



Working Group 21  
Physics for Climate Change Action  
and Sustainable Development

## Report to the EC&CC meetings and General Assembly

# Background

➤ The purpose of the WG

is to promote and grow the unique role that physics is,  
and should be,  
playing in climate change action and sustainable development.

➤ approved by the IUPAP Executive Council on 21 September 2022



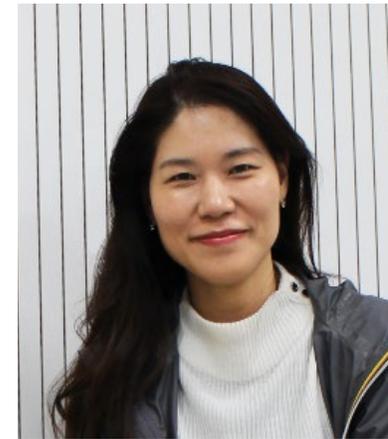
Marcelo Barreiro  
Uruguay



Chair Nithaya  
Chetty South Africa



Secretary Igle  
Gledhill  
South Africa



HyunJung Lee  
Korea



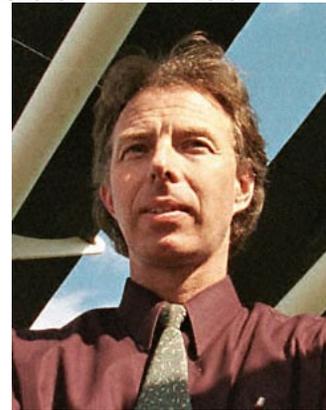
Morgan O'Neill  
Canada



Ram Prasad Regmi  
Nepal



Jon Samseth  
Norway/SCOPE



Jean-Louis  
Scartezzini  
Switzerland



Tomás Sintes, Spain



Gry Tveten, Norway

# Tasks and progress

**1. Identify, promote, engage and discuss the unique role that physics is and should be playing in this area.**

- Position paper in development

**2. Entrench an evidence-based approach to responses to climate change studies and the energy transition process in close collaboration with experts from other disciplines AND**

**3. Establish a strong bridge with the broad international public on these topics.**

- Communication strategy has been approved
- Start with physicists, learn and apply learning to general public
- Communication with university students (task 4): entrench an evidence-based approach in their own work

Climate contacts being developed among IUPAP members and non-members

**4. Suggest and encourage ways of incorporating green economy and sustainability thinking in university curricula and research training.**

- Quiet in 2025
- Liaison with C14

**5. Advise EC on actions to be taken, work to be done, statements to be issued.**

- IDSSD
- Earth-Humanity Coalition

# Task 6: Organize at least one major conference over the next three years

## 2024

- Inter-Commission Symposium
- Physics Research for a Sustainable Planet
- Hainan, China, Oct 2024
- Part I: <https://doi.org/10.5281/zenodo.14292387>  
Part II: <https://doi.org/10.5281/zenodo.14293521>
- Photos: <https://zenodo.org/records/14291952>



**IUPAP**

**IUPAP Inter-Commission Symposium**  
Physics research for a sustainable planet

facing the major challenges that endanger earth as we know it

Afternoons of 12 and 13 October 2024  
Hainan China and virtual

An event co-organised by C19 and WG21  
Co-chairs: Prof. Nithaya Chetty, Prof. Pietro Ubertini  
Organising Committee:  
Prof. Li Lu, Prof. Igle Gledhill, Prof. Xiaoyan Shen

Humankind faces major challenges that endanger our future and civilization as we know it. Global challenges for humanity include sustainable development and global warming, energy, natural resources, pollution, clean water and the uncontrolled development of artificial intelligence. Solving these problems requires scientific researchers, politicians and decision makers to talk and to listen to each other and needs scientists to raise public awareness.

It also requires scientists to learn how to clearly explain their science in a way that can be understood by non-experts. We live in an interconnected world where complex problems can only be solved in interdisciplinary collaborations and addressing these problems from very different angles. Scientists should therefore learn to think out of their own narrow field and interact with other communities. IUPAP has an enormous potential to play a leading role in such an enterprise. Its diversity from biophysics to nuclear and astrophysics covers all major branches of physics. Run by the physics community itself, it is independent and free. Each community might not have much impact. But if all branches get together and speak with one voice, it could make a major difference.

