

# International Year of Basic Sciences for Sustainable Development in 2022

M. Spiro

President of IUPAP

Chair of the Steering Committee for the proclamation  
of an International Year of Basic Sciences  
for Sustainable Development in 2022 (IYBSSD 2022)

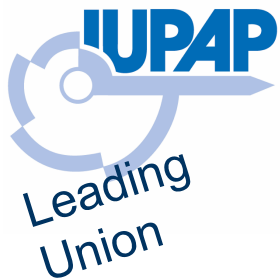
# Basic Sciences under the spotlight (1)

1. Curiosity driven
2. Long term
3. Source of the pool of knowledge which future generations will use for their applications
4. Source of disruptive innovations

# Basic Sciences under the spotlight (2)

5. Serendipity plays a role
6. Often forgotten by policy makers because basic sciences are not driven by short term applications
7. Viewed from the past, Basic Sciences are the Foundations of Sciences
8. Facilitate open multicultural dialogue

# Founding Unions & Partners



# Structure of the Support

- 35 active International Unions and Organizations, are members of the Steering Committee, representing the community, signing an MoU
- 50 science academies and networks (many more are signing thanks to Nicole Moreau and Ahmed Fahmi), members of the International Advisory Committee, representing the « elite », expressing their support
- 28 Nobel laureates and Fields Medalists (largely thanks to Tran Thanh Van but also C. Brett and LS Shashidhara)
- UNESCO, World Science Forum, Club of Rome, Inter Parliamentary Union      See for more details: <https://www.iybssd2022.org/>

# Executive Committee

- Michel Spiro, France, IUPAP, Astroparticle physics, Chair
- Luc Allemand, France, Afriscitek, Secretary General, Science communication, Chair
- Bruce McKellar , Australia, Nuclear Physics, Treasurer
- Lily Rodriguez, Peru, Biology, Vice-Chair
- Prajval Shastri, India, Astrophysics, Vice-Chair
- Marian Asantewah Nkansah, Ghana, Chemistry, Vice-Chair
- Jean Tran Thanh Van, Vietnam, Theorist, Vice-Chair, event in Vietnam with IPU on Science, Ethics and Human Development
- Maurizio Bona, Italy, Switzerland, CERN, Accelerator physics, Vice Chair for the Proclamation at the next UN GA (Honduras and Vietnam)
- Ahmed Fahmi, biochemistry, UNESCO, contact person

# Rationale (1/2)

- Although it is generally recognized that science is useful for society, quite often, **basic** sciences, **curiosity driven**, are not considered as they should deserve, in the discussions concerning the societal, environmental and economic development.
- After the International Year of Physics, the International Year of Chemistry, the International Year of Mathematics, the International Year of Astronomy, of Crystallography, of Light, of the Periodic Table of Elements, it is time to plan **an International Year of Basic Sciences for Sustainable Development**

## Rationale (2/2)

- Basic Sciences, **curiosity driven**, construct the pool of knowledge which future generations will use for their development → sustainability!
- **2022** would be a good time to celebrate **Basic Sciences for Sustainable Development (Centenary of many International Unions, Quantum Century)**
- Fits well with UNESCO and UN agenda **mid-sustainable goals agenda)**



# Examples (1/4)

- The WEB was born at CERN from the needs of global collaboration for fundamental science.
- The success of Google, one of the largest company in the world, comes from a brilliant mathematical idea.
- Artificial intelligence relies on statistical methods and will have an influence on all aspects of society.
- Cellular phones come from the discovery of transistors, integrated circuits, WiFi astronomy spin-off developments.

## Examples (2/4)

- GPS accuracy is a spin-off of Einstein General Relativity, and the improvement in accuracy of atomic clocks based on quantum technology
- The discovery of DNA has revolutionized medicine
- The Genome Project has opened the way to gene therapies.
- The development of innovative instrumentation for Basic Sciences has many impacts for Health and Development: PET, MRI, Adaptive Optics.

## Examples (3/4)

- The rapid uptake of the generation and storage of renewable energy depends on advances in physics, chemistry and materials science.
- Reduction in pollution and green chemistry rely on basic advances in chemistry



# Examples (4/4)

Please add yours:

# Support for IYBSSD 2022 (1/3)

- The proposal of 2022 as the International Year of Basic Sciences for Development was presented to IBSP in January 2017 and was well received. It got the oral and then formal support of IBSP and of the representatives of ICSU (International Council for Science), ISSC (International Social Sciences Council) → now ISC (International Science Council).
- Initial steering committee: IUPAP, IUPAC, IAU, IMU, IUBS, IUCR, IUMRS, IUGG, IUVSTA, ICTP, EPS, CERN, JINR, IRD, SESAME, Weizmann Institute. Many more now.

# Support for IYBSSD 2022 (2/3)

- The proposal was presented in 2019 to the Jordan ambassador to UNESCO and received a firm support to bring this project to UNESCO, with the support of Nigeria, Russia and Vietnam. It was also discussed with the director at UNESCO, of Science Policy and Capacity Building, Executive Secretary of IBSP (International Basic Sciences Program at UNESCO), very supportive of the initiative. IBSP confirmed its support.

