



Working Group 21  
Physics for Climate Change Action  
and Sustainable Development



THE EARTH-HUMANITY  
COALITION  
Science for Equitable Well-being on a Healthy Planet



IDSSD

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To:

IUPAP Member Liaisons

Chairs and Secretaries of Commissions, Affiliated Commissions, and Working Groups

Members of WG21

1 December 2024

Dear Member Liaison, dear Chair,

**Working Group 21, Physics for Climate Change Action and Sustainable Development, aims to hold a major international conference in 2027. We invite you to submit a proposal to host this conference.**

The aim of the Working Group 21 and of the conference is to provide a forum for the global physics community to engage more closely with climate change action and sustainable development.

We call for expressions of interest, followed by proposals, to host this significant international conference, which should comply with the guidelines attached. It is important that this conference should attract as many physicists from around the world as possible, including from the developing world, so that they can meet, exchange information, data and ideas, and fulfil the task of identifying, promoting, engaging with, and discussing the unique role that physics is and should be playing in the challenges that face our planet now and in the coming decades.

This will be one of IUPAP's major events in the International Decade of Science for Sustainable Development declared by the United Nations. It will also contribute through the Earth-Humanity Coalition <https://earth-humanity.org>.

**The Conference:** Please read the attached conference guidelines and scope carefully. It addresses the aim, funding, and unique nature of this conference. Enquiries can be directed to the contact below.

The call for General Assembly (GA) Proposals: the Executive Committee has called for expressions of interest in hosting both the in-person GA and the ICP, International Conference of Physics, in 2027. The GA/ICP call email is attached. It may be possible to combine these events, offering the climate change and sustainability science conference as the ICP.

### The Process:

1. The call for expressions of interest, and proposals from short-listed applicants, is organised by IUPAP Working Group 21.
2. The IUPAP conference guidelines are referred to in the call.
3. WG21 will communicate closely with the IUPAP President and Executive in cases where the proposal **combines** the climate change and sustainability conference as the ICP with the GA.  
In these cases, please follow the instructions in the **GA/ICP call email AND ALSO** send the Expression of Interest to the contact below, i.e.  
The Chair and Secretary of Working Group 21,  
c/o the IUPAP Secretariat, [secretariat@iupap.org](mailto:secretariat@iupap.org).  
Please state very clearly in a covering letter that you wish to bid for **both**.
4. If you wish to propose for the climate change and sustainability conference **only**, please send the Expression of Interest to the contact below, i.e.  
The Chair and Secretary of Working Group 21,  
c/o the IUPAP Secretariat, [secretariat@iupap.org](mailto:secretariat@iupap.org).  
Please state very clearly in a covering letter that you wish to bid for the climate change and sustainability conference **only**.
5. We may call for an oral presentation from short-listed applicants.
6. In cases where the GA/ICP is involved, the decision process in the GA/ICP call will be followed, with the involvement of WG21.
7. In cases where the GA/ICP is not involved, the successful host will be decided by WG21.

### Important dates:

1. The expression of interest should reach the IUPAP Secretariat by the end of Wednesday, **January 10, 2025**. If you need more time, please email us to that effect as early as possible.
2. Timeline:
  - a. The Working Group will short-list expressions of interest, communicate their decisions, and call for proposals by **January 31, 2025**.
  - b. Full proposals should be submitted by **March 31, 2025**. The Working Group may liaise with the proposers to update information in the proposal after that date.
  - c. A decision will be taken and communicated by **May-June, 2025**.
3. The conference itself should take place between October 2026 and December 2027.
4. Please note that proposed dates should be checked and agreed with WG21 and IUPAP, since a number of other IUPAP conferences and meetings take place during the year.

### The contact:

please direct enquiries, expression of interest, and the final proposal document to

The Chair and Secretary of Working Group 21,  
c/o the IUPAP Secretariat, [secretariat@iupap.org](mailto:secretariat@iupap.org).

We look forward to hearing from you.

Yours sincerely

A handwritten signature in black ink, appearing to read "J. Gledhill". The signature is fluid and cursive, with the first letter "J" being particularly large and stylized.

