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# Digital Sustainability

Global sustainability as a driver of innovation and growth

Net-positive Companies and Accelerated Uptake of Innovative Solutions that Deliver on the Sustainable Development Goals





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This report is an introduction to digital sustainability and a net-positive approach.

Digital sustainability is the means by which digitalisation, as a key part of the fourth industrial revolution, can deliver on the global sustainability goals. In this report, when we refer to ICT solutions, we mean any solution that is enabled by digitalisation: not only classical ICT solutions such as teleworking, but also many of the new innovative solutions, including most new business models based on services rather than products, as these require ICT systems.

In a net-positive approach, the focus is on how an organisation can provide the sustainable solutions that are needed in various different parts of society, beyond its own operation. This differs from a traditional sustainability perspective, in which the focus is on philanthropy and the organisation's negative impacts over its life cycle.



# Introduction to Digital Sustainability

Digital sustainability is an approach that harnesses one of the most powerful forces for societal change, namely digitalisation, to deliver what we need and want in a sustainable way. Further, it represents a 21st-century tool for discussing, reflecting on and assessing our real individual and societal needs and wants.

For a long time, there was a real tension between the satisfaction of our basic needs and the potential destruction of the planet. There were no known ways to provide enough nutrition, basic mobility and buildings for universal sustenance, shelter and survival, without destroying the planet in the process.<sup>1</sup> With digitalisation, it is now possible to provide for our basic needs in a sustainable way, while also providing transparency so that we can see the consequences of our actions.

In a situation where society is suffering the consequences of excessive consumption in many areas – calories, cars, exploitation of natural habitats, to name but a few – digitalisation can provide valuable tools. Companies selling food (such as fast food chains), mobility (cars) and home furniture (retailers) must now consider how much is enough – and they can get some answers from scientific research and by connecting to their customers with smart digital tools. Digitalisation makes it easier to calculate and visualise whether the consumption is sustainable, based on various assumptions, such as equity, room for other species, pollution and overconsumption of natural resources.

Digitalisation is also beginning to play a key role in determining what we want beyond what is necessary for basic survival. Many companies push people to buy more than they really want, to grow sales and profit. They often do this by portraying certain lifestyles and consumption patterns as attractive, as well as lobbying for conditions that encourage consumption and the creation of new markets. Such practices have a negative impact on the planet; moreover, there is evidence that treating citizens as merely consumers whose happiness depends on the consumption of products is contributing to an increase in mental illness.<sup>2</sup>

While digitalisation can help accelerate unsustainable consumption, it also provides new opportunities for a flourishing society based on collaboration and sharing. Researchers, artists, entrepreneurs and citizens have already benefited from new ways to share both things and knowledge, as well as analysing and visualising complex issues.

All this suggests that digital sustainability should not be seen as a traditional sustainability approach, something that is optional and/or an add-on to existing work. Rather, the concept of digital sustainability highlights the need to ask fundamental questions about what companies are contributing to society and what tools they require to satisfy needs and wants in the 21st century.

1. [https://na.unep.net/geas/archive/pdfs/geas\\_jun\\_12\\_carrying\\_capacity.pdf](https://na.unep.net/geas/archive/pdfs/geas_jun_12_carrying_capacity.pdf)
2. <https://academic.oup.com/heapro/article/22/3/261/599085/Well-being-and-consumer-culture-a-different-kind>

However, digital sustainability will not happen without conscious decisions. Many of our current regulations, habits, innovation strategies and structures focus on rapid economic growth, neglecting sustainability or life-quality considerations. The result is that digitalisation is currently often used to accelerate unsustainable trends, from more efficient ways to explore for and exploit new fossil fuel resources to ways to encourage people to overconsume. There are also new challenges related to privacy, cyber security, cyber bullying, spaces for reflection and the appreciation of experiences in nature.

At the same time as encouraging digital sustainability, we also need to discourage digital unsustainability.

## Digital Sustainability and Sustainability

Digital sustainability relates to the role of ICT, digitalisation, connectivity, the Internet of Things (IoT) and so on, in other words, the “knowledge structure” of 21st-century society and how this structure can help ensure, or undermine, sustainability. Digitalisation be a very powerful and disruptive catalyst that can help accelerate different trends. There is nothing inherently sustainable in digitalisation: indeed, a lot of digitalisation today is done for the purpose of only marginally improving unsustainable systems, and actually accelerates unsustainable lifestyles and values.

What is clear is that, unless we reduce the population significantly and/or, in effect, go back to living in caves, digitalisation is one of the key features of every scenario for a sustainable development.

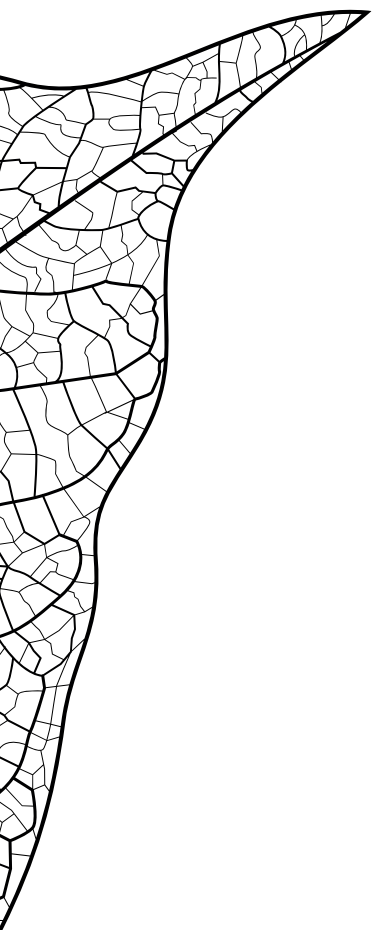
Digitalisation creates new opportunities and challenges beyond those of the Global Sustainability Goals. Opportunities for science and art also fall within its remit, as are new challenges, such as cyber security and privacy.

## Digital Sustainability and Digitalisation

Digitalisation refers to a certain technology and its implications and consequences. Digital sustainability is how that technology is used to deliver sustainability. There is very little digitalisation that does not contribute to either digital sustainability or digital unsustainability.

Much current digitalisation is incremental, or linear, meaning that it focuses on improving the efficiency of current systems. If those systems are contributing to sustainability, then digitalisation in that context also contributes to sustainability. However, incremental work should be assumed to be unsustainable; it should not be assumed, as it often is, to be sustainable or neutral.

The aspect of digitalisation that is most important is the disruptive, or exponential, aspect, when ICT is used to deliver new solutions that fundamentally change the way goods and services are delivered. Disruptive solutions can have relatively small direct impacts in industries of less environmental importance, such as the music industry, where there has been a shift from CDs to streaming of music. The



reason it is important to emphasise small “direct” impacts is that such solutions can have significant indirect effects, e.g. by making sustainable lifestyles based on sharing and low material consumption attractive, as well as establishing sharing and dematerialisation as viable business models. Other disruptive solutions can have very large direct impacts by delivering solutions in industries that must change dramatically to ensure global sustainability, such as the construction industry and the shift from old buildings and transport infrastructure to smart buildings that are shared and produce more renewable energy than they use.

# Introduction to a net-positive approach

A growing number of companies are shifting focus from only “doing less harm” to becoming “net positive”, i.e. having a positive impact on the world. In that process, companies are moving away from merely cleaning up their internal problems to a situation in which delivering sustainability through the products they sell becomes part of their core business.

Although this report focuses mainly on companies, it should be noted that the approaches and tools discussed are equally applicable to other organisations, from local government to global institutions, as well as most non-profit organisations.

The example of a company that produces and installs sustainable solar panels, compared to a polluting company that tries to reduce its emissions, is often used to illustrate the difference between a net-positive and a traditional sustainability approach. In a traditional approach, the solar panel supplier reports only on the impact of the production of the solar panels, the impact of its offices and how much energy the system uses when installed. While this makes sense for a coal mining company, providing sustainable and renewable energy is or should be the whole *raison d'être* of a company providing solar panels. With a net-positive approach, the reduction of emissions into the atmosphere by the use of solar panels would also be included in the assessment, together with the impacts from production. A net-positive perspective would also enable credit to be given to a solar company with an integrated approach in which they also help increase energy efficiency and support, for example, a shift to electric cars (which can be shared and then self-driving).

The use of solar panels is an obvious candidate for considering sustainability, but other companies providing everything from enzymes to smart control systems may not seem so obvious. Still, most reporting systems and most initiatives focus only on how negative impacts should be quantified and reported. In the case of solar panels, this may not matter so much, as governments often provide support for renewable energy. However, the problem approach is a matter of concern in the case of other solution providers where the positive impacts are not as well known. New innovative solutions are similarly a concern, as many companies and governments buy only slightly less bad versions of the solutions they already use.

The current work with net-positive emerged from the convergence of different trends, including:

3. See chapter 1.1.4 for a discussion about this. During this process, many also identified opportunities along the value chain, e.g. suppliers that could become net producers of renewable energy and clean water, and office buildings that could provide a surplus of renewable energy.
4. WWF's work with Climate Solvers, in contrast to their traditional work with Climate Savers, when the focus was on companies reducing their own emissions, is a good example of such a shift. <http://www.climatesolver.org/> Global Opportunity Network is another. <http://www.globalopportunitynetwork.org/> considers the challenges in society and how companies can help deliver solutions to them, turning them into opportunities. Sustainia's work in seeking solutions is yet another example <http://www.sustainia.me/solutions/>

### 1. Positive impacts identified as an opportunity

A growing number of companies saw opportunities to move beyond a negative/zero approach, in which the best a company can do is to aim for zero negative impact. These companies started to concentrate on their core business and how their products and services could deliver on sustainability challenges.<sup>3</sup>

### 2. Solution providers increasingly engaged

For a long time, the focus was on the big polluters and how they could reduce their negative impacts. During the 1990s, solution companies became more involved in discussions about sustainability and how they could provide solutions, not just how they could reduce the negative impacts from operations and suppliers. At the same time, a growing number of NGOs began to focus on solution companies.<sup>4</sup>

Companies from different sectors, such as the ICT sector, biomimicry, renewable energy and construction, all tried to accelerate the uptake of sustainable solutions. It became clear that the old sustainability tools, such as current reporting standards, labelling, rankings and procurement criteria, seldom acknowledged solutions from this new generation of solution providers (with the exception of renewable energy providers, but only if they avoided system solutions and simply added capacity to the existing system). Instead of aiming to increase their positive contributions through their core business, companies were only expected to reduce their own emissions, sometimes to the extent that the output of sustainable solutions would suffer.

### 3. A shift from product to services

The shift in focus from old products to new ways of providing a service helped the net-positive narrative, as some disruptive solutions offered strong sustainability gains, without support from most of the traditional sustainability tools provided by NGOs and governments. The best-known changes are probably those in the music and video industry. In only a few years, the practice of buying physical records and videotapes became obsolete, as people began subscribing to digital services. The combination of dematerialisation and renting instead of owning has revolutionised the way people access music, books and movies.

Now similar changes are beginning to happen in transport/mobility, building/public spaces and food/nutrition. Many of these new solutions are magnitudes more resource-efficient than traditional solutions and much less expensive: think virtual meetings instead of flying. These changes have also resulted in institutional changes, where the service rather than the old way of providing the service is the focus. The shift from travel agencies (which provide only physical travel) to meeting agencies (which provide both physical and virtual opportunities) is an example.

### 4. Re-thinking the role of companies

In a society where “more” was an approximation for “good”, the role of a company was straightforward. Throughout history, almost all of humanity lived in a condition of scarcity, so that getting more food, health, transport and trade was nearly always good. However, over the last decades, more is no longer recognised as obviously good, but often bad or unnecessary. Society's tendency to look only at short-term profits has resulted in, for example, the obesity epi-

mic, traffic congestion, climate change, the destruction of the last rainforests and the mass extinction of species. Are the things that we get always bad? Clearly not: on the contrary, many things are better than they have ever been, and innovation in some companies is delivering solutions to current challenges and producing valuable services to society.<sup>5</sup> Nevertheless, depression now tops the list of causes of ill health, having risen by more than 18% since 2005, and there is evidence that acquisition of goods and wealth is not the route to happiness.<sup>6</sup> Today, we are moving from a society defined by scarcity and the need for more to a society where quality matters, and companies need to re-think their role accordingly.

The net-positive approach builds on earlier work to support companies with solutions to society's problems and to exhibit more transparency and smarter reporting that help companies and stakeholders to identify what is being done to promote sustainability. It has been developed as a way of helping to change the way companies approach sustainability and find new ways to report their full sustainability impact, as well as challenging the notion that the best a company can do is to reduce its negative impact to zero.

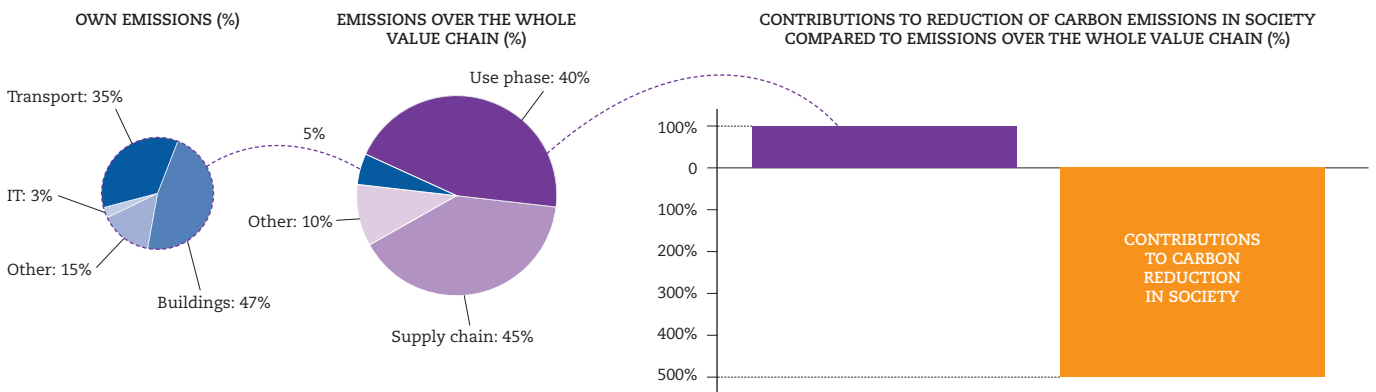
The shift towards a net-positive approach often results in a situation where sustainability moves from reactive risk management, that is, "cleaning up the mess" after business plans have already been signed off, to a proactive approach that identifies new business opportunities and pursues increased revenues from products that help deliver sustainability goals.

In other words, the net-positive approach broadens and shifts companies' perspectives on sustainability. Net-positive is not a substitute for the traditional approach, given that it is still important for a company to reduce negative impacts as much as possible, but instead adds an additional layer. In these early days, the net-positive approach is primarily suitable for companies that are interested in engaging in discussions about their role and actively making a positive contribution to society.

As the net-positive approach is relatively new, this introduction will first briefly discuss the evolution of corporate sustainability work and then consider what is needed from companies today. Next, we provide examples of companies performing net-positive work and finally present current efforts to develop methodologies to assess net-positive impacts.

5. It seems bizarre to have to point out that things have become better, but there are a number of media influencers, for example, Bjørn Lomborg, who accuse those who stress the urgency of acting in areas such as climate change, poverty reduction and biodiversity loss, of failing to acknowledge that many things today are much better than they used to be, often adducing statistics on child mortality or literacy. The fact that many things are indisputably better than they were does not make our current development path any less unsustainable. Lomborg and his like even tend to claim, unscientifically, that "The world has never been better than it is today". Whether such a general statement is true obviously depends on what it encompasses and on our ethical values. No doubt most of us are in a better situation with regard to fulfilling our basic physical needs in the short term, but we are increasing the global risks of catastrophe and failing to meet many other human needs, while also adding to inequality in many different ways.
6. <http://www.who.int/mediacentre/news/releases/2017/world-health-day/en/>

**Figure 1**  
A company's emissions and reductions from different perspectives





# 1. A Net-Positive Approach with Digital Sustainability

## 1.1 The Evolution of Sustainability Work

7. <http://www.csrquest.net/uploadfiles/1D.pdf>  
<http://www.emeraldinsight.com/doi/abs/10.1108/17471111111117511>  
<http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199211593.001.0001/oxfordhb-9780199211593-e-002>  
[https://www.researchgate.net/publication/282746355\\_A\\_History\\_of\\_Corporate\\_Social\\_Responsibility\\_Concepts\\_and\\_Practices](https://www.researchgate.net/publication/282746355_A_History_of_Corporate_Social_Responsibility_Concepts_and_Practices)  
[http://www.unescap.org/sites/default/files/6%20-%20Chapter%20II\\_Developments%20in%20the%20concept%20of%20CSR.pdf](http://www.unescap.org/sites/default/files/6%20-%20Chapter%20II_Developments%20in%20the%20concept%20of%20CSR.pdf)

To understand the net-positive approach, it is helpful to take a step back and see how corporate sustainability work has evolved over time. There are obviously significant overlaps between older and newer initiatives, as well as leaders who have moved ahead of the curve and laggards who resist every new step, but four phases of corporate work with sustainability can be identified.<sup>7</sup> It is also important to note that the different phases provide an indication of when a new trend started to become significant, although that does not mean the end of the earlier phases.

1. 1900 - Philanthropy and efficient giving
2. 1960 – Understanding the limits of the planet and arguing about responsibility
3. 1990 – Improving how things are done, with a focus on companies that are polluting/creating problems
4. 2000 – New ways of delivering services and a focus on companies that can provide important solutions

### 1.1.1 1900–: Philanthropy and efficient giving

For most of history, good works by companies were broadly defined as charity. Giving money to those less fortunate was enshrined in many religious teachings and it was not until the late 1800s that this perspective was truly challenged.

