



Future-Fit

Business Benchmark

Action Guide

BE17

Products do not harm people or the environment

Release 2.1.4

Copyright © August 2019



Future-Fit
Foundation

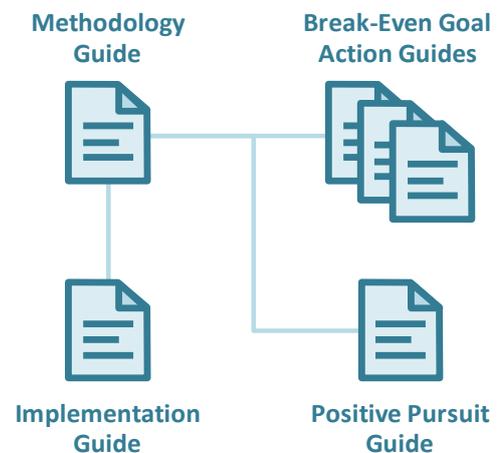
About this document

This document forms part of Release 2.1 of the Future-Fit Business Benchmark.

Action Guide

This document is an Action Guide, offering specific guidance on how to pursue future-fitness with respect to a particular aspect of the business.

The text is written to be accessible to a general business audience: no academic or technical knowledge about systems science, sustainability practices, or other specialist topics is assumed.



Documents included in Release 2.1

Methodology Guide

The scientific foundations and concepts underpinning the Benchmark, together with details of its key components and how they were derived.

Break-Even Goal Action Guides

Guidance on how to transform business operations, procurement practices, and products in pursuit of future-fitness. There is one Action Guide for each of the 23 Break-Even Goals.

Positive Pursuit Guide

The kinds of activities that any business may undertake – above and beyond its pursuit of Break-Even – to speed up society’s transition to future-fitness.

Implementation Guide

Supplementary guidance on how to begin pursuing future-fitness and how to assess, report on and assure progress.

All Release 2.1 documents are available for download [here](#).

Contents

About this document	2
Contents	3
Products do not harm people or the environment	4
1. Ambition	4
1.1 What this goal means	4
1.2 Why this goal is needed	5
1.3 How this goal contributes to the SDGs	5
1.4 Related goals	6
2. Action	6
2.1 Getting started	6
2.2 Pursuing future-fitness	9
3. Assessment	14
3.1 Progress indicators	14
3.2 Context indicators	15
4. Assurance	15
4.1 What assurance is for and why it matters	15
4.2 Recommendations for this goal	16
5. Additional information	16
5.1 Example	16
5.2 Definitions	18
5.3 Useful links	18
5.4 Frequently asked questions	20
Appendix 1: References	21
Appendix 2: Licensing	23

Goal BE17

Products do not harm people or the environment

1. Ambition

A Future-Fit Business ensures all of the products it offers are completely benign to people and nature, both during use and (in the case of physical goods) as a result of their post-use processing.

1.1 What this goal means

Although many products *could* be used in ways that harm people or the environment, the focus here is on three areas: goods that directly cause harm; goods that cause harm as an unavoidable consequence of their use; and services whose use could reasonably be expected to cause harm, by instilling or reinforcing behaviours that undermine society's progress to future-fitness.

With respect to physical goods, a Future-Fit company ensures that any goods it provides do not cause physical degradation to the environment or physical harm to people, and that they do not contain substances that physically or chemically disrupt the health of people, organisms and ecosystems when used as intended or when processed at their end of life. This includes revenue-generating products, as well as any additional goods the company provides to others.¹

These requirements cover both final products designed for end users, and interim goods which are incorporated or processed into final products by other companies.²

¹ Throughout this document, the term 'others' is intended to encompass all individuals and organizations which are *not* considered to be part of the company for reporting purposes. For details on how to define company boundaries, see section 2 of the [Implementation Guide](#).

² A distinction is often made between a *formulated product* (a substance/mixture) and an *article*. An article is characterized by EU chemical regulations REACH as: "an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition". [13] This goal covers both types of products.

To be Future-Fit, a company must ensure that the goods and services it provides to others are not likely to cause harm to people or the environment through their use and (in the case of physical goods) at their end of life.

1.2 Why this goal is needed

As with all Future-Fit Break-Even Goals, a company must reach this goal to ensure that it is doing nothing to undermine society’s progress toward an environmentally restorative, socially just, and economically inclusive future. To find out more about how these goals were derived based on 30+ years of systems science, see the [Methodology Guide](#).