Prof. Irvy (Igle) Gledhill  
Secretary, WG21

pp. Prof. Nithaya Chetty  
Chair, WG21

**cc**

Silvina Ponce-Dawson, IUPAP President (2025-2028)

Michel Spiro, IUPAP President (2020-2024)

Jens Vigen, IUPAP Secretary-General

Gabriella Marra, IUPAP Secretariat

### **Attachments**

1 WG21 Conference 2027 outline v11

2 IUPAP GA and ICP call email

3 WG21 conference scope rough draft v03

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## Conference 2027 outline: climate change action and sustainable development

- A possible name for the conference would be: *Physics for regenerative development: equitable wellbeing on a healthy, lively planet*, or an equivalent.

### Aims of the conference

- Provide a forum for the global physics community to engage with climate change action and sustainable development.

### 1. Process

- a. A call for expressions of interest is organised by Working Group 21.
- b. The conference may be offered to IUPAP Executive as a possible International Conference on Physics in conjunction with the call for an International Physics Conference in conjunction with the General Assembly 2027. *In this case, the IUPAP Executive Committee would be involved in decisions.*
- c. Short-listed applicants will be asked for a more detailed bid.
- d. The bid must describe the expected conference structure in detail. There should be no surprises for the LOC in drawing up the bid.
- e. The IUPAP conference guidelines will be found at <https://iupap.org/conferences/conference-policies/>. This is a Working Group conference and does not need to abide by the process for Commission conferences, but does need to meet the requirements of the sections on Travel grants, Participation of Women in IUPAP-supported Conferences, criteria by which applications are assessed.
- f. WG21 may call for an oral presentation from short-listed applicants.
- g. The successful host will be decided by WG21 (and possibly the IUPAP Executive Committee (EC)).
- h. Organising and scientific committees are formed as below.

### 2. Committees

- a. An LOC is formed.
  - i. When the bid has been awarded to a country or territory, it is likely that a Bid Committee has been formed, which becomes the kernel of the LOC.
  - ii. The LOC chooses opening speakers (with the inclusion of the IUPAP President and the WG21 chair, and local dignitaries) and one plenary.
  - iii. The LOC is responsible for local fundraising.
- b. The International Organising Committee is WG21, possibly with members of the EC.
  - i. The IOC chooses the balance of the plenaries. It may work with the LOC, the Commissions, and the other IUPAP Working Groups if it chooses to call for nominations in the spirit of Inter-Commission collaboration.
  - ii. The IOC is responsible for global fundraising.
  - iii. The IOC may co-opt assistants.

- iv. The IOC should approve the appointment of a professional conference organising company if one is to be used.
- c. A Scientific Committee is formed.
  - i. Working Group 21 members, and possibly EC members, form the core of the Scientific Committee and may invite other members.
  - ii. The Scientific Committee is responsible for acceptance of abstracts and papers.
  - iii. The scientific scope will be agreed with the Scientific Committee.

### 3. Voice

This conference will be open to registration from any participant. (This is in contrast to some WG conferences, which have been by invitation.)

It is very easy for LMIC<sup>1</sup> voices to be dominated by high-income countries. A discussion is essential on how to make sure the voices of developing countries, island states, indigenous people, and the global South can be well heard.

WG21 is developing a system of “Climate contacts” across the world. Part of their function is specifically to be the main contact in an IUPAP member territory, or a country, for this conference.

### 4. General principles

WG21-sponsored meetings should find a viable path that takes the following into account:

- minimise carbon footprint; set an example for future conferences; take advantage of advances in technology for virtual presence,
- encourage meeting and the formation of partnerships and collaborations,
- encourage inclusivity; enhance the participation of developing countries, island states, and the global South.

### 5. Structure

1. The scope will match the WG21 call document.
2. The conference will be hybrid.
  - a. An in-person component offers the opportunity for collaborations and relationships to be built across the community. The first conference of this kind is important in forging links and exchanging experiences. A disadvantage is that it is less inclusive in terms of who can come.
  - b. A virtual component offers the opportunity for people to attend who do not have funding, cannot get a visa, are physically disabled, or who cannot travel because of family or other reasons. It is also a greener conference.
  - c. The advantages of completely virtual conferences were noted: a green conference, setting an example. Future conferences will consider the option.
  - d. There is funding to be raised for each aspect: travel in person, or organisation on line (“the future of conferencing”).
3. Hybrid conference
  - a. A hybrid conference requires proper technology and reliable internet throughout the conference. A good model is that in-person delegates bring a laptop and connect in the meeting rooms, wearing earphones.