Perhaps the best-known text supporting modern philanthropy is *The Gospel of Wealth* by Andrew Carnegie (1889).<sup>8</sup> In it, Carnegie argued for a scientific approach to giving and against emotional charity.

Of every thousand dollars spent in so-called charity to-day it is probable that \$950 is unwisely spent; so spent, indeed, as to produce the very evils which it proposes to mitigate or cure. [...] one of the serious obstacles to the improvement of our race is indiscriminate charity. It would be better for such money to be thrown into the sea.

Carnegie wanted to ensure that money donated delivered actual results. He also argued that it was immoral to cling on to money, and was one of the first businesspersons to promote giving away wealth before death.

8. <http://www.hudson.org/research/10723-both-more-and-not-more-the-historical-split-between-charity-and-philanthropy>



More than a century on, philanthropy is probably still the dominant means of fulfilling corporate social responsibility, especially in the US and some emerging countries such as India. In 2010 in the US, Bill and Melissa Gates initiated “The Giving Pledge”, an initiative to encourage rich people to give away more than half of their wealth before they die. Interestingly, the emphasis on efficient delivery is not very strong and the term “charity” is used.<sup>9</sup>

The Giving Pledge is an effort to help address society’s most pressing problems by inviting the world’s wealthiest individuals and families to commit to giving more than half of their wealth to philanthropy or charitable causes either during their lifetime or in their will.

India’s CSR law, which came into force in 2014, also defines companies’ contribution to society in terms of philanthropy. The law makes it mandatory for companies to give 2% of their profits to charity.<sup>10</sup>

There is currently debate about how effective philanthropy is in delivering actual results. This question has become almost an industry in its own right, with consultants charging foundations large sums for offering evaluations of their philanthropic giving.<sup>11</sup> For as long as rich businesspeople have existed, there have been those who challenge the idea of philanthropy, or charity, seeing it as undemocratic and moreover as undermining sustainability. Many of the projects that philanthropy funds are undoubtedly important, but what is debatable is whether it avoids more complicated challenges. Equally, it is claimed that some philanthropy is used to promote certain business interests such as lobbying for or pursuing indiscriminate patent rights, far-reaching privatisation of natural resources and unfair trade agreements.<sup>12</sup>

Most leading philanthropists and foundations today, including Bill Gates and the Rockefeller Foundation, do not regard philanthropy by companies as sufficient to fulfil their social obligations. The need for more than philanthropy became clear for most progressive thinkers in business during the 1960s.

#### Key dates

- 1889: The Gospel of Wealth, by Andrew Carnegie<sup>13</sup>
- 1905: Carnegie Foundation founded<sup>14</sup>
- 1913: Rockefeller Foundation founded<sup>15</sup>
- 1936: Ford Foundation founded<sup>16</sup>

### 1.1.2 1960–: Understanding the limits of the planet and arguing about responsibility

After the Second World War, two things happened that moved the discussion about the role of companies to a new phase. First, mass marketing accelerated consumption, with a dramatic increase in the ecological footprint per capita as a result. Second, a dramatic increase occurred in new and untested technologies, including chemicals. As a consequence, a growing body of academic research indicated that industrial development brought with it significant problems and needed to change to become sustainable.

Around the 1960s, a number of books were published that got people discussing the role of companies and environmental problems, among which the most notable was Silent Spring by Rachel Carson.<sup>17</sup> This was a book about the risks inherent in agricultural practices at the time, in particular the indiscriminate use of pesticides. Like many contemporary books, it was written by an academic who was not sciep-

9. <http://givingpledge.org/>

10. <https://www.theguardian.com/sustainable-business/2016/apr/05/india-csr-law-requires-companies-profits-to-charity-is-it-working>

11. <https://assets.aspeninstitute.org/content/uploads/files/content/docs/pubs/PSI-SSIR-Advancing-Eval-Practices-Philanthropy.pdf>

12. <https://www.theguardian.com/books/2015/oct/24/no-such-thing-free-gift-gates-foundation-philanthropy-review>. <https://www.theguardian.com/commentisfree/2013/jan/29/bill-gates-charity-work-business-practices>

13. <https://www.swarthmore.edu/SocSci/rbannis1/AlH19th/Carnegie.html>

14. [https://en.wikipedia.org/wiki/Carnegie\\_Foundation\\_for\\_the\\_Advancement\\_of\\_Teaching](https://en.wikipedia.org/wiki/Carnegie_Foundation_for_the_Advancement_of_Teaching)

15. [https://en.wikipedia.org/wiki/Rockefeller\\_Foundation](https://en.wikipedia.org/wiki/Rockefeller_Foundation)

16. [https://en.wikipedia.org/wiki/Ford\\_Foundation](https://en.wikipedia.org/wiki/Ford_Foundation)

17. <http://www.rachelcarson.org/SilentSpring.aspx>

tical about technology but who foresaw problems if the broader consequences for society were not evaluated.

18. [http://www.nytimes.com/2012/09/23/magazine/how-silent-spring-ignited-the-environmental-movement.html?\\_r=0](http://www.nytimes.com/2012/09/23/magazine/how-silent-spring-ignited-the-environmental-movement.html?_r=0)

The response to Silent Spring set the standard for how many companies would react to criticism. The chemical industry undertook an expensive negative PR campaign, which included “circulating The Desolate Year, a parody of [chapter 1 in Silent Spring] A Fable for Tomorrow that mocked its woeful tone. The parody, which was sent out to newspapers around the country along with a five-page fact sheet, argued that, without pesticides, America would be overrun by insects and Americans would not be able to grow enough food to survive.”<sup>18</sup>

The same year as Rachel Carson’s book was published, Milton Friedman’s Capitalism Is Freedom, was published, which influenced the discussion about companies and sustainability to an even greater degree. Friedman’s book did not enjoy wider circulation until the 1970s, and the two books illustrate two very different perspectives.

The discussion about sustainability was very polarised during this time and focused almost exclusively on the companies that were part of the problem. Within a span of 11 years, three organisations were born, which are still the international leading environmental NGOs: World Wildlife Fund (now the World Wide Fund for Nature), Friends of the Earth and Greenpeace.

19. [https://en.wikipedia.org/wiki/United\\_Nations\\_Conference\\_on\\_the\\_Human\\_Environment](https://en.wikipedia.org/wiki/United_Nations_Conference_on_the_Human_Environment)

In response to the growing evidence that humanity faced an environmental crisis, world leaders also met in Stockholm in 1972 for the first UN summit on the environment.<sup>19</sup> The outcome from the meeting was surprisingly clear for a negotiated outcome.

*A point has been reached in history when we must shape our actions throughout the world with a more prudent care for their environmental consequences. Through ignorance or indifference we can do massive and irreversible harm to the earthly environment on which our life and well-being depend.*

**United Nations Conference on the Human Environment  
Stockholm, 5–16 June 1972  
Paragraph 6**

It was during this time, when there was a sense of urgency about tackling pollution of the environment by companies, that many of the current structures for working with companies were created. It was also during this time that the blame game between environmentalists and polluting companies began, and it continues to make headlines. Most business leaders recognised the challenges, but the culture and ideology within large parts of the business community held that social and environmental challenges were not something that companies should engage in.

For many years, the formula “The business of business is business” was used both by many in the business community and those who criticised business. The line is attributed to various people, including General Motors Co. Chairman and CEO, Alfred P. Sloan, and Milton Friedman.

20. <http://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html?mcubz=3>

Friedman’s ideas were widely distributed after he wrote an article in the New York Times in 1970, in which he argued that “–there is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits”.<sup>20</sup>

In 1972, the report Limits to Growth was released.<sup>21</sup> To this day, it is used to argue that the current development path is fundamentally unsustainable. It was not individual chemicals that were the problem, it claimed. The main problem was the fact that humanity was using too many natural resources. The conclusion in the report was that if nothing was done human civilisation would face a collapse.

While Limits to Growth did underestimate some areas of technological improvement, the overall conclusion that current trends are unsustainable has been verified a number of times since.<sup>22</sup> The fact that a situation in which human society is taking more resources than the natural systems can regenerate is unsustainable seems to be uncontroversial, but when it was published it came as a shock to many. The research revealed the scale of the challenge, beginning the discussion about the need for more transformative change.

Environmental work has started to become mainstream but the leading perspective can be summed up in the phrase “The solution to pollution is dilution”, the dilution in question consisting of higher smokestacks, longer pipes into the oceans and better filters.<sup>23</sup> According to many governments, environmental companies are in essence “providers of end-of-pipe solutions”.

### Key dates

1961: WWF founded <sup>24</sup>

1962: Rachel Carson’s Silent Spring published <sup>25</sup>

1962: Milton Friedman’s Capitalism Is Freedom published <sup>26</sup>

1969: Friends of the Earth founded. <sup>27</sup>

1970: Friedman’s article “A Friedman doctrine” published <sup>28</sup>

1971: Greenpeace founded <sup>29</sup>

1972: United Nations Conference on the Human Environment, first global UN conference on the environment <sup>30</sup>

1972: The report Limits to Growth published <sup>31</sup>

### 1.1.3 1990–2000: Improving how things are done, with a focus on companies that are polluting/creating problems

Over the decades that followed the first global environmental conference, it became clear that, with a few exceptions, the unsustainable trends were not improving ; <sup>32</sup> in fact, many of them were accelerating in the wrong direction.<sup>33</sup> When the largest gathering in UN history took place in 1992, 20 years after the first meeting, there was an unprecedented consensus that things needed to change.

*Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being.*

**United Nations Conference on Environment and Development  
Rio de Janeiro, 3–14 June 1992  
Agenda 21, Chapter 1**

Increasingly, companies understood the need to address the challenges, and to help them do so they formed groups such as the World Business Council for Sustainable Development. The notion that the only role for business was to do business started to die out during the 1990s. In 1997, the Global Reporting Initiative (GRI) was created in response to an increased appetite for data on companies’ actions for sustainability.

21. <https://www.clubofrome.org/report/the-limits-to-growth/>

22. [http://www.smithsonianmag.com/ist/?next=/science-nature/looking-back-on-the-limits-of-growth-125269840/http://sustainable.unimelb.edu.au/sites/default/files/docs/MSSI-ResearchPaper-4\\_Turner\\_2014.pdf](http://www.smithsonianmag.com/ist/?next=/science-nature/looking-back-on-the-limits-of-growth-125269840/http://sustainable.unimelb.edu.au/sites/default/files/docs/MSSI-ResearchPaper-4_Turner_2014.pdf)

23. <http://greenrisks.blogspot.se/2010/12/solution-to-pollution-is-dilution.html>

24. [https://en.wikipedia.org/wiki/World\\_Wide\\_Fund\\_for\\_Nature](https://en.wikipedia.org/wiki/World_Wide_Fund_for_Nature)

25. <https://www.nrdc.org/stories/story-silent-spring>

26. [https://en.wikipedia.org/wiki/Capitalism\\_and\\_Freedom](https://en.wikipedia.org/wiki/Capitalism_and_Freedom)

27. [https://en.wikipedia.org/wiki/Friends\\_of\\_the\\_Earth](https://en.wikipedia.org/wiki/Friends_of_the_Earth)

28. [http://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html?\\_r=0](http://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html?_r=0)

29. <https://en.wikipedia.org/wiki/Greenpeace>

30. [https://en.wikipedia.org/wiki/United\\_Nations\\_Conference\\_on\\_the\\_Human\\_Environment](https://en.wikipedia.org/wiki/United_Nations_Conference_on_the_Human_Environment)

31. [https://en.wikipedia.org/wiki/The\\_Limits\\_to\\_Growth](https://en.wikipedia.org/wiki/The_Limits_to_Growth)

32. It is important to emphasise the obvious point that many improvements were made at the margins. Technology development has delivered many efficiency improvements and many new radical solutions have been implemented.

33. Global GHG emissions kept increasing faster than most experts estimated.



In 2000, Kofi Annan formed the UN Global Compact in order for companies to discuss their responsibility. To join, companies had only to agree that they had a responsibility for sustainability issues. The fact that merely acknowledging the need to tackle sustainability in some structured way was still controversial in 2000 shows how fast things have changed since then.

Also in 2000, the Carbon Disclosure Project was launched, an initiative in which leading investors coordinated their collection of emissions data from companies.

During this time, it became clear that it was important to work throughout the supply chain. Many large companies are not producers but this does not mean that they can ignore what is happening at their suppliers.

It began to be recognised too that the end-of-pipe and incremental approach was not enough, although most initiatives tended to prioritise exactly those incremental approaches, and much effort was exerted towards institutionalising, standardising and developing tools for that purpose. End-of-pipe solutions still predominated, but resource efficiency was coming to the fore as a driver for cost savings, still, however, directed largely towards polluting companies.

We live today with the legacy of that time. Many countries continue to pursue a green/environmental technology primarily for end-of-pipe solutions, capable, according to the OECD definition, “of reducing environmental damage through processes and materials that generate fewer potentially damaging substances, recover such substances from emissions prior to discharge, or utilize and recycle production residues”.<sup>34</sup> This is about reducing damage, not providing sustainable solutions. It is about generating fewer damaging substances, not delivering solutions that do not require any damaging substances. It is about recovering damaging substances from emissions, not ensuring that production happens without any damaging emissions.

34. <https://stats.oecd.org/glossary/detail.asp?ID=834>

35. [https://en.wikipedia.org/wiki/Earth\\_Summit](https://en.wikipedia.org/wiki/Earth_Summit)

36. <http://www.wbcsd.org/about/history.aspx>

37. [https://en.wikipedia.org/wiki/Global\\_Reporting\\_Initiative](https://en.wikipedia.org/wiki/Global_Reporting_Initiative)

38. [https://en.wikipedia.org/wiki/United\\_Nations\\_Global\\_Compact](https://en.wikipedia.org/wiki/United_Nations_Global_Compact)

39. <https://www.cdp.net/en-us/pages/staff.aspx>

#### Key dates:

1992: The Earth Summit in Rio de Janeiro<sup>35</sup>

1995: World Business Council for Sustainable Development (WBCSD) formed<sup>36</sup>

1997: Global Reporting Initiative (GRI) formed<sup>37</sup>

2000: UN Global Compact launched<sup>38</sup>

2000: Carbon Disclosure Project (CDP) formed<sup>39</sup>

### 1.1.4 2000–: New ways of delivering services and a focus on companies that can provide important solutions

Over the last years, a growing number of companies have begun to shift perspective from doing less harm to becoming generators of good, use the sustainability demands that come from society as drivers for innovation. Instead of trying only to minimise negative impact, these companies are looking at what society needs, such as zero carbon mobility, buildings that are resource-efficient and net producers of renewable energy, inexpensive educational solutions that encourage creativity, and smart health and nutritional solutions, and helping to provide sustainable solutions for these needs

In many ways, the shift to a solution perspective might be the most significant change in the relationship between business and sustainability since the discussion about charity. Historically, the assumption about sustainability in the corporate sector has been that companies are the creators of the problems. The shift from a problem focus to a solution focus has perhaps been most visible in the area of climate change.

Much of the early work with companies as solution providers and a net-positive approach happened within the ICT sector. This is a sector where many are used to rapid change, see “impossible problems” as challenges to be solved and are used to thinking beyond the bounds of incremental changes. This work built on early pioneering work like the Eurescom report “Calling for a Better Tomorrow” from 1996.

**Table 1: Examples of the shift from a problem-only focus to a problem-and-solution focus**

	<b>Problem-only focus</b>	<b>Problem-and-solution focus</b>
Climate change/clean energy and transport	Producers and providers of fossil fuel-powered cars and airplanes	Teleworking providers, developers of apps for sharing electrical vehicles/public transport, city planning solutions
Climate change and buildings	Producers of inefficient buildings and high-carbon building materials	Smart building control providers, sustainable architecture, integrated solar and storage solutions
Climate change and food	Fast food meat restaurants	Health apps, providers of plant-based protein
Destruction of biodiversity	Irresponsible forest companies, meat producers	Providers of e-books, cloud services, sustainable building companies, providers of plant-based protein
Water scarcity	Producers of soft drinks	Smart farming solutions, intelligent water control, design of waterless solutions
Poverty	Users of sweatshops	Micro financing, companies with responsible taxation, ICT companies proving transparency, companies paying fair salaries (including providing data on how much they spend on advertising and PR staff salaries in relation to those with the lowest salary)

A common mistake is to treat the problem focus and the solution focus as polar opposites, forgetting the “only”. New solution areas have to be found, but it is still important to reduce the problems. In transport, for example, it is important both to get rid of cars powered by fossil fuels and to build a new and sustainable transport/mobility system. The problem hitherto has been too much emphasis on incremental reductions of problems that need to disappear totally. And too little emphasis on doing anything to promote the transformative solutions that are needed.

In an attempt to introduce a solution perspective to the World Summit on Sustainable Development (WSSD) in 2002, WWF initiated a project on ICT as a solution provider, which generated the report “Sustainability at the speed of light”:<sup>40</sup>

40. [http://wwf.panda.org/about\\_our\\_earth/all\\_publications/ict/](http://wwf.panda.org/about_our_earth/all_publications/ict/)

Throughout history the consequences of mankind’s actions have often been limited in time and space. The implications of many of our actions today are global, stretching far into the future; some of them, such as the extinction of species, are forever. ICT has brought into focus the opportunity to develop new innovative tools to address these challenges and opportunities. Used in the right way, ICT could also support the development of a global ethic giving us information about the consequences of our actions, helping us to act according to our values and creating a new kind of transparency where our physical footprints on the planet become visible for the rest of the world to see.

