	27.0	13.9	57.9			3.8	38.9
pH (acidity)	pH	8.98	8.95	10.05	9.85	8.94	8.47	8.73	9.52	8.02	9.18	8.56	9.02
CO_2	mg/kg	**28.2**	**14.3**	**12.1**	**20.1**	10.2	**11.1**	44.5	17.0	69.8	37.7	60.7	**5.4**
H_2S	mg/kg	1.14	0.75	0.12	0.22	0.49	0.58	0.20	0.08	7.62	4.22	0.02	0.05
SiO_2	mg/kg	137.2	121.5	89.0	94.7	119.1	131.4	141.7	82.3	224.0	272.2	92.1	71.5
Na	mg/kg	**78.4**	**111.0**	**67.9**	**83.7**	**367.0**	**270.2**	113.0	108.0	159.0	184.8	61.4	689.3
K	mg/kg	1.90	2.50	0.70	1.40	11.30	**15.55**	3.40	2.50	11.60	15.52	1.1	18.8
Ca	mg/kg	2.83	13.99	2.78	2.87	44.03	**42.15**	4.59	6.11	3.82	3.36	2.69	1050.1
Mg	mg/kg	0.012	0.125	0.012	0.010	0.010	0.020	0.015	0.007	0.010	0.000	0.015	0.557
Fe	mg/kg	0.028	0.036	0.191	0.048	0.05	0.03	0.047	0.017	0	0	0.007	0.032
Al	mg/kg	0.127	0.024	0.127	0.230	0.080	0.050	0.142	0.073	0.370	0.530	0.012	N.D.
B	mg/kg	0.264	0.238	0.121	0.22	0.26	0.25	0.309	0.111	0.36	0.44	0.239	0.102
F	mg/kg	**2.5**	**2.0**	**2.14**	**1.259**	**0.53**	**0.56**	**0.949**	0.59	1.24	1.72	**0.709**	**1.07**
Cl	mg/kg	**35.2**	**114.6**	**28.2**	**45.3**	**613.2**	**407.1**	**116.0**	105.0	105.5	122.0	**29.88**	**2805**
SO_4	mg/kg	**55.7**	**72.4**	**22.7**	**62.5**	**111.4**	**125.1**	**53.1**	39.5	48.1	57.7	**33.37**	**326.01**
Uppleyst O_2	µg/kg	0	0	0	0	0	0	0	0			0	0

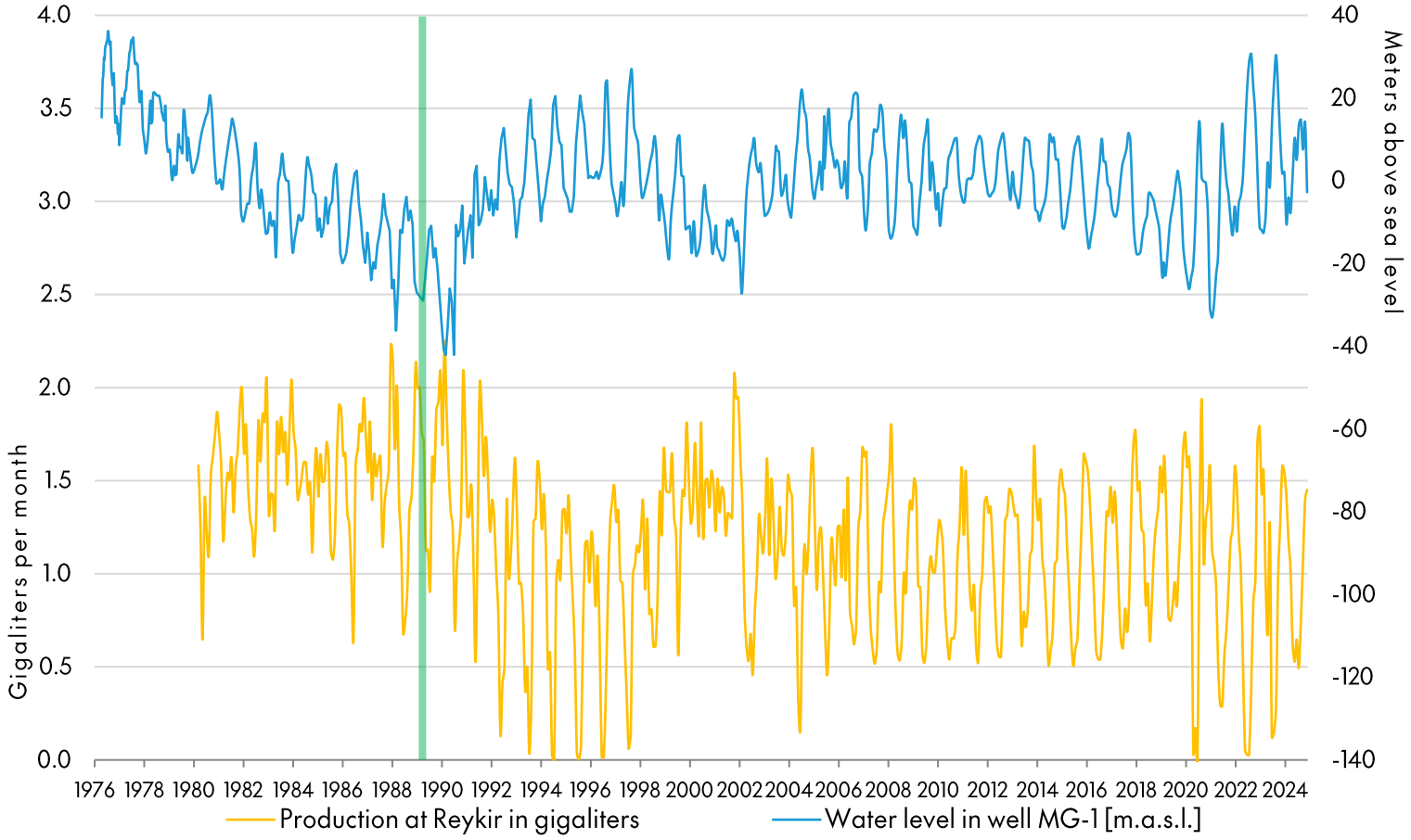
* No samples collected in winter 2023-24. **Results in bold are older samples.**

