Fondazione Ettore Majorana

INTERNATIONAL SCHOOL OF SCIENCE EDUCATION
(Director: Pierre Léna)

First Course (Sept.1-7, 2017), Erice, Sicily, Italy

CLIMATE CHANGE : A CHALLENGE FOR SCIENCE EDUCATION
(Director: David Wilgenbus)

CONCLUDING STATEMENT

The magnitude and urgency, the long-term effects, the threats and opportunities of the ongoing climate change, as evidenced by IPCC Reports, led to the COP21 and the Paris Agreement (2015), now ratified by 160 countries and having entered into force.

Along with political, economic and technical measures, education is recognized by Art.12 of the Agreement as an important component of a comprehensive policy, as the youth must be prepared to understand the issues, change behaviours, and act in the next decades as informed and responsible adults.

The Erice Course was attended by 34 climate scientists and educators from developing and developed countries, in order to examine how best to implement climate change education in primary and secondary schools worldwide, empowering teachers and students. They discussed and agreed on the following:

- The youth – girls and boys - must be prepared: to understand climate change and its consequences; and to discover that action is necessary and possible, in order to attenuate the impacts, mitigate the change itself and build a low carbon society;
- Primary and secondary schools can no longer continue 'school as usual', and profound changes in teaching methods and contents are necessary;
- Improving the way science is taught and the way related societal issues are addressed will be essential to develop rationality and critical thinking among students;
- Teachers at K to 12 levels are the key actors for these changes, but they must be supported and accompanied;
- Science education has made significant and exciting progress in the last decades, with pilot projects all over the world based on an inquiry pedagogy (Inquiry Based Science education). It now has to address the new challenge of climate change education, complementing natural science contents with social sciences and wider societal challenges. This being in phase with the breadth of issues involved in climate change, as evidenced in the *Intergovernmental Panel on Climate Change* (IPCC) periodic Reports.

The participants therefore:

- Underline the necessity to empower children and teenagers, girls and boys, within as well as outside the school;
- Call for a convergence and cooperation between climate scientists, educators and NGOs in both developing and developed countries;
- Observe that existing initiatives for climate education that are run by a rich diversity of actors, many of them of high value, should be complemented in order to meet the needs of the teachers, who have very specific requirements;
- Recognize subsequently the necessity to develop a variety of high quality dedicated resources in order to help educators and teaching institutions worldwide, combining a global and common frame with local contextualisation and adaptation;
- Consider, in view of the IPCC Reports to be issued in 2018, 2019, 2021/22 and the IPCC *Summaries for Policymakers* to be derived from these Reports, being inspired by these, that *Summaries and Tools for Teachers* should be prepared and published at the same time;
- **Support the creation of an international initiative leading to such tools: prepared in cooperation with the IPCC and other leading scientists and with a network involving actors of climate change education; and made available to teachers by appropriate dissemination and support methods;**
- Call for broad support from the whole scientific community and especially science academies, which are already well engaged in science education in many countries;
- Agree to pursue together these long-term but urgent goals.

Signatures (by alphabetical order)

- Juan Carlos ANDRADE, Innovec (Mexico)
- Stéphan BAILLARGEON, Pôle régional pour l'enseignement de la science et de la technologie (Canada)
- Martín BASCOPÉ, Pontificia Universidad Católica de Chile (Chile)
- Abdelatif BELKOURI, Ecole Normale Supérieure de Casablanca (Morocco)
- Chiraz BEN KILANI, Higher Institute of Education (Tunisia)
- Pascaline BOURGAIN, Tara Expeditions Foundation (France)
- Laurence CONSTANTINI, Fondation La main à la pâte (France)
- Emilie DETOUILLON, Museum National d'Histoire Naturelle (France)
- Sanny DJOHAN, PT Kuark Internasional (Indonesia)
- Michael FRITZ, Stiftung Haus der kleinen Forscher (Germany)
- Soledad GONZALEZ, for Siemens Stiftung (Chile)
- Eric GUILYARDI, Institut Pierre Simon Laplace (France)
- Jean JOUZEL, LSCE/IPSL CEA Saclay (France)
- Ute KRÜMMEL, Stiftung Haus der kleinen Forscher (Germany)
- Pierre LENA, Fondation La main à la pâte (France)

- Robin MATTHEWS, IPCC Working Group I - Technical Support Unit (France)
- Peter McGRATH, InterAcademy Partnership (Italy)
- Mauricette MESGUICH, Maison pour la science en Aquitaine (France)
- Sylvain MONDON, Observatoire national sur les effets du réchauffement climatique (France)
- Cliona MURPHY, Institute of Education, Dublin City University (Ireland)
- Abdourakhmane NDIAYE, Université Clermont Auvergne (France)
- Carol O'DONNEL, Smithsonian Science Education Center (USA)
- Eric PAKULAK, University of Oregon (USA)
- Anna PASCUCCI, National Association of Natural Science Teachers (Italy)
- Elena PASQUINELLI, Fondation La main à la pâte (France)
- Laurent RICHARD, Albédo climat (France)
- Anwar RUMJAUN, Mauritius Institute of Education (Mauritius)
- Daniel SCHAFFER, Foundation for Environmental Education (Denmark)
- Jenny SCHLÜPMANN, Freie Universität Berlin (Germany)
- Catherine SENIOR, Institut Pierre-Simon Laplace (France)
- Matthew StCLAIR, University of California Office of the President (USA)
- Julia TORRES, Facultad de Química, Universidad de la Republica (Uruguay)
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