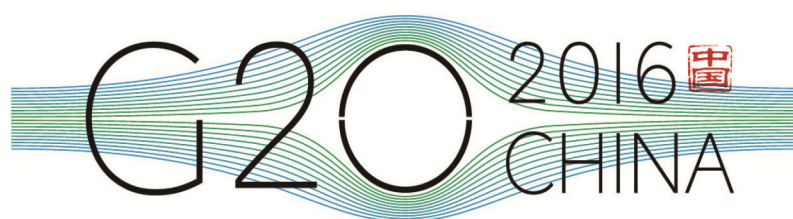


# G20能效引领计划（全文）



## G20 Energy Efficiency Leading Programme(EELP)

2016

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## Executive Summary

Energy efficiency, including energy conservation, is a long-term priority for G20, as it constitutes the optimum utilisation of energy resources. G20 members agree that increased collaboration on energy efficiency can drive economic activity and productivity, strengthen energy security and improve environmental outcomes. As consumers of over 80% of global energy, G20 members can play a significant role in access to energy by continuously improving their energy efficiency performance. Moreover, G20 members have accumulated a wealth of experience and have a demonstrated strength in developing energy efficiency programmes, channeling energy efficiency investments, and driving energy efficiency improvements.

The G20 Energy Efficiency Action Plan (EEAP) adopted in 2014 is a practical plan to strengthen voluntary energy efficiency collaboration in a flexible way. It allows countries to share knowledge, experiences and resources by choosing, on an opt-in basis, the activities that best reflect their domestic priorities and interests.

In recognition of this, G20 members adopt the G20 Energy Efficiency Leading Programme (EELP), which provides the basis for the comprehensive, flexible, and adequately-resourced long term framework necessary for strengthened G20 voluntary collaboration on energy efficiency (see Text box 1). It includes the G20 Voluntary Pillars for energy efficiency cooperation, which characterises international bilateral and multilateral cooperation on energy efficiency as beneficial, innovative, inclusive and sharing.

G20 members commit to significantly improving energy efficiency in the G20 by enhancing energy efficiency cooperation and encouraging G20 members to pursue energy efficiency through a variety of national programmes, policies and measures that reflect the socio-economic diversity within the G20.

Acknowledging that the work conducted by participating members under the 2014 EEAP constitutes the foundation for G20 collaborative action on energy efficiency, the EELP covers the existing activities under the EEAP on Vehicles, particularly heavy-duty vehicles, Networked Devices, Finance, Buildings, Industrial Processes (Industrial energy management), and Electricity Generation. In addition, the EELP expands these work areas to include five new key areas of collaboration: Super-efficient Equipment and Appliances Deployment initiative (SEAD), Best Available Technologies and Practices (TOP TENS), District Energy Systems (DES), Energy Efficiency Knowledge Sharing Framework, and Energy End-Use-Data and Energy Efficiency Metrics. The long-term perspective for each key area is outlined in the EELP, which enables participating G20 members to maximise the energy efficiency opportunities on offer and voluntarily contribute to the long-term progress of energy efficiency in the G20. All G20 members remain free to join or withdraw at any point from Task Groups depending on their own national circumstances, priorities and domestic developments. This flexibility implies that non-participating countries are not bound by the work of the task groups they are unable to join.

The International Partnership for Energy Efficiency Cooperation (IPEEC) will continue to ensure overall coordination and fully support collaboration under the EELP. In this role, IPEEC will cooperate fully with other international organisations<sup>1</sup>. To support effective resourcing for the EELP, G20 members and other participating countries will aim to support and strengthen IPEEC through active participation in their selected areas of work, direct voluntary contributions to those areas of work (financial or in-kind) and, if they are IPEEC members, ongoing voluntary member contributions to IPEEC (financial or in-kind). In order to strengthen the global voice for energy efficiency, G20 members support IPEEC working with the IEA and other international organizations, including IEF, OPEC, OECD, APEC, BRICS, SE4ALL and C2E2, and with stakeholders, and G20 members will explore the feasibility of innovative collaborative arrangements for international cooperation on energy efficiency.

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<sup>1</sup> the International Energy Agency (IEA), the International Energy Forum (IEF), the Organisation of the Petroleum Exporting Countries (OPEC), the Organisation for Economic Cooperation and Development (OECD), the Asia-Pacific Economic Cooperation (APEC), Sustainable Energy for All (SE4ALL), Copenhagen Centre on Energy Efficiency (C2E2)

**Text box 1 - The *EELP*: a long term, comprehensive, flexible and adequately resourced framework for G20 voluntary collaboration on energy efficiency**

- Long-term: Energy efficiency needs time. Based on best practices and knowledge sharing, investments, awareness and skills mature over several years. A long-term forward looking strategy will help avoid locking-in inefficient assets, boost profitability, increase investors' confidence, and go beyond short-term measures that aim for the low-hanging fruit only, and maximise the full potential of energy efficiency gains available.
- Comprehensive: Energy efficiency is rarely the result of one single decision or programme. Energy gains are achieved by combining and utilising experiences of different policy tools in the short-term and long-term objectives, across different sectors of the economy.
- Flexible: Energy efficiency national policies need to be dynamic and updated over time to benefit from lessons learned from national and international developments and constant technological innovation, among other things.
- Adequately Resourced: Like all programmes, energy efficiency needs to be adequately resourced by dedicated human, institutional and financial resources, to allow its deployment at all levels of national and local economies. Support is needed to: i) create an enabling national policy environment; and ii) generate direct investments by public and/or private stakeholders into energy efficiency solutions, systems and technologies.

## 1. G20 as a Leading Force in Improving Energy Efficiency in the World

### 1.1 The multiple benefits of energy efficiency for advancing global sustainable development

Energy efficiency benefits are not limited to maximum utilisation of energy resources, but beyond to include reduced greenhouse gases emissions. Acknowledging the dangers of climate change, environmental degradation and resource constraints, both developed and developing countries have increasingly recognised sustainable development as an important goal.

Energy efficiency contributes greatly to socio-economic development and quality of life. In addition to helping reduce final energy consumption, improved energy efficiency contributes to energy security, reduced greenhouse gas emissions, retained environment pollution, reduced energy infrastructure spending, reduced energy poverty, enhanced public health and industrial competitiveness, among others<sup>2</sup>.

Energy efficiency is a priority for many G20 members and one of the most important choices in energy utilisation. It has been shown that energy efficiency has consistently reduced annual energy consumption over the past decade. For instance, between 2001 and 2011, energy efficiency improvements have allowed 18 IEA member countries to avoid the equivalent of 1,731 million tonnes of oil-equivalent (Mtoe)<sup>3</sup>. These energy savings exceeded total oil consumption by more than 400 million toe, and were much higher than total electricity and natural gas consumption.<sup>4</sup> By the quantity in energy supply and demand balance, and the cost-effectiveness of all energy balancing measures, energy efficiency could be regarded as an important energy resource comparable to other conventional sources of energy (coal, oil, gas, and electricity).

