The *World Energy Outlook (WEO)-2018* provides a framework for thinking about the future of global energy. It does not make predictions about the future. Instead, it sets out what the future could look like on the basis of different scenarios or pathways, with the aim of providing insights to inform decision making by governments, companies and others concerned with energy.

The three main scenarios in the *WEO-2018* are:

- The **New Policies Scenario** provides a measured assessment of where today's policy frameworks and ambitions, together with the continued evolution of known technologies, might take the energy sector in the coming decades. The policy ambitions include those that have been announced as of August 2018 and incorporates the commitments made in the Nationally Determined Contributions under the Paris Agreement, but does not speculate as to further evolution of these positions. Where commitments are aspirational, this scenario makes a judgement as to the likelihood of those commitments being met in full. It does not focus on achieving any particular outcome: it simply looks forward on the basis of announced policy ambitions.
- Among recent policy announcements, the New Policies Scenario includes the European Union's new, more ambitious 2030 renewable energy and energy efficiency targets. It likewise includes the June 2018 announcement by China of a new three-year action plan for cleaner air. It reflects the impact of the planned revision of the Corporate Average Fuel Economy standards in the United States, as well as the announced US Affordable Clean Energy rule that replaces the previous Clean Power Plan. It also takes account of Japan's revised basic energy plan and Korea's 8th National Electricity Plan. It is the New Policies Scenario to which we devote most space and attention.
- The **Current Policies Scenario** is based solely on existing laws and regulations as of mid-2018, and therefore excludes the ambitions and targets that have been declared by governments around the world. It provides a baseline for the *WEO* analysis.
- The **Sustainable Development Scenario**, introduced for the first time in the *WEO-2017*, starts from selected key outcomes and then works back to the present to see how they might be achieved. The outcomes in question are the main energy-related components of the Sustainable Development Goals, agreed by 193 countries in 2015:
  - Delivering on the Paris Agreement. The Sustainable Development Scenario is fully aligned with the Paris Agreement's goal of holding the increase in the global average temperature to "well below 2 °C".
  - Achieving universal access to modern energy by 2030.
  - Reducing dramatically the premature deaths due to energy-related air pollution.

  The Sustainable Development Scenario sets out the major changes that would be required to deliver these goals simultaneously. This year's edition also incorporates the linkages between energy and water.

These three scenarios are the main points of reference for the discussion in this *World Energy Outlook*. They are accompanied by multiple supplementary analyses and case studies.

The principal quantitative tool used to generate the underlying projections is the World Energy Model, a large-scale simulation model developed at the International Energy Agency (IEA) over many years to capture the evolving nature of energy markets and technologies.[1] Information on the inputs used to generate the scenarios, including the underlying assumptions for economic growth, population, policies and the trajectories for energy and carbon dioxide (CO_2) prices, is found in Annex B.[2] Assumed rates of growth for global gross domestic product (average of 3.4% per year to 2040) and population (an increase to just over 9 billion people in 2040) are constant across the scenarios, whereas policies, costs and equilibrium prices differ substantially.

Box 1 ▷ A new way to navigate the *WEO*

Regular readers of the *World Energy Outlook* will notice some changes to the presentation of this year's results, especially if they also visit the IEA website at www.iea.org. This reflects the priority given to move towards a more "digital IEA". It also reflects feedback from readers and commissioned customer research. There are three main changes:

- **Online presence**: Headline findings are now more readily available on a revamped *WEO* website (www.iea.org/weo).
- **Ease of use**: Chapters in Part A now have summaries and reference material concentrated at the outset of each chapter, followed by more in-depth analysis on selected topics.
- **Accessible data**: We have improved access to underlying data, including all tables and figures, which are available in Excel format to all *WEO* purchasers.

The changes in *WEO-2018* are part of a process of continual improvement that reflects our determination to remain the gold standard for long-term energy research. We welcome your comment.

The *WEO-2018* is structured as follows:

Chapter 1 provides an overview of the implications of the *WEO* projections and considers some of the key policy, technology and price uncertainties that could affect how scenarios play out in practice. The remainder of **Part A** presents the main updates to the scenario projections, starting with a dedicated chapter on the Sustainable Development Scenario,

1. Details related to the World Energy Model are available at www.iea.org/weo/weomodel.
2. Scenario descriptions and background information are available at www.iea.org/weo/.

and then working through the main elements of the outlook by fuel, including renewables and energy efficiency.

Part B presents a detailed focus on electricity. At the IEA, 2018 is the "year of electricity". This special focus in *WEO-2018* is the centrepiece of a broad analytical effort in the IEA to examine the forces that are reshaping electricity demand and supply, transforming the operation of the power system, and requiring a fresh look at electricity security. The analysis includes modelling of the Future is Electric Scenario (FiES).

Part C focuses on the links between innovation and the environmental performance of oil and gas supply. The energy and emissions characteristics of different sources of oil and gas can vary widely. We explore the reasons for these variations and look at possible measures to reduce the energy and environmental footprint of oil and natural gas delivered to consumers.

Comments and questions are welcome and should be addressed to:

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More information about the *World Energy Outlook* is available at www.iea.org/weo.

OUTLINE

Part A presents energy projections to 2040, by scenario, for all energy sources, regions and sectors.

Chapter 1 provides an overview of key findings from this year's *WEO*. It covers the main results of the scenario projections and considers the implications for the three dimensions of long-term energy security: reliability, affordability and sustainability.

Chapter 2 assesses the benefits and challenges of pursuing an integrated approach to achieving three key energy-related Sustainable Development Goals (SDGs): universal energy access, reducing the impacts of air pollution and tackling climate change. It also considers the role of energy in reaching the SDG on clean water and sanitation.

Chapter 3 explores the outlook for oil and evaluates three key questions for the future. How is fuel efficiency and fuel switching affecting oil use in the world's cars and trucks? Are we heading for an oil supply shock? And what do energy transitions mean for oil products?

Chapter 4 focuses on natural gas, looking in detail at the role of emerging Asian economies in gas demand, the prospects for exporters in an increasingly competitive and interconnected global gas market, and the future of natural gas in the European Union.

Chapter 5 analyses the outlook for coal, examining how coal fares in a rapidly changing power sector and the prospects for exporters in a demand-constrained world.

Chapter 6 examines renewables and energy efficiency, going into detail on their importance for the future of transport, and the role of heat from renewables and improved efficiency in Europe's building sector. It also tracks country-by-country progress on the SDG 7 targets in both these areas.