These statistics help to illustrate why it is critical for all companies to reach this goal:

- **We are continuously introducing novel substances into circulation.** An estimated 2,000 chemicals are introduced every year for use in everyday items including food, personal care products and prescription drugs. The effects of many of these chemicals remain unknown. [1]
- **A large number of substances are being used that may soon be subject to restrictions.** At the time of publishing, there are more than 1,100 companies in the EU and USA which produce or import hazardous chemicals that are likely to be banned or restricted soon. [2]

1.3 How this goal contributes to the SDGs

The UN Sustainable Development Goals (SDGs) are a collective response to the world's greatest systemic challenges, so they are naturally interconnected. Any given action may impact some SDGs directly, and others via knock-on effects. A Future-Fit Business can be sure that it is helping – and in no way hindering – progress towards the SDGs.

Companies may contribute to several SDGs by ensuring its products cause no harm, and actively encouraging their suppliers to do the same. But the most direct links with respect to this goal are:



Support efforts to promote mental health and wellbeing, and efforts to substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution.



Support efforts to improve water quality by reducing pollution, eliminating dumping and minimizing the release of hazardous chemicals and materials, and to protect water-related ecosystems.



Support efforts to reduce the adverse per capita environmental impact of cities.



Support efforts to achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, and significantly reduce their release to air, water and soil.



Support efforts to prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, and efforts to protect marine and coastal ecosystems.

1.4 Related goals

The purpose of this section is to help clarify the scope for this goal. It will help you understand which issues are covered by this goal, and where other goals apply instead.

- **Operational emissions do not harm people or the environment:** One way products can cause harm during their use is through emissions, which are covered by this *Products do not harm* goal. Emissions that occur as a result of the way products are created, rather than as a result of their use or disposal, are covered separately by the *Operational emissions* goal.
- **Operations do not encroach on ecosystems or communities:** Another way products can cause harm during their use is by physically damaging the environment, which is covered by this *Products do not harm* goal. Any physical degradation that occurs as a result of the way products are created, rather than as a result of their use or disposal, is covered separately by the *Operations do not encroach* goal.
- **Products can be repurposed:** The *Products can be repurposed* goal gives guidance on reducing product waste through end-of-life recovery of product materials. The *Products do not harm* goal includes complementary criteria relating to the harm that goods may cause as a result of substances contained in them, which may also be an issue during their post-use processing or disposal.

2. Action

2.1 Getting started

Background information

This goal relates to both physical goods and to services. Some services may cause harm – inadvertently or otherwise – by instilling or reinforcing behaviours that undermine society’s progress to future-fitness.³

³ See [Assessing services for future-fitness](#) below for further details.

When it comes to physical goods, it can be difficult to determine whether they are likely to cause harm, and so most of the guidance that follows is dedicated to this topic.

Many physical goods are made up of a complex mixture of chemical substances, which may go through multiple stages of interim processing before ending up in the hands of the final user. Even if a company that manufactures goods knows every intentionally added substance contained within them, it might still struggle to evaluate whether these substances are dangerous or benign. A lack of supply chain transparency and gaps in our understanding of chemical hazards pose major systemic challenges. As a result, progress toward this goal will likely require sustained effort by the company and its partners.

A company's first step toward future-fitness should be to examine the modes of use and composition of any physical goods it provides. Having this data in hand will allow the business to pursue opportunities for improvement, through product and/or business model innovation, as well as collaboration with others across the value web.

Questions to ask

These questions should help you identify what information to gather.

Does the company sell, lease or otherwise provide goods to others?

- Does the company sell physical goods, or offer services which involve the provision of physical goods?
- Are any additional physical goods supplied to others (external individuals or organizations) in support of the company's core activities, such as providing point-of-sale display materials to third-party retailers, marketing materials for customer giveaways, or supplementary services (e.g. meals provided on long-haul flights)?
- How do customers and final users interact with products or materials that the company provides to others? Could people be exposed to potentially harmful substances as a result of such use (e.g. through contact with the skin, ingestion, inhalation)? Could potentially harmful substances be emitted into air, land or water as a result of the use or likely post-use processing of such goods? Might such exposure occur if goods are *misused* in predictable ways (e.g. infants interacting with household products)?

What is the composition of company-provided goods?

- What materials and/or components are used as inputs to create these physical goods? Do they contain multiple substances? If so, are those substances tracked by the company?
- Does the company or its suppliers use chemicals that are identified as hazardous? Are any of the substances used subject to market regulations, or disclosure requirements? Have any substances been flagged as potentially problematic by one or more industry authorities?



- How far back up the supply chain can the company confidently trace the inputs to its products? Does this visibility extend all the way back to the harvesting or extraction of raw materials? Are there any crucial gaps in the company’s knowledge?

How might services performed or delivered by the company impact society’s progress toward future-fitness?

- Does the company perform or deliver services that are intended or likely to influence customer behaviour? Could that influence be reasonably expected to instil or reinforce behaviours that might undermine society’s pursuit of future-fitness?
- Do services performed or delivered by the company cause changes to physical infrastructure or goods in ways that could negatively influence society or the environment? How might such negative impacts be eliminated?

