

**Communiqué**  
**G20 Ministerial Meeting on Energy Transitions and**  
**Global Environment for Sustainable Growth**  
**15-16 June 2019, Karuizawa, JAPAN**



**<Energy and Environment>**

1. We, the G20 Energy and Environment Ministers, met in Karuizawa Town, Nagano Prefecture, Japan, on 15 and 16 June 2019, to discuss energy transitions and global environment for sustainable growth.
2. We recognize the importance of leading energy transitions to improve the “3E+S” (Energy Security, Economic Efficiency, and Environment + Safety) as well as urgently addressing key global issues and challenges, such as climate change, biodiversity loss, resource efficiency, sustainable consumption and production, air, land, freshwater and marine pollution, urban environmental quality, and energy access. We recognize these challenges are complex and urgent, the importance of energy transitions and innovation on sustainable and clean energy systems, the close nexus between energy security, economic growth, climate change, and environmental protection, and the importance of long-term low emissions strategies for sustainable development, and acknowledge that G20 members have and continue to take concrete and practical actions to address these challenges and also acknowledge their progress. We note the reaffirmation of commitments made in Buenos Aires to the full implementation of the Paris Agreement by those countries that chose in Buenos Aires to implement it. To this end, we stress the importance of accelerating a virtuous cycle of environment and growth, which is driven by breakthrough innovation, and with business communities playing an important role under the enabling environment created by governments.
3. We adopt the “G20 Karuizawa Innovation Action Plan on Energy Transitions and Global Environment for Sustainable Growth” to accelerate the virtuous cycle as a collaborative endeavor to facilitate voluntary actions. This action plan would reinforce and enhance a variety of relevant international, regional, national and local initiatives involving multiple stakeholders, especially those in the private sector.
4. We realize that, in order to accelerate the virtuous cycle and lead transformations to a resilient, inclusive, and sustainable future, emphasis should be placed on collecting wisdom from around the world, mobilizing finance and investment, and improving business environments to encourage technological innovation and behavioral change. We promote solutions, including nature based solutions that have multiple benefits.
5. We welcome the G20 Japanese Presidency’s initiative aimed at spurring innovation in the context of climate change by launching an international conference, called Research and Development 20 for clean energy technologies (“RD20”) to promote international collaborative relationships among leading R&D institutes from G20 members. We recognize that R&D collaboration under existing initiatives is also important to advancing innovation.
6. We acknowledge the importance of enhancing global communication between business and financial sectors to increase transparency and develop risk mitigation measures to help mobilize private finance, while recognizing that public finance plays an important role. We support efforts to mobilize finance and to improve the market and investment environment for various energy options, innovative technologies and quality infrastructure

that enhance energy access, resilience, sustainability, cleaner environment and water access.

7. We emphasize the importance of improving business environments and promoting business activities, including public-private partnerships for dissemination of innovative technologies and development of infrastructure projects, products, and services.

## <Energy>

1. Building upon the invaluable outcomes of the previous Presidencies and Ministerial Meetings, the G20 Energy Ministers emphasize their special responsibility to lead energy transitions of our energy systems into affordable, reliable, accessible, sustainable and low GHG emissions systems as soon as possible, recognizing that there are different possible national paths to achieve this goal. The G20 Energy Ministers stress the need to successfully transform energy systems, by increasing investments in cleaner technologies, cooperation in energy efficiency and deployment of renewables and delivering the policy, financial and business environment necessary to promote and support energy innovation in line with the spirit of the 2030 Agenda for Sustainable Development, recognizing that fossil fuels still play a major role in the energy transitions. We recognize that energy transitions are an essential element to achieving development strategies that should combine economic growth with decreasing GHG emissions. The G20 Energy Ministers promote the cleaner use of various energy sources and facilitate open, transparent, and competitive energy markets. The G20 Energy Ministers adopt the “G20 Karuizawa Innovation Action Plan” and take note of the six Presidency documents produced with the valued support of several prestigious international organizations.

