The invention of efficient blue LEDs which has enabled bright and energy-saving white light sources

2014’s Nobel Laureates were rewarded for having invented a new energy-efficient and environment-friendly light source – the blue light-emitting diode (LED). With the advent of LED lamps we now have more long-lasting and more efficient alternatives to older light sources.

When Isamu Akasaki, Hiroshi Amano and Shuji Nakamura produced bright blue light beams from their semiconductors in the early 1990s, they triggered a fundamental transformation of lighting technology. Red and green diodes had been around for a long time but without blue light, white lamps could not be created.

White LED lamps emit a bright white light, are long-lasting and energy-efficient. They are constantly improved, getting more efficient with higher luminous flux per unit electrical input power.

As about one fourth of world electricity consumption is used for lighting purposes, the LEDs contribute to saving the Earth’s resources. Materials consumption is also diminished as LEDs last up to 100,000 hours, compared to 1,000 for incandescent bulbs and 10,000 hours for fluorescent lights.

The LED lamp holds great promise for increasing the quality of life for over 1.5 billion people around the world who lack access to electricity grids: due to low power requirements it can be powered by cheap local solar power.