

# **G20 VOLUNTARY ACTION PLAN ON RENEWABLE ENERGY**

(Final Version)

## **G20 Voluntary Action Plan on Renewable Energy**

### **1. Context**

Over the course of last century, the global humanity has been experiencing environmental pollution and climate change. Since the 1990s, global efforts to address this challenge and reduce greenhouse gas emissions have focused on low greenhouse gas from energy systems through greater shares of clean energy sources. Reducing emissions of greenhouse gases, while retaining continued economic growth and sustained social development, requires stepped-up endeavours in different sectors over a long time span. On average, the energy sector contributes two-thirds of the global greenhouse gas emissions, the largest source of which is from fossil-fuelled power generation, transport and industry. This is the key rationale behind the call for a cleaner and low greenhouse gas emission energy system, in particular, the power system. Renewable energy, *inter alia*, has made, and will continue to make, significant contribution on this front, due to its zero or near zero emissions of greenhouse gases and reduction of other conventional pollutants. Besides contributing to climate change mitigation, renewables also contribute to enhancing energy access and energy security, both for rural and urban populations in off- and on-grid settings.

At the 21<sup>st</sup> Conference of Parties (COP21), 195 countries adopted The Paris Agreement under the United Nations Framework Convention on Climate Change, a global agreement on addressing climate change which has been open for signature since 22 April 2016. The agreement provides the cornerstone for global action to, *inter alia*, stabilise climate change by limiting global mean surface temperature rise to well below 2 degrees Celsius (°C) above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C. This historical accomplishment is, however, just a beginning.

The renewable energy sector has been growing rapidly in recent decades, especially in the power sector. With an increase of 8.3% — a record high achieved in 2015 — the global total renewable power generation capacity is approaching 2,000 gigawatts (GW), contributing to about a quarter of the world's electricity production. However, sustaining such fast growth requires increasing efforts to address the new challenges emerging from deployment at scale in the current energy systems, which evolved based on conventional energy fuels. In contrast, there is a real need to accelerate the use of renewable energy sources beyond the power sector especially in end-use sectors such as cooling and heating, transport, and building.



The G20 members host 80% of the world total installed renewable power generation capacity, and hold 75% of total global deployment potential of all renewables in the energy sector for the period from 2010 to 2030, as estimated by International Renewable Energy Agency (IRENA). The G20 members are, therefore, in a position of leading the global renewable energy development and many are engaged in innovative activities to increase research, development and deployment of renewable energy.

In this context, the G20 Energy Sustainability Working Group has proposed a *G20 Voluntary Action Plan on Renewable Energy*, developed under China's presidency in 2016, for adoption by the G20 Energy Ministers at the Ministerial Meeting in 2016. Under the leadership provided by the G20 members, the goal is to unlock the potential of renewable energy through developing and deploying it globally.

The action plan, participated on a voluntary and flexible basis, is a non-binding commitment for the G20 members.

## 2. Aim

The G20 affirms its support for the sustainable development goals on energy in 2015, in which signatories agreed by 2030 to increase substantially the share of renewable energy in the global energy mix. The *G20 Voluntary Action Plan on Renewable Energy* aims to consolidate the leading role that the G20 has in the global renewable energy deployment and development, through the established efforts and new initiatives that can be carried out in 2016 and beyond.

## 3. Key Actions

### 3.1 Increasing substantially the share of renewable energy by 2030

#### Key points

- Encourage G20 members to voluntarily implement policies and programs to accelerate the deployment of renewable energy based on national conditions;
- Promote proactive approaches and actions.

#### Rationale

Renewable energy development in the G20 members has reached an impressive scale, and many countries are implementing national targets for renewable electricity share or renewable energy

consumption share. Yet, there remains significant potential to increase the share of renewable energy. To consolidate the leading role that the G20 has already secured in global renewable energy development and showcase the political momentum built under the G20 framework propelling an energy transition towards a low-greenhouse gas emission future. G20 countries agree to encourage enhanced renewable deployment on a basis of voluntary and flexible participation.

### **Description**

In September 2015, 193 countries agreed on the Sustainable Development Goal 7.2 to increase substantially the share of renewable energy in the global energy mix by 2030. Enhanced efforts are needed to reduce the consumption of fossil fuels, particularly coal, in favour of low emission energy technologies and sources, including renewables.