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<sup>1</sup> Low- and Lower Middle Income Countries, World Bank

- b. Time zones are a major problem. The best solution so far is that not all delegates attend all sessions, but recordings of all sessions are made available.
  - c. The Future of Conferences group in Australia carries out ongoing development in this area (a contact can be arranged).
  - d. Translation might be considered for some sessions, depending on cost. French and Spanish are likely to be top languages. Informal translation by another delegate should be arranged well ahead of the conference by a speaker who needs translation. Closed Captioning is sometimes requested by those who are hard of hearing.
  - e. It is vital for delegates to be able to meet and chat outside sessions. Gathertown provides a good place for online delegates to meet and set up one-on-one, or small party, chats.
  - f. The Future of Meetings resources may be considered<sup>2</sup>.
4. Satellite conferences
- a. The LOC and IOC can discuss together the possibility of setting up “zone inclusive” satellite conferences at a few locations to which interested people can travel in their region. A small grant may be made for the support of such a satellite, depending on budget. Factors to consider are time zones and stable internet connectivity.
  - b. The IOC must make the expectations for satellite conferences clear.
  - c. Expenditure must be controlled; over-expenditure must be made up locally.
5. The conference will run for approximately 2 ½ days
- a. Day 0: reception in the evening
  - b. Day 1: official opening, sessions, evening session if desired
  - c. Day 2: sessions, afternoon tour if possible, evening session if desired
  - d. Day 3: short sessions and closing before midday.
6. Plenaries: 5-6 top speakers, ample time for questions.
7. Special sessions:
- a. An open call will be issued for Special Sessions. Climate contacts are included in the call. The sessions may function as a workshop or as a session for presentation of scientific papers.
  - b. The proposers will be responsible for organising the sessions and for their success.
  - c. The Scientific Committee will evaluate proposals and select the Special Sessions.
  - d. The infrastructure is supported by WG21.
  - e. Special Session papers, and summaries if required, will be included in the Proceedings.
8. Contacts (“Climate contacts”) will be set up by WG21 both in member territories and territories which are not members. The function of the Climate Contact is to communicate with the Working Group on one hand and with interested parties in their territory/Commission/Working Group on the other. A Climate Contact may choose to be responsible for convening a bid committee and submitting a conference Bid. They may choose to organise action through their local physical society. There is one contact for each:
- a. Commission and affiliated Commission, Working Group and Affiliated Working Group
  - b. Member territory

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<sup>2</sup> <https://www.nature.com/articles/s41550-021-01325-z>  
<https://youtu.be/TqCdsgTD1RA>  
<https://youtu.be/LuN3A15mUw>  
<https://www.nature.com/articles/s41550-022-01806-9>

- c. Any other country or territory wishing to participate in the conference, one per territory
  - d. The costs of participation of country contacts from LMIC<sup>3</sup>s, and possibly some UMIC<sup>4</sup>s, will be covered on acceptance of an application for support by a grant if there are sufficient funds (Travel Grant or Technology Grants, see below)
  - e. The WG21 members form the selection committee.
  - f. There is one contact in order to organise communications through the Working Group. These are otherwise overwhelming.
9. Papers
- a. Scientific abstracts will be submitted for review and acceptance. They may be organised in parallel or Special sessions, as oral or poster contributions, or posters with three-minute pitches.
  - b. Plenaries are asked to write a short summary paper. A member of the LOC may be assigned to work with the speaker to produce the paper.
  - c. Progress papers are written by country contacts and outline the progress of a country or territory in terms of climate change action and sustainable development.
  - d. Special session papers are written by the session participants and organisers, and speakers and facilitators may be included as authors.
  - e. All progress papers are posters, with a three-minute poster pitch. The poster pitch sessions need careful organisation and good diplomacy: the best practice so far is to ask for 3 slides, and change them automatically.
10. Proceedings
- a. Proceedings are essential for the community to move forward; they form a record of the state of the field and are an important gateway.
  - b. Proceedings also provide an opportunity for young delegates and those from developing countries to produce a paper for the proceedings.
  - c. Only those papers for which abstracts have been accepted, and which have been presented at the conference, are eligible for review for the proceedings.
  - d. The work required to produce the proceedings is large – comparable to the work of organising the conference, especially review and language editing. It is worth it in terms of IUPAP's aims and the WG21 mandate.
  - e. WG21 is responsible for finding funding for the proceedings, finding editors and publishers of the proceedings, and overseeing the process.
11. Output
- a. Proceedings
  - b. Recommendations to be considered by (1) IUPAP WG21, and (2) country contacts and delegates.
  - c. WG21 may put forward a General Assembly resolution based on the recommendations.
  - d. Conference reports are submitted by the LOC to WG21 and IUPAP.
  - e. Media releases; interviews during the conference.
  - f. Video recordings.

