Portuguese input to the European Strategy for Particle Physics Update 2025

0%

I. Collider Projects: Strategy

1 **Do you agree or disagree with the following statements?**

	Strongly agree	Rather agree	Neither agree nor disagree	Rather dis-agree	Strongly disagree	No answer
In my opinion, it is important to have a future 'flagship' collider.	○	○	○	○	○	●
In my opinion, it is important to have a future 'flagship' collider at CERN.	○	○	○	○	○	●
In my opinion, it is important to have a future 'flagship' collider at CERN ensuring the immediate HL-LHC continuity.	○	○	○	○	○	●

2 **Which of the following criteria are important to you regarding the next future collider and its realization?**

The next collider facility should:

- Only numbers may be entered in these fields.
- The sum must equal 90.
- Each answer must be between 0 and 90

Allow stable support for smaller projects	
Drive technology R&D and innovation	
Have a well-defined longterm upgrade path	
Maximise social/public acceptance (eg. regarding cost and land use)	
Be built at a specific location	
Minimise the environmental impact (sustainability)	
Minimise the time to first collisions	
Be open to world-wide collaboration	
Have an ambitious baseline physics programme (without upgrades)	
Remaining:	90
Total:	0

Please distribute all **90 points among the 9 listed criteria** according to your personal priorities. Criteria that feel unimportant to you should be left with 0 points. (If you have an opinion for a given criterion that depends on the details of that criterion, it is perhaps not unimportant to you).

Portuguese input to the European Strategy for Particle Physics Update 2025

16%

I. Collider Projects: CERN Priorities

The ESG's remit explicitly states that ***"The Strategy update should include the preferred option for the next collider at CERN and prioritised alternative options to be pursued if the chosen preferred plan turns out not to be feasible or competitive"***.

It is imperative that the **European HEP community should provide explicit feedback on** both **the preferred and alternative options** for this **"next collider at CERN"**, which will be the Laboratory's next flagship project, **and an explanation of any specific prioritisation**.

3 **Which is your preferred next major/flagship collider project for CERN?**

Choose one of the following answers
If you choose 'Other:' please also specify your choice in the accompanying text field.

- ○ Hadron collider without passing through e+e- collider (eg. FCC-hh)
- ○ A linear e+e- collider (e.g. CLIC)
- ○ FCC-ee followed by FCC-hh @100 TeV
- ○ A muon collider
- ○ Other:
- ◉ No answer

4 **What are the most important elements to assess your preferred next major/flagship collider project for CERN?**

Double-click or drag-and-drop items in the left list to move them to the right - your highest ranking item should be on the top right, moving through to your lowest ranking item.
Please select at most 7 answers

Your choices

- Physics potential
- Long-term perspective
- Financial and human resources: requirements and effect on other projects
- Timing
- Careers and Training
- Sustainability
- Other

Your ranking

6 **Beyond your preferred next major/flagship collider project for CERN, what other accelerator R&D topics should be pursued in parallel?**

Check all that apply

- ☐ High-field magnets
- ☐ RF technology
- ☐ Alternative accelerators/colliders
- ☐ Other:

Portuguese input to the European Strategy for Particle Physics Update 2025

33%

I. Collider Projects: CERN Alternatives

The ESG's remit explicitly states that ***"The Strategy update should include the preferred option for the next collider at CERN and prioritised alternative options to be pursued if the chosen preferred plan turns out not to be feasible or competitive"***.

It is imperative that the **European HEP community should provide explicit feedback on** both **the preferred and alternative options** for this **"next collider at CERN"**, which will be the Laboratory's next flagship project, **and an explanation of any specific prioritisation**.

7 **If the project of Circular Electron-Positron Collider (CEPC) is approved in China and could deliver first collisions in 2035-2040, up to 10 years earlier than other projects, what should be the next flagship project in Europe?**

Choose one of the following answers
If you choose 'Other:' please also specify your choice in the accompanying text field.

- ○ FCC-ee followed by FCC-hh @100 TeV
- ○ Hadron collider without passing through e+e- collider (eg. FCC-hh)
- ○ A muon collider
- ○ A linear e+e- collider (e.g. CLIC)
- ○ Other:
- ◉ No answer

8 **If the project of the International Linear Collider (ILC) is approved in Japan and could deliver first collisions in a timely manner, what should be the next flagship project in Europe?**

Choose one of the following answers
If you choose 'Other:' please also specify your choice in the accompanying text field.

