

## Daejeon Declaration on Science, Technology, and Innovation Policies for the Global and Digital Age

The following is the full English text of the Daejeon Declaration on Science, Technology, and Innovation Policies for the Global and Digital Age, which was announced Wednesday after the two-day OECD Ministerial Meeting Daejeon 2015, World Science Forum.

WE, THE MINISTERS AND REPRESENTATIVES OF [list of countries to be added], assembled in Daejeon, Korea, on 20 and 21 October 2015, under the chairmanship of Korea and the vice-chairmanship of Norway and Spain to discuss how science, technology and innovation can help shape our common future;

STATE our commitment to support science, technology and innovation to foster sustainable economic growth, job creation and enhanced wellbeing, NOTING that achieving these goals will require adequate investment, and policy and regulatory environments that support strong and well-connected global science and innovation systems, and which also enable creativity and innovation throughout the economy and society, and RECOGNISE that changes in science and innovation systems, influenced by digitisation and globalisation, require that our national and international policy agendas and instruments be updated.

SHARE a vision that science, technology and innovation:

- improve the quality of life for all our citizens as they increase employment, productivity and economic growth in a sustainable manner over the long term;
- provide new opportunities for investment, both for start-ups and established firms, in developed and developing countries; and,
- are essential to meeting global and societal challenges, such as environmental sustainability, climate change, developing new sources of energy, food security and healthy ageing, hence achieving the Sustainable Development Goals agreed by the United Nations.

Moreover, science enlarges our understanding of Nature and society: science advances thanks to the curiosity and creativity of researchers which needs to be encouraged.

AGREE that science, technology and innovation are being revolutionised by the rapid evolution of digital technologies, which are changing the way scientists work, collaborate and publish; increasing the reliance on access to scientific data and publications ("open science"); opening new avenues for public engagement and participation in science and innovation ("citizen science"); facilitating the development of research co-operation between businesses and the public sector; contributing to the transformation of how innovation occurs ("open innovation").

RECOGNISE that an array of new production technologies heralding the "next production revolution" is potentially transformative for our economies and can support sustainable growth and well-being.

ACKNOWLEDGE that innovation is essential to address new health challenges that arise from ageing (e.g. Alzheimer's and other neurodegenerative diseases), globalisation (possibly facilitating pandemics) and rapidly shifting income and dietary patterns: Advanced health technologies and approaches, such as genomics and precision medicine, will offer promising contributions for responding to these and other health challenges.

AGREE that science, technology and innovation have become more global, with emerging countries becoming major actors and many issues reaching global scale, like climate change, food security, neglected diseases, global health issues (e.g. dementia) and pandemics (as illustrated in the recent Ebola outbreak).

RECOGNISE that science is increasingly important to inform policies and decision making across a broad range of areas, from long-term environmental and public welfare issues to emergency disease outbreaks and natural disasters.

RECOGNISE the unique role of the OECD as an international forum for science, technology and innovation policy analysis and for peer learning among governments.

ACKNOWLEDGE the importance of the OECD's enhanced multi-stakeholder approach that directly involves the key societal actors in science, technology and innovation, from university associations to business representatives, while collaborating actively with relevant international and regional organisations.

DECLARE that our countries need policies that promote excellence and relevance in public research and encourage stronger links between academia, industry and society in order to strengthen the impact of science and technology. To that effect:

a) Basic and applied research need adequate long-term funding, even in a context of budgetary constraint.

b) A market-friendly, competitive environment is required for businesses to invest in research and innovation, and for entrepreneurship to flourish.

c) The innovation capacity of the public sector needs to be strengthened, as it is a major source of economic activity in itself.

d) The education and training systems should nurture talent and supply the workforce with the broad range of skills required for generating and using innovations.

e) Monitoring and evaluation should be strengthened, making full use of opportunities raised by information technology and new sources of data. The results of measurement and evaluation should be used in subsequent policy development and appropriate steps should be taken to make evaluation data accessible for analysis.

f) Public understanding of science, as well as public engagement and trust in key science and technology institutions, are necessary for society to fully exploit the opportunities created by innovation.

g) Policies are needed that support the positive transformational impact of digital technologies on research and innovation (and limit any anticipated risks), so as to promote "open science".

h) The policy frameworks need to be strengthened to enable the next production revolution and maximise its positive impact on productivity and areas such as health and the environment.

i) The scientific and technological advances required to address new health challenges would be facilitated by collaboration among governments, academia, patients, and industry throughout the R&D and regulatory processes (for instance through data sharing, citizen science, crowdsourcing, virtual platforms for encouraging peer-to-peer networks and other collaborative research).

j) Greater international co-operation is critical for addressing global challenges, but new co-ordination, funding and governance mechanisms are also required, notably to better exploit open science, invest in global research infrastructures and accelerate collective responses to crises.

k) The governance of international science and technology co-operation should be made more inclusive vis-à-vis developing and emerging economies; the innovation capacities of these countries should be strengthened, they should be more involved in agenda and priority setting for research co-operation, as well as have a stronger role in global policy coordination and rule setting.

ENCOURAGE the forthcoming Conference of the Parties to the United Nations Framework Convention on Climate Change in Paris, as well as other global efforts for sustainability, to take into consideration the critical roles of science, technology and innovation in explaining and responding to climate change.

WELCOME the 2015 update of the OECD Innovation Strategy, which provides a highly valuable framework for designing, orienting and implementing national innovation strategies and addressing international issues of common interest relating to science, technology and innovation.

REQUEST that the OECD, going forward, continue advising on the future development of science, technology and innovation policies, notably as regards: i) building scientific excellence and increasing the impact of public research, ii) strengthening the contribution of science, technology and innovation to sustainable economic growth, a cleaner environment and a more inclusive society; and iii) improving international co-ordination in science and technology.

INVITE the OECD to:

a) Support the improvement of policies for "open science", notably by:

i) continuing to explore key policy actions to promote open access to the results of publicly funded research, and to investigate ways to develop internationally coordinated approaches to data and information infrastructures;

ii) assessing the need for revising the Recommendation of the Council concerning Access to Research Data from Public Funding, and identifying common principles for the development of open science and big data (in conjunction with parallel efforts addressing the broader issue of data access on the Internet);

iii) working with key actors to bring the lessons learned from information- and data-sharing initiatives led by the scientific community to the attention of policy makers and bring policy lessons to the attention of the scientific community.

b) Continue to develop methods and indicators for assessing the impact of research and innovation policies, notably by:

i) preparing analyses of policies and their impact across countries;

ii) facilitating the exchange of good practices on impact assessment;

iii) conducting co-ordinated impact assessments of comparable policies across countries when appropriate.

c) Continue improving statistics and measurement systems to better capture the key features of science, technology and innovation, including by ensuring a successful 2016 OECD Blue Sky conference on the Future of STI Indicators, which can make a major contribution to this goal.

d) Explore the innovation policy frameworks needed for sustainable development and the "next production revolution", specifically by:

i) analysing the expected economic, social and environmental impact of emerging technologies including the impact on productivity and inclusive growth;

ii) examining the innovation policy issues raised by environmental challenges;

iii) developing better evidence on the effectiveness of specific policy instruments (e.g. prizes) that could advance technologies for sustainable development, as well as better evidence on the coordinated use of these instruments ("systems innovation");

iv) assessing the policies needed to accelerate development of a bio-based economy, including the design of

guidelines for measuring the sustainability of biomass production and utilisation, while exploring the associated ethical, social and political implications;

v) analysing the role of research and innovation in the sustainable development of the ocean economy.

e) Investigate how best to support basic research in the health area and its translation into applications, notably with regards to omics technologies and precision medicine; identify innovative approaches to foster co-operation between the various stakeholders involved in research and development; and examine effective ways to integrate ethics and societal values into the evolution and governance of health technologies.

f) Explore new measures to implement effective cross-border co-operation in science and technology, particularly by:

i) identifying best-practice mechanisms to improve the coherence and coordination of national research agendas across countries. Such mechanisms might include the development of standards, methodologies and other approaches for sharing information on publicly-funded research across countries.

ii) improving the availability of information about national research agendas, which could help avoid unnecessary duplication, identify possible gaps in global research efforts, and enable greater international co-operation to address shared research challenges.

iii) exploring the need for updating the Recommendation of the Council concerning a General Framework of Principles for International Co-operation in Science and Technology.

g) Identify effective ways for the international sharing of good practices in the governance, design and implementation of innovation policy between countries having different levels of development, including by:

i) exploring how to build research and innovation capacities in developing countries as well as in less favoured areas of the developed world;

ii) examining ways of improving statistical data on official development aid allocated to science- and technology-related projects;

iii) studying and proposing ways how innovation could make growth more inclusive.

h) Explore ways to improve science advisory processes, including mechanisms for international co-ordination and exchange of good practices, and the associated engagement of civil society, and examine the possible development of a Recommendation of the Council on Scientific Advice.

COMMIT to working collectively with all stakeholders to implement and review, as appropriate, the understanding that we have achieved in this Declaration so as to maintain its relevance to future challenges and opportunities confronting our economies and societies.