

# Global warming some facts, what can the HVAC and Building sector do?

The last months strong messages reached us regarding the not substantial decrease of CO<sub>2</sub> emission and the increasing global warming. The Paris agreement targets of 2 °C or preferably the 1,5 °C seem unachievable given the current energy policy from many countries around the globe. Europe formulated targets that MS's agreed to achieve.

**A**mended EU Directive 2012/27/EU on Energy Efficiency, endorses the mainstreaming of more efficient technologies in heating and cooling. It sets a general indicative target of 32,5% reduction in energy use by 2030. In the longer term, the Union is committed to decarbonise the energy sector and transition to a net-zero greenhouse gas emission economy by 2050 [1]. Efficient H&C in buildings and industry are a key component in this transition, making use of energy need reduction, energy use reduction by improved system efficiency and the use of renewable energy. Half of the energy in EU is used for H&C and 80% of this is consumed in buildings. This means that the transition would be impossible without an intelligently engaging H&C sector.

At the same time, we listen to the strong messages voiced by our children. On September 23, 2019, at the climate summit in New York immediately after Secretary General António Guterres, Greta Thunberg called on the United Nations General Assembly in a sharp tone to account for their negligence on decisive action against the climate crisis. Not many of us will have missed this message. But what state leaders, we voted for, do is repeating that this have to be cost effective. It is cost effective if we include all environmental costs in our equations. But this is still not happening. Even the simplest way, to tax the CO<sub>2</sub> emission is not enforced because we wait for international agreement on this.

Some facts: Yes, we are with many people on this planet. 15% of the people ever lived on earth are currently running around. Half of the worldwide CO<sub>2</sub> emission since 1750 dates from the years after the Kyoto Protocol (1997), we didn't achieve much! Those who believe



that nuclear energy will save us have to bear in mind that the carbon footprint of nuclear produced electricity is on average 65 CO<sub>2</sub>-eq gr/kWh [2]. Which is comparable with fossil fuel produced electricity with CCS technology. Compare this with the CO<sub>2</sub>-eq footprint of wind turbines which is around 15 gr/kWh.

What can we do as building HVAC sector to convince our clients that reducing the energy needed by investing in better designed buildings and at the same time reducing their remaining energy use by smart and energy efficient HVAC and domestic hot water systems and on top of that we have to add sustainable energy producing and using systems. We all know how to do this, how to reach the zero carbon emission buildings. We can do it tomorrow. But the way we calculate the costs, not including the total environmental impact (LCA), prevents us doing this. Pricing the carbon emission and other environmental impacts in a honest and transparent way will help. This is why CEN, the European Standards organisation, developed the set of EPB standards [3] to at least assess the Energy Performance of our buildings and systems in a transparent and reliable way. Most EU MS's still struggle accepting these EP assessment procedures (see articles on pages 6 – 38). These standards are there to support and increase transparency regarding the declared Energy Performance of buildings we built, buy or rent out. The recently published prEN 17423 (see page 54 of REHVA Journal 4/2019) on Primary Energy Factors and CO<sub>2</sub> emission factors is an important step to increase the transparency of the energy performance declarations. For the time being the MS's politicians have the privilege to declare and justify the underlying policy factors, this standard will help them to do this in a transparent way. ■

[1] A Clean Planet for all. A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, COM(2018) 733, 28.11.2018.

[2] Life Cycle Greenhouse Gas Emissions of Nuclear Electricity Generation Systematic Review and Harmonization. Ethan S. Warner, Garvin A. Heath.

[3] See [www.epb.center](http://www.epb.center).