Projet FCC du CERN

CONCERTATION SUISSE

Du 18 mai au 2 octobre 2026

CAHIER D'ACTEUR

Concertation publique suisse du Futur Collisionneur Circulaire

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Ginger Geotec is an engineering firm specialising in geotechnical engineering and large-scale underground works. As set out in our articles of association, our mission is to develop safe, innovative and sustainable infrastructure. Led by a team of expert geologists and engineers, the company is actively committed to addressing Europe's technological challenges, whilst always operating with the utmost transparency and accountability

As GINGER GEOTEC, a company operating in the field of complex geotechnical investigations, we express our full and wholehearted support for the Future Circular Collider (FCC) project. We believe that this infrastructure is not only the next milestone for fundamental physics, but also an indispensable driver for Europe's industrial, economic and technological development.

The history of CERN demonstrates that extreme scientific challenges generate incalculable technological benefits for society, from medicine to information technology. The FCC will require engineering solutions that do not yet exist in fields such as superconductivity, cryogenics, tunnel excavation and big data management. This will force European industry to push beyond its limits, securing us a global competitive advantage.

Furthermore, supporting the FCC is essential to maintaining our continent's scientific leadership. Abandoning this strategic vision would mean ceding ground to other world powers, weakening our high-tech sector and losing the ability to attract the best talent.

We are aware of the logistical and environmental challenges, but we are confident that the project will stimulate the development of new technologies for energy efficiency, setting unprecedented sustainability standards for large-scale infrastructure.

For these reasons, our view is firmly positive: we regard the FCC as a strategic and indispensable investment for the future of Europe.

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Support for the Construction of the Future Circular Collider (FCC)
Company: GINGER GEOTEC
Date: 22th September 2026
Subject: Favourable opinion in the context of the institutional public debate on CERN's Future Circular Collider (FCC) project..

1. Executive Summary As an industrial player integrated into the economic and European fabric, Ginger Geotec expresses its strongly favorable opinion regarding the construction of the Future Circular Collider (FCC). We believe that the project transcends the vital field of high-energy physics, configuring itself as an indispensable strategic infrastructure to preserve Europe's technological sovereignty, industrial competitiveness, and academic excellence for the next seventy years. The engineering and logistical challenges posed by the FCC represent an unprecedented stimulus for continental industry, acting as an accelerator for innovation in multiple knowledge-intensive sectors.

2. The Engine of Industrial and Technological Innovation The history of major European research infrastructures, particularly those associated with CERN, unequivocally demonstrates that extreme scientific goals generate transversal technological "spill-overs". The FCC will require quantum leaps in engineering that cannot be achieved with the technologies currently available on the market, forcing the industrial supply chain to innovate. The favorable opinion of Ginger Geotec is based on the immense industrial opportunities that will open up in the following directions:

- **2.1 Advanced Materials and Superconductivity:** To reach the collision energies foreseen in the hadronic phase (FCC-hh), it will be necessary to develop superconducting magnets capable of generating magnetic fields up to 16 Tesla. This requires a shift from the well-established Niobium-Titanium (NbTi) technology used in the LHC to Niobium-Tin (Nb3Sn) compounds or high-temperature superconductors (HTS). This applied research effort will catalyze the creation of a new metallurgical and manufacturing supply chain in Europe, with immediate spin-offs in the biomedical sector (next-generation ultra-high-resolution MRI systems), energy storage systems,and transport (magnetic levitation).
- **2.2 Civil and Geotechnical Engineering:** The construction of a 91 km circular tunnel under the Geneva basin constitutes one of the greatest civil engineering works of the century. It will require the development of highly automated tunnel boring machines (TBMs) and the use of artificial intelligence for the predictive analysis of subsurface geology. Furthermore, the management of millions of cubic meters of excavated material will open new frontiers in the circular economy, promoting techniques for the reuse of molasse

and rocks in the construction and agricultural sectors, setting new standards for the sustainable construction industry.