<sup>2</sup> The IEA has identified more than 20 different types of economic, social, and environmental co-benefits – See IEA (2014), *Capturing the Multiple Benefits of Energy Efficiency*.

<sup>3</sup> IEA (2014), *Energy Efficiency Market Report*.

<sup>4</sup> IEA (2013) *Energy Efficiency Market Report*.

## 1.2 The G20 is capable of taking the lead in improving global energy efficiency

The G20 holds a crucial position in the global economy and energy landscape, especially in terms of energy security. The G20 covers the world's major economies, accounting for around 84% of the world's total economic output, more than 80% of primary energy consumption and 80% of global greenhouse gas emissions. Given this, and given its important political weight, the G20 can take on an exemplary role in leading the world towards energy efficiency improvements and their financing, as well as in promoting the development of technology to ensure future sustainable development through the utilisation of all indigenous energy resources.

G20 members have considerable successful experience in energy efficiency measures, and in achieving energy reductions. Between 1990 and 2013, the annual energy consumption per unit of gross domestic product (GDP) decreased by 1.4% across G20 members. In Germany, China, India, Indonesia, the United Kingdom (UK), and the United States (US), energy consumption per unit of GDP decreased by 2% each year during that period. From 1990 to 2013, the G20's total energy consumption savings reached about 4.3 billion toe, and about 10.4 billion tonnes of carbon dioxide emissions were avoided<sup>5</sup>.

As the world's major economies, the economically attractive opportunity to invest in energy efficiency creates market demand for finance in G20 members that requires enhanced capital flows into energy efficiency investments. According to the IEA, the potential size of global investment opportunities for energy efficiency was estimated at USD 310 billion in 2012<sup>6</sup>, and is growing every year. Recognising this, more and more governments and financial institutions in the G20 have given energy efficiency finance a high priority. The volume of capital investment into energy efficiency has accelerated, investments have become increasingly incentivised, and a growing number of financial innovation measures have begun to develop in this area.

To tap into this potential, members initiated the *EEAP* in 2014, thereby elevating energy efficiency as a key G20 issue. In 2015, G20 Leaders reaffirmed the importance of continued progress on energy efficiency, restated their commitment to increase support for energy efficiency, and agreed that energy efficiency plays an important part in ensuring sustainable energy<sup>7</sup>. This followed the agreement of the first G20 Energy Ministers to provide a long-term perspective to international collaboration on energy efficiency<sup>8</sup>.

<sup>5</sup> <http://g20-energy-efficiency.enerdata.net>

<sup>6</sup> IEA (2014) *Energy Efficiency Market Report*.

<sup>7</sup> See G20 Leaders' Statement 2015.

<sup>8</sup> G20 Energy Ministers' Communique. This Communique was then referenced in the G20 Leaders' Statement, during their Summit which took place in Antalya from 15-16 November 2015.

### 1.3 Further strengthening the outlook for international collaboration on energy efficiency

In 2011, United Nations Secretary General Ban Ki-moon presented three objectives to achieve the transition to clean energy and global clean, low-carbon growth. These objectives were restated in September 2015 as Goal #7 of the “Sustainable Development Goals” (SDGs) agreed by the United Nations General Assembly<sup>9</sup>, which aims to:

1. Ensure universal access to modern energy services;
2. Increase substantially the share of renewable energy in the global energy mix; and
3. Double the global rate of improvement in energy efficiency.

In December 2015, at the 21st Conference of Parties (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC), member states reached a new international agreement on climate change, called the *Paris Agreement*. The *Paris Agreement* aims to curb the global average temperature rise above pre-industrial levels to 2 degrees Celsius (2°C), and proposes to limit the temperature increase to 1.5°C above pre-industrial levels. The *Paris Agreement* aims to achieve an equal balance between anthropogenic emissions from sources and the removal of greenhouse gases through sinks in the second half of this century, all within the context of sustainable development and efforts to eradicate poverty. By the end of October 2015, a total of 119 Intended Nationally Determined Contributions (INDCs) had been submitted to the UNFCCC, covering a total of 146 countries, which collectively are responsible for 86% of global greenhouse gas emissions based on 2012 levels<sup>10</sup>. All G20 members submitted INDCs and made commitments to address climate change<sup>11</sup>. In the aftermath of the signing of the Paris Agreement, countries are now developing and implementing their own INDCs (to become Nationally Determined Contributions – or NDCs- upon ratification of the Paris Agreement), which marks an important step in the transition towards a low-GHG economy.

Another noteworthy development has been the statement by Leaders of the Asia-Pacific Economic Cooperation (APEC) forum, made in their Declarations of 2011, of an ambitious goal for the APEC region to reduce energy intensity by 45% by 2035 compared to 2005.

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<sup>9</sup> <https://sustainabledevelopment.un.org/post2015/transformingourworld>

<sup>10</sup> UNFCCC, [http://unfccc.int/focus/indc\\_portal/items/8766.php](http://unfccc.int/focus/indc_portal/items/8766.php)

<sup>11</sup> UNFCCC, <http://www4.unfccc.int/submissions/INDC/Submission%20Pages/submissions.aspx>



Energy efficiency is one of the most important mechanisms through which countries can act to mitigate climate change in the short-term to long-term. According to the IEA<sup>12</sup>, energy efficiency can contribute up to 49% of the energy related CO<sub>2</sub> emission reductions that are needed to limit global temperature increases to less than 2°C by 2050. The above developments reflect the growing emphasis placed on energy efficiency internationally.



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<sup>12</sup> These are consistent with the existing G20 Principles for Energy Collaboration agreed in 2014.<sup>13</sup> These are consistent with the existing G20 Principles for Energy Collaboration agreed in 2014.

## 2. G20 Voluntary Pillars for Energy Efficiency Cooperation

G20 members are encouraged to strengthen bilateral and multilateral cooperation on energy efficiency, as well as to share experiences on energy efficiency improvements with G20 members and non-G20 members, in order to play a leading role in improving energy efficiency in the long-term.

G20 members agree to improve energy efficiency cooperation on the basis of the following four voluntary pillars<sup>13</sup>:

1) Mutual beneficial: Enable mutual benefits through bilateral and multilateral cooperation between G20 members by utilising members' wealth of experiences.

2) Innovative: Encourage and support innovative energy-efficient technologies and practices through research and development, demonstration and dissemination; as well as developing open and effective energy efficiency programmes that encourage energy technology transfer.

3) Inclusive: Encourage countries at different stages of economic development, with different natural resource endowments and population densities, to implement energy efficiency improvements according to local conditions, and share developed corresponding energy efficiency aims and formulations of collaboration that are in accordance with their national development objectives.