How to prioritize

These questions should help you identify and prioritize actions for improvement.

What are the best opportunities for making progress?

- Which of the company’s goods or services are most likely to cause harm to users or their surroundings? Which are most likely to negatively impact the environment?
- Which of the company’s goods or services are most vulnerable to changes in regulation (e.g. substances that may be banned), or to negative coverage by consumer advocacy groups?
- If the company relies on any materials that are harmful or potentially harmful, which of these are used or purchased in the highest quantities? Do any such materials have benign or less harmful alternatives? Would a substitution present an opportunity to differentiate in the market? What are the likely trade-offs?

Does the company have targets in place to reduce the concentration or presence of harmful components or product characteristics?

- Has the company made public commitments or set internal targets to significantly reduce or eliminate the harmful properties of the goods and services it provides? If so, are the related action plans sufficient to achieve future-fitness over time?
- If the company hasn’t set targets yet, how might they be put in place? Whose authorization would be needed, and who would need to be involved to design and implement adequate procedures and incentives to ensure their successful adoption?
- If current action plans are not likely to get the company to future-fitness, how can they be supplemented or adjusted?



Could the company find ways to *exceed* the requirements of this goal?

- Beyond what is required to reach this goal, is the company able to offer products that serve to speed up society's progress to future-fitness?⁴ For further details see the [Positive Pursuit Guide](#).

The next section describes the fitness criteria needed to tell whether a specific action will result in progress toward future-fitness.

2.2 Pursuing future-fitness

Introduction

The fitness of all goods and services provided by the company must be assessed, and determined not to be harmful, in order for the company to be Future-Fit with respect to this goal. The steps required to identify and assess the future-fitness of goods are described below.

Guidance on identifying physical goods being delivered

The term 'physical goods' encompasses all materials transferred to customers, as well as those used to deliver products. These include the following categories:

Sold or leased goods

This category encompasses all goods offered to customers in exchange for revenue.

Supplementary goods

This category encompasses any physical items aside from sold or leased goods that are provided to a customer in support of commercial activities, but which the company does not consider to be revenue-generating, including:

- Packaging that ends up in the hands of customers (e.g. boxes, carrier bags, receipts).
- Marketing materials and giveaways, including items offered with the purchase of a product (e.g. toys with children's meals).
- Goods the company transfers to other organizations before the products are sold (e.g. point of sale displays provided to third-party retail partners, shipping materials such as pallets and wrapping provided to external transportation partners).
- Goods that are at least part-consumed or that otherwise leave the company's control in the delivery of a service (e.g. meals on airplanes, paints used by decorators).

⁴ For information on the eight Properties of a Future-Fit Society which a company's products may help to deliver, see the [Methodology Guide](#).



Categorizing goods

A company may provide some goods which it is unsure whether to designate as revenue-generating or not (e.g. product packaging). Whatever approach is taken, companies are encouraged to apply the same rationale consistently to categorize all physical goods. Once a designation has been made, it should not be changed in future years except in rare cases where doing so would result in the reported data providing more reliable and relevant information.⁵

Guidance on identifying whether goods are likely to expose people or the environment to substances of concern

Goods which are intended to be benign might inadvertently cause problems if they expose people or the environment to harmful substances embedded within them. The onus is on the company to consider both how its goods are intended to be used, and also if they can reasonably be expected to be misused (e.g. infants interacting with household goods) and disposed of.

In particular, the company should consider the following questions:

- Is the use (or any reasonably expected form of misuse) of a good likely to result in any substance coming into contact with a person's skin, being ingested or being inhaled?
- Is the use (or any reasonably expected form of misuse) of a good likely to result in the emission of any substance into air, land or water?
- Is the post-use processing of a good likely to result in the emission of any substance into air, land or water?⁶

If the answer to any of these questions is yes, the company must determine whether those goods contain substances of concern – see below.

Guidance on identifying and addressing substances of concern

What is a substance of concern?

For the purposes of this goal, a substance is considered to be a 'substance of concern' if one or more of the following is true:

⁵ The company should approach the way it sorts goods into these categories in the same manner as it approaches applying an accounting policy. For this reason, the wording used here reflects that used in International Accounting Standard 8.14. [16]

⁶ Note: For goods that may emit harmful substances, progress is calculated separately for the good's use phase and post-use phase. This is because some types of good are harmless during use, but may cause harm if they are not responsibly processed at the end of their useful life (e.g. batteries which end up in landfill).