This could create a new standard that would address the needs of the physical world through the medium existing in the virtual world. Thus by merging the digital with the physical, the visionary with the concrete, the ethical with the practical, the long term with the short term, we could create a framework for sustainability at the speed of light.<sup>41</sup>

41. <http://www.itu.int/net/wsis/docs/geneva/official/poa.html>

42. [http://www.unmillenniumproject.org/documents/131302\\_wssd\\_report\\_reissued.pdf](http://www.unmillenniumproject.org/documents/131302_wssd_report_reissued.pdf)

There was little appetite for a solution perspective at that time in the major sustainability organisations and processes. Significant discussions took place among key stakeholders about the need for a new, less problem-oriented approach, but this was not reflected in the actual outcome. In the report of the WSSD, “problem” was mentioned 35 times and “solution” only five times.<sup>42</sup>

An initial challenge was that processes in which a solution perspective could have been introduced, such as the WSSD, failed to include solution providers when the drafts were developed. To remedy this, a group of companies, NGOs, academics and UN organisations came together and asked the World Summit on Information Society (WSIS) to include sustainability into the plan of action. The WSIS was the next major international conference and the theme was ICT, so it was a great place to start. The secretariat and government officials were very open to the idea and the final action plan included many of the suggested changes that the solutions group suggested, including clear dates for action by international organisations and financial institutions to develop strategies for ICT for sustainable development.

43. <http://www.itu.int/net/wsis/docs/geneva/official/poa.html>

By 2005, relevant international organizations and financial institutions should develop their own strategies for the use of ICTs for sustainable development, including sustainable production and consumption patterns and as an effective instrument to help achieve the goals expressed in the United Nations Millennium Declaration.<sup>43</sup>

44. [http://assets.panda.org/downloads/road\\_map\\_speed\\_of\\_light\\_wwf\\_etno.pdf](http://assets.panda.org/downloads/road_map_speed_of_light_wwf_etno.pdf)

Buoyed by success in the WSIS process, but frustrated by the lack of progress among governments and relevant organisations, the European Telecommunications Network Operators’ Association (ETNO) and WWF launched a joint project in 2006 to get the European Commission and relevant organisations in the EU to acknowledge ICT as a solutions provider.<sup>44</sup>

Unfortunately, most stakeholders did not see accelerated uptake of new ICT solutions as a major opportunity for sustainable solutions, and policy makers, NGOs and academics tended to regard the ICT sector as a polluting sector.

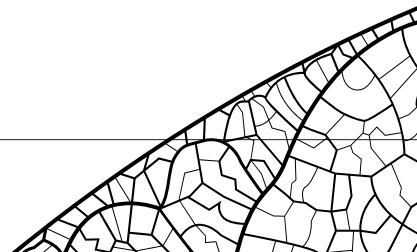
While many working in the areas of sustainability and ICT understood the potential, other individuals and organisations saw only a rapidly growing environmental footprint from ICT. This footprint should obviously not be ignored, but without any search for a solution, society would become stuck with the old system of incremental improvement and miss out on the transformative possibilities that the digital revolution provided.

45. <http://www.gartner.com/newsroom/id/503867>

In 2007, a study by Gartner correctly estimated that the sector was responsible for approximately 2% of global emissions.<sup>45</sup> The report on this study spread like wildfire and many NGOs, media and policy makers, as well as many in the ICT sector, responded by initiating work to reduce emissions from ICT, whatever the cost. This reaction was not rational, as many ICT solutions, from virtual meetings to smart control of buildings, are necessary to ensure the deep reductions required.

46. <http://www.gartner.com/newsroom/id/1458613>

Fortunately, Gartner is a science-driven organisation and WWF partnered with it to highlight the opportunities afforded by ICT, establishing the “2% problem/98% opportunity” meme for ICT.<sup>46</sup> The figures are derived from the fact that ICT makes an approximately 2% contribution to global emissions but also has a crucial role to play in reducing all other emissions. After all, the ICT sector is at the very centre of the fourth industrial revolution.





The net-positive approach is in no way limited to the ICT sector, even if much of the initial work happened there and much of the methodology has been developed by ICT companies. Many other types of business have explored strategies based on their role as solution providers, and have often found it frustrating to have identified such solutions and yet still be in a subservient position in which governments, NGOs, media and consultants demand only that they reduce their emissions.

In 2007, the World Economic Forum (WEF) initiated work to explore how ICT could contribute to climate change mitigation, producing a report that included the following three areas:<sup>47</sup>

47. <http://www.pamlin.net/written/documents/Contribution%20of%20ICT-%20detailed%20paper.pdf>

### 1. Infrastructure innovation

This section covers the area where many of the most significant and immediate impacts can be made with regard to energy saving and reduction of greenhouse gases (GHGs). This includes the large-scale physical environment consuming the most energy, encompassing buildings, public utilities and infrastructure, and manufacturing. It also captures opportunities for innovation within the energy grid and efficiencies for energy distribution.

### 2. Behavioural change and green enablement

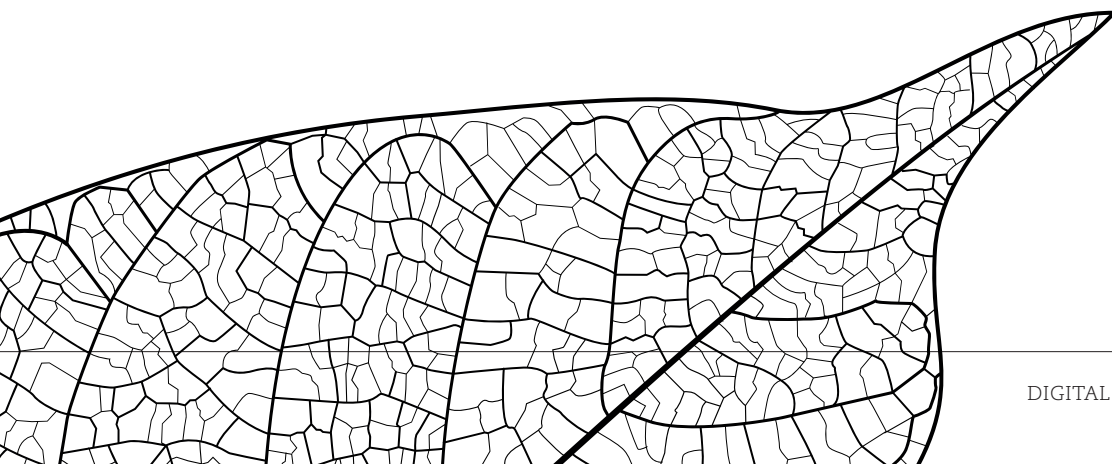
This section relates to the need for global measurement and tracking of carbon reduction, as well as tools that impact positive behavioural change. This includes software tools for carbon impact measurement and the use of innovative technologies and opportunities that reduce travel and transport, such as those for virtual meetings, telecommuting and online services (e.g. e-health, e-taxation and e-banking).

### 3. Energy efficiency of ICT products and solutions

This section covers the energy efficiency of data centres, electronic devices and solutions. Even if ICT products themselves have only a marginal environmental impact, there is a great risk that the public will judge the whole sector as environmentally unfriendly if it does not take steps to reduce its own carbon footprint. First, this would impact on ICT's credibility, making it difficult to deliver on the points above. Second, the rapid increase and penetration of ICT products can, if no action is taken, result in increased energy demand.

During 2007–2010, a number of leading companies began to develop net-positive strategies. They included IKEA, HP, Ericsson, ITC Hotels, China Mobile, Novozymes and Fujitsu. There had been earlier initiatives to highlight individual solutions, such as smart mobility in the ICT sector, energy efficiency in general, a specific portfolio with positive impacts and reductions due to the use of renewable energy.<sup>48</sup> But it was after the WSSD that the idea of an overall net-positive, especially climate-positive, company emerged as a strategy among leading solution providers.

48. The best-known is probably Ecomagination by GE <https://www.ge.com/about-us/ecomagination>, an approach that has been widely discussed, <https://hbr.org/2014/08/ges-failure-of-ecomagination>



49. [http://www.ikea.com/ms/en\\_CN/about\\_ikea/pdf/climate\\_fact\\_sheet.pdf](http://www.ikea.com/ms/en_CN/about_ikea/pdf/climate_fact_sheet.pdf)
50. <http://www.hp.com/hpinfo/newsroom/press/2008/080619b.html>, The link to the paper is broken on the page, but is available here: <http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/billiontons.pdf>
51. <https://www.ericsson.com/news/1314940>
52. <http://www.fujitsu.com/global/documents/about/resources/reports/sustainabilityreport/2015-environmentalreport/fujitsureport2015-040101-e.pdf>
53. [http://assets.panda.org/downloads/china\\_mobile\\_english\\_summary\\_1.pdf](http://assets.panda.org/downloads/china_mobile_english_summary_1.pdf)
54. <http://www.novozymes.com/en/news/news-archive/2009/03/45299>
55. <http://www.itshotels.in/responsibleluxury/sustain.html>
56. <https://investors.skf.com/en/press-releases/skf-launches-portfolio-customer-solutions-significant-environmental-benefits-part-its>
57. <http://www.dell.com/learn/us/en/uscorp1/2020-goals>
58. [https://www.kingfisher.com/sustainability/files/reports/cr\\_report\\_2014/2014\\_Net\\_Positive\\_Report.pdf](https://www.kingfisher.com/sustainability/files/reports/cr_report_2014/2014_Net_Positive_Report.pdf)
59. <http://www.btplc.com/Purposefulbusiness/Energyandenvironment/Our31methodology/index.htm>
60. This is not really a net-positive target – more of a zero target with some additional benefits. This is unfortunate as Unilever is seen as a sustainability leader, but it may be hoped that they will revise their target. <https://www.unilever.com/news/news-and-features/2015/Unilever-to-become-carbon-positive-by-2030.html>
61. <http://about.att.com/content/dam/csr/sustainability-reporting/PDF/2016/ATT-Goals.pdf>
62. It is difficult to understand why Toyota talks about a net-positive impact when all its targets are reduction targets or targets to reach zero. <http://www.toyota-global.com/sustainability/environment/challenge2050/>
63. [http://europa.eu/rapid/press-release\\_IP-08-733\\_en.htm?locale=en](http://europa.eu/rapid/press-release_IP-08-733_en.htm?locale=en)
64. [http://europa.eu/rapid/press-release\\_IP-08-733\\_en.htm?locale=en](http://europa.eu/rapid/press-release_IP-08-733_en.htm?locale=en)
65. <http://cop15innovation.blogspot.se/2009/05/join-copenhagen-innovation-kick-off-for.html>

**Table 2: Examples of net-positive approaches**

Company	Year	Initiative
IKEA	2007	The Climate Positive project <sup>49</sup>
HP	2008	Low Carbon IT Solutions – reducing the first billion tonnes of CO2 <sup>50</sup>
Ericsson	2009	Climate-positive solutions to reduce global CO2 emissions <sup>51</sup>
Fujitsu	2009	GHG emission reduction through the provision of ICT <sup>52</sup>
China Mobile	2009	Low-carbon telecommunications solutions in China: current reductions and future potential <sup>53</sup>
Novozymes	2009	Bio Solutions Initiative – eliminating the first billion tonnes of CO2 <sup>54</sup>
ITC Hotels	2010	Luxury for the Planet <sup>55</sup>
SKF	2012	BeyondZero portfolio <sup>56</sup>
Dell	2013	Legacy of Good Plan <sup>57</sup>
Kingfisher	2013	Net-positive goal <sup>58</sup>
BT	2013	Net Good programme <sup>59</sup>
Unilever	2015	Unilever target: carbon positive by 2030 <sup>60</sup>
AT&T	2015	10x the footprint of our operations <sup>61</sup>
Toyota	2016	Six challenges to achieve a net-positive impact <sup>62</sup>

During the early 2000s, an increasing number of policymakers began to take notice of the solution perspective. In 2008, the European Commission announced that it “would promote the use of ICT [...] to improve energy efficiency throughout the economy”.<sup>63</sup> It also stated that:

The real gains from green ICT will come from developing energy efficient ICT solutions that impact the other 98% of global emissions.<sup>64</sup>

Still, the vast majority of initiatives are aimed only at reducing emissions to zero. Even the main business initiative in support of the climate meeting in Copenhagen referred only to incremental reductions of companies’ own emissions.

In order get the message out that there are companies ready for deep reductions and to help deliver significant GHG reductions, a small network was established, with Ericsson, Novozymes and Suntech in the lead. They contributed both before and during the Copenhagen conference, including the following:<sup>65</sup>

Governments must make sure that the current focus on improvements also includes solutions-based transformative technologies that have a huge potential in terms of mitigating climate changes when they are used.

Business, cities and states should be encouraged to report, not only their own emissions, but also their contribution to reductions in other parts of the economy. This would allow for climate-positive reporting and catalyze action among companies that have solutions that can help reduce GHG emissions significantly, but are not big emitters (such as many IT and biotech companies).

Governments should shift from a product to a services perspective, applying life cycle approaches that support cradle-to-cradle strategies in business along all value chains and using ecosystem services sustainably. An effective global climate treaty must support the creation of an intelligent and bio-based 21st century low carbon infrastructure.

The existing processes aroused significant interest, but there was a problem in integrating a net-positive approach into old processes, largely because the focus over the last decades has been on problems, with the result that companies that define themselves as problems dominate sustainability forums.

Much of the current sustainability work is funded as part of a branding/PR strategy, as an internal cost-reduction strategy or as a risk. Many environmental journalists writing about sustainability treat businesses as problems. Moreover, many economic journalists do not understand sustainability as anything more than incremental improvements in existing business and production models. Depending on their perspective, they either celebrate incremental improvements or are critical of the limited progress made. There is little coverage in the media of solution providers.

The failure of the Copenhagen conference to produce any meaningful outcome and its persistent designation of all companies as problems resulted in a realisation that solution providers must be given platforms so they would become visible. The UN Global Compact, together with WWF, created one such platform with the launch of the Low-Carbon Leaders Initiative.<sup>66</sup>

While most of the UNGC's work still focuses on traditional emissions reduction, their high-level communication has been increasingly solution-oriented. Georg Kell was probably one of the first senior figures among international organisations to call for transformative solutions, as well as acknowledging the important role of ICT companies.<sup>67</sup>

The ultimate goal is to inspire new ways of thinking and generate transformative action by incentivising and scaling the new business models, technologies and innovations that hold the potential to solve the challenges we face today, and radically transform society for the better. There must be a fundamental shift in the way we think about growth and prosperity. We expect to see more focus on sustainability as the next generation of business leaders comes to the fore. The new vanguard is not just concerned with profitable business: they want to leave a profitable and sustainable legacy.<sup>68</sup>

Today, a number of initiatives are taking place, including the Net-Positive Project that Forum for the Future launched in 2016. GeSI together with The Carbon Trust and many others have worked on a methodology for calculating positive contributions by companies.<sup>69</sup> The need to accelerate the uptake of transformative sustainable solutions is now close to a mainstream idea, but it will require bold leadership among committed businesses to ensure that a net-positive approach is not used by less serious companies as a PR strategy.

### Key dates

2002: "Sustainability at the speed of light" published by WWF<sup>70</sup>

2002: The World Summit on Sustainable Development held, but lacking a focus on companies as solution providers<sup>71</sup>

2002: Joint submission by WWF, GeSI, UNEP and Grid Arendal to WSIS to acknowledge ICT companies as potential solution providers<sup>72</sup>

2003: WSIS plan of action highlighting ICT potential for delivering solutions<sup>73</sup>

2003: GRI Telecom Telecommunications Sector Supplement included possible positive impacts from ICT, and is still used.<sup>74</sup>

2006: ETNO and WWF's "Saving the climate at the speed of light" published<sup>75</sup>

2007: Climate-positive work launched by IKEA and WWF<sup>76</sup>

2009: Ericsson's work with climate-positive solutions launched<sup>77</sup>

2009: Group of solution companies established during the climate meeting in Copenhagen<sup>78</sup>

66. [https://www.unglobalcompact.org/docs/issues\\_doc/Environment/LOW\\_CARBON\\_LEADERS\\_PROJECT.pdf](https://www.unglobalcompact.org/docs/issues_doc/Environment/LOW_CARBON_LEADERS_PROJECT.pdf)

67. <https://www.youtube.com/watch?v=I4A3uJDpe3s>, <http://www.un.org/apps/news/newsmakers.asp?NewsID=122>

68. <https://www.unglobalcompact.org/docs/publications/ImpactUNGlobalCompact2015.pdf>

69. <https://www.carbontrust.com/media/672238/mobile-carbon-impact-ctc856.pdf>

70. [http://wwf.panda.org/about\\_our\\_earth/all\\_publications/ict/](http://wwf.panda.org/about_our_earth/all_publications/ict/)

71. [http://www.unmillenniumproject.org/documents/131302\\_wssd\\_report\\_reissued.pdf](http://www.unmillenniumproject.org/documents/131302_wssd_report_reissued.pdf)

72. [https://www.itu.int/dms\\_pub/itu-s/md/03/wsispc2/c/S03-WSISPC2-C-0055!!PDF-E.pdf](https://www.itu.int/dms_pub/itu-s/md/03/wsispc2/c/S03-WSISPC2-C-0055!!PDF-E.pdf)

73. <http://www.itu.int/net/wsis/geneva/index.html>

74. <https://www.globalreporting.org/information/g4/sector-guidance/sector-guidance/pilot-versions/telecommunications/Pages/default.aspx>

75. [http://assets.panda.org/downloads/road\\_map\\_speed\\_of\\_light\\_wwf\\_etno.pdf](http://assets.panda.org/downloads/road_map_speed_of_light_wwf_etno.pdf)

76. [http://www.wwf.se/source.php/1473737/WWF\\_IKEA\\_Fact\\_Sheet\\_Climate.pdf](http://www.wwf.se/source.php/1473737/WWF_IKEA_Fact_Sheet_Climate.pdf)  
[http://www.ikea.com/ms/en\\_CN/about\\_ikea/pdf/climate\\_fact\\_sheet.pdf](http://www.ikea.com/ms/en_CN/about_ikea/pdf/climate_fact_sheet.pdf)

77. <https://www.ericsson.com/news/1314940>

78. <http://www.pamlin.net/new/?p=572>



79. <https://hbr.org/2009/09/why-sustainability-is-now-the-key-driver-of-innovation>
80. <http://transformative-solutions.net/>
81. [http://gesi.org/files/Reports/Evaluating%20the%20carbon-reducing%20impacts%20of%20ICT\\_September2010.pdf](http://gesi.org/files/Reports/Evaluating%20the%20carbon-reducing%20impacts%20of%20ICT_September2010.pdf)
82. [http://b4esummit.com/wp-content/uploads/2013/09/Statement\\_B4E-Mexico-2010\\_Call-To-Action-on-Climate-Change.pdf](http://b4esummit.com/wp-content/uploads/2013/09/Statement_B4E-Mexico-2010_Call-To-Action-on-Climate-Change.pdf)
83. <https://www.forumforthefuture.org/sites/default/files/Measuring%20Net%20Positive.pdf>  
<http://www.forumforthefuture.org/sites/default/files/The%20Net%20Positive%20Principles.pdf>
84. <https://www.unglobalcompact.org/docs/publications/ImpactUNGlobalCompact2015.pdf>
85. <http://chgeharvard.org/category/corporate-sustainability-and-health-shine-0>
86. <http://www.netpositiveproject.org/>

2009: “Why sustainability is now the key driver of innovation” published in Harvard Business Review <sup>79</sup>

2010: Low-carbon leaders’ work initiated under the UN Global Compact to identify and support companies with transformative solutions that help reduce global GHG emissions <sup>80</sup>

2010: GeSI report published on how to calculate the positive impacts of ICT solutions <sup>81</sup>

2010: Net-positive and transformative business solutions called for by the B4E Climate Summit <sup>82</sup>

2014: Net-positive principles and measurement recommendations published by Forum of the Future <sup>83</sup>

2015: Impact: Transforming Business, Changing the World published by UNGC <sup>84</sup>

2015: The Sustainability and Health Initiative for NetPositive Enterprise (SHINE) established <sup>85</sup>

2016: BSR, Forum for the Future and Corporate Sustainability and Health (SHINE) at Harvard net-positive project launched <sup>86</sup>

## 1.2 Current Global Goals and New Opportunities

Once the general idea of a solutions agenda and a net-positive approach is accepted, the concrete goals that need to be delivered on must be formulated. There are an almost infinite number of processes and projects with different sustainability goals, so what should a company with a net-positive approach focus on?