4) Sharing: Encourage and strengthen the collection, dissemination and analysis of knowledge and information for G20 members to carry out energy efficiency improvements and to provide technical support.

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<sup>13</sup> These are consistent with the existing G20 Principles for Energy Collaboration agreed in 2014.

### 3. G20 Long-Term Aim to Improve Energy Efficiency

In recent years, G20 members have formulated various energy efficiency programmes within their national economic and energy development strategies that clearly demonstrate the great importance they attach to energy efficiency.

G20 members agree to adhere to the Voluntary Pillars for Energy Efficiency Cooperation, which are "mutually beneficial, innovative, inclusive, and sharing".

G20 members commit to significantly improving energy efficiency in the G20 by improving energy efficiency cooperation and encouraging G20 members to develop active energy efficiency programmes, policies and measures based on each member's own social and economic context.

G20 members agree to the *EELP*, as a long-term energy efficiency programme, and in doing so, take a leading role in achieving sustainable energy efficiency growth during future G20 presidencies.

G20 members will work to significantly improve energy-efficient technologies and equipment coverage, as well as effectively work to enhance capacity building and the policy and regulatory environment for energy efficiency investments, taking into account different national realities, capabilities and levels of development within countries, and respecting national policies and priorities.

G20 members are encouraged to develop voluntary national energy efficiency programmes, in line with each member's respective circumstances.

## 4. Key areas of collaboration

The *EEAP* outlined six key areas of work on energy efficiency<sup>14</sup> that initially formed the backbone for international collaboration on energy efficiency organized by the International Energy Partnership for Energy Efficiency Cooperation (IPEEC) under the G20 mandate. The *EELP* adds five new key areas (Super-Efficient Appliances Deployment initiative, TOP TENS, District Energy Systems, Energy Efficiency Knowledge Sharing Framework, and Energy End-Use-Data and Energy Efficiency Metrics). This expansion stems from interested G20 members' desire to scale up improvements in energy efficiency. G20 members and guest countries, based on their national priorities and capabilities, will select and voluntarily participate for as long as they consider appropriate in the key areas of work and Task Groups in which they are interested. The long-term perspectives and pathways outlined in each key area of collaboration are not mandatory for participating G20 members, but are only intended to reflect the general direction of activities which members can pursue. This flexibility also implies that non-participating countries are not bound by the work of the task groups they are unable to join.

### 4.1 Key area 1: Vehicles

Globally, the transport sector is estimated to account for around 20% of total energy use, with heavy-duty vehicles (HDVs) alone consuming around half of all transport fuels. G20 nations account for over 90% of global vehicle sales, so their policies largely determine the energy, air quality, and climate impacts of the sector globally.

The Transport Task Group (TTG) is led by the United States, and participated by 13 member economies.

<sup>14</sup> Vehicles, Networked Devices, Finance, Buildings, Industrial Process( Industrial Energy Management) and Electricity Generation

#### **4.1.1 Long-term perspective and pathway**

The long-term perspective of the TTG is to support participating and other interested countries in developing and implementing world-class policies and programmes to reduce the energy and environmental impacts of motor vehicles, especially HDVs.

Countries are encouraged to develop their own policy goals and milestones towards world-class clean fuel and vehicle standards. Examples of existing policies and programmes, which G20 members could all aspire to, are:

1. Introduction of mandates for clean fuels with a maximum sulfur content of 10-15 parts per million (ppm) to reduce emissions and enable advanced emission control technologies;
2. Introduction of stringent tailpipe emissions standards to minimise harmful pollutant emissions. For light-duty vehicles (LDVs), world-class standards are Euro 6, U.S. Tier 2/3, or equivalent standards. For HDVs, these are the Euro VI, U.S. HD2010, or equivalent standards;
3. Development of standards and programmes to improve fuel efficiency and reduce GHG emissions from LDVs and HDVs, to the greatest extent possible. Some countries aim to reduce the fuel consumption of new LDVs by 50% from a 2005 baseline by 2030, and to reduce the fuel consumption of new HDVs by 30% from a 2010 baseline by 2030;
4. Support to Green Freight programmes to help freight companies achieve cost-effective energy efficiency improvements in their vehicle fleets.

Other actions and options, such as promoting the use of low GHG complementary fuel, including sustainable biofuels, onboard capture and storage, or electric vehicles / new energy vehicles - have been successful in several G20 countries, and are useful to showcase world-class policies and programmes to reduce the energy and environmental impacts of motor vehicles. Examples include policies and programmes to support low-carbon biofuels as well as electric and hybrid electric vehicles.

Robust national compliance programmes, including in-use compliance programmes, an important part of all policies and programmes, help ensure standards are effectively implemented and enforced, and expected results are achieved.

#### **4.1.2 Achievements**

Since 2015, the TTG has achieved a number of important milestones, including:

1. Secured G20 Energy Ministers' agreement to develop G20 Policy Roadmaps for reducing the energy and environmental impacts of motor vehicles, with specific focus on HDVs;
2. Produced an international assessment of existing regulations and programmes<sup>15</sup>;
3. Conducted a survey of participating countries on their institutional needs and technical challenges to inform the development of the Policy Roadmaps; and
4. Led policy exchanges on experiences and best practices on key issues<sup>16</sup>.

#### **4.1.3 Planned work**

The TTG will focus on supporting domestic progress in participating and other interested countries by sharing experiences on best practices in energy and environmental policies for vehicles and fuels, especially HDVs, including by:

1. Developing Policy Roadmaps outlining future policy and programmatic improvements in participating and other interested G20 members;
2. Engaging the financial community to provide guidance on financing for energy-efficiency investments (e.g. for oil refinery upgrades to produce low-sulfur fuels);
3. Encouraging ongoing policy exchanges on experiences and best practices on key issues to support nations in developing and implementing world-class policies and programmes to reduce the energy and environmental impacts of vehicles and fuels;
4. Exploring the creation of an annual workshop of Achievement for participating G20 members to recognize their commitment and progress in the area of clean fuel and vehicle standards.

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<sup>15</sup> International Council for Clean Transport (ICCT), Policies to Reduce Fuel Consumption, Air Pollution, and Carbon Emissions from Vehicles in G20 Nations.

<sup>16</sup> These included among others: compliance and enforcement and sustainable alternative fuels (natural gas, electricity, hydrogen, and sustainable biofuels).

## 4.2 Key area 2: Networked Devices

The number of devices connected to the network is expanding rapidly, and eventually almost all appliances will be networked. By 2030, networked devices may represent as much as 6% of current final global energy consumption<sup>17</sup>. In this context, the small amount of energy demand from individual products to remain ‘connected’, will have very large impacts in terms of energy consumption<sup>18</sup>. Much of that consumption could be reduced through improved energy management. At the same time, efficient networks and networked devices have the potential to substantially raise the overall energy productivity of economies. To take advantages of these opportunities, since 2015 the United Kingdom and the IEA have led the Networked Devices Task Group (NDTG)<sup>19</sup>, bringing together nine countries of the G20 to identify energy efficiency policy options for networked devices.