1. It has properties that make it dangerous to – or capable of having a harmful effect on – human health or the environment.
2. The substance is designated as harmful by one of the following sources:
 - a. Credible industry bodies relevant to the industry in question, who recommend the phasing out of the substance.⁷
 - b. Lists of substances which are legally banned in one or more of the company's areas of operations.⁸
 - c. Credible peer-reviewed research, which strongly suggests evidence of harm.
3. The substance is likely to build up in nature if emitted.⁹ Categories of substances known to be of concern for this reason include, but are not limited to:
 - a. Human-made synthetics that are novel or foreign to nature [3] (e.g. persistent organic pollutants (POPs) [4] including endocrine disrupting chemicals (EDCs) [5], radioactive materials [3], and nanomaterials/micro-plastics [3]).
 - b. Metals and their compounds that are not naturally abundant in nature (e.g. compounds of heavy metals like mercury, lead, zinc and cadmium). [6]
 - c. Stratospheric ozone-depleting chemical substances. [3]
 - d. Aerosols. [3]
4. The substance is likely to interact with other substances, as a result of its emission, in ways that cause 1, 2 or 3 to be true.

Assessing goods for substances of concern

To identify substances of concern in its products, a company should undertake the following steps:

- Identify the good's composition by breaking it down into a list of its homogenous materials.
- Identify the supplier(s) of each homogenous material, and ascertain whether the supplier has intentionally added any substances of concern at a concentration level of at least 1,000 parts per million (or 0.1% by the supplied material's weight).
- If substances of concern are identified, the company can either:
 - a) Identify the good as unfit; or
 - b) Identify whether the use of each substance is problematic.

⁷ For example, the Zero Discharge of Hazardous Chemicals (ZDHC) initiative, the US EPA's listing of six criteria pollutants and 187 air pollutants, or ChemSec's SIN and SINimilarity lists. [10]

⁸ In this case the substance should be banned from production across all company operations.

⁹ For further guidance on why the build-up of substances in the environment is considered problematic, see this frequently asked question.



Cradle to Cradle certification

Note that these steps are closely aligned with key steps required to attain a basic-level Cradle to Cradle Certified™ product certification. If a product is Cradle to Cradle Certified™ at any level, it can therefore be assumed to be Future-Fit.

Guidance for each of these steps is provided below.

Identify the good's composition

The good must be characterized in terms of its individual components, and each component described in terms of the homogenous materials from which it is made. At the end of this process, the identified materials should be of uniform composition throughout, such as polypropylene, steel, shampoo, glass cleaner, nylon yarn, glue or paint. [7]

Note that it is possible for this analysis to be conducted for a group of products, in cases where those products all share the same materials in the same concentrations, except for one or more chemical components which can be readily substituted into the product *without altering its core composition* (e.g. a shampoo that comes in different fragrances).¹⁰

Engage with product input suppliers

The next step is to identify the suppliers who produce each homogenous component. Here it may be necessary to work with direct suppliers to identify the relevant sub-suppliers.

Once a supplier has been identified the company must attain a written declaration stating whether the supplier has intentionally added any substances of concern.

When necessary, investigate further

If a substance of concern has been found, the company can either conclude that the good is currently unfit, or it can undertake further analysis to identify whether that substance is acceptable given the particular context within which it is being used. This requires a full assessment, equivalent in scope to the one specified by the [Cradle to Cradle Certified™ Material Health Assessment Methodology](#) or the [GreenScreen® for Safer Chemicals Hazard Assessment Guidance](#).

For a substance's presence to be considered Future-Fit, it must be assigned a score at least equivalent to a "C" on Cradle to Cradle's Material Health Assessment rating.¹¹

¹⁰ This follows the guidance offered by the [Cradle to Cradle Certified™ Product Standard](#).

¹¹ Note that Cradle to Cradle's Material Health Assessment Rating is a separate process to their Product Certification.

Fitness criteria

Assessing goods for future-fitness

Physical goods that fall into one of the following categories are assigned a progress score of 0%:

- Goods that are banned from use in one or more markets, due to hazardous characteristics (e.g. chemicals identified as a Substance of Very High Concern and restricted by the EU Commission).
- Weapons designed to kill or permanently maim people (e.g. landmines, bombs, assault rifles).
- Environmentally destructive technologies (e.g. bottom-trawling fishing nets which damage aquatic ecosystems, plastic microbeads which accumulate in waterbodies).
- Goods that are designed for human consumption or ingestion and whose use even at moderate levels is likely to increase long-term health risks (e.g. cigarettes).
- Goods that force the user to pollute the environment (e.g. diesel-powered equipment that emits nitrous oxide, lead or other air pollutants).
- Goods that contain substances of concern which – through the good’s intended use, likely misuse or disposal – can be reasonably expected to undermine people’s health.
- Goods that contain substances of concern which – through the good’s intended use, likely misuse or post-use processing – can be reasonably expected to be emitted into the environment.¹²

Assessing services for future-fitness

Services that fall into one of the following categories are assigned a progress score of 0%:

- Their delivery results in negative impacts similar to those identified for unfit goods.¹³
- Their delivery could be reasonably expected to cause harm to ecosystems (e.g. tourism services offering excursions into vulnerable habitats, with insufficient protection for endangered species).¹⁴
- They could reasonably be expected to instil or reinforce behaviours that undermine society’s progress towards future-fitness (e.g. public information services with a consistent editorial bias against established science, such as the existence of human-caused global warming).