## Energy Innovation

2. In the framework of energy transitions, the G20 Energy Ministers considering individual country circumstances, stress the need to accelerate energy innovation, recognizing the critical role of innovative, clean and efficient technologies, including digitalization, renewable energy and systems flexibility, demand side management, energy efficiency, biofuels, advanced nuclear, and advanced and cleaner fossil fuels technologies considering individual country circumstances. The G20 members encourage relevant international organizations to support international collaboration and analyze the impact of innovative technologies and will share best practices for the development, dissemination and deployment of these technologies in particular on policies, national experiences, and market frameworks. The G20 Energy Ministers support further international cooperation on sustainable biofuels and bioenergy, as well as on innovative technologies for sector coupling, e.g. power to X and heat pumps in all sectors including the industrial sector, heating cooling and desalination, depending on national circumstances. The G20 members stress the importance of setting up innovation ecosystems and recognizing the role of startups and SMEs in promoting energy transitions.
3. The G20 Energy Ministers recognize opportunities for forms of energy carriers and storage including hydrogen in fostering a cleaner energy future that supports economic growth, noting relevant international organizations’ reports such as the IEA hydrogen report. The G20 Energy Ministers will step up existing international efforts to unlock the potential of hydrogen as a clean, reliable and secure source of energy including cooperation in research and development, evaluating hydrogen’s technical and economic potential, cost reduction pathways and addressing the various challenges including regulations and standards.
4. The G20 Energy Ministers, depending on national circumstances, recognize the potential of developing and deploying Carbon Capture, Utilization and Storage (CCUS) technologies,

including through international cooperation and multilateral innovation initiatives, taking note of work on "Carbon Recycling" and "Emissions to Value".

### **Energy Security**

5. In light of recent developments highlighting concern about energy security, the G20 Energy Ministers acknowledge energy security as one of the guiding principles for the transformation of energy systems. The G20 Energy Ministers also emphasize the importance of resilience, protection, and development of reliable energy infrastructure to prevent energy supply disruptions; and stress the importance of diversification of energy sources, suppliers, and routes, facilitation of open, flexible, transparent, competitive, stable, and reliable markets, increasing energy efficiency. They attach importance to promotion of dialogue between consumers and producers as well as global collaboration in the business sector, and the need to facilitate the proper conditions to continue and increase energy investments to ensure in sustainable, affordable, reliable, resilient and cleaner energy systems. The G20 Energy Ministers recognize the importance of quality infrastructure investment that promotes sustainable growth and enhances the resilience of our energy systems.

### **Energy Efficiency**

6. The G20 Energy Ministers recognize the key contribution that energy efficiency makes to energy transitions as well as its vast untapped potential as an affordable, secure and sustainable means to provide energy services and welcome the work of the Task Groups of the Energy Efficiency Leading Programme (EELP), IPEEC and note the progress on establishing the Energy Efficiency Hub. In addition to the past achievements, the G20 Energy Ministers note the energy efficiency analysis such as Global Energy Efficiency Benchmark work undertaken by the IEA, which includes Well to Wheel analysis. They will further explore the potential and impact of energy efficiency, in such areas as heating and cooling, and buildings through international cooperation and sharing best practices. The G20 Energy Ministers encourage policy actions to significantly scale up investments and financing in energy efficiency across all sectors to help to achieve the energy transitions.

### **Renewable Energy**

7. The G20 Energy Ministers welcome the impressive progress achieved with regard to the development and deployment of renewable energy, benefitting from innovation and in part from significant cost reductions. The G20 Energy Ministers welcome the rapid growth of renewable energy around the world and encourage increased investment and financing in renewable energy production. The G20 Energy Ministers acknowledge that renewable energy sources, such as wind, bioenergy, solar, hydro and geothermal energy, can play an important role including in the transportation, heating and cooling, and industrial sectors worldwide, and sector coupling and sustainable bioenergy can play an important role in those areas, depending on national circumstances and conditions. Renewable energy progress should be accelerated beyond the power sector. The G20 Energy Ministers will work together with support of international organizations such as IRENA, IEA, ISA, and the Biofuture Platform, to promote innovative solutions for accelerating the major potential of renewable energies.

### **Power System**

8. The G20 Energy Ministers recognize the importance of achieving stable, flexible, clean, affordable and resilient power systems for low emissions future by improving electricity markets and supporting conditions for investment. The G20 Energy Ministers also emphasize the importance of technologies for system integration of variable renewable energy, including energy storage, smart grid technology, minimization of the risk of malicious use of ICT technologies, electric vehicles, hydropower, biomass power generation, flexible power plants, and demand side management. They acknowledge the increased potential for electricity use, and the opportunity for sector coupling to reduce and/or avoid emissions in end-use sectors and improve system efficiency and cost

effectiveness, such as through electrified mobility, heating and cooling, and industrial processes.