### 4.2.1 Long-term perspective and pathway

The work of the NDTG has led to the establishment of the Connected Devices Alliance (CDA), a platform for international cooperation among 350 government and industry representatives which pursues two aims:

1. Realise a world where devices and networks optimise energy management while delivering increased energy productivity across all sectors; and
2. Maximise network-enabled energy savings and minimise the energy consumption from all networks and network-connected devices.

### 4.2.2 Achievements

Since 2015, the NDTG has held four international workshops and developed a series of new initiatives to improve the energy-efficiency of connected devices, and has:

1. Devised Design Principles on key features of energy-efficient networked devices, networks and communication protocols for designers, manufacturers and authors;
2. Decided on Policy Principles for participating countries to encourage a common framework for the development of government policies;

<sup>17</sup> It is estimated that there will be 50 billion networked devices by 2020 (More Data Less Energy, OECD/IEA, 2014)

<sup>18</sup> Already, the current annual standby power consumption of networked devices is estimated at over 600 TWh, which is greater than Canada’s total annual electricity consumption for 2011.

<sup>19</sup> NDTG is short for Networked Devices Task Group.

3. Agreed to a first set of Definitions that provide a common understanding of key elements and underpin the development of policies in this area for participating countries;
4. Launched a Centre of Excellence<sup>20</sup> with information for participating governments and industry on best practices and energy savings opportunities in networked devices and networks;
5. Researched the issues of ‘Energy Aware Devices’ and ‘Intelligent Efficiency’; and
6. Explored opportunities for Recognition Awards<sup>21</sup> for industry and governments and for Market Monitoring activities for participating countries to track policies and potential savings relating to networked devices.

#### **4.2.3 Planned work**

The CDA will continue to provide a platform for international collaboration between governments and industry to achieve the above stated aims. In 2016, the group has and will focus on promoting the Policy and Design Principles so that they are actively supported and propagated as appropriate by participating G20 governments, industries, product manufacturers, designers and standards-making bodies. This will happen through continuation of the initiatives mentioned above, and the hosting of workshops.

Beyond 2016, the CDA will focus on progressing work under each initiative, with particular attention to: expanding its membership; investigating the scope for new voluntary efficiency targets for products; promoting the use, by industry and participating governments; and developing methodologies to measure energy efficiency outcomes. It is envisaged that at least one workshop will be held annually to monitor progress.

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<sup>20</sup> The web portal is operational at <http://cda.iea-4e.org>

<sup>21</sup> These would be in partnership with SEAD under their ‘Global Efficiency Medal’, see section 4.7



### 4.3 Key area 3: Finance

Energy efficiency requires enhanced finance to support its deployment across G20 economies at the national and local levels. The Energy Efficiency Finance Task Group (EEFTG), led by France and Mexico and counting 14 G20 members, aims to remove barriers, enhance policy support, and drive public and private sector action to drive greater capital flows towards energy efficiency in the G20.

#### 4.3.1 Long-term perspective and pathway

To achieve this, in the long-term, the EEFTG aspires to scale-up energy efficiency investments significantly, as investments must increase multiple times to meet the Sustainable Development Goal on energy. This will require participating G20 members to work together to:

1. Build robust, investment grade<sup>22</sup> national policy and investment frameworks;
2. Identify and replicate best practices in finance among participating G20 members;
3. Optimise public resources to lever and scale-up private sector investments in participating G20 members; and
4. Facilitate the dialogue between participating G20 policymakers and the private and public sector finance community, industry and international organisations.

#### 4.3.2 Achievements

Since 2015, the EEFTG has increased the visibility of the issue of energy efficiency finance and encouraged greater action by the private and public sectors by:

1. Developing the Voluntary Energy Efficiency Investment Principles for G20 Participating Countries to address existing barriers in G20 countries and enhance capital flows to energy efficiency investments;
2. Contributing to the G20 Energy Efficiency Investor Statement endorsed by over USD 4 trillion of private sector institutional investors to fully embed energy efficiency into their investment processes;
3. Launching and promoting Financial Institutions Energy Efficiency Statements, supported by 106 banks from over 40 countries, to drive energy efficiency investments;

<sup>22</sup> 'Investment grade' refers to a rating that indicates a relatively low risk of default. By extension, an 'investment grade policy framework' refers to a policy framework that indicates a low regulatory risk, thereby enabling energy efficiency investments.

4. Leading consultative processes<sup>23</sup> with participating G20 members, financial institutions, and private sector experts to identify the policy frameworks required for the implementation of the Voluntary Energy Efficiency Investment Principles for G20 Participating Countries; and
5. Publishing the conclusions of their research<sup>24</sup>, with identified policy options and case studies to share experiences and best practices among G20 members.

### **4.3.3 Planned work**

The EEFTG plans further collaboration to enhance capital flows to energy efficiency through the following activities:

1. Working with participating G20 members to enhance national investment policy environments through the framework of the Voluntary Energy Efficiency Investment Principles<sup>25</sup>;
2. Strengthening these Principles by gathering additional data, implementation experience and commitments, including through the support of the UNEP FI and its partners;
3. Broadening and deepening private sector engagement, including through the establishment of a Private Sector Energy Efficiency Investment Platform, and other work with long-term investors, banks and insurers with our partner support;
4. Mobilising IFIs to support finance where most needed (e.g. capacity building), and to directly fund technical assistance for project development, finance intermediaries, and the aggregation of energy efficiency investments;
5. Engaging with participating G20 members in the framework of the Principles to support cooperation and communicate on the finance and investment aspects of the EELP;
6. Connecting and communicating with other international initiatives on energy efficiency finance to avoid redundancy, broaden reach and deepen commitment;

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<sup>23</sup>'Investment grade' refers to a rating that indicates a relatively low risk of default. By extension, an 'investment grade policy framework' refers to a policy framework that indicates a low regulatory risk, thereby enabling energy efficiency investments. tings with international organisations to find way for further endorsement of the Principles and Statements cited above.

<sup>24</sup> See 2015 Activity Report of the G20 Energy Efficiency Finance Task Group.

<sup>25</sup> Supported by UNEPFI, IEA, OECD, CEM, World Bank, among others.

