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Low Carbon Hong Kong: Supporting Business to Set Targets



Foreword

Climate change is one of the most urgent global challenges of our time. Decisions made today by Governments, businesses and communities, will have long-term consequences for our planet. Not taking meaningful and substantive action to reduce global greenhouse gas emissions today would commit our future generations to a world with a much harsher climate. The issue is that the effects of greenhouse gas emissions are long-lasting – it has been estimated that even after human-induced greenhouse gas emissions stop completely, it will take centuries for atmospheric temperatures to significantly decline.

In January 2017, in its efforts to support China's commitment to the Paris Agreement on climate change and to keeping the global temperature rise below 2°C, the Government of the Hong Kong SAR unveiled 'Hong Kong's Climate Action Plan 2030+', which sets out a carbon emissions intensity reduction target of 65-70% by 2030 compared to 2005.

From a business perspective, action taken to reduce carbon emissions is a responsible way to reduce the risks that climate change can bring to businesses, ranging from potential physical damage to our assets and disruption to our operations and supply chain, to reputational and regulatory compliance risks. However, what is more important is the business community's strength in seeing the potential opportunities that can arise while mitigating risks, especially in an entrepreneurial place like Hong Kong.

With this in mind, we aim to inspire businesses to both address risks and begin to explore potential business opportunities that can come from reducing their carbon emissions.

The Government identified potential co-benefits of carbon reduction as including efficient homes and productive offices, low carbon transport, less waste and more sustainable production, green lifestyles and green jobs, amongst others. It also introduced the '4Ts' to help deliver on their target and these potential co-benefits – setting Targets with Timelines and Transparent metrics to monitor progress that everyone can work Together to achieve.

Hong Kong businesses too can adopt the approach of setting targets with timelines and transparent metrics to reduce carbon emissions and do their part in combatting climate change, while adapting their business to flourish in a low or net zero carbon future. A steady transition towards a low carbon future involves long-term thinking and making the right strategic decisions now. Putting targets in place will guide businesses in making the decisions needed today to achieve a low carbon future.

We hope this report will be of assistance in helping Hong Kong businesses get on their way in developing forward-looking strategies to make their businesses fit for one of the most fundamental 21st century challenges in our lifetimes.



BEC Chairman

Richard Lancaster

Chairman,
Business Environment Council Limited

Foreword



**Chairman
BEC Climate Change
Business Forum
Advisory Group**

The Paris Agreement reached in December 2015 was a game changer that saw 197 countries enter into a legally-binding treaty to ensure an orderly transition to a low carbon world. For the first time in history, countries of the world agreed to a bottom-up process where they agreed to set fully transparent carbon targets in the form of Intended Nationally Determined Contributions (“INDCs”) in response to the rising threat from climate change. The Paris Agreement was also significant in the high level participation and engagement of businesses. This reflects the recognition of the important role played by businesses and the responsibility they have at this critical juncture.

BEC recognises the role of business in supporting and driving change towards a low carbon economy in Hong Kong. It is important that Hong Kong does its fair share considering its position and reputation as a world class city with high levels of professional expertise and businesses operating not only locally but regionally. Concerted and strategic action is vital to make this happen. Setting a carbon target is an important step in this direction.

This report sets out not only why business would want to set such targets but also explains the different methodologies for doing so. It sets out the global trajectories developed on an international level for 4 of HK’s key sectors: property, construction, transport and energy. It recognises the complexities of setting targets and explores solutions, and looks at what this process may involve for a company in terms of process, resource and governance.

At a workshop conducted by the BEC on setting carbon targets, participants highlighted benefits such as giving direction in support of long term strategy, showing leadership, driving innovation and ambition, and responding to stakeholder and investor interests. Many of these benefits are associated with the long term sustainability and performance of a business. Hence setting carbon targets ultimately is about developing a long-term robust business strategy, something which is simply good for business.

Developing long term plans and targets is not easy. Going forward BEC intends to support businesses work on this added dimension to business strategies. By doing so, we believe we will help businesses in Hong Kong manage the risks that arise as well as take advantage of the opportunities that change brings.

Eric Chong

Chairman,
Climate Change Business Forum Advisory Group
Business Environment Council Limited

Messages from Hong Kong SAR Government Officials

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I am proud that with the publication of Hong Kong's Climate Action Plan 2030+, an ambitious carbon reduction target has been set. To achieve the target, we must engage Hong Kong people including the business sector. This BEC report shows that the business sector takes climate change seriously and I am pleased it is looking to align its activities with the change called for by the Paris Agreement across the world.

KS Wong,
Secretary for the Environment

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BEC is an important stakeholder for Environment Bureau as it is an excellent forum for exchange of views and co-learning on many issues of mutual interest. It is also a forum that helps us to achieve our 4T objectives. We encourage everyone to set Targets with Timelines in their efforts to fight climate change and achieve sustainability, that we work hard to have the metrics to showcase our efforts so that results can be made Transparent, and that in the spirit of partnership, we should work Together to achieve better results. Thank you BEC for yet another report to rally the business community. We stand ready to partner with you and your members once more.

Christine Loh,
Under Secretary for the Environment

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To meet the goals in the Paris Agreement, there is an urgency to act now. It is not just a matter of scientists making reliable climate assessment and projection, or government laying down the policies and plans, but even more importantly stakeholders in the business sector need to work together to find innovative and viable business solutions for sustainable economic growth, such as climate-friendly business models or practices that drive the development of our society, as well as products and services that enhance climate awareness and encourage climate-friendly consumer and user behaviour. It is therefore most encouraging to see that the business sector recognises both the challenges and opportunities ahead associated with climate change and makes a conscientious effort to contribute to the targets set by the Paris Agreement.

CM Shun,
Director of the Hong Kong Observatory

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Messages from Business Leaders

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Hong Kong businesses can adopt the approach of setting targets with timelines and transparent metrics to reduce carbon emissions and do their part in combatting climate change, while adapting their business to flourish in a low or net zero carbon future. A steady transition towards a low carbon future involves long-term thinking and making the right strategic decisions now. Putting targets in place will guide businesses in making the decisions needed today to achieve a low carbon future.

Richard Lancaster,
BEC Chairman
CEO, CLP Holdings Limited

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For businesses to be future-proofed as well as to play their part in addressing climate change, they need to develop corporate strategies with the goal of being climate neutral. Cutting carbon footprint is not only good corporate citizenship, it is also good business. I believe Hong Kong's businesses with their history of entrepreneurship and innovation are well-placed to take up the gains as a result of the huge shift that is taking place in Asia and beyond.

Eric Chong,
Chairman of BEC Climate Change Business
Forum Advisory Group
President & CEO, Siemens Limited

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As the operator of a world-class hub airport, we recognise the challenges posed by climate change not only to people worldwide but to business continuity. We have collaborated with 53 business partners to set an airport-wide carbon reduction target and strategies for 2020. Looking forward, the Authority will explore setting long-term carbon reduction targets and we believe that this document plus the collaborative work planned will provide useful guidance and support for other businesses in setting their long-term carbon reduction roadmaps.

Wilson Fung,
Executive Director, Corporate Development,
Airport Authority Hong Kong

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The time is right for business to seriously engage in the setting of carbon targets - it is clear that 'business-as-usual' is no longer tenable given the evidence of climate change. Gammon welcomes this guidance as it will help us to set a new, longer term target for carbon reduction which in turn will help drive innovation and greater efficiency across our business.

Thomas Ho JP,
Chief Executive,
Gammon Construction Limited

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Messages from Business Leaders

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Being a company with over 150 years' presence in China, we take pride in our focus on the long term and being part of the fabric of Hong Kong society. We recognise that the world needs to act swiftly and decisively to mitigate climate change and are committed to support this through our new group-wide environmental sustainability strategy – THRIVE, focusing on addressing our material impacts, including progressive decarbonisation and building lasting climate resilience. We welcome the recommended approach of this report, to set targets and to develop strategies and plans to achieve those targets.

Mark Watson,
Head of Sustainable Development,
John Swire & Sons (HK) Limited

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Sustainability is central to Sino Group's business. As one of the leading developers, we strive to curate a better environment and greener future, and aspire to be part of the solution to sustainability. We make continuous efforts to make our properties more environment-friendly through eco-architectural planning and green management while partnering with the community. Vertical Green, relocation of T99 and Mission Green Top, some of our notable initiatives, exemplify social benefits and the role we can play. This philosophy is upheld in every aspect of our operation.

Thomas Lau,
General Manager (Landscape Architecture & Sustainability), Sino Land Company Limited

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This report outlines why and how businesses should transform themselves into resilient organisations to face and overcome emerging challenges.

Calvin Kwan,
General Manager - Sustainability,
Link REIT

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Sun Hung Kai Properties understands its responsibility and recognises the importance of timely action in combatting climate change. The Group aspires to achieve the Hong Kong government 40% energy-intensity reduction target in 2025 as compared to 2005. Ranging from the deployment of latest proven technologies to the development of manpower skills, all possible measures are taken to mitigate the potential risks emanating from changes in climate.

Sze Lai Susanna Wong,
Director of Planning & Operations,
Non-property Portfolio Businesses
Department, Sun Hung Kai Properties Limited

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Messages from Business Leaders

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A bank's biggest impact occurs indirectly, via its support and advice to customers. However, it is also important that we – like our customers – manage our direct impacts. We therefore reduce our own carbon footprint and analyse the climate risks to our business. We believe that setting carbon targets is key to improvement of climate performance in companies and we set ourselves the target in 2011, of reducing our annual carbon emissions per employee from 3.5 to 2.5 tonnes by 2020.

Malini Thadani,

Head of Corporate Sustainability Asia Pacific,
The Hongkong and Shanghai Banking
Corporation Limited

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Over the years, it is clear that the world's energy needs have evolved: the need is now for reliable and accessible energy that is also environmentally friendly. One of HK Electric's key strategies to achieve this in the immediate term is through a significant increase in the use of natural gas to replace coal for power generation. In the longer term, greater effort is required not only from the power companies but also the whole community including other business sectors to work towards carbon neutrality, the goal of the Paris Agreement. HK Electric is committed to playing its role and will be exploring how it can reduce carbon further in support of this initiative.

Chi Tin Wan,

Managing Director,
The Hongkong Electric Company, Limited.

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Contents

Chapter 1:	Why is it so important to support a maximum 2°C temperature rise?	9
	Supporting the Paris Agreement	10
	Business Helping Achieve Hong Kong's Commitments	11
	The Science: why a maximum rise of 2°C?	12
	What does the world need to do to keep within a maximum temperature rise of 2°C?	13
	How does this translate into action by different parties – countries and businesses?	14
Chapter 2:	What are the benefits to a business in setting 2°C targets?	15
	What are the benefits to an individual business in setting its own targets consistent with a maximum 2°C temperature rise?	16
	What's different and why is it now so important to be setting targets?	18
	Securing Investment: are the investor and insurance sectors driving change?	18
	Capturing Cost Savings and Business Opportunities	21
	Conclusions	22
Chapter 3:	What are the different methodologies for setting targets?	23
	Understanding the Different Methodologies	24
	Sectoral Decarbonisation Approach	24
	Other Options	25
	Identifying the Best Approach	26
Chapter 4:	Target-setting on a Sectoral Basis	29
	What do the sectoral trajectories look like?	32
	Power Generation - Electricity	32
	Service Buildings: Operations (energy usage)	33
	Buildings & Infrastructure: Construction	35
	Transport	37
	Summary	40
Chapter 5:	Setting targets: challenges and solutions	41
	Commencing the Process of Setting Targets	42
	Challenges and Solutions	43
	Making Things Happen in Your Company	47
Chapter 6:	Looking to the Future	50
	Further Reading	52
	Glossary	54
	Acknowledgments	55

CHAPTER

1

Why is it so important to support a maximum 2°C temperature rise?



Supporting the Paris Agreement

1. A good starting point is the Paris Agreement which sets out the international obligations of signatories. For the first time, this Treaty brings nearly all countries into common cause to take ambitious action to address climate change. 197 countries entered into this legally-binding treaty in December 2015. By 4 November 2016², the requisite number, 133 countries, had ratified it, enabling the Agreement to come into force. Many see it as a game-changer and seemingly the last chance of achieving an orderly transition in avoiding dangerous climate change.
2. Its central aim is “to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°Celsius”. The overarching objective to achieve this goal is net zero emissions in the second half of the century.
3. The Paris process was markedly different in asking countries to set out their carbon reduction commitments, which were submitted in the form of Intended Nationally Determined Contributions (“INDCs”) to reduce carbon emissions³. It was a bottom-up process, not a top-down process, with countries deciding independently what they could do. Commitments to date – the “Nationally Determined Contributions” if implemented, will take the world off the “business as usual” trajectory⁴, which is a temperature rise of about 6°C, and instead put the world on a trajectory for achieving approximately a 3°C rise in temperature. For this reason, the Paris Agreement also includes a commitment to review and deepen these Nationally Determined Contributions every 5 years, to ensure that we achieve the over-arching objective of a maximum temperature rise of 2°C.
4. The process of negotiation and implementation also engaged non-state players – such as businesses - more than before. Businesses pushed for a sufficiently ambitious Treaty.
“An agreement that is not ambitious enough in terms of its scope and reach could have potentially disastrous consequences. Runaway climate change could wipe out development gains of the last century in little more than a generation⁵.”
Paul Polman, Business Green 2015
5. Businesses acknowledged the need to act and set long term targets and recognized that governments cannot achieve this change on their own. Responsibility lies in part with them. This report reflects the business community’s recognition of responsibility in implementing and supporting the Paris Agreement.
“The Paris Climate Change Agreement provides a clear direction of travel to limit global warming to ‘well below’ 2 degrees Celsius, which will require reaching net zero emissions for all GHG gases within the next 50 years. It is imperative that carbon reduction pledges and targets set by the private sector, as well as by governments and regions, align with this pathway.”
Joe Franses, Coca Cola
6. In line with this thinking, BEC signed the Paris Pledge; committing to help achieve the overarching objective of the Paris Agreement. Through its Climate Change Business Forum Advisory Group, it concluded that proactive action by the business community would help shape practice and policy, as with the Fair Winds Charter⁶. This is the approach of BEC’s Climate Change Business Forum Advisory Group’s Low Carbon Hong Kong Project. Its goal is supporting business in setting carbon reduction targets for a maximum temperature rise of 2°C and working collaboratively on a sectoral level to set and achieve those targets.

¹ <http://bigpicture.unfccc.int/#content-the-paris-agreement>

² http://unfccc.int/paris_agreement/items/9444.php

³ http://unfccc.int/focus/indc_portal/items/8766.php

⁴ Long-term Climate Change: Projections, Commitments and Irreversibility, http://ar5-syr.ipcc.ch/resources/htmlpdf/WG1AR5_Chapter12_FINAL/, IPCC trajectory RCP 6.0.

⁵ <http://www.businessgreen.com/bg/interview/2436817/paul-polman-paris-is-just-the-start-rather-than-the-end-of-the-journey>

⁶ The Fair Winds Charter 2013, http://www.civic-exchange.org/materials/theme/files/FWC/FWC2013_en.pdf

Business Helping Achieve Hong Kong's Commitments

7. Hong Kong's commitments derive from China's Nationally Determined Contribution. As a key signatory to the Paris Agreement, China committed to: reduce the carbon intensity of its GDP, the amount of emissions per unit of economic output, by 60-65% by 2030 from 2005 levels; peak absolute emissions by 2030; and increase the area covered by forest, so that the forest carbon stock volume increases by around 4.5 billion cubic meters from 2005 levels.
8. For China to meet its Nationally Determined Contribution, different parts of the country and different sectors need to make their contribution. Hong Kong, as an affluent part of China with OECD levels of income, might be expected to do more than the figures above; with those areas with low incomes possibly doing less. This would be in line with the principle of "common and differentiated responsibility" enshrined in the Agreement.
9. On 20 January 2017, in its Climate Action Plan 2030+⁷, the Hong Kong SAR Government published Hong Kong's revised carbon reduction target for 2030, to play its part in implementing the Paris Agreement. The new target takes into account China's Nationally Determined Contribution. It is to reduce the carbon intensity of the economy by 65-70% by 2030 from 2005 levels, seemingly reflecting the principle of common and differentiated responsibility. This target builds on Hong Kong's previous 2020 target of reducing the carbon intensity of the economy by 50-60%. Assuming 2.5 - 3% annual growth in GDP, this means absolute reductions of 26-36% in Hong Kong's carbon emissions will be required.

"As decided by the Central People's Government, the Paris Agreement applies to the Hong Kong Special Administrative Region⁸"

10. This territory-wide 2030 target has been set largely on the basis of what companies and the Government consider possible with today's technology and practices as well as today's policy landscape. It builds on work with property companies to develop targets for 2030. As the Government has pointed out in its communications, the targets set will be kept under review and ratcheted up as necessary to help ensure the world is on the right trajectory for a maximum temperature rise of 2°C.
11. BEC intends that its Low Carbon Hong Kong Project assist in the achievement of the new 2030 target. Our project begins with the ultimate goal in mind: the overarching objective of the Paris Agreement of keeping the temperature rise below 2°C, which requires regular ratcheting up of targets to meet the mid-century goal of net zero emissions. By working in parallel with the Government to support businesses in setting and achieving the necessary targets, we will provide a framework for businesses to develop strategies for longer time horizons.

