Item 47 of the provisional agenda

PROPOSAL FOR THE PROCLAMATION BY THE UNITED NATIONS
OF 2015 AS AN INTERNATIONAL YEAR OF LIGHT

SUMMARY

This item has been included in the provisional agenda of the 190th session of the Executive Board at the request of Ghana, Mexico, New Zealand and Russian Federation.

An explanatory note, together with a proposed decision, is attached hereto.

Action expected of the Executive Board: proposed decision in paragraph 14.
EXPLANATORY NOTE

I. Introduction

1. Light plays a central role in human activities. On the most fundamental level, through photosynthesis, light is at the origin of life itself and the many applications of light have revolutionized society through medicine, communications, entertainment and culture.

2. Industries based on light are major economic drivers, and light-based technologies directly respond to the needs of humankind by providing access to information, promoting sustainable development, and increasing societal health and well-being.

3. Light-based technologies are increasingly providing solutions to global challenges in, *inter alia*, energy, education, agriculture and community health. Applications of light-based technologies improve the quality of life in the developing world, and are key enablers to achieving and going beyond the Millennium Development Goals.

4. As light becomes the key cross-cutting discipline of science and engineering in the twenty-first century, it is essential that the importance of the scientific study of light and the application of light-based technologies for global development is fully appreciated by the citizens of the world. It is equally vital that the brightest young minds continue to be attracted to scientific and engineering careers in this field.

II. Rationale and goals of an International Year of Light

5. An International Year of Light will:

   - improve public understanding of how light and light-based technologies touch the daily lives of everybody, and are central to future global development;
   - build worldwide educational capacity through activities targeted on science for young people, help address issues of gender balance and focus in particular on developing countries and emerging economies;
   - promote the importance of light-based technology in sustainable development particularly in healthcare, agriculture and communications so as to enable access to educational opportunities and for improving the quality of life worldwide;
   - promote awareness of the interdisciplinary nature of twenty-first century science, and emphasize how interactions between different thematic areas of science will be increasingly needed in future research and education;
   - highlight and explain the intimate link between light and art, enhancing the increasing role of optical technology in the preservation of cultural heritage;
   - enhance international cooperation by coordinating activities between learned societies, educational establishments and industry, focusing specifically on new partnerships and initiatives in the developing world;
   - establish durable partnerships to ensure that these activities, goals and achievements continue in the future beyond the International Year of Light.

6. The year 2015 commemorates a remarkable series of important milestones in the history of the science of light dating back 200, 150, 100 and 50 years. In 1815, Fresnel in France introduced the theory of light as a wave; in 1865, Maxwell in England described the electromagnetic theory of
light; in 1915, Einstein in Germany developed General Relativity which confirmed the centrality of light in both space and time; and in 1965, Penzias and Wilson in the United States discovered the Cosmic Microwave Background, an echo of the creation of the universe. Celebrating the scope of these milestones in 2015 will provide a tremendous opportunity for educational activities worldwide.

III. Coordination of an International Year of Light and UNESCO’s role

7. The International Year of Light is an initiative developed by many international scientific societies and other organizations led by the African and European Physical Societies. A resolution in favour of the proclamation of 2015 as the International Year of Light was unanimously approved by the International Union of Pure and Applied Physics (IUPAP) Executive Council at its 27th General Assembly in London in November 2011. A decision also unanimously in favour of this was approved by the Council of SESAME (Synchrotron-light for Experimental Science and Applications in the Middle East) at its 19th session in December 2011.

8. The activities of the International Year of Light will be coordinated by an International Steering Committee which will ensure effective action at both national and international levels between a wide range of international partners including learned societies, science and technology platforms, educational institutions, non-governmental and inter-governmental organizations etc. These partners include: the African, European and American Physical Societies (AIPS, EPS, APS); the African Laser Centre (ALC); the Ghana Academy of Arts and Sciences; the Universidad Nacional Autónoma de México (UNAM); the Association of Asia Pacific Physical Societies (AAPPSS); the Federación Iberoamericana de Sociedades de Física (FEIASOFI); the Fédération Française de Sociétés Scientifiques (F2S); the Canadian Association of Physicists (CAP); the Società Italiana di Fisica (SIF); the Deutsche Physikalische Gesellschaft (DPG); the Institute of Physics (IOP); the United Physical Society of the Russian Federation (UPSRF); the New Zealand Institute of Physics (NZIP); the European Astronomical Society (EAS); the Abdus Salam International Centre for Theoretical Physics (UNESCO-ICTP); SESAME; the International Commission on Optics (ICO); the International Society for Optics and Photonics (SPIE); the Chinese Optical Society (COS); the European Optical Society (EOS); the Optical Society (OSA); the Institute of Electrical and Electronics Engineers Photonics Society (IEEE Photonics Society); the Australian Optical Society (AOS); the World Federation of Scientists (WFS); the Diamond Light Source; Education and Training in Optics Conference (ETOP); EYEST Association (Excite Youth for Engineering, Science and Technology); European Technology Platform Photonics 21; Institute of Optics Rochester; Laserlab Europe, the Integrated Initiative of European Laser Research Infrastructures; European Centers for Outreach in Photonics (ECOP); Museo de la Luz (Museum on Light); the Commission Internationale de l’Eclairage (CIE); the International Society for Photogrammetry and Remote Sensing (ISPRS); the International Committee on Ultra-High Intensity Lasers (ICUIL); the European Society for Photobiology (ESP). Supporting international scientific unions include: the International Union of Pure and Applied Physics (IUPAP); the International Union of Pure and Applied Biophysics (IUPAB); the International Union of the History and Philosophy of Science (IUHPS); the International Astronomical Union (IAU); the International Union of Theoretical and Applied Mechanics (IUTAM); and the International Union of Radio Science (URSI).

