

# INTERNAL CARBON PRICING FOR FUTURE-PROOF SUPPLY CHAINS

Nine approaches for low-carbon procurement  
and supply chain management



## January 2020

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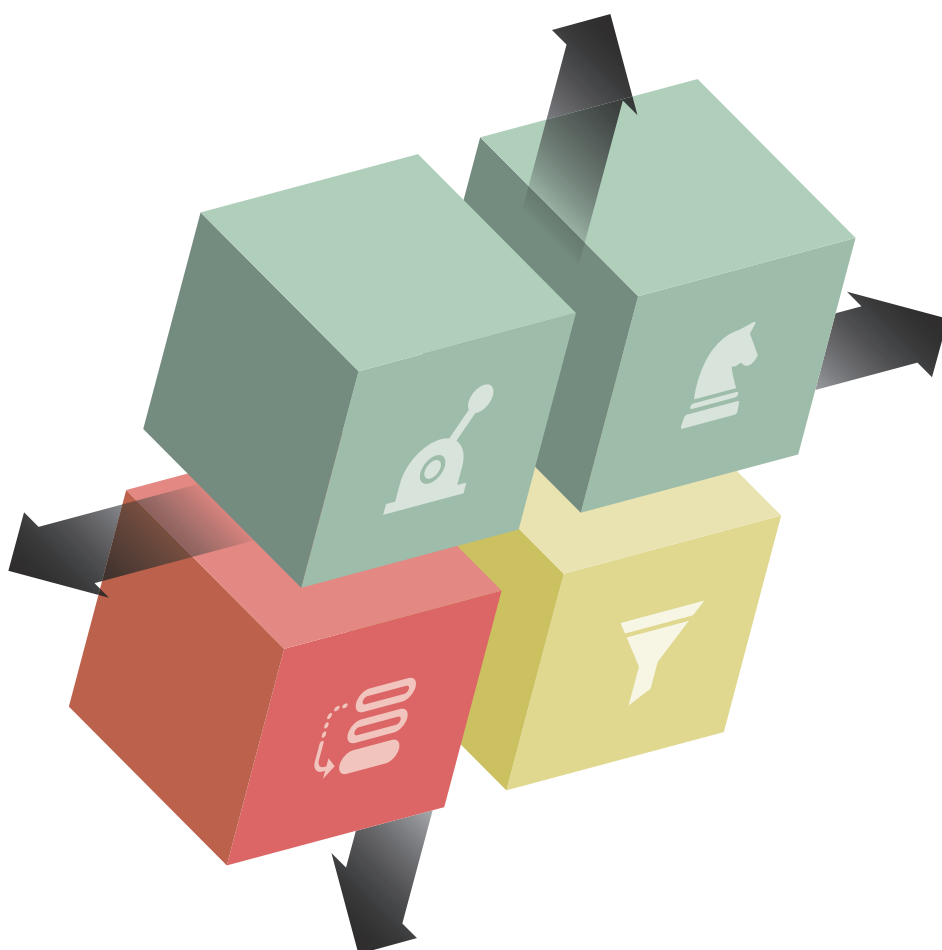
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# INTERNAL CARBON PRICING FOR FUTURE-PROOF SUPPLY CHAINS

Nine approaches for low-carbon procurement  
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## ABOUT US

### About Navigant Consulting, Inc.

With over 600 consultants, Navigant's global Energy segment is the largest energy and sustainability consulting team in the industry. We collaborate with utilities and energy companies, government and NGOs, large corporations, product manufacturers, and investors to help them thrive in a rapidly changing energy environment. Joined force with Ecofys in 2016, the company is a trusted advisor to governments, corporations, NGOs, and energy providers worldwide. The team delivers powerful results in the energy and climate transition sectors. Working across the entire energy value chain, Navigant develops innovative solutions and strategies to support its clients in enabling the energy transition and working through the challenges of climate change. Carbon pricing forms part of Navigant's core expertise: since its conception, we have advised the European Commission and other stakeholders on the design of the European Union Emissions Trading System, and we continue to provide analyses on the potential impacts of proposed design changes. Capturing the topic in its global scope, Navigant has been assisting The World Bank in producing their annual flagship report State and Trends of Carbon Pricing over the past seven years. We also work with the industry on compliance and internal carbon pricing strategies, and thereby provide a fully rounded perspective on carbon pricing that spans from policies and technological innovation, to impacts at the consumer level.

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### About The Generation Foundation

The Generation Foundation (the 'Foundation') was part of the original vision of Generation Investment Management LLP ('Generation') since the firm was founded in 2004. The Foundation was established alongside Generation in order to strengthen the case for Sustainable Capitalism. Our strategy in pursuit of this vision is to mobilise asset owners, asset managers, companies and other key participants in financial markets in support of the business case for Sustainable Capitalism. In our effort to accelerate the transition to a more sustainable form of capitalism, we primarily use a partnership model to collaborate with individuals, organisations and institutions across sectors and geographies and provide catalytic capital when appropriate. In addition, the Foundation publishes in-house research, gives select grants related to the field of Sustainable Capitalism, engages with our local communities and supports a gift matching programme for the employees of Generation. All of the activities of the Foundation, a not-for-profit entity, are funded by a distribution of Generation's annual profitability.

**generation**—  
**foundation**



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## About Carbon Pricing Unlocked

Today, over 45 national jurisdictions and about 30 cities, states, and regions are putting a price on carbon. Despite this global uptake, harmonisation of carbon pricing policies across different regions remains difficult. Furthermore, carbon prices are often too low to incentivise the investment necessary to decarbonise emissions-intensive value chains. At the end consumer level, the impact of carbon pricing is often insufficient to drive changes towards more low-carbon consumption. How can carbon pricing facilitate sustainable global economic growth? In order to find vital answers to this question, The Generation Foundation has teamed up with Navigant in the Carbon Pricing Unlocked (CPU) research partnership. The research extends over three years from 2016 to 2019 and tackles carbon pricing from a new angle, exploring the role of carbon pricing along value chains up to the end consumers. The partnership aims to deliver quantified insights into the role carbon pricing can play in a 1.5°C future. Navigant is one of the pioneers in carbon pricing, and has worked on the topic for nearly two decades.

Combining in-depth expertise with a high-level stakeholder network, Navigant and The Generation Foundation investigate how carbon pricing might be better integrated at both business practice and economic policy levels in order to unlock its full mitigation potential. The complete list of publications produced by the CPU partnership is:

1. *Impacts of a global carbon price on consumption and value creation – Implications for carbon pricing design* (2016)
2. *How-to guide to corporate internal carbon pricing – Four dimensions to best practice approaches* (2017)
3. *Raising the Acceptability of Carbon Pricing – The crucial role of carbon revenue recycling* (2018)
4. *Internal Carbon Pricing for Low-Carbon Investment – A briefing paper on linking climate-related opportunities and risks to financing decisions for investors and banks* (2019)
5. *Internal Carbon Pricing for Future-Proof Supply Chains – Nine approaches for low-carbon procurement and supply chain management* (2020)

To receive news and updates about our project, please sign up at **[CPU@navigant.com](mailto:CPU@navigant.com)**.

## EXECUTIVE SUMMARY

### New Tool for Low-carbon Procurement and Supply Chain Management

**Internal carbon pricing (ICP) can help low-carbon materials and products become more competitive and future-proof supply chains against emerging policy and climate transition risks.** Governments around the world have introduced various policies that directly or indirectly put a price on carbon and support low-carbon innovation. Unfortunately, these are often insufficient to make lower carbon alternatives cost competitive with higher carbon equivalents. ICP can bridge this gap as it monetises the carbon footprint of products and materials, enabling the associated greenhouse gas (GHG) emissions to be costed into financial decisions. Organisations can use ICP to gain more insights in the financial risks in their supply chain posed by climate policies and market developments, and use these insights to manage those risks. In addition, greater and better use of ICP in procurement and supply chain management could increase demand for low-carbon products and materials, which could lead to long-term cost savings on some purchases.

**A lack of information about how to use ICP in procurement and supply chain management and its benefits is hindering uptake.** Very few organisations have experience in using ICP in procurement and supply chain management, and even fewer organisations have publicly shared their experience. The lack of information and limited experience contributes to the perception that it is costly and complex to implement, which prevents any exploration of its implementation before it has begun. Nonetheless, the interest in ICP in procurement and supply chain management could grow as organisations look at ways to implement climate targets, or start feeling pressure from investors to manage and report climate-related financial risks, including supply chain risks.

### Key Stages to Develop an ICP Programme for Procurement and Supply Chain Management

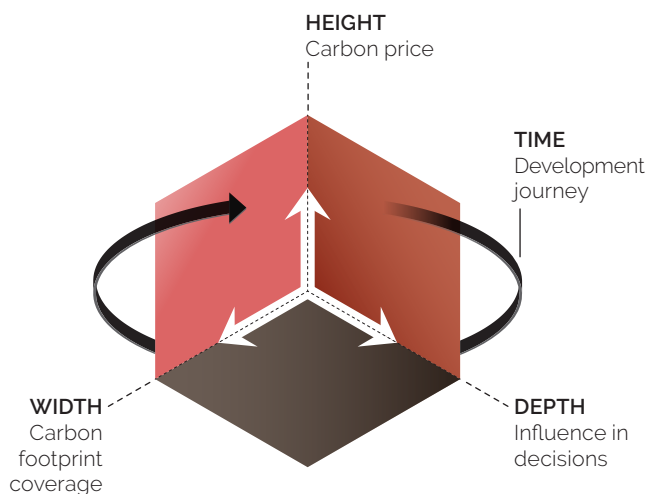
**This briefing paper aims to help procurement, sustainability and risk departments set up ICP in procurement and supply chain management to increase value and reduce costs.** ICP is a tool that uses financial incentives to inform decisions and/or influence behaviour related to GHG emissions. It translates GHG emissions into the common language of money to help organisations manage desired changes to their decisions and behaviour in the low-carbon transition. As a change management tool, an ICP programme can be developed following traditional change management process steps. These steps follow a similar progression across organisations and include: engaging the organisation and its suppliers with ICP, designing the ICP programme, rolling it out, and monitoring its implementation with regular evaluations. In this paper, these steps are summarised from the perspective of procurement and supply chain management.

**As with any change management tool, it is important to identify the objectives for ICP before developing a programme.** ICP is a means to an end. For it to be successful, the added value, benefits and goals of ICP need to be determined first. The desired benefits form the objectives for the ICP programme. Identifying the benefits that resonate most strongly with internal stakeholders and with suppliers will help

secure their buy-in, which is crucial for the success of any ICP programme. In particular, the importance of getting senior management on board when exploring ICP cannot be overstated; most change management tools only achieve the desired outcomes if the objectives for these tools are prioritised by the organisation. After the objectives of the ICP have been identified, the organisation's next step is to design a detailed plan to realise the benefits.

**Designing an ICP programme comes with many considerations, and using our four-dimensional framework for best practices can breakdown the complexity of ICP.** The four-dimensional (4D) framework shown in Figure 1 illustrates the four key components of an ICP programme: carbon price (height), carbon footprint coverage (width), influence in decisions (depth) and the development journey (time). By thinking about these dimensions as individual components, organisations can simplify the design process and tackle one component at a time.

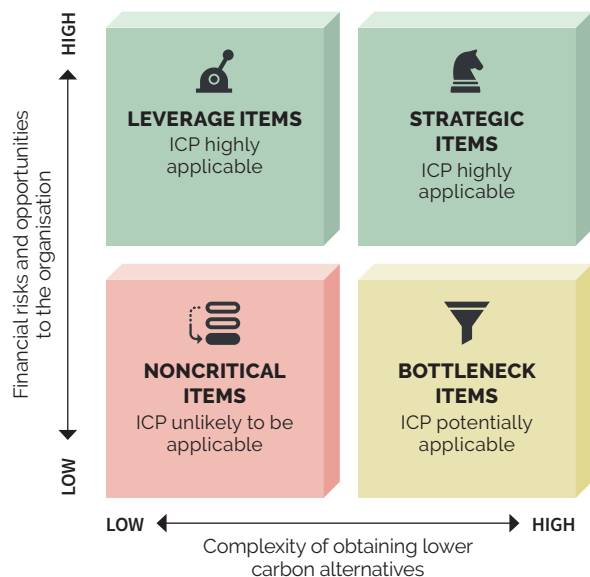
**FIGURE 1** The four dimensions of ICP for procurement and supply chain management



For ICP in procurement and supply chain management, this translates into the following stages for design:

**Stage 1 Choosing products and materials** (width—carbon footprint coverage): identify which parts of your supply chain to target, covering those purchased products and materials that could contribute most to achieving the defined objectives. The ICP-adapted Kraljic matrix introduced in this paper and shown in Figure 2 can help organisations in their choice. It maps the exposure of purchased products and materials to financial risks and opportunities arising from a carbon price against the complexity of obtaining substitutes with a lower carbon footprint. Products and materials can then be divided into four different item categories to help determine the scope of the ICP programme. The matrix gives organisations a good starting point, but other factors such as the organisation's internal culture and objectives, as well as external factors outside the control of an organisation's value chain, should also be considered when choosing the initial ICP scope.

**FIGURE 2** ICP-adapted Kraljic matrix for selecting products and materials suitable for ICP



## **Stage 2 Determining how ICP applies in procurement processes and supply chain management**

(depth—influence on decision-making): decide how ICP should influence decisions, so that it becomes increasingly influential and has a material impact. In procurement and supply chain management, the decisions that ICP can influence tend to fall into one of two categories: internal processes or external suppliers. Where ICP is most applicable depends on its objectives as different approaches bring different benefits. This paper introduces nine approaches to use ICP, as presented in Figure 3. The first two ICP approaches focus on influencing internal processes, whereas the last seven approaches aim to influence decisions related to external suppliers. Within the purchasing organisation, ICP could be used to influence internal strategies and decisions related to procurement and supply chain management at different levels of the organisation. Externally with suppliers, the best way to use ICP depends on the type of purchased product or material. The ICP-adapted Kraljic matrix could help with the latter in identifying the most suitable ICP approach.

**Stage 3 Setting the internal carbon price** (height—carbon price): set a carbon price that has sufficient impact to affect decisions in line with the defined objectives. For procurement, the price should be high enough to influence decisions within the organisation, as well as decisions made by its external suppliers. At the same time, the price should be at a level that is acceptable internally, and that is not too high for suppliers to take on. The optimal carbon price will vary depending on the purchased product and material, the geography and the time horizon of the decision. Organisations can therefore choose to use different carbon prices to account for these variations—although this would increase the complexity of the ICP programme. In addition, certain constraints on price setting may be applicable to some organisations due to regulation. Testing the impact of different carbon prices on various purchased products and materials is recommended.









































## **Stage 4 Improving the ICP programme over time**

(time—development journey): start with the most promising products and/or materials and first keep it simple. Make a plan to gradually expand it through learning-by-doing and regularly evaluating the programme to ensure it remains fit-for-purpose. Developing an ICP programme is a dynamic and iterative process. Starting with an ICP programme that may not deliver all of the set objectives from the beginning is much more effective than doing nothing. Organisations are encouraged to use this paper to start with simulation exercises or pilots on a small number of departments or geographies to ascertain how the ICP process works for them before rolling it out on a wider scale.

**Since every organisation is different, each ICP programme will be unique.** Which approach(es) are most suitable for the organisation and the products and materials ICP should cover depends on many factors. Each organisation has different characteristics and circumstances. The nine ICP approaches for procurement and supply chain management presented in Figure 3 should therefore mainly be used as inspiration for organisations to develop their own ICP programme. The nine approaches should not be considered exhaustive, and not all approaches may be applicable to all organisations. The ICP approaches could also be combined with other sustainable procurement practices. To help organisations understand each approach better, this paper describes the benefits ICP can bring, the ideal application and details about what is needed from the organisation and suppliers to operationalise the ICP approach. An illustrative example to show how it can work in practice is also provided with each approach. This enables organisations to weigh the benefits of each ICP approach against the required effort and resources to implement them and to choose the approach that is most suitable to their needs.



**FIGURE 3** Overview of nine approaches to use ICP in procurement and supply chain management and their added value

Influence	ICP approaches for ICP in procurement and supply chain management		Most suitable for	Added value
INTERNAL PROCESS	Approach 1	ICP to assess risks of price increases from suppliers due to climate policies	Centralised supply chain management	  
	Approach 2	ICP as an internal fee to financially incentivise the procurement of low-carbon materials and products	Decentralised procurement decisions	    
EXTERNAL SUPPLIERS	Approach 3	Adding a requirement that suppliers need to use ICP to calculate the carbon cost in their offering	Leverage and strategic items	  
	Approach 4	ICP as an assessment method to score competitive tenders	Leverage items	    
	Approach 5	ICP as an additional price element in the financial assessment of competitive tenders	Leverage items	     
	Approach 6	Requiring suppliers to use ICP in their company	Leverage and strategic items	   
	Approach 7	ICP to determine the level of financial support for low-carbon projects of suppliers	Strategic items	   
	Approach 8	ICP in a form of an emissions trading system throughout the supply chain	Strategic items	     
	Approach 9	ICP to determine a premium paid for lower carbon materials and products	Bottleneck items	   



Incorporating climate impacts into financial decisions



Strengthening brand value with climate leadership



Providing risk insight on carbon cost exposure in line with the FSB-TCFD recommendations



Discovering new opportunities for low-carbon innovation



Providing an additional metric to assess suppliers



Providing a more accurate estimate of the organisation's carbon footprint



Making procurement and supply chain management a higher priority



Enabling knowledge transfer throughout the supply chain

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# 1 | INTRODUCTION

## “The customer is always right.”

This well-known business slogan represents the influence that

buyers have over suppliers. By harnessing this power, companies and governments can play a key role in the transition to a low-carbon economy by demanding products with a lower carbon footprint from suppliers. However, they face a challenge in overcoming the cost differential between these products and similar, cheaper products with a higher carbon footprint. Even if some of these low-carbon products and materials are more economical when considering durability and cost savings on energy, their higher purchase price is a barrier for most buyers. Economies of scale and increased competition could improve the availability of low-carbon materials and products and for some lead to price reductions. However, the lack of robust demand signals for low-carbon materials and products makes it difficult for suppliers to build a business case for large scale, low-carbon innovation. This vicious circle needs to be broken to decarbonise value chains.

**This briefing paper shows nine different internal carbon pricing (ICP) approaches to make low-carbon products and materials more competitive and to inspire greater and better use of ICP in procurement and supply chain management in the public and private sectors.**<sup>1</sup> By putting a price on the carbon footprint of products and materials, the associated greenhouse gas (GHG) emissions are monetised and can be accounted for in financial decisions. There are many government policies that already provide carbon price signals, but these are often insufficient to make many lower carbon alternatives cost competitive with higher carbon equivalents.<sup>2</sup> While governments are strengthening their policies, these developments take time to materialise. When they do, they could disrupt supply chains and operations of organisations that are unprepared. ICP can help organisations prepare for these risks, tap into new opportunities, and create the necessary incentive for low-carbon innovation to future-proof value chains. See Box 1 for more details about ICP.

### BOX 1 What is internal carbon pricing?

ICP is a tool that can support organisations in managing and contributing to the transition to a low-carbon economy. ICP translates the GHG emissions related to a product, material, project or decision into a uniform monetary metric. This is done by multiplying the volume of GHG emissions in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) with a price per unit of GHG emitted that the organisation chooses (e.g. US\$/tCO<sub>2</sub>e). The resulting carbon value can then be taken into account in decisions as a financial metric, allowing organisations to determine the most cost-effective strategy to reduce their GHG emissions. ICP also helps organisations understand the climate-related financial risks and opportunities that could arise from government policies related to the transition to a low-carbon economy. So far, about 1,300 companies, including more than 100 Fortune Global 500 companies with collective annual revenues of about US\$ 7 trillion, disclosed that they use ICP or plan to do so within two years.<sup>3</sup> Additionally, 17 Organisation for Economic Co-operation and Development (OECD) member governments indicated that they use ICP.<sup>4</sup>

- 1 In this paper, procurement is defined narrowly as the purchasing of external goods or services while supply chain management refers to the management of the supply chain after the procurement process and includes logistics and inventory management related to procurement.
- 2 See World Bank, *State and Trends of Carbon Pricing 2019*, June 2019 and OECD, *Taxing Energy Use 2019*, October 2019.
- 3 CDP, *Putting a price on carbon – Integrating climate risk into business planning*, October 2017.
- 4 OECD, *Monetary Carbon Values in Policy Appraisal*, September 2015.

**Increasingly, organisations are using ICP to help reduce their carbon footprint, but only in decisions related to their own GHG emissions. Very few organisations have experience in using ICP in procurement and supply chain management or on emissions from their supply chain,<sup>5</sup> and even fewer organisations have publicly shared their experience.** Over 2,800 companies reported in 2017 to CDP that they have at least some insight into their value chain emissions.<sup>6</sup> However, only a quarter of them have calculated all value chain emissions that they consider relevant and even fewer are using ICP for procurement and supply chain management. Concha y Toro,<sup>7</sup> ProRail,<sup>8</sup> Rijkswaterstaat,<sup>9</sup> Solvay,<sup>10</sup> and Skanska UK<sup>11</sup> are some of the few organisations that actively used or are using a form of ICP as part of their procurement process or supply chain management. In some organisations, such as Infosys and Arvind, the role of ICP in procurement is limited to the purchase of energy.<sup>12</sup> For this paper, we explored the barriers to using ICP in procurement and supply chain management through stakeholder consultations and workshops. Feedback suggests that the main barrier to using ICP in purchasing decisions is a lack of information about how it can be used and what value it brings. This contributes to the perception that it is costly and complex to implement, which prevents any exploration of its implementation before it has begun. Other reasons for low uptake include limited visibility of and control over supply chain emissions; distance between procurement departments and sustainability initiatives; numerous and diverse suppliers; and legal uncertainties.

**Nonetheless, several government departments and companies are actively exploring the use of ICP in procurement or supply chain management.**

For example, the subnational governments in the Netherlands are piloting ICP for sustainable procurement.<sup>13</sup> The interest in ICP in procurement and supply chain management could grow as organisations look for ways to implement their Science-based Targets<sup>14</sup> and feel pressure from investors to meet the recommendations from the Financial Stability Board's Task Force for Climate-related Financial Disclosures (FSB-TCFD) to manage and report climate-related financial risks, including supply chain risks.<sup>15</sup>

*Feedback suggests that the main barrier to using ICP in purchasing decisions is a lack of information about how it can be used and what value it brings.*

**This paper targets procurement and supply chain professionals from all kinds of organisations to help them better understand how ICP could be used to future-proof their supply chain.** It aims to support procurement and supply chain departments in working with other parts of the organisation such as senior management, sustainability and risk to set up an ICP programme. This paper builds on 20 responses to a public consultation<sup>16</sup> that ran from August to December 2018, ten workshops over the course of 2018 with over 50 procurement professionals (primarily from

5 In this paper, we refer to ICP approaches that directly influence decisions in procurement and supply chain management. ICP approaches that have an indirect influence through investment and operations decisions to purchase low-carbon alternatives are not discussed in this paper.

6 Science Based Targets initiative, Navigant and the Gold Standard, *Value Change in the Value Chain: Best Practices in Scope 3 Greenhouse Gas Management*, November 2018.

7 Navigant, The Generation Foundation and CDP, *How-to Guide to Corporate Internal Carbon Pricing*, 2017.

8 Railway agency. ProRail, *ProRail gebruikt voortaan MKI bij aanbestedingen*, 3 May 2018, available at <https://www.spoorpro.nl/spoorbouw/2018/05/03/prorail-gebruikt-voortaan-mki-bij-aanbestedingen/>.

9 Dutch government agency. Rijkswaterstaat, *Duurzaam inkopen in het inkoopdomein GWW*, accessed 25 February 2019 at <https://www.rijkswaterstaat.nl/zakelijk/zakendoen-met-rijkswaterstaat/inkoopbeleid/duurzaam-inkopen/index.aspx>.

10 Chemicals company. Solvay, *Sustainable Portfolio Management Guide*, 2018.

11 Construction company. Skanska UK, *Skanska Sustainable Procurement*, September 2016.

12 Information technology consulting company (Infosys) and textile manufacturer (Arvind). WRI India, *Reducing Risk, Addressing Climate Change through Internal Carbon Pricing: a Primer for Indian Business*, March 2018.

13 PIANOo, *Rijksoverheid biedt ondersteuning aan overheden om meer klimaatneutraal en circulair in te kopen*, 15 January 2019, available at <https://www.pianoo.nl/nl/actueel/nieuws/rijksoverheid-biedt-ondersteuning-aan-overheden-om-meer-klimaatneutraal-en-circulair>.

14 Science Based Targets initiative, Navigant and the Gold Standard, *Value Change in the Value Chain: Best Practices in Scope 3 Greenhouse Gas Management*, November 2018.

15 FSB-TCFD, *Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures*, June 2017.

16 Including partial responses.

the Netherlands), publicly available information on sustainable procurement and supply chain management, and discussions with sustainability, procurement and supply chain management professionals. As the use of ICP in procurement and supply chain management is still in its infancy, this paper focuses on inspiring more organisations to work with their suppliers to apply ICP and share lessons learned internally and externally.<sup>17</sup>

This paper also contains a special section that zooms in on nine approaches for using ICP in procurement and supply chain management at the end of Section 5. The section includes a description of their key features such as added value, ideal applications and barriers to overcome, how to apply each approach, and an illustrative example how each approach could work in practice.

### About this briefing paper

This briefing paper is an extension of two best practice guides to ICP developed by Navigant, The Generation Foundation and CDP in 2017 under the Carbon Pricing Unlocked (CPU) partnership:<sup>18</sup>

- » *The C-suite Guide to Internal Carbon Pricing – Toolbox for Creating Corporate Value* to help board members and decision makers in identifying the most appropriate ICP approach(es) to their company
- » *The How-to Guide to Corporate Internal Carbon Pricing – Four Dimensions to Best Practice Approaches* to give concrete guidance for establishing an ICP approach

This extension focuses on ICP for procurement and supply chain management. This paper also builds on the CPU report *Impacts of a Global Carbon Price on Consumption and Value Creation*, which can help organisations identify the GHG emissions hotspots in their supply chain.

In 2019, Navigant, The Generation Foundation and CDP published another extension to the best practice guides to ICP under the CPU partnership specifically focused on ICP for financial institutions titled *Internal Carbon Pricing for Low-Carbon Finance – a briefing paper on linking climate-related opportunities and risks to financing decisions for investors and banks*.

<sup>17</sup> While emissions from the whole value chain are considered in this paper, the focus lies on upstream supply chain emissions as these are emissions organisations can best address through procurement and supply chain management.

<sup>18</sup> Navigant developed the best practices guides under the name Ecofys. As of 1 January 2019, the name Ecofys has changed integrally to Navigant.

## 2 | THE VALUE OF ICP IN PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

**ICP can bring substantial benefits to procurement and supply chain management**, but its use in these areas has been very limited so far. Understanding and clearly communicating the potential benefits of implementing ICP will help organisations set clear objectives and create buy-in from suppliers, senior management and others within the organisation. Key objectives and benefits include:



**Incorporating climate impacts into financial decisions** – ICP in procurement and supply chain management will allow an organisation to factor in existing or future climate costs in their decision

making. By translating GHG emissions into monetary values, the carbon footprint of the organisation can be quantitatively included in financial decision making. This could increase the weight of climate change impacts in the decision-making process and improve the case for purchasing low-carbon products and materials. This could even lead to long-term cost savings where lower carbon alternatives are more economical compared to the conventional counterparts when considering durability and operational costs over their lifetime, in particular with the growth of climate policies.

**Strengthening brand value with climate leadership**



– ICP can help organisations gain a competitive edge in the transition to a low-carbon economy. As consumer preferences are increasingly shifting towards low-carbon products and

services, the use of ICP can show consumers that the organisation is taking climate action seriously. By valuing its climate impact and that of its suppliers into its decisions, organisations can influence purchasing decisions or supplier behaviour to lower the carbon footprint of purchased products and materials.



**Providing risk insight on carbon cost exposure in line with the FSB-TCFD recommendations** – ICP can highlight GHG emissions hotspots within an organisation and across its supply

chain. This, coupled with the more accurate emissions estimate and inclusion of carbon costs in decision making, will provide insight into financial risks due to carbon cost exposure. Such risks could increase as carbon pricing and emission reduction policies globally are strengthened on the path to decarbonisation. Gaining risk insight will allow better assessment of possibilities to build resilience against these risks throughout the value chain.



**Discovering new opportunities for low-carbon innovation** – ICP could provide an incentive for suppliers to invest in the development of low-carbon products and materials. It can also trigger the

purchasing organisation to develop its own low-carbon alternatives and reduce its dependence on suppliers for certain products and materials. Through economies of scale, this could ultimately make low-carbon products and materials cheaper, potentially even cheaper than their conventional counterparts.



**Providing an additional metric to assess suppliers** – Ranking suppliers in terms of sustainability requires specific methodologies with clear criteria that can take time to develop in detail. Using ICP

in procurement can be an easier option to provide an additional metric to assess suppliers. By translating the carbon footprint of products and materials offered by suppliers into a monetary metric, it can be evaluated in a uniform manner as a financial indicator.



### **Providing a more accurate estimate of the organisation's carbon footprint**

– the integration of ICP into parts of the supply chain management systems will allow a much more accurate estimate

of the total carbon footprint of an organisation, in particular its upstream Scope 3 emissions.<sup>19</sup> These are usually more difficult to estimate accurately since they fall outside the direct control of organisations and suppliers are often reluctant to provide this information for various reasons including a lack of accurate data, too much of an administrative burden and a risk that price sensitive information could be deduced from emission data. Yet Scope 3 emissions often represent the largest portion of an organisation's carbon footprint. By monetising the carbon footprint and giving it weight in decisions through ICP, suppliers have an incentive to provide accurate emissions data.



### **Making procurement and supply chain management a higher priority –**

Monetary impacts resulting from pricing carbon can lead to an increased attention from senior management, finance and strategic departments. Translating GHG emissions from suppliers into monetary terms allows key decision makers to understand the climate-related risks and opportunities from their supply chain. This could result in redirection of priorities and resources towards procurement and supply chain management to limit these risks or to tap into these opportunities.



### **Enabling knowledge transfer throughout the supply chain**

– ICP can help build capacity on managing climate-related costs by engaging suppliers and encouraging them to consider

their carbon footprint from a financial perspective. This should enable suppliers to better understand the carbon footprint of their offered products and materials, the costs and benefits of reducing their carbon footprint, and business opportunities that may arise from the transition to a low-carbon economy.

Organisations often set the realisation of one (or more) of the first five benefits as the key objective of their ICP programme whereas the last three benefits tend to be broader objectives where ICP can act as a catalyst in combination with other tools to achieve these benefits.<sup>20</sup> Some of the benefits overlap, or are closely related, but may resonate differently with different stakeholders. Communicating the benefits that resonate best with suppliers and internally in the organisation is key in getting their support, which is crucial as setting up and implementing ICP will require them to free up resources. In particular, the importance of getting senior management on board when starting to discuss implementing ICP in an organisation cannot be overstated; most ICP programmes only become a success if they are a priority for the organisation. During the initial internal engagement and with suppliers on ICP, it is also important to show how ICP could connect to existing procurement and supply chain management processes, so that it will not be seen as a huge additional burden.<sup>21</sup>

<sup>19</sup> Scope 3 emissions are all indirect GHG emissions occurring upstream and downstream in the value chain of the organization except for indirect GHG emissions from purchased energy. For more information, see e.g. <http://ghgprotocol.org/standards/scope-3-standard>.

<sup>20</sup> Science Based Targets initiative, Navigant and the Gold Standard, *Value Change in the Value Chain: Best Practices in Scope 3 Greenhouse Gas Management*, November 2018.

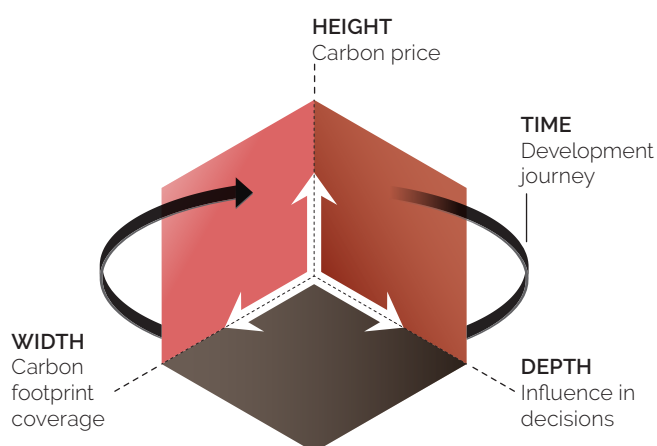
<sup>21</sup> For more information on how to engage the organisation and build the case for ICP, see Step 1 of the *How-to Guide to Corporate Internal Carbon Pricing*.

### 3 | THE FOUR DIMENSIONS OF ICP FOR PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

Once it is clear what the organisation wants to achieve with ICP, it will have to translate those objectives into a detailed programme design. In 2017, the Carbon Pricing Unlocked partnership developed a four-dimensional (4D) framework to help organisations design and apply ICP in a best practice manner.<sup>22</sup> This framework offers a new way of thinking about ICP and has influenced CDP's expansion of their climate change disclosure questionnaire on carbon pricing.<sup>23</sup>

The 4D framework helps break down the complexity of ICP and allows organisations to consider each dimension separately in the design of an ICP programme. Figure 4 shows the 4D framework tailored to procurement and supply chain management:

**FIGURE 4** The 4D framework for ICP in the context of procurement and supply chain management



- » **Width (carbon footprint coverage)** represents the proportion of an organisation's carbon footprint covered by the ICP that relates to purchased products and materials

- » **Depth (influence in decisions)** refers to the way ICP is applied and how it influences decision-making on procurement and supply chain management
- » **Height (carbon price)** is the carbon price the organisation has set to enable the ICP programme to achieve its objective(s)
- » **Time (development journey)** denotes the processes used to continually improve the ICP programme over time, particularly with respect to the previous three dimensions

A best practice ICP programme must have clear objectives and find the optimal combination of the four dimensions of ICP; the combination determines what the ICP programme will be able to achieve. Design choices for each dimension affects one another and are influenced by the characteristics of the organisation and its supply chain. The How-to Guide to Corporate Internal Carbon Pricing of the Carbon Pricing Unlocked partnership helps practitioners find the optimal combination of the four dimensions with step-by-step guidance. Since ICP uses financial incentives to manage desired changes to decisions and behaviour, an ICP programme can be developed in a similar manner as most other change management tool. The guide therefore builds on traditional process steps of change management, presented through the lens of the 4D framework. Figure 5 provides an overview of these process steps from the perspective of procurement and supply chain management.

The process steps in Figure 5 for designing and implementing ICP could be viewed in isolation of broader sustainability and procurement contexts. However, ICP can be (and often is) developed as part of more expansive sustainability programmes. While this paper does not provide guidance for establishing comprehensive sustainable procurement and supply chain management practices, many other sources do. These include the ISO 20400 guidance on Sustainable Procurement,<sup>24</sup> the European Commission's handbook

<sup>22</sup> Navigant, The Generation Foundation and CDP, *How-to Guide to Corporate Internal Carbon Pricing*, 2017.

<sup>23</sup> CDP, *Carbon Pricing: CDP Disclosure Best Practice*, 2018.

<sup>24</sup> International Organization for Standardization (ISO), *ISO 20400:2017 Sustainable procurement — Guidance*, 2017.



**FIGURE 5** Key process steps for establishing an ICP programme for procurement and supply chain management



on green public procurement<sup>25</sup> and the UNGC-BSR Practical Guide for Continuous Improvement in Supply Chain Sustainability.<sup>26</sup> To support the integration of ICP into broader sustainability practices, the rest of the paper zooms in on considerations specific to ICP in procurement and supply chain management. Sections 4 to 7 provide guidance on designing a suitable ICP programme building on the 4D framework:

**Section 4** How to choose products and materials to apply ICP (width)

**Section 5** The different ways ICP can be applied in procurement processes and supply chain management (depth)

**Section 6** What internal carbon price(s) to use (height)

**Section 7** How to improve the ICP programme over time (time)

<sup>25</sup> European Commission, *Buying green! A handbook on green public procurement*, 3<sup>rd</sup> edition, 2016.

<sup>26</sup> United Nations Global Compact (UNGC) and Business for Social Responsibility (BSR), *Supply Chain Sustainability: A Practical Guide for Continuous Improvement*, 2<sup>nd</sup> edition, 2015.

## 4 | CHOOSING PRODUCTS AND MATERIALS FOR ICP

The first stage for designing an ICP programme for procurement and supply chain management is to identify **which parts of its supply chain to target**. Organisations generally classify the products and materials they need to buy into categories, which allows them to formulate specific procurement strategies and management processes for each category. The most established tool for categorisation is the Kraljic Purchasing Portfolio Matrix.<sup>27</sup> The Kraljic matrix maps purchased products and materials against their financial importance to the organisation and complexity in obtaining them from suppliers, dividing them into four item categories.

By focussing on the considerations relevant to ICP, the Kraljic matrix can be adapted to help choose the initial scope of the ICP programme based on the exposure to financial risks and opportunities due to a carbon price<sup>28</sup> and the complexity of obtaining substitutes with a lower carbon footprint as shown in Figure 6. The financial risks and opportunities relate to the GHG emissions profile of an organisation's value chain. The complexity of obtaining low-carbon alternatives is determined by the position and influence of the organisation in its supply chain, i.e. the power dynamics in the organisation's relationship with its suppliers. Box 2 provides an illustrative example of how the Kraljic matrix can be applied.

By overlaying this mapping with the result from a traditional Kraljic matrix, some products and materials that were originally considered as noncritical and bottleneck items could become leverage and strategic

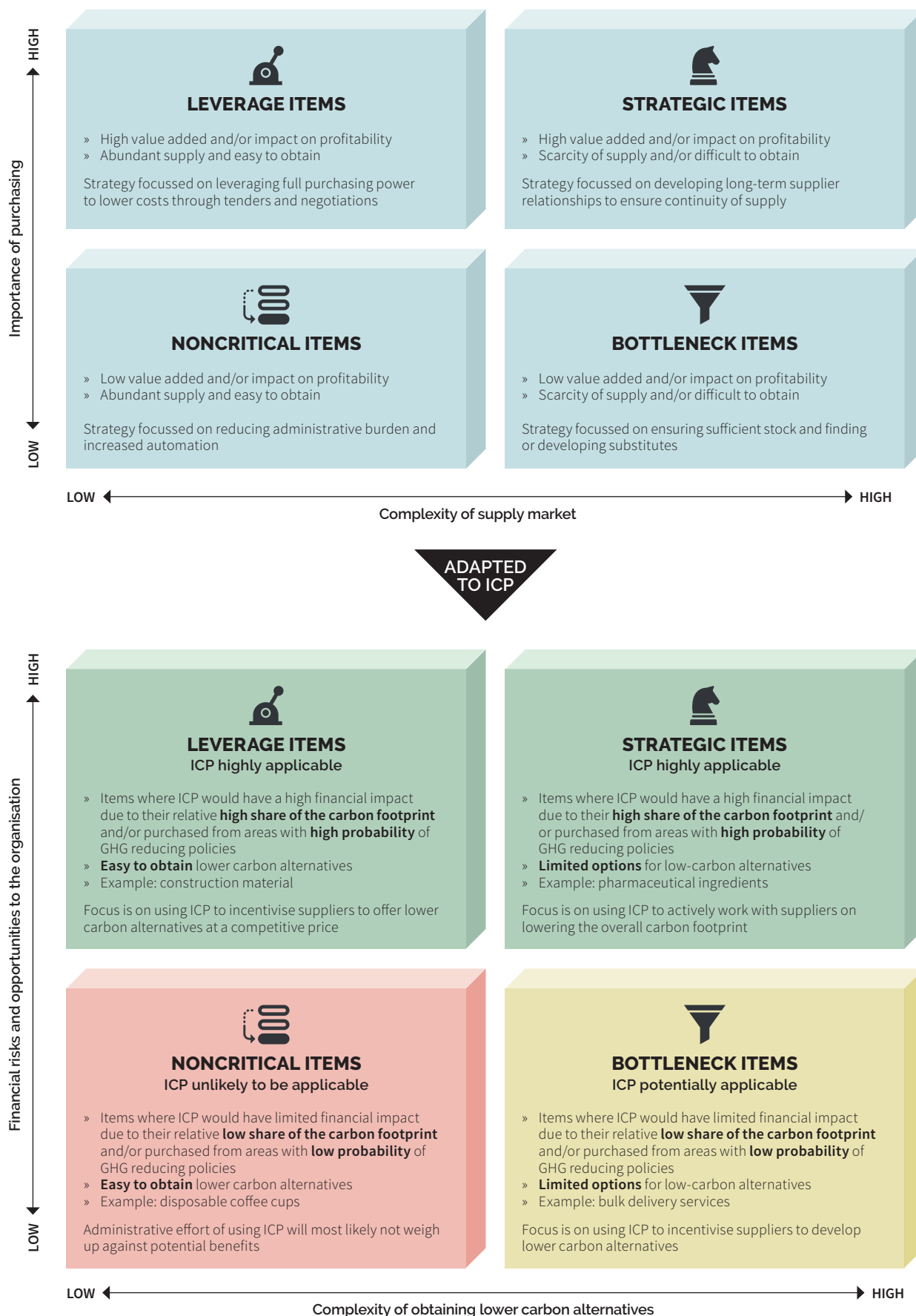
items respectively. This could be due to their high share in the organisation's carbon footprint, purchased from areas where there is a high probability of climate policies being introduced and affecting their prices, and/or the expectation that their purchased volumes would increase in a low-carbon economy. An example of a noncritical item becoming a leverage item is outsourced distribution services. For large manufacturers, distribution services only account for a small share of their overall costs. However, when potential carbon costs associated with fuel use are factored in, this cost increase could have a large impact on the profit of the manufacturer.

The ICP-adapted Kraljic matrix gives organisations a starting point for choosing the initial scope of the ICP programme for procurement and supply chain management based on their GHG emissions profile and its position and influence in the supply chain. However, there are also other factors to consider when choosing the scope of the ICP programme. These can be grouped into considerations related to an organisation's internal culture and objectives and external factors outside the control of an organisation's value chain. Table 1 shows a summary of the key considerations for choosing the scope of an ICP programme. The importance of each consideration will vary per organisation and purchased product and material, so the most suitable scope will vary for each organisation. Some of these considerations, such as the administrative effort required and the internal acceptance and support for ICP, will depend on the way ICP will influence decisions and carbon prices applied (discussed in the next sections).

<sup>27</sup> Kraljic, P., *Purchasing Must Become Supply Management*, Harvard Business Review, September 1983.

<sup>28</sup> For information on how to assess the exposure of purchased products and materials exposure to financial risks and opportunities, see *Approach 1 – ICP to assess risks of price increases from suppliers due to climate policies* in the section *Nine approaches to use ICP in procurement and supply chain management*.

**FIGURE 6** Adapting the Kraljic matrix to help in choosing the scope for the ICP programme



**TABLE 1** Overview of key characteristics of an organisation and considerations relevant for choosing which products and materials ICP could cover in procurement and supply chain management

ICP CHARACTERISTIC	KEY CONSIDERATIONS	RELEVANCE FOR CHOOSING THE ICP COVERAGE
<b>GHG emissions profile of your value chain:</b> Mapping this out can reveal your organisation's exposure to financial risks and opportunities arising from policy aimed at reducing GHG emissions.	» Availability of robust carbon footprint data throughout your value chain to identify GHG emission hotspots, which could include logistics and warehousing	→ Assess the added value and feasibility of using ICP for each purchased product and material based on the data availability and financial importance of the products and materials associated with the hotspots
	» Insights into the drivers of GHG emissions throughout your value chain	→ Focus ICP on where it could have most impact based on how supply chain emissions could develop, where new GHG emission hotspots could arise and the feasibility for suppliers to reduce their carbon footprint
	» Geographical location of current and potential future GHG emission hotspots in the supply chain	→ Determine for which products and materials ICP could add most value in managing financial risks and opportunities based on where the supply chain emissions occur
<b>Position and influence in supply chain:</b> understanding the power dynamics between the organisation and suppliers could highlight areas of complexity in influencing supplier behaviour and obtaining lower carbon alternatives.	» Bargaining power of your organisation compared to its suppliers, which depends on factors such as the degree of supplier fragmentation and commoditisation of the product or material	→ Gain insight in which suppliers ICP could influence and what strategy would work best to have them offer more low-carbon alternatives or lower their carbon footprint
	» Feasibility for your organisation to reduce its carbon footprint with lower carbon products and materials currently available on the market and/or in development	→ Determine where ICP can have an impact in lowering the carbon footprint or stimulating low-carbon innovation with suppliers based on those products and materials that can be switched to lower carbon alternatives
	» Influence of financial incentives on the choice of products and materials your suppliers offer	→ Assess the products and materials for which ICP could be most effective based on how it could influence suppliers' product offering, e.g., whether financial incentives could drive suppliers to offer low-carbon alternatives to compared to their conventional counterpart
	» Awareness and ability among your suppliers to monitor their carbon footprint and willingness to apply ICP	→ Evaluate which products and materials ICP could cover from the get-go and how the coverage of ICP could be expanded based on how advanced suppliers are in the monitoring of their carbon footprint and their willingness to investigate how to reduce the carbon footprint of their offerings

ICP CHARACTERISTIC	KEY CONSIDERATIONS	RELEVANCE FOR CHOOSING THE ICP COVERAGE
<b>Internal culture and objectives:</b> gauging the support within your organisation for ICP could help determine for which products and materials the use of ICP would be feasible.	» Internal awareness and support on the application of ICP, including management, purchasers, sustainability, risk management and other staff	→ Determine whether there are any purchased products and materials where there is strong internal support for or resistance against the application of ICP
	» Administrative effort required to apply ICP, which is influenced by the maturity of your organisation's purchasing processes	→ Evaluate whether the benefits from ICP weigh up against the administrative efforts to set up processes and rollout ICP, which will vary for each purchased product and material
	» Distribution of relevant responsibilities over staff and the ability of staff to monitor the outcomes from the ICP programme	→ Ensure reducing supply chain emissions is embedded into performance measurement of procurement and supply management staff
	» Potential overlap with other sustainability initiatives or organisational objectives	→ Evaluate both the positive and negative impacts of ICP on other sustainability objectives and cost saving initiatives for each purchased product and material
<b>External factors:</b> understanding what factors outside the control of your organisation's value chain interacts with ICP and influences the choice of products and materials to cover.	» Legislation regarding procurement, especially when considering ICP in public procurement, although private procurement also must adhere to laws such as on equality and bribery	→ Investigate whether there is any procurement legislation that could be a barrier for the application of ICP such as state aid rules or restrictions on adding new procurement criteria, which can vary for different products and materials
	» Government policies that already incentivise suppliers to reduce their carbon footprint	→ Assess whether the incentives from ICP overlap with any government policy incentives that could harm the competitiveness of your organization or your suppliers, which will vary for each purchased product and material
	» Public support, especially when considering ICP in public procurement	→ Check whether the application of ICP to certain products and materials could lead to a cost increase to society that would not be acceptable

## BOX 2 Illustrative example of how to choose products and materials

BOX 3

BOX 5

BOX 6

A large real estate developer plans to construct a new office park. Due to new building regulations and a demand from the market, the developer needs an office park with a low carbon footprint without the costs becoming significantly higher than other office spaces. From an analysis of office buildings, it found that a significant portion of the carbon footprint of buildings stems from the embedded GHG emissions in construction material and that there are various ways to reduce these emissions. These include building designs that use less material or using materials that have a lower carbon footprint. The cost of construction material largely determines the overall construction costs of buildings, and a potential carbon price on the embedded emissions would increase the financial importance even more. The developer also analysed the construction market found that many contractors are looking for new projects. As construction material has a high financial impact and there are many potential suppliers, it falls in the category of leverage items (see Figure 6), meaning ICP would be highly applicable.

## 5 | DETERMINING HOW ICP APPLIES IN PROCUREMENT PROCESSES AND SUPPLY CHAIN MANAGEMENT

After selecting what is in scope of the ICP programme, the next step is **to determine how ICP should influence decisions**. This paper presents nine different approaches to use ICP in procurement and supply chain management. The most suitable approach for an organisation depends on the objective of its ICP programme, the characteristics of the organisation (as summarised in Table 1), the scope and the types of decisions ICP should affect. This step can be taken in parallel with the previous step as many considerations for selecting the scope also apply to choosing how ICP should influence decisions.

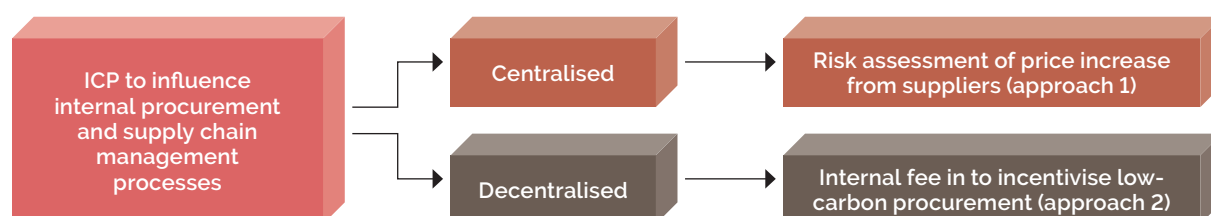
In procurement and supply chain management, the activities that ICP can influence will fall into one of two categories: internal processes or external suppliers. Of the nine approaches presented in this paper, the first two are ICP approaches to influence internal processes, whereas the remaining ones are ICP approaches that affect the selection of and relationship with external suppliers. The details of each approach, their added value, and how to apply an approach in practice (with an illustrative example) are provided in the next section.

**Within the purchasing organisation**, ICP could be used to influence internal strategies and decisions related to procurement and supply chain management at different levels of the organisation as shown in Figure 7:

- » In a **centralised** way, as a form of shadow pricing to assess risks of price increases from suppliers due to climate policies and inform strategies to mitigate these risks
- » In a **decentralised** way, by imposing a carbon fee on purchasers or departments based on the carbon footprint of the products and materials they buy<sup>29</sup>




**Externally with suppliers**, ICP could be used to steer more purchasing decisions in favour of products and materials with a lower carbon footprint. As noted in Section 4, the type of strategies towards suppliers generally depends on the category of purchased products and materials. Ideally, the selected ICP approach should align with procurement and supply chain management strategy in place for those categories. This means that some of the seven

**FIGURE 7** ICP approaches to influence internal procurement and supply chain management processes




<sup>29</sup> Shadow pricing embeds a carbon price in the overall procurement decision or supply chain analysis, but not result in actual financial flows or monetary transfers. Under an internal carbon fee suppliers or purchasers are actually charged or rewarded based on the carbon footprint of the supplier's offering. For more information, see Navigant, The Generation Foundation and CDP, *How-to Guide to Corporate Internal Carbon Pricing*, 2017.

remaining ICP approaches would only be applicable for a specific category, while others could be used for more than one category. The most suitable ICP approaches per item categories of the ICP-adapted Kraljic matrix are as follows as shown in Figure 8:<sup>27</sup>

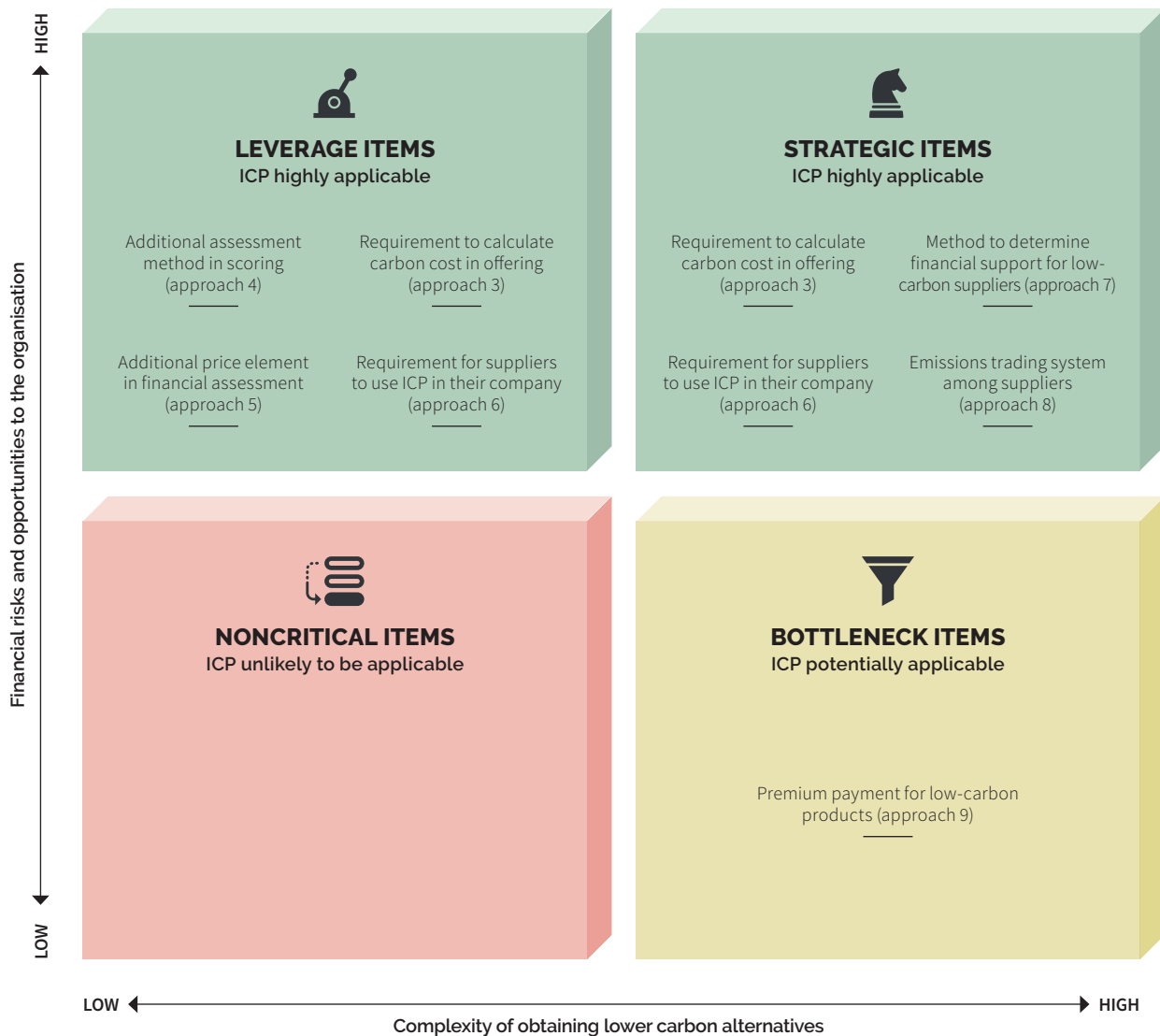
- »  **Leverage items** – these products and materials are generally bought through tendering procedures and competitive bidding. ICP could be included in the tendering procedure, initially without consequences for suppliers to allow them to get used to using ICP, but later in a more stringent form as part of the qualitative scoring, directly in the financial evaluation or as a demand for suppliers to use ICP in their company.
- »  **Noncritical items** – the purchasing strategy for these products and materials is focussed on efficiency and reducing administrative burden. As items in this category have a minimal impact on the organisation's financial performance even with a carbon price, and are only a small part of the organisation's carbon footprint, the potential benefits from ICP may not weight up against the required effort to set it up and apply.
- »  **Strategic items** – purchasing organisations generally aim to establish strategic partnerships and close relationships with the suppliers of these products and materials to ensure a continuity of supply. The most suitable ICP approaches in this category would build on this relationship and use ICP to work together in the transition to a low-carbon economy. This could be through using ICP to provide financial support for the supplier's low-carbon projects, having suppliers apply ICP in their offerings, having

suppliers implement ICP in their company, or creating an emissions trading system among suppliers to work together in reducing their overall carbon footprints.

- »  **Bottleneck items** – the strategy for these products and materials is focussed on assuring sufficient volume by keeping extra stock, trying to find new suppliers or developing substitutes. ICP could be used to incentivise developments of lower carbon alternatives by offering a premium on top of what the organisation is willing to pay for their conventional counterpart.

There are also other considerations that are relevant in choosing the most suitable approach, some of which are also mentioned in Table 1. These include the sophistication of an organisation's procurement and supply chain management functions, the alignment of the approach with the objectives set for ICP, the desired degree of influence in decisions, the complexity to implement, and support from within the organisation and buy-in from the suppliers. In addition, constraints from legislation are especially important for public procurement. For example, in the European Union (EU) specific rules need to be followed if external environmental costs are used as part of the award criteria in procurement.<sup>30</sup> In particular for tendering processes, and generally applicable to leverage items, the way ICP influences decisions should be made legally robust to avoid court challenges from suppliers that were not selected. These constraints can be overcome through careful design of the ICP approach—and if needed for public procurement, supporting government regulations—and should not restrict organisations from exploring the use of ICP. Box 3 shows an illustrative example of several key considerations in deciding on the ICP approach to use.

**FIGURE 8** ICP approaches to influence procurement and supply chain management decisions related to external suppliers



BOX 2

**BOX 3** Illustrative example on deciding on the ICP approach to apply

BOX 5

BOX 6

Continuing the illustrative example from Box 2, the real estate developer determined that construction material falls under leverage items in the ICP-adapted Kraljic matrix. The best strategy for this category is to use ICP to incentivise suppliers to offer lower carbon alternatives at a competitive price. As construction material also falls under leverage items in the traditional Kraljic matrix, the developer decides to issue a competitive tender for the office park. From the construction market analysis, the developer found that many building contractors are already familiar with carbon footprint calculations and monetisation of environmental factors. This means that the inclusion of a shadow carbon cost in the tender requirement would not lead to a lot of additional effort for contractors in their bid. As a reduction of the carbon footprint in the most cost-effective manner is the main objective of the developer, it decides to make the shadow cost part of the financial assessment (see Approach 5 for details on using ICP as an additional price element in competitive tenders).



## NINE APPROACHES TO USE ICP IN PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

This section presents nine different ways to use ICP in procurement and supply chain management as inspiration for organisations to develop their own ICP programme. Which approach(es) are most suitable for the organisation and the products and materials ICP covers depends on many factors (as discussed in Section 5). The approaches are not mutually exclusive and could be combined. The ICP approaches could also be combined with other sustainable procurement practices. The nine approaches should not be considered as exhaustive and not all approaches may be applicable to all organisations.

Table 2 provides an overview of the nine options, whereby the first two relate to internal processes and the remaining ones to external suppliers. To help organisations understand what the approaches could achieve and the main elements that are needed for implementation, guidance from the various sections of this paper are summarised in the following **key features** for each approach, followed by the **key steps to apply** the approach in practice and an **illustrative example**:

- » **Added value:** the added value that the approach could bring to the purchasing organisation, as described in Section 2
- » **Influence:** whether the ICP approach is aimed at influencing internal supply chain management processes or procurement and management decisions related to external suppliers, as described in Section 5
- » **Level—only relevant for internal processes (approaches 1 and 2):** whether the ICP approach influences procurement and supply chain management decisions in a centralised or decentralised way, as described in Section 5
- » **Purchase category—only relevant when dealing with external suppliers (approaches 3 to 9):** the type of product or material in the Kraljic matrix the approach would be most suitable for according to Section 4 and Figure 8
- » **Prerequisites for optimal application:** what is ideally needed in the organisation and/or from suppliers to implement the ICP approach and optimise its impact, highlighting the most important considerations from Table 1 regarding choosing the scope as well as practical considerations when designing and rolling out the approach as discussed in Section 7

**TABLE 2** Overview of the nine ICP approaches for procurement and supply chain management

INTERNAL PROCESS	Approach 1	ICP to assess risks of price increases from suppliers due to climate policies
	Approach 2	ICP as an internal fee to financially incentivise the procurement of low-carbon materials and products
EXTERNAL SUPPLIERS	Approach 3	Adding a requirement that suppliers need to use ICP to calculate the carbon cost in their offering
	Approach 4	ICP as an assessment method to score competitive tenders
	Approach 5	ICP as an additional price element in the financial assessment of competitive tenders
	Approach 6	Requiring suppliers to use ICP in their company
	Approach 7	ICP to determine the level of financial support for low-carbon projects of suppliers
	Approach 8	ICP in a form of an emissions trading system throughout the supply chain
	Approach 9	ICP to determine a premium paid for lower carbon materials and products

## APPROACH 1

### ICP to assess risks of price increases from suppliers due to climate policies

The risk or strategy department could use ICP to assess its organisation's exposure to costs from climate policies that could be imposed on its suppliers. This will allow them to form strategies and take measures to manage these risks.

#### Key features

##### » Added value:



Incorporating climate impacts in decisions as a financial indicator



Risk insight into carbon cost exposure in line with the FSB-TCFD recommendations



Making procurement and supply chain management a higher priority

##### » Influence:

- › Decisions related to internal processes

##### » Level:

- › Influence decisions at the centralised way

##### » Prerequisites for optimal application:

- › Insight into the carbon footprint of suppliers and the products and materials they supply
- › Knowledge about suppliers' production locations
- › Insights into climate policy developments in those locations
- › Assessment of the possibility of suppliers to pass on cost

#### Key steps to apply

**Step 1** Determine the carbon footprint of purchased products and materials

**Step 2** Apply internal carbon price to the carbon footprint of the purchased products and materials to determine where the largest carbon cost risk lie

**Step 3** Assess each supplier's exposure to carbon costs, the probability of these costs materialising, and options to mitigate this risk

#### Illustrative example

A company realises that many of its suppliers operate in regions where carbon pricing policies are being introduced or revised to increase the current price. The company has quantified the carbon footprints of key raw materials from its suppliers, and found that one of these products has a carbon footprint of 2 tCO<sub>2</sub>e/tonne (Step 1). Using a carbon price of US\$ 30/tCO<sub>2</sub> (Step 2), the company determines that there is a risk the price of a purchased product could increase by 60% (product with a carbon footprint of 2 tCO<sub>2</sub>e/tonne currently priced at US\$ 100/tonne, i.e.  $30 \times 2 / 100 = 60\%$  increase). With specific risks quantified, the company can explore alternative materials or suppliers. At the same time, engagement with suppliers affected can lead to collaborative discussions on emission reductions in the value chain and risk sharing (Step 3).

## APPROACH 2

### ICP as an internal fee to financially incentivise the procurement of low-carbon materials and products

The sustainability department of a company or government could set up an internal carbon fee system for the procurement of materials and products. The fee would incentivise purchasers and/or departments to choose low-carbon products more often and come up with innovative ways in the procurement process to motivate suppliers to offer lower carbon alternatives. The fee applicable to a specific product can also be used to support negotiations with suppliers with the aim of lowering the purchase price. The collected fee can be used reward the best performers, invest in sustainability projects internally, or financially support low-carbon projects from suppliers (Approach 7). Variations to this approach without fee collection include linking the carbon footprint of purchases to the remuneration of purchasers and/or departments through shadow pricing.

#### Key features

##### » Added value:



Incorporating climate impacts in decisions as a financial indicator



Strengthening brand value with climate leadership



Discovering new opportunities for low-carbon innovation



Providing an additional metric to assess suppliers



Making procurement and supply chain management a higher priority

##### » Influence:

- › Decisions related to internal processes

##### » Level:

- › Influence decisions in a decentralised way

##### » Prerequisites for optimal application:

- › Senior management support for an internal carbon fee
- › Insight into the carbon footprint of the suppliers' offerings
- › Detailed design of the processes related to the ICP approach, particularly how to deal with financial flows and accounting
- › Transparent rules on how the collected funds will be used

#### Key steps to apply

**Step 1** Calculate the carbon fee that would have to be transferred to the head office for each potential purchase based on its carbon footprint and the internal carbon price

**Step 2** Add the carbon fee calculated in Step 1 to the purchase price to determine the most financially beneficial offer

**Step 3** Distribute the funds that were collected as carbon fees from each purchaser or department to low-CO<sub>2</sub> projects or rewards

#### Illustrative example

An organisation decides to impose an internal carbon fee of 20 US\$/tCO<sub>2</sub>e on its internal departments. The fee applies to the carbon footprint of all materials the departments buy. One department needs to buy 25 tonnes of a product and has received two offers:

- » Supplier 1: US\$ 7,500 with the product having a carbon footprint of 5 tCO<sub>2</sub>e/tonne
- » Supplier 2: US\$ 7,800 with the product having a carbon footprint of 4 tCO<sub>2</sub>e/tonne

As part of the internal carbon fee system, the department would have to pay US\$ 2,500 (25 x 5 x 20) to the head office if it chooses supplier 1 and US\$ 2,000 (25 x 4 x 20) if it decides to go with supplier (Step 1). It would therefore be more financially beneficial for the department to choose supplier 2 who offers a lower carbon product, as its total costs would be US\$ 9,800 (7,800 + 2,000) compared to US\$ 10,000 (7,500 + 2,500) with supplier 1 (Step 2). The organisation adds the \$ 2,000 collected from the department to a central fund to pay for energy efficient lighting in its buildings (Step 3).

## APPROACH 3

### Adding a requirement that suppliers need to use ICP to calculate the carbon cost in their offering

The procurement department of an organisation could add a criterion that suppliers need to calculate the shadow carbon cost in their offering without it affecting the bid assessment. By providing suppliers with standard emission factors to use, the effort for suppliers to apply ICP is reduced. This approach would mainly serve as an engagement tool with the suppliers by raising awareness of their potential carbon costs that could arise from government policies and encourage them to reduce the carbon footprint of their products. With the carbon footprint translated in a monetary value, this would facilitate a better understanding of their climate-related financial risks and opportunities and increase the uptake of low-carbon solutions. At the same time, it allows the purchasing organisation to discover and resolve any potential legal issues when incorporating shadow carbon cost in the bid assessment, setting the stage for the application of more stringent ICP approaches for the assessment of suppliers (Approaches 4, 5 and 6).

#### Key features

##### » Added value:



Discovering new opportunities for low-carbon innovation



Providing an additional metric to assess suppliers



Enabling knowledge transfer throughout the supply chain

##### » Influence:

- › Decisions related to external suppliers

##### » Purchase category:

- › Leverage and strategic items

##### » Prerequisites for optimal application:

- › Communication of this new requirement well in advance before including it as an assessment criterion
- › Training and workshops to teach suppliers how to apply ICP in their offering

#### Key steps to apply

1. Add a criterion for calculating shadow carbon costs of the offered products and materials in the requirements to suppliers
2. Provide the carbon price and standard emission factors for products and materials that they need to use in the calculation of the shadow carbon costs
3. Engage with suppliers to draw lessons from applying ICP

#### Illustrative example

A government wants to change its streetlights to light-emitting diodes (LEDs) and is setting up a tender to obtain the best offer. In the tender requirements, a criterion is added that suppliers need to calculate the shadow carbon costs associated with the LEDs they offer (Step 1) using the internal carbon price and GHG emission factors provided (Step 2). In addition to allowing for the selection of the most economically efficient and sustainable bid, the ICP opened lines of engagement between the purchasing party and the suppliers (Step 3). Several suppliers who had not considered carbon costs before reported that the high price of the shadow costs led them to look at their own carbon costs from lighting and discovered additional electricity cost savings. Finally, their respective finance department got involved, exploring the use of ICP to evaluate the impact of carbon emissions on the company's bottom line.

## APPROACH 4

### ICP as an assessment method to score competitive tenders

The procurement department could include the shadow carbon cost (i.e. the internal carbon price multiplied by the associated GHG emissions) as an assessment indicator or qualification criterion to incentivise suppliers to offer lower carbon products. This could be combined with other factors to ensure optimising bids on GHG emissions does not impede performance on other (environmental) factors. The shadow carbon costs are taken into account in a qualitative manner instead of quantitatively as in Approach 5, although these costs can be subsequently linked to the financial assessment to achieve similar effects. Box 3 shows a practical example of this approach in addition to the illustrative example below.

#### Key features

##### » Added value:



Strengthening brand value with climate leadership



Discovering new opportunities for low-carbon innovation



Providing an additional metric to assess suppliers



Providing a more accurate estimate of the organisation's carbon footprint



Enabling knowledge transfer throughout the supply chain

##### » Influence:

- › Decisions related to external suppliers

##### » Purchase category:

- › Leverage items

##### » Prerequisites for optimal application:

- › Insight into the carbon footprint the products and materials suppliers offer
- › Knowledge about other environmental factors and an appropriate price to monetise them
- › Communication of this new requirement well in advance before including it as an assessment criterion
- › Training and workshops to teach suppliers how to apply ICP in their offering

#### Key steps to apply

**Step 1** Determine the weighting of GHG emissions with other environmental factors based on the price to monetise these factors and add these prices in the specifications to suppliers

**Step 2** Calculate the shadow carbon costs of the offers based on the carbon footprint and the internal carbon price, and combine these with other monetised environmental factors to determine the total environmental costs

**Step 3** Translate the total environmental costs into a score for the assessment of the offerings

#### Illustrative example

An organisation is holding a competitive bid where sustainability is part of the assessment criteria. The organisation includes an internal carbon price of US\$ 100/tCO<sub>2</sub>e to monetise the carbon footprint of each bid as a shadow cost. In combination with other monetised environmental factors such as water usage, energy usage and air pollution, the total shadow environmental cost determines the environmental score of a bid, whereby the total shadow environmental cost has to stay below US\$ 50 M (Step 1). The organisation receives three bids and adds the calculated shadow carbon costs to other environmental costs (Step 2):

- » Bid 1 has a shadow carbon costs of US\$ 15 M, and combined with other monetised environmental factors, a total shadow environmental cost of US\$ 30 M
- » Bid 2 has a shadow carbon costs of US\$ 20 M and a total shadow environmental cost of US\$ 40 M
- » Bid 3 has a shadow carbon costs of US\$ 30 M and a total shadow environmental cost of US\$ 60 M

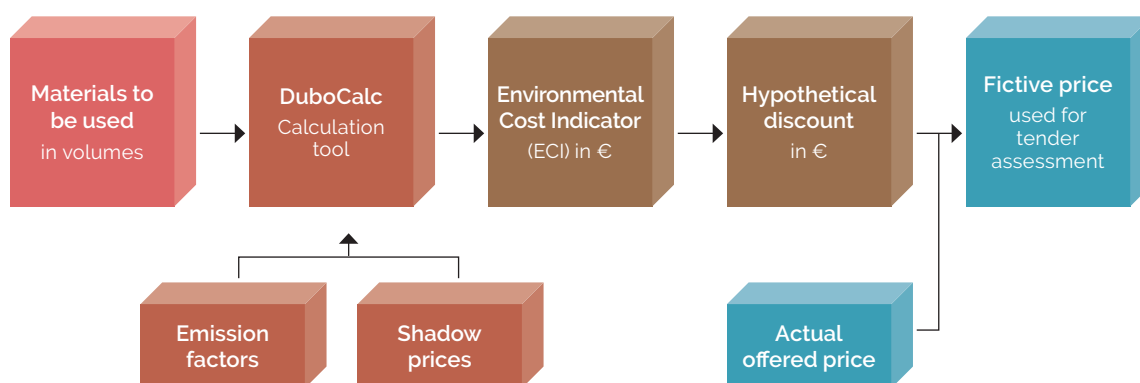
Bid 3 is disqualified because it exceeds the maximum threshold of US\$ 50M. For bid 1 and bid 2, the organisation translates the total environmental costs into a score used to assess the offering (Step 3). With the maximum environmental score being 10 at US\$ 0 environmental cost and 0 at US\$ 50M, bid 1 scores 4 ( $[50 - 30] / 50 \times 10$ ) and bid 2 scores 2 ( $[50 - 40] / 50 \times 10$ ) for the sustainability criteria. In this case, the internal carbon price essentially serves as a weighting factor, accounting for 50% of the environmental score.

#### BOX 4 The ICP approach of Rijkswaterstaat and ProRail in procurement decisions

The Dutch government agency Rijkswaterstaat has used a form of ICP similar to Approach 4 since 2010 in the procurement process of several large infrastructure projects. Rijkswaterstaat and the Dutch state-owned enterprise ProRail developed the calculation tool DuboCalc to incorporate the environmental impacts of products and materials used in their tender decisions.<sup>31</sup> Rijkswaterstaat applies it to tenders for ground-, road- and waterworks projects and ProRail uses the same approach for the procurement of various rail infrastructure projects. Offers with a low environmental impact receive a competitive advantage in the financial assessment of the tenders. This incentivised suppliers to explore options in lowering the environmental impact of their offering through changing their designs to use materials more efficiently or use materials with a lower carbon footprint. As a result, suppliers with offers that had a low environmental impact were often awarded the assignment.<sup>32</sup>

Figure 9 shows a schematic overview of how Rijkswaterstaat and ProRail uses ICP in the assessment of tenders. Suppliers need to first determine the amount of material used in their offer and enter this information in the calculation tool DuboCalc. DuboCalc subsequently monetises the impact of eleven environmental indicators, one of which is GHG emissions, related to the materials used using shadow prices and emission factors. The emission factors are based on life cycle analysis and for GHG emissions a shadow price of €50/tCO<sub>2</sub>e is used. By adding the shadow carbon costs to the shadow costs of the other ten environmental indicators, the Environmental Cost Indicator (ECI) is calculated. The ECI determines the hypothetical discount a supplier receives: the higher the ECI, the lower the hypothetical discount. This is generally not a one-to-one relationship as reducing one € of ECI is often linked to more than one € of hypothetical discount. The ECI related to the maximum hypothetical discount that a supplier can receive varies per tender. The hypothetical discount is then subtracted from the actual price offered to determine the fictive price. This fictive price is used in the financial assessment of the tenders to determine the most economically advantageous offer.

**FIGURE 9** Schematic overview of how ICP is used in procurement decisions by Rijkswaterstaat and ProRail



<sup>31</sup> DuboCalc, *What is DuboCalc?*, accessed 1 March 2019 at <https://www.dubocalc.nl/en/what-is-dubocalc/>.

<sup>32</sup> Rijkswaterstaat, *Duurzaam inkopen loont*, January 2017, <https://www.magazinesrijkswaterstaat.nl/zakelijkeninnovatie/2017/01/duurzaam-inkopen-loont>.

## APPROACH 5

### ICP as an additional price element in the financial assessment of competitive tenders

The procurement department of an organisation could add the shadow carbon cost (i.e. the internal carbon price multiplied by the associated GHG emissions) to the price of each bid as part of the financial assessment. The shadow carbon costs are therefore quantitatively linked to the financial assessment instead of qualitatively in Approach 4. Suppliers can directly see which lower carbon products and materials will provide them with a price advantage based on the carbon footprint compared to their conventional counterpart and the internal carbon price. This incentivises suppliers to include the most cost-effective low-carbon alternatives in their offer.

#### Key features

##### » Added value:



Incorporating climate impacts in decisions as a financial indicator



Strengthening brand value with climate leadership



Discovering new opportunities for low-carbon innovation



Providing an additional metric to assess suppliers



Providing a more accurate estimate of the organisation's carbon footprint



Enabling knowledge transfer throughout the supply chain

##### » Influence:

- › Decisions related to external suppliers

##### » Purchase category:

- › Leverage items

##### » Prerequisites for optimal application:

- › Insight into the carbon footprint the products and materials suppliers offer
- › Communication of this new requirement well in advance before including it as an assessment criterion
- › Training and workshops to teach suppliers how to apply ICP in their offering

#### Key steps to apply

**Step 1** Add the internal carbon price that needs to be used in the specifications to suppliers

**Step 2** Calculate the shadow carbon costs of the offers based on the carbon footprint and the internal carbon price

**Step 3** Add the shadow carbon costs to the price of each offering in the financial assessment to determine the most economical offering

#### Illustrative example

A real estate developer is planning to build new infrastructure. It wants to reduce the carbon footprint of its procured projects cost-effectively while incentivising construction companies to use low-carbon materials. Therefore, a price-based tender is launched that includes an internal carbon price of €150/tCO<sub>2</sub>e (Step 1). The developer then calculates the shadow carbon costs of the offers (Step 2):

- » Bid 1 offers a price of €200 M using material with 30,000 tCO<sub>2</sub>e, which has a shadow carbon cost of €45 M.
- » Bid 2 offers a price of €210 M using material with 20,000 tCO<sub>2</sub>e, which has a shadow carbon cost of €30 M.

The price and shadow carbon costs are added together, so bid 2 (€240 M) wins over bid 1 (€245 M) (Step 3). The developer only pays the price of €210 M of bid 2. Inclusion of shadow carbon costs ensures the bid with the best combination of value (construction price) and emissions intensity (shadow carbon costs) is selected.

## APPROACH 6

### Requiring suppliers to use ICP in their company

The procurement department of a company or government could encourage suppliers to account for and reduce their carbon footprint by requiring suppliers to use ICP in their company. The verification of ICP usage could, for example, be done as part of a wider supplier certification programme.

#### Key features

##### » Added value:



Strengthening brand value with climate leadership



Discovering new opportunities for low-carbon innovation



Providing an additional metric to assess suppliers



Enabling knowledge transfer throughout the supply chain

##### » Influence:

- › Decisions related to external suppliers

##### » Purchase category:

- › Leverage and strategic items

##### » Prerequisites for optimal application:

- › Communication of this new requirement well in advance before including it as a selection criterion
- › Training and workshops to teach suppliers how to apply ICP in their organisation
- › Clear guidance on how to verify that the ICP approach of suppliers complies
- › Sufficient bargaining power of purchasing organisation

#### Key steps to apply

**Step 1** Set clear guidelines in the requirements that the ICP approach of suppliers must meet

**Step 2** Support suppliers in getting their ICP approach approved by their management and rolling it out in their organisations

**Step 3** Select suppliers based on whether they have implemented ICP in their organisations

#### Illustrative example

A company has recently set an ICP approach and finds it is an effective tool for managing its climate-related financial risks. The company therefore decides to incentivise its suppliers to also use ICP. The company sets out clear requirements of its suppliers, and stipulates that suppliers need to use a shadow carbon price of at least US\$30/tCO<sub>2</sub>e on the expected direct GHG emissions and emissions from purchased energy (scope 1 and 2) of all investment decisions above US\$100,000 (Step 1). The suppliers need to add the shadow carbon cost calculated according to the requirements to total investment cost in the financial evaluation of each investment decision. Additionally, the company provides its suppliers with a brief to communicate the new requirements and benefits of using ICP to their managers and works with them to implement ICP (Step 2). Only suppliers that have taken these steps are considered for a contract or renewal (Step 3).



## APPROACH 7

### ICP to determine the level of financial support for low-carbon projects of suppliers

The procurement or sustainability department of an organisation could offer its suppliers financial support for low-carbon projects with the internal carbon price setting what the organisation is willing to pay for the GHG emissions reduced by its suppliers. Decisions could be made on a first-come-first-serve basis, through a special committee, or in a competitive bidding process. Transparent rules and technical assistance for suppliers will need to be established to ensure all suppliers have a fair chance for the funding. The supplier projects would not only lead to a reduction of the carbon footprint of the value chain but could also result in cost reductions in the short (e.g. energy cost savings) and long term (e.g. climate policy cost savings and economies of scale). An internal carbon fee system (Approach 2) could be used to collect the necessary funds.

#### Key features

##### » Added value:



Strengthening brand value with climate leadership



Discovering new opportunities for low-carbon innovation



Making procurement and supply chain management a higher priority



Enabling knowledge transfer throughout the supply chain

##### » Influence:

- › Decisions related to external suppliers

##### » Purchase category:

- › Strategic items

##### » Prerequisites for optimal application:

- › Allocation of a budget and resources to provide meaningful financial support to projects from suppliers
- › Clear communication and transparent rules on how suppliers can obtain funding
- › Strong working relationship with suppliers
- › System to ensure that the emission reductions from the supplier projects are actually realised

#### Key steps to apply

**Step 1** Determine level of financial support the organisation is willing to provide to projects and the size of the fund

**Step 2** Hold information campaigns to make suppliers aware of the possibility of obtaining financial support for low-carbon projects

**Step 3** Allocate funding to low-carbon projects according to prescribed rules based on the internal carbon price and amount of GHG emissions that will be reduced

#### Illustrative example

An organisation active in various markets has set a target to reduce its GHG emissions for purchased goods and services. It wants to decrease its carbon footprint and decides to stimulate its suppliers to find ways to reduce their emissions. The organisation has set aside US\$ 500,000 to financially support projects from suppliers against an internal carbon price of US\$ 30 per tCO<sub>2</sub>e reduced over the first two years of a project (Step 1). It holds a supplier event to communicate the availability of the new financial incentives (Step 2).

One of its suppliers that recently piloted a new production process that saves 10 gigawatt hours of electricity and 5,000 tCO<sub>2</sub>e per year. Due to the large capital costs for upgrading the plant, the supplier has submitted a proposal to the organisation for co-financing, and in return it would provide a discount of the product it sells to the organisation. Using its internal carbon price, the organisation agrees to contribute US\$ 300,000 to the project (US\$ 30 x 5,000 tCO<sub>2</sub>e x 2 years) as co-financing (Step 3).

## APPROACH 8

### ICP in a form of an emissions trading system among suppliers

The procurement or sustainability department of an organisation could set up an emissions trading system (ETS) for its suppliers. This would allow the purchasing organisation to enforce the GHG emissions reduction targets it has set for their supply chain emissions. Suppliers would be able to trade among themselves to determine whether it is cheaper to reduce the emissions through investing in emission reduction measures or buy carbon credits from other suppliers.

#### Key features

##### » Added value:



Incorporating climate impacts in decisions as a financial indicator



Strengthening brand value with climate leadership



Discovering new opportunities for low-carbon innovation



Providing an additional metric to assess suppliers



Providing a more accurate estimate of the organisation's carbon footprint



Enabling knowledge transfer throughout the supply chain

##### » Influence:

- › Decisions related to external suppliers

##### » Purchase category:

- › Strategic items

##### » Prerequisites for optimal application:

- › Good understanding of the carbon footprint of each product and material and their emission reduction potential
- › Strong support from management and suppliers for an internal ETS
- › Technical infrastructure to facilitate creation and trading of credits
- › Protocols for monitoring the emissions of each supplier

#### Key steps to apply

**Step 1** Determine the target emission intensity (tCO<sub>2</sub>e per unit) of each product and material that is purchased and communicate this to suppliers

**Step 2** Reward suppliers that are able to offer the product or material with a lower emission intensity than the target with carbon credits that they can sell to other suppliers

**Step 3** Mandate suppliers of products and materials with an emission intensity higher than the target to buy carbon credits from either other suppliers or the purchasing organisation

#### Illustrative example

A company wants to find the most cost-effective way to reduce its emissions in the supply chain, but has limited information about what measures can be taken by suppliers. It decides to implement a corporate ETS among its suppliers, where 1 carbon credit would be equal to 1 tCO<sub>2</sub>. For purchases of a specific product, the company has set a target that the carbon footprint of that product is capped at 20 tCO<sub>2</sub>/unit and communicates this to its suppliers (Step 1).

The company currently purchases the product from three different suppliers. The carbon footprint of their products determines whether the suppliers need to buy or can earn carbon credits:

- » Supplier 1: 20 tCO<sub>2</sub>/unit – no carbon credit purchase needed
- » Supplier 2: 19 tCO<sub>2</sub>/unit – earns 1 carbon credit per unit of product it sells to the company
- » Supplier 3: 23 tCO<sub>2</sub>/unit – needs to buy 3 carbon credits per unit of product it sells to the company

Supplier 2 earns one carbon credit by providing the product a carbon intensity that is lower than the target (20 – 19 = 1) (Step 2). For supplier 3 to continue to as an approved vendor for this product, it must buy credits from Supplier 2 or other suppliers that are included in the corporate ETS, or find ways to reduce its emissions (Step 3). Suppliers that do not comply with their obligations in the ETS would see their contract terminated.

## APPROACH 9

### ICP to determine a premium paid for lower carbon materials and products

The procurement department of a company or government could use ICP to send a market signal on the premium it is willing to pay for lower carbon materials and products. This can help inform investment decisions of suppliers in low-carbon alternatives. Similar to Approach 5, this approach allows suppliers to see the direct price advantage of offering low-carbon alternatives. The difference is that in this approach the full premium is directly paid to suppliers, while in Approach 5 the supplier has no certainty it will win the tender and, if it wins, only receives the additional cost of the low-carbon alternatives instead of the full premium. The premium could eventually be phased out as lower carbon alternatives become more competitive compared to conventional products through innovation and economies of scale.

#### Key features

##### » Added value:



Incorporating climate impacts in decisions as a financial indicator



Strengthening brand value with climate leadership



Discovering new opportunities for low-carbon innovation



Making procurement and supply chain management a higher priority

##### » Influence:

- › Decisions related to external suppliers

##### » Purchase category:

- › Bottleneck items

##### » Prerequisites for optimal application:

- › Good understanding of the emission reduction potential of purchases
- › Ability to accurately determine the carbon footprint of offered products and materials
- › Sufficient budget allocated for expected higher cost of lower carbon alternatives
- › Clear communication and transparent rules on how the premium will be determined

#### Key steps to apply

**Step 1** Establish a reference value for the carbon footprint of conventional products and materials that are being bought

**Step 2** Determine the internal carbon price that specifies how much the purchasing organisation is willing to pay extra for the products and materials with a carbon footprint below the reference value

**Step 3** Communicate the premium the organisation is willing to pay on top of the market price for lower carbon alternatives

#### Illustrative example

A manufacturing company finds that customers are increasingly demanding products with a lower carbon footprint, but sees that there are limited lower carbon alternatives for many materials it uses. It also sees the potential risk of price increases if a mandatory carbon pricing system kicks in for its suppliers. A key component of one of its best-selling products has a carbon footprint of 50 tCO<sub>2</sub>, and there are currently no alternative suppliers selling a lower carbon version of this product (Step 1). To meet the needs of its current customers and win potential new ones, the manufacturer is therefore willing to pay a premium for products that can deliver a reduction in the overall carbon footprint against an internal carbon price of €50/tCO<sub>2</sub> (Step 2).

The company communicates its willingness to pay a carbon premium to its suppliers (Step 3). As a result, a new challenger in one of the manufacturer's supply markets is considering producing a new component that would have carbon footprint of 48 tCO<sub>2</sub>. However, to do this, it would need to invest in new equipment, making the new component more expensive than existing ones. With the premium from the manufacturer, the new supplier knows the new component will be competitive, as long as the additional production costs do not exceed €100 (50 x [50 – 48]) per component.

## 6 | SETTING THE INTERNAL CARBON PRICE

After choosing which products and materials the ICP programme should apply to and how ICP should affect relevant procurement and/or management decisions, organisations should set a carbon price. The right price

will depend on what the ICP programme aims to achieve. Table 3 shows the carbon price considerations associated with the five key ICP objectives for procurement and supply chain management discussed in Section 2.<sup>33</sup>

**TABLE 3** Examples of how to set the internal carbon price depending on the ICP objective(s)

ICP	INTERNAL CARBON PRICE
Incorporating climate impacts into financial decisions	The carbon price should be at a level where it can <b>make climate change impacts relevant in the decision-making process</b> , improving the case for purchasing low-carbon products and materials. The price could be based on external sources that reflect the impact climate change has on society such as the social cost of carbon. The price could also be based on an analysis of the potential cost impact from climate policies and/or potential damages from climate change on the supply chain.
Strengthening brand value with climate leadership	The carbon price should be high enough to <b>influence purchasing decisions or supplier behaviour to lower the carbon footprint of purchased products and materials</b> . The price could be based on analysis of the carbon price required to trigger purchasers to choose a lower carbon product based on past decisions or technical-economic analyses of choices that can be made in the future.
Providing risk insight on carbon cost exposure in line with the FSB-TCFD recommendations	The carbon price should be at a level that <b>reflects the climate-related financial risks posed by climate policies and market developments</b> . The price could be based on price projections from climate policies such as carbon taxes, emissions trading systems or other policies that implicitly put a price on carbon. As more countries are strengthening their policies to move towards a low-carbon economy, the carbon price should also incorporate risks that could arise from changes to existing policies, introduction of new policies or changes in customer demand.
Discovering new opportunities for low-carbon innovation	The carbon price should be at a level that incentivises the organisation to <b>capitalise on climate-related financial opportunities presented by expected climate policies</b> to reduce costs and/or increase revenues. The price could be based on the carbon price needed to trigger purchasers to select lower carbon products and materials that save costs in the long term. The carbon price could also be based on what is needed for suppliers to investment low-carbon innovation based on consultations or techno-economic analyses of measures that reduce their carbon footprint.
Providing an additional metric to assess suppliers	The carbon price should be at a level that <b>the additional metric has a material impact in the assessment of suppliers</b> . The price could be based on an analysis of the carbon price needed to be distinguish suppliers based on the carbon footprint of products and materials they offer.

<sup>33</sup> For more details on price setting approaches, see Table 3 of Navigant, The Generation Foundation and CDP, *How-to Guide to Corporate Internal Carbon Pricing*, 2017.

Often organisations find that there is not one single “right” price, particularly organisations that want to use ICP to achieve multiple objectives at the same time. The price should be high enough to be able influence decisions to achieve the desired objectives. For procurement, the price should not only be high enough to influence decisions within the organisation, but also externally for its suppliers. At the same time, the price should be at a level that is acceptable to the organisation and its suppliers. The carbon prices will vary depending on the purchased product and material, the geography and the time horizon of the decision. Organisations can therefore choose to use different carbon prices to account for these variations, although this would increase the complexity of the ICP programme. Box 5 shows an example of considerations to take into account when setting the internal carbon price.

In addition, certain constraints on price setting may be applicable to some organisations due to existing legislation. For example, the EU Directive on public procurement<sup>34</sup> includes provisions on taking into

account product life cycle costs through tools such as ICP. Specifically, for public procurement of vehicles, a price in the range of €30-40/tCO<sub>2</sub>e (in 2007 prices)<sup>35</sup> used to be mandatory when monetising GHG emissions as part of the tender assessment although it has recently been abolished.<sup>36</sup> Such constraints may not be directly applicable to companies, but there are often other, less stringent, constraints that these organisations need to consider. For example, companies may want to align the carbon price with the price in their ICP programme that is already in place and is expanded to procurement, or they may wish to align with public sector standards in this area should these exist.

We therefore recommend testing the impact of different carbon prices on the procurement and management of various purchased products and materials. Furthermore, the selected internal carbon price(s) should be periodically evaluated and adjusted if needed to ensure the ICP programme continues to influence decisions as intended, as discussed in the next section.

BOX 2

BOX 3

**BOX 5 Illustrative example of setting the internal carbon price**

BOX 6

Continuing the illustrative example from Box 3, the real estate developer has decided to use ICP as an additional price element in the financial assessment of competitive tenders. Its ICP objective was to strengthen its brand value and make a low-carbon office park that is more attractive to tenants. To ensure building contractors have a sufficiently strong incentive to include low-carbon solutions in their offerings, the carbon price needs to be high enough. The carbon price should not be too high though to avoid exceeding the developer’s budget or create perverse incentives for low-carbon material that are not commercially viable. The developer therefore conducts a techno-economic analysis of a few key construction materials to determine the carbon prices needed for some of their lower carbon alternatives already on the market to become economically more attractive. The developer then chooses the highest carbon price from the analysis as the internal carbon price for its tender, so that bidders would have a strong incentive to include some of these lower carbon alternatives in their bid.

<sup>34</sup> EU Directive 2014/24/EU

<sup>35</sup> As specified in the Clean Vehicles Directive 2009/33/EC. The Directive was amended on 20 June 2019 to abolish the requirement to use a specific mandatory methodology and price for life-cycle costing. Member States have until 2 August 2021 to transpose this into national law.

## 7 | IMPROVING THE ICP PROGRAMME OVER TIME

The use of ICP in procurement and supply chain management will be new to almost all organisations. We therefore recommended keeping the ICP programme simple at the start and gradually expanding it through learning-by-doing. Starting with an ICP programme that may not deliver all of the set objectives from the beginning would still be much more effective in directing focus on the organisation's carbon footprint and engaging suppliers than doing nothing. It is therefore recommended to take a gradual and iterative approach to introduce ICP in procurement and supply chain management:

- » **Start with the most promising products and/or materials and expand gradually:** the carbon footprint data for purchased products and materials is not always available or reliable. In addition, the knowledge level of suppliers on GHG emissions and carbon pricing varies. ICP could be first applied to a small group of products and materials where suppliers are familiar with ICP and good data is available or build on existing emission databases.<sup>36</sup> By working together with the suppliers and introducing incentives to improve the carbon footprint data, ICP can be expanded to other products and materials. Various measures can be taken to ensure that the data is robust and trusted by all parties, for example by using internationally recognised standards<sup>37</sup> and/or having the data verified by a certified third-party.
- » **Gradually increase the influence of ICP in procurement processes and supply chain management decisions:** senior management,

purchasers and suppliers may be resistant or hesitant in applying ICP. Depending on the bargaining power dynamics, the purchasing organisation could directly impose ICP on its suppliers, but this may not lead to the intended outcomes. To create greater buy-in and acceptance of ICP, the ICP programme could start small in a pilot form, be introduced with voluntary participation, or with limited influence on procurement and supply chain management decisions. Designing the ICP programme to build on existing practices and standards will also help in lowering the administrative burden and create buy-in. Following greater information campaigns on the added value ICP could bring and training on the application internally and externally, the impact of ICP in decisions can then be gradually expanded. For public procurement, new legislation may need to be introduced to solidify the legality of using ICP.

- » **Setting the price(s):** Adopting a price that will significantly change the way an organisation operates, especially when it comes to potentially unknown impacts on its supply chain, is unlikely to be supported from the outset. However, concerns about setting the right price should not be a barrier to implementing ICP in general. By starting with a lower price, the organisation can allow purchasers and suppliers to familiarise themselves with the ICP programme and its potential impact. As ICP becomes more accepted, the price could gradually increase to enhance its impact in procurement and/or supply chain management decisions.

<sup>36</sup> For example, global databases such as EXIOBASE (<https://www.exiobase.eu/>), ecoinvent ([www.ecoinvent.org](http://www.ecoinvent.org)) or Eora ([www.worldmrio.com](http://www.worldmrio.com)), sector-specific database such as Agri-footprint ([www.agri-footprint.com](http://www.agri-footprint.com)) or Industry data LCA library ([simapro.com/databases/industry-data-lca-library](http://simapro.com/databases/industry-data-lca-library)), or country-specific databases such as the Dutch Nationale Milieudatabase ([www.milieudatabase.nl](http://www.milieudatabase.nl)) or French Agribalyse ([www.ademe.fr/en/expertise/alternative-approaches-to-production/agribalyse-program](http://www.ademe.fr/en/expertise/alternative-approaches-to-production/agribalyse-program))

<sup>37</sup> For example, GHG Protocol (<http://www.ghgprotocol.org/>), ISO/TS 14067 (<https://www.iso.org/standard/59521.html>), or PAS 2050 (<http://www.bsigroup.com/PAS2050>).

A plan should be made as to how the ICP programme could improve over time. The approach should be evaluated on a regular basis so that it remains fit for purpose. It is therefore important to **have clear monitoring protocols and enforcement rules** following the implementation of the ICP programme.<sup>38</sup> This is particularly important for ICP programmes where the financial incentive is put at the supplier side to ensure they deliver the products and materials with the carbon footprint as agreed upon.

Ultimately, setting up an ICP programme is a dynamic and iterative process. The initial designed may need revisions in the face of unforeseen practical implications or changing market circumstances. Organisations can start with simulation exercises or pilots on a small number of departments or geographies to test how the ICP programme performs in practice and iron out any teething problems before rolling it out on a wider scale.

BOX 2

BOX 3

BOX 5

#### **BOX 6 Illustrative example of how to improve an ICP programme**

Continuing the illustrative example from Box 5, the real estate developer has found that the use of ICP has not only decreased the carbon footprint of its office park, the contractor that was awarded the tender also offered one of the lowest price. The contractor was able to achieve this by coming up with innovative designs that used less construction material while still meeting all functional requirements. The potential advantage introduced by ICP made it worth for the contractor to invest additional resources thinking of ways to lower the carbon footprint of its bid. As a next step, the developer is considering expanding the use of ICP to all its infrastructure tenders. However, the contractors in housing construction are less familiar with monetisation of environmental factors and the emission data quality is poorer. The developer therefore first has to get these contractors on board with ICP and train them before it can issue similar tenders with ICP in the financial assessment.

<sup>38</sup> For more details on ICP implementation and monitoring, see Step 3 and 4 of Navigant, The Generation Foundation and CDP, *How-to Guide to Corporate Internal Carbon Pricing*, 2017.

## LIST OF ABBREVIATIONS AND ACRONYMS

	°C	Degrees Celsius
C	CO <sub>2</sub> CPU	Carbon Dioxide Carbon Pricing Unlocked
E	ECI ETS EU	Environmental Cost Indicator Emissions Trading System European Union
F	FSB-TCFD	Financial Stability Board's Task Force for Climate-related Financial Disclosures
G	GHG	Greenhouse Gas
I	ICP	Internal Carbon Pricing
L	LED	Light-emitting Diode
O	OECD	Organisation for Economic Co-operation and Development
T	tCO <sub>2</sub> e	Tonne Carbon Dioxide Equivalent





Navigant and The Generation Foundation, *Internal Carbon Pricing for Future-Proof Supply Chains*, January 2020. Prepared under the Carbon Pricing Unlocked partnership between The Generation Foundation and Navigant.

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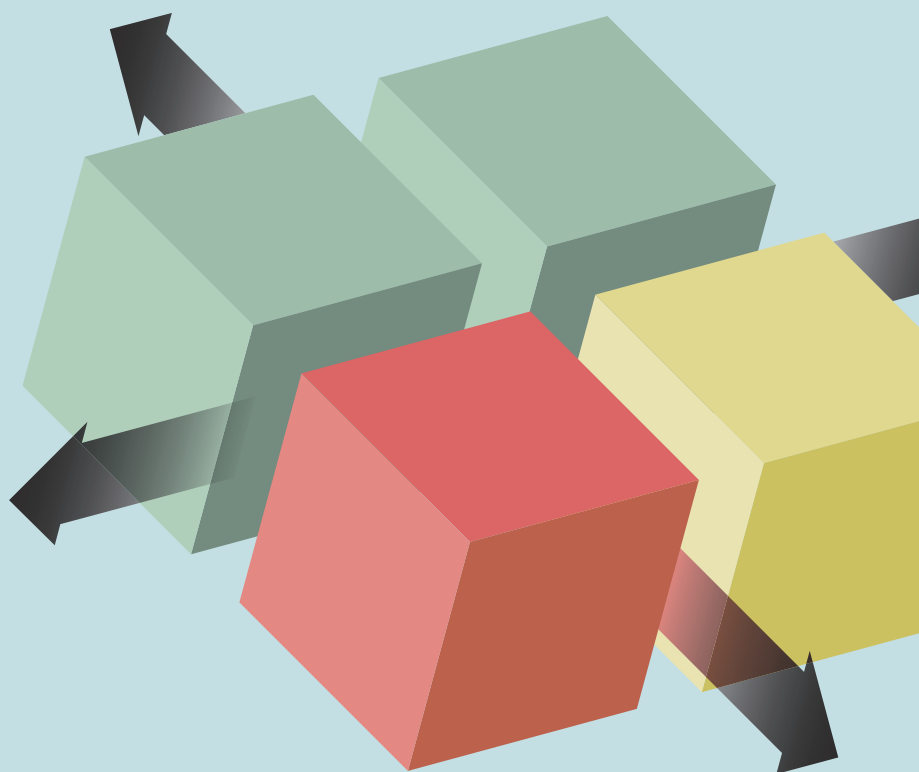
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