- **2.3 Data Science and Quantum Computing:** The FCC will produce data volumes orders of magnitude greater than those of the already colossal High Luminosity LHC. To process, store, and distribute this mass of information in real time, the IT infrastructure will have to evolve radically. The project will drive the development of grid computing, neuromorphic computing, and accelerate the integration of quantum algorithms for pattern recognition. The parallel computing and Big Data management technologies developed for the FCC will become the new standard for the financial industry, global logistics, and predictive meteorology.

3. Expected Spill-over Prospects

The following highlights the mapping between the needs of the FCC infrastructure and the consequent innovations that can be transferred to the civil and industrial market:

- **Beam physics and energy:** Ultra-high efficiency klystrons, superconducting RF cavities. $\rightarrow$ *Market Impact:* Lossless electrical power transmission, advanced radars, compact oncological radiotherapy (FLASH therapy).
- **Vacuum and Cryogenics:** Superfluid helium cooling systems on 91km scales; ultra-high vacuum. $\rightarrow$ *Market Impact:* Liquid hydrogen logistics for the energy transition, quantum computing hardware, aerospace.
- **Robotics and Automation:** Drones and rovers for autonomous inspection in radiogenic and hostile environments. $\rightarrow$ *Market Impact:* Predictive maintenance in industrial plants, nuclear decommissioning, space exploration.

4. Technological Sovereignty and Geopolitics of Research In a geopolitical scenario characterized by growing competition for technological supremacy, Europe cannot afford to abdicate its leadership in fundamental physics, painstakingly built over the last seventy years. Currently, other powers (in particular China with the CEPC - Circular Electron Positron Collider project) are planning similar infrastructures. If Europe were not to proceed with the FCC, we would inevitably witness an irreversible "brain drain". The best European physicists, engineers, computer scientists, and project managers would relocate to Asia or the Americas, irreparably weakening our innovation ecosystem. Building the FCC means keeping Europe at the center of the global knowledge map and attracting talent from all over the world.

5. Environmental Sustainability: From Criticality to Opportunity

Ginger Geotec acknowledges the concerns raised in the public debate regarding the ecological impact and energy consumption of such an infrastructure. However, we view the FCC not as an environmental problem, but as a catalyst for large-scale ecological solutions. The challenges imposed by the ecological transition will oblige the design of the FCC to integrate the principle of extreme energy efficiency from the very beginning.

- **Heat Recovery:** The waste heat generated by the FCC's cooling systems must be recovered and fed into local district heating networks, providing clean energy to tens of thousands of homes in the Franco-Swiss cross-border region.
- **Consumption Efficiency:** The need to contain operating costs will drive research towards components (such as power converters) with almost zero dissipation, technologies that will become crucial for the civil power grids (smart grids) of the future.
- **Water and Soil Management:** The construction sites will require hydrogeological studies of millimeter precision, providing valuablemapping for the protection of regional aquifers.

- **6. Local Socio-Economic Impact and Procurement** The planned investment will generate a formidable economic return for the territory and for the contributing nations. The excavation and infrastructure construction phase will lead to the creation of thousands of direct and indirect jobs. In addition, CERN's procurement system ensures that investments fall back on the companies of the Member States, triggering a virtuous cycle. Companies that win contracts for CERN, working to extreme quality specifications, increase their know-how and become significantly more competitive in international markets.

- **7. Conclusions and Recommendations** In light of the considerations set out above, Ginger Geotec reiterates its **strongly favorable** opinion regarding the approval and construction of the Future Circular Collider. We do not consider the projected costs as a passive expense, but rather as a high-yield investment in Europe's technological, industrial, and intellectual future.

  We therefore invite the decision-making institutions, the local authorities in France and Switzerland, and the CERN Member States to courageously support this vision, ensuring a rapid approval process and facilitating synergies between the scientific community, the host territories, and the industrial supply chains. The exploration of the unknown has always paved the way for human progress; the FCC is the essential means to continue this journey.

  Sincerely,

  Ginger Geotec Management