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<sup>3</sup> Low- and Lower Middle Income Countries, World Bank

<sup>4</sup> Upper Middle Income Countries

## 12. Sponsors

- a. Sponsor acknowledgement is essential. Sponsors may require time to speak or space in which to exhibit, which will be organised by the LOC. Sponsor logos appear on banners and in proceedings. Letters of thanks are sent to the sponsors by the LOC.

## 13. Roles

- a. Early career physicists should be encouraged to be co-chairs of sessions.
- b. Local physics students should be encouraged to be helpers at the conference.
- c. Students and early career participants will need an organised space which they own and in which they can hold their own discussions.

## 14. Visas and timing

- a. Countries with easier visa regulations have an advantage, and electronic visas are very helpful.
- b. The call has to be issued unusually early for in-person or hybrid conferences, since for LMIC countries the sequence of events is: submit abstract, submit travel/technology grant application, abstract acceptance, grant acceptance, apply for visa.

## 15. Social programme and discussion time

- a. These are vital, and will be programmed in. Events in the virtual space can be planned in with Gathertown or a similar tool.

## 6. Funding

1. Given the extent of Travel and Technology Grants, and proceedings, it is essential to find sponsors. IUPAP will provide some funding which can assist in leveraging sponsorship.
2. Because developing countries (LMICs) are involved, travel or technology grants are needed.
  - a. Early fund raising is essential, and governs decisions on what grants can be afforded.
  - b. Funding for editing and production of proceedings is essential. Language and scientific writing editing may be needed.
  - c. Funding for the virtual part of the conference is needed, including videos that can be viewed by those in widely separated time zones.
  - d. In-person or in-person delegates at a hybrid meeting, Travel grants: for LMIC climate contacts, all costs should be covered except visa and ground travel in the home country. Costs include registration, air, ground travel at the destination, all meals at the conference. A call for applications is issued. If funds permit, other delegates applying in the same call may be funded. The Working Group is the selection committee. Selection depends on the budget available.
  - e. In-person or hybrid: all costs of plenary speakers are covered for economy class travel, with the exception of visa costs.
  - f. Virtual or hybrid: technology grants should be offered cover the cost of a router, or internet connection and data, or a big screen for use in a satellite conference at a local destination where people can gather and participate in the conference together.
  - g. Virtual and hybrid conferences, properly managed, can have significant costs.
  - h. Satellite conferences must have best possible interaction planned in from the beginning; an example is to make it possible for questions to be asked and answered live. A small grant for a meal may be made.
3. Sponsorship has to be organised unusually early, in view of decisions on travel/technology grants.



#### 4. Budgeting, Proceeds and Debts

- a. The LOC provides an initial budget to the IOC for approval.
- b. The budget could be based on 250±50 participants.
- c. The LOC is responsible for monitoring expenditure and accounting and regularly updating the IOC.
- d. Any changes proposed by the LOC or IOC must be discussed with and agreed to by the IOC or LOC respectively.
- e. It is essential to have an extremely clear written agreement of who keeps any surplus. It is suggested that the LOC keeps any surplus of LOC fundraising and WG21 keeps IOC fundraising surplus.
- f. The potential for a conference debt must be very carefully managed.

#### 5. IUPAP Conference Policies

- a. Conferences sponsored by IUPAP are expected to stick to the relevant policies, which can be found at <https://iupap.org/conferences/conference-policies/> . Relevant policies will be found under 'Criteria By Which Applications Are Assessed'.
- b. A WG21-sponsored conference does not fall under the Commission conference types.
- c. A report on the conference is expected within 4 months of the conference. In addition, the form at <https://iupap.org/conferences/conference-report-form/> , which gathers data used by IUPAP in evaluating conferences, should be completed within two months.

#### 7. Dates

1. The conference itself should take place between October 2026 and December 2027.
2. Please note that proposed dates should be checked and agreed with WG21 and IUPAP, since a number of other IUPAP conferences and meetings take place during the year.

#### 8. Contact

The Secretary of Working Group 21,  
c/o the IUPAP Secretariat, [secretariat@iupap.org](mailto:secretariat@iupap.org).

