

Norwegian Water and Energy Directorate (NVE)
Postboks 5091 Majorstuen
0301 OSLO
Norway

Your ref.:
Seming Haakon Skau

Our ref.:
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► Price Regulation Hydroelectric Projects Index Regulation from 01.01.1997 to 01.01.2025

We have considered the development of cost during the year 2024 and updated the indices which cover the time from 1.1.1997 to 1.1.2025. Updated indices are as follows:

- | | |
|------------------------------|--------------------------|
| • Mechanical components | 2.30, increased by 4.8% |
| • Electrotechnical equipment | 2.20, increased by 5.9% |
| • Construction | 3.10, increased by 3.7% |
| • Tunnels | 3.08, increased by 2.2% |
| • Embankment dams | 2.68, increased by 1.29% |

Comments and justifications to the indicated indices are as follows:

Mechanical components - Cost development

The average bid prices from suppliers in the market indicate an increase in prices for turbines, pipes, valves and gates for hydropower. Monthly market conditions significantly impact these prices, resulting in greater uncertainty compared to previous years.

This index adjustment is primarily based on Statistics Norway's (SSB) data:

- The Producer Price Index for the metal goods industry shows a 3.3% increase from the previous year.
- The Price Index of first-hand domestic sales of iron and steel indicates a 2.6% increase for the previous year.
- The Industrial Wage Index has risen by 5.5%.

The exchange rate between the Norwegian Krone (NOK) and the Euro (EUR) is relevant, as approximately 90% of turbine equipment and about 40% of other mechanical components for power plants are produced outside of Norway. Over the past year, the EUR has appreciated by approximately 3.4% relative to the NOK.

Based on the above information and the offers received for mechanical equipment in 2024, our assessment is that the price level for mechanical equipment for hydropower projects has increased by approximately 4.8% during 2024.

The new index for mechanical equipment for hydro power projects, effective from January 1st, 2025, will be 2.30.

Electrotechnical equipment - Cost development

There is a continuous trend of upgrade and maintenance projects in 2024. Transformers, high voltage equipment and control system are reaching their technical lifetime. There has been a high demand for feasibility studies for pumped storage hydro projects during the year.

The transmission system and the distribution system need to be upgraded, and this trigger the establishment of new transformer stations. The transmission system operator (TSO) has invested in new 420 kV substations, which has caused investments in the 132 kV substations for the DSO as well as the grid connection for the existing hydropower plant. In addition to the installation of air-insulated switchgears, gas-insulated switchgears with alternative gases are used in rural areas. This technology is still slightly more expensive than those using conventional SF6 gas.

Normally, there are three or more tenderers bidding for the various hydropower and substation projects. During 2024, the experience was that several tenderers withheld from bidding and the project could end up with only one contestant. The result would be higher prices for individual components or electrotechnical packages.

The price level of electrotechnical equipment and transformers varies during the year 2024. Variations are reflected in indexes provided by Statistics Norway (SSB).

Index adjustments are primarily based on SSB's statistical data. SSB's index for electrical machinery and apparatus shows a price increase of 3.9% in both the domestic market and the domestic and import markets.

The index for iron and steel shows a slight decrease of 0.1% for the domestic market and an increase of 1.8% for the domestic and import markets. The index for non-ferrous metals shows a larger increase of 11.4% for the domestic market and 13.4% for the domestic and import markets this year. Metal prices have remained relatively steady throughout the year, with a slight increase during the summer. The increase for the non-ferrous metals index has largely occurred after the summer months.

The consumer price index for goods and services with labor as the dominant factor has increased by 0.8% in 2024. This is much lower compared to the previous years. However, the market pricing of labor seems to increase at a higher rate than the consumer price index for electrotechnical deliveries.

There has been a high price development for electrical machinery and apparatus in 2024. Mostly driven by the high demand of electrotechnical deliveries. The exchange rate against the EURO remains consistently high, contributing to keeping deliveries produced in the EU at a high level.

Our assessment of price indexes and the market for hydropower projects suggests a price development of 5.9% in 2024.

The new index for electrotechnical components, effective from January 1st, 2025, is set to 2.20.

Constructions in general - Cost development

Like the few previous years, only a limited number of hydropower-related construction projects have been tendered in 2024. Furthermore, the available prices vary significantly depending on the location and the specific conditions at each site. This makes the statistical data of hydropower-related construction projects by which to assess the development in unit prices insufficient. Hence, we will rely on the Statistics Norway's (SSB) Construction cost index for concrete bridges (Table 08662) for the assessment of the development in unit prices.

SSB's index for concrete bridges shows an increase of 3.7% from the 4th quarter of 2023 to the 4th quarter of 2024, compared to a decline of 0.1% in 2023.

In SSB's index for road construction, labour accounts for 35.6% of the total cost, materials 30.5%, machinery and transportation 26.4%, and other costs 7.5%. The costs of concrete bridges are assumed to follow a similar distribution.

The cost of materials for concrete bridges has in the same period shown an increase of 4.3% compared to a decline of 4.0% in 2023. Furthermore, total wages for workers in building and construction activities had an increase of 6.1% in 2024 compared to 5.7% in 2023.