# Support for IYBSSD 2022 (3/3)

- The resolution for the proclamation of an International Year of Basic Sciences for **Sustainable** Development in 2022 was unanimously adopted by the **UNESCO** Executive Board in October 2019 and the UNESCO General Conference in November 2019
- It was also welcomed by the **World Science Forum 2019** in Budapest, welcomed during **the International day of Women and Girls in Science** in the UN in January 2020
- And now by the **Club de Rome** and the **Inter Parliamentary Union**

It will have to be proclaimed by the United Nations General Assembly.

The Resolution is being brought up by **Honduras Government** (Ambassador Yolannie Cerrato) **joined by Vietnam** and supported by many others (Dominican Republic, Paraguay, Jordan, Russia, South Africa, Senegal, Montenegro, China ..).

**Proclamation should occur in November 2021 (second half)**



# Tentative list of topics

- Basic Sciences, Multicultural Dialogue and Peace
- Basic Sciences, Education and Human Development
- Basic Sciences and Women (figures, empowering women, role models)
- Basic Sciences, Innovation and Economy
- Basic Sciences, Health and Life Sciences (especially now)
- Basic Sciences and Global Challenges (climate, biodiversity, water...)
- Basic Science as a Global Public Good
- Basic Sciences and hazards
- Basic Sciences and Big Data

# Some events (1)

- **Inauguration ceremony at UNESCO July 1<sup>st</sup> 2022** (due to the expected late proclamation by the UN GA)
- **Closing Ceremony at CERN in Summer 2023** (Renzo Piano Science Gateway Building Inauguration)
- **Use ISC regional offices and UNESCO centres to organize events**
- **Honduras and Vietnam** will play a major role,
- **The IYBSSD 2022 events** could be global, regional, national, local in developed and in developing countries. We have to foresee some centralized funding to help (especially to attend the events)

## Some events (2)

- **Endorsed events**, supported by at least two steering committee unions or founding partners or supporting academies (members of the SC or IAC) → can use the logo. International days, actions from UNESCO (like Mathematics for Action, supporting Decision Making, like International Days) could be opportunities.
- **Sponsored events**: help in kind or in cash with a modest lump sum or help to find sponsors, supported by at least four either steering committee unions or founding partners or supporting academies (members of the SC or IAC)
- **IYBSSD “Flagship” continental events SDG oriented**, submitted to the “active” approval by the SC and the IAC, ad hoc support and participation to be discussed case by case

## Some events (3)

- **Opening Ceremony** in the hands of UNESCO and IYBSSD Steering Committee
- **Closing Ceremony at CERN** will have to be discussed with CERN
- **Regional and Thematic Events with UNESCO, ISC centers?** will require a special treatment
- Forms will have to be filled to get the IYBSSD logo and reports on the outcome of the event will have to be written
- Transparent funding on our side

NB. Action plan is circulating and being finalized soon.

# Possible resulting actions (1/3)

- Debate on full implementation of open access publishing for all research papers connected to Fundamental Research, i.e. curiosity driven. This would allow free access to universities to all published material in Basic Sciences
- More generally debate on promoting Open Science in all Basic Sciences.

## Possible resulting actions (2/3)

- Promote equity, diversity and inclusion into collaboration in Fundamental Research (teams from developed countries together with teams from developing countries, gender balance and empowering women in science, etc.)
- Organize top level international scientific or educational events in developing countries with many side events. International Scientific Unions should be mobilized for that purpose.
- Promote training and education to Basic Sciences in developing countries.

# Possible resulting actions (3/3)

- Illustrate the role of Basic Sciences for Pandemics with their specific angle on Covid19
- Consider the International Year with the angle of what will happen after the pandemic
- Develop basic tool kits to support science-based decision making
- Support for establishment of vaccine development resources around the world to deal with future pandemics
- Promote a smart combination of remote and in person events
- Internet access to All
- **Decade of Basic Sciences?**

# Steps (1/2)

**2018** Formal recommendation by IBSP for 2022 – International Year of Basic Sciences for Development

**2019** Formal approval by the General Conference of UNESCO: International Year of Basic Sciences for Sustainable Development

**2020 and 2021** Enlarge the circle of Unions, Partners and Academies (still in progress, thanks **to ISC and many others**)

**2020** Approval by the UN General Assembly (December).

We did not succeed yet due to the restricted UN GA agenda this year because of the pandemic. → **we expect to have it proclaimed in 2021 at the 76<sup>th</sup> UN GA**



## Steps (2/2)

**2021** Detailed Preparation of Regional and International events  
**(mostly in the second half of 2021 and beginning 2022)**

**2022** International Year of Basic Sciences

for Sustainable Development (It should start July 1<sup>st</sup> 2022  
and conclude in summer 2023, due to the anticipated late  
approval by the UN GA (end of this year) and to the pandemics

**2023-2033** Decade of Basic Sciences?

# Support to bring the resolution for the proclamation at the UN

- Honduras (1), Vietnam (2),
- Followed by Dominican Republic, Paraguay, Jordan, Montenegro, Russia, Senegal, South Africa, Argentina, China and we hope many others
- And many others!!



# Thank You

We count on you all for all that!!!

International Year of Basic Sciences for Sustainable Development 2022