7. Encouraging participating G20 members to incentivise the development of a pipeline of energy efficiency projects and collaborating with partners to help support this activity;
8. Promoting policy frameworks and best practices in EEFTG participating countries including through Technical Engagement Workshops;
9. Encouraging energy efficiency investments and their positive impacts to be systematically considered alongside supply-side investments relating to G20 countries energy systems;
10. Recognizing the importance of energy efficiency considerations in all relevant decision making to significantly increase and strengthen energy efficiency investments in G20 economies in the context of a balanced progression of the three dimensions of sustainable development;
11. Reinforcingt of the policy framework in each G20 country to drive energy efficiency investments by sectors;
12. Increasing the effectiveness of public and private financial institutions in using tailored approaches to structure and facilitate energy efficiency investments in each sector of the economy.

#### 4.4 Key area 4: Buildings

Buildings offer significant energy savings as they account for over 30% of global final energy consumption, and it is estimated that G20 members alone could account for three-fourths of the cumulative global building energy savings potential. Recognising this, the Buildings Energy Efficiency Task Group (BEET), led by Australia and the United States and engaging most G20 members, aims to research, inform, and support the development and implementation of effective building energy efficiency policy options .

##### 4.4.1 Long-term perspective and pathway

International cooperation can help realise the large energy savings potential in buildings by pursuing joint efforts to develop, compare and promote effective national building energy policy options and tools. This includes collaborating on energy rating systems, energy codes, sharing best practices, experiences, expertise, data and analysis.

##### 4.4.2 Achievements

Since 2008, the BEET project has helped advance energy efficiency in buildings and has:

1. Produced a foundational BEET1 report, Building Energy Rating Schemes, which found that energy rating programmes have the greatest impact when combined with other policy levers<sup>26</sup>, and underscored the need for improved data;
2. Released the BEET 2 report on Building Energy Efficiency: Opportunities for International Collaboration, which provided options to develop building energy performance metrics to gauge progress and identify areas for improvement<sup>27</sup>;
3. Issued the BEET3 report on Delivering Energy Savings in Buildings, with recommendations <sup>28</sup> to improve compliance with building energy codes; and launched a BEET3 portal<sup>29</sup> to share approaches to building code implementation; and

<sup>26</sup> These include code enforcement, financial incentives, quality assessments, assessor training, as well as robust outreach and communications efforts.

<sup>27</sup> The report also presented a number of actions that countries could consider taking, such as extending building rating, labelling, and disclosure policies to cover more building types and implementing cost-effective building energy codes for all new construction and renovation.

<sup>28</sup> These include: code compliance checking systems; measuring performance of buildings against code design; and incentives (sticks and carrots) for code compliance and encourage beyond-code performance; among other areas.

<sup>29</sup> This BEET3 portal is hosted by the Global Buildings Performance Network (GBPN): <http://www.gbpn.org/laboratory/building-energy-codes-portal>

4. Published quantitative data on the energy efficiency performance of buildings in G20 countries, which constitutes one of the broadest and finest sets of data available to date, through the BEET4 report, Building Energy Performance Metrics. The report further highlights the need for smart efficiency policies options to optimize energy consumption in buildings.

#### **4.4.3 Planned work**

In 2016, participating countries will work together to identify successful elements of rating schemes as a key path to driving greater energy gains in the buildings sector. They will conduct an international review of residential building energy efficiency rating schemes, looking at elements such as: administrative structures, operational cost-effectiveness, and impact on energy consumption. The objective of this review, which will lead to the publication of a BEET5 report, is two-fold: i) help countries build national energy rating schemes and disclosure systems; and ii) enhance information available to the public on successful elements of rating schemes.

They will also seek to further disseminate best practices in code implementation to allow participating countries to effectively learn from one another. This may include: further development of the BEET 3 building energy codes portal; reports on best practices in code implementation and compliance; and webinars and dialogues to share experiences in code implementation.

Beyond 2016, participating countries will focus on continuing the development of resources and collaborative models aimed at assisting nations to improve building energy productivity, possibly focusing on effective building codes, rating systems and metrics. All of the above initiatives will help drive greater efficiency gains in the buildings sector, an area with one of the largest potentials for improvement.

#### **4.5 Key area 5: Industrial Processes (Industrial Energy Management)**

Industry and commercial buildings cover over 50% of global energy use. By increasing uptake of energy management systems, the energy productivity of energy-intensive industrial processes and firms can be improved and bring about large energy and GHG savings. The Energy Management Working Group (EMWG), led by the United States, and the Energy Management Action Network (EMAK) led by Japan and China aim to realise the energy efficiency potential these sectors offer. They each bring together 11 members of the G20.

##### **4.5.1 Long-term perspective and pathway (Energy Management Working Group, EMWG)**

In the long-term, the EMWG aims to have 50,000 facilities using energy management systems, such as the ISO 50001 standard. It pursues this objective by:

1. Encouraging industrial facilities and commercial buildings to continuously improve their energy efficiency performance (through the ISO 50001 standard);
2. Promoting public and private partnerships for cooperation on specific technologies in individual energy-intensive sectors; and
3. Serving as a discussion forum for best practices.

##### **4.5.2 Achievements**

Since 2010, the EMWG has supported technical exchanges among participating countries for greater uptake of effective energy management systems. Most recently, it has:

1. Established a certification scheme for auditors of the ISO 50001 standard, to increase consistency in its implementation in participating countries;
2. Trained and certified over 40 professionals to assist in the implementation of the standard;
3. Published practical case studies (aiming to release 40 by July 2016) with real-world data and users' experiences in energy management systems;
4. Facilitated pilot projects to harmonise technical approaches among members, focusing on the United States, Mexico and Canada;
5. Facilitated technical exchanges, including on: measurement and verification; training and certification of professionals; and development of technical tools, among other things; and
6. Hosted webinars and bilateral meetings to share policy best practices, latest developments, technical tools and approaches, and areas for new joint activities.

#### **4.5.3 Planned work**

Looking forward, the EMWG and EMAK have identified work required for further uptake of energy management practices to help realise the large productivity gains in this sector. In 2016 and beyond, EMWG plans to:

1. Ensure quality implementation of ISO 50001 worldwide, including through regional workshops in key ISO 50001 markets, such Latin America, China, and potentially South East Asia;
2. Evaluate and promote the value of implementing the ISO 50001 standard, including through: establishing an ISO 50001 Impacts Research Network; conducting impact analyses; and developing a transparent methodology to predict, quantify, and demonstrate the value of ISO 50001;
3. Launch the Energy Management Campaign to lock-in participating government, private sector and other stakeholder commitments to support the uptake of ISO 50001 and its robust and consistent implementation worldwide; and
4. Launch Energy Management Leadership Awards to recognise companies' and organisations' achievements in successfully implementing ISO 50001 projects in participating countries, as well as other types of awards to offer and expand recognition opportunities.

#### **4.5.4 Long term objective and pathway (Energy Management Action Network)**

The long term objective of EMAK is to reduce energy-intensity drastically in the industrial sector by establishing and enhancing energy management systems and related policy and legal frameworks. EMAK pursues this aim by:

1. Building capacity through the sharing of best practices and tools on the use of energy management systems; and
2. Creating opportunities for networks between policy makers and industrial practitioners who are responsible for energy management.

