FORMAT			
1. Name of resource	Low Carbon Retrofit Toolkit		
2. Location	https://www.betterbuildingspartnership.co.uk/low-carbon-retrofit-toolkit		
3. Alternative location			
4. Author[s]	J. Rhoads and others		
5. Publisher/producer/ host	Better Buildings Partnership		
6. Year	2010		
7. Suggested citation	Rhoads, J. (2010). Low Carbon Retrofit Toolkit. Better Buildings Partnership, available at		
8. Languages in which available	English		
9. Geographic area resource relates to	UK, but with global relevance		
10. Does the resource relate to a specific time frame?			
11. Type	Report	Yes	
	Toolkit/Framework/Roadmap	Yes	
	Sign-post to other resource (database)		
	Case studies		
	Other		
12. If this is part of an initiative, what is the initiative?			
COLLECTIONS AND COLLECTIONS-BASED INSTITUTIONS			
13. Explicit links to collections	No		
14. Explicit links to museums/libraries/archives	No		
15. Types of institutions the resource covers	Museums	X	
	Archives	X	
	Libraries	X	
	Other	X	
16. Types of collections/disciplines the resource covers	Arts, humanities and social sciences: philosophy, psychology, religion, social sciences, law, politics, language, arts and recreation, architecture, literature, history, geography and ethnology, anthropology, archaeology		

	Science, natural history, technology, medicine, engineering, manufacturing	X
17. If no explicit links to collections, justification for inclusion		
HOW IT CONTRIBUTES TO SUSTAINABLE DEVELOPMENT		
18. Collections-related activities the resource relates to (mark all that apply)		
Develop collections to protect and safeguard wider cultural and natural heritage more effectively, for example by targeting collecting to threatened forms of heritage in strategic ways		
Use collections to promote learning and educational opportunities that contribute to sustainable development more effectively, for example education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development and/or skills development relating to collections		
Use collections to promote cultural participation/social inclusion more effectively, for example by reducing barriers to participation, to ensure no-one is 'left behind'		
Use collections to promote sustainable tourism more effectively, for example by developing new products based on local cultural heritage, and/or considering the rights of stakeholder groups in relation to collections		
Use collections to support research that contributes to sustainable development (including all forms of personal and self-directed research at all levels that make use of stored collections) more effectively, for example by providing effective facilities, collections and information to meet researchers' needs		
Make decisions around collections that contribute to sustainable development more effectively		
i.	employment (recruiting, staff training, staff safety)	
ii.	energy consumption, greenhouse gas emissions, reduction, monitoring and reporting	X
iii.	waste management and reduction of waste	
iv.	transport (forms of transport, energy use)	
v.	commercial activities including copyright and IP	
vi.	governance and management	X
vii.	security, disaster preparedness and risk reduction	
Direct external leadership, partnerships and collaborations towards sustainable development more effectively, for example by developing impactful partnerships		

19. Does the resource relate clearly to any international conventions (mark all that apply)?	
Culture conventions:	
1952, 71 Protection of Copyright and Neighbouring Rights	
1954 Protection of Cultural Property in the Event of Armed Conflict	
1970 Fighting Against the Illicit Trafficking of Cultural Property	
1972 Protection of the World Cultural and Natural Heritage	
2001 Protection of the Underwater Cultural Heritage	
2003 Safeguarding of the Intangible Cultural Heritage	
2005 Protection and Promotion of the Diversity of Cultural Expressions	
Rio Conventions:	
Convention on Biological Diversity (CBD), Convention to Combat Desertification (UNCCD), Framework Convention on Climate Change (UNFCCC)	X
AIMS AND CONTENT	
20. What issues does the resource aim to address?	"The aim of this Toolkit is to identify the barriers limiting the uptake of low carbon retrofit in the market place and provide a 'low carbon retrofit roadmap' to help overcome these, supported by BBP member case studies. Through a series of interviews with property professionals and industry representatives the following five key barriers emerged: Commercial – failure to provide a compelling business case for investment in retrofit and the inherent split incentive between owners and occupiers. Roles and Processes – no designated role within an organisation with the responsibility and authority to identify, plan and deliver energy saving and carbon reduction interventions. Additionally, the lack of any clearly defined approvals process or evaluation criteria. Financial – lack of availability of capital funds. Technology – skills shortage, immature technologies, supply chain failure, building and operational constraints, lengthy pay back periods. Policy – lack of regulation or incentives for action. Insufficient focus by policy makers on existing building stock compared to new build."
21. Intended audience of resource	[Building owners, occupiers and