

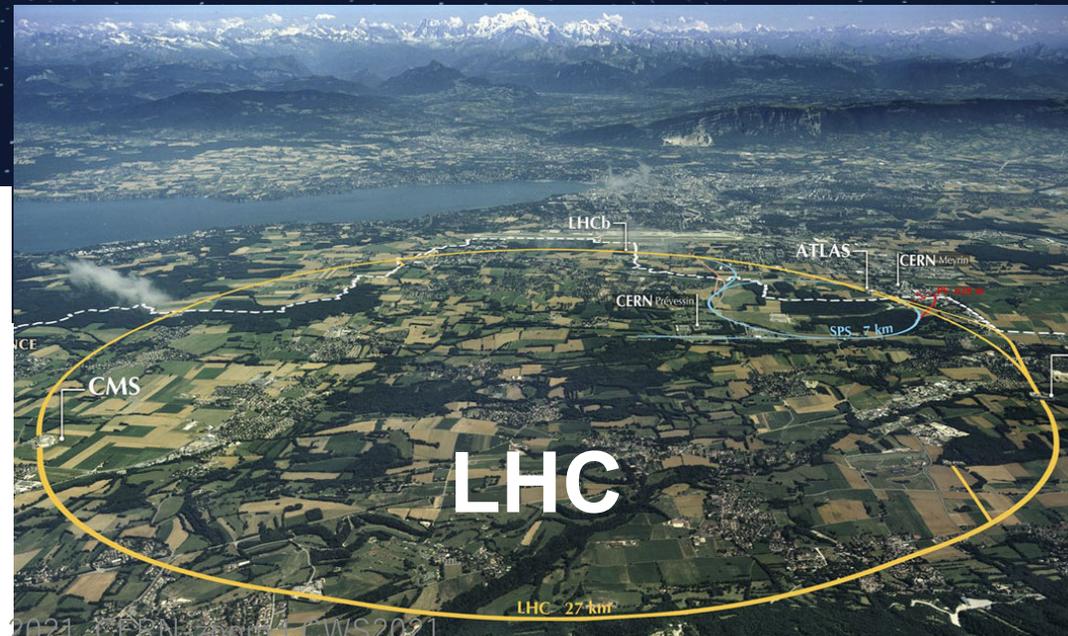
Environmental assessment in Pre-lab phase

*Introduction of the Summary of Discussion
by the ILC Environmental Assessment Advisory Board*

Nobuhiro Terunuma, KEK

The ILC will be constructed in the mountains.

- Surface facilities are located approximately every 5 km.
- Underground excavation
 - Accelerator tunnels: 20km of straight and 3km of ring
 - Access tunnel and utility halls
 - Detector hall, etc.