#### **4.5.5 Achievements**

Since 2009, EMAK has organised seven workshops and two webinars for the purpose of sharing experiences on designing and implementing energy efficiency policies and programmes among many policy makers and energy managers. In 2015, EMAK hosted two workshops in India and Russia:

1. The first workshop held in India focused on energy efficiency in small and medium sized enterprises (SMEs) and waste heat recovery measures. The workshop served to identify the barriers to enhancing energy efficiency actions and sharing and implementing energy efficiency policies and programmes for SMEs. It provided a better understanding for the technical opportunities to reuse waste heat in industrial organisations.
2. The second workshop held in Russia focused on energy management systems and ESCO<sup>30</sup> programmes. The workshop served to provide experiences and lessons learned from Russia, Japan, China, Australia and UNIDO<sup>31</sup> on energy management systems and ESCO programmes.

#### **4.5.6 Planned work**

In 2016 and beyond, EMAK plans to:

1. Hold workshops to provide best practices on energy management systems for policy makers and energy managers; and
2. Identify the options (tools and best practices) to overcome energy efficiency barriers.

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<sup>30</sup> Energy services company

<sup>31</sup> United Nations Industrial Development Organization



## 4.6 Key area 6: Electricity Generation (High-Efficiency Low Emissions - HELE)

Over the past twenty years, global electricity generation expanded approximately 1.6 times, with fossil fuels accounting for the largest share of this growth. According to the IEA<sup>32</sup>, this trend is projected to continue until 2040. The Electricity Generation Task Group, led by Japan, aims to support energy efficiency improvements in conventional electricity generation, focusing on its seven participating countries.

### 4.6.1 Long-term perspective and pathway

In the long-term, power generation technologies - in the form of supply-side improvements in energy efficiency through the introduction of HELE power plants - could be a pragmatic measure to limit GHG emissions. The Electricity Generation Task Group supports collaboration among participating countries with the aim to:

1. Improve understanding of HELE technologies (such as Ultra Super Critical, Integrated Gasification Combined Cycle, and Carbon Capture and Storage) in participating G20 members where fossil fuels are a major source of power generation, and of their technical, financial and environmental aspects;
2. Develop and disseminate best practices in operation and maintenance; and
3. Continue workshops and side-visits to foster technical cooperation.

### 4.6.2 Achievements

In 2015, the Electricity Generation Task Group organised two workshops, which brought together numerous G20 members, private sector leaders and international organisations<sup>33</sup>:

1. The first workshop focused on clean coal technology and served as a forum for discussing a wide range of topics, from research and development to finance, to help participants gain a better understanding of technology, options and financial instruments that could facilitate clean coal.
2. The second workshop enabled knowledge-sharing on HELE technologies and barriers to deployment, including through a site-visit to a coal-fired power plant to allow information exchange on best practices and to identify a detailed approach for further progress.

<sup>32</sup> IEA World Energy Outlook, 2014

<sup>33</sup> This included the Asian Development Bank, IEA, IPEEC, OECD, Organization of the Petroleum Exporting Countries and World Coal Association.

#### **4.6.3 Planned work**

In 2016 and beyond, the Task Group plans to:

1. Hold technical tours and workshops to allow for discussions on policy options and technologies related to HELE;
2. Develop a common measurement basis for GHG emission reductions in participating countries through improvements in operation and maintenance;
3. Encourage the construction and use of HELE technologies as a pragmatic energy option, especially in areas where fossil fuels continue to be a major source of electricity generation; and
4. Encourage further collaboration on technical and financial barriers and solutions to greater uptake of HELE plants.

#### **4.7 Key area 7: Super-Efficient Equipment and Appliance Deployment initiative (SEAD)**

Worldwide electricity consumption is expected to continue growing, driven in part by the increasing use of equipment, appliances, lighting, and other devices. The associated growth in energy consumption poses a number of challenges for governments, including electric grid overloads, power outages, declining air quality, and other environmental challenges such as climate change.

The existing IPEEC SEAD initiative, co-led by the United States and India, brings together 18 participating governments to accelerate and strengthen the design and implementation of appliance energy-efficiency options and related measures, which are proven cost-effective approaches to address the above energy, economic and environmental challenges.

##### **4.7.1 Long-term perspective and pathway**

By employing current best practices, SEAD countries can reduce annual electricity demand and therefore annual fuel energy demand. This would decrease GHG emissions and improve the environment, in addition to sizable cost saving.

##### **4.7.2 Achievements**

Since its inception in 2009 as an IPEEC Task Group, SEAD has:

1. Raised awareness on lighting efficiency by launching the Clean Energy Ministerial (CEM) Global Lighting Challenge, and secured commitments from 13 governments as well as lighting manufacturers/retailers to deploy over 10 billion high-efficiency LEDs<sup>34</sup> as quickly as possible;
2. Supported the development of energy-efficient measures for appliances in Mexico by investigating the impact of appliance minimum energy performance standards (MEPS)<sup>35</sup>;
3. Brought together initiatives on Awards, Incentives, and Procurement to promote the manufacture, purchase, and use of energy-efficient appliances, lighting, and equipment worldwide; and
4. Created a new online SEAD Policy Exchange Forum (SPEx)<sup>36</sup> to promote informal and voluntary policy dialogues among participating member governments on cost-effective product options.

<sup>34</sup> LEDs: Light-Emitting Diodes

<sup>35</sup> Since 2000, MEPS are saving 6 billion kWh annually in Mexico.

<sup>36</sup> <http://www.superefficient.org/spex>

#### 4.7.3 Planned work

In 2016 and beyond, SEAD aims to pursue its mandate through a range of activities among participating countries, including:

1. Promoting policy dialogue, by:
  - a) Launching the "Energy Efficiency Leading Program Product Best Practice Exchange Series" to engage efficient product experts from across G20 countries and beyond to share their experiences through a series of virtual and face-to-face workshops from May 2016 to November 2017. This task would be delivered collaboratively through the existing mechanisms offered by SEAD, 4E<sup>37</sup> and the IEA, and would reflect the scale of efficiency opportunities in end-use products and complement existing G20 activities taking place under the Networked Devices Task Group;
  - b) Supporting country-specific technical exchanges (e.g. U.S.-Mexico Appliance Standards and Labelling Technical Exchange);
  - c) Hosting SEAD Policy Exchange Forum (SPEX) webinars to share insights on innovative options, technical questions, and market developments; and focusing on key topics such as: Multiple Benefits of Improving Product Efficiency; Performances Standards Approaches; or Air Conditioner Efficiency; and
  - d) Identifying and sharing best practices for adoption of energy-efficient products (e.g. computers and motors), and conducting comparative analyses of modelling tools and results underpinning energy-efficiency devices.
  
