

Sustainable Energy

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Sustainable energy can be understood as the combination of conservation and energy efficiency (demand approaches) with renewable energy sources (supply approaches) to satisfy all type of energy needs reliably. Through this viable energy strategy entire continents, individual nations, and local communities can achieve valuable benefits, including energy security, resilience, climate protection, new employment opportunities, and lower environmental pollution levels.

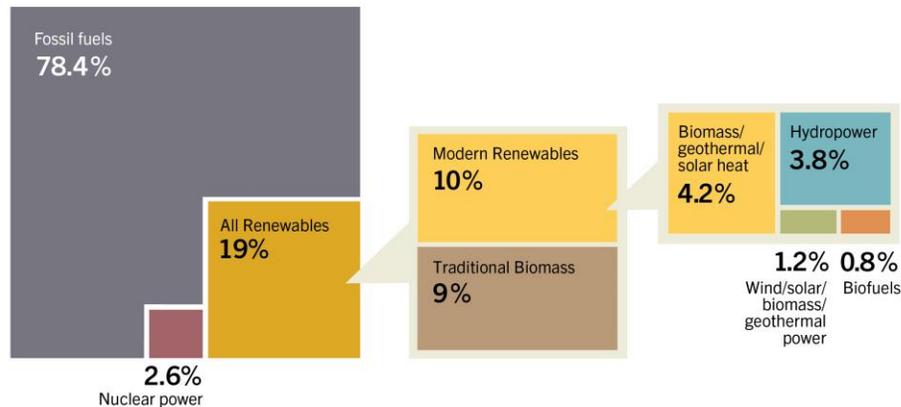
Conservation and energy efficiency are often conflated as synonymous terms as they both aim to achieve a similar objective (i.e. doing more with less). However, achieving energy demand minimization requires addressing conservation and efficiency simultaneously. Conservation involves behavioural changes that allow society or individuals to use less energy by changing their energy use habits and practices. Energy efficiency involves adopting technologies that maximize energy services while using as little energy as possible. Paradoxically, if we implement energy efficiency technologies without introducing strong conservation strategies, overall energy use will soon increase.

To ensure that conservation and energy efficiency initiatives become developed to their full potential, many leading [jurisdictions](#) have implemented specialized agencies and [leading think-tanks](#) provide guidance on this key sustainable energy strategy.

The term ‘renewable energy’ refers to using technological and design solutions to harness solar, wind, biomass and hydro sources to satisfy all types of energy needs (e.g. transportation, electricity generation, heating and cooling of buildings, productive uses, food production, and water purification). The use of renewable energy sources requires careful planning to deal effectively with resource variability; to ensure that local communities participate actively and benefit from projects; and to achieve the lowest possible ecological impact.

Renewable energy sources represent [the second biggest source](#) of primary energy supply worldwide.

Estimated Renewable Energy Share of Global Final Energy Consumption, 2012



REN21. 2014. *Renewables 2014 Global Status Report* (Paris: REN21 Secretariat).



Currently fossil fuels supply 78 per cent of global energy supply. However, the United Nations' [Intergovernmental Panel on Climate Change \(IPCC\)](#) and all of the world's [best scientific academies](#) identify the use of fossil fuels as the main culprit behind climate change.

Achieving planetary climate security requires that fossil fuel dependency is stopped as soon as possible in favour of [a global ramp-up on the use of renewable energy sources](#). Achieving that supply transformation will require strong political commitment and smart policy changes. Unfortunately, the use of fossil fuels is deeply ingrained and it is buttressed by over two hundred years of technological and economic support.

Worldwide, energy subsidies today still vastly favour fossil fuel and nuclear energy instead of sustainable energy strategies. For example, [the International Energy Agency's](#) latest estimates indicate that fossil fuel consumption subsidies worldwide amounted to \$523 billion in 2011, up from \$412 billion in 2010.

The good news is that technological development for key renewable energy solutions (e.g. solar, wind, and biomass) is advancing rapidly and in the last few decades the [prices of many key renewable energy technologies](#) have become [highly competitive](#).

Smart and consistent policies are essential to accelerate the widespread adoption of renewable energy, conservation, and efficiency.

[Sustainable energy policies](#) are required to address financial and economic barriers and to ensure that nations and local communities can have the necessary expertise in place to implement effective projects.

[Smart policies](#) are crucial to ensure that entrenched price inequalities can be eliminated quickly and to ensure stable investment in renewable energy, conservation, and efficiency. Smart policies are also essential to ensure that renewable sources, conservation, and energy efficiency strategies are prioritized at all times over polluting and finite energy sources.

[Leading sustainable energy nations](#) such as Germany have implemented comprehensive policies that include renewable energy laws, incentive programmes such as [feed-in tariffs](#), carbon trading, and carbon taxation programmes, generous research and development support for renewable energy and a nuclear phase-out that combined ensure that renewable energy projects are more easily implemented and prioritized.

The European Union (EU), through its [2020 Directive](#), provides a valuable policy example of an entire region that is [working collaboratively](#) to ensure that conservation, efficiency, and renewable energy use are all maximized through clear targets and timelines that are combined with detailed national energy planning.

The creation of the [International Renewable Energy Agency](#) represents another example of a new global effort that is actively focused on promoting sustainable energy approaches worldwide.

Achieving widespread implementation of renewable energy, conservation, and efficiency strategies involves [substantial challenges](#) and will require [new thinking](#), [innovation](#), and strong political commitment to develop these sustainable energy solutions to their full potential. The world is at a crossroads as [current trends](#) indicate that political and economic support for sustainable energy needs to increase from current levels to ensure that the multiple social and environmental benefits of this innovative energy paradigm are fully achieved.