HK's Climate Action Plan: What does the Government expect of business in terms of targets?

"setting energy targets according to a timeline that would eventually dovetail with that of the Paris Agreement reporting timeline"

12. By working with BEC's Low Carbon HK, businesses will be ahead of the game. They will be better prepared to develop a long-term strategy that is in line with the Paris Agreement. We will look not only at targets and the plans that support them but consider how the public policy framework may need to be changed to enable targets to be met. As investment decisions made in the next 5 years will affect our 2050 infrastructure, we encourage businesses to focus now on the longer term.

⁷ Climate Action Plan 2030+, <http://www.enb.gov.hk/sites/default/files/pdf/ClimateActionPlanEng.pdf> Accessed 23 March 2017

⁸ Quote taken from Climate Action Plan 2030+teActionPlanEng.pdf Accessed 23 March 2017

13. This approach accords with the Government's 4 T principles of Targets, Timelines, Transparency and Together. It's Dialogue Platform for the building sector is an important part of working "Together" and we encourage business to take part in that process to affirm the sector's commitment to work together with the Government.

The Science: why a maximum rise of 2°C?

14. There is broad agreement across governments that the level of disruption caused by an average global temperature rise of more than 2°C (above pre-industrial levels), will be unmanageable.

15. The Inter-Governmental Panel on Climate Change ("IPCC")'s latest report, the 5th Assessment Report⁹ shows that once temperatures are over 2°C, the risks are much higher. It is only under the Representative Concentration Pathway 2.6 ("RCP 2.6") that it is considered likely that the temperature rise will stabilise and in fact fall in around 2100¹⁰.

16. That is not to say that a 2°C rise is nothing to worry about. The last time temperatures were 2°C higher, sea levels were in fact 5 – 10m higher¹². Sea level is likely to continue rising long after the atmospheric temperature is stabilized. A recent study¹³ suggests that whilst there is much uncertainty about the precise effects, there will also be significant differences between a rise of 1.5°C and 2°C. This will be in terms of heat-wave duration, rainstorm intensity and rate of sea-level rise (roughly a third faster). According to NASA¹⁴, tropical coral reefs would be wiped out, and the Mediterranean area's reduction in fresh water would double. Tropical regions would be affected the most with sea level rise, loss of agricultural productivity, and degradation of coastal systems. There would also be a disproportionately greater impact on certain staple crops. Low lying islands are particularly concerned about the impacts as many of them will lose most of their land surface area through being completely inundated. After considering these severe predictions, this Report suggests that the 2°C limit should be seen as a minimum ambition, and business should in fact aim for a lower rise.

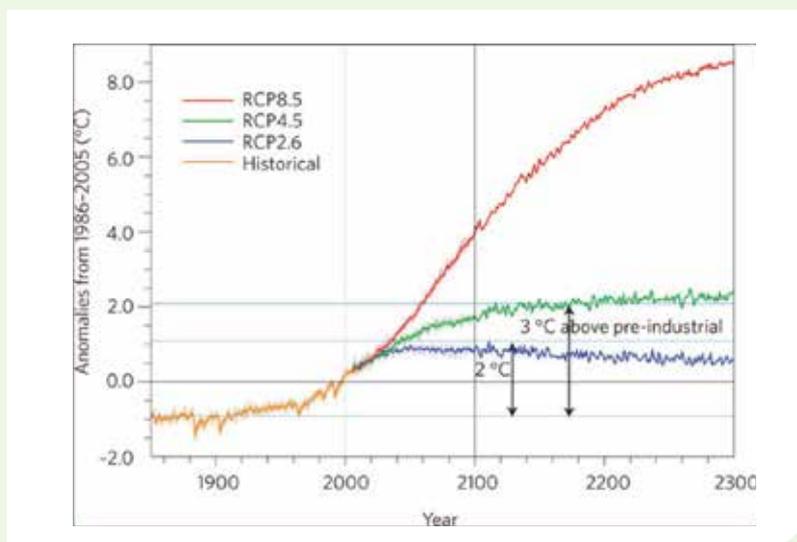


Figure 1:
Global Temperature
Projections for various
RCP Scenarios (IPCC
5th Assessment Report)

⁹ Fifth Assessment Report, Climate Change 2014 Synthesis Report, https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf

¹⁰ Fifth Assessment Report, Summary for Policy-makers p.8 "Warming will continue beyond 2100 under all RCP scenarios except RCP2.6."

¹¹ <http://www.nature.com/nclimate/journal/v2/n8/full/nclimate1529.html>. This graph shows the temperature rise from pre-industrial times with the arrows showing the temperature increase from that point (around 1800), from which the 2°C is normally measured.

¹² Chapter 13 Sea Level Change, IPCC AR5, The Physical Science Basis, IPCC, (2013), https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter13_FINAL.pdf Accessed 3 April 2017 ⁹Fifth Assessment Report, Climate Change 2014 Synthesis Report, https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf

¹³ European Geosciences Union (2016) <http://www.egu.eu/news/230/15c-vs-2c-global-warming-new-study-shows-why-half-a-degree-matters/> Accessed 23 March 2017

¹⁴ NASA (2016) <http://climate.nasa.gov/news/2458/why-a-half-degree-temperature-rise-is-a-big-deal/> Accessed 23 March 2017

	1.5°C	2°C	
Heat wave (warm spell) duration [month]			
Global	1.1 [1;1.3]	1.6 [1.4;1.8]	Tropical regions up to 2 months at 1.5°C or up to 3 months at 2°C
Reduction in annual water availability [%]			
Mediterranean	9 [5;16]	17 [8;28]	Other dry subtropical regions like Central America and South Africa also at risk
Increase in heavy precipitation intensity [%]			
Global	5 [4;6]	7 [5;7]	Global increase in intensity due to warming; high latitudes (>45°N) and monsoon regions affected most.
South Asia	7 [4;8]	10 [7;14]	
Global sea-level rise			
in 2100 [cm]	40 [30;55]	50 [35;65]	1.5°C end-of-century rate about 30% lower than for 2°C reducing long-term SLR commitment.
2081-2100 rate [mm/yr]	4 [3;5.5]	5.5 [4.8]	

Figure 2: An estimate of the differences between 1.5°C and 2°C on several physical phenomena¹⁵

What does the world need to do to keep within a maximum temperature rise of 2°C?

17. The 2°C limit would be achieved by keeping the amount of greenhouse gases in the atmosphere below a certain amount. The IPCC's latest report, the 5th Assessment Report¹⁶, published in 2014 says that to reach a "more likely than not" probability of staying within 2°C, we have to keep the concentration of CO₂ equivalent within 430–480 parts per million (ppm)¹⁷. To keep the temperature rise below 1.5°C, this concentration needs to be even lower. However, the latest direct measurements suggest that the current levels of CO₂ (more readily measured than CO₂ equivalent) are already over 400 ppm¹⁸, and that it is not long before we will hit these limits on our current steep trajectory.

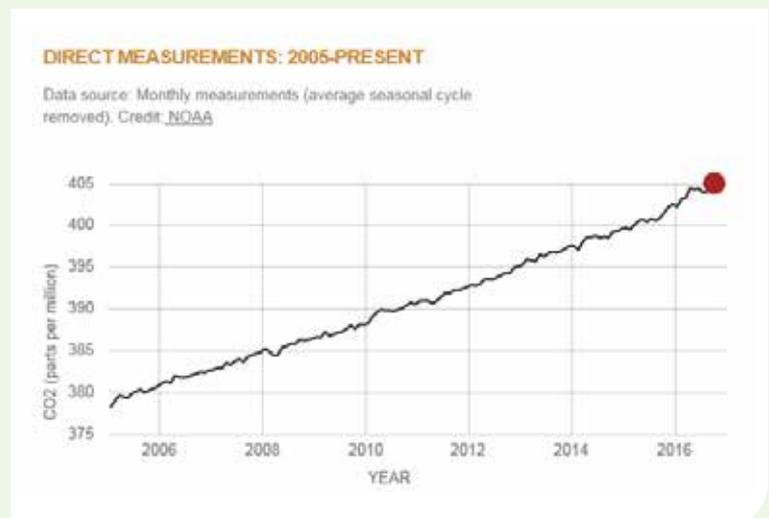


Figure 3: CO₂ concentrations in atmospheric, direct measurement

¹⁵ Adapted from Differential climate impacts for policy-relevant limits to global warming: the case of 1.5°C and 2°C, (2016), <http://www.earth-syst-dynam.net/7/327/2016/esd-7-327-2016-corrigendum.pdf>

¹⁶ IPCC Fifth Assessment Report, Climate Change 2014 Synthesis Report Summary for Policymakers, https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf (Accessed 23 March 2017)

¹⁷ In this report, this range is referred to as 450ppm as this is commonly done in other reports.

¹⁸ Carbon Dioxide Latest Measurement (2017), NASA, <http://climate.nasa.gov/vital-signs/carbon-dioxide/> Accessed [23 March 2017]

18. To stay within these atmospheric concentrations of CO₂, the world must keep aggregate CO₂ emissions within our carbon budget. This is the cumulative amount of CO₂ emissions emitted over industrial times – historic and future – which is consistent with the maximum atmospheric concentrations explained above. The budget corresponding to the 2°C limit has been estimated to be 2900 Gt CO₂¹⁹, though, as there is uncertainty to these estimates, this level should be even lower. As of 2013, the world’s cumulative anthropogenic emissions have amounted to approximately 1900 Gt CO₂, so the remaining budget before 2100 is 1000 Gt CO₂.

How does this translate into action by different parties – countries and businesses?

19. How do we decide how far and how fast each party must cut its emissions considering there are so many contributors to this carbon budget? Various studies and reports about how the world economy has to shift and how each sector must evolve examine this. One of these studies is the International Energy Agency’s 2°C scenario (“2DS”)²⁰ which has been heavily drawn upon in writing this report.

20. The 2DS lays out a global energy system pathway and an overall emissions trajectory consistent with at minimum a 50% chance of limiting the average global temperature increase to 2°C. The scenario is aligned with the IPCC’s 2°C (“RCP 2.6”) pathway, as laid out in its 5th Assessment Report. It is based on keeping the cumulative anthropogenic CO₂ emissions between 2015 and 2100 to 1 000 Gt CO₂.

21. It involves cutting all CO₂ emissions, including those from fuel combustion and industry process and feedstock emissions by almost 60% by 2050 (compared with 2013), with emissions declining further after 2050 until carbon neutrality is

reached. The 2DS recognises that across the world there are some sectors that will need to continue to grow²¹ and others that need to contract. The trajectories in emissions reductions for different sectors are explained in chapter 4.

22. We are making use of the 2DS in the Report because of the fairly well developed methodology based on this scenario, the Sectoral Decarbonisation Approach²², that helps translate global goals into sectoral and hence, business specific targets. This is also supported by the Science-based Targets Initiative which offers a helpful assurance process. Other relevant methodologies are explained in Chapter 3. A detailed explanation of what the SDA suggests for sector reduction is at Chapter 4.

23. The IEA 2DS is not the only low carbon scenario developed and it is based on only a 60% probability of keeping temperature rise below 2°C. Some criticism has been levelled against it for this and because it relies on a certain amount of carbon capture and storage (CCS), which is as yet an untested technology. Due to the uncertainty around the feasibility of large amounts of CCS uptake in the future, other scenarios recommend steeper reductions earlier in the century, so that net zero emissions are achieved earlier, rather than later.²³ Countries such as the UK have carried out a detailed analysis²⁴, by looking at what average per capita emissions should look like by 2050, and they have concluded that absolute emissions need to fall by 80% by 2050. Business groups such as the B-Team which is led by Richard Branson, the founder of Virgin PLC, and which includes companies such as Unilever and Broad Group China, also take the view that the target should be 80% reductions by 2050.

24. So it is not possible to give a definitive answer to what business and sectoral targets should be. But it is clear that acting in accordance with the IEA’s 2DS will not be an overachievement. In fact it may be that we should do more.

¹⁹ IPCC AR5 Climate Change 2013 Physical Science Basis Summary for Policymakers, (2013), http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf p27 Accessed (3 April 2017)

²⁰ IEA, 2016, <http://www.iea.org/publications/scenariosandprojections/> (Accessed 23 March 2017)

²¹ SBT Report – why is p.21 different from earlier figure.

²² Sectoral Decarbonisation Approach (SDA): A Method for Setting Corporate Emission Reduction Targets in line with Climate Science (2015), <http://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

²³ IPCC Fifth Assessment Report, Climate Change 2014 Synthesis Report Summary for Policymakers, https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf (Accessed 23 March 2017)

²⁴ Setting a target for emission reduction, Committee on Climate Change, <https://www.theccc.org.uk/tackling-climate-change/the-science-of-climate-change/setting-a-target-for-emission-reduction/> (Accessed 23 March 2017)

CHAPTER 2

What are the **benefits** to a business in setting 2°C targets?



1. Some businesses may decide to set targets to ensure their businesses play their part to mitigate climate change. Even this has a pragmatic angle: without a commitment to do one's own share, others may decide not to do theirs.
2. However, many businesses here and elsewhere will undoubtedly ask: "How do we explain this to our customers and to our shareholders in commercial terms? What is in it for us?" We have looked at a range of publications²⁵, talked to leaders in the field, and held a workshop on this topic to understand why businesses may wish to do so. This chapter sets out BEC's Climate Change Business Forum synthesis of why it is in the interests of companies to set targets and of course develop implementation plans.

What are the benefits to an individual business in setting its own targets consistent with a maximum 2°C rise?

3. Drawing on these two reports and various others (see Further Reading section of this report), BEC considers that the benefits of this forward-looking approach crystallise into 5 reasons, which range from risk management to seizing opportunities. We emphasize that strategic action today is not only about risk; it is also about opportunity.

a. Enhancing the reputation of your business:

"playing your part" or taking a leadership role in ensuring the Paris Agreement succeeds, by setting targets and supporting plans is increasingly important. It maintains and enhances your business' reputation with customers, investors, employees and Government, giving it the edge over others. We expect it will be a core part of the "**license to operate**" going forward. The leadership role that China is beginning to play in the climate change arena means that the action taken by companies in China, including Hong Kong, will be increasingly valued by the government of China, and be important in creating momentum globally.

b. Securing Investment: Investors are paying increasing attention not only to companies past carbon emissions but to their capacity to **withstand both climate change impacts and the financial risk** relating to the carbon intensity of their operations. This financial risk relates in part to the extent to which their business may be affected by a changing policy framework to avoid dangerous climate change. The launch of the G20's Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures ("the TCFD") was a landmark in terms of recognition of climate change as a financial risk and is expected to shift investor behaviour. The UN Environment Programme Financial Initiative (UNEP FI) report summarised below also reflects this direction of travel. It emphasizes the **fiduciary duty of fund managers** to take on board both the risks from an evolving regulatory framework, which may make highly carbon intensive businesses unviable, as well as the risks from changing behaviour of investors and customers. Importantly, one of the TCFD Report 4 core themes for recommended disclosure is metrics and targets related to carbon reduction, thereby encouraging visibility as to whether actionable targets have been set²⁶.

c. Stimulating ambition and innovation: Setting long term targets can help bring employees, clients and the supply chain along in a process of change and transformation. Business leaders all know the importance of setting a vision, which enables their staff to act purposefully with a clear goal in mind. **Ambitious targets can stimulate a culture of improvement, catalyse change and inspire innovation.** We come to this later, with the example of Japanese apparel company ASICS as explained on page 56.

²⁵ See Further Reading section of this report.

²⁶ Recommendations of the Task Force on Climate-related Financial Disclosure (2016), <https://www.fsb-tcfd.org/publications/recommendations-report/> (Accessed 23 March 2017)

d. Levering in efficiency/costs-savings:

Reducing carbon emissions generally means reducing energy usage, not only within the business but also within the supply chain. The evidence shows that substantial savings can be made even in the short term. For example, we have seen substantial reductions in hotels, office blocks, and factories in Hong Kong²⁷. We also see companies such as IKEA and Walmart working hard to reduce energy use in their supply chain. With the risk of rising energy costs (with carbon pricing on the agenda) and rising temperatures, **it is worth investing to ensure that operations are lean and efficient.**

Failing to take potential efficiencies into account creates a risk for a business' competitiveness now and in the future.

e. Strategic change to make the most of wider business opportunities:

There will be new business opportunities from the transition to a low carbon economy, not only locally but beyond, access to which is supported by the Belt & Road initiative. By aligning themselves with this transition and developing the necessary skills and expertise in advance, businesses can **position themselves to make the most of new opportunities that arise.**

Carbon targets can help businesses focus on developing longer term strategies that make the most of the opportunities from this transition.