87. <http://www.wbcsd.org/vision2050.aspx>

Before discussing the current global goals, it is worth establishing a vision of the whole to which all the different goals should contribute. Vision 2050, a new agenda for business, from WBCSD perhaps expresses it best: <sup>87</sup>

... a planet of around 9 billion people, all living well – with enough food, clean water, sanitation, shelter, mobility, education and health to make for wellness – within the limits of what this small, fragile planet can supply and renew, every day.

88. <https://esa.un.org/unpd/wpp/Graphs/Probabilistic/POP/TOT/>

### There are three core parts of this vision:

1. A 9 billion filter (which should probably be adjusted to 11 billion or more, based on the UN population division’s latest assessments<sup>88</sup>) that aims for equity, such that all should live well, not just a few or a majority.

2. A service perspective focusing on food, mobility and shelter, without stating how this should be provided. Whether, for example, mobility is virtual or physical and whether, if it is physical, it is achieved by means of public transport, self-driving vehicles or walking, all depends on what it is possible to provide to everyone within the limits of the planet.

89. <https://en.wikipedia.org/wiki/Half-Earth>

3. Environmental boundaries, again within the limits of the planet, but it is not stated what those limits should be. Whether we should go to the outermost limits or take more of a half-earth perspective<sup>89</sup> to allow for a dramatic lowering of the rate of extinctions and give other species room to live undisturbed is an ethical decision.

90. <https://sustainabledevelopment.un.org/sdgs>
91. [https://en.wikipedia.org/wiki/Sustainable\\_Development\\_Goals](https://en.wikipedia.org/wiki/Sustainable_Development_Goals)

Using the above vision as a guide can help put the specific goals into a broader perspective. When it comes to specific goals, there are two main approaches. The first, easiest and probably best to start with is to use the Sustainable Development Goals (SDGs)<sup>90</sup>, an intergovernmental set of aspirational goals that the world leaders agreed should be delivered by 2030.<sup>91</sup>



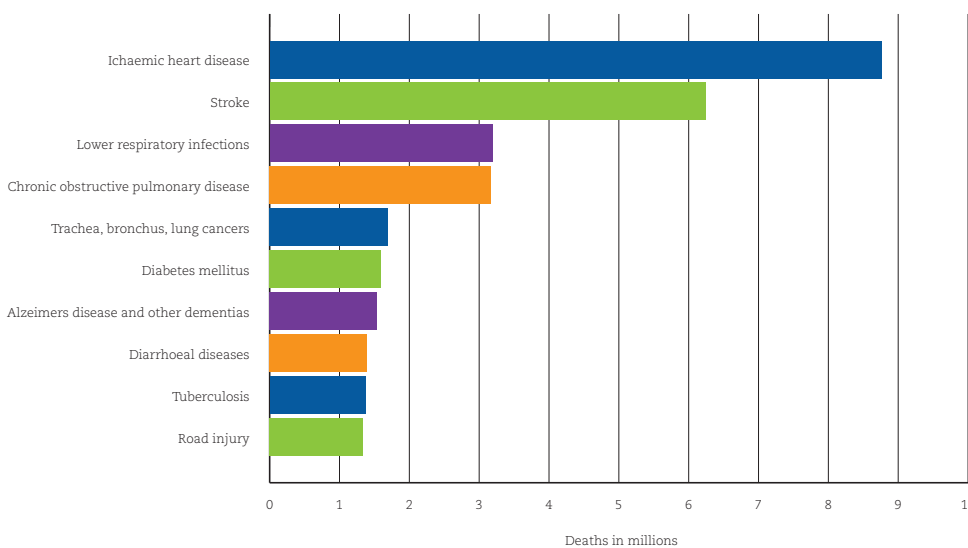
**Figure 2**  
The Sustainable Development Goals.

The SDGs cover many of the major global challenges, but they have two major weaknesses. First, they are not designed to be used by companies. Indeed, it could be argued that they are not meant to be used by anyone as actual goals, but constitute rather vague and unstructured guidance, being a negotiated outcome from a long process in which concrete targets and formulations were often removed by less progressive governments.<sup>92</sup> Nevertheless, the goals and the 169 targets provide a number of opportunities for businesses to analyse their contribution.

Second, and perhaps more problematic, is that they are not selected based on any particular criteria. How they should be prioritised, interpreted and weighted against other global sustainability challenges is not clear. Many of the challenges above can be reduced by cross-referencing the SDGs with a science-based list of challenges, among which two candidates could be:

- A top 10 list of the main global causes of death<sup>93</sup>
- The 12 global risks that threaten human civilisation.<sup>94</sup>

These two lists are very different, but both are based on a transparent methodology and focus on different aspects of ethically unacceptable consequences. Some areas such as climate change, poverty, pandemics, reduced use of natural resources, education and health improvements are relevant for both the SDGs and the science-based lists.



**Figure 3**  
The 10 leading causes of death worldwide and the 12 global risks that threaten civilisation.

92. [http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(14\)61046-1.pdf](http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(14)61046-1.pdf)  
<https://www.scientificamerican.com/article/sustainable-development-goals-offer-something-for-everyone-and-will-not-work/>

93. <http://www.who.int/mediacentre/factsheets/fs310/en/>

94. <http://www.oxfordmartin.ox.ac.uk/publications/view/1881>

In addition to the SDGs and the science-based lists, a company might also identify positive goals in seeking a solutions perspective. Two uncontroversial areas that a company can contribute to are basic science and art. Both areas are parts of a flourishing society with creative citizens. Priorities may differ, but there are obvious areas, such as exploration of the universe and better understanding of the fundamental nature of material, that are part of the very essence of being human. Likewise, classical music, poetry and creative expression in different forms are transcending aspects of our existence.

## 1.3 Methodologies to Calculate Net-positive Impacts

Methodologies to calculate the net-positive impact of a solution are now relatively well established, especially in the area of climate change. Multiple published reports cover different aspects, and a few provide an overall framework. There is, however, no ongoing process to standardise the methodologies in order to mainstream them into existing reporting frameworks, even if GRI, the GHG-reporting initiative, CDP and the like all allow for and sometimes even encourage such reporting on a general level.

- 95. [http://caringforclimate.org/forum/wp-content/uploads/LCLP\\_Calculations.pdf](http://caringforclimate.org/forum/wp-content/uploads/LCLP_Calculations.pdf)
- 96. [http://gesi.org/files/Reports/Evaluating%20the%20carbon-reducing%20impacts%20of%20ICT\\_September2010.pdf](http://gesi.org/files/Reports/Evaluating%20the%20carbon-reducing%20impacts%20of%20ICT_September2010.pdf)
- 97. <https://www.itu.int/rec/T-REC-L.1430-201312-I/en>
- 98. <https://www.cdp.net/CDPResults/CDP-ICT-sector-report-2014.pdf>
- 99. <http://www.forumforthefuture.org/sites/default/files/Measuring%20your%20way%20to%20Net%20Positive.pdf>
- 100. [https://www1.compliance2product.com/c2p/getAttachment.do?code=cnFcn3jCF4ISKPflQddi6Q0g2SV\\_Sugx5xTHWzf2l9YQZXnqCqzHJvRu0woc7nlCJT](https://www1.compliance2product.com/c2p/getAttachment.do?code=cnFcn3jCF4ISKPflQddi6Q0g2SV_Sugx5xTHWzf2l9YQZXnqCqzHJvRu0woc7nlCJT)

- 101. [http://www.isa.org.usyd.edu.au/research/InformationSheets/ISATBLInfo17\\_new.pdf](http://www.isa.org.usyd.edu.au/research/InformationSheets/ISATBLInfo17_new.pdf)

### The steps below are based primarily on the following reports:

- UN Global Compact: Low-carbon leaders: transformative calculations <sup>95</sup>
- GeSI: Evaluating the carbon reducing impacts of ICT <sup>96</sup>
- ITU: Methodology for environmental impact assessment of information and communication technologies at city level <sup>97</sup>
- CDP: ICT sector's role in climate change mitigation <sup>98</sup>
- Forum for the Future: Measuring your way to net positive <sup>99</sup>
- GHG protocol product life-cycle accounting and reporting standard ICT sector guidance v2.1 - Guidance for assessing GHG emissions for ICT-enabled transport substitution (unpublished but available for download) <sup>100</sup>

### The following steps are required:

1. Identify positive and negative impacts in society and a process to evaluate the process to identify impacts.
2. Clarify system boundaries (what impacts/emissions should be included).
3. Determine an appropriate baseline.
4. Avoid cherry-picking (accounting for both positive and negative impacts).

### One additional step is needed if several companies are involved in delivering a solution and want to divide the contribution among them:

5. Allocate reductions among multiple entities in a value chain (i.e. to avoid double counting of reductions among producers of intermediate goods, producers of final goods, retailers, etc.). Address allocation of reductions so that double counting is avoided. Traditional calculations address the fact that the same emissions are included in different stakeholder's emission calculations by separating different scopes from each other, e.g. "scope 1" reductions for one company, can be "scope 2" reductions for another, and "scope 3" for multiple companies. <sup>101</sup>

### 1.3.1 Identify a company's contributions to the SDGs and a process for evaluation

In order to calculate the net-positive contribution from a company, the negative as well as positive contributions must be identified. Under 2.2, "The Digital Sustainability Process", the identification of the positive (and negative) contributions in society will be discussed. The other part of a net-positive assessment is to identify a company's traditional direct contributions to the SDGs and to other areas, for which the SDG Compass (see below) could be used.<sup>102</sup> This system has been developed by GRI, the UN Global Compact and the World Business Council for Sustainable Development (WBCSD). The objective of the guide is to support companies in aligning their strategies with the SDGs and in measuring and managing their contribution.

102. <http://sdgcompass.org/>

**The SDG Compass guide is organised into five sections:**<sup>103</sup>

#### 1. Understanding the SDGs

As a first step, companies are assisted in familiarising themselves with the SDGs.

#### 2. Defining priorities

To seize the most important business opportunities presented by the SDGs and reduce risks, companies are encouraged to define their priorities based on an assessment of their positive and negative, current and potential impact on the SDGs across their value chains. This is one of the most difficult aspects, as different impacts are not easy to compare. Balancing the difficulty or cost of an action with the impact is also not always straightforward, especially when there are uncertainties involved.

#### 3. Setting goals

Goal setting is critical to business success and helps foster shared priorities and better performance across the organisation. By aligning company goals with the SDGs, the leadership can demonstrate its commitment to sustainable development.

#### 4. Integrating

Integrating sustainability into the core business and governance and embedding sustainable development targets across all functions within the company are key to achieving set goals. To pursue shared objectives or address systemic challenges, companies increasingly engage in partnerships across the value chain, within their sector or with governments and civil society organisations.

#### 5. Reporting and communicating

The SDGs enable companies to report information on sustainable development performance using common indicators and a shared set of priorities. The SDG Compass encourages companies to build the SDGs into their communication and reporting with stakeholders.

103. [http://sdgcompass.org/wp-content/uploads/2015/12/019104\\_SDG\\_Compass\\_Guide\\_2015.pdf](http://sdgcompass.org/wp-content/uploads/2015/12/019104_SDG_Compass_Guide_2015.pdf)



Figure 4  
The SDG Compass.



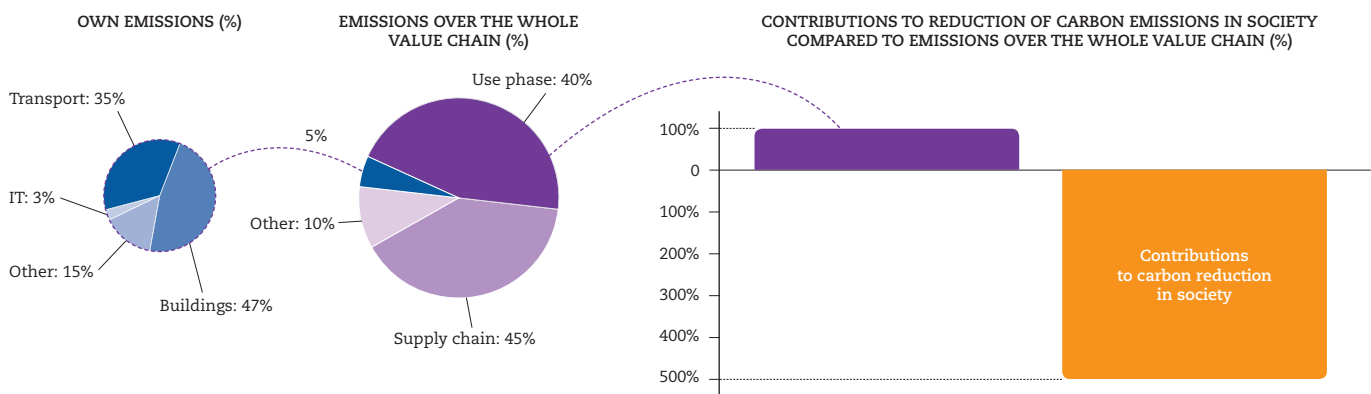
### 1.3.2 Clarifying system boundaries to determine net-positive contributions

Clarifying system boundaries is very important in relation to most solutions, especially transformative solutions.

First, the difference between the traditional impacts that companies report, which for carbon emissions includes scopes 1–3, and the impacts on society needs to be clarified. This is important to ensure that companies do not just report changes in their direct emissions and use them to claim net-positive contributions.

If a smart LED system is provided, the whole life-cycle impact from the LED system (from mining and production to installation and recycling) must be included in the assessment. This is crucial from a climate/science perspective, as it is such system boundaries that enable a judgement on whether the contribution is actually net-positive. It is also important from a business/policy perspective, as it then becomes clear which companies have been involved in delivering net-positive solutions.

**Figure 5**  
A company's emissions and reductions from different perspectives



Second, the actual positive contribution must be calculated. For many solutions, this presents a challenge, as these reductions in emissions are much more significant than many traditional reductions. If a fossil fuel-powered car gets a more efficient engine, the reduction in emissions that this contributes to is often pretty straightforward. Everything else is the same, only the emissions from the car are reduced (assuming that the production of the new engine is equivalent to the old). But many solutions are much more transformative and can include a significant shift, e.g. a move from car driving to online meetings.

