Environmental Applications: Key Areas for CERN

- **RENEWABLE AND LOW-CARBON ENERGY**
  - Production
  - Transformation
  - Distribution
  - Storage

- **CLEAN TRANSPORTATION AND FUTURE MOBILITY**
  - Aviation
  - Shipping
  - Rail
  - Automotive

- **CERN KNOWHOW**
  - Superconductivity
  - High Field Magnets
  - High Vacuum
  - Cryogenics
  - Materials
  - Artificial Intelligence
  - Advanced Sensors
  - Rad-Tol Systems
  - Thermal Control
  - Radioprotection

- **SUSTAINABILITY AND GREEN SCIENCE**
  - Power Management
  - Heat Management
  - Industrial Processes

- **CLIMATE CHANGE AND POLLUTION CONTROL**
  - Monitoring
  - Modelling
  - Mitigation
Bundling efforts to increase efficiency and visibility

Compact Fusion Energy Systems
- Technologies for Hydrogen storage and handling
- Protection systems for SC based energy generators
- Energy saving techniques based on digital twins
- Platforms for consumption and emissions monitoring and optimization

Accelarator Driven Nuclear Systems
- SC technologies for on-board and long distance energy distribution
- Technologies for fuel cells, batteries and PV efficiency improvement
- Efficient, low GHG thermal control systems
- Detectors and instruments for environmental monitoring

Fast, low-power, advanced ML/DL based computing
- Fast, autonomous long distance transportation
- Accelerator technologies for on-board and industrial pollution reduction
- AI platforms for environmental modelling

Efficient, low GHG thermal control systems
- Protection systems for SC based energy generators
- Energy saving techniques based on digital twins
- Platforms for consumption and emissions monitoring and optimization

27 June 2022
Enrico Chesta | CERN Innovation Programme on Environmental Applications
CIPEA submitted proposals

CERN Innovation Programme on Environmental Applications
CIPEA phases

**IDEATION**
March-May 2022
Identify new ideas (done)

**PITCHING**
June 2022
Discuss and celebrate selected projects (today)

**IMPLEMENTATION**
Starts in July 2022
Define support strategies
• Support strategies will be defined for every CIPEA project
• Options include:
  • Use of internal instruments like the KT Fund or the Impact Fund
  • Establishment of bilateral partnerships with external organisations
  • Coordination or participation to EU or national projects
  • Other possible internal funding options tbd
• A KT Fund session with focus on environmental projects will be organised on 22 September (deadline to apply: 8 August)
• KT team will liaise with the technical departments representatives and reach every CIPEA project team to discuss next steps on a case by case basis
Conclusions

- The amount and variety of ideas submitted demonstrates that there is a broad and strong interest from experts across CERN to contribute.

- The CIPEA team will, together with the experts, determine the best way forward for each of the 15 approved ideas in the months to come.

- IPT/KT will define and streamline a coherent strategy for CERN Environmental Applications to maximize impact on society and the return for the Organization in terms of image and direct benefits.

Let’s create real tangible impact together and show that CERN can help to tackle climate and environmental issues on a global scale!
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