SSB's statistics of construction cost for residential buildings has a more detailed breakdown on construction materials. These materials are also relevant for hydropower projects. Their cost developments over the last four years have been as follows:

	Change from previous year (per cent)				
	2020-M12	2021-M12	2022-M12	2023-M12	2024-M12
Timber	2.7	100.9	-19.4	-9.9	10.7
Concrete	-1.2	9.9	11.9	13.6	5.8
Concrete elements	-0.9	4.4	19.0	4.1	1.2
Reinforcement steel	-2.5	43.3	6.0	-16.6	8.1
Structural steel	10.2	43.9	0.0	-8.6	-2.9

As can be observed from the table above, all materials except for structural steel had an increase in prices last year. This, together with the increase in wages, are the main factors contributing to the increase in cost of construction of concrete bridges.

We also observe from the SSB quarterly data that the cost development for construction of concrete bridges starts quite steep in the first and second quarters. The material cost then flattens out in the third and fourth quarters by 0.2% and 0.5% respectively.

An overall assessment based on the considerations outlined above indicates a cost development for construction work in hydropower projects in line with the indices. Therefore, we chose to use the index for concrete bridges from the SSB statistics to represent the cost development for the (civil) construction part of hydropower projects in 2024.

Based on price indices and the hydropower market, we suggest a cost development for the (civil) construction works of 3.7% for 2024.

Hence, the index for general construction works, effective from January 1st, 2025, is 3.10.

Tunnels in rock - Cost development

In 2024, as in previous years, the statistical data for assessing the development in unit prices remains insufficient due to the low number of assignments that include tunnels. Therefore, to evaluate the price development over the period, Statistics Norway's "Construction cost index for road construction" (Table 08662) is used.

The construction cost index for road tunnels increased by 1.8% from the fourth quarter of 2023 to the fourth quarter of 2024. During the same period, the index for materials rose by 3.9%. This is a modest increase compared to the previous year, where the growth was 1.9% for tunnels and 2.0% for materials for road tunnels. Compared to the period from 2010 to 2024, the price increase for 2024 is below average.

Construction prices are influenced by several factors during the period:

- The rise in prices for materials has increased by 3.9%.
- Labor cost in the period has increased by 5.7%.
- The fuel price has increased by 0.4%.
- Key interest rate has been fixed at 4.5%.
- The consumer price index in the period has increased by 2.3%.

Throughout 2024, the increase in material costs was significantly higher than the increase in tunnel costs. The cost of materials is higher for road tunnels than hydropower tunnels due to the greater amount of materials needed for road tunnel interiors, such as concrete elements, electrical components, heating, and so forth. Therefore, the tunnel index is considered more relevant than the material index.

Based on price indices and the hydropower tunnel market, we suggest a price increase of 2.2% for 2024.

Hence, the rock tunnel index effective from January 1st, 2025, is 3.08.

Embankment dam – Cost development

Work on embankment dams in Norway are mainly in the form of rehabilitation, with project costs in the order of 20 to 250 mill. NOK. In addition, a couple of new dam projects are presently being constructed.

The item prices for the different work specifications differ a lot due to the contractor's pricing philosophy, depending on how much lump sums are favored over unit prices, so it may be misleading to use one or two main project to obtain the correct indices.

In this respect, it will be more correct to use SSBs cost statistics to evaluate the rise of the costs for the various types of work during 2024. We are suggesting using the indices of the road works, which includes the same type of works as for an embankment dam.

The three indices that will be used are (highlighted in Table 1):

1. **Road construction, ex tunnel** (excavation, hauling, compacting)
2. **Concrete road bridge** (concrete works incl. materials)
3. **Road tunnel in rock** (cost of drilling/blasting, loading, and hauling)

Table 1. Building Cost Index for roads, 2023 (Q4) – 2024 (Q4).

	Building cost index	
	2023 Q4	2024 Q4
Sum, road construction	224.3	228.0
Road construction, materials	283.5	287.8
Road construction, equipment	187.8	187.4
Road construction, labour	202.3	209.8
Road construction, ex tunnel	223.9	225.8 (+ 0.8%)
Concrete road bridge	222.9	231.2 (+ 3.7%)
Concrete bridge, materials	291.1	303.6
Road tunnel in rock	226.7	230.8 (+ 1.8%)
Road tunnel, materials	271.0	281.5

Even if the cost index for roads includes a large part of works during winter, of which embankment dam works do not, the seasonal work for dams will be more intense requiring more equipment. Hence, it is suggested that the indices for road works are very similar to the work performed at embankment dams and will be used as they are given in Table 1. The indices are weighted to obtain a total price increase:

1. Embankment dam works (similar to road works): + 0.8% (70% of the total)
2. Concrete works, seepage measurements etc.: + 3.7% (10% of the total)
3. Works in the quarry: + 1.8% (20% of the total)
4. **SUM: 1.29%**

We suggest increasing the index for embankment dams by 1.29% from January 1st, 2024, to January 1st, 2025. This will raise the index from 2.65 to 2.68.

Best regards
Norconsult Norge AS



Erik Falch Pettersen
Project Manager