4. BEC's workshop in June 2016 on methodologies for setting science-based targets led to some findings on the drivers which are shown below. They are consistent with the 5 key points that this report draws out.

Findings – BEC Workshop – June 2017

Benefits of Targets

- a. Giving **direction and supporting long-term strategy development:** this was CLP's rationale and experience in setting a long-term target for their electricity generation. Their target is a 75% reduction in carbon intensity across the Asia region by 2050. This gives direction to their business overall and has supported thinking on a wider regional level so that reductions in emissions can be made in those areas where it is most cost-effective to do so;
- b. The potential to **drive innovation and beget ambition** by setting ambitious targets: ASICS, a Japanese footwear company brought out the benefits from encouraging efficiency in its own operations and supply chain, and doing so involved a constant process of innovation. The SBTi framework was regarded as a "credible and ambitious framework that created momentum"
- c. **Showing industry leadership:** early and public commitment to targets was regarded as enabling the business to enhance its public image and make a difference to the wider economy.
- d. **Responding to stakeholder interest:** stakeholders wanted to see meaningful action on climate change. Energy efficiency and CO2 reduction is one of ASICS priority materiality issues.

²⁷ Various BEC workshops have involved presentation of evidence by experts.

What's different and why is it now so important to be setting targets?

5. The first change is a clear international climate change agreement that creates greater certainty as to the change that is needed, increasing business opportunities from the transition as a result. But perhaps of even greater importance is an emerging shift in terms of assessing the financial value of businesses. We highlight two main reports of importance in Hong Kong, that relate to the embedding of the Paris Agreement in practices for assessment of financial value and risk.

a. G20 Financial Stability Board Taskforce on Climate-related Financial Disclosures ("TCFD") Report

The establishment of this Taskforce was driven by Mark Carney, Governor of the Bank of England, to address what he perceived as a long-term systemic risk to financial markets. The Report is transformational as it says that climate change is a mainstream financial issue. It recommends in definitive terms that assessments of financial risk of an investment should take on board climate change: vulnerability to climate change impacts, as well as the policy framework required for a maximum 2°C temperature rise.

b. UNEP FI's Report on the Real Estate Sector (2016)²⁸

This sets out for the real estate sector the benefits of a strategic approach to climate change in order to maintain and also increase asset values, in the face of climate risks. Done properly, this involves much more than just setting targets.

6. Real value and robust risk assessments with regard to climate change are the new dimensions to financial practice that have emerged. These new dimensions are added drivers for businesses

to adopt a long term strategic approach to climate risk. Importantly, these reports don't simply set out why the market should factor this risk into their consideration, they provide the tools for doing so. As a result, investors and insurers are now better equipped to address this long-term systemic risk to financial markets by factoring these real values into their decision-making.

7. A shift in the policy framework to support a 2°C maximum is already underway in the region, notably with a carbon trading and stricter environmental regulation in China to be introduced in the near future.

Securing Investment and Insurance: are the investor and insurance sectors driving change?

8. We turn now to look more closely at the emerging dimensions of robust risk assessment and real value²⁹, and consider how far investors and insurers are acting to drive change.

Investors

9. To begin it should be noted that investors have been a driving force for some time in terms of Environmental, Social and Governance (ESG) practice. This is especially true for institutional investors with a high interest in protecting their reputation. European pension funds and sovereign wealth funds are notable examples, but even in Hong Kong we have family offices and "ESG funds" that take such considerations into account. More and more stock market indices give ratings to businesses which reflect their ESG performance. Hong Kong's SFC has given guidance that promotes systematic disclosure³⁰. CDP's framework helps ensure transparency as to climate change-related risk³¹, and other indices like MSCI also provide information on individual companies.

²⁸ UNEP FI (2016) <http://www.unepfi.org/fileadmin/documents/SustainableRealEstateInvestment.pdf> (Accessed 23 March 2017)

²⁹ Ibid.

³⁰ Consultation Conclusions on the Principles of Responsible Ownership (2016), <https://www.sfc.hk/edistributionWeb/gateway/EN/consultation/conclusion?refNo=15CP2> (Accessed 23 March 2017)

³¹ CDP, <https://www.cdp.net/en> (Accessed 23 March 2017)

10. BEC CCBF AG held a workshop in July 2016 to investigate the extent of this interest and the information needed to allow investors to take these considerations into account. Workshop findings included a developing interest on the part of a few Family Offices, and well-established policies by European and US banks as well as European sovereign and pension funds. A lack of good information on companies was a barrier to widespread consideration of company climate change policies.

Insurance Companies

11. Insurance is also likely to be a strong driver in the future as insurers begin to better understand the magnitude of climate impacts, and factor this into premiums and investment decisions³². Many of the large insurers and reinsurers are working to make sure premiums accurately reflect the new risks. The September 2015³³ speech by the Chair of the Financial Stability Board, Mark Carney that led to the TCFD was in fact targeted at this sector.

Task Force on Climate-related Financial Disclosures – Report and Recommendations

12. The FSB's identification of climate change risk to the financial system highlights the insurance and investment sectors as in need of enhanced information on companies to judge real value.

13. After a lengthy study and stakeholder engagement, the TCFD put forward a rigorous forward-looking reporting framework for companies and a method for investors to carry out a robust risk assessment.

14. It recommended in its Report published in December 2016³⁴ that companies include information about climate risk being incorporated in their mainstream financial filings against 4 themes. These are: governance, strategy, risk management and metrics & targets. It set out key principles as to how a business should report and the risk factors in relation to key economic sectors are described at length.

15. Guidance was developed on scenario analysis to enable risk management. It steers businesses to consider how they will perform in future scenarios – to in effect “stress test” their business and consider how well-adapted and resilient they are to climate risks. This facilitates the investors and companies to consider the risks as recommended by the Taskforce. This approach has been supported by leading figures in the finance industry in China³⁵.

16. The recommendation on metrics and targets critically underlines the importance of target-setting. The recommendation on using metrics in a way that enables comparisons within a sector is also important.

17. Importantly, the recommendations advise investors to weigh up the climate risk of a company, not on the basis of past performance but on whether there are clear forward looking plans and good governance structures to enact those plans. As a result, climate risk is not only taken out of the “reputational risk” basket and placed into the basket of “financial risks”, but the method proposed for assessing risk is different – being primarily forward-looking not backward-looking. This change underlies the need for setting carbon targets as part of a forward-looking plan.

³² The impact of climate change on the UK insurance sector, Bank of England (2015), <http://www.bankofengland.co.uk/prd/Documents/supervision/activities/pradefra0915.pdf> (Accessed 27 March 2017)

³³ Bank of England (2015) <http://www.bankofengland.co.uk/publications/Pages/speeches/2015/844.aspx> (Accessed 23 March 2017)

³⁴ Recommendations of the Task Force on Climate-related Financial Disclosure (2016), <https://www.fsb-tcfd.org/publications/recommendations-report/> (Accessed 23 March 2017)

³⁵ Ma Jun, Chief Economist, PBOC at BritCham, Hong Kong, Feb 2017

The Taskforce on Climate-related Financial Disclosures Report (2016)

The Report:

- systematizes and integrates the approach to climate risk – bringing both carbon mitigation and resilience/adaptation into the picture – for investors and companies;
- gives detailed and structured guidance on transparency by companies, to support informed investment and insurance decisions;
- provides a forward-looking scenario analysis methodology for assessing risk or carrying out “stress testing”; and
- recommends mainstreaming of climate risk reporting in the company’s financial filings.

Enhancing Asset Values: UNEP FI’s Sustainable Real Estate Investment – Implementing the Paris Agreement – “An Action Framework”

18. Following the Paris Agreement, the UNEP FI published an Action Framework for the real estate sector on implementing the Paris Agreement. It is recommended reading for the sector, bringing out the benefits of a strategic approach to climate change in terms of maintaining and increasing asset values. For those who may ask about the connection, hard targets in our view are a critical part of a company’s strategic approach, and this Framework brings out the importance of a strategic approach.
19. This Action Framework³⁷ starts one step back but is relevant to those businesses at the beginning of the journey – at stage 1 of setting targets. It sets out why the Real Estate sector should take ESG considerations into account in business decisions. It highlights the business reasons for doing so, such as by pointing to the relationship with asset values in many geographies and the negative perception of “brown assets”.
20. It links this realignment of asset values to:

- growing evidence that connects “green real estate” positively with investment fundamentals; including increased client demand, lower void lengths, lower obsolescence, reduced rates of depreciation, lower operational costs, and higher liquidity;
- recent data showing that green and energy certified office and residential buildings have a lower risk of mortgage default compared to that of non-certified properties’;
- tightened regulation, posing a real threat of regulatory obsolescence.

“There is growing evidence in multiple geographies that a climate- friendly and sustainable real estate sector can both preserve and increase asset value. Indeed, there is growing market, expert and academic evidence of an emerging correlation between green building characteristics and investment performance. Buildings, which do not have such characteristics, may in some cases suffer from ‘brown discounting’³⁸.”

21. The framework throws some light onto why it is important to set quantitative targets and think ahead. For example, it points to a 2-4% increase in energy efficiency in existing portfolios each year, and to 30-50% improvements in energy efficiency in new buildings. This creates risks for those portfolios which do not make such changes³⁹.
22. Drawing on this framework, target-setting should be seen as part of a broader strategy for implementing the Paris Agreement. The rationale given implicitly in the report range from meeting legal duties to social benefits. These are explained below:
- a. fiduciary duty: which is linked to the need for “directors” to show they have taken on board risk.
 - b. supporting productivity and socio-economic growth: through healthy buildings and jobs in energy efficiency retrofitting
 - c. opportunities to enhance investment performance

³⁷ Sustainable Real Estate Investment Implementing the Paris Climate Agreement: An Action Framework (2016), <http://www.unepfi.org/file-admin/documents/SustainableRealEstateInvestment.pdf> (Accessed 23 March 2017)

³⁸ UNEP FI p.8

³⁹ Ibid., p.8

Fiduciary Duty in the 21st century⁴⁰

'Fiduciary Duty in the 21st century', UNEP FI, PRI, UNGC and UNEP Inquiry 2015

Fiduciaries need to be able to show that they have identified and assessed the risks (to companies and to their portfolios). In the case of climate change, for example, this would require them to:

- Show that they have recognized relevant risks.
- Analyse how climate change might affect investment returns over the short, medium and long-term.
- Explicitly manage the risks, and not assume that the risks are automatically managed by other risk management strategies.
- Interrogate and challenge the individuals or organisations (e.g. investment managers, companies) to ensure that these risks are being effectively managed.
- Establish processes that enable them to demonstrate the actions they have taken.

Capturing Cost Savings and Business Opportunities

23. The Paris Agreement by creating greater momentum and certainty as to the direction and speed of travel, opens up business opportunities, for example relating to energy management and developing new products and services. A competitive edge can be gained from creating a leaner more efficient business, by reducing emissions internally and across the supply chain, or by becoming a responsible business focused on the wider social interest so strongly dependent on the environment.

24. Here are two quotations from international companies which have sought to create and obtain this value.

Unilever⁴¹

Eco-efficiency isn't just about reducing our environmental footprint - it also makes good business sense. We collect cost information via our Environmental Performance Reporting system for all manufacturing sites and for each energy type. This enables us to measure the financial benefits of our eco-efficiency programme." Since 2008, reducing our energy use has contributed to cumulative supply chain cost avoidance of over €600 million: around €330 million in energy, around €245 million in materials, around €50 million in water, and around €15 million in waste disposal. The financial benefits are clear and reinforce the business case for sustainability"

British Telecom⁴²

"This year we've achieved an 81% reduction in our climate stabilisation intensity (CSI) measure compared to its 1996/97 baseline, achieving the 80% target we set for 2020.

We helped customers avoid an estimated 7.6mill tonnes of CO2 emissions in 2015/16. And we generated £3.6bn revenue from the products and services that are helping them do it. That's a 16% increase over the last two years."

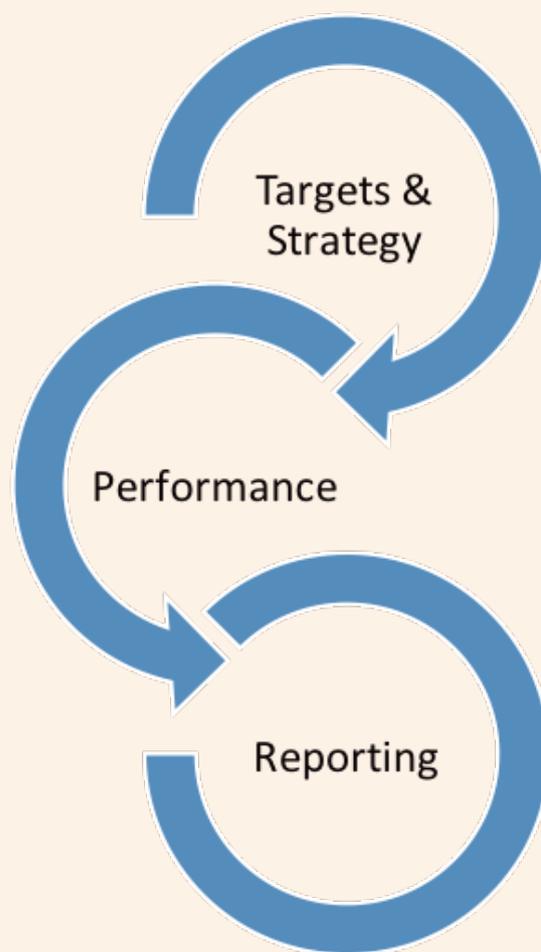
⁴⁰ Fiduciary Duty in the 21st Century, UNEP FI (2015) http://www.unepfi.org/fileadmin/documents/fiduciary_duty_21st_century.pdf (Accessed 23 March 2017)

⁴¹ Reducing emissions in our operations, Unilever (2016) <https://www.unilever.com/sustainable-living/the-sustainable-living-plan/reducing-environmental-impact/greenhouse-gases/Reducing-emissions-in-our-operations/> (Accessed 23 March 2017)

⁴² Delivering environmental benefits, BT PLC (2016) http://www.btplc.com/Purposefulbusiness/Deliveringourpurpose/-Downloads/2016/2016_BTDoP_Environment.pdf (Accessed 23 March 2017)

Conclusions

25. BEC CCBF AG has concluded that together these different aspects of the system – from recommendations on forward-looking action by business and disclosure in mainstream financial filings in the TCFD Report to an interest on the part of business globally in making firm commitments - reflect an emerging paradigm. The new paradigm involves a proactive future-looking strategic approach to address risk and capture the opportunities of a changing economy. It is about factoring the impact of this action into the value of a business. Critically, the tools to facilitate this have now been developed and will we expect continue to be improved upon.
26. Targets in line with a maximum temperature rise of 2°C are a key component of such future-looking strategic behaviour, though they are just part of the picture. They help with the development of a sufficiently ambitious business strategy. They not only support effective reporting by providing clear KPIs or smart objectives for companies to report against, but they focus minds on what is good performance in these changing circumstances.



CHAPTER 3

What are the different methodologies for setting targets?



1. Setting targets related to these global goals by business is a complex task as it involves working out what needs to be done in a particular sector or country and then for the particular business. There are variations from country to country, dependencies between sectors, and many uncertainties for example, in technological development.
2. Specific methodologies for setting these targets have been developed over the past few years, including by a coalition of NGOs, which set up “the Science Based Targets Initiative” (“SBTI”)⁴³. This is the best known initiative for this purpose, and widely respected. However, we do not focus this report on that initiative in an exclusive way – though we recognise its importance in developing a common methodology and an assurance process – but on science-based targets in a general sense.
3. By “science-based targets”, we mean targets that are in line with the timing and level of decarbonisation required to keep the global temperature increase below 2°C compared to pre-industrial temperatures. In practice, this means setting targets with regard to the long term objective of the Paris Agreement of net zero emissions by 2050.
4. The most widely used of the “science-based” methodologies, with 264 businesses signed up as of May 2017, is the Sectoral Decarbonisation Approach⁴⁴ (SDA). This defines trajectories for key business sectors towards the point of net zero.
5. The trajectories were developed by looking at the global carbon budget combined with the International Energy Agency’s 2 Degree Scenario (2DS) as set out in its Energy Technology Perspectives (ETP) report⁴⁵. The 2DS⁴⁶ sets out for different sectors, based on the global least cost approach of keeping our emissions within these limits, by how much and by when the carbon intensity and the absolute emissions need to fall.
6. It is the level of activity plus carbon intensity of each sector that will govern the actual carbon reductions achieved in a sector or a business. Both are critical to actual emission reductions. The 2DS is underpinned by assumptions about the feasibilities and costs of emissions reduction in different sectors whilst accounting for growth in activity in different regions⁴⁷.
7. The view taken by many experts is that this approach is best suited to relatively homogeneous sectors with good activity and emissions data including: power generation, industry, transport and commercial buildings. In the next section this methodology is described more fully. For some sectors such as construction, trajectories are still in development. In some other sectors, heterogeneous businesses (with several activities) in particular, the sectoral decarbonisation methodology may be less useful and is more complex to use as targets cannot be expressed as a single indicator. The sectoral methodologies are explained in more detail in [chapter 4](#).