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## Call for expressions of interest to host the IUPAP GA and Conference in 2027 (expressions due on January 10, 2025)

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**From** IUPAP Secretariat <secretariat@iupap.org>

**Date** Thu 2024-11-14 12:30

**To** IUPAP-Territorial-Members@cern.ch <IUPAP-Territorial-Members@cern.ch>

**Cc** Alain Joye <alain.joye@univ-grenoble-alpes.fr>; Ani Aprahamian <aapraham@nd.edu>; Florencia Canelli <florencia.canelli@cern.ch>; Kai Liu <kai.liu@georgetown.edu>; kjjin@aphy.iphy.ac.cn <kjjin@aphy.iphy.ac.cn>; Lucilla De Arcangelis <Lucilla.DEARCANGELIS@unicampania.it>; Marc Himbert <marc.himbert@cnam.fr>; sasai@nuap.nagoya-u.ac.jp <sasai@nuap.nagoya-u.ac.jp>; Mei-Yin Chou <mychou6@gate.sinica.edu.tw>; nagaosa@riken.jp <nagaosa@riken.jp>; Pietro Ubertini <pietro.ubertini@inaf.it>; Roberto Pini <r.pini@ifac.cnr.it>; Rosario Gonzalez-Ferez <rogonzal@ugr.es>; Sylvie JACQUEMOT <sylvie.jacquemot@polytechnique.edu>; Tae Won Noh <twnoh@snu.ac.kr>; <kajita@icrr.u-tokyo.ac.jp> <kajita@icrr.u-tokyo.ac.jp>; Tetyana Antimirova <antimiro@ryerson.ca>; 김영동 (물리학과) <ydkim@khu.ac.kr>; Florencia Canelli <canelli@physik.uzh.ch>; kl881@georgetown.edu <kl881@georgetown.edu>

Dear Liaison Chairs,

For the last few years we have been discussing the possibility of having a major physics conference across different disciplines to be organized in conjunction with the next in-person IUPAP General Assembly (GA) (as is being done by some other unions such as IUPAC, IMU etc.). We have decided to explore this possibility starting with the next in-person GA to be held in 2027 (most likely in October). To this end:

### **IUPAP is seeking Expressions of Interest for hosting the General Assembly and restarting the IUPAP International Conference on Physics series in 2027.**

If your Liaison Committee would offer to host the IUPAP General Assembly in 2027 along with the next International Conference on Physics, please indicate your interest by sending an email with subject "IUPAP GA 2027 and ICP" to [secretariat@iupap.org](mailto:secretariat@iupap.org). If you are willing to host only the GA (and the associated Executive Council and Commission Chairs meeting), then also please send an email accordingly. **The deadline for Expressions of Interest is 10 January 2025. If you need more time, then please inform us by sending an email to that effect.**

After evaluating the Expression of Interests received, the successful bidder(s) would be requested to submit a comprehensive proposal. Documents detailing comprehensive proposals will be presented to the IUPAP Executive Council for initial assessment in March 2025, after which the successful bidder(s) may be requested to update their proposal to include missing information. The due date for the final update will be the end of April 2025.

The selection of the successful proposal for 2027 will be made during a special Executive Council meeting to be held in May-June 2025. Successful bidders will have an opportunity to present their proposals with a short presentation, after which the Executive Council will vote for the final selection. The successful bid will be announced directly after the vote at the Council meeting.

To help you to prepare your Expression of Interest, please see the accompanying file (available here: [https://iupap.org/wp-content/uploads/2024/11/2027\\_IUPAP\\_ICP\\_Guidelines.pdf](https://iupap.org/wp-content/uploads/2024/11/2027_IUPAP_ICP_Guidelines.pdf)).

Thank you and best regards,  
Silvina Ponce Dawson and Michel Spiro  
IUPAP Presidency



**Purpose of this document:** rough draft, WG21 conference scope

**Related documents:** WG21 Conference 2027 outline v11.docx

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## **Introduction**

Our planet is already experiencing significant effects of climate change. Physics is deeply embedded across climate science and sustainability science.

The global challenges for humanity through energy security, food security, water security, and sustainability of the environment, and if not addressed will impact negatively on poverty, inequality, mass migration, and the human condition as we know it. Overcoming these problems requires scientific researchers, politicians and decision makers to talk and to listen to each other, and needs scientists to raise public awareness. We live in an interconnected world where complex problems can only be solved in interdisciplinary collaborations and by addressing these problems from very different angles.