104. The point is illustrated in this video about ICT solutions for a 21st-century office: <https://www.youtube.com/watch?v=GwRPPj7A0MQ>

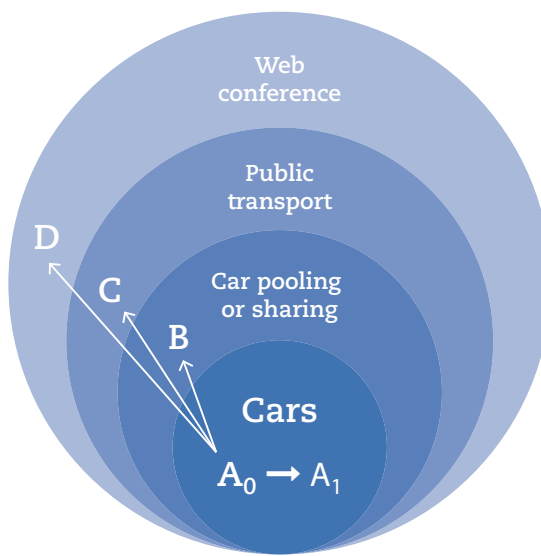
105. <http://www.transportationca.org/index.php>

For transformative solutions, i.e. solutions that are more than incremental improvements in existing systems, the underlying infrastructure is important for estimating the emissions savings from low-carbon solutions.<sup>104</sup>

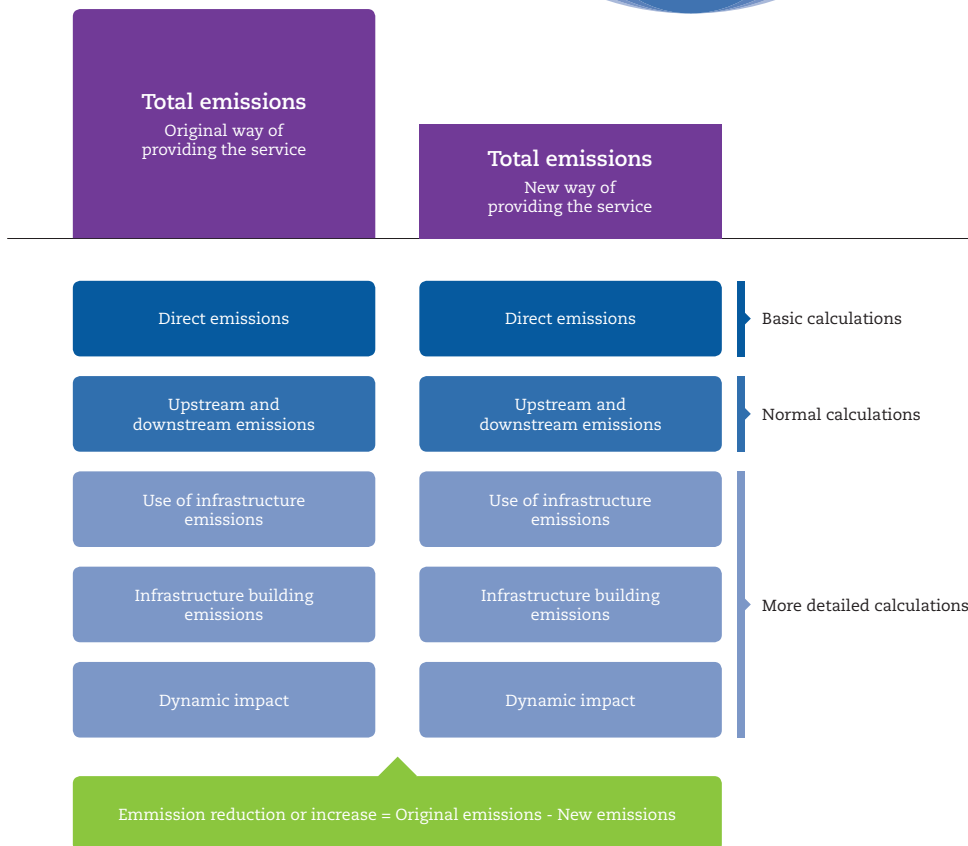
When comparing teleworking to commuting by car, it's not simply a case of comparing the emissions from the energy used by the mobile device to the tail-pipe emissions. Both systems have up- and downstream emissions. Likewise, the mobile device must be produced and so must the car; the fuel for the car must be extracted and refined. The two solutions also depend on different underlying infrastructures. Cars require roads, parking spots, fuelling stations, street lights, etc. In the case of car transport, the underlying infrastructure often represents about 30% of the total emissions.<sup>105</sup> On the other hand, mobile devices require fibre optic cables and base stations.

Companies that provide transformative solutions and/or support a zero-carbon economy may also be interested in providing information about the dynamic impacts, such as positive and negative rebound effects.

Increased use of cars may result in more roads and more shopping centres built outside city centres, resulting in further increases in emissions. Increased reliance on teleworking may result in increased use of dematerialisation services, such as e-banking and other digital services, rather than physical content, resulting in further decreases in emissions. A freightliner can have a strategy to reinvest increased revenues in net-energy-producing ports and zero-emitting ships that enable and support sustainable global trade in a way that airfreight carriers do not. The dynamic effects are important for companies and policy makers who want to avoid high-carbon lock-in (i.e. a situation in which the investments make it very difficult or impossible to go beyond the first reductions.)



**Figure 6**  
As improvements move from incremental to transformative, calculating savings becomes increasingly difficult.



**Figure 7**  
The figure illustrates how savings from transformative solutions need to be calculated.

106. This is basically copied from GHG Protocol Product Life-Cycle Accounting and Reporting Standard ICT Sector Guidance v2.1, written by Darrel Stickler from Cisco, but changed from a focus on specific ICT solutions only to all relevant solutions. A discussion about rebound effects that deliver additional positive impacts has also been added.

### 1.3.4 Emissions categories <sup>106</sup>

There are several categories of emissions that are considered for the comparison to the baseline.

#### Direct GHG emissions

Direct emissions are the GHG emissions generated over the life cycle of the solution. Direct GHG emissions increase as a result of implementation of the solution.

#### Enabling effects

Enabling effects refer to activities replaced by the implementation of the solution, and can be placed into two classes:

- An immediate enabling effect is directly tied to solution use and is observed immediately or in the very short term. For example, use of a remote-collaboration solution on a particular day directly substitutes for a specific business trip. Use of a teleworking solution on a particular day probably substitutes for employee commuting on that same day.
- A longer-term enabling effect is a non-immediate reduction of business as usual (BAU) GHG emissions occurring as the result of cumulative solution implementation over time and typically at an increased scale of adoption. These effects can be related to societal changes in behaviour, as well as to changes in provision and use of infrastructure.

Examples of potential, longer-term enabling effects (and their likely timescale) include reductions in:

- Production of goods or vehicles (medium term): Teleworking may result in longer service life for personal motor vehicles, reducing embedded GHG emissions from the production of new vehicles (although potentially increasing GHG emissions from the operation of older, less fuel-efficient vehicles).
- Manufacturing infrastructure (long term): Less private motor vehicle production will reduce the need for automobile manufacturing facilities and accompanying GHG life-cycle emissions.
- Use of shared transport terminal facilities (long term): Less travel may reduce GHG emissions from the operation of airport and train terminals.
- Future infrastructure (long term): Less air travel and employee commuting may reduce future airport, road and rail maintenance and construction.
- Use of goods or vehicles (medium term): Individuals who telework may as a result adopt other, more sustainable behaviours, such as travelling less in general, using more public transport and improving the energy efficiency of their home.

#### Rebound effects

Rebound effects traditionally refer only to the negative offset of some portion of enabling-effect GHG savings, owing to additional changes in human behaviour within the system boundary caused by or related to the availability of the solution. Like enabling effects, these rebound effects are placed into two classes:

- An immediate rebound effect offsets some portion of the enabling-effect GHG-emissions savings as a direct result of system implementation.
- A longer-term rebound effect is a non-immediate offset of some portion of enabling-effect GHG savings achieved by solution implementation, often as a result of the cumulative impacts of larger-scale adoption.

However, there are also positive rebound effects, so called super-conservation effects, e.g. when environmentally friendly practices (such as e-mobility) raise concern for environmental protection and encourage other such practices.<sup>107</sup> Such rebound effects are especially important for more transformative solutions that

107. See for example the article "Mapping rebound effects from sustainable behaviours: key concepts and literature review" SLRG Working Paper 01-10, ISSN: 2050-4446 by Steve Sorrell.

deliver more than incremental improvements in existing systems.

Rebound effects can be quantified with well-designed data collection and monitoring, and managed through updated policies and business processes. Assessing longer-term enabling and rebound effects carries more uncertainty, in determining both the likelihood of occurrence and the magnitude of impact. Primary data from relevant, real-world experience generally will not be available until actual solution adoption is more widespread.

### 1.3.5 Clarifying different baselines

Determining an appropriate baseline is a critical step in accounting for avoided emissions. But what kind of baseline should be used? Current emissions in society, a BAU scenario-based extrapolation of historic emissions, relative to the technology/lifestyle development in society, in relation to policy targets or in relation to a sustainable level of emissions?

#### Using increasing future emissions as a baseline

In many situations, current trends indicate that emissions will continue to grow, especially in emerging economies. A company that provides solutions which help reduce emissions compared to such a baseline can calculate these.

Comparing future emissions reductions resulting from the introduction of a low-carbon solution (future achieved emissions) to a BAU benchmark of growing GHG emissions may show a significant reduction in GHG emissions (see Figure 8), even though actual emissions compared to a historical level (what has been emitted so far) are still growing over time (see Figure 8, right).

This approach is often used today as companies look at the relative benefits of their new (often marginally) improved products. This can lead to the conclusion that the climate benefit achieved is going in the right direction (claimed emission reductions), when in fact more GHG may still be emitted into the atmosphere compared to historical emissions (what has been emitted so far from the products a company provided). Using this benchmark allows a company to grow without considering the impact on the planet and still report “climate benefits” from their solutions. If the calculations are done over decades, it is important also to calculate the absolute increase in the atmosphere, as absolute reductions are necessary across the globe in the medium to long term.

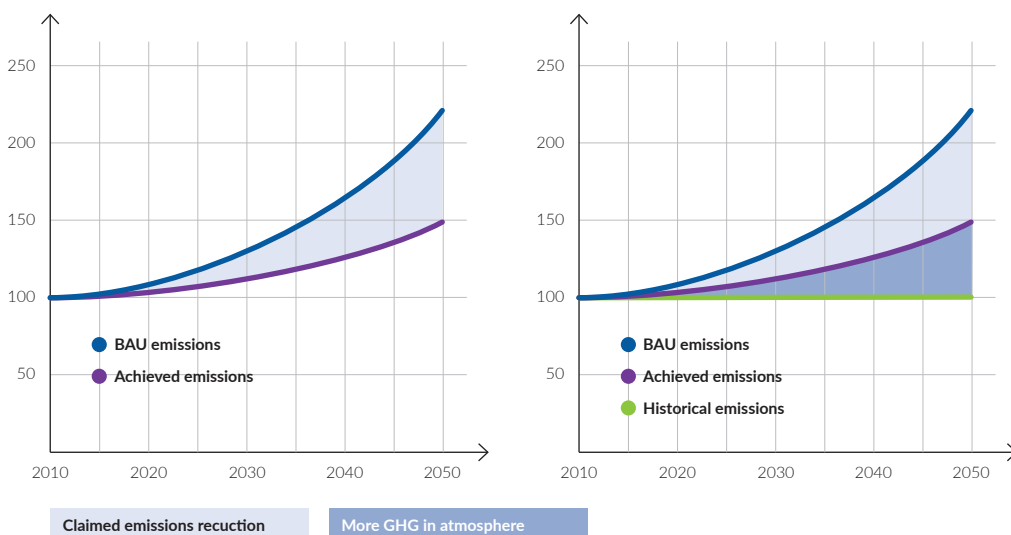


Figure 8  
Improvements compared with BAU.



[http://www.sustainablelifestyles.ac.uk/sites/default/files/projectdocs/slr\\_working\\_paper\\_01-10.pdf](http://www.sustainablelifestyles.ac.uk/sites/default/files/projectdocs/slr_working_paper_01-10.pdf) and the article "Can rebound effects explain why sustainable mobility has not been achieved?" by Hans Jakob Walnum, Carlo Aall and Søren Løkke [www.mdpi.com/2071-1050/6/12/9510/pdf](http://www.mdpi.com/2071-1050/6/12/9510/pdf)

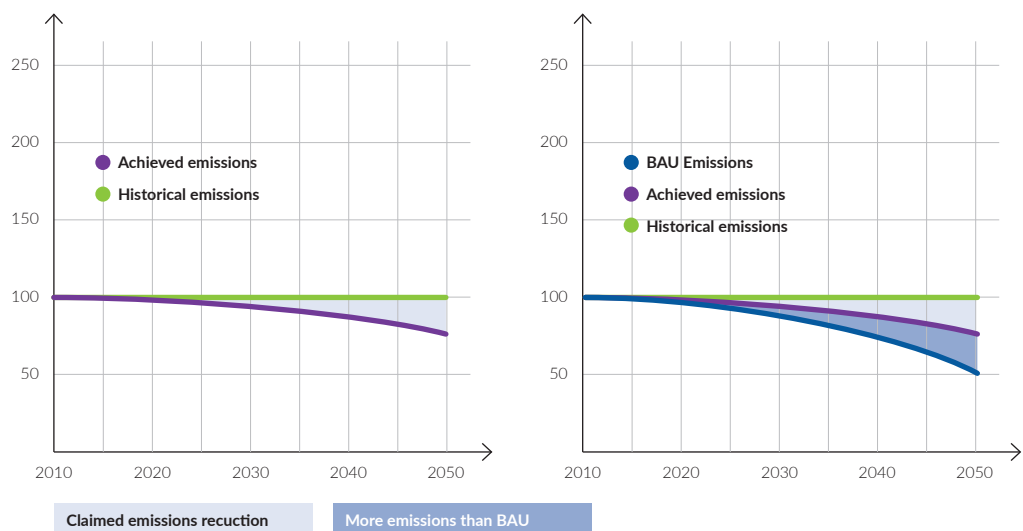
### Using historical emissions as a baseline when emissions are decreasing

Comparing future achieved emissions reductions (projection of emissions reductions after implementing a new solution) to a historical emissions benchmark (emissions from an old version of the solution) can show a positive development, indicating that emissions reductions are being achieved (see Figure 9, left); yet this benchmark may fail to recognise that emissions would decrease anyway, owing to, for example, technology development, improved legislation or an increased level of renewable energy in the energy system. It may even prove that reductions would have occurred faster than had been achieved using the solution the company provided (see Figure 9).

The reported reductions may incorrectly be understood as progress – climate benefit – as a result of the introduction of a new solution (claimed emissions reductions), whereas emissions reductions without the introduction of the new solution from the company could have been even greater. In these circumstances, using such a benchmark allows a company to report climate benefits from solutions that may in fact prevent society from using existing solutions with even greater reduction potentials.

Companies that use historical emissions must explain what assumptions they have made to calculate savings based on a situation in which there is no change. Explaining these assumptions is particularly important if the company is claiming reductions over a long time, perhaps 20 years or longer, as significant emissions reductions are needed over this timeframe. A company not projecting any reductions over the next decades may plan its business strategy on this basis; it will thereby contribute to a high-carbon lock-in and signal to policy makers and other stakeholders that it does not want or believe in significant carbon reductions.

**Figure 9**  
Improvements compared to BAU for competitors.



### Using actual necessary, science-based reductions as a baseline

Future achieved emissions may actually be lower than both BAU and historical emissions (see Figure 10, left). This can be interpreted as an indication that emission trends are going in the right direction. However, when the benchmark is the emissions necessary to avoid dangerous changes to the Earth's climate, a substantial gap may be seen (see Figure 10, right). Ultimately, any positive impact from a company or any other stakeholder should be seen in relation to what is actually needed. This may not always be easy to establish, as science cannot tell us what the target should be. With regard to climate change, it is, for example, not agreed what probability we will accept or what warming is seen as acceptable, but we can base our assumptions on science. To have companies present what they see as

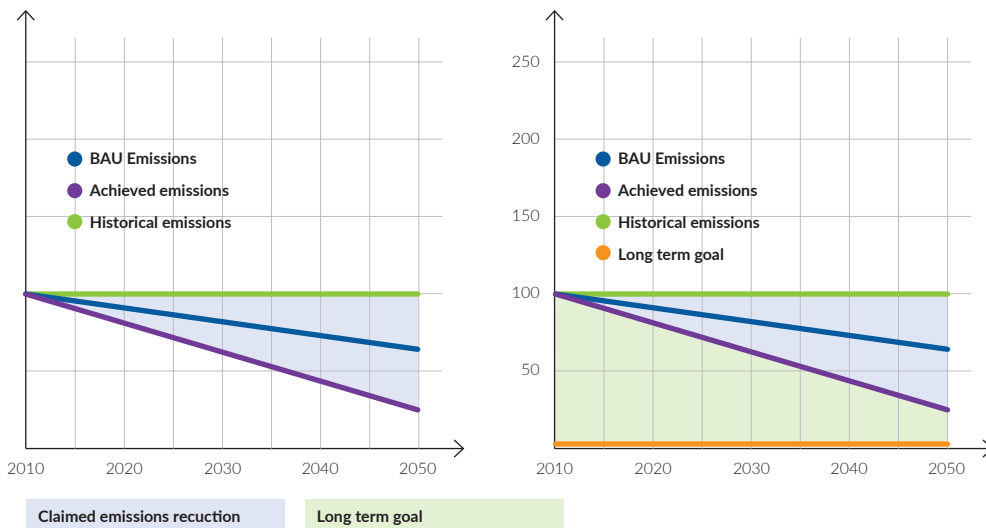
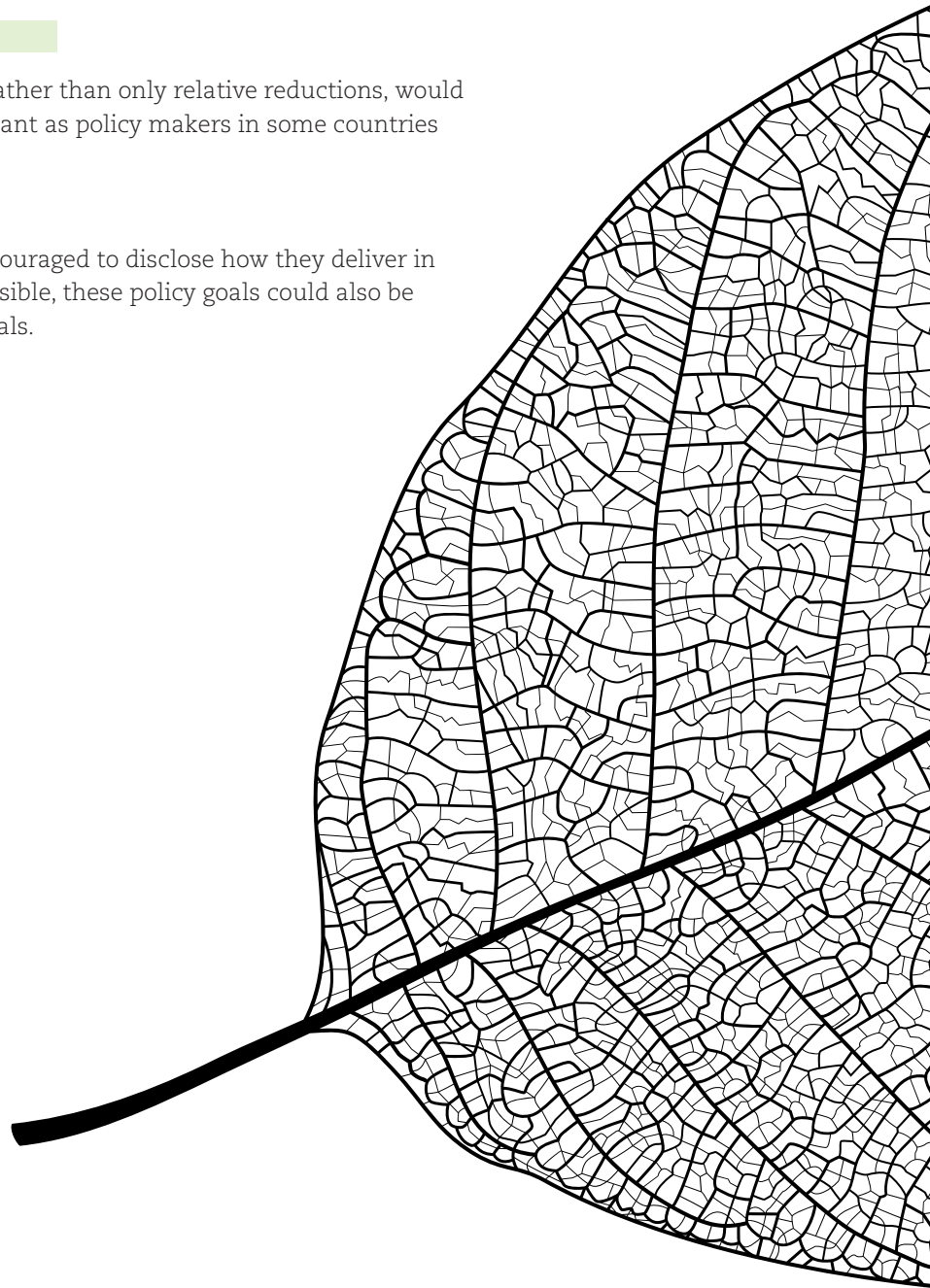


Figure 10  
Improvements compared with an absolute science-based target.

necessary reductions, based on science, rather than only relative reductions, would be very valuable. This is especially important as policy makers in some countries disregard science.