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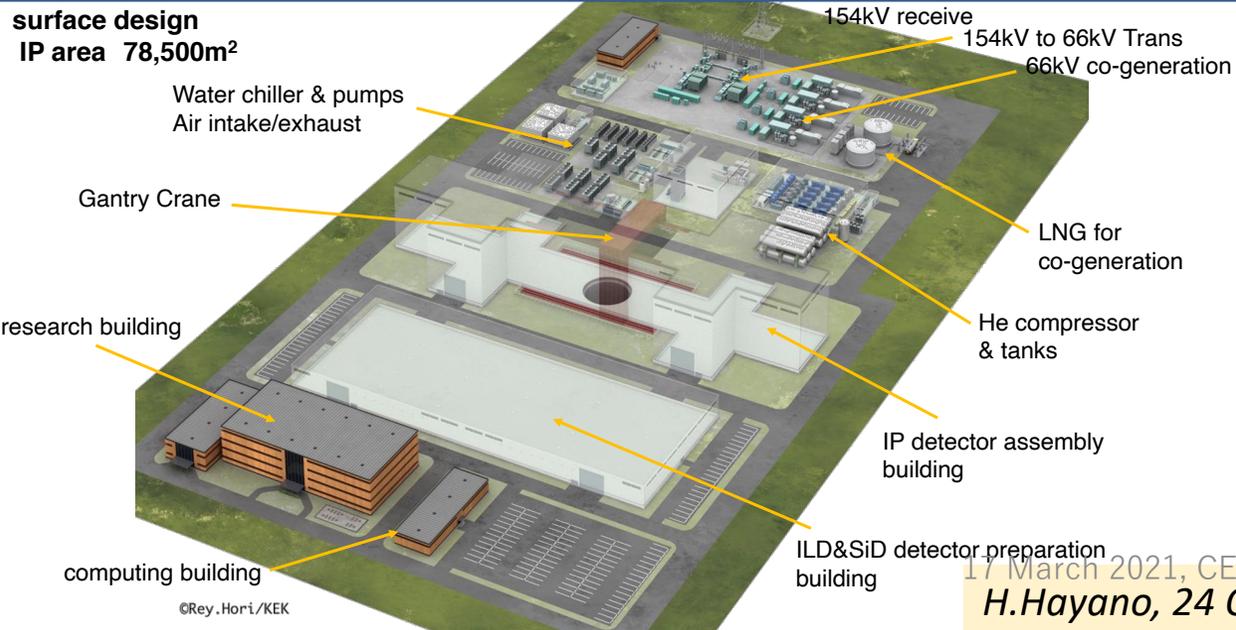
These figures are shown at approximately the same scale.

IP Facilities

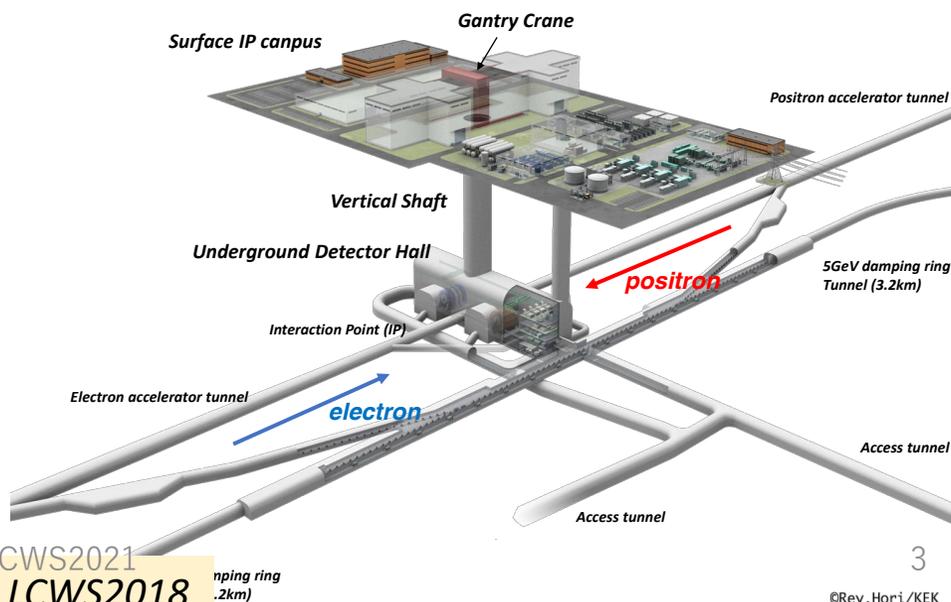


- Surface IP area will be $\sim 100,000 \text{ m}^2$.
- New power line from the power company to the IP area.
- Public road to IP area is available.