¹² Note: For goods that may emit harmful substances, progress is calculated separately for the good’s use phase and post-use phase. This is because some types of good are harmless during use, but may cause harm if they are not responsibly processed at the end of their useful life (e.g. batteries which end up in landfill).

¹³ Note: If the company delivers a service using a good containing a harmful substance, that service could still be Future-Fit if the good concerned is used in a way that prevents harm from occurring.

¹⁴ See the goal Operations do not encroach on ecosystems or communities for further information on activities that can disrupt ecosystems.



3. Assessment

3.1 Progress indicators

The role of Future-Fit progress indicators is to reflect how far a company is on its journey toward reaching a specific goal. Progress indicators are expressed as simple percentages.

A company should always seek to assess its future-fitness across the full extent of its activities. In some circumstances this may not be possible. In such cases see the section *Assessing and reporting with incomplete data* in the [Implementation Guide](#).

Assessing progress

This goal has four progress indicators. To calculate them the following steps are required:

- Assess the fitness of each physical good or service, separately for its use phase and (in the case of physical goods) at its end of life.
- For both use phase and end of life, calculate the company's progress with respect to sold or leased goods and services, and for any supplementary goods.

The resulting four indicators capture company progress as follows:

- Sold or leased goods and services – Use phase
- Sold or leased goods and services – End of life
- Supplementary goods – Use phase
- Supplementary goods – End of life

Assessing the fitness of a physical good or service

A product is **100% fit** if it has been assessed and meets the stated fitness criteria. Products that have not yet been assessed, or which do not meet all of the stated fitness criteria are **0% fit**.

Calculating company progress

The company's overall progress towards this goal can now be calculated, for each of the four indicators, as a weighted average:

- For sold or leased goods and services, use the revenue generated as a weighting factor.
- For supplementary goods, use the cost incurred to produce those goods as a weighting factor.

These calculations can be expressed mathematically as:

$$F^G = \frac{\sum_{p=1}^P f_p \times R_p}{\sum_{p=1}^P R_p}$$

Where:

F^G	Is the progress made by the company across a category of physical goods (or services), expressed as a percentage.
f_p	Is the future-fitness of physical good (or service) p .
R_p	Is the total revenue generated by (or cost associated with) p .
P	Is the total number of goods (or services) in the company's portfolio.

For an example of how this progress indicator can be calculated, see [here](#).

3.2 Context indicators

The role of the context indicators is to provide stakeholders with the additional information needed to interpret the full extent of a company's progress.

Total revenue/costs

In addition to the four progress indicators, companies must report the total revenue and cost amounts as follows:

- Total revenue from sold or leased goods and services.
- Total cost of supplementary goods delivered to customers.

The total revenue/costs of each category are equivalent to the summed values of R_p in the equation above, and so no additional data or effort is required to calculate them.

For an example of how context indicators can be reported, see [here](#).

4. Assurance

4.1 What assurance is for and why it matters

Any company pursuing future-fitness will instil more confidence among its key stakeholders (from its CEO and CFO to external investors) if it can demonstrate the quality of its Future-Fit data, and the robustness of the controls which underpin it.

This is particularly important if a company wishes to report publicly on its progress toward future-fitness, as some companies may require independent assurance before public

disclosure. By having effective, well-documented controls in place, a company can help independent assurers to quickly understand how the business functions, aiding their ability to provide assurance and/or recommend improvements.

4.2 Recommendations for this goal

The following points highlight areas for attention with regard to this specific goal. Each company and reporting period is unique, so assurance engagements always vary: in any given situation, assurers may seek to evaluate different controls and documented evidence. Users should therefore see these recommendations as an illustrative list of what may be requested, rather than an exhaustive list of what will be required.

- Document the methods used to identify all materials included by the company in the *Sold or leased goods* and related *Supplementary goods* categories. Describing how these were identified can help assurers to assess whether the company’s approach runs the risk of failing to identify harmful materials present in the goods it produces.
- Document the methods used to check whether materials used in the company’s products are “substances of concern”. This can demonstrate to assurers that the company has understood the requirements in this Action Guide and that the assessment performed by the company was sufficient.
- Document the methods used to determine and evaluate the end-of-life implications for the company’s products. Describing how these were identified can help assurers to assess whether the company’s approach runs the risk of failing to identify any substances of concern involved in end-of-life processes.¹⁵
- Retain references to data sources used to determine the costs and revenues of products. This can help assurers to understand and verify the weighting calculations performed for the company’s progress indicators.