### Using policy goals as a baseline

In democracies, companies should be encouraged to disclose how they deliver in relation to agreed policy goals. Where possible, these policy goals could also be compared to the actual, science-based goals.



# 2. Cybercom's Work with Digital Sustainability and Net-Positive

## 2.1 Cybercom's Strategy for Digital Sustainability and Net-Positive

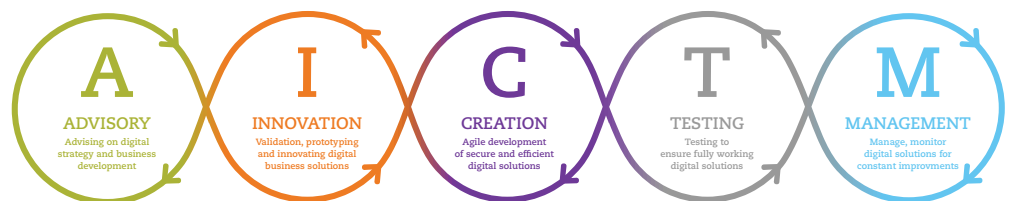
Cybercom is at the centre of the fourth industrial revolution and helps a wide range of customers in the digital transition. The company enables businesses, cities and citizens to benefit from the opportunities of the connected world, to enhance their competitiveness or to achieve efficiency gains. Cybercom's expertise spans the entire ecosystem of this communication – connectivity – and delivers at both local and global level.

Cybercom acknowledges that the fourth industrial revolution provides unprecedented opportunities to use ICT to deliver to key sustainability goals. While Cybercom's own direct impact should not be ignored, it is through the solutions arrived at in collaboration with customers that our major contributions to society are delivered.

108. <http://www.cybercom.com/what-we-do/>

Cybercom has the capacity to support transitions in the fourth industrial revolution from a full life-cycle approach. The knowledge and experience gained from concrete implementation, combined with deep understanding of how the major trends affect different stakeholders, is captured in the idea of "Makers of Tomorrow".<sup>108</sup> As makers of tomorrow, the company is a partner in strategic advisory, innovation, creation, testing and management of digital solutions that are ahead of the curve.

**Figure 11**  
The full life-cycle approach.



**The net-positive work informs how Cybercom, in collaboration with clients and other stakeholders, provides support on three levels:**

### 1. Problem solution fit/specific tool

This includes support for the implementation of a well-defined specific solution. This could be a cloud migration, a specific solution to ensure connectivity in products that were not connected earlier or a system to ensure the safe transfer or storage of data.

## 2. Product market fit/areas of work

This includes support for a broader digital strategy in a specific area. This could be a specific product range and the ways in which this can benefit from digitalisation and connectivity.

## 3. Business model fit/strategy

This includes overall support to enable a company/organisation as a whole to benefit from current and future opportunities of the connected world.

For each level of support, Cybercom provides three different services:

### 1. Direct support

Cybercom helps the client to identify and optimise the positive contribution in relation to an existing situation. Only minor changes in the solutions are implemented and often it is a matter of gathering data and increasing understanding of the positive contributions among users.

### 2. Flanking

Cybercom collaborates with clients to build on an existing situation and add features or new solutions in order to deliver more significant contributions for the customer as well as society.

### 3. Transformation

Cybercom works together with clients to make more significant transitions that often include a broader shift towards digitalisation and a change from a product perspective to a service perspective. This can happen based on earlier work or as a result of a strategic dialogue about the possibilities to turn digital opportunities into tangible business results.

The services are provided either in response to a client's request or where Cybercom has identified an opportunity and contacts the potential client.



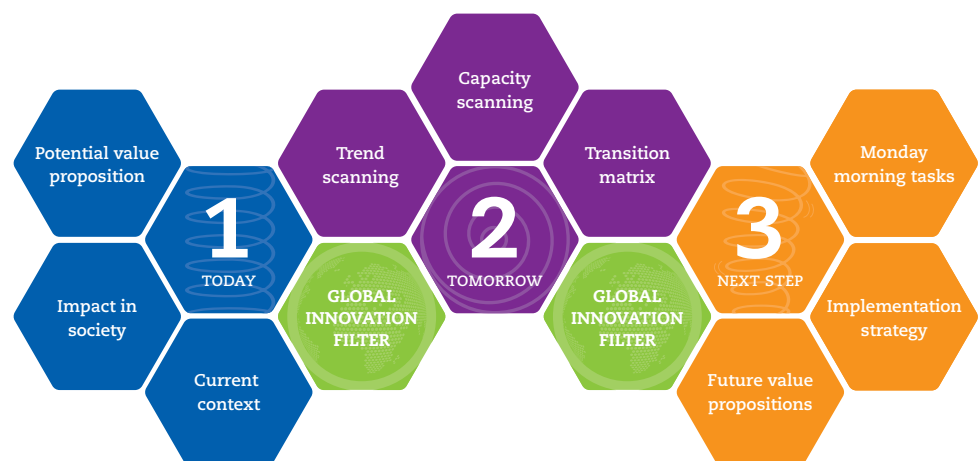
Figure 12  
The three levels of support provided by Cybercom.

Initially, Cybercom will focus on net-positive contributions in relation to greenhouse gas emissions and report on impacts on other SDGs, as well as contributions in the areas of science and art.

	Specific solution	Product/Area	Business model/Strategy
Direct			N/A
Flank			
Transform			



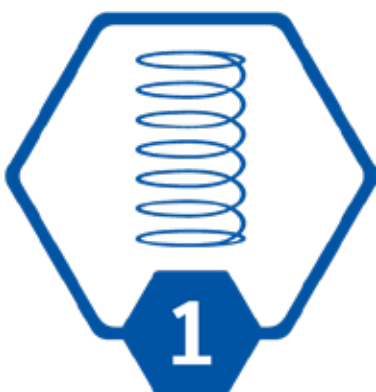
# 3. Cybercoms Digital Sustainability Process



Cybercom has developed a digital sustainability process (DSP) to support companies that want to explore the potential of using sustainability digitalisation as drivers of innovation and profit. The DSP assesses a company’s current situation and future opportunities, in a programme consisting of nine steps in three phases. Unlike many other processes, the DSP has a strong focus on the implementation strategy and provides support during the implementation phase.

## PHASE ONE: Service benchmarking: Assessment of current situation

During this first phase, we provide an overview of the company’s current contributions and how well prepared the company is for possible future opportunities.



### 1. Potential value proposition: Services currently provided and how they relate to sustainability needs in society

In the first step, the service the company provides to society, that is, the potential value proposition, is assessed. This is particularly important for companies that sell physical products and have business models based on a product perspective. However, service-based companies can equally benefit from this assessment. For example, a video conference equipment provider may have their eye on selling the best technology or on organising efficient meetings. Applying a digital perspective in the context of global sustainability highlights the “sustainable mobility” aspect of emissions from transport solutions and considers sustainable alternatives that support smarter mobility, such as teleworking.

In a time when many companies have forgotten or renounced the idea of providing something that helps people and makes society a better place, providing

a value proposition based on digital sustainability is important. Companies such as Unilever have begun to review what their actual contribution to society is. Instead of spending millions of dollars on advertisements that attempt to persuade people to pay for a toothpaste with another stripe or buy a razor with an additional blade, companies could begin to assess their social contribution. Paul Polman, the CEO of Unilever, often points to the fact that Unilever was created “in an effort to stop rampant epidemics and child deaths amid the grinding poverty and squalor of Victorian England”.<sup>109</sup> To link companies to key challenges in society and deliver important contributions in a systematic way is only possible if the value proposition reflects such an aspiration.

**Identifying the potential value proposition from a digital sustainability perspective involves four stages:**

1. An overview of the actual impacts in society from the products and services provided by the company. Most companies do not measure their impacts on society and surprisingly often companies are not even aware of their actual impact in society as they only focus on sales of products.
2. An overview of how the company’s vision/mission relate to its business idea and existing goals, in order to assess the company’s contribution to society. Sometimes the company’s vision/mission could be identical to the potential value proposition from a digital sustainability perspective, but often it is not. Further, very often the vision/mission is vague while the business goals are highly specific and related only to selling more of what the company sells today.
3. When appropriate, the reason for which the company was originally created is assessed. This is often helpful in identifying the original need in society at the time the company was started.
4. Assessment of whether and how the products and services contribute to social well-being and whether the company actively pursues the ambition of contributing to society.

**2. Potential delivery on key goals for society (e.g. the SDGs)**

During this step, the company is assessed on how, in accordance with the value proposition identified at step 1, it delivers on relevant sustainability goals such as the SDGs.

The SDGs are the starting point, but other goals can also be included, such as national sustainability goals or a contribution to reducing the main causes of death and suffering. It is also important to ensure that positive goals, such as contributions to science and art, are included in this review.

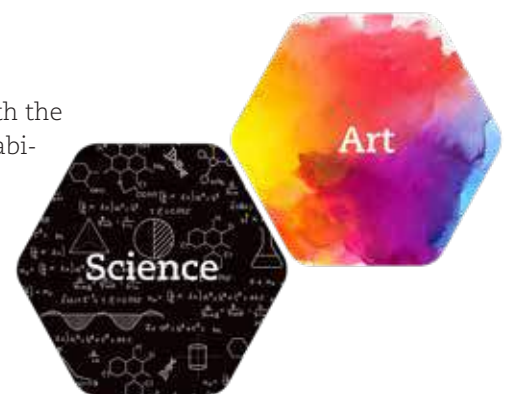
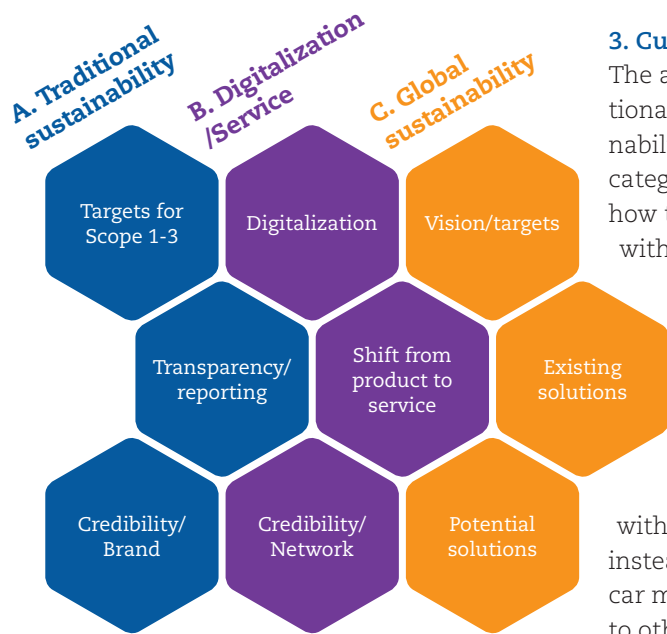


Figure 13  
The SDG matrix

**Companies may be divided into four categories according to the degree to which their services contribute to key goals in society:**

- A: Solution (helps directly)
- B: Catalyst (helps indirectly)
- C: Neutral (no effect)
- D: Problem (undermines sustainability)

A company, in particular its products or services, can belong to several categories, and different levels of uncertainties can be assigned. No quantification is done at this stage, as it would require a separate life cycle-based calculation (if necessary, these calculations are performed during phase two). For example, videoconference solutions can help reduce emissions related to meetings and the use of natural resources, but they can also accelerate the use of certain minerals that are contained in ICT equipment. Different strategies can be applied according to the categories into which the company or its products/services falls.



**3. Current context: The current capacity of the company**

The assessment of the current context covers three areas: traditional sustainability work, digitalisation/service and global sustainability/future proofing. These three areas are divided into three categories and each category is rated from zero to ten to indicate how the company best can move towards a net-positive approach with the help of digital sustainability.

- Each category is ranked from zero (0) to ten (10):
- Laggard: 0-3
- Average: 4-6
- Leader: 7-10

The ranking is done in relation to existing companies with the capacity to deliver on their potential value proposition, instead of only in relation to existing or perceived competitors. A car manufacturing company will be assessed not only in relation to other car manufacturing companies, but also to companies that deliver services relevant to the value proposition based on a digital sustainability perspective, such as car sharing companies and teleworking companies.

**Figure 14**  
Capacity scanning matrix.

**A: Traditional sustainability work**

In this area, the company’s current work in the traditional areas of sustainability, its targets for direct impacts, its transparency and reporting and the credibility of its name or brand among experts are assessed. This assessment helps establish whether the company has done enough basic traditional sustainability work to have the capacity and credibility to engage in net-positive work, or whether more work in this area is needed.

The assessment of targets for scopes 1–3 focuses on the kind of targets companies have for GHG emissions, or whether GHG emissions are not relevant for the most important negative impact they have. A full score would require a rapid reduction target that includes scope 1–3 emissions<sup>110</sup> that are in line with a 1.5°C target or are more ambitious.

The assessment of transparency and reporting considers how the company is approaching transparency in general, but in particular in relation to sustainability-related data. As well as following existing standards such as GRI, does the company go beyond and provide additional data? How easy is it for an external stakeholder to find the data?

110. For an explanation of scope 1-3 please see <http://www.ghgprotocol.org/calculation-tools-faq> and click on "What is the difference between direct and indirect emissions?"

The assessment of “brand” looks at the company’s public rankings, visibility and participation in key processes in relation to traditional sustainability. For the assessment of “credibility”, we consider how the company is judged by leading sustainability experts.

### **B: Digitalisation/Service**

In this area, the company’s current work with regards to digitalisation, its business model and credibility and brand are assessed. Has the company done enough basic work in the area of digitalisation to have the capacity and credibility to engage in net-positive work, or is more work in this area needed?

The assessment of “digitalisation” considers how digitalisation is used within the company. What kind of data exist on key aspects of the company? How close to real time is it collected? How is the quality of that data assessed? The capacity to keep sensitive data is also assessed.

The assessment of “shift from product to service” looks at how close the company is to being able to have a business model based on selling services, or if it already does this, how well it is executed. We also take account of how well the company understands the competition in this area.

The assessment of “brand” appraises the company in relation to public rankings, visibility and participation in key processes related to digitalisation. For the assessment of “credibility”, we consider how the company is judged by leading digitalisation experts.

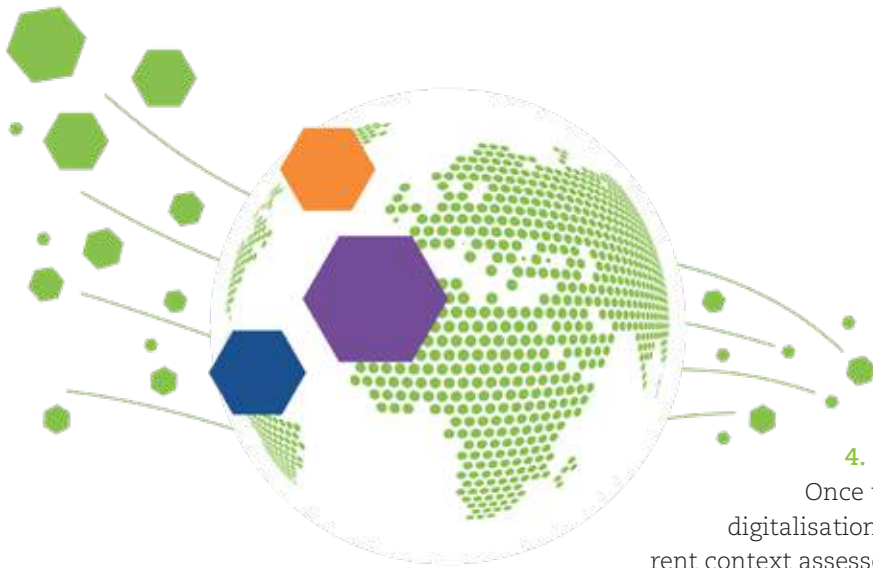
### **C: Promotion of global sustainability**

This area is the heart of the assessment. Here the company’s current relation to global sustainability is assessed. This includes current solutions that can help deliver global sustainability in the present and the potential to develop solutions for the future, fulfilling a vision that will allow 11 billion people to live a good life.