Plan of Interaction Point Campus at Surface



Plan of Interaction point

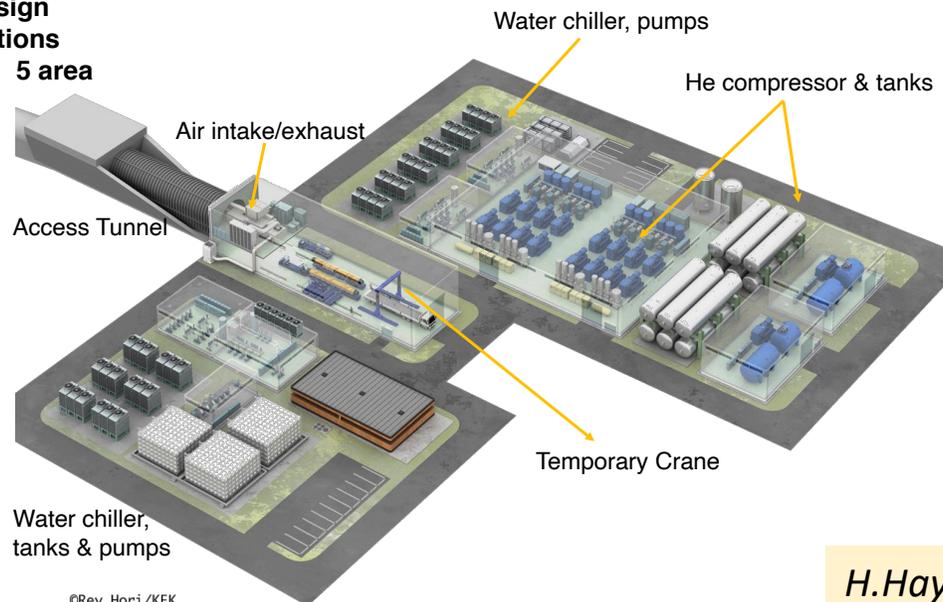


Surface Facilities - Access Points

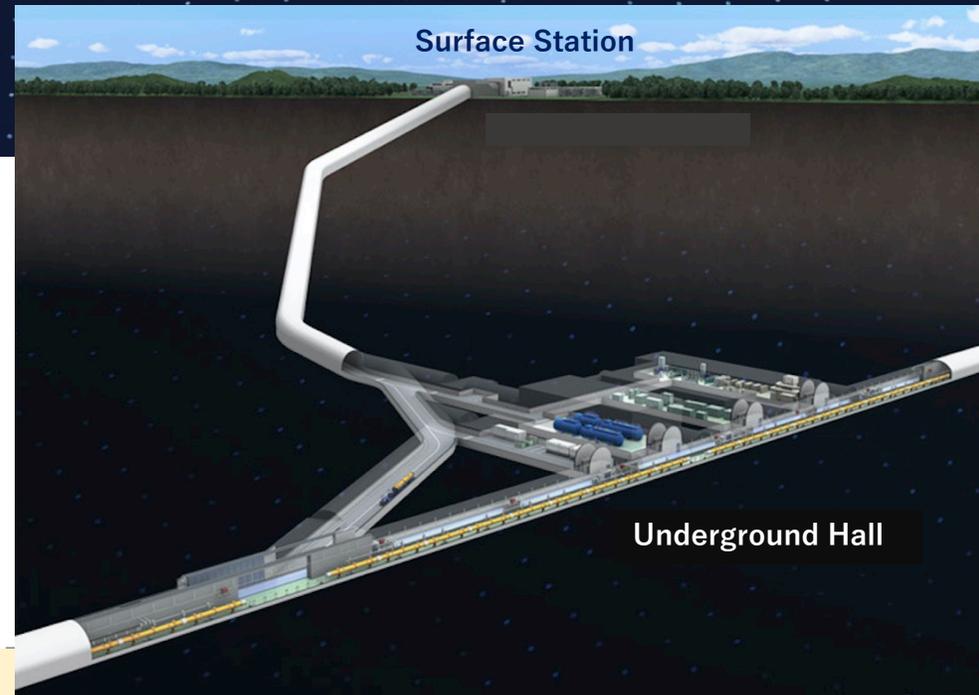
- 5 access stations (DR, 2MLs x 2), ~19,000 m².
- There is a public road, and there are residents nearby in every location.

Plan of Access-station at Surface

surface design
access stations
16,600m² 5 area



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Hori / KEK

H.Hayano, 24 Oct.

