

Human Innovation - A Thought Leadership Series

Part 1 - Human Innovation has been Intrinsic to our Evolution as a Species

A founding core value we have a passion for demonstrating at ITP Energised is technology enabled innovation. As well as recently launching our new digitally enabled consulting and digital products platform "[The Net Zero Accelerator®](#)" we have developed an eight-part thought leadership series on human innovation. This series explores the essential place of innovation within our evolution as a human species, the history of innovation in the electricity sector, innovation in the current era of our sustainability revolution and our view of the top five challenges we will face if we are to achieve net zero by at least 2050; where disruptive, not incremental innovation, must play a key role.

We have a long and steeped culture in innovation dating back some 2.4 million years

There is something intrinsic to humankind that drives us to do things better and more easily whilst taking less time and resource. History can help us learn if we are open minded to doing so. The timeline of our human condition is comprehensively and interestingly laid out:

From a likely big bang some 13.8 billion years ago, through the advent of the earliest water (12,200 million years ago (MYA)), the sun (4,570 MYA), the moon (4,510 MYA), the earth (4,500 MYA), the oceans (4,400 MYA), the earliest single celled life (4,100 MYA), the earliest photosynthesising bacteria (3,500 MYA), the first continents (3,200 MYA), the earliest multicellular life (2,100 MYA), the first oxygenation (2,330 MYA) and the earliest forests (385 MYA), to the first hominoids (25.2 MYA), stone artefacts in Kenya (3.3 MYA), and first human life some 2.8 MYA there has been a lot of change on this little planet we call home.

Within this time period we also see clear records of mass extinction caused by fluctuations in CO₂ concentration— disruptive climate change:









- 445 MYA—mass extinctions across 1 million years eliminates $\frac{3}{4}$ of all species linked to volcanic activity
- 375 MYA—mass extinction across 20 million years, eliminating $\frac{2}{3}$ of all species
- 251.9 MYA—largest mass extinction eliminating $\frac{9}{10}$ of all species which took 61,000 years due to hot acidifying volcanic CO₂ emissions from Siberian Traps
- 201.3 MYA—mass extinction event removing $\frac{2}{3}$ of species again linked to volcanic CO₂ emissions
- 66 MYA—mass extinction of terrestrial dinosaurs and $\frac{3}{4}$ of all species linked to a 9 km asteroid in Mexico

And we must reflect on the fact that current Era 21st century emissions are predicted to be on a par with that of the extinction 201.3 MYA. However, we also see the start of human life and its deep association with human discovery we now call innovation. The first periods of recorded human innovation date back to some 2.4 MYA, which translates to roughly 86% of our time on planet earth. We've been innovating for a long while now!



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The key innovation eras	
	<p>The first human evolution era dates back 2.8 million years ago.</p> <p>We can all remember learning about cave people with their stone tools – this development took place some 2.4million years ago in the Early Stone Age. There is debate that the use of stone tools may have been evidenced even earlier than this era; essentially placing human innovation at its birth.</p>
	<p>The hunter gatherer nomads era was some 176,000 years ago. These prehistoric nomadic groups harnessed the use of fire, developed a knowledge of plant life and developed innovation for hunting and domestic purposes as they spread from Africa to Asia, Europe and the rest of the known world. But human population growth was constrained by the carrying capacity of land.</p>
	<p>Agricultural farming and settlements era was some 11,500 years ago in the 9500s BC. This era resulted in both demographic transition and significant increases in population as the carrying capacity of land increased.</p>
	<p>The empires and conquests era dates back some 3,800 years ago in the 1800s BC</p>
	<p>The scientific revolution era was 479 years ago in the 1540s</p>
	<p>The industrial revolution era was 242 years ago in the 1780s</p>
	<p>The technological revolution era was 77 years ago in the 1940s, in fact much of the Apollo 11 technological innovation that placed man on the Moon on 20 July 1969 in the Sea of Tranquillity is applied in common use in daily life today; and</p>
	<p>Finally, the sustainability revolution era began just 7 years ago in 2015.</p> <p>The UN General Assembly of 194 countries adopt the 17 Sustainable Development Goals for 2030 and the UN Paris Agreement on Climate Change was adopted by 196 countries to keep global average temperature to well below 2 degrees in excess of pre-industrial levels.</p>

Conclusion

Human history shows an intrinsic affiliation towards innovation dating back 2.4 million years ago evidenced by fossilised records. These periods of discovery can be categorised as innovation eras and have enabled meaningful progress for civilisation and for ever increasing human prosperity. This shows that we should be hopeful for progress in the current sustainability revolution. In the next part of this series, we will examine the history of innovation in the electricity sector.