Understanding the Different Methodologies

Sectoral Decarbonisation Approach

4. The most widely used of the “science-based” methodologies, with 264 businesses signed up as of May 2017, is the Sectoral Decarbonisation Approach⁴⁴ (SDA). This defines trajectories for key business sectors towards the point of net zero.

⁴³ Science Based Targets Initiative, (no date) <http://sciencebasedtargets.org> (Accessed 23 March 2017)

⁴⁴ Sectoral Decarbonisation Approach, A Method for Setting Corporate Emission Reduction Targets in line with Climate Science (2015), <http://sciencebasedtargets.org/SDA/> (Accessed 23 March 2017)

⁴⁵ Energy Technology Perspectives IEA (2014) <https://www.iea.org/publications/freepublications/publication/energy-technology-perspectives-2014.html> (Accessed 23 March 2017)

⁴⁶ TIMES model 2 March 2017) (2005) <https://www.iea.org/etp/etpmodel/energyconversion/> (Accessed 23 March 2017)

⁴⁷ Sectoral Decarbonisation Approach (SDA): A Method for Setting Corporate Emission Reduction Targets in line with Climate Science (2015), <http://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf>, p.73 (Accessed 23 March 2017)

Other Options

8. The 4 options below fall into the SBTI's 3 broad categories, sector-based, economic-based and absolute-based methodologies:
 - > the **McKinsey/CDP 3% solution** – absolute based which, similar to the SDA involves an assessment of cost of carbon savings,
 - > the **Mars Method** – a straightforward linear approach in terms of absolute emissions,
 - > the **BT – CSI approach** – an economic-based approach, and
 - > the **C-Fact approach** – helps derive intensity reduction targets, aimed at achieving absolute reductions.

There are other methodologies to be found on the SBTI website: the Centre for Sustainable Organisation's (CSO) approach and Greenhouse Gas Emissions per Unit of Value-Added (GEVA), which are what the SBTI calls "economic-based approaches".

9. **The McKinsey/CDP 3% solution**⁴⁸: developed by McKinsey and CDP in 2013, with business partners. It proposed that the US corporate sector reduce its emissions collectively by 3% a year. The report provides a tool for each company to work out its own emissions reductions using a "Carbon Target Profit Calculator"⁴⁹, which helps companies set targets with regard to carbon and costs savings. This approach takes into account sectoral opportunities and costs savings, but it is primarily US-focused and the time horizon is 2020, which is relatively short and no longer accepted by the SBTI. It was estimated that this approach would drive \$190bn net present value savings in 2020 for the corporate sector in the USA.

10. The **British Telecom ("BT") – Climate Stabilisation Intensity approach**⁵⁰: This is based on a 2008 study by CDP for BT which looked at the gulf between business pledges on carbon reduction and what is needed to avert catastrophic climate change. It took the view that standard intensity targets could mask absolute increases in emissions, and absolute targets did not take into account growth (for example capturing market share) or decline in a company's contribution to GDP. Working from the carbon budget that is consistent with 2°C, a required 50% absolute reduction in global emissions by 2050, and projections of GDP growth, BT came up with the objective to reduce its emissions per unit of value-added by 80% by 2020. It concluded that it needed to make a 9.6% pa reduction in global emissions per unit of GDP by 2050 to achieve this taking on board its expected growth.

11. **The C-Fact Approach**⁵¹: This has been developed by Autodesk⁵² and is a method for setting an annual carbon intensity reduction target that relates to a company's contribution to GDP in 2050. This means that a company's expected increase in its share of GDP needs to be reflected in its target, with a smaller reduction in absolute emissions if its share of GDP increases. It also uses the IPCC's recommended target for climate stabilisation for 2050, with an 85% absolute reduction by 2050 for industrialised countries and 50% for developing countries. It recommends a 4 stage method of calculating a carbon intensity reduction rate, committing for a timeframe; translate this into annual corporate and departmental absolute reduction rates, and adjust at year end.

⁴⁸ The 3% Solution: Driving Profits Through Carbon Reduction, CDP (2013) https://c402277.ssl.cf1.rackcdn.com/publications/575/files/-original/The_3_Percent_Solution_-_June_10.pdf?1371151781 (Accessed 23 March 2017)

⁴⁹ Carbon Target and Profit Calculator, WWF (2016) <http://www.worldwildlife.org/pages/carbon-target-and-profit-calculator> (Accessed 23 March 2017)

⁵⁰ Climate Stabilisation Intensity Targets, BT PLC (no date) https://www.btplc.com/Purposefulbusiness/Energyandenvironment/Our31methodology/CSI_Methodology.pdf (Accessed 23 March 2017)

⁵¹ A Corporate Finance Approach to Climate-Stabilizing Targets (/Our31meth Autodesk (2009), http://sciencebasedtargets.org/wp-content/uploads/2014/09/greenhouse_gas_white_paper000.pdf (Accessed 23 March 2017)

⁵² Methods, Science Based Targets, (no date), <http://sciencebasedtargets.org/methods/> (Accessed 23 March 2017)

12. **The Mars Method**⁵³: Mars, the food and drink company, took global GHG emissions, applied theoretical reductions and scaled this down linearly to apply to their business. It is a straightforward approach. It says that the world is at ~35 GT/yr and needs to come down 80% by 2050; Mars is ~14 MT and therefore needs to come down 80% too. The merit of this approach is its simplicity - if everyone followed it, the world would achieve an 80% reduction. Mars consider this to be their “fair share”. However, this doesn’t take on board the differences between sectors or potentially greater allowances for emissions in the developing world to reflect their lower historical emissions.

13. Another approach to target-setting which may arrive on the radar of companies in 2017 is contained within the **Task Force on Climate-related Financial Disclosures (“TCFD”) Recommendations**⁵⁴. Included within this set of 4 recommendations is a section on metrics and targets (p.13). The Task Force recommends that organisations describe their key climate-related targets such as GHG emissions, water usage, and energy usage. It is recommended that in describing their carbon target, organisations should consider including:

- whether the target is absolute or intensity based
- time frames over which the target applies
- base year from which progress is measured
- key performance indicators used to assess progress against targets

14. Although it does not state how these targets are to be set, it is suggested that this may be done through a process of risk assessment and scenario analysis. This involves asking the question of how the organization would fare under a 2°C scenario with relevant policies in place. A highly carbon intensive organization will be at risk as a result of future policy measures such as regulations and carbon prices. Organisations are expected to describe the methodologies used to calculate targets and measures. Though this is a

rigorous approach, it is different from the approaches focused on achieving no more than a 2°C temperature rise.

Identifying the Best Approach

15. What the “science-based approaches” have in common is that they are based on: the notion of a “carbon budget”, the maximum amount of cumulative GHG emissions that the world must keep within; the extent to which emissions must fall, by 2050 or earlier, under the relevant scenario (eg RCP 2.6 or 2DS); and how to allocate those remaining allowable emissions across sectors and businesses. The SBTi seeks to formalize these approaches and provide guidance and an assurance process for putting such targets in place.

16. The approaches developed are essentially either related to reductions in absolute emissions or in intensity. Both these approaches have their problems. The former does not take into account a growth or decline in market share. The latter, though improved through the BT and C-Fact methodologies, are based on an intensity reduction to achieve an absolute-reduction end point. That carries the risk that all companies overestimate an increase in market share and under-estimate the intensity reduction needed.

17. Though we cannot recommend a particular methodology for all businesses, this report focuses on the SDA which we consider to be most helpful for Hong Kong’s business sectors. It is distinctive in looking at different sectors to establish the least cost way of achieving the required end-point across the global economy. Considerable work has been done to provide a set of global sectoral trajectories for these key sectors, based on the IEA’s 2 degree scenarios. It looks at both absolute emissions reductions and intensity reductions. Therefore, it provides an almost ready-made set of trajectories for companies around the world to use. It does not cover all sectors but it covers a substantial number.

⁵³ *ibid.*

⁵⁴ Recommendations of the TCFD, (2016), https://www.fsb-tcf.org/wp-content/uploads/2016/12/16_1221_TCFD_Report_Letter.pdf (Accessed 23 March 2017)

18. Property developers and managers, the transport and the power sector can draw heavily on it to set targets in accordance with the principle of the least cost mitigation. Construction companies are different because there is no specific sectoral decarbonisation trajectory in place. As with heterogeneous businesses, the sector can however still make use of the SDA to help develop targets.
19. We propose an on-going process of working collaboratively within key sectors to develop company specific targets. There is value in a

common approach within sectors and in collaboration with related sectors, combined with common metrics to measure progress, because that will make it easier to chart progress across the board.

20. In the next chapter, we explain this particular methodology and how it works, and what the methodology suggests for key sectors in Hong Kong, including how it could be adapted for the construction sector, with a focus on construction materials.

The Science-based Targets Initiative

This joint initiative of CDP, UN Global Compact, WRI and WWF has developed an approach for setting targets⁵⁵, which takes on board a range of methodologies.

“The initiative aims to lift corporate ambition and help businesses pursue bolder solutions to climate change. It supports companies to set emission reduction targets in line with what the science says is necessary to keep global warming below the dangerous threshold of 2 degrees. This will send a clear signal to policymakers that industry is committed to playing its part in decarbonizing the economy and will inspire other companies to move to ensure their future resilience. Our aim is that by 2018, science-based target setting will become standard business practice and corporations will play a major role in closing the emissions gap left by country commitment”

It categorises the available methodologies as shown below:

Lesson 5: SBTi Criteria and Recommendations : Scope 1 and 2 Targets Ambition

Absolute-based

- Linear approach/ absolute contraction
- Corporate Finance Approach to Climate-Stabilising Targets (C-FACT)

Economic-based

- Greenhouse Gas Emissions per Value Added (GEVA)
- Carbon Stabilisation Intensity (CSI)
- Context-based carbon metric (CSO)

Sector-based

- Sectoral Decarbonization Approach (SDA)
- 3% Solution

⁵⁵ About us, Science Based Targets, (2017), <http://webcache.googleusercontent.com/search?q=cache:-dI9X95Ud0JAJ:sciencebasedtargets.org/about-us/> (Accessed 23 March 2017)

Worked example: Autodesk Approach

Commit to setting your company on track for climate stabilization relative to your company's contribution to global GDP, by employing following steps:

A: Calculate Your Company's Base-Year Carbon Footprint

If you have completed a carbon footprint calculation for more than one year, select the earliest year for which you feel confident about the data and for which you feel the boundaries will remain relevant in the future. *Autodesk's base-year is 2009 and its base-year carbon footprint is 83,073 metric tons*

B: Calculate Your Company's Contribution to GDP

Contribution to GDP is the best universally available measure of the value added by a company to the economy. A good proxy for a company's contribution to GDP is Gross Profit (commonly defined as revenue minus cost of goods sold). Similar to GDP at the economy level, Gross Profit at the company level, measures total sales less the value of intermediate outputs.

Autodesk's contribution to GDP (as measured by its Gross Profit) in Fiscal Year 2009 was US\$2.1 billion

C: Calculate Your Company's Carbon Intensity Ratio (A ÷ B)

Divide your Carbon Emissions in the Base Year by your Contribution to GDP *Autodesk's carbon intensity ratio for fiscal year 2009 was 0.04 kg CO2/\$ GDP contribution*

D: Forecast Your Company's Contribution to GDP

Use recognized financial analysts' research to forecast Gross Profit for the short term. Use a steady-state growth rate and target Gross Margins to estimate Gross Profit for the long term. Cite your specific sources in communications related to the target.

E: Use 2050 Climate Stabilization Target to Derive Carbon Intensity Reduction Rate

Use IPCC recommended reduction target for climate stabilization for 2050 (that is, 85 percent absolute reduction from current levels for industrialized countries and 50 percent for developing countries). Calculate the annual Carbon Intensity Reduction Rate at which your Carbon Intensity Ratio must decrease to achieve that 2050 goal. It only needs to be done once. The derived carbon intensity ratio would then remain unchanged for the commitment time frame.

Autodesk's carbon intensity reduction rate is 9.08 percent year-over-year, based on its financial projections and starting point of Fiscal Year 2010

http://sciencebasedtargets.org/wp-content/uploads/2014/09/greenhouse_gas_white_paper000.pdf

CHAPTER 4

Target-setting on a Sectoral Basis



1. This Chapter explains:
 - a) The Sectoral Decarbonisation Approach (“SDA”) and how it was developed
 - b) What the 2050 sectoral trajectories for a maximum 2°C temperature rise look like for key sectors in Hong Kong
 - c) Particular circumstances in Hong Kong which may mean the trajectories need some minor modification
 - d) How the SDA can be used for a sector like construction for which no specific trajectory has been developed.
2. The SDA was the output of extensive work at a global level by the partners (CDP, WRI, & WWF) of the Science Based Targets Initiative (SBTI) with technical support from Ecofys. It involved engagement of business and other stakeholders. Its two main components are global sectoral trajectories plus an assurance process for companies to set their targets with reference to those trajectories, giving companies the confidence to state that they have a science-based target⁵⁶.
3. The method used to develop the trajectories is as follows:
 - Starting point: the “carbon budget”, which is

total amount that future cumulative CO₂ emissions from all anthropogenic sources must keep below; about 1,000 gigatonnes (Gt) of carbon, if we are to keep global warming within 2°C. (IPCC 2013).

- Identified the trajectory that needs to be followed globally to keep within this budget. This led to the IPCC’s 2°C “RCP 2.6” pathway. This pathway would stabilize concentrations of CO₂ emissions in the atmosphere at about 450 parts per million (ppm) by 2100.
- Since RCP 2.6 does not consider the sectoral level, the International Energy Association (IEA)’s 2°C scenario (2DS) was used for this purpose. The 2DS scenario describes an energy and industrial system consistent with an emissions trajectory that, according to climate science, has a good chance of limiting global warming to less than 2°C. Consistency between the 2DS scenario and RCP 2.6 has been validated.
- The sectoral trajectories relate to an emissions breakdown by sector. See below. This shows power generation contributing 25% of direct emissions and service buildings contributing 6% of direct emissions, which are worldwide figures.

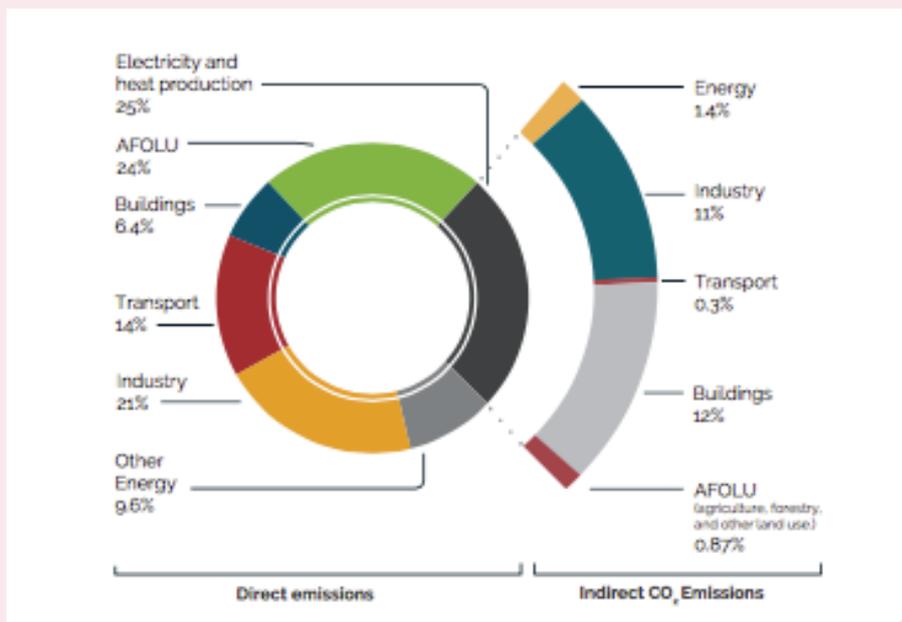


Figure 4: Showing the current contribution globally of different sectors to carbon emissions⁵⁸

⁵⁶ SBTi, (no date), <http://sciencebasedtargets.org> (Accessed 23 March 2017)

⁵⁷ Scenarios and Projections, IEA, (no date), <https://www.iea.org/publications/scenariosandprojections/> (Accessed 23 March 2017)

⁵⁸ Sectoral Decarbonisation Approach (SDA), SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/-Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

- Using a ‘global least cost mitigation’ methodology, to establish the most cost-effective ways of making the carbon reductions, sectoral trajectories were plotted. They show total emissions from each sector in 2050 if reductions were made in the most cost-effective way across the economy, as shown below.
- The GHG Protocol distinctions between Scope 1, Scope 2 and Scope 3 emissions are important for the application of these methodologies. The SDA is designed for

projecting reductions in Scope 1 emissions which are direct on-site emissions, for example from heating buildings and hot water or smelting aluminium, and Scope 2 emissions, the indirect emissions from the purchase of electricity primarily. The SDA also provides guidance on setting reduction targets for Scope 3 emissions that arise from the wider value chain, such as extraction of raw materials, production and transportation of supplies, and from outsourced services.