Civil and site-related tasks in the Pre-lab phase to be described in the interim Pre-lab proposal by IDT (1/2)

■ Geological surveys

- Pilot geological surveys have been conducted at Kitakami Mountains.
- More surveys along the accelerator route, access tunnels and the detector hall are **required for the detailed civil engineering design.**

■ Topographical surveys

- For the design of the surface facilities; IP ~100,000 m², access stations ~19,000 m² each.

■ Detailed design of civil engineering and infrastructure:

- The Japan Society of Civil Engineers assessed the technical feasibility of the designs and concluded that the designs in the "Tohoku ILC Civil Engineering Plan" are appropriate.
- **The remaining tasks for the civil engineering are to develop and document the layouts and designs for actual construction.** The layout of underground facilities will be optimized by examining the land use and the environment on surface.
- The detailed design **should be completed in the fourth year of the preparation period,** after which the preparation for the construction contract will be implemented.

Civil and site-related tasks in the Pre-lab phase to be described in the interim Pre-lab proposal by IDT (2/2)

■ Environmental assessment:

- Large scale constructions take place both underground and above-ground, and an environmental assessment at appropriate time is important aspect of the ILC project.
- **This environmental assessment needs to be done in close cooperation with local authorities.**
- A pilot survey has been conducted by the local government in the Kitakami Mountains.
- Future environmental surveys will cover **not only environmental but also the socio-economic impacts and communication with and obtaining the understanding of local residents** under the concept of the **Strategic Environmental Assessment**.



input from **the ILC Environmental Assessment Advisory Board**.

The ILC Environmental Assessment Advisory Board

Under the KEK ILC Planning Office

- **Several environmental concerns have been raised by SCJ and MEXT.**
- **An advisory board was established in September 2019, to obtain external input regarding environmental assessment.**
 - **The board members**
 - Three experts recommended by the **Environmental Impact Assessment Office of the Ministry of the Environment.**
 - **Observers**
 - KEK, University of Tokyo, and the ILC promotion Bureau of Iwate Prefecture.
- **investigated and summarized implementation structure, process, method, and contents of the environmental assessment.**
- **The Board compiled the Summary of Discussion in December 2020.**

- **On February 26, 2021, the summary of the discussion on the environmental assessment of ILC was released on the WEB and sent to the IDT-EB for discussion.**

Strategic Environmental Assessment of the ILC Project
- Summary of the Discussion –

December 28, 2020

High Energy Accelerator Research Organization,
ILC Environmental Assessment Advisory Board

https://www2.kek.jp/ilc/ja/contents/docs/Strategic_Environmental_Assessment_of_the_ILC_Project_Summary_of_the_Discussion_r.pdf



<http://newslines.linearcollider.org/2021/02/26/ilc-pre-lab-preparation-on-the-accelerator/>

The Board studied the required environmental assessment approach based on the following characteristics of the ILC Project.

- i. **The project is currently in the pre-preparatory phase**, prior to the decision to host the ILC in Japan, and the project implementing body has not been identified.
- ii. **The project will be a long-term international collaborative project** with a duration of more than 30 years from the start of preparation to the end of the experiment.
- iii. **Large-scale construction work, both above and below ground**, is to be carried out to set up the experimental facilities, the ILC Laboratory campus, and other facilities.
- iv. The site of the experimental facility must avoid densely populated areas and the ground must be solid.
- v. The maintenance and operation of the experimental facilities will consume a lot of electrical power.
- vi. **A symbiotic relationship with local residents** must be fostered through town development, as many ILC Laboratory personnel (domestic and international staff and facility users, as well as their families, etc.) will live in the vicinity of the campus.
- vii. **Large-scale and continuous investment of resources** (budget and human resources) is needed by the national government to construct the experimental facilities and operate the ILC Laboratory, and for the local governments and others to develop and maintain infrastructure such as town development and access roads around the ILC campus.