The assessment of “vision” has regard to the company’s current vision/mission and other statements related to the direction of the company. The ranking is based on the degree to which the vision/mission of the company supports global sustainability.

With regard to existing solutions, we look at the current portfolio of the company and how many of the existing solutions, if any, are in keeping with global sustainability. We also consider whether the solutions are moving towards or away from global sustainability. The assessment is done not only on a product level, but also on an overall society level. So if a product is becoming slightly better but the sales are rapidly increasing, it may well be moving in the wrong direction if it cannot be used in an equitable world with 11 billion people.

In relation to potential solutions, we assess the potential a company has to deliver global sustainability solutions based on existing structures and capacity. The assessment focuses on three main aspects: first, the position of the company in society and what it is known to deliver, as well as its existing network of partners; second, the current competition to deliver the solutions – if there is no competition, the potential is greater than if there is significant competition; and third, the changes that are needed to deliver the solutions – if only small changes are needed, the potential is greater than if significant changes are required.



#### 4. Global innovation filter: Initial assessment

Once the value proposition based on a sustainable digitalisation perspective has been identified and the current context assessed, a global innovation filter is applied to test whether the way the company currently delivers on the basic value proposition can be considered sustainable in an equitable world with approximately 11 billion people.

Three aspects are assessed:

- Environmental impacts
- Economic access
- Social/ethical context

To ensure global environmental sustainability, the resource efficiency of the potential value proposition is assessed by asking the question: What would happen if everyone used the same method to provide the basic value proposition? This is not the same thing as saying that everyone should be able to use every solution provided, but no one should be excluded from access to the basic value proposition because of a lack of natural resources.<sup>111</sup>

The most resource-efficient way to deliver the potential value proposition is discussed. This discussion is based on what Elon Musk has called “first principles thinking”:

*The normal way we conduct our lives is we reason by analogy [...] [With analogy] we are doing this because it's like something else that was done, or it is like what other people are doing. [With first principles] you boil things down to the most fundamental truths [...] and then reason up from there.*

It is clear, for example, that a global system in which people share video conference equipment could – given use of sustainable materials, energy-efficient products and recycling of natural resources – allow a population of 11 billion to have concurrent meetings all the time (and the equipment could soon run 24/7). Compare this with the current situation, where many companies are greatly increasing flying – something that also requires the use of hotel rooms and dedicated conference venues and so on – and it is easy to see that air travel is not a sustainable solution from a global perspective. One return trip between New York and Europe alone consumes about 4 tonnes of CO<sub>2</sub>. Imagine if 11 billion people took such a trip even as infrequently as once a year: the total CO<sub>2</sub> emissions would equal current total global emissions, 40 billion tonnes of CO<sub>2</sub>, an unconscionable amount. A switch to biofuel could solve part of the GHG problem, but reduced biodiversity and competition with other uses for land demonstrate that current trends are not sustainable.<sup>112</sup> New solutions that can fulfil the value proposition from a digital sustainability perspective, moving people and things between places, are therefore required.

111. <http://www.businessinsider.com/elon-musk-first-principles-2015-1?r=US&IR=T&IR=T>

112. <http://www.aviationeconomics.com/NewsItem.aspx?title=The-Commercial-Use-of-Biofuels-in-Aviation>



Figure 14  
Transition matrix



The assessment of global environmental sustainability also includes an evaluation of the contributions, positive and negative, to the 12 global risks that threaten human civilisation.<sup>113</sup> These risks are very low-probability by most measures, but to assess how future-secure a company is it is important to include this category of challenges.

113. <http://www.oxfordmartin.ox.ac.uk/publications/view/1881>

The global economic impacts are assessed based on the likelihood that everyone will be able to afford the way the value proposition is provided. An individual product or service does not have to be accessible to everyone, as we all have different preferences, but if it is too expensive for many then there must be a strategy to bring down costs. The initial electric cars and mobile phones were expensive, but some companies had a strategy based on cost development in technologies (batteries and electronics) and business models (sharing, co-development) that enabled them to provide the services to everyone. How the company is contributing to eradicating poverty is also assessed here.

The social and ethical impacts are assessed to ensure that the way in which the value proposition is delivered is not socially unsustainable, for example whether it depends on child labour or exploits vulnerable groups.

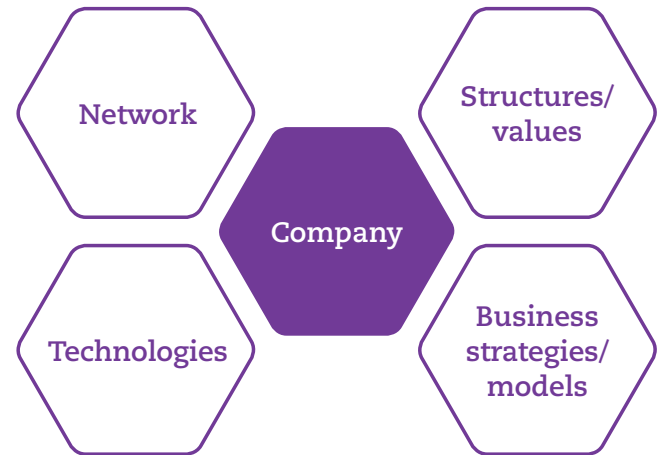


## PHASE TWO: Transition possibilities: Identifying opportunities for future net-positive contributions

Phase Two uses a dedicated process to explore the opportunities for a company to develop net-positive solutions and even become net-positive.

### 5. Trend scanning: Relevant changes in technologies, networks, business models and structures/values

The first step in assessing transition possibilities is to map what trends are relevant for the company, assuming that they want to use digital sustainability to become net-positive. The process involves looking at technologies, how the price and use of existing technologies will change and how new technologies might disrupt. Values and corresponding lifestyles are also assessed to understand how social preferences may change. Networks are also scrutinised to see what new collaborations and partnerships are likely, including changes among competitors and among customers.



### 6. Capacity: The internal and external contexts in which future services are developed

Capacity scanning for net-positive business possibilities covers the same three areas as the assessment of the current context. However, instead of considering the current situation, capacity scanning reviews capacity based on planned and expected changes in the three areas.

### 7. Transition matrix: What are the options for the company to deliver sustainable services?

This is an assessment of the present situation based on various changes in technology and a market approach with a view to establishing nine different options for moving from the current situation to one in which the company provides sustainable solutions for an equitable future. These options are described in the “Innovation matrix for technology and the market” (Figure 14).

The three categories, incremental, disruptive and breakthrough, are defined based on the technologies and business models discussed and implemented in relation to the potential value proposition. To focus on potential value propositions, rather than only the competitors that are delivering the same products/services the company delivers today, requires an expanded scope of reference. This expansion of scope occurs in five aspects:

#### 1. Potential value propositions

Instead of only the current goals and targets of the company, other potential goals and targets are also included.

#### 2. Expansion of the time horizon and geographical scope

This allows for the inclusion of solutions and business models that will be relevant in the next five to ten years, depending on area. It also allows for inclusion of solutions from all over the world.

### 3. Additional stakeholders

This allows for the inclusion of stakeholders outside the existing value chain and competitors. It is especially important to include start-ups, as they tend to introduce the disruptive and breakthrough solutions, as well as companies from other sectors.

### 4. Additional business models

This is to ensure that different kinds of business models are included, to allow exploration of disruptive and breakthrough aspects from a business/market perspective.

### 5. Other technologies

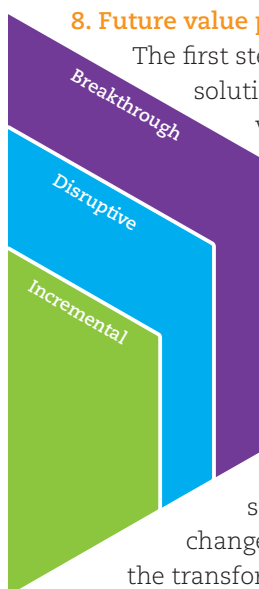
This allows for the inclusion of solutions and business models that will be relevant in the next five to ten years, depending on area. It also allows for inclusion of solutions from all over the world.

### 8. Global innovation filter: Next step assessment

For each of the nine positions in the matrix, the “11 billion filter” is applied to assess what kinds of changes might be required for a company to be able to provide sustainable solutions. The emphasis is on the route from the current situation, rather than the exact optimal position in the future.

## PHASE THREE: Opportunity implementation: Making a sustainable tomorrow happen

### 8. Future value propositions

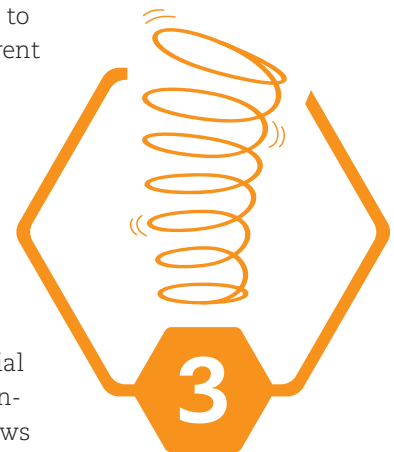


The first step in the final phase is to present possible routes to solutions for global sustainability by translating the potential value propositions to different value proposition depending on time horizon and area of business. This allows for a transition towards digital sustainability through a three-pronged approach: first, small tweaks or the acceleration of existing work that can be implemented directly; second, supportive measures that require some changes; and third, transformative change that can be delivered only as a result of larger changes in products and services.

More significant gains, from both an economic and sustainability perspective, tend to require transformative changes. Initially, only small resources tend to be required for the transformative work, but ensuring that such a focus exists is important, as it allows companies to explore such opportunities and be aware of rapidly emerging competition.

### 9. Implementation strategy

At this point, the clusters (i.e. the different parts of the company, as well as other companies and stakeholders) are identified that are needed for implementation. Here too the strategic launch of the new offering is developed.



## 10. “Monday morning tasks”

In the final step, to ensure that the process and assessment can be used to deliver concrete results, a list of priority tasks with clear responsibilities is drawn up. These tasks are labelled “Monday morning tasks” and can begin to be implemented directly once the Digital Sustainability Process with Cybercom is over. The need for such a list is important for many reasons, among them:

**First**, it is relatively easy to present high-level concept ideas of how digitalisation can deliver transformative change for a company, but harder to implement more than incremental improvements in the real world, where specific contexts and skills must be considered.

**Second**, the world is changing fast. If the work is not started immediately, it is easy to lose momentum and after a while have a set of recommendations that are no longer valid.

### Monday morning tasks:

#### Task 1:

Expected outcome:

Responsibility:

Report back by:

Value proposition:

#### Task 2:

Expected outcome:

Responsibility:

Report back by:

Value proposition:

#### Task 3:

Expected outcome:

Responsibility:

Report back by:

Value proposition:

#### Task 4:

Expected outcome:

Responsibility:

Report back by:

Value proposition:

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## APPENDIX 1:

# Cybercom and ICT as an Enabler for All Sustainable Development Goals (SDGs)

Most people are aware of the capacity of information and communications technologies (ICTs) to contribute to sustainability through specific smart ICT services such as virtual meetings, e-paper, m-banking and e-health. ICT can deliver transformative solutions enabling services to be provided in ways that are magnitudes more resource-efficient than the old ways. However, the potential for ICT to contribute to sustainability goes well beyond a few well-known solutions. New business ideas based on principles such as the circular economy and the sharing economy require smart and safe connectivity. The same is true for smart buildings that are net producers of renewable energy and initiatives that can offer universal access to tailor-made education. However, more than anything, the new connectivity will enable solutions we cannot even imagine today.

### **The lesser-known “smart structures”**

ICT allows social structures to become much more resource-efficient and transparent. We can collect, process, analyse and present data in ways that provide totally new opportunities. These new opportunities require an underlying infrastructure that is resilient and secure. How such systems are developed and managed will influence all other solutions that sit on top of them. If the systems do not work well or are not secure, the risk may arise of a situation in which no one wants to use these new sustainable solutions. If the systems do not integrate a sustainability perspective from the beginning, it is also more difficult, or even impossible, to build innovative sustainability solutions for specific challenges.

The underlying structure also supports different parts of society that are often ignored or taken for granted in sustainability work. However, if citizens, businesses and authorities cannot communicate with one another in simple ways that protect citizens' data, then many applications related to areas such as health and dematerialisation become impossible. Verified data are also important in a sharing economy where open innovation is a fundamental part.

Below are three cases from Cybercom that cover different aspects of the underlying ICT infrastructure for sustainability. There are also direct links to specific SDGs, but primarily these projects help ensure a structure where delivery on all SDGs is not only possible but also encouraged.

### **Case 1: e-government (All SDGs)**

A transparent, interactive and cost efficient e-government solution with smart standards is not just an incremental improvement compared with traditional governance. Such governance is needed if different parts are to collaborate with one another. Collaboration between different ministries and authorities is needed for many of the transformative solutions, as they cut across traditional industrial ways of organising government. Smart teleworking has been less successful than

it could have been around the world if those responsible for transport issues, buildings standards, ICT infrastructure, labour regulation and incentives for companies had collaborated.

In this context, Cybercom was entrusted with implementing the Finnish government's e-identification management services and the management of roles and authorisation rights related to them.

Electronic services require secure electronic identity of the people using them. Finland's e-identification infrastructure will be renewed. The public administration needs a uniform and cost-efficient method for identifying the users of electronic services with strong authentication methods. Currently available strong authentication methods include ID cards, the TUPAS identification service used by banks and the operators' mobile certificates.

"In the future, there will be more and stronger authentication methods available. They will be produced on the basis of the market needs by a trusted network of authentication service providers based on a legislative proposal that has been submitted to the parliament for handling," says director Janne Viskari from the Population Register Centre.

Thus, digitisation of Finnish public sector services proceeds. The objective of digitisation is to make it simpler and easier for citizens to contact companies, associations and authorities electronically. From now on, development of e-identification will be speeded up. After a tender process, the Population Register Centre selected the IT consulting company Cybercom to implement the public administration's e-identification service. Cybercom will design and implement the digital service solutions, and will subsequently develop and maintain them.

One possible new identification method could be remotely readable IDs. "The starting point is that people will be able to use a number of identification methods in the future as well. The most important thing is that the identification method feels familiar and safe to the users. To ensure this, we are designing and implementing a flexible solution," says director Timo Laaksonen from Cybercom.<sup>114</sup>

## Case 2: Smart taxation and e-governance (All SDGs)

Cybercom is working with the Swedish Tax Agency to create a smarter, easier and more efficient system for citizens to use and interact with the tax authority. A cost-efficient system that allows for easy data processing is crucial to ensure that resources are available for global public goods, including official development assistance (ODA) for specific SDGs. Such a system will also enable tax avoidance to be tackled in better ways. Only a few months ago, the amount of money lost as a result of lack of capacity to track tax avoidance was not known, but after the revelation of the "Panama papers", the importance of ensuring a well-functioning tax system is now better understood.

The Swedish Tax Agency chose Cybercom as its supplier of digital signature services. The agreement runs for two years, with an option for an additional two years. Bo Strömqvist, Head of Sales at Cybercom Group, observes:

114. For further information please see:  
<http://www.cybercom.com/Cases-and-clients/ict-for-sustainable-cities-and-communities/>  
<http://www.cybercom.com/About-Cybercom/Press-Media/Press-releases/cybercom-helps-speed-up-digitisation-of-finnish-public-services/>  
<http://www.cybercom.com/About-Cybercom/Press-Media/Press-releases/the-population-register-centre-selected-cybercom/>

Winning this security business is highly significant. It confirms our strong position in Connected Identity, a field with excellent growth potential. These federated and enabling security concepts create new opportunities for collaboration and connectivity in the broadest sense within the community. The time has therefore passed when security solutions were an obstacle to the digital development of business activities.

Björn Lindeberg, Business Manager at Cybercom, adds:

*We are very proud of the confidence shown in us by the Tax Agency. This is a unique assignment in the industry, and demonstrates once again our leading expertise and delivery capabilities in the field of security and federation. We delivered the new Swedish public e-identification system to the E-identification Board last year. Together with the signature system for the Tax Agency, this gives us a fantastic opportunity to enable other public-sector organisations to gradually migrate their e-services into the new federation-based electronic identification system.*

115. For more information please see:  
<http://www.cybercom.com/Cases-and-clients/swedish-tax-agency--e-services/>  
<http://www.cybercom.com/About-Cybercom/Press-Media/Press-releases/cybercom-provides-digital-signature-services-to-swedish-tax-agency/>

Delivery will take place under the e-management support services framework agreement, and includes complete service delivery for digital signatures to which the Tax Agency will link all of its e-services for Swedish citizens. A very high level of security is required.<sup>115</sup>

Cybercom is also in dialogue with governments from the least developed countries (LDCs), including Rwanda, to discuss ways to ensure efficient and smart tax systems.