Some contributions are made by new physics, as illustrated by the 2021 Nobel Prize awards “for ground breaking contributions to our understanding of complex physical systems”. Physics also enters a transdisciplinary endeavour across all sciences, engineering, human and social sciences, law, health sciences, and basic sciences. The physics community has an enormous potential to play a leading role in such an enterprise. Its diversity, from biophysics, through condensed matter, nuclear, plasma, astrophysics and theoretical physics as examples, is based fundamentally in systems thinking, and in evidence-based reasoning of multiple kinds.

## **Possible conference name, for consideration**

*Physics for regenerative development: equitable wellbeing on a healthy, lively planet, or an equivalent.*

## **The aims of this conference are**

- To provide a forum for physicists addressing global climate change
- To provide a view of the landscape of physics in the challenging world of climate and sustainability science
- To seek gaps where physics can provide new insight
- To open opportunities for physicists to engage with global challenges.

A title that could be considered: Physics for a regenerative society and sustainable development.

## **This conference addresses these broad themes.**

1. Physics in climate science and planetary science
2. Physics in sustainability science

3. Physics in rebuilding after devastation; conditions in developing countries and LMICs<sup>1</sup>
4. Physics in science communication, policy and diplomacy
5. Education in climate and sustainability science for physicists
6. Gaps and opportunities for physics

The themes are certainly overlapping. Every effort will be made to accommodate papers in an appropriate environment.

### **What can physics do?**

A few of the physics topics are given below.

#### Theme 1 Physics in climate science

Earth systems models, climate and weather modelling; the problems of turbulence, ice dynamics, ocean-atmosphere interaction; validation

Thunderstorm physics, cyclones

Oceanography, sea level rise; polar science

Complex systems, the dynamics of biomes, modelling biodiversity; novel modelling systems, information theory, Machine Learning and AI

Non-linear dynamics, chaos, complex systems

The new science of attribution

Earth observation and planetary science; data collection in places difficult to access; collaboration and citizen science involvement

#### Theme 2 Physics in sustainability science

The green economy and the circular economy; smart solutions; daylighting, natural systems; perspectives of industry and corporations

Renewable energy; lifecycle studies; maintenance and inspection; sustainability in power generation systems, stability and efficiency of transmission networks; energy storage systems

Fusion energy, superconductivity

Nuclear energy alternatives; waste management; advantages and disadvantages

Socio-economic systems, vulnerability studies; biological system models, validation; feedback loops and the polycrisis

Early warning systems and disaster management; air space near vulnerable airports; predicted flood damage

Sustainability within physics research: sustainable innovations, the sustainable lab, data centres, the future of meetings

Urban and Regional Planning for sustainable urban development.

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<sup>1</sup> Low- and Lower-Middle Income Countries

### Theme 3 Physics in rebuilding after devastation; Developing countries and LMICs

Rebuilding after disasters of any kind, climate-related or conflict-related

Low greenhouse gas emission and high vulnerability; innovations; low-cost, widespread options;

Bringing together the learning of all themes for harsh new environments

### Theme 4 Physics in science communication, policy and diplomacy

Interaction with communities, theory of change projects; thinking out of the field of physics, and communicating within the world of physics; Open Science and the future of publishing

Science communication, communicating across cultures, media and misinformation

Climate finance, climate justice, insurance and what the insurance sector observes; quantitative finance and stability of financial sectors

Communication across fields: multidisciplinary and transdisciplinary projects

Science diplomacy; critical success factors

Citizen science: integrity and data quality, citizen science project management

### Theme 5 Education in climate and sustainability science for physicists

Undergraduate curricula and high school curricula; short courses for postgraduates and practicing physicists; incorporating examples in curricula and projects; postgraduate projects; collaboration at postgraduate level

Critical thinking, reasoning, and the scientific method at school and in early childhood; hands-on physics

Career advice; are bright students lost to physics departments?; “is this physics?”; collaboration in the university environment

### Theme 6 Gaps and opportunities for physics

Identifying gaps for physics

Career choices and opportunities, early career precarity

Industry, science councils and academia

Development of physics across the globe; global interaction between physicists

The future on the scale of decades: foresight

### **Workshops**

Workshops topics might include:

- Basics of climate science for physicists
- Basics of sustainability science for physicists
- A brainstorming workshop on physics gaps in climate, sustainability, and regenerative science
- Developing countries or LMIC, the climate crisis and sustainability

- Cross-faculty collaboration in the university environment: is it possible?