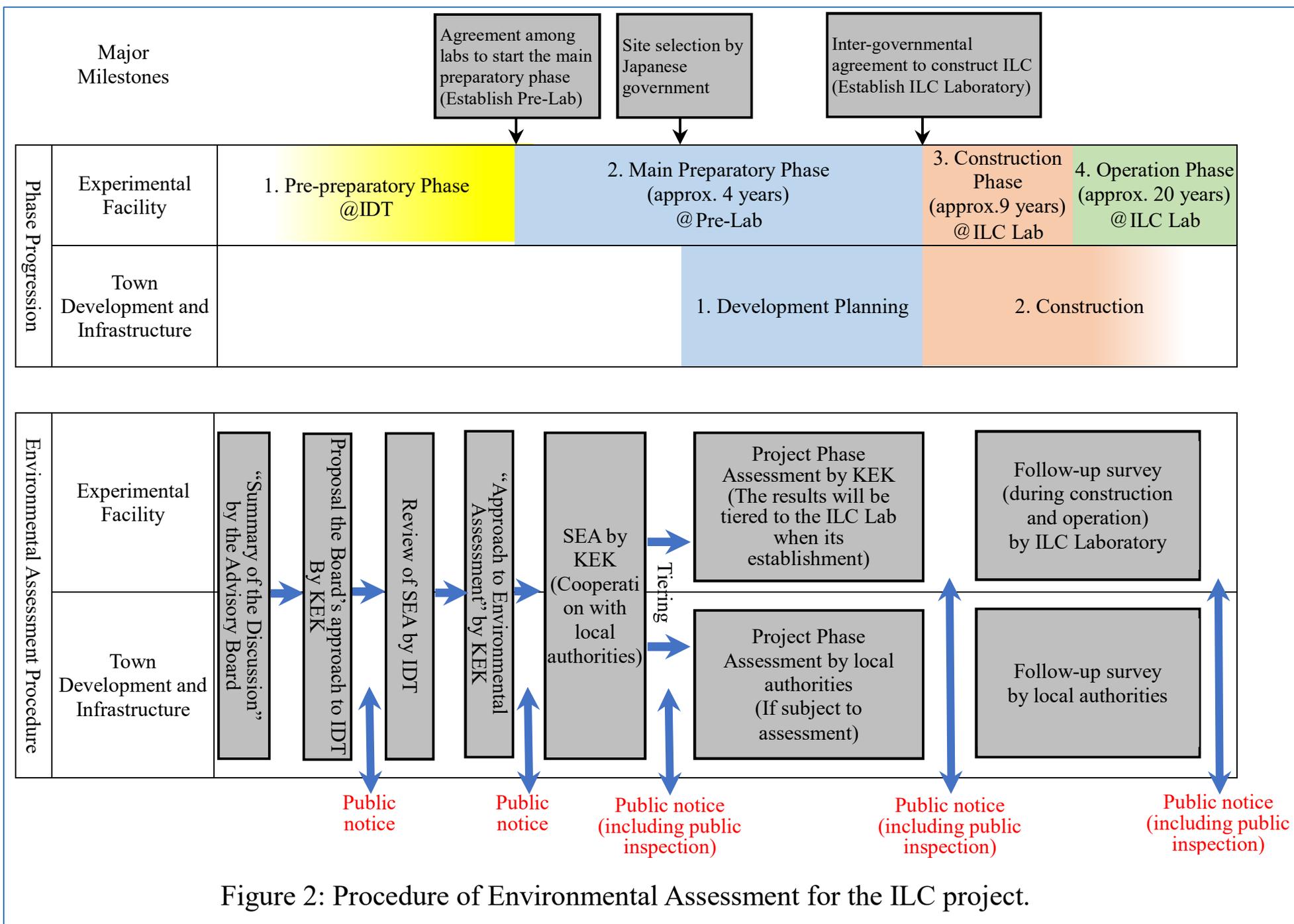
In view of such characteristics, it is desirable to adopt **the Strategic Environmental Assessment (“SEA”)** as the environmental assessment for the ILC to ensure smooth and appropriate promotion of the project.