9. An International Year of Light will offer UNESCO a novel important opportunity to fulfil its mission of promoting international cooperation in key areas of modern physics, and trigger a wide range of cooperative undertakings within follow up to the Memorandum of Cooperation in Pure and Applied Physics between IUPAP and the International Basic Sciences Programme (IBSP) of UNESCO It will also be conducive to the reinforcement of the Organization’s cooperation with its major partners in physics that opens new vistas for advanced research and applications of synchrotron light.

10. An International Year of Light with the rationale and objectives outlined in paragraphs 1 to 6 above will contribute to achieving the aims of UNESCO’s 36 C/5 Major Programme II in Natural
Sciences, especially the biennial sectoral priorities strengthening science, technology and innovation (STI) systems and policies for sustainable development, poverty eradication, and a culture of peace and non-violence, as well as mobilizing science for the sustainable use of natural resources, renewable energy and energy efficiency, and for natural disaster reduction and mitigation. In addition, the areas where an International Year of Light will bring especially strong focus are: (i) the advancement of science and technology for sustainable development; (ii) the promotion of UNESCO’s Priorities for Africa with focus on Education for All and gender equality; and (iii) the harnessing of international cooperation for science and technology capacity-building.

11. UNESCO has played a crucial role in the designation and celebration of the International Year of Physics, the International Year of Planet Earth, the International Year of Astronomy and the International Year of Chemistry. Through its Executive Board, UNESCO will be an important champion to obtain United Nations designation of an International Year of Light.

IV. Conclusion

12. International Years may only be proclaimed by the United Nations during their annual General Assembly meetings, and only at the request of one (or more) of the United Nations Member States. Ghana, Mexico, New Zealand and Russian Federation are taking the lead role in bringing this request forward, understanding that a significant number of other United Nations Member States will support this initiative.

13. An International Year of Light will support and raise the profile of UNESCO in pursuing its global leadership in building capacity in science and technology for sustainable development.

Proposed draft decision

14. In the light of the above, the Executive Board may wish to adopt a decision along the following lines:

The Executive Board,

1. **Recognizing** the importance of light and optical technologies in the lives of the citizens of the world, and for the future development of global society on many levels;

2. **Stressing** that enhanced global awareness of, and increased education in, the science and technologies of light is vital for addressing challenges such as sustainable development, energy, and community health, and for improving the quality of life in both the developed and the developing worlds;

3. **Considering** that the applications of light science and technology are vital for existing and future advances in medicine, communications, entertainment and culture, and that light-based technologies directly respond to the needs of humankind by providing access to information and increasing societal health and well-being;

4. **Being aware** that the year 2015 coincides with the anniversaries of a series of important milestones in the history of the science of light, specifically the notion of light as a wave proposed by Fresnel in 1815, the electromagnetic theory of light propagation by Maxwell in 1865, the embedding of light in cosmology through general relativity in 1915, and the discovery of the cosmic microwave background in 1965;

5. **Being also aware** that the celebration of the anniversaries of these discoveries in 2015 will provide an unparalleled opportunity to highlight the continuous nature of scientific discovery in different contexts, with particular emphasis on promoting science education among young people and women, especially in developing countries and emerging economies;
6. Having examined document 190 EX/47;

7. Welcomes and endorses the unanimous resolution of the International Union of Pure and Applied Physics (IUPAP) at its 2011 General Assembly, the unanimous decision of the Council of SESAME at its 19th session in December 2011, and the leadership and initiative of the international scientific community through the large number of partner scientific learned societies, unions and institutions, to declare 2015 as the International Year of Light;

8. Invites the Director-General to support all efforts leading the United Nations General Assembly to proclaim 2015 international year of light;

9. Recommends that the General Conference adopts a resolution in this regard at its 37th session.