Water production and water levels in wells in the low-temperature fields of Veitur Utilities in the capital area

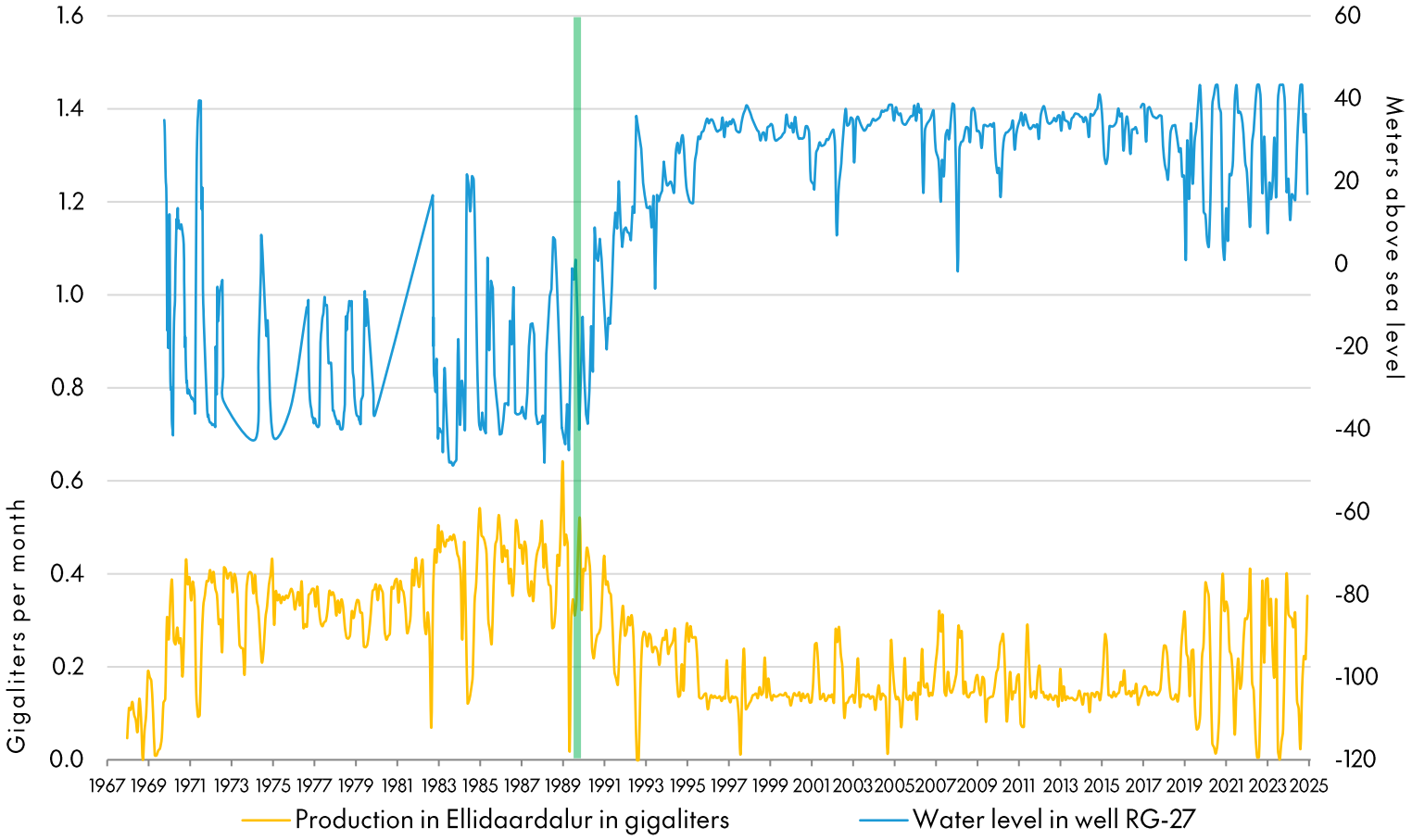
By measuring water levels and quantity of water produced it is monitored how production fields react to utilization. In the greater capital area, there are the production fields of Reykjahlid and Reykir in Mosfellsbaer and Ellidaardalur and Laugarnes in Reykjavik. The vertical green line marks when the thermal plant at the Nesjavellir geothermal power plant began operations. As a result, water production in low-temperature fields in the capital area was significantly reduced, which positively affected water levels in production fields.