The SEA is to be conducted during the early phase (policy, planning, or program phase), prior to the Project Phase Assessment, **and covers socio-economic impact as well as environmental considerations.**

■ Project Phase Assessment

- Necessity of Project Phase Assessment

It is foreseen that **the ILC project is not subject to the Environmental Impact Assessment Act and Ordinance. Despite this, it will be necessary to conduct the Project Phase Assessment in accordance with the laws and regulations, considering the fact that the project requires a large budget.**



From the report of the EA Advisory Board

Figure 2: Procedure of Environmental Assessment for the ILC project.

Table 1: Evaluation items based on the characteristics of the ILC project.

Environmental Items	Main environment	Air, water quality and hydrosphere, soil and ground
	Ecosystem	Biological growth and habitat, water cycle, organisms/ecosystems, greenery
	Living environment	Noise, traffic congestion, vibration, odor, communication disruption (radio interference), overshadowing, radiation
	Amenities & culture	Landscape, nature activity sites, pedestrian comfort, historic and cultural sites
	Resources & waste	Water use, waste, and ecomaterials (oil-free)
	Greenhouse gas	Greenhouse gas, energy
Socio-Economic Items	Land use	Land use, regional fragmentation and relocation
	Social activities	Cultural activities
	Participation & collaboration	Communities, environmental awareness
	Safety, sanitation, security	Safety, sanitation, fire and disaster prevention
	Traffic	Traffic congestion, access to public transportation, road safety
	Local industries	Agriculture, forestry and fisheries, commerce and industry, tourism
	Economy	Economic impact, employment

•Appendix 1: Summary Table for the Environmental Assessment for the ILC Project

From the report of the EA Advisory Board

•Strategic Environmental Assessment (SEA)

When to start	To be started after the establishment of the Pre-Lab.
Project implementing body	KEK, foreseen to be the host laboratory for the Pre-Lab, is preferable.
Scope	The entire project. (Experimental facilities, the ILC Laboratory, town development and infrastructure around the campus.)
Evaluation items	Natural environment and socio-economic impact.
Use of results	The SEA results should be tiered to the Project Phase Assessment.
Collaboration with local authorities	In view of the SEA scope, it will be implemented in cooperation with the local authorities where the project is sited.
Procedure	Use the Ministry of the Environment’s “Guidelines for Strategic Environmental Assessment” as a reference.
Information exchange	Refer to Japan Society for Impact Assessment’s “The Basics of Information Exchange in Environmental Assessment” to incorporate appropriate environmental considerations.

•Project Phase Assessment and Follow-Up survey

Project Phase Assessment	When to start	To be started after the site selection by the Japanese government.
	Project implementing body	KEK, foreseen to be the host laboratory for the Pre-Lab, should take the initiative. After the ILC Laboratory is established, the results of the assessment by KEK are tiered to the ILC Laboratory.
	Implementation guidelines	Since the ILC project is foreseen to be not subject to legal assessment, it should be carried out in accordance with the implementation guidelines established by a public third party. In this case, MEXT , which is expected to be the ministry with jurisdiction over KEK and ILC, is the preferred body for defining the implementation guidelines.
	Tiering of the results	It should be agreed in the inter-governmental agreement for the start of ILC construction that the SEA results by KEK are to be tiered to the Project Phase Assessment by the ILC Laboratory.
Follow-up survey	As a follow-up to the Project Phase Assessment, follow-up surveys will be conducted during both the construction and operation phases.	

Summary and Outlook

- **The ILC Environmental Assessment Advisory Board** has been established under the ILC Promotion Office of KEK and has summarized the discussion on how to proceed with the assessment.
- **The summary of discussion was published on the web in February 2021 and has been sent to the IDT EB for review.**
- In the pre-lab period, the strategic environmental assessment will be followed by the project phase assessment.
- We will be **working closely with the local authorities** to discuss the specifics of the project and will **conduct the Strategic Environmental Assessment first.**