



World Energy Outlook 2018

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The **World Energy Outlook 2018 report** released by **International Energy Agency's (IEA)** highlights the crucial considerations for the global energy industry in 2040, including the rise in demand for renewables and major fossil fuel concerns.

- **Electricity** is the **special focus of the 2018 edition**. The share of electricity in global energy use is growing while the rise of low-carbon technologies is prompting a major transformation in the way electricity is generated.
- It examines future patterns of a **changing global energy system** at a time of increasing uncertainties and finds that major transformations are underway for the global energy sector, from growing electrification to the expansion of renewables, upheavals in oil production and globalisation of natural gas markets

Findings

- **Special Focus: Electricity**
 - Electricity is increasingly the “fuel” of choice in economies that are relying more on lighter industrial sectors, services and digital technologies.
 - Policy support and technology cost reductions are not only increasing its share in global consumption but also putting the power sector in the vanguard of emissions reduction efforts.
 - On the demand side, **efficiency gains** from more **stringent energy performance standards** have played a pivotal role in holding back demand. E.g.: 18 out of 30 IEA member economies have seen declines in their electricity use since 2010.
- **Energy Scenario**
 - **Demand**
 - Rising incomes and an extra 1.7 billion people, mostly added to urban areas in developing economies will push up global energy demand by more than a quarter to 2040.
 - In 2000, Europe and North America accounted for more than 40% of global

energy demand and developing economies in Asia for around 20%. By 2040, this situation will be **completely reversed**.

- All the growth comes from **developing economies, led by India**.
- **Production**
 - Fifteen years ago, European companies dominated the list of the world's top power companies, measured by installed capacity; now six of the top-ten are Chinese utilities, i.e **domination of Asia by 2040**.
- **Shale Gas**
 - By 2025, the United States will account for more than half of **global oil and gas production growth** (nearly 75% for oil and 40% for gas).
 - This will exert the **pressure on traditional oil and gas exporters** that rely heavily on export revenues to support national development.
- **Energy Trade**
 - International energy trade flows are **increasingly drawn to Asia** from across the Middle East, Russia, Canada, Brazil and the United States.
 - However, new ways of sourcing energy are also visible at local level, as digitalization and increasingly cost-effective renewable energy technologies enable distributed and **community-based models of energy provision**.
- **Flexibility**
 - The rise of solar Photo Voltaic (PV) and wind power gives unprecedented importance to the flexible operation of power systems. Renewables and coal switch places in the power mix: the rises from 25% today to around 40% in 2040.
 - By 2040 many countries in Europe, as well as Mexico, India and China, are set to require a degree of flexibility.
 - However, conventional power plants remain the main source of system flexibility, supported by new interconnections, storage and demand-side response. E.g.: The European Union's "**Energy Union**" illustrates the role that regional integration can play in facilitating the integration of renewables.
- **Fossil Fuels**
 - Coal use rebounded in 2017 after two years of decline, but **final investment decisions** in new coal-fired power plants were well **below the level** seen in recent years.
 - **Natural gas** will overtake coal in 2030 to become the **second-largest fuel** in the global energy mix.
- **Emissions and Access**
 - Countries are set to **meet the national pledges made as part of the Paris Agreement**. But these are **insufficient** to reach an early peak in global emissions.

- The projected emissions trend represents a **major collective failure** to tackle the environmental consequences of energy use.
- Around 93% of the world's carbon capacity is already in use up to 2040. Carbon capacity refers to the level of CO₂ emissions that can be released without causing significant global warming effects. This means that there is very little space for future fossil fuel projects to be developed over this period without contradicting international objectives around climate change.
- In **2017, for the first time**, the number of people **without access to electricity dipped below 1 billion**.

Challenges

- **Affordability:** The costs of solar Photo Voltaic and wind continue to fall, but oil prices climbed above \$80/barrel in 2018 for the first time in four years; and hard-earned reforms to fossil fuel consumption subsidies are under threat in some countries.
- **Reliability:** One-in-eight of the world's population has no access to electricity and new challenges are coming into focus in the power sector, from system flexibility to cyber security.
- **Sustainability:** After three flat years, global energy-related carbon dioxide (CO₂) emissions rose by 1.6% in 2017. Energy-related air pollution continues to result in millions of premature deaths each year.

International Energy Agency

- The International Energy Agency (IEA), an **autonomous organisation**, works to ensure reliable, affordable and clean energy to its **30 member countries, 8 association countries and beyond**.
- It was established in the **wake of the 1973 (set up in 1974) oil crisis** after the OPEC cartel had shocked the world with a steep increase in oil prices. **The IEA has four main areas of focus, i.e. 4Es:**
 - Energy **security**,
 - Economic **development**,
 - **Environmental awareness** and
 - **Engagement** worldwide.
- India became an **associate member of International Energy Agency in 2017**.
- **Mexico** officially became the **International Energy Agency's 30th member** country in February 2018, and its first member in Latin America.
- It is **headquartered in Paris, France**

Conclusion

- Rapid, least-cost energy transitions require an acceleration of investment in cleaner,

smarter and more efficient energy technologies. Policy makers need to ensure that all key elements of energy supply, including electricity networks, remain reliable and robust.

- Frameworks put in place by the public authorities also shape the pace of energy efficiency improvement and of technology innovation. Therefore, the National governments will have a significant role to play in the direction of the future global energy mix.