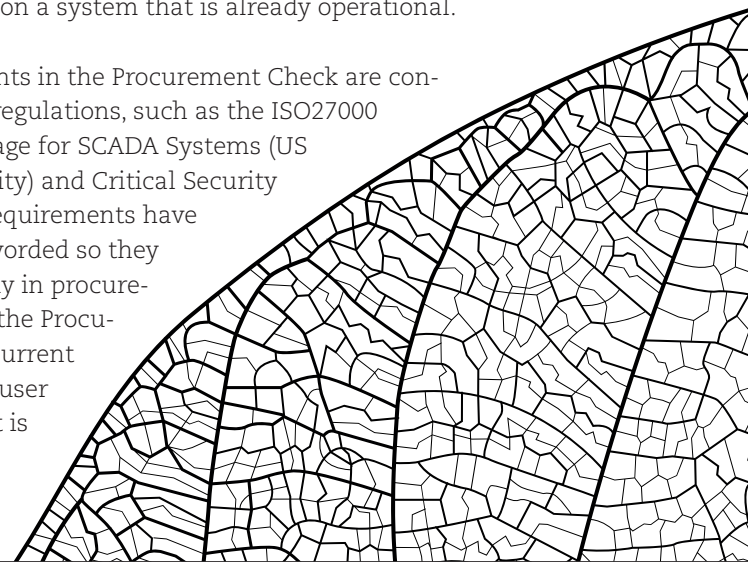
### Case 3: Agenda setting for security (All SDGs)

All around the world, we are more connected than ever. People and companies are coming up with newer, more efficient and more innovative ways to process, share and distribute information. As systems become more important, requirements for availability, integrity and confidentiality are increasing at the procurement stage. Cybercom equips its customers to manage these risks.

It is difficult to impose security requirements in IT procurements. However, if you succeed, you gain significantly more quality aspects than security, whether you're a customer or a supplier. There are many reasons to prioritise the security aspect of IT procurements, and that is why we created the Procurement Check.

The Procurement Check is meant to serve as a flexible, useful support tool in all types of IT procurements to ensure that critical security issues do not fall through the cracks. It is also more cost-effective to invest in IT security at the procurement phase than it is to implement it on a system that is already operational.

The requirements and checkpoints in the Procurement Check are condensed versions of well-known regulations, such as the ISO27000 series (SIS), Procurement Language for SCADA Systems (US Department of Homeland Security) and Critical Security Controls (SANS Institute). The requirements have been revised, prioritised and reworded so they can be used easily and effectively in procurement situations. To ensure that the Procurement Check always contains current regulations and that it includes user experiences with the program, it is updated twice a year.

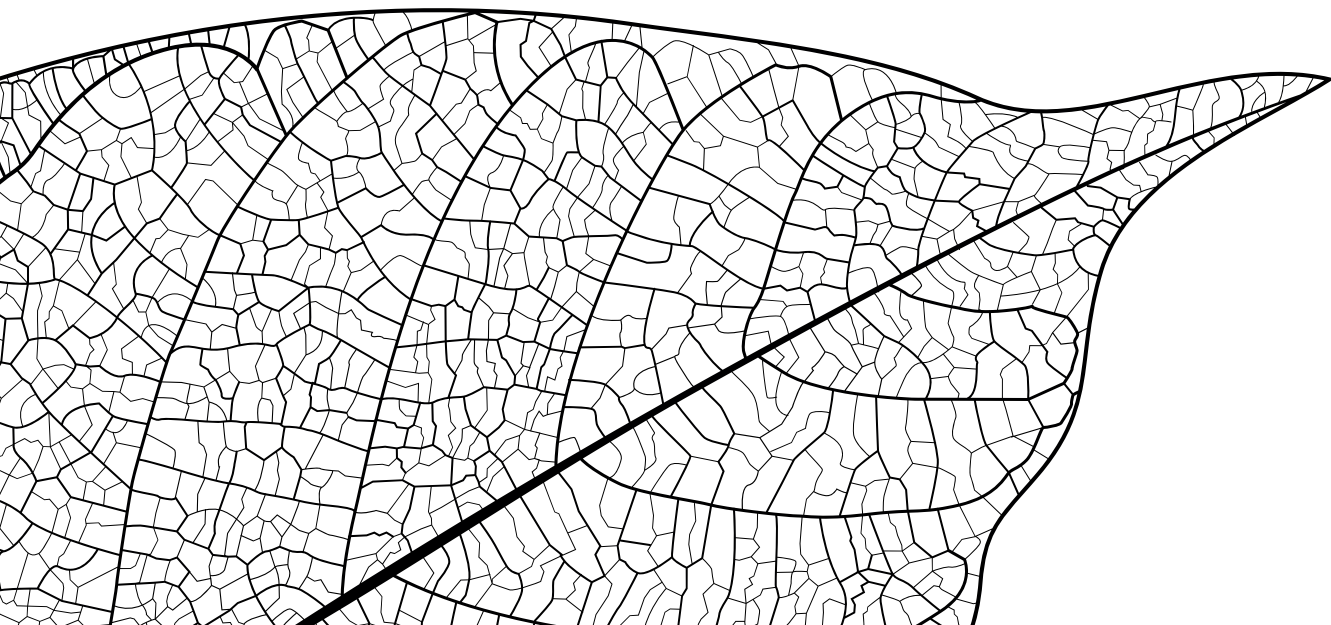


All procurements are different, but there are a number of common denominators. The Procurement Check has been designed in such a way that you will be able to customise it to your specific security requirements, but it will always simultaneously prepare you to meet general security requirements. You can also decide which requirements are important to you, which are less important and how you want the tenderer to meet your requirements.

The guide is divided into sections that deal with various security aspects of the proposed solution. Each section has a number of requirements and checkpoints, with time recommendations for fulfilling these. Each requirement and checkpoint also has columns in which you can specify the priority of the requirement or checkpoint, and columns in which the tenderer can respond to your requirements and checkpoints.

To support sharing and joint development, the Procurement Check is available for download free of charge.<sup>116</sup>

116. For more information please see:  
[http://www.cybercom.com/  
upphandlingskollen/en/](http://www.cybercom.com/upphandlingskollen/en/)



## APPENDIX 2:

# Cybercom and ICT as an Enabler for Specific SDGs

Unless we change perspective from incremental change in existing systems to new ways of delivering solutions, the SDG goals will always be out of reach. Moreover, if we acknowledge that sustainable delivery of the SDGs will require a transformation of the way in which we organise our society and will entail a change that is far deeper and faster than we have seen so far, we can use the SDGs as drivers for disruptive innovation.

The SDGs call for several historical deliverables by the year 2030, including the end of extreme poverty (SDG 1) and hunger (SDG 2), universal health coverage (SDG 3), universal secondary education (SDG 4), universal access to modern energy services (SDG 7) and combatting climate change (SDG 13).

117. <http://www.un.org/press/en/2015/sgsm16800.doc.htm>

These goals may initially seem difficult to achieve, but with an ICT perspective they are actually quite modest. Transformative solutions already exist for most areas, and more are in the pipeline. The challenge will be to ensure support for a new generation of solutions, often delivered by a new generation of companies. As UN Secretary-General Ban Ki-moon said, “We are the first generation that can end poverty, the last that can end climate change.”<sup>117</sup>

Cybercom has a number of solutions in the areas that ICT is well known for, including connectivity to help eradicate poverty, build smarter infrastructure and deliver smart energy solutions, but also in areas where the role of ICT is less well known. Below are cases from Cybercom covering SDGs that may be slightly different from those that most people associate with ICT.

### Case 1: Sustainable health solutions in different parts of the value chain (SDG: 3)

Cybercom is working with several organisations, in various ways, in different parts of the health/nutritional value chain, to ensure smarter ways to live healthily and ensure that sustainable nutrition is possible in a world with 11 billion people.

At one end of the spectrum, this work includes projects with public sector stakeholders to develop comprehensive solutions that directly promote sustainable health in innovative ways. An example of such work is MovereX, an app developed by Cybercom that encourages physical movement as part of a prescription.

Although there is substantial scientific evidence that lack of exercise adversely affects health and leads to disease, around 70% of patients surveyed in primary care say that they are not physically active enough. The Swedish National Board of Health and Welfare therefore recommends that people who do not move enough should be offered exercise on prescription, including specific monitoring. Prescription of physical activity reportedly has positive effects on a number of medical conditions, including hypertension, cardiovascular disease, stroke, diabetes and breast cancer. At the same time, the estimated cost to society of inadequate physical activity in Sweden alone is about €600 million per year.

Of all the patients prescribed physical activity, only just over 50% complete their course. To improve compliance, Cybercom has developed MovereX, a tool that makes it easier for patients and prescribers to ensure that the prescription is followed, by improving dialogue. MovereX consists of a mobile app, an activity bracelet and a



prescriber tool that allow the patient and prescriber to measure and monitor the prescription daily. The prescriber can also use the mobile app to remotely provide support and motivation to the patient.

“MovereX makes it easier for prescribers and patients to ensure adherence to prescribed physical activity, and gives the prescriber a tool to support and monitor the patient through enhanced dialogue,” says Magnus Borg from Cybercom. “We hope to contribute to better patient health by making it easier and more fun for the patient to follow physical activity, which could help to lower healthcare and social costs.”

At the other end of the spectrum, we may act in a strategic advisory role to companies regarding the smart use of ICT in food production. An example of such work is with producers of sustainable food, including smart lighting of crops.

Cybercom has collaborated with and advised the Swedish start-up Heliospectra, a company with a vision to create a complete system, including biofeedback, in which the plants are in essence controlling the light system.

Meeting a growing global population’s food requirements creates a corresponding challenge: greening the globe’s greenhouses. Agriculture is changing; extreme weather, rising prices and consumer demand for local and organic produce necessitate sophisticated and efficient growing solutions. As agriculture evolves, greenhouses must also adapt: structures will be built both above and below ground and integrated into existing buildings to enable production close to the consumers.

The Heliospectra package includes a complete biofeedback system, intelligent LED-based lights, sensors and software to encourage plant growth. The system “listens” to the plants, and the plants convey back information using reflected light and fluorescence. This relayed information helps the system optimise the light spectrum to produce only the necessary light, while also encouraging desired plant characteristics. The result is energy saved, yield increased, waste reduced and quality improved. Heliospectra’s system also leads to more durable plants that require less water and have no need for mercury lamps.

Part of Heliospectra’s innovation is to design the system as a cloud-based business model that is able to aggregate information from multiple growers and refine predictive algorithms for continual improvement. Best growing practices are captured, making growers less reliant on staff while further enabling automation. Providing food and energy for a growing population using a finite amount of arable land is a challenge today and for the foreseeable future. Currently, an estimated 30 billion square metres of commercial greenhouses globally are used to produce vegetables, herbs and ornamentals. Many of these greenhouses use supplemental lighting in their production. The global urbanisation trend drives demand for vertical greenhouses and for closed cultivation environments in densely populated areas.

New technology is enabling greenhouse farmers to use the full spectrum of light, leading to increased yields per square metre. In combination with LED lamps’ relatively lower energy consumption, these systems offer the opportunity to substantially lower the carbon footprint of global greenhouse production. Assuming that 1 billion square metres of the world’s greenhouses use supplemental lighting, WWF estimates that L4A Efficient Greenhouse Lighting or similar systems could reduce CO<sub>2</sub> emissions by 21 million tonnes per year if used by 20% of the target market by 2022.<sup>118</sup>

118. <http://www.climatesolver.org/innovations/living/l4a-efficient-greenhouse-lighting>

## Case 2: Sustainable lifestyles (SDG: 12)

Cybercom is working with many organisations to encourage a lifestyle based on a sharing and experience-driven perspective, rather than consumption of physical goods. This includes work with museums to encourage citizens to focus on consumption of knowledge (a service with almost no environmental footprint). Cybercom is also working in the area of sustainable tourism, which is based on new innovative tools that support local and virtual experiences (as many cities struggle to curb unsustainable lifestyles and long-haul flights).

Cybercom gives new life to the websites of the Royal Armoury, Skokloster Castle and the Hallwyl Museum. To meet a new generation of visitors, Cybercom is expanding the museums' digital channels with new, interactive websites and increasing its social media presence.

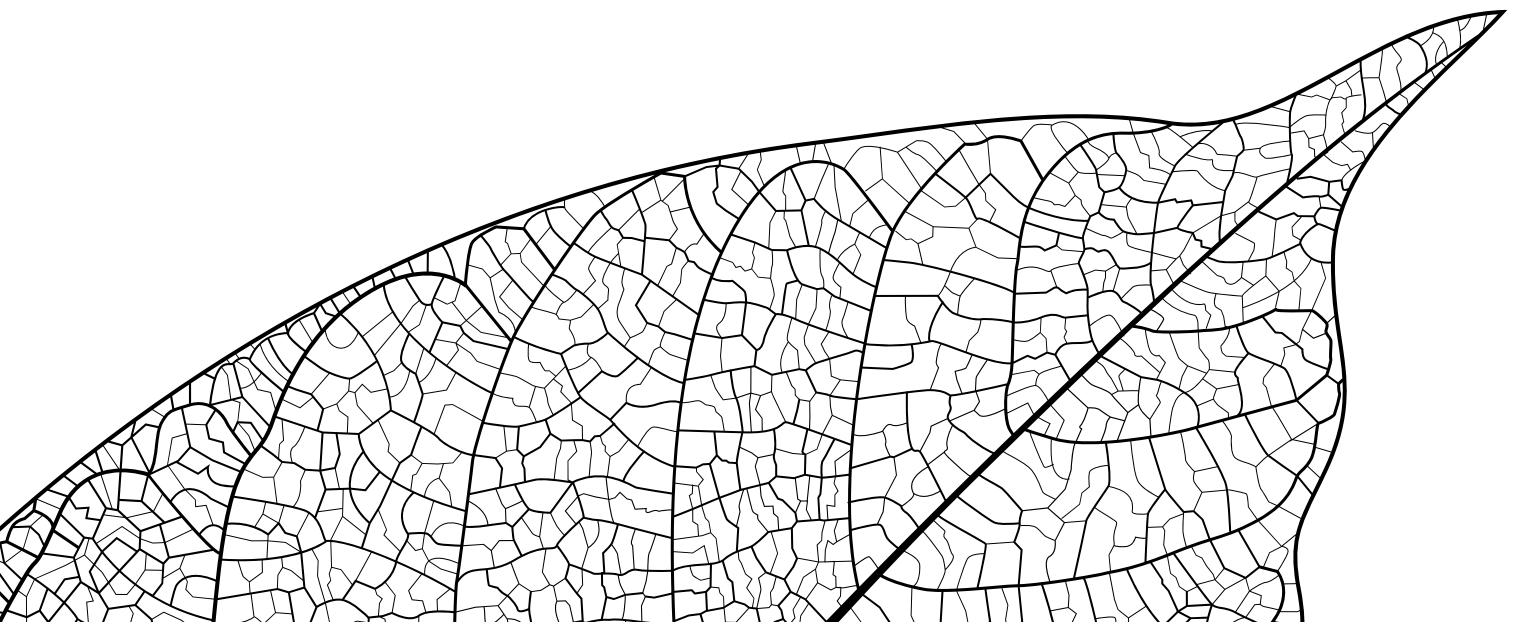
“The new websites developed by Cybercom will give our visitors a brand new experience, starting online,” says Emma Reimfelt, web strategist at the Royal Armoury. “Visitors will be able to visit each room and investigate objects from the collection virtually.”

Cybercom is developing the museums' websites (see [lsh.se](http://lsh.se), [livrustkammaren.se](http://livrustkammaren.se), [skoklostersslott.se](http://skoklostersslott.se), [hallwylskamuseet.se](http://hallwylskamuseet.se)) using Drupal (an open source platform for building digital experiences) and a focus on interactivity and participation. The intention is for teachers and school classes to be able to access the museum archives.

Modern technology, interactive objects and other visual and graphic solutions will in the future allow the museums to stage virtual exhibitions.

In conjunction with the new websites, the Royal Armoury, Skokloster Castle and the Hallwyl Museum will launch an online searchable collection ([emuseumplus.lsh.se](http://emuseumplus.lsh.se)). Visitors to the online database can browse and search information and images of more than 80,000 objects.

Museum visitors online will also be able to comment on, send questions and share information on the historically significant collections, which include centuries-old interiors and artefacts.



# The digital sustainability offer builds on Cybercom's expertise in three areas:

## 1. Business Transformation

Understanding the impact digitalisation will have on business models and customer value and how to capture opportunities

## 2. Digital Experience

Maximising the effect of using digital means when interacting with clients and other stakeholders

## 3. Digital Operation

Managing infrastructure, organisation and culture to maximise efficiency



## Contact, feedback and further information

As always, we at Cybercom look forward to further dialogue with you.

Are there areas where you would like to collaborate to help accelerate the uptake of solutions that deliver on global sustainability?

What do you think is good and bad in a digital sustainability and net-positive approach? What would you like us to focus on and what do you think we should avoid?

If you would like further information about the digital sustainability and net-positive approach, you can download the full paper at [www.cybercom.com](http://www.cybercom.com)

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Cybercom is an innovative IT consulting company with 20 years of experience in IT and communications technology. Our consultants enable businesses and organisations to benefit from the opportunities of the connected world, to enhance their competitiveness or to achieve efficiency gains. Cybercom's expertise spans the entire ecosystem of this communication – Connectivity – and our delivery is both local and global.

Cybercom's principal market is the Nordic region, with established operations in Sweden, Finland and Denmark. Poland and India are international centres of expertise that partly support the Nordic business and partly represent their own specialised business. The group has approximately 1,200 employees in five countries.

At Cybercom we believe it is important to take responsibility for how people, the environment and society are affected by our operations and, ultimately, the operations of our clients. We actively strive to reduce our own impact on the environment, and we conduct dialogue about what is important from a sustainability perspective. That said, the greatest potential of a consulting company is, of course, our ability to influence our clients and, by extension, their users and end customers. Our offer includes innovative, secure and effective solutions that contribute to profitability and sustainable development through, for example, energy- and cost savings and above all, reducing the consumption of finite resources.



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