



Whitepaper

# Digitalization: The key to sustainable validation

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The sustainability impact of validation, and what you can do to reduce it.

The challenge to reduce the environmental impact of pharma's complex global supply chain is immense and has been well documented, but what is the environmental impact of validation?

Despite sustainability efforts by many leading life sciences companies and the establishment of the Pharmaceutical Supply Chain Initiative in 2006, pharma's carbon footprint has grown to surpass the automotive industry, by a significant margin of 54%.<sup>1</sup>

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In 2015, global carbon emissions produced by the pharmaceutical sector averaged 48.55 tons per \$million revenue, compared to automotive's 31.4 tons per \$million.<sup>2</sup>

Since 2016, with the entering into force of the Paris Climate Agreement, the awareness of and pressure to change life sciences' contribution to climate change has grown steadily. As of 2021 however, just 25 of the world's top 200 pharmaceutical companies consistently report their carbon footprint, with the industry overall needing to reduce their footprint by 59% on average by 2025 to comply with the Paris Agreement in time.<sup>3</sup> Further, the publication of COP26 in November of 2021 may only increase the pressure on life sciences companies to be transparent, and increasingly active in ESG.

Increasing pressure on the life sciences to operate sustainably need not be the only driver for change, as the economic rewards are proven and clear. In 2020 Roche reported an operating profit increase of 4%, and a net income increase of 17% whilst being recognized as the 'most sustainable healthcare company' in the world (for the tenth consecutive year) driving strong investment.<sup>4</sup> Roche (and others including Amgen and Johnson & Johnson) have emerged as industry sustainability leaders, after taking positive action to reduce their carbon footprint through renewable energy and industry 4.0 technologies as early as 2005.

The use of industry 4.0 and renewable energy technologies presents a significant opportunity for life sciences to tackle sustainability, whilst also making sense on the bottom line. Between 2008 and 2020 Amgen invested 50 \$million into renewable energy sources, netting a saving of 250 \$million in energy costs across the same period.<sup>5</sup> In 2021, HCL Technologies achieved a cost saving of 35% [0.81 \$Million USD] on a global CSV deployment as a result of using Kneat to digitalize validation.<sup>6</sup>

Despite the clear sustainability benefits of renewable energy, the positive environmental impact of digitalization through technologies like Kneat is just beginning to be quantified, but early studies are promising. Deloitte's UK based 'Tech for Impact' report found that, through digitalization alone, carbon emissions in manufacturing could be decreased by as much 7% by 2030—a figure equating to millions of tons in carbon each year.<sup>7</sup>

At any one time, a large global pharmaceutical company will archive and store up to 8 million pages of compliance documentation, locking away on average over half a million documents into physical storage for regulators to call upon during audit, and destroying over 800 trees in the process.<sup>8</sup>

Just one tree can supply enough oxygen for up to four people, but crucially it will absorb over 20 kilograms of carbon each year of its life, magnifying carbon sequestration over its lifespan.<sup>9</sup>

By digitizing the entire validation lifecycle, through the elimination of validation on paper alone, Kneat enables companies to decrease their carbon footprint by over 1.5 tons, whilst achieving efficiencies that drive the bottom line.\* The carbon offset on travel created by Kneat's remote validation capability is much greater again - with an average carbon offset of half a metric ton, per person, per domestic air-travel event for projects where Kneat is used.<sup>10</sup> This is particularly impactful in global CSV projects, capex C&Q & FUE projects, and where global processes are in place, where staff and supplier travel is frequent or ongoing.

In addition to achieving reductions in their carbon footprint, Kneat customers, including seven out of ten of the world's largest life sciences companies, report validation cycle-time reductions between 50%-100%, validation cost savings of over 35%, and speed-to-market acceleration of 17% for tech-transfer and software deployment – while reducing their carbon footprint (<https://kneat.com/client-stories/>).

1. (Source: Journal of Cleaner Production, Belkhir, L. et al. <https://theconversation.com/big-pharma-emits-more-greenhouse-gases-than-the-automotive-industry-115285>).

2. (Source: Journal of Cleaner Production, Belkhir, L. et al. <https://theconversation.com/big-pharma-emits-more-greenhouse-gases-than-the-automotive-industry-115285>).

3. (Source: Journal of Cleaner Production, Belkhir, L. et al. <https://theconversation.com/big-pharma-emits-more-greenhouse-gases-than-the-automotive-industry-115285>).

4. (<https://www.globenewswire.com/news-release/2021/02/04/2169535/0/en/Roche-reports-solid-results-in-2020.html>); (<https://www.globenewswire.com/en/news-release/2018/09/13/1570262/0/en/Roche-ranked-the-most-sustainable-healthcare-company-in-the-Dow-Jones-Sustainability-Indices-for-the-tenth-year-running.html>).

5. (<https://www.fiercepharma.com/pharma/solar-wind-water-pharma-go-planet-astrazeneca-novo-nordisk-novartis-and-amgen-talk-renewable>).

6. (<https://kneat.com/client-story/a-global-technology-partnership/>).

7. (Source: Deloitte <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/technology-media-telecommunications/deloitte-uk-tech-for-impact.pdf>).

8. (Source: Iron Mountain <https://www.ironmountain.com/uk/resources/case-studies/s/sanofi>).

9. (Source: USDA <https://www.usda.gov/media/blog/2015/03/17/power-one-tree-very-air-we-breathe#:~:text=It%20is%20proposed%20that%20one,have%20had%20on%20our%20environment>).

10. (<https://www.impetusdigital.com/2020/10/14/infographic-environmental-impact-of-in-person-vs-virtual-meetings/>).

\*Projection based on survey benchmarks established by Belkhir, et. al.