For a more general explanation of how to design and document internal controls, see the section *Pursuing future-fitness in a systematic way* in the [Implementation Guide](#).

5. Additional information

5.1 Example

ACME Inc. sells three lemonade products. Traditional lemonade in a glass bottle, traditional lemonade in a plastic bottle and sugar-free lemonade in a plastic bottle. Both

¹⁵ This is also relevant for BE19: [Products can be repurposed](#).



types of product (traditional and sugar-free) contain water and lemons, but whereas the first contains sugar, the latter contains an artificial sweetener.

ACME Inc. has already worked closely with its lemon and sugar suppliers to make sure each input is free of problematic pesticides. However, it has not yet analyzed the artificial sweetener. It can assess the fitness of each product as:

$$f_{TradPL} = 100\%$$

$$f_{TradGL} = 100\%$$

$$f_{SugFree} = 0\%$$

The traditional lemonade in a glass bottle brings in \$300,000 of revenue, traditional lemonade in a plastic bottle brings in \$430,000 and the sugar-free lemonade brings in \$300,000. ACME's fitness for *Sold and leased goods and services* is therefore:

$$F^{ProdUse} = \frac{\sum_{p=1}^P f_p \times R_p}{\sum_{p=1}^P R_p} = \frac{100\% \times (300,000 + 430,000) + 0\% \times 300,000}{1,030,000} \approx 71\%$$

ACME assesses the post-use harm of the different types of bottles. The plastic bottles are found to emit toxins if incinerated or left to decompose in landfill. Hence:

$$F^{ProdPostUse} = \frac{\sum_{p=1}^P f_p \times R_p}{\sum_{p=1}^P R_p} = \frac{100\% \times 300,000 + 0\% \times (430,000 + 300,000)}{1,030,000} \approx 29\%$$

Finally, it confirms that pallets, shrink-wrap used to transport packages of its product, and the branded product packaging it uses are the only *Supplementary goods* they utilize. The pallets are made of wood and are assessed to be Future-Fit both during use and at their end of life, and cost \$15,000 total during the reporting period. The shrink-wrap costs \$8,500 and is determined not to meet the fitness criteria for use or post-use. The packaging costs \$60,000 annually and meets the fitness criteria for use, but is not recyclable and if burned would result in toxic emissions to the air. The company performs the following calculations:

$$F^{SuppUse} = \frac{\sum_{s=1}^S f_s \times C_s}{\sum_{s=1}^S C_s} = \frac{100\% \times (15,000 + 60,000) + 0\% \times 8,500}{83,500} \approx 90\%$$

$$F^{SuppPostUse} = \frac{\sum_{s=1}^S f_s \times C_s}{\sum_{s=1}^S C_s} = \frac{100\% \times 15,000 + 0\% \times (8,500 + 60,000)}{83,500} \approx 18\%$$

It reports the progress and context indicators as shown, below:

Progress indicators

Sold or leased goods and services – Use phase: 71%

Sold or leased goods and services – End of life: 29%



Supplementary goods – Use phase: 90%

Supplementary goods – End of life: 18%

Context indicators

Total revenue from sold or leased goods and services: \$1,030,000

Total cost of supplementary goods delivered to customers: \$83,500

5.2 Definitions

Homogenous material

We use the definition from [The Cradle to Cradle Products Innovation Institute](#): [7]

Homogeneous materials are defined as materials of uniform composition throughout that cannot be mechanically disjointed, in principle, into different materials. Examples of homogeneous materials are polypropylene, steel, shampoo, glass cleaner, nylon yarn, finish, and coating. Examples of non-homogeneous materials are powder-coated steel, a printed bottle label, plywood, laminate, and chair casters.

5.3 Useful links

Clean Production Action

[Clean Production Action](#)'s mission is to design and deliver green chemicals and sustainable materials. The group is the creator or co-creator of a range of programs and initiatives that aim to advance safe, green and sustainable materials in production. These include:

- [Green Screen® for Safer Chemicals](#) is an open, transparent, and publicly accessible method for chemical hazard assessment to help move our society quickly and effectively toward the use of greener and inherently safer chemicals.
- [The Chemical Footprint Project](#), which tracks, disseminates, and benchmarks corporate progress toward using safer chemicals in products, manufacturing, and supply chains.
- [BizNGO](#), a collaborative initiative involving both companies and environmental groups that works to ensure safer chemicals and sustainable materials in products and production. Its [Guide to Safer Chemicals](#) provides detail on the level of granularity required when analysing product composition, and for information on residuals of high concern. [8]

Cradle to Cradle™ Institute

The Cradle to Cradle Institute administers the publicly available Cradle to Cradle Certified™ [Product Standard](#) which provides designers and manufacturers with criteria



and requirements for continually improving what products are made of and how they are made. [9]

The International Chemical Secretariat

[The International Chemical Secretariat](#) (ChemSec) is a non-profit organization, based in Sweden and founded by four environmental organizations: The Swedish Society for Nature Conservation, WWF Sweden, Nature and Youth, and Friends of the Earth Sweden.