- ○ FCC-ee followed by FCC-hh @100 TeV
- ○ Hadron collider without passing through e+e- collider (eg. FCC-hh)
- ○ A muon collider
- ○ A linear e+e- collider (e.g. CLIC)
- ○ Other:
- ◉ No answer

9 **In your opinion, what should be the prioritised list of alternative options if your preferred next major/flagship collider project for CERN is not feasible (due to cost, timing, international developments, or for other reasons)?**

Double-click or drag-and-drop items in the left list to move them to the right - your highest ranking item should be on the top right, moving through to your lowest ranking item.
Please select at most 5 answers

Your choices	Your ranking
A linear e+e- collider (e.g. CLIC)	
Hadron Collider (eg. FCC-hh)	
A circular e+e- collider (e.g. FCC-ee)	
A Muon collider	
Other	

11 **What are the most important elements in the response to the previous question?**

Double-click or drag-and-drop items in the left list to move them to the right - your highest ranking item should be on the top right, moving through to your lowest ranking item.
Please select at most 7 answers

Your choices	Your ranking
Physics potential	
Long-term perspective	
Financial and human resources: requirements and effect on other projects	
Timing	
Careers and Training	
Sustainability	
Other	

II. Beyond-Collider Projects: Strategy

The remit given to the ESG also specifies that **"The Strategy update should also indicate areas of priority for exploration complementary to colliders and for other experiments to be considered at CERN and at other laboratories in Europe, as well as for participation in projects outside Europe."** It would thus be most useful if the national inputs explicitly included the preferred prioritisation for non-collider projects.

13 **Do you agree or disagree with the following statements?**

	Strongly agree	Rather agree	Neither agree nor disagree	Rather disagree	Strongly disagree	No answer
In my opinion, it is important to have complementary collider projects in Europe.	○	○	○	○	○	●
In my opinion, it is important to have complementary collider projects at CERN.	○	○	○	○	○	●
In my opinion, it is important to participate in complementary collider projects outside Europe.	○	○	○	○	○	●

14 **What other areas of physics should be pursued, and with what relative priority?**

Double-click or drag-and-drop items in the left list to move them to the right - your highest ranking item should be on the top right, moving through to your lowest ranking item.
Please select at most 8 answers

Your choices

- Nuclear and Hadron Physics
- Searches for Feebly Interacting/Long-Lived Particles
- Direct Dark Matter detection
- Applications to Medical Physics
- Flavour physics
- Neutrino Physics
- Other
- Astroparticle Physics

Your ranking

16 **What are the most important elements in the response to the previous question?**

Double-click or drag-and-drop items in the left list to move them to the right - your highest ranking item should be on the top right, moving through to your lowest ranking item.
Please select at most 7 answers

Your choices

- Physics potential
- Long-term perspective
- Financial and human resources: requirements and effect on other projects
- Timing
- Careers and Training
- Sustainability
- Other

Your ranking

II. Beyond-Collider Projects: CERN Participation

The remit given to the ESG also specifies that "The Strategy update should also indicate areas of priority for exploration complementary to colliders and **for other experiments to be considered at CERN** and at other laboratories in Europe, as well as for participation in projects outside Europe." It would thus be most useful if the national inputs explicitly included the preferred prioritisation for non-collider projects.

18 **In case CERN has a collider project after the HL-LHC (within 20-years), to what extent should CERN participate in Nuclear physics, Astroparticle physics or other areas of science, while keeping in mind and adhering to the CERN Convention?**

Please use the current level and form of activity as the baseline for comparisons.

	Definitely increase	Rather increase	Maintain	Rather decrease	Definitely decrease	No answer
Beyond-collider physics generally	○	○	○	○	○	●
Applications to Medical Physics	○	○	○	○	○	●
Searches for Feebly Interacting/Long-Lived Particles	○	○	○	○	○	●
Accelerator R&D beyond next-generation colliders	○	○	○	○	○	●
Nuclear and Hadron Physics	○	○	○	○	○	●
Neutrino Physics	○	○	○	○	○	●
Astroparticle Physics	○	○	○	○	○	●
Flavour Physics	○	○	○	○	○	●
Direct Dark Matter detection	○	○	○	○	○	●

19 **In case CERN does not have a collider project after the HL-LHC (within 20-years), to what extent should CERN participate in Nuclear physics, Astroparticle physics or other areas of science, while keeping in mind and adhering to the CERN Convention?**

Please use the current level and form of activity as the baseline for comparisons.

	Definitely increase	Rather increase	Maintain	Rather decrease	Definitely decrease	No answer
Direct Dark Matter detection	○	○	○	○	○	●
Nuclear and Hadron Physics	○	○	○	○	○	●
Searches for Feebly Interacting/Long-Lived Particles	○	○	○	○	○	●
Astroparticle Physics	○	○	○	○	○	●
Applications to Medical Physics	○	○	○	○	○	●
Beyond-collider physics generally	○	○	○	○	○	●
Flavour Physics	○	○	○	○	○	●
Neutrino Physics	○	○	○	○	○	●
Accelerator R&D beyond next-generation colliders	○	○	○	○	○	●

Portuguese input to the European Strategy for Particle Physics Update 2025

83%

Other inputs

20 Please specify any other relevant aspects to be considered in the Europen Strategy for Particle Physics Upgrade.

Maximum 1000 characters.