We encourage G20 members to formulate energy strategies and pathways; adapt these to national contexts and conditions; and ultimately turn strategies into actions. We also encourage the governments to take leadership role in supporting technology innovation, facilitating new business and financing models, in order to increase the take-up of the renewable energy in the sectors of power, transportation and buildings.

### **3.2. Continue the implementation of the "G20 Toolkit of voluntary options on renewable energy deployment"**

#### **Key points**

- Continue G20 Toolkit implementation;
- Voluntary options, as determined by G20 members;
- In-depth analysis at the country level.

#### **Rationale**

The "G20 Toolkit of Voluntary Options on Renewable Energy Deployment" that was adopted at the first-ever G20 Energy Ministerial Meeting has proven to be a useful package of options for actions that the countries may consider to be engaged with and benefit from.

IRENA has spearheaded in-depth studies in the fields such as renewable energy technology cost analysis, renewable energy investment risk mitigation mechanism and structured financing options, and REmap, among others. Based on these study results, the G20 members can analyse the potential for continued cost reduction of renewable energy systems in their own countries,

develop the right national energy policies and the effective measures for promotion of investment and financing in renewables, thereby advancing the rapid development of renewable energy in each individual participating G20 member.

In view of continuation of the development and implementation of actions under the G20 framework, the G20 members agree to continue to support the implementation of the “G20 Toolkit” with the efforts to apply it at the national level on a voluntary basis, thereby promoting bilateral or multilateral collaboration under the G20 framework.

### **Description**

#### **3.2.1 In-depth analysis of renewable technology costs and structure, their cost reduction potential**

Building on the preliminary analysis of renewable energy technology cost reduction potential focusing on the G20 members as a whole, in-depth country studies could be conducted by the country/member supported by IRENA in coordination with other international organisations with focus on how to interpret the results in various national contexts – given differing national cost structures and policy settings –and the implications for national policy makers and follow-up work. This would help the G20 members better understand the current cost structure, the dynamics of the different cost reduction drivers over time, and identify the key opportunities for the future cost reductions that the country may wish to capitalise on. This has important implications for policy makers and ones that need to be acted on soon to ensure continuous cost reductions.

#### **3.2.2 Continue the good practice exchanges on enabling national policy framework design**

Good practice exchanges on enabling national policy framework design among the G20 members will be carried out based on the analyses of policies catalogued in the IEA-IRENA Joint Policies and Measures Database. As a result, the insights for the G20 members with the essential elements in renewable energy policy framework at the national-level and a policy synthesis would help highlight the important trends of policy development and better facilitate the learning process among G20 members. The work could be significantly beneficial for the G20 members with the least developed renewable energy capacity and those members that request involvement with the aim of accelerating their renewable energy deployment.

#### **3.2.3 Continue the development of instruments for renewable energy specific risk mitigation**

As part of the continued implementation of the Toolkit, IRENA, in partnership with financial institutions active in the field, would facilitate to exchange experiences in the use of risk

mitigation instruments and structured finance and develop the concept of a renewable energy specific risk mitigation facility and discuss potential use of voluntary risk mitigation instruments and structured finance approaches within the G20 framework. Participation of such facility, if and when established, will be on a voluntary basis.

#### 3.2.4 Assessment of renewable energy technology potential and development of roadmaps

The REmap study for G20 members has assessed renewable energy technology potential, and provided a cost-benefit analysis, in the context of doubling the share of renewable energy by 2030.

To reveal the current status of renewables deployment as well as a portfolio of options for 2030 at a national level, the G20 members invited IRENA, in close cooperation with the G20 country experts, to expand the initial REmap analyses to an individual country report for each voluntarily participating G20 member. This report will be updated annually by the G20 members with support from IRENA, subject to be consent from the ESWG, to reflect the latest progress in renewable energy development in the participating countries.

#### 3.2.5. Deployment of modern bioenergy

Biomass plays an important role in the energy future mix. To realize this, ensuring sustainable and affordable supply of biomass will be key. IRENA, together with interested G20 members and other organizations, such as IEA Bioenergy, should support implementation of the Global Bioenergy Partnership (GBEP) sustainability indicators and other actions and tools for expanding modern, reliable and sustainable use of bioenergy, including cost assessment of biomass feedstocks for creating reliable feedstock supply markets; expanding the use of sustainable agricultural and forestry residues and waste and other bioenergy feedstocks (e.g. lignocellulosic biofuels) by prioritizing their increased uptake in a cost-effective manner; and supporting the development of innovative biomass applications including co-production of energy and other products, conventional and advanced biofuels and biomaterials to discover new and economically viable applications of biomass.