ChemSec maintains the following useful resources:

- The [SIN](#) (Substitute It Now!) List, a constantly evolving list of harmful substances that should be phased out of all products, regardless of the industry. [10]
- [SINimilarity](#), a free online tool that identifies substances which are structurally similar to SIN List substances. [11]

The Natural Step

The Natural Step is an international not-for-profit organization which pioneered the development and use of the [Framework for Strategic Sustainable Development](#) (upon which the Future-Fit Business Benchmark is based). For more than two decades The Natural Step has worked with a wide range of companies, industry bodies and others to understand how substances can cause harm to society and the environment by assessing life cycle management practices against system conditions for a sustainable future.

Various tools, guides and case studies are available on its website. [12]

REACH

[REACH](#) is a EU chemical regulation concerning the Registration, Evaluation, Authorization and restriction of Chemicals, which defines criteria for classifying products. It exists principally to provide a high level of protection to human health and the environment from the use of chemicals. [13]

The Zero Discharge of Hazardous Chemicals Programme

The [ZDHC](#) Programme, led by a group of leading apparel and footwear companies, has created a list of restricted or problematic substances relevant to the footwear and apparel industry. [14] This should serve as credible guidance for any company in that industry, even if that company is not actively involved in ZDHC.

5.4 Frequently asked questions

Why is a substance considered harmful if it can build up in the environment?

As our understanding of the effects of chemicals increases, international bodies, NGOs and regulators will continue to identify substances whose use should be eliminated. This is typically due to their inherent characteristics, toxicity classification and resultant effects on people and the environment.

However, harm to the environment cannot always be known in advance. For example, substances such as CFCs were hailed as a modern wonder due to their stable state and long life. It was not understood that CFCs build up in the atmosphere, resulting in the destruction of the ozone layer. Allowing substances to systematically increase in concentration in the environment is fundamentally at odds with system conditions for a sustainable society (see the [Methodology Guide](#)) and will eventually lead to harm when systemic thresholds are surpassed. [15]

Many of the compounds on the [SIN list](#) went through the same stages. They were known to increase in concentration but were allowed to be used until damaging thresholds were exceeded, and correlations were effectively demonstrated. A Future-Fit company should err on the side of caution in such cases.

Is revenue-weighting always appropriate?

Some organizations – such as early-stage companies, some charities, divisions of companies operating as cost-centres, or companies working on pre-production development – may determine that using revenue as a weighting approach to assess progress might paint a misleading picture.

Such cases are likely to be rare, because even companies that do not directly sell goods or services still need to meet their costs, and therefore receive some form of monetary capital or in-kind services and labour. These inputs are directed at operational work-streams, which in turn lead to meeting customer needs, so in many cases it is possible to connect indirect funding (as a proxy for revenue) to appropriate downstream user groups.

When this is not possible, or if it is determined that this technique may mislead stakeholders, companies should consider using cost instead of revenue to determine the completeness of their assessment, and as a method for weighting their progress scores.

Appendix 1: References

- [1] US Department of Health and Human Services, “National Toxicology Program,” 11 September 2017. [Online]. Available: <https://ntp.niehs.nih.gov/about/index.html>. [Accessed 28 September 2017].
- [2] International Chemical Secretariat, “SIN Producers List,” 2017. [Online]. Available: <http://sinproducers.chemsec.org/Search/SearchAll>. [Accessed 28 September 2017].
- [3] W. Steffen, K. Richardson, J. Rockstrom, S. E. Cornell, I. Fetzer, E. M. Bennett, R. Biggs, S. R. Carpenter, W. de Vries, C. A. de Wit, C. Folke, D. Gerten, J. Heinke, G. M. Mace, L. M. Persson, V. Ramanathan, B. Reyers and S. Sorlin, “Planetary boundaries: Guiding human development on a changing planet,” *Science*, vol. 347, no. 6223, 13 February 2015.
- [4] UN Industrial Development Organization, “Stockholm Convention,” 17 May 2004. [Online]. Available: <https://www.unido.org/our-focus/safeguarding-environment/implementation-multilateral-environmental-agreements/stockholm-convention>. [Accessed 3 August 2017].
- [5] Environmental Working Group, “Dirty Dozen Endocrine Disruptors,” 28 October 2013. [Online]. Available: <http://www.ewg.org/research/dirty-dozen-list-endocrine-disruptors#.WdToDkyZPBI>. [Accessed 2 August 2017].
- [6] C. A. Azar, J. Holmberg and K. Lindgren, “Socio-ecological Indicators of Sustainability,” *Ecological Economics*, vol. 18, no. 2, pp. 89-112, August 1996.
- [7] Cradle to Cradle Products Innovation Institute, “Guidance for Determining Homogeneous Materials in the Cradle to Cradle Certified Product Standard,” March 2016. [Online]. Available: http://s3.amazonaws.com/c2c-website/resources/certification/guidance/GUI_HomogeneousMaterialsGuidance_v1.0_030316.pdf. [Accessed 18 August 2017].
- [8] BizNGO, “The Guide to Safer Chemicals,” December 2012. [Online]. Available: https://www.bizngo.org/static/ee_images/uploads/resources/guide_safer-chemicals_full.pdf. [Accessed 18 August 2017].
- [9] Cradle to Cradle Products Innovation Institute, “Cradle to Cradle Certified List of Banned Chemicals,” December 2014. [Online]. Available:

http://www.c2ccertified.org/resources/detail/cradle_to_cradle_certified_product_standard. [Accessed 24 August 2017].

- [10] International Chemical Secretariat, “About the SIN List,” 2012. [Online]. Available: <http://chemsec.org/business-tool/sin-list/about-the-sin-list/>. [Accessed 18 August 2017].
- [11] International Chemical Secretariat, “SINimilarity,” [Online]. Available: <http://sinimilarity.chemsec.org>. [Accessed 18 August 2017].
- [12] The Natural Step, “The Natural Step,” 2016. [Online]. Available: <http://www.thenaturalstep.org>. [Accessed 2 August 2017].
- [13] UK Health and Safety Executive, “What is REACH,” [Online]. Available: <http://www.hse.gov.uk/reach/whatisreach.htm>. [Accessed 8 August 2017].
- [14] The Zero Discharge of Hazardous Chemicals Programme, “The Zero Discharge of Hazardous Chemicals Programme,” 2017. [Online]. Available: <http://www.roadmaptozero.com>. [Accessed 18 August 2017].
- [15] G. I. Broman and K.-H. Robert, “A framework for strategic sustainable development,” *Journal of Cleaner Production*, vol. 140, no. 1, pp. 17-31, 1 January 2017.
- [16] International Accounting Standards Board, “IAS 8 — Accounting Policies, Changes in Accounting Estimates and Errors,” December 2015. [Online]. Available: <https://www.iasplus.com/en/standards/ias/ias8>. [Accessed 30 November 2017].

Appendix 2: Licensing

The Future-Fit Business Benchmark is free to use, share and modify with a few conditions.

Using the Future-Fit Business Benchmark

To accelerate progress toward a prosperous future for all, we want to make it as easy as possible for people to use and build on our work.

To that end, the Future-Fit Business Benchmark is published under a [Creative Commons Attribution-ShareAlike 4.0 International](#) license.

This means you are free to:

- **Share** – Copy and redistribute the material in any medium or format.
- **Adapt** – Remix, transform, and build upon the material for any purpose, even commercially.

These freedoms apply as long as you adhere to the following terms:

Partnering with Future-Fit Foundation

Future-Fit Foundation is working toward providing various forms of accreditation – including the right to use Future-Fit logos, and to identify us as a partner – for advisors, assurers, software

- **Attribution** – You must give appropriate credit, with a link to futurefitbusiness.org and to [this license](#), indicating if changes have been made. You may do so in any reasonable manner, but not in any way that suggests endorsement by Future-Fit Foundation.
- **ShareAlike** – If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original.
- **No additional restrictions** – You may not apply technological measures or legal terms that legally restrict others from doing anything this license permits.

developers and anyone else wishing to incorporate our work into their own products and services. [Contact us](#) to find out more.

Join the movement today

We must all play our part in society's journey toward future-fitness – and we'll get there faster if we work together.

For more information visit:
futurefitbusiness.org

Who we are

Future-Fit Foundation is the non-profit developer, promoter and steward of Future-Fit Benchmarks. Our vision is a future in which everyone has the opportunity to flourish. Given where we are today, this vision can only be realised through a rapid and radical shift in the way the global economy works.

Our mission is to catalyse that shift – by translating systems science into practical, free-to-use tools designed to help business leaders, investors and policy makers respond authentically and successfully to today's biggest challenges.

info@futurefitbusiness.org



[@FutureFitBiz](https://twitter.com/FutureFitBiz)



[future-fit-foundation](https://www.linkedin.com/company/future-fit-foundation)



[futurefitbiz](https://vimeo.com/futurefitbiz)