2. Recognising achievements, by:
  - a) Launching the SEAD Global Efficiency Medal competition for outdoor and industrial lighting to recognise corporate leadership in manufacturing highly-efficient products;
  - b) Providing governments with updates on market developments to inform procurement options and new standards in participating G20 members;
  - c) Developing Recognition Awards with the NDTG to encourage best practices among networked products and protocols;
  - d) Supporting the expansion and tracking of CEM Global Lighting Challenge, including use of SEAD Street Lighting Procurement Tool; and
  - e) Building on the SEAD Air Conditioning Strategy and collaboration with India to launch the CEM Advanced Cooling Challenge to ensure that rapidly growing global demand for cooling services will be met by highly energy-efficient products.

<sup>37</sup> Energy Efficient End-use Equipment, a technology collaboration programme of the IEA

#### **4.8 Key area 8: Sharing Best Available Technologies (BATs) and Best Practices (BPs) (TOP TENS)**

Sharing Best Available Technologies (BATs) and Best Practices (BPs) is an important means to improve energy efficiency and address environmental issues, including climate change<sup>38</sup>. The objective of the TOP TENS Task Group is to improve the way in which participating countries share and disseminate information on the BATs and BPs in use today, as well as to accelerate widespread application of technological innovations.

Established in 2013 to realise this opportunity for collaboration, the TOP TENS Task Group is co-led by China and Australia through the IPEEC, and currently brings together 7 participating G20 members.

Participating G20 members develop BATs and BPs lists by assessing data on their domestic companies and public sectors' energy efficiency using an agreed set of TOP TENS methodology. The methodology includes criteria on, for example, the energy savings potential of a technology or practice, its reliability, payback period and level of innovation. Company projects are rated against the criteria and listed accordingly. Each member's domestic lists and the collective international lists all contain case studies which showcase how the technology or practice has been used. The initial lists cover the industrial, building and transportation sectors.

##### **4.8.1 Long-term perspective and pathway**

In the long-term, the TOP TENS Task Group will focus on:

1. Enhancing the sharing of best available energy efficiency technologies and practices, by establishing a G20 database for energy efficient BATs and BPs through IPEEC;
2. Optimising the TOP TENS methodology by developing consistent criteria to compile, evaluate, update and promote the implementation of findings;
3. Stimulating cooperation between governments and market actors in exchanging and promoting TOP TENS BATs and BPs;
4. Promoting the application of TOP TENS BATs and BPs in the participating G20 members including activities such as seminars, capacity-building, pilot demonstration projects, and mobilisation of finance, among other things;
5. Consideration of domestic awards or recognition schemes to highlight corporate leadership and share the expertise and knowledge more broadly amongst the global business community.

<sup>38</sup> The 2015 "Paris Agreement" highlighted the importance of technological innovation, development and transfer, deployment, diffusion and exchange of experience as a long-term vision of the Parties.

#### **4.8.2 Achievements**

Since its establishment in 2013 as an IPEEC Task Group, the TOP TENS Task Group has completed a number of activities including:

1. Development of a methodology to assist governments to create their lists of best available energy-efficient technologies and practices used by companies in their countries;
2. Development of the inaugural International TOP TENS Lists of BATs and BPs which combines the leading examples from participating members' own domestic TOP TENS Lists. The International Lists are designed to showcase examples of best practices and use of technologies that are leading, replicable and available and could be taken up by other members to improve their energy savings;
3. Commencement of promotion of the domestic TOP TENS lists in the first round of member countries and monitoring the impact of the lists.

#### **4.8.3 Planned work**

In 2016 and beyond, the TOP TENS Task Group is expanding its focus by:

1. Promoting the Domestic and International TOP TENS Lists through such avenues as the websites and social media of the IPEEC and member countries, developing communication materials for companies and policy makers on the purpose of the lists and how to use them effectively to promote energy savings;
2. Preparing guidelines for TOP TENS members on the collection, identification and promotion of energy-efficient BATs and BPs, and the release of TOP TENS lists;
3. Encouraging G20 countries to join the TOP TENS Task Group to develop their own lists showcasing leading energy efficiency practices and technology take-up;
4. Continuing the development of the second round of Domestic TOP TENS Lists;
5. Continuing to refine and periodically updating of the TOP TENS methodologies and communication to increase their relevance and ease of use;
6. Considering the expansion of the sectors covered in the lists.

## 4.9. Key area 9: District Energy Systems (DES)

Cooling currently accounts for a large share of the electricity consumption in various G20 countries. Peak cooling demand is expected to continue on the path of high growth, creating a major strain. When certain conditions are met (in particular, high cooling load and density, and diversity of end-uses), district cooling (DC)<sup>39</sup> is a proven cost-effective solution to reduce energy consumption and peak load demand. The same applies to district heating (DH). It will be co-led by Kingdom of Saudi Arabia, China and Russia, as G20 Members, with close support of Singapore, as a permanent guest.

### 4.9.1 Long-term perspective and pathway

The objective of the Task Group is to encourage DC/DH deployment, focusing on:

1. Establishing national institutions to support DC/DH deployment and regulation;
2. Developing a national DC/DH strategy, covering key issues such as licensing frameworks, technical regulation and economic regulation;
3. Encouraging the use of DC/DH in new participating public projects; and
4. Defining DC/DH only zones, where DC/DH would be the only used cooling/heating technology.

### 4.9.2 Achievements

As a new initiative, the DES has not yet initiated work under the G20. However, Saudi Arabia has made good progress in DC, and could serve as an example to other participating countries.

Since 2015, Saudi Arabia has helped promote DC through:

1. Establishment of DC arrangements, under the existing Electricity Regulatory Authority (ECRA);
2. Drafting (in-train) of a ‘DC Perspective’ by ECRA covering licensing, technical and economic regulation issues/specifications for DC;
3. Development of district cooling threshold standards, and agreement that new future participating public buildings could champion DC; and
4. Identification of potential DC zones.

<sup>39</sup> District Cooling (DC) consists of providing cooling to multiple facilities from one or more centrally located cooling plants, connected to end-users via a network of supply and return pipes

### **4.9.3 Planned work**

In 2016 and beyond, building on participating countries' experiences in DC/DH, participating countries will define initiatives, a work programme, and Terms of Reference to address this issue. Work could focus on exchanging experiences, and exploring options for:

1. Establishing the necessary institutional framework (e.g. establishing a DC/DH Regulator or regulatory capacities within existing organisations);
2. Identifying barriers challenges and options to greater DC/DH deployment and crafting a DC/DH national strategy, including key elements for higher penetration of DC/DH. These could cover licensing aspects, as well as technical regulation and economic regulations;
3. Encouraging participating government projects and public procurement practices to support DC/DH. For example, this could aim at all new participating government projects; and
4. Identifying and mapping zones where DC/DH would be the only cooling/heating technology used.