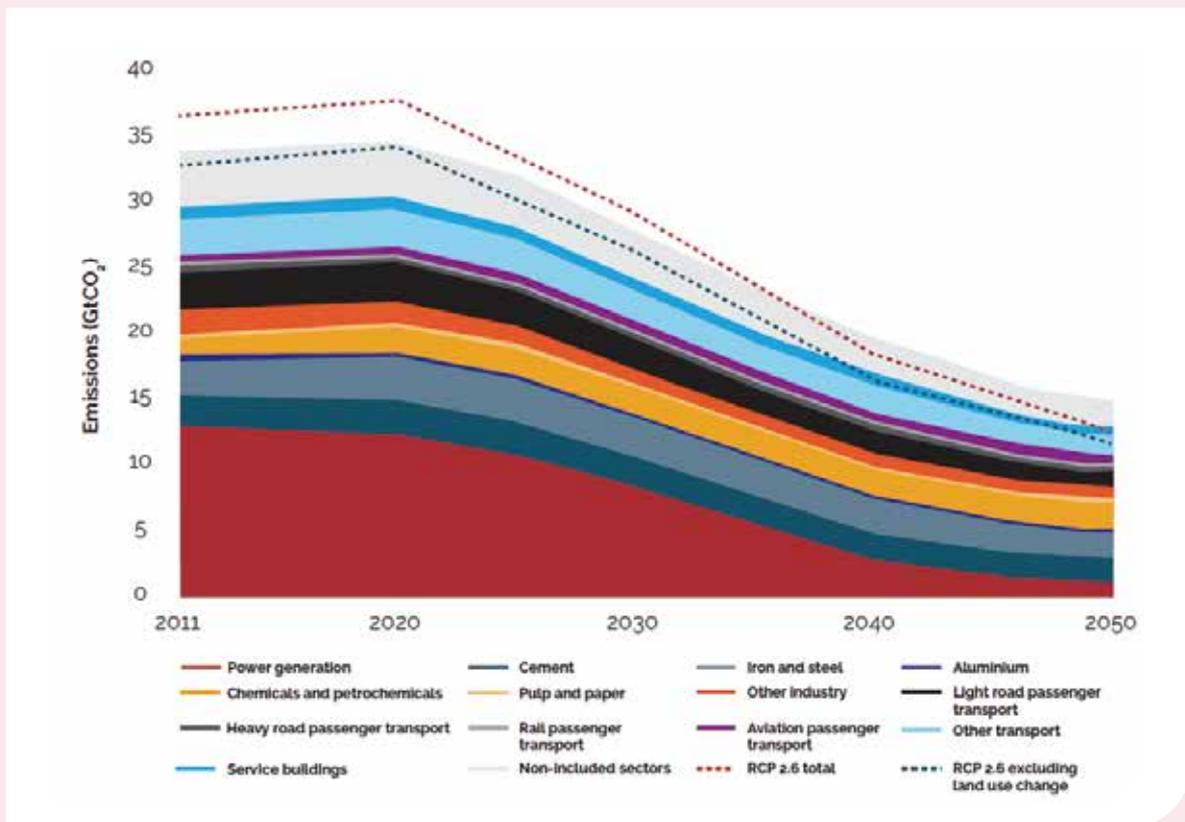


Figure 5: The projected trajectory of sector emissions until 2050 (Source: IEA ETP 2DS 2014)

What do the sectoral trajectories look like?

- In this section, we set out what these trajectories look like on a global level, what variations may be needed in Hong Kong in very general terms, and explore some of the complex issues that arise for companies within these sectors⁵⁹. We are not able however in this report to set out what the trajectories for Hong Kong would look like in any detail. But we can say that it is reasonable to expect variations between countries and within countries to reflect specific circumstances.

Power Generation - Electricity

- The sectoral trajectory developed shows a major shift in the carbon intensity of global power generation with a deep decarbonisation of around

95% by 2050 from 2010 levels⁶⁰. The SDA trajectory in Figure 6 is based on the ETP 2DS scenario, and it shows at a global level an initial modest reduction in the carbon intensity of power generation, between 2011 and 2025. The sector decarbonizes faster in the period 2025–2050. This overall reduction results from the replacement of coal power by renewable energy as well as natural gas (expected to maintain its capacity until around 2040). After that an increase in renewables, an increase in nuclear (11% in 2013 to 17% in 2050⁶¹) and carbon capture and storage are expected to drive most of the decarbonisation. The cost of these changes in the energy sector worldwide is estimated at US \$9trill, 0.1% of global GDP⁶², to be spent between 2016 and 2050. Energy demand overall⁶³ would fall by 30%, compared with business as usual.

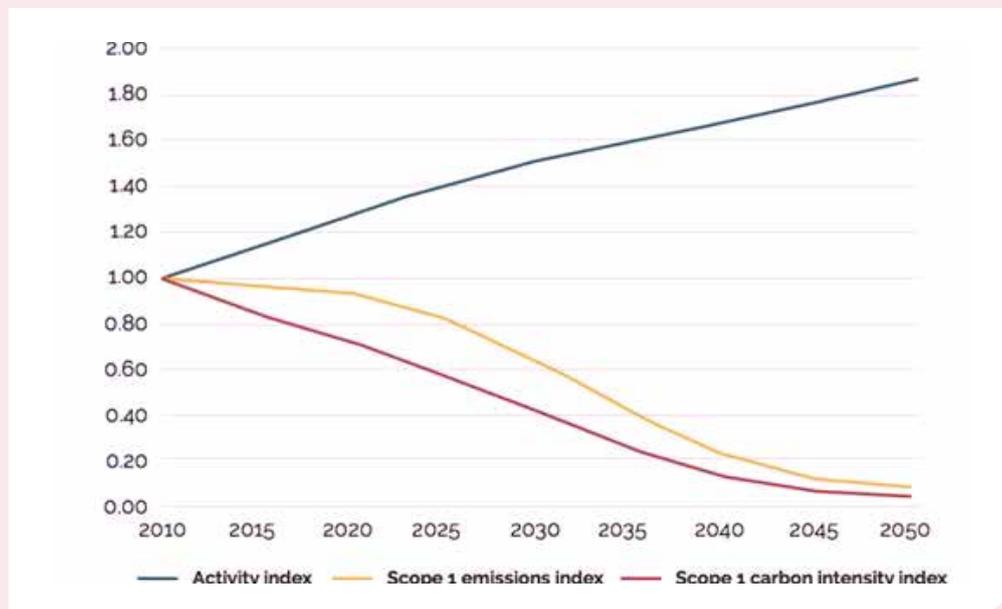


Figure 6: Decarbonisation of the Power Sector under the SDA⁶⁴

⁵⁹ The approaches recommended are not formally agreed with the SBTi, and represent our considered view.

⁶⁰ Sectoral Decarbonisation Approach (SDA): A Method for Setting Corporate Emission Reduction Targets in line with Climate Science (2015), <http://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf>, p.51 (Accessed 23 March 2017)

⁶¹ Technology Road Map: Nuclear Energy, IEA (2015)

⁶² IEA ETP 2016, Executive Summary, https://www.iea.org/publications/freepublications/publication/EnergyTechnologyPerspectives2016_ExecutiveSummary_EnglishVersion.pdf, p.3 (Accessed 23 March 2017)

⁶³ Total energy usage from all sources of energy as a whole.

⁶⁴ SDA, SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

6. In terms of actual power usage, the trajectory shows strong growth, in accordance with an expectation that electricity needs around the world will continue to grow⁶⁵. This is because there is currently still limited access to power in many parts of the world. Hong Kong's power generation may also be expected to grow, partly due to the electrification of transport, which displaces oil and gas use.
7. As to applying these trajectories to Hong Kong, underpinning the methodology is an assumption that technological convergence means that the end point is universally applicable perhaps with only some minor modification. In Hong Kong, the Government's Climate Action Plan suggests that due to limited land space in Hong Kong, renewable penetration in Hong Kong will, at least by 2030, be low. It estimates this at 3-4% generation by 2030 on the basis of "currently mature and commercially available technologies". The methodology suggests that Hong Kong's power sector would therefore see slowing growth in electricity demand through both more energy efficiency and conservation and the fuel mix changing to incorporate more gas, nuclear and renewable energy.
8. Ultimately it is the actual GHG emissions – shown by the yellow line above i.e. activity multiplied by intensity - that matter, in accordance with the carbon budget concept. Keeping an eye on actual carbon emissions is vital. Reflected in the SDA is this principle: a higher increase in activity of the sector as a whole will require deeper intensity reductions. Also to be noted is that for those companies which already have lower carbon intensities, their emissions would not need to fall as fast.

Service Buildings: Operations (energy usage)

9. This is the commercial buildings sector, and does not include residential buildings. Examples are trade, finance, real estate, public administration, health, food, lodging, education, and commercial services. Energy use in this sector includes space heating and cooling, water heating, lighting, appliances (HVAC), and miscellaneous office equipment. Heating and cooling make the largest contribution to GHG emissions worldwide, with cooling being the biggest contributor in Hong Kong.
10. Commercial buildings are one of the primary sources of energy demand - the largest user of energy in Hong Kong. Residential buildings are the second major source. Collectively they amount to 60% of Hong Kong's carbon emissions, and consume 90% of Hong Kong's electricity⁶⁶. High levels of cooling as well as limited industrial activity underline the importance of this sector.
11. The trajectory shown below sets out a reduction of approximately 60% in Scope 1 emissions whilst the overall carbon intensity of buildings overall is expected to decline by approximately 55% between 2010 and 2050.

⁶⁵ Note: the trajectory for energy can be contrasted with another sector, say cement. Here a slight increase in intensity is allowed for in the early years but then from around 2020, an initially modest decline begins followed by a sharper decline. The decline in intensity is not as marked as with energy, in part because the increase in activity is expected to tail off.

⁶⁶ Energy Saving Plan: For Hong Kong's Built Environment 2015-2025+ (2015), <http://www.enb.gov.hk/sites/default/files/pdf/EnergySaving-PlanEn.pdf> [Accessed 23 March 2017]

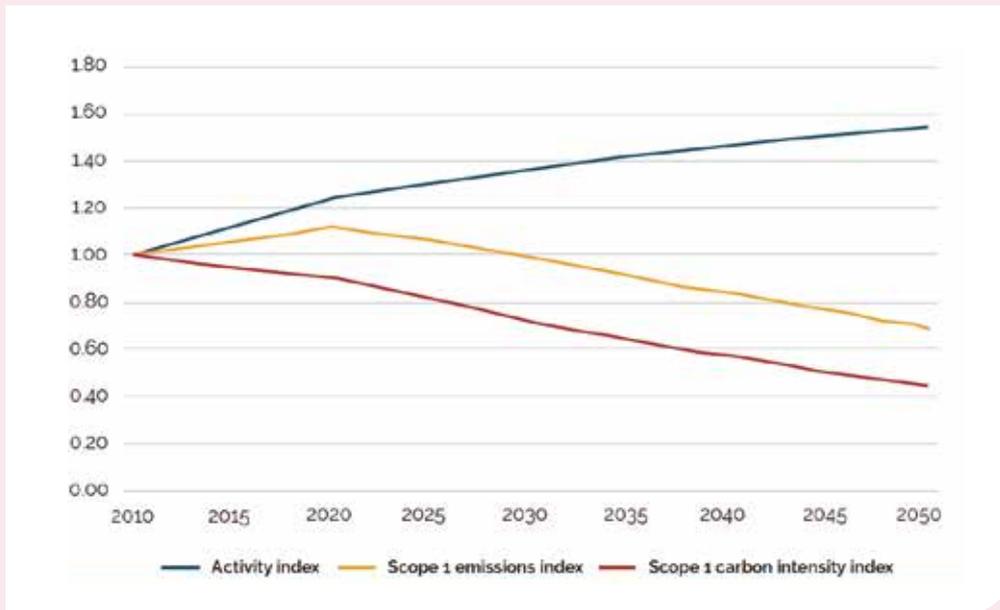


Figure 7: Decarbonisation of Service Buildings⁶⁷

12. In line with the 2DS, the SDA takes the view that reductions will be due to increased insulation, electrification of offices, more energy efficient appliances, and an increase in the use of clean energy such as nuclear or renewable energy.
13. For cities in developed countries, the IEA's Energy Technology Perspectives suggests savings will be made by deep energy renovations of existing buildings, as well as stricter performance standards and possibly fiscal policies⁶⁸. For developing countries, where many new buildings will be built, improvement of buildings energy codes and their enforcement for new buildings will be critical as well as good urban planning with compact design and the widespread use of efficient district cooling and heating, which is generally more efficient than other technology solutions.
14. As to how this trajectory relates to that for power generation, the trajectory for power generation is built into the trajectory for buildings. Assumptions are made regarding decarbonisation of the power sector. If the electricity generation does not decarbonise fast enough, they will need to deepen their energy efficiency efforts by implementing reduction opportunities with longer payback periods in effect following a steeper trajectories with more investments in energy efficiency.
15. As to who is responsible, primary responsibility lies with the property developer, though architects and consultant engineers also have an important role in this respect. The construction sector also has a role though its influence in reducing emissions in new buildings is marginal in comparison, other than under a design and build contract. Another area over which property developers have substantial control is construction, so property developers should also have targets related to construction as explained below in regard to construction of new buildings and infrastructure.

⁶⁷ SDA, SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

⁶⁸ IEA ETP 2016, Executive Summary, (2016), https://www.iea.org/publications/freepublications/publication/EnergyTechnologyPerspectives2016_ExecutiveSummary_EnglishVersion.pdf, p.7, 11

Buildings & Infrastructure: Construction

16. The SDA does not try to set out a trajectory for this sector. It does however set out trajectories for construction materials: steel, cement and aluminium, as well as for road transport. It has also developed a 'sector development framework' which provides the framework for sectors that are not included in the current SDA model to contribute to the development of new sector 2DS pathway.
17. In considering what this sector can do in terms of target setting, drawing on the SDA and other methodologies, we have broken the sector down into 4 parts:
- > Construction material producers e.g. producers of iron & steel and cement.
 - > Materials suppliers i.e. distributors
 - > Construction companies
 - > Property and infrastructure developers
18. Developers have been included as we have noted that the types of materials used and the volume of each are largely determined by the design (and hence buildability) or performance specifications and design life of a building or infrastructure. Regulations, programme constraints and Government approvals may also impact on the flexibility of construction companies and materials suppliers. The client i.e. the property developer or Government department commissioning the infrastructure also, therefore, has a key role to play. As a result contractors and material suppliers' decisions may be limited to: which producers to source from, transportation-related carbon emissions, and on-site emissions.
19. Taking on board the relative impacts of Scope 1, 2 and 3 emissions within this sector as well as the level of control over these different emissions, our conclusion is that:
- a. **construction materials producers:** appears that Scope 1 and 2 emissions are material and within the control of the company.
 - b. **construction companies and materials suppliers:**
 - Scope 1 and 2 emissions are material and within the control of the company. This includes fuel and electricity use on site, including transport and on-site machinery.
 - Scope 3 emissions: some emissions for example from the transportation of workers are material and under the control of the company. As to the carbon content of materials used, though these emissions are material, the construction company may have less control.
 - c. **property and infrastructure developers:** scope 1, 2 and 3 emissions are all relevant.
 - Scope 3 emissions for new projects are within the control of the company or Government department and their architecture and consultant team. They need to take the lead in considering the Scope 3 emissions of the different design options and the materials they select as well as the life-cycle scope 1 and 2 emissions of the final project. Using embodied or whole-life carbon as a KPI or in tender evaluation criteria at the bidding stage for the design of a project is one way to do this, as explained in the UK Government's Infrastructure Review⁶⁹.
20. We have concluded after discussion that construction companies should set targets and report on those scope 3 emissions seemingly outside their control (such as materials). This is on the basis that they can choose better materials, source regionally produced materials, or supplies from lower carbon producers. They can also push for design with smaller amounts of high carbon materials. If construction companies do not include these emissions at all, we risk a "chicken & egg situation" where the materials supplier says it cannot sell the lower carbon materials because of insufficient demand and the construction company says that it is outside their control. In relation to one aspect of materials, good progress has already been made - low carbon timber i.e. timber from sustainable sources, showing that it is possible to impact on scope 3 emissions.