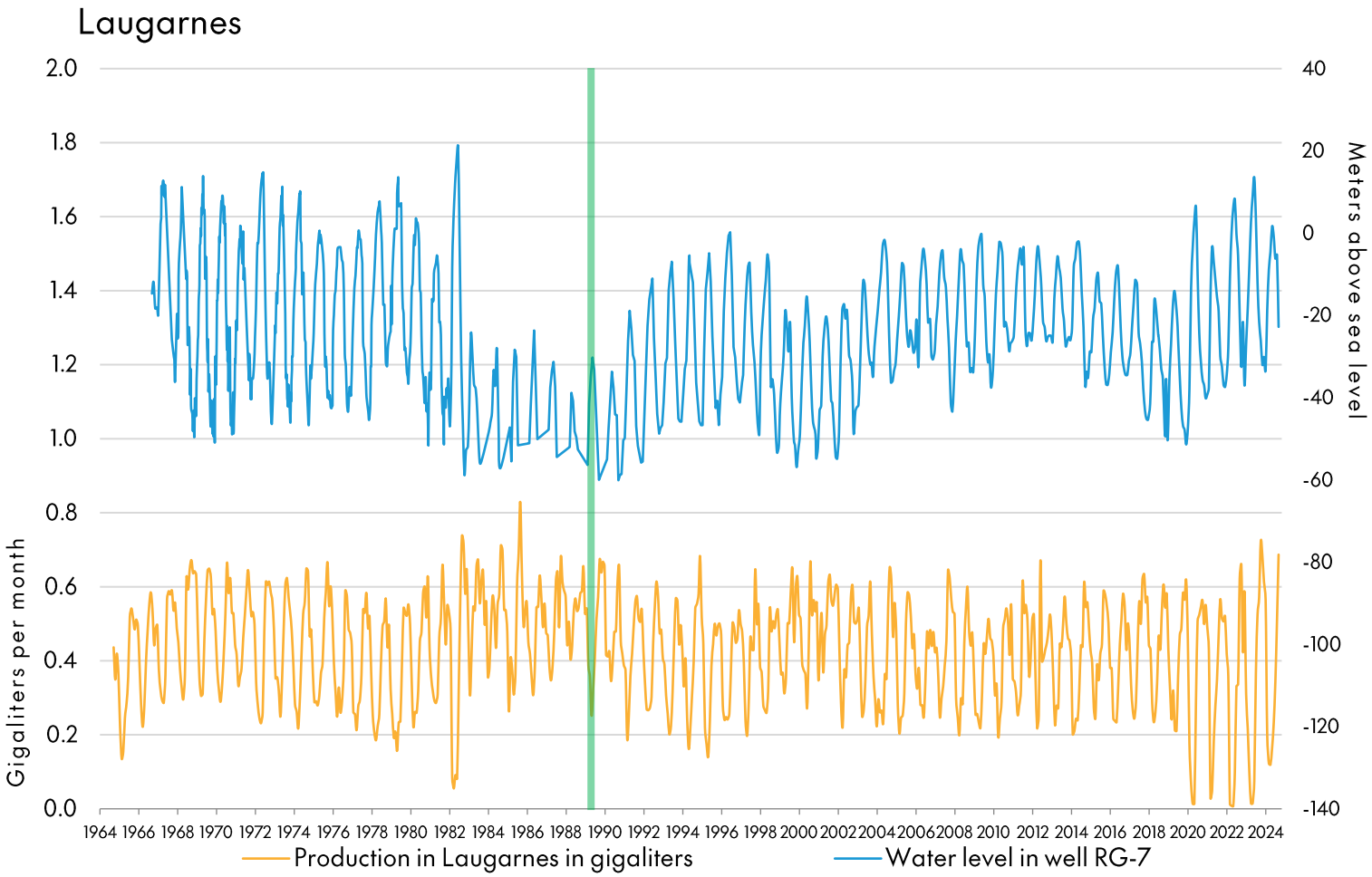


Reykir



Ellidaar




Laugarnes
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Gigaliters per month
40
20
0
-20
-40
-60
-80
-100
-120
-140
Meters above sea level
1964 1966 1968 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024
Production in Laugarnes in gigaliters
Water level in well RG-7