#### **4.10 Key area 10: Energy Efficiency Knowledge Sharing Framework**

Given the wealth of energy efficiency experience among G20 members, the G20 proposes a framework for a platform that facilitates knowledge sharing on energy efficiency policies, best practices and national experiences. The current proposal is to establish an Energy Efficiency Knowledge Sharing Framework under the International Energy Forum (IEF) for the G20. The proposed Energy Efficiency Knowledge Sharing Platform will be led by Saudi Arabia.

##### **4.10.1 Long-term perspective and pathway**

The objective is to collect and disseminate policies, practices and measures, which will help G20 and other interested countries to improve energy efficiency.

This Framework would extend work already under way to establish an Asian Energy Efficiency Sharing Framework under the IEF, endorsed by Energy Ministers gathered at the 6th Asian Ministerial Energy Roundtable in Doha, Qatar, after a proposal from the Kingdom of Saudi Arabia and supported by Japan.

Energy efficiency matters to both energy producers and consumers. The Framework can showcase and amplify achievements in state of the art energy efficiency policies, technologies, and innovation on both the supply and demand sides, while serving as a platform to share experiences and information in respect of financing and implementation of energy efficiency gains.

##### **4.10.2 Planned work**

In pursuit of the Framework's objectives, the IEF will collaborate with other relevant International Organizations, including IPEEC, IEA and OPEC among others, and Agencies to give greater visibility to the energy efficiency policies of the G20 as well as other countries and contribute to strengthen their institutional capacity and international collaboration. The IEF has set a standard in inter-institutional cooperation under the Joint Organizations Data Initiative, where it works in concert with APEC, Eurostat, the GECF, IEA, OLADE, OPEC, and UNSD.

With the support of G20 and IEF member countries and international organisations and agencies, a first high-level meeting of the IEF Knowledge Sharing Framework on Energy Efficiency can take place in the first half of 2017.

This high-level meeting will set further priorities, mobilise resources and engage with potential partners, including public and private sector stakeholders of interested G20 and IEF countries.

#### **4.11 Key area 11: Energy End-Use-Data and Energy Efficiency Metrics**

Evaluating the impact of energy efficiency policies is challenging for policy makers. Different types of energy efficiency policies require different data and metrics which are also dependent on the target sector (e.g. residential, industrial, transport, agricultural or commercial). Each task including, prioritising areas for intervention, evaluating the impact of policies, and tracking progress against objectives, requires a different set of data and a range of metrics that is limited by the information available in each country. Within the context of the G20 there would be great value in sharing experiences to improve energy efficiency metrics to allow for better decision making and prioritisation of the most cost-effective energy efficiency options, taking into account specific national circumstances and capabilities.

This work-stream is led by France through the French National Agency for Energy Management (ADEME) with the support of the IEA. Other G20 members would be very welcome to co-lead the work stream.

##### **4.11.1 Long-term perspective and pathway**

The objective of this work-stream would be to provide a forum for participating G20 countries to share knowledge and experience in collecting and analysing energy end-use demand and energy efficiency data including the strategies, approaches and methodologies that can lead to better metrics and ultimately improved decisions and more effective policies. The value of the work-stream is independent of the range of policies being implemented in each G20 country and also does not depend on the G20 countries having any similar policies or goals.

#### **4.11.2 Achievements**

As a new workstream, the initiative has not yet achieved as such. It will however rely on the experience of partners:

Both France, through its national agency ADEME, and the IEA have been involved in end-use energy data collection and analysis for many decades.

In particular, ADEME developed and manages the European Commission database on energy efficiency indicators known as ODYSSEE for its 28 members. Through cooperation with the Mediterranean Energy Management Agencies (MEDENER network) a similar database on indicators has been developed for the Mediterranean region. More recently, in the framework of IPEEC, a project (BIEE project) has been conducted to develop an energy efficiency indicators methodology and database for 19 Latin America and the Caribbean countries, with the Economic Commission of Latin America and the Caribbean. ADEME is also working with the World Energy Council in order to provide a global database on energy efficiency indicators.

Complementary to the work led by France, the IEA has a systematic end-use data collection process for its members that shows energy efficiency progress across sectors, drivers of economy-wide trends and quantifies variations in energy demand. The IEA also regularly fosters exchange on energy efficiency data collection through manuals for both policy makers and statisticians in English, Chinese, Russian and Spanish as well as a database of country practices for collecting data across sectors. The IEA uses these resources to provide training to emerging economies and has a key role in partnering with the World Bank to produce the Global Tracking Framework Report for Sustainable Energy for All (SE4All). This report tracks global progress towards the SE4All objectives for energy efficiency, renewable energy and access to modern energy services.

#### **4.11.3 Planned work**

The work-stream would be implemented by establishing a knowledge sharing forum under the G20 *EELP*. The forum would aim to meet face to face twice a year and would also establish virtual systems for sharing experiences of practice. The forum would be aligned with other relevant international activities to ensure that it builds on existing experience and does not duplicate other initiatives.

The work-stream would be complemented by the identification of pilot initiatives allowing collaboration between participating countries on data quality improvement, as well as indicators design and use for policy evaluation, to be enhanced.

The work-stream would be launched through an international workshop on energy efficiency data and metrics to establish a sound platform for the future cooperation. This workshop would include participants from regional bodies involved in data issues relevant to the G20. It would be used as a forum to identify priorities and showcase relevant experience from a range of countries.

An indicative schedule is as follows:

1. First workshop in Paris in late 2016
2. Issues paper in early 2017
3. Agreement of pilot actions to improve data quality among participating countries by mid-2017

A detailed Terms of Reference and work-plan would be developed in the first 6 months of the life of the work stream, based on dialogue with interested G20 members.

## 5. Implementation

G20 members agree that the International Partnership for Energy Efficiency Cooperation (IPEEC) will be the key coordinating agency for the *EELP*. In this capacity, IPEEC will fully cooperate with international organizations including IEA, IEF, OPEC, OECD, APEC, BRICS, SE4ALL and C2E2, and others. In order to strengthen the global voice for energy efficiency, G20 members support IPEEC working with the IEA and other international organizations, including IEF, OPEC, OECD, APEC, BRICS, SE4ALL and C2E2, and with stakeholders, and G20 members will explore the feasibility of innovative collaborative arrangements for international cooperation on energy efficiency.

Recognizing the importance of adequate support to energy efficiency, G20 members agree that stable resources will be important to the effective implementation of the *EELP*, and encourage G20 members to provide the financial contributions necessary to its realisation. G20 members and other participating countries will aim to support and strengthen IPEEC through active participation in their selected areas of work, including through direct voluntary contributions to those areas of work (financial or in-kind).