### **Nuclear Energy**

9. For those countries that opt to continue utilizing nuclear energy, it can contribute to energy security, access to baseload power and reducing and/or avoiding emissions. Those countries intend to promote innovation, including through international cooperation on new developments, in small modular reactors and advanced reactors, and to improve the business environment for nuclear energy. We call upon those countries to uphold the highest standards of nuclear safety, security, and non-proliferation. It is also important to recognize the value of international cooperation on decommissioning of nuclear plants and final disposal of high-level radioactive waste; to share experience and knowledge on public engagement; and to promote technical cooperation for safety improvement.

### **Fossil Fuels**

10. The G20 Energy Ministers reiterate the importance of transparent, liquid, flexible, stable and competitive global energy markets. The G20 Energy Ministers support enhancing natural gas security, including LNG, through sharing of best practices and knowledge for supply security as well as for emergency response. The G20 Energy Ministers recognize the key role that natural gas currently plays for many G20 countries, and its potential to expand significantly over the coming decades, supporting transitions towards lower emissions energy systems. Natural gas can also play a significant role to meet expanded demand in some countries as well as in new sectors such as the transportation sector, including marine bunkering. Those countries that opt to continue utilizing fossil fuels recognize the need for investment and financing of advanced and cleaner fossil fuel technologies including CCUS, depending on national circumstances.

### **Inefficient Fossil Fuel Subsidies that encourage wasteful consumption**

11. In 2009, the Pittsburgh Leaders Declaration called for medium term rationalization and phasing-out of Inefficient Fossil Fuel Subsidies that encourage wasteful consumption, while providing targeted support for the poorest. The G20 Energy Ministers reaffirm this joint commitment. The G20 Energy Ministers welcome the efforts made by those G20 members who have already participated in voluntary peer reviews, and we encourage those who have not yet done so to initiate their peer reviews as soon as feasible.

### **Energy Access and Affordability**

12. The G20 Energy Ministers recognize that ensuring access to affordable, reliable, sustainable and modern energy services and clean cooking facilities is one of the prerequisites for social and economic development, noting the disproportionate impact of energy poverty on women. The G20 Energy Ministers welcome progress made on improving energy access globally, and reaffirm our commitments to promote universal energy access, in line with the spirit of the 2030 Agenda for Sustainable Development. The G20 Energy Ministers will explore ways to further advance energy access as well as productive use of energy. Building upon the past works of the G20, and with support of relevant international organizations, the G20 Energy Ministers will engage with other interested countries to explore effective ways to enhance implementation of regional action plans, taking into account the need to provide displaced people and disaster impacted and remote areas with energy access.

## **<Environment>**

### **I. Resource Efficiency and Marine Plastic Litter**

#### **Resource Efficiency**

1. We, the G20 Environment Ministers, recognize that improving resource efficiency through policies and approaches, such as circular economy, sustainable materials management, the 3Rs (reduce, reuse, recycle) and waste to value, supports our belief that economic growth and environmental protection can and should go hand-in-hand, contributing to the Sustainable Development Goals. We also recognize that pursuing sustainable consumption and production and improving resource efficiency contributes to addressing a wide range of environmental challenges, enhancing competitiveness and economic growth, managing resources sustainably, and creating jobs, and acknowledge the United Nations Environment Assembly (UNEA) resolution 4/2 on Innovative pathways to achieve sustainable consumption and production.
2. We recognize the importance of science-based approaches in policymaking, and acknowledge the contributions from relevant international and regional organizations, including, but not limited to the International Resource Panel (IRP), the Organization for Economic Co-operation and Development (OECD), the United Nations Industrial Development Organization (UNIDO), and the Economic Research Institute for ASEAN and East Asia (ERIA), and continue to engage with them.
3. We promote various bilateral and multilateral partnerships at regional and global level including public-private partnerships, in order to facilitate actions and build necessary capacity for sustainable, efficient, and effective use of resources, including environmentally sound management of waste, as well as that derived from natural disasters, which could be one of additional sources of marine litter.
4. We acknowledge that improving resource efficiency can contribute to solving the problem of marine litter, especially marine plastic litter and microplastics, and also acknowledge the importance of taking a comprehensive life-cycle approach to reduce the discharge of waste into the oceans.
5. We accelerate initiatives to reduce food loss and food waste, including deployment of innovative technologies for food preservation, efficient and sanitary management of food waste, public awareness and education, and sharing experiences on relevant national actions and policies. We recognize the economic and environmental benefits of resource efficiency and circular economy policies in their potential to reduce all types of emissions, and look forward to pursuing these benefits.
6. We appreciate the work done by the G20 Resource Efficiency Dialogue, and utilize the Dialogue to continue to share actions, achievements, and best practices among the G20 members, to advance scientific knowledge and science-based approach taking into consideration inputs from relevant organizations, and to collaborate with relevant initiatives. We invite the Dialogue to develop its roadmap under the Japanese Presidency, to organize such activities and explore innovation and business opportunities with the private sector.