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

**100** IUPAP  
IUPAP Commission C19

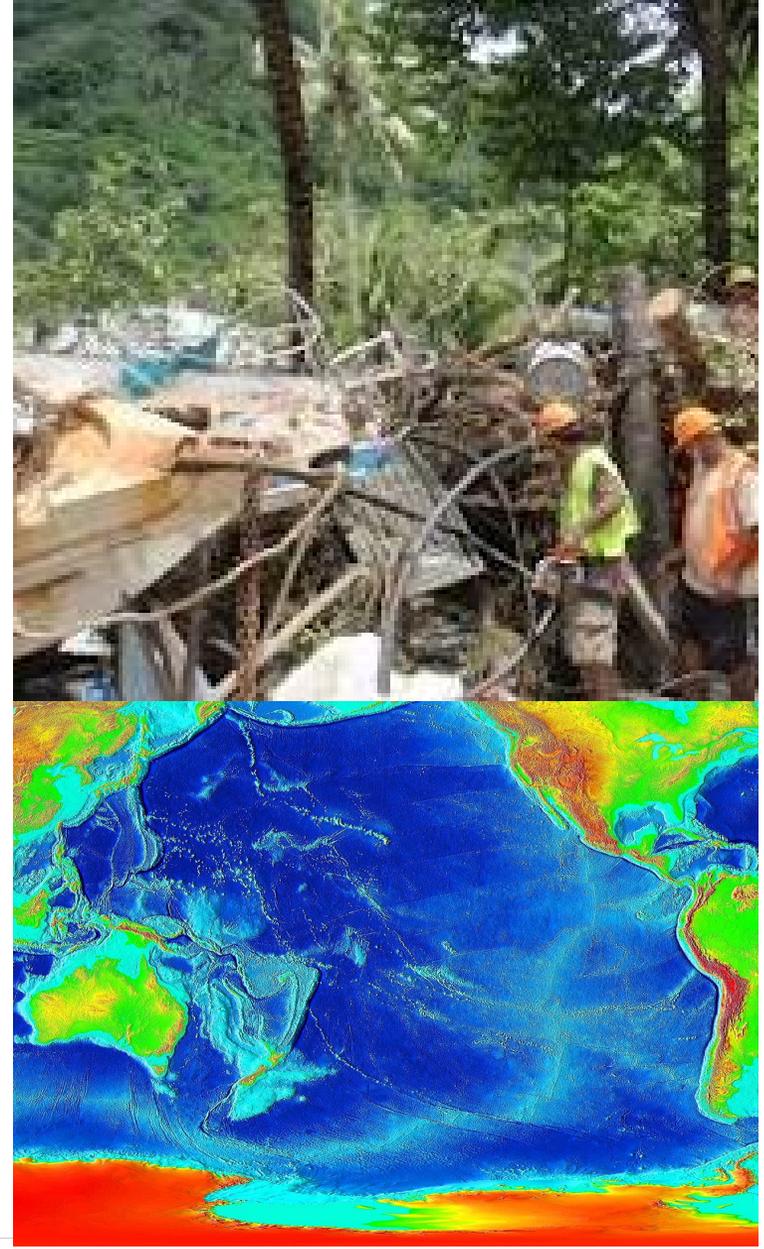
**THE EARTH-HUMANITY COALITION**  
Sciences for Equitable Well-being on a Healthy Planet

**100** YEARS  
1919-2019  
INTERNATIONAL UNION OF  
PURE AND APPLIED PHYSICS

**中国物理学会**  
Chinese Physical Society

# 2025

- IUPAP-UNESCO Pasifika Physics Summit
- Nadi, Fiji, 17-18 Nov 2025
- Themes -
  - Disaster Risk and Recovery, Climate change and Sustainability
- With UNESCO Entrepreneurship and Innovation Bootcamp, undergrad students
  - Physics and Sustainability theme



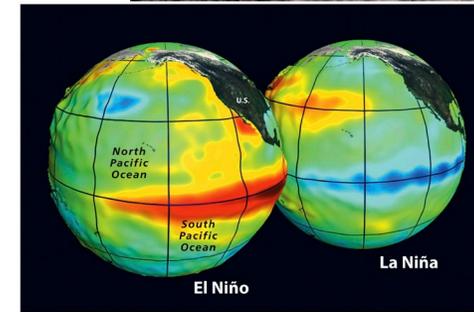
# 2027

- 2027 International Conference on Physics
- Provisional title: Physics for regenerative development: equitable wellbeing on a healthy, lively planet
- Southern Africa 21-23 October 2027
- Call for Bids for WG21 conference issued in conjunction with call for GA as International Conference on Physics ICP
- Won by Southern African Consortium

<https://ifurtado.org/el-nino-southern-oscillation/> [https://en.wikipedia.org/wiki/2025\\_Iberian\\_Peninsula\\_blackout](https://en.wikipedia.org/wiki/2025_Iberian_Peninsula_blackout)

S. Frazer-Baxter, El Niño key driver of drought in highly vulnerable Southern African countries  
Kimutai et al. <https://spiral.imperial.ac.uk/bitstream/10044/1/110770/2/Report2.pdf>

By Luis Badesa, Blackout in Spain and Portugal: What do we know so far?, CC0,  
<https://commons.wikimedia.org/w/index.php?curid=165043734>



Courtesy Gregory W. Shiob, NASA/GSFC/Scientific Visualization Studio/NC Maps



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2024 • 2033  
International Decade of  
Sciences for Sustainable  
Development

# 2027 International Conference on Physics

Provisional title:

“Physics for regenerative development: equitable wellbeing on a healthy, lively planet”



# Tasks and Progress continued

## 7. Engage with the activities that are expected to take place in connection with the IDSSD

In progress

## 8. Liaise with Regional, national Physics Societies, with other Unions in other fields in the spirit of IYBSSD

In progress

➤ **Meetings:** 15 Nov 2024; 25 March 2025; 9 July 2025

➤ **Commission reports**

➤ **Liaisons**