### **3.3 Improve the frameworks for enabling the scale up of renewable energy investment**

#### **Key points**

- Government's role to establish an enabling framework for scaling up the renewable energy investment;
- Private sector engagement;



- Actively collaborate with G20 other Working Groups.

### **Rationale**

There is clear evidence that renewable energy investments have grown dramatically. The year 2015 witnessed a new record high, an increase by 5% from 2011 in investments.

However, to ensure that the Paris Agreement is effectively implemented and the target of keeping the global temperature rise below 2°C above pre-industrial levels can be met at the end of the century, investments in renewable energy have to be scaled up.

The recent global REmap study indicates that doubling the share of renewables to 36% by 2030, would need global renewable energy investment to increase from US dollars (USD) 286 billion in 2015 to nearly USD 600 billion in 2020 and USD 1,300 billion by 2030. This is in line with the call from the UN Secretary-General Ban Ki-moon at the Investor Summit on Climate Risk for the doubling of clean energy investments by 2020.

### **Description**

The G20 is the leader on both economic and renewable energy fronts and agreed to step up G20's efforts to improve the frameworks for enabling the acceleration of renewable energy investment at appropriate levels in consideration of national circumstances and priorities.

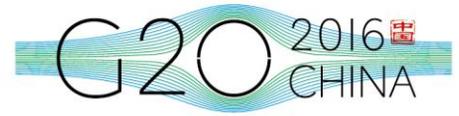
The G20 members agree, in cooperation with other relevant G20 working groups to explore the potential for increased regional infrastructure connectivity and cross-border investment to enable greater levels of investment in renewable energy. The G20 members also agree to encourage international and regional financial institutions and funds, multilateral financial institutions and commercial financial institutions, to take further steps to scale-up of investments in renewable energy technologies, products and services, within and beyond the G20 members.

The participating G20 members agree to work with the G20 Investment and Infrastructure Working Group, the G20 Trade and Investment Working Group, and the G20 Green Finance Study Working Group on all these fronts.

### **3.4 Continue to support the strengthening of international cooperation**

#### **Key points**

- Capacity building for developing countries on renewable energy technologies, energy planning and rural electrification as a priority;
- Encouraging use of the existing international cooperation platforms and mechanisms for renewable energy that are part of the established international organisations;



- Voluntary contributions could be made to support the capacity building and technology transfer from the G20 to the developing countries on a bilateral and multilateral basis, with or without the assistance from relevant international organisations.

### **Rationale**

The existing international cooperation platforms and mechanisms can be instrumental in terms of knowledge generation and sharing. Within the G20 members, there are renewable energy frontrunners and latecomers. To facilitate the exchange of knowledge amongst the G20 members and even beyond to other developing countries, would help accelerate the deployment of renewable energy systems, globally.

### **Description**

In alignment with the G20 Principles on Energy Collaboration agreed by the leaders of G20 members on the 16 November 2014, the G20 members agreed to strengthen the cooperation between G20 members and international energy institutions on renewable energy. We support the study and exchange of successful cases of renewable energy technology development and innovation, through the existing international cooperation platforms and mechanisms that would further facilitate the achievement of the commitment to ensure access to affordable, reliable, sustainable and modern energy for all as required by the UN Sustainable Development Goals. We encourage international organisations, such as IRENA and the IEA, to take the lead in conducting case studies on, and developing voluntary guidelines for, the integration of renewable energy into the current energy systems; the impact of pro-active energy planning on the integration of variable renewable energy sources; smart grids contributing to grid modernisation or upgrading for coping with the growing distributed generation; and renewables in different sectors, including transport, heating, industry and others, in view of national circumstances, capabilities and priorities. Through the toolkit, the G20 requested IEA in collaboration with IRENA to expand its Grid Integration for Variable Renewables (GIVAR) analysis to a broader range of interested countries by taking into account countries' efforts in the field.

The G20 members agree to provide the technical assistance and capacity building on a voluntary basis, wherever possible and appropriate, and taking into account national capabilities, to developing countries on the areas related to renewable energy development and deployment. Through which, developing countries will be able to utilize advanced, efficient and reliable renewable energy technologies.