### **Marine plastic litter**

7. Marine litter, especially marine plastic litter and microplastics, is a matter requiring urgent action given its adverse impacts on marine ecosystems, livelihoods, and industries including fisheries, tourism, and shipping, and potentially on human health. Considering its durable and ubiquitous nature, we reiterate that measures to address this issue need to be

taken nationally and internationally by all countries in partnership with relevant stakeholders, while noting that plastics play an important role in our economies and daily lives. We are determined to drive measures to resolve this issue and swiftly take appropriate national actions, including through collaborating with the international community, for the prevention and significant reduction of discharges of plastic litter and microplastics to the oceans through a life-cycle approach.

8. To this end, we establish the “G20 Implementation Framework for Actions on Marine Plastic Litter” as set out in the Annex, to facilitate the implementation of the "G20 Action Plan on Marine Litter" launched at the G20 Hamburg Summit in 2017, through voluntary national actions. In following up, we will utilize opportunities of co-organizing with relevant meetings, inter alia, the G20 Resource Efficiency Dialogue and the multi-stakeholder platform to be established under the UNEP, which will be decided by G20 presidencies.
9. We acknowledge the UNEA resolutions 4/7 on Marine plastic litter and microplastics and 4/10 on Addressing single-use plastic products pollution, and note the decision at the 14th meeting of the Conference of the Parties to the Basel Convention to include plastic waste under the convention. We will work with relevant international and regional instruments, organizations and initiatives, including but not limited to the United Nations Environment Programme, in a coordinated manner in order to maximize effectiveness and efficiency, and to avoid duplication of efforts.

## **II. Adaptation and resilient infrastructure including ecosystem-based approaches**

10. Building on the previous work on infrastructure, climate and adaptation by G20 members, we stress the benefits of adaptation actions and the role of quality and climate-resilient infrastructure for building resilient socio-economic and ecological systems globally. We note the IPCC Special Report on Global Warming of 1.5 Degrees Centigrade, welcome the outcomes of the UNFCCC COP24, and look forward to the outcomes of COP25, subsequent to the UN Climate Action Summit in September 2019.
11. We recognize that adaptation and resilience actions can reduce disaster risk, and promote the 2030 Agenda for Sustainable Development, especially for vulnerable communities and people. We also recognize the importance of formulating comprehensive adaptation and disaster risk reduction strategies at national and local levels, including investment in infrastructure that is resilient to extreme weather events and disasters. While we recognize that adaptation is a global challenge with implication at national, regional, and local levels, we acknowledge the context-specific and local nature of climate impacts, and therefore underscore the importance of promoting adaptation and building resilience at the local level. We recognize that multi-dimensional, ecosystem-based approaches can achieve both conservation objectives and the sustainable use of local resources while addressing local needs and challenges. Noting that ecosystem-based approaches can generate co-benefits such as food security, biodiversity protection, and emissions reductions, we recognize that our discussions and efforts on these approaches can contribute to the consideration of the post-2020 global biodiversity framework, building on the lessons learned from the implementation of the Aichi Biodiversity Targets.

12. We underscore the importance of adaptation planning based on the latest scientific knowledge, best practices and activities as well as enhancing enabling environments and adaptive capacities. We, therefore, will continue to promote international cooperation to share relevant information, best practices and experiences, including indigenous and local knowledge, among various stakeholders. We intend to engage with the private sector to enhance adaptation efforts by mobilizing private finance and investment for resilient transformations, recognizing that adaptation provides new opportunities for business, while bearing in mind the important role of public finance and the importance of deploying innovative, environmentally sound technologies and approaches.
  
13. To this end, we conclude the “G20 Action Agenda on Adaptation and Resilient Infrastructure” as one of the outcomes of the G20 Climate Sustainability Working Group (CSWG) Adaptation Work Program (2018-2019), which outlines actions, initiatives, and best practices that G20 members wish to highlight and share with other countries, drawing upon relevant discussions under the CSWG.