⁶⁹Infrastructure Review, HM Treasury, UK (2013) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/260710/infrastructure_carbon_review_251113.pdf (Accessed 23 March 2017)

21. For construction companies to set ambitious targets with respect to material use, their early engagement in the design process is recommended. Design and build contracts can be a better way of ensuring that the design takes on board the embodied carbon in materials. Contracts that do not involve all decisions being made before a contractor is on board are also beneficial, the approach used in the London 2012 Olympics⁷⁰.
22. Considering the lack of a sectoral trajectory under the SDA, alternative methodologies such as the BT or Autodesk approaches described in Chapter 3 could also be used by construction companies to test the emissions reduction targets that they adopt.
23. Producers of construction materials can establish targets using the SDA methodology with its trajectories for each material. Though to avoid simply seeking to reduce the carbon intensity of each material rather than switching to lower emission materials, a holistic approach is important.
24. Taking cement to begin with (Figure 8), the SDA takes the view that the carbon intensity per unit of production is already falling. Until about 2020 there will however be a fairly large increase in carbon emissions from production of cement, because of increased levels of demand. From around 2020, absolute emissions begin to fall as the carbon intensity of cement production falls more sharply due to technological advances in the production process and intensity levels fall by around 38% by 2050.
25. For steel (Figure 9), the trajectory is different with activity levels continuing to rise and hence, absolute emissions do not fall as far. This reflects an expectation of continuing infrastructure growth in developing countries.
26. In Hong Kong, its largely developed urban infrastructure mean that the activity levels may flatten much earlier. So the carbon intensity trajectory would appear to be of greater relevance to Hong Kong businesses, than the trajectory for absolute emissions.

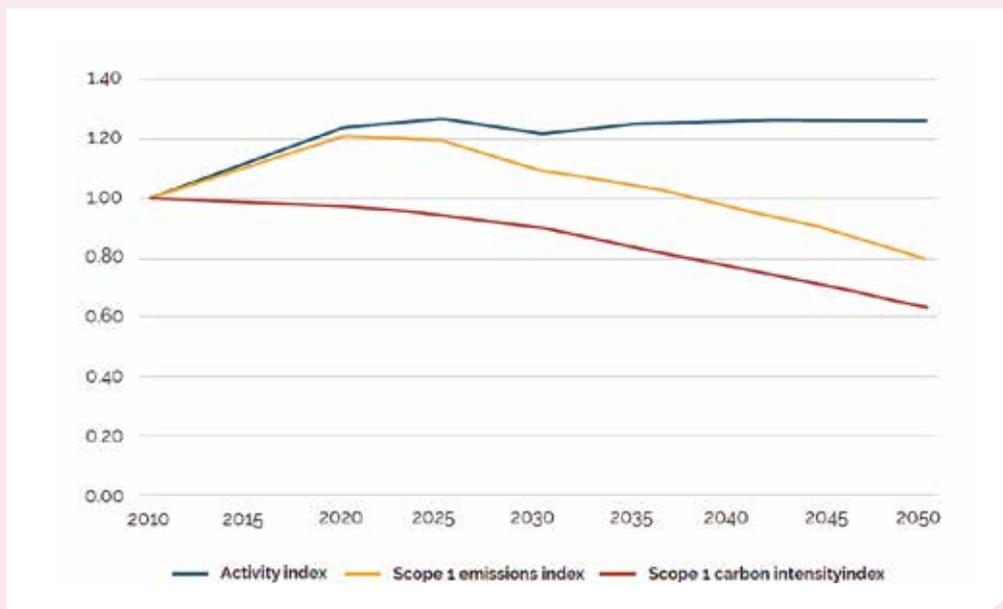


Figure 8: Cement manufacture emissions⁷¹

⁷⁰ London 2012 Olympic and Paralympic Games The Legacy: Sustainable Procurement for Construction Projects A Guide, Department For Environment, Food and Rural Affairs (2013), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224038/pb13977-sustainable-procurement-construction.PDF (Accessed 23 March 2017)

⁷¹ SDA, SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

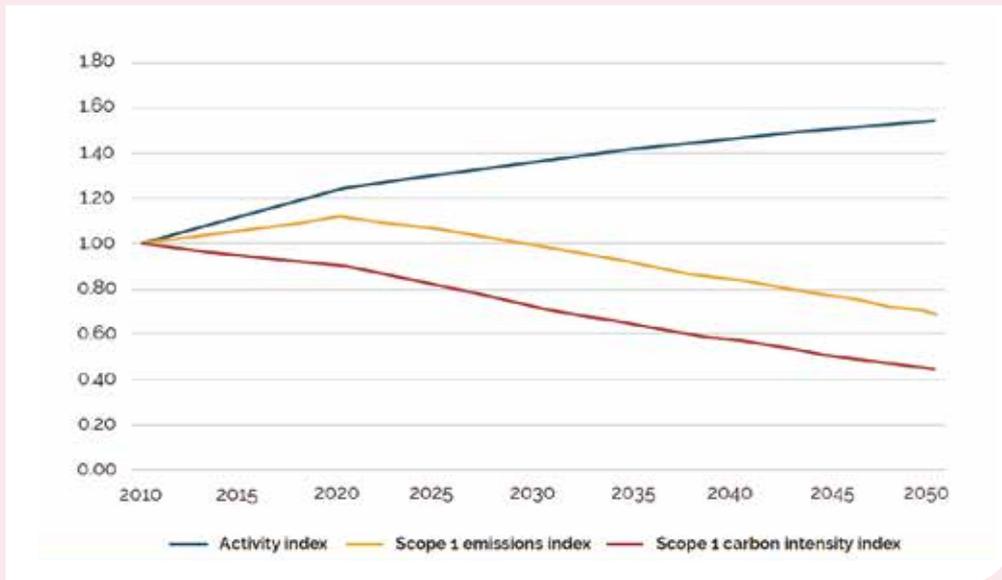


Figure 9: Iron and steel emissions⁷²

Transport

27. In Hong Kong, transport is the second major source of carbon emissions after power generation (mainly used by buildings). We explain the trajectories mapped out under the SDA for the three main sectors: air, road and rail, and freight, with some observations on the Hong Kong situation.

Aviation

28. The trajectories for this sector (Figure 10) show the number of revenue passenger kilometres in aviation doubling between 2011 and 2050. Total emissions increase as well, though at a lower rate, resulting in a carbon intensity approximately 26% lower in 2050 compared to 2010.

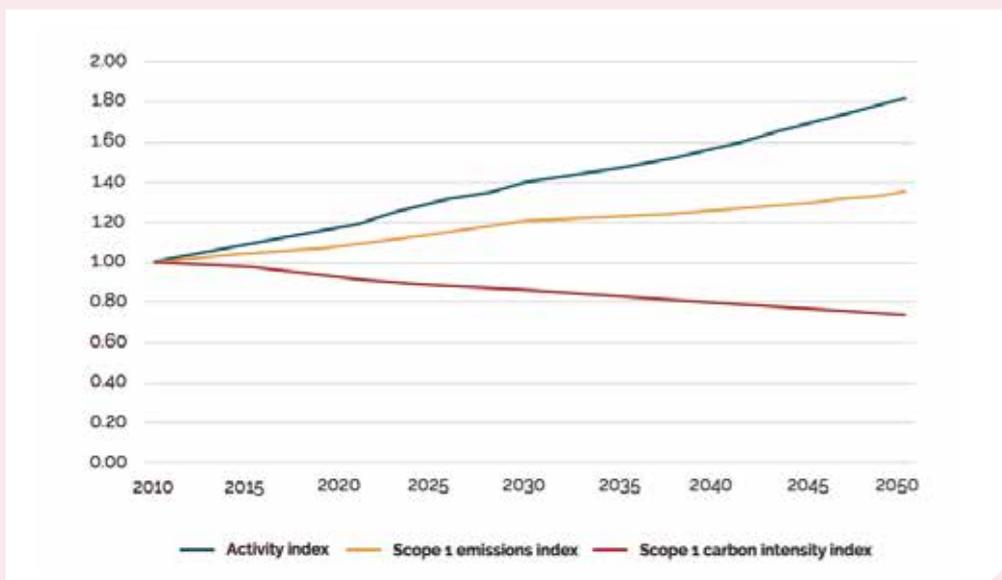


Figure 10: Aviation emissions⁷³

⁷² *ibid.*

⁷³ SDA, SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

Land Transportation

29. This is broken down into light transport i.e. private cars, heavy passenger transport such as buses, freight and passenger rail.

Light Vehicles

30. For light vehicles including passenger cars (Figure 11), a 68% decline in absolute terms and a 78% reduction in intensity is projected worldwide. Technologies ranging from hybrid power trains, fully electric vehicles and hydrogen fuel cells, more efficient driving, increased use of biofuels, reduced weight and improved aerodynamics are expected. The increase in activity is expected to occur mainly in non-OECD countries; so HK's activity trajectory would most likely be expected to fall too.

Heavy- Duty Road Passenger Transport: Buses and Trams

31. Passenger kilometres are expected to double but carbon intensity fall by 65%. This is related to expected growth in the sector worldwide as buses replace private vehicles. Technological innovation will help achieve this. The 2DS lists: hybrid drive trains, increased aerodynamics, weight reduction, fuel cell buses, biofuels, eco-driving, fully electric buses, improved consumer information schemes, fuel taxation, or bus rapid transit (BRT) systems and other mass transit schemes.

Rail

32. A similar shift is expected with rail (Figure 14), an increase in activity but with a carbon intensity reduction of 65%. The Hong Kong situation may be different considering the already very high levels of penetration of mass transit. The activity level will increase but this may not be as much as in other parts of the world. The emissions intensity index may also not be as steep a fall considering the efforts to date of the MTR on energy savings.

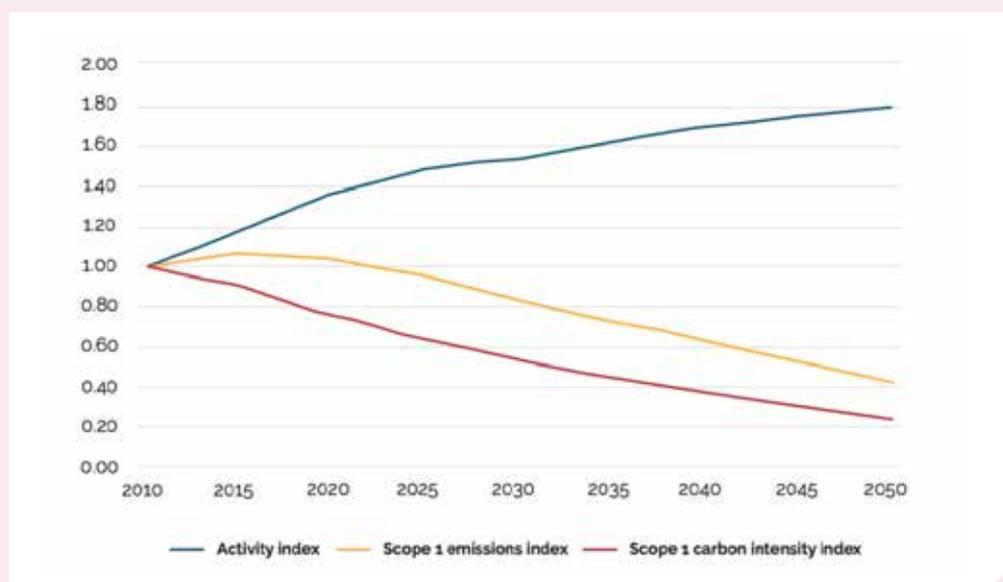


Figure 11: Cars and Light Trucks⁷⁴

⁷⁴ SDA, SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

⁷⁵ SDA, SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

Freight

33. Freight is an area where it would appear that Hong Kong could make steep reductions in intensity. The trajectories (Figure 13) show an 85% reduction in CO2 intensity. Actions identified

to support this include: fuel economy policies, fuel replacement options (eg vehicle electrification particularly important, but using a biodiesel blend will also help), load optimization and efficiency strategies, and vehicle technology improvements.

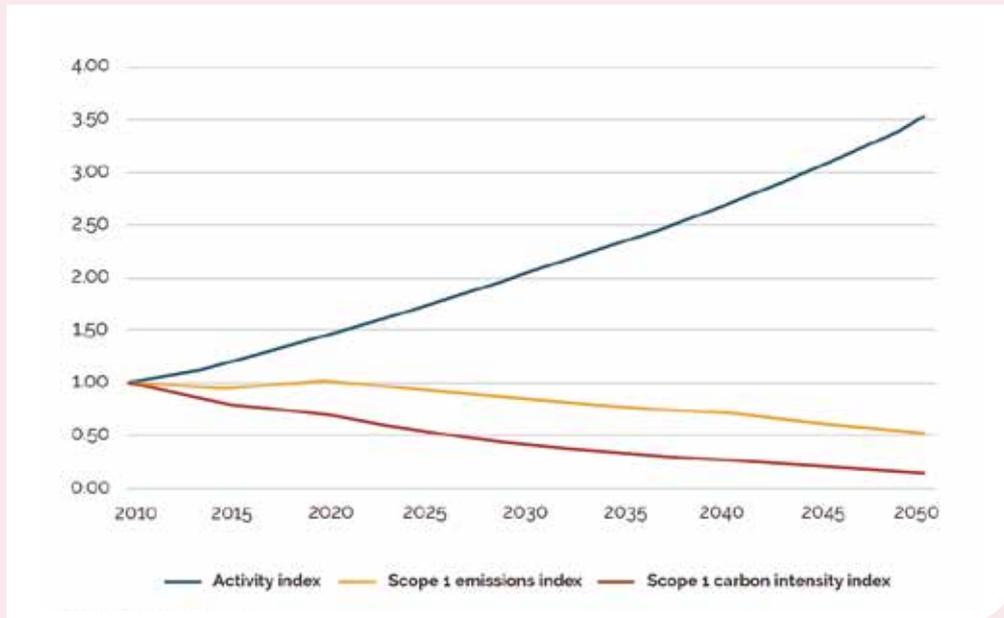


Figure 13: Road freight⁷⁷

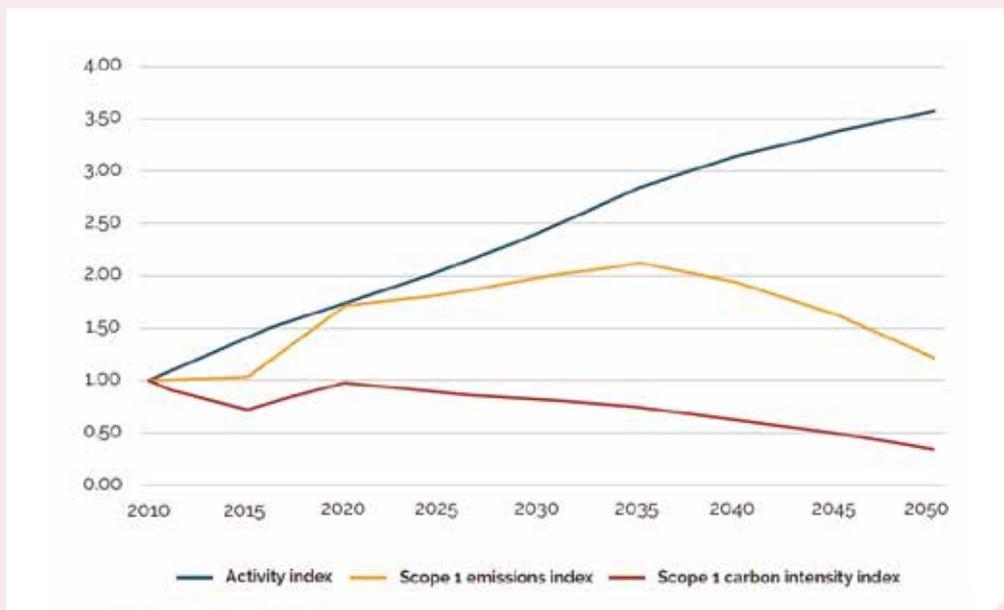


Figure 14: Passenger Rail transport⁷⁶

⁷⁶ SDA, SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

⁷⁷ SDA, SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

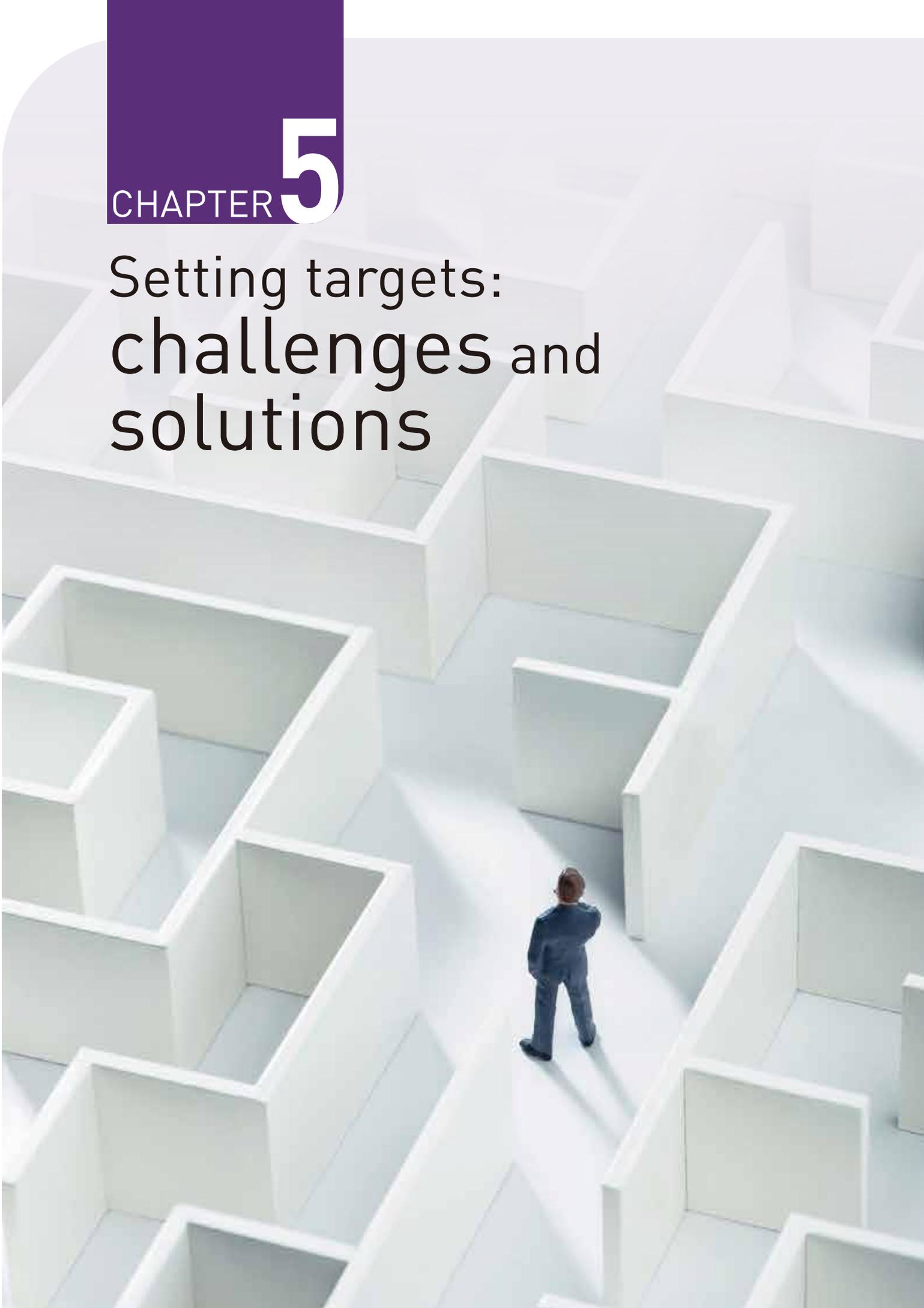
Summary

34. The key points to note from these trajectories are as follows:

- > The trajectories mapped out under the SDA show sectoral growth, carbon intensity reduction, and absolute emission reductions on a global level.
- > A higher growth rate than projected for the particular sector under 2DS will mean a more aggressive intensity improvement is needed. The SBTI is expected to review periodically the emission reduction targets in line with updated projections.
- > The same principle also applies to individual company growth, i.e. if a company exceeds the growth projection of the sector, the company will have an increased market share, and will therefore need to more aggressively reduce its intensity.
- > The SDA framework is built on the assumption that each company in each sector will do its fair share to meet the 2DS. If all companies do not follow the 2DS pathway, revised pathways will require more aggressive emission reduction targets.
- > The SDA framework is sector specific, not country/city specific. The trajectories may therefore need to be adjusted to reflect Hong Kong's own circumstances, taking on board the share in increased activity that Hong Kong can expect to have, considering its current level of development and relative affluence. The SDA methodology does not give explicit guidance on the regional distribution of growth in activity in each sector.
- > The model is based on the expected equalisation in technologies, emissions per unit of output (intensity levels) are expected to equalise. If Hong Kong is not able to meet the reductions in intensity eg in power generation, consideration may need to be given to reducing the growth in the sector to achieve the necessary absolute emission reductions.

CHAPTER 5

Setting targets: challenges and solutions



1. This chapter explains:
 - (a) how a company can begin the process of setting targets, setting out what factors need to be considered;
 - (b) how best to address issues that frequently arise;
 - (c) how best to kick off this process within your organization.

Commencing the Process of Setting Targets

Choosing a Methodology

2. The first step is to consider the methodology to adopt. As explained in Chapter 4, the SDA methodology sets out a straightforward approach for key sectors in Hong Kong, but for others, different approaches need consideration. This may involve the other non-sectoral approaches explained. If assurance is to be sought, which helps ensure confidence in the approach adopted, the methodology needs to be checked in advance with the SBTi team.

Assurance Process

3. Companies should consider having targets formally approved to give the company assurance that they are on the right lines and to obtain the available reputational benefits. The Science-based Targets Initiative provides an assurance framework for a fee. It involves submitting your target and the evidence used to develop it for consideration and approval.

Key Questions

4. The guidance to the Sectoral Decarbonisation Approach provides some useful pointers as to relevant factors and the decisions that need to be made:

What is the intended scope or boundary of the emissions to be covered? Any acceptable target

aimed at this overarching goal would cover company-wide Scope 1 and Scope 2 emissions and all relevant GHGs as required in the GHG Protocol Corporate Standard. However a materiality assessment is important and this may suggest, for example for a vehicle manufacturer, that Scope 3 is most important.

What timeframe suits your company? The SDA approach requires targets to be a minimum of 5 years and a maximum of 15 years from the date of announcement of the target. This doesn't mean that you should not have a 2050 target, but rather that, if you are intending to set a long term target, it is important to set an interim target too.

What is your level of ambition? At a minimum, the target should be consistent with the 2°C goal, though companies are encouraged to pursue efforts towards a 1.5°C trajectory.

Will you use an absolute emissions target or an intensity target? The benefits of the different options are explained in the next section.

How will you collect data and measure your Scope 3 emissions? As a first step, the SBTi requires companies to undertake a Scope 3 screening to determine if Scope 3 emissions cover a significant portion of their emissions (greater than 40% of total Scope 1, 2 and 3 emissions). If that is the case, then an ambitious and measureable Scope 3 target with a clear time-frame is required, and the target boundary should include the majority of value chain emissions as defined by the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (e.g. top 3 categories, or 2/3 of total Scope 3 emissions).

How will you modify your reporting processes to take this target on board? Having a target can enhance your transparency and help show progress. The SDA requires companies to disclose company-wide GHG emissions inventory on an annual basis.

²⁵ See Further Reading section of this report.

²⁶ Recommendations of the Task Force on Climate-related Financial Disclosure (2016), <https://www.fsb-tcfd.org/publications/recommendations-report/> (Accessed 23 March 2017)

Using the Sectoral Decarbonisation Approach

- To apply this approach, a company should identify the sectors of relevance to the company and a base year. For each of those sectors, work out current levels of activity and expected activity for the target year, as well as current carbon intensity levels. Using the sectoral trajectories or the 2DS to establish the intensity level it needs to meet, the company works out actual carbon reductions that relate to expected activity levels.
- By going through this process for Scope 1 and Scope 2 emissions, it works out its total carbon emissions reduction target in absolute terms.

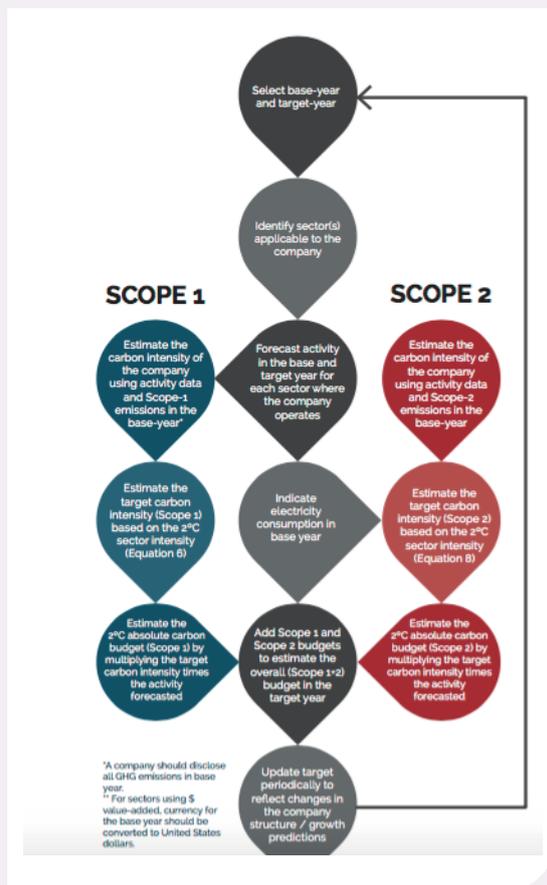


Figure15: Scope 1&2 target setting using the SDA method for homogenous sectors⁷⁸

Challenges and Solutions

- There are a number of complex issues that can arise. This is in part because of the regional/country targets that reflect “the common and differentiated responsibility principle”, and the sectoral approach of the SDA which provides a global sectoral set of trajectories.
- In this section, we seek to show that there are solutions. We cannot guarantee that these are exactly the answers that will be given on submission to the Science-based Targets Initiative. But we help explain the issues that arise and how the thinking on these points is developing. It will take a period of time for solutions to crystallise, which will involve working together within and across sectors to ensure that we have solutions that support meaningful long-term targets

Understanding the relationship of the supply side to demand-side targets

- As to how the demand-side should take into account the supply side, should assumptions be made by energy users as to the supply side’s decarbonisation and efforts put only into the balance? The sectoral targets methodology identifies the most cost-effective approach to reducing emissions overall – in effect weighing up the relative costs of demand-side reductions in comparison with supply side reductions. For example, a reduction in supply-side emissions is built into the service buildings trajectory on the basis that the grid will be progressively decarbonised.

⁷⁸ SDA, SBTi, (2015), <https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> [Accessed 23 March 2017]

10. In Hong Kong, in the short to medium term, a shift from coal-fired to gas-fired generation will deliver substantial supply side reductions. Considering circumstances such as limited space for wind turbines and solar panels and a political climate that encourages energy self-sufficiency, there may be a limit to the extent of decarbonisation in electricity generation in the longer term. However it is possible that nuclear power will enable Hong Kong to achieve the decarbonisation of the grid that is needed and there may be absolute and intensity related carbon reductions in the use of gas for hot water and cooking, as well as a shift from petrol/diesel usage for transport to less carbon intensive electricity. If however these reductions are not in accordance with the 2DS projections, the demand-side and supply-side split may need to be different, with further action required on the demand-side.
11. Taking into account the unknowns as to the supply side, our conclusion is that the end users should seek to follow the global trajectories for the supply and demand-side. They should not assume that the grid will be decarbonised in accordance with international trajectories. This will mean building owners may need to cut their demand further and if the grid has not decarbonized sufficiently. Purchase of green energy certificates or carbon off-sets may be at least an interim solution.
12. Going forward, BEC proposes to work with key sectors and perhaps even across key sectors on a collaborative basis to facilitate discussion on how to best achieve the substantial reductions needed in the long term. Ideally Hong Kong's very own "marginal abatement cost curve" exploring the options in Hong Kong and their relative costs would be developed, but this is a complex process which may not yield any precise answers. So businesses are encouraged not to make assumptions about other related sectors and to look at their carbon reductions overall.

Absolute Targets vs Intensity Targets

13. As to whether businesses should set targets on a carbon intensity basis or an absolute emissions basis, absolute emissions targets unlike intensity targets involve recognizing some limit on activity. However they do not take into account growth of or decline in market share. Most businesses are inclined not to constrain their growth and seek to increase market share, and therefore favour intensity targets.
14. However, on a global level, setting only intensity targets and allowing for unlimited growth in activity would not achieve the desired impact considering the limited carbon budget left. Actual emissions need to fall as the yellow line in the Chapter 4 graphs show. If carbon intensity were to fall but absolute emissions went up as a result of activity being beyond what is projected, the world would exceed its carbon budget.
15. For an individual business, the position taken by the SBTi is that the higher the expected activity growth of the business, the more of the absolute emissions budget of the sector the business gets, but the more its intensity should decrease.
16. Another scenario that may arise in practice is where a business anticipates reduced levels of activity. An absolute target may in that case be met without any actual improvements in efficiency. Therefore an intensity target is also important.
17. So this is a complex issue. The SBTi guidance is that an intensity target should only be set if it leads to absolute reductions in line with climate science or is modelled using a sector specific pathway like the SDA which assures emission emissions reductions to a sector as a whole. Essentially, companies will need to have regard to the growth in activity of their sector under the relevant scenario, and be guided by an absolute target as well as an intensity target.

⁷⁹ Sectoral Decarbonisation Approach (SDA): A Method for Setting Corporate Emission Reduction Targets in line with Climate Science (2015), <http://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf> (Accessed 23 March 2017)

Case Study – CLP Holdings Ltd

CLP Holdings Ltd set a long term carbon intensity target in 2007, in its Climate Vision 2050 document, long before the introduction of the SDA methodology.

It is broadly consistent with the reduction set out in the SDA trajectory, a reduction in carbon intensity of 75% by 2050 (covering Scope 1 emissions). This was based on an analysis of the change needed in the sector with reference to the Accelerated Technologies (ACT) MAP Scenario in the IEA Technology Perspectives 2006.

Intermediate targets were also set of 28% by 2020 and 45% by 2035 (under the Alternative Policy Scenario (APS) in the IEA World Energy Outlook 2006.

By setting the main target far into the future the immediate worries about achieving the target were reduced, enabling a stretching target to be set and for the company to gear efforts up to achieving it.

This target has nevertheless contributed to the company's strategy for the longer term, and helped drive the company's action in terms of renewable energy and nuclear in its regional portfolio, for example in India and China. It has supported innovation, such as the issuance of a Green Bond to finance a wind farm in India.

CLP has the benefit of strong commitment from senior management engaged in environmental best practice locally and also internationally through the World Business Council for Sustainable Development.

Regional Variations

18. How about regional variations? Can all regions be expected to follow the same trajectory?
19. The SDA does not provide for regional variations in target-setting by companies. However the principle of "common and differentiated responsibility" suggests that richer countries may need to make deeper and faster reductions in absolute emissions whilst allowing poorer countries to grow economically whilst also reducing their carbon intensity. In line with this, China's main target relates to the carbon intensity of its economy. It commits to peak absolute emissions in 2030, without stating how far and fast they would fall afterwards.
20. Considering Hong Kong's level of development, there is a good case for it to undertake steeper absolute reductions just as many OECD countries are committed to do. This approach is now adopted in Hong Kong's Climate Action Plan 2030+, which sets targets of 65-70% intensity cuts between 2010 and 2030. Taking into account HK's economic growth predictions through to 2030, that target will mean a fall in absolute emissions by 26-36%.
21. The different levels of development of countries and territories suggest that Hong Kong businesses need to take on board variations in expected growth in the range of sectors across the world under the relevant scenarios.

Direct and Indirect Emissions (scope 1, 2 and 3 emissions)

22. We discussed this issue in Chapter 4 in relation to construction. To explain further, Scope 1 and 2 emissions⁸⁰ relate to the direct emissions of the business including fuel use in heavy equipment, gas use and electricity consumption. Scope 3 emissions relate essentially to the transportation and production of inputs (upstream emissions) as well as the use of the products e.g. for a car manufacturer the energy used by vehicles sold, the waste generated and water consumed (downstream emissions).

⁸⁰ GHG Protocol Corporate Standard, [2013], <http://www.ghgprotocol.org/standards/corporate-standard> (Accessed 23 March 2017)

23. Two issues arise when counting Scope 3 emissions: (a) insufficient control by a business, for example as to usage of a vehicle; and (b) counting emission reductions by a buyer and also by a supplier may at first sight appear to be double counting.
24. For the purposes of setting targets, including Scope 3 emissions when they are significant is important. Leaving out Scope 3 emissions if they are a large part of a business's climate impact may mean ignoring a significant portion of a company's operations. For example, with the construction sector the largest share of its emissions are from the production of inputs such as cement and steel, which are highly carbon intensive. This is the Scope 3 hotspot. If a buyer of construction materials does not take these considerations into account, the supplier may not change its practices. Both sides, buyer and supplier, need to focus on those emissions. In some cases, the construction company (as explained in Chapter 4) may have little control over those emissions, and in fact the primary influencer is really the property developer or commissioner of infrastructure and it is important that they factor in embodied carbon in the supply chain. However, we emphasize that where a purchaser can impact on their supply chain in relation to materials of high emissions it is important that it does so. One area that illustrates this possibility is sourcing of timber. Hong Kong's construction industry has taken large strides forward to play its part in preventing deforestation through exercising its purchasing power.
25. The SBTi advises that where supply chain emissions are significant, they should be taken into account. It encourages businesses to do so, even if not initially. It requires them to begin by carrying out a scope 3 inventory to identify carbon intensive hotspots within the supply chain, as per the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. If a company's scope 3 emissions are at least 40% of total scope 1, 2, and 3 emissions, a scope 3 target is required. The scope 3 target boundary must include the majority of value chain emissions, the top 3 categories or 2/3 of total scope 3 emissions, in effect requiring companies to focus on those most relevant to their business.

Case Study: ASICS

ASICS is a Japanese sports and lifestyle company with over 7000 staff and sales in 2015 of HKD \$31, 312, 963 321. It adopted short term 10% reduction target, from 2009 to 2015, in line with a science-based approach.

The scope covered is broad including Scope 3 emissions, considering the significance of carbon emissions from production of materials.

ASICS sought advice from CDP, developed their own target with reference to sectoral targets and submitted their target for review. They had a number of reasons for adopting this approach. On the one hand they had a company commitment to energy efficiency and carbon reduction, with stakeholders wanting meaningful action on climate change. On the other, they saw this as making a commitment that showed industry leadership and it was also in line with a commitment to efficiency in their operations and supply chain, as part of their growth plan. Despite not meeting one of their targets, the management fully view this as a success and part of a continuing process of improvement⁸¹.

⁸¹ http://assets.asics.com/page_types/1824/files/csr2013_global_original.pdf?1386749396

Short term or Long Term Targets

26. The advantage of a set of short term targets, say 5 year targets, leading ultimately to low emissions in 2050, is that the targets are within the company's business planning cycle. This leads to a greater impetus to plan for and meet those targets.
27. The advantage of a longer term target is that the company makes a clear commitment to the 2°C scenario and has a tool that supports long term strategic planning. Ensuring that efforts are put into this long term plan may be a challenge, but ultimately can help businesses adopt a strategic approach related to the major shift that is needed. Businesses should consider whether the longer term transition is best made through a series of incremental goals or a longer term goal that requires transformative change. This may vary from sector to sector. In our case studies, CLP set a longer term target for 2050 and ASICS set a series of 5 year targets.
28. Short term targets are useful when it is possible to make significant achievements in the short term. Reducing emissions earlier means less demanding reductions later on. So if short term savings can be made in a cost effective manner, setting short term targets can help focus minds and efforts to achieve these early reductions.
29. However for a capital intensive sector like an energy company a longer term target may be more appropriate recognizing the time it takes for capital investments. What is important here is supplementing the long term target at an early stage with a plan.

Other GHG emissions

30. This report talks mainly about CO2 emissions and not other GHG emissions such as methane, nitrous oxide, and HFCs. In part this is because the SDA approach focuses on CO2.
31. As the bulk of emissions from Hong Kong businesses relate to carbon emissions from electricity generation, gas, and fuels for land and marine transport and logistics and construction machinery, this is not a problem. However all GHG emissions are relevant. Some businesses will need to pay particular attention to other GHG emissions such as methane, for the food distribution and F & B sector, and HFCs for example from refrigerants⁸² in other sectors. For companies such as those in the agricultural sector, where emissions are other forms of GHGs, the SDA approach may not be the best to adopt.

Making Things Happen in Your Company

35. One of the practical challenges in setting carbon targets is initiating a target-setting process within an organisation, and bringing this to a successful conclusion with a meaningful target that will be implemented.
36. We explored this through a cross-sectoral workshop (March 2017). This built on BEC CCBF AG's earlier paper entitled "Influencing Upwards, Sideways and Across". It also drew on the experience of CLP, Cathay Pacific and LINK REIT who shared their experience on the technical aspects of setting targets as well as the "leadership challenge" in making things happen within a large corporation.
37. The learning to emerge from this workshop is explained here.

⁸² Climate-friendly alternatives to HFCs and HCFCs, https://ec.europa.eu/clima/policies/f-gas/alternatives_en, [Accessed 23 March 2017]

The Challenges

38. These range from:

- > lack of a “compliance” driver, which is a key driver for much sustainability activity in Hong Kong
- > the technical complexity of setting targets, especially long-term targets which involve looking far into the future and inadequate expertise in companies in HK in doing so
- > lack of clarity in terms of company responsibilities (eg holding companies and subsidiaries)
- > absence of a shared view across a company on the benefit and importance of action.

The Drivers and Opportunities

38. Despite the barriers there is a strong feeling that there are drivers and opportunities. Points made included:

- > Senior Management often do see the big picture.
- > HKEx rules on reporting have begun to drive change and ensure some attention to environmental/climate change impact.
- > Efficiencies and costs savings achievable through reducing energy use.
- > Corporate reputation and risk: with investors and consumers, especially for large high profile companies with substantial emissions, increasingly taking on board climate impacts.
 - Family companies may be motivated by their own reputation and risk to long-term future of company, with their legacy to the next generation being very important.
 - Public companies may be motivated by investors who are actively seeking forward-looking approaches and climate risk stress-testing (eg Blackrock).
- > Corporations can lead setting expectations from investors and corporate customers, cumulating the impact of their action, creating and strengthening trust in their

brand through the association with social responsibility. Interest in BT Plc’s low carbon strategy came from corporate customers rather than consumers; there can be a considerable knock-on effect from one corporation to another.

The Solutions

40. A wide range of ideas for tackling these barriers and making use of these opportunities emerged. These include:

Prepare

- > Begin by mapping your company’s carbon emissions and having clarity about your baseline, and source of emissions.
- > Think through an implementation plan in broad terms: What would this involve? What steps need to be taken? Awareness of what may need to be done helps in discussions with other Departments.
- > Internal and external stakeholder engagement: map your stakeholders internally and externally, seek to understand what the audience is interested in.

Communicate Sideways

- > Communicate in the right terms: speaking the right language internally is critical, risk management or responsible business may be better than “sustainability” or “climate change”; AQ rather than climate change for an external audience, and “investment” better than a “social contribution”. Think like a marketer not a technical expert.
- > Work closely with other teams to create shared goals and develop an implementation plan integrated into wider business plan. Important not to work in a silo. Adopting a co-creation approach internally (bottom upwards across the range of departments) can help.
- > Develop detailed implementation plans with short term KPIs, and bottom-up measurement methods that are understood such as costs savings from energy reduction.

Communicate Upwards

- > Benchmarking: Establish how your company compares against others,
- > Exposure: encourage your C-suite to take part in local, regional or international organisations and projects which increase their exposure to action of others, and motivates them to play a leadership role.
- > Engage with senior management: using the language of risk and opportunity. This may be easier in family companies, with owners having more direct engagement with sustainability officers and a longer-term perspective.
- > Seek to ensure a clear governance structure: so that top-level management have responsibility, and there are clear reporting lines, so that achieving targets is not the responsibility of just the sustainability team.

Communicate Externally

- > Leverage consumer understanding and NGO pressure, recognising that by engaging people in actions your company is taking and then highlighting your achievements for example through social media, your company can create a positive buzz.
- > Encourage sharing and learning with sustainability professionals within and across sectors

“We transform business by engaging and empowering people to realize a value-creating corporate strategy” Calvin Kwan, General Manager, Sustainability, Link REIT

41. These findings fit closely with the findings of BEC’s research project “Influencing Down and Across” summarised in the table below. Remember to communicate the right message to the right person at the right time. Here is a suggested set of steps to take to take this forward.

Influencing Up: senior management

Be Targeted

- Analyse and map senior management audiences
- Be concise – develop your elevator pitch

Present the Data

- Articulate value in a compelling way
- Ban jargon

Stay on top of emerging trends

- Be a subject matter expert
- Work out how those trends may affect your business
- Drive senior management to capture first mover advantage – be bold!

Influencing Down and Across

Raise Awareness

- Make sustainability visible internally, using company “collateral”
- But cut through the communications clutter

Explain sustainability clearly

- A narrative – simple and engaging story
- Communicate a clear plan: why? how and what?
- Integrate sustainability story into corporate story

Drive Action and Innovation

- Connect the dots: what does it mean to each dept
- Co-create: and carry out trials, and share successes
- Develop practical tools: checklists, cross-functional teams, KPIs, innovation support schemes

Influencing Up, Down and Across

CHAPTER 6

Looking to the Future



1. We have set out in this report why it is critically important for businesses to develop a strategic approach to addressing climate change, with targets being central to this approach. Targets are part of a bigger picture – a strategy and plan. Underlying this thinking is that businesses cannot afford to wait and see. They need to plan and act.
2. We suggest a simple step by step sequence for developing a strategy with 2°C consistent targets, putting in place and implementing a plan, monitoring and reporting back, followed by reviewing targets. This approach can usefully be embedded into a company’s planning and development, helping future-proof by focusing clearly on the long term and obtaining the comfort of taking on board increasing investor attention to climate risk.
3. For targets to effectively put the world on the right track, to be “science-based”, they must be set in accordance with a maximum 2°C temperature rise, but preferably a maximum 1.5°C rise.
4. Deciding on the right target and achieving it is a challenge. Some useful and practical methodologies for setting the targets have been developed. The right methodology will depend on a company’s sector and circumstances. The range of methodologies is explained in this report, with an emphasis on the sectoral decarbonisation approach. We cannot say that all the answers are already clear, but we have the tools and with a willingness to tackle these issues individually and collaboratively, businesses are in a position to develop meaningful targets.
5. We recognise that getting corporate support for a target is not always easy. Guidance is provided in this report based on considerable discussion with companies in Hong Kong as to how to obtain corporate backing.
6. Inter-connections between different sectors also create challenges. For example, Scope 3 emissions of the construction sector are dependent on the design chosen by the client, ie the property developer.
7. A finance sector well-attuned to climate risk can help facilitate change by fully costing the risks related to overly carbon intensive businesses as well as the risks related to the impacts of climate change itself.
8. For the future, BEC intends to set up a working group on property and construction to support the development of targets in this sector, and also a transport working group. These groups will build on on-going advisory groups – BEC’s Climate Change Business Forum, Energy Advisory Group and Transport & Logistics Advisory Group.
9. In the longer term, we also anticipate exploring how the public policy framework can be modified to help businesses achieve long term targets, as well as how the finance sector can help support this change.

Case Study 3: Cathay Pacific

Cathay Pacific is committed to tackling the issue of climate change, as their use of non-renewable fossil fuels is not only a major operating cost, but also their most significant environmental impact.

In 2009, Cathay Pacific set a carbon efficiency target of a 2% improvement year on year from 2009 to 2020.

In deciding on a target, the initial step was deciding on a suitable metric to use. They chose to use CO2 per Revenue Tonne Km, a metric which best represents an airline’s operational activity. The metric is widely used and understood in the industry and consistent with the International Air Transport Association (IATA)’s metric.

The specific target of 2% was developed through analytical assessment of the expected efficiency gains through consultation with internal departments on the various influencing factors such as expected business growth and aircraft fleet profile, modernisation plans as well as the potential of new technologies and alternative fuel sources such as biofuel in further improving their performance. Senior management was then briefed and the target subsequently endorsed as part of Cathay sustainable development Pacific’s 20/20 sustainable development commitments.

The exercise has helped them better understand their emissions, as well as form the basis for developing a strategy to reduced emissions. The journey will continue, and they are currently exploring solutions such as the use of sustainable alternative fuel from waste organic matter.

Further Reading

United Nations Framework Convention on Climate Change (UNFCCC)

<http://unfccc.int/>

Paris Agreement, 2015

http://unfccc.int/paris_agreement/items/9485.php

http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

Intergovernmental Panel on Climate Change (IPCC)

5th Assessment Report Synthesis Report Summary for Policymakers (2014)

https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf

5th Assessment Report Physical Science Basis Summary for Policymakers (2013)

https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf

5th Assessment Report Mitigation of Climate Change Summary for Policymakers (2014)

https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf

5th Assessment Report Mitigation of Climate Change Summary for Policymakers (2014)

https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf

5th Assessment Report Physical Science Basis Summary for Policymakers (2013)

https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf

5th Assessment Report Mitigation of Climate Change Summary for Policymakers (2014)

https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_summary-for-policy-makers.pdf

Science-Based Targets Initiative

“Five reasons why setting science based targets makes business sense, SBT”

<http://sciencebasedtargets.org/2016/06/21/five-reasons-why-setting-science-based-targets-makes-business-sense/>

Sectoral Decarbonisation Approach, SBT

<http://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf>

WRI

Mind the Gap Project Overview

http://www.wri.org/sites/default/files/uploads/2._mind_the_science_mind_the_gap_-_project_overview.pdf

Carbon Trust

Strategic advice, target setting and reporting, Carbon Trust

<https://www.carbontrust.com/client-services/advice/business-advice/science-based-targets/>

<https://www.carbontrust.com/client-services/advice/strategy/>

Science based targets

<https://www.carbontrust.com/media/673339/carbon-trust-science-based-targets.pdf>

WBCSD

Making the business voice heard Top Messages for COP22, WBCSD

http://image.s6.exacttarget.com/lib/fe871272706001747c/m/1/WBCSD_COP22+top+messages.pdf

Sustainability and enterprise risk management: The first step towards integration

<http://www.wbcsd.org/Projects/Non-financial-Measurement-and-Valuation/Resources/Sustainability-and-enterprise-risk-management-The-first-step-towards-integration-science-based-targets.pdf>

Taskforce on Climate-related Financial Disclosures

[Recommendations of the Task Force on Climate-related Financial Disclosure \(2016\)](#)

<https://www.fsb-tcf.org/publications/recommendations-report/>

SFC

[Consultation Conclusions on the Principles of Responsible Ownership \(2016\)](#)

<https://www.sfc.hk/edistributionWeb/gateway/EN/consultation/conclusion?refNo=15CP2>

CDP

<https://www.cdp.net/en>

<http://sciencebasedtargets.org/wp-content/uploads/2017/04/SBT-Manual-Draft.pdf>

Accounting for Sustainability

<https://www.accountingforsustainability.org/content/dam/a4s/corporate/home/KnowledgeHub/Guide-pdf/A4S%20Managing%20future%20uncertainty.pdf.downloadasset.pdf>

Real Estate

UNEP FI Sustainable Real Estate Investment

<http://www.unepfi.org/fileadmin/documents/SustainableRealEstateInvestment.pdf>

<http://www.carbonneutral.com/interface/files/knowledgecentre/A%20Handbook%20to%20Internal%20GHG%20Reduction%20Targets%20and%20Plans.pdf>

Construction

[Infrastructure Review, HM Treasury, UK \(2013\)](#)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/260710/infrastructure_carbon_review_251113.pdf

[Alliancing Best Practice In Infrastructure Delivery, HM Treasury, UK](#)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/359853/Alliancing_Best_Practice.pdf

BEC CCBF

[Influencing Up, Down and Across, \(2013\)](#)

http://bec.org.hk/ccfb/en-us/downloads/513-Up__Down_and_Across_-_From_Sustainability_Professional_to_Change_Agent_-_8_April_2013.pdf

Glossary

2DS	2 Degrees Scenario developed by the International Energy Agency
Carbon budget	The cumulative amount of emitted CO ₂ in the atmosphere that will lead to a certain temperature rise
CDP	Carbon Disclosure Project
CO₂ equivalent	A weighted measure of CO ₂ and the other GHG's
ETP	Energy Technology Perspectives
FSB	Financial Stability Board
Gigatonnes (Gt)	1 billion tonnes
GHG	Greenhouse Gas, as defined by the Kyoto Protocol, including CO ₂ , methane, N ₂ O, HFCs, PFCs and SF ₆
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
Net Zero	The net balance between human GHG emissions
OECD	Organisation for Economic Cooperation and Development
Paris Agreement	Treaty signed in December 2015 regarding new climate change commitments
RPC	Representative Concentration Pathway, IPCC's name for their temperature/emission trajectories
SDA	Sectoral Decarbonisation Approach
Target boundary	Defines which GHGs and emissions sources are covered by the target
TCFD	Taskforce on Climate related Financial Disclosure
UNEP FI	United Nations Environment Programme Financial Initiative

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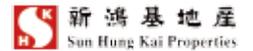
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Business Environment Council Limited ("BEC") is an independent, charitable membership organisation, established by the business sector in Hong Kong. Since its establishment in 1992, BEC has been at the forefront of promoting environmental excellence by advocating the uptake of clean technologies and practices which reduce waste, conserve resources, prevent pollution and improve corporate environmental and social responsibility. BEC offers sustainable solutions and professional services covering advisory, research, assessment, training and award programmes for government, business and the community, thus enabling environmental protection and contributing to the transition to a low carbon economy.

BEC Climate Change Business Forum Advisory Group ("BEC CCBF AG") promotes awareness of, and builds capacity in relation to, climate change mitigation, adaptation and resilience activities amongst the BEC membership and generally amongst the business community in Hong Kong. It also aims to provide a platform for BEC to engage relevant regulatory bodies on climate change related matters, and forge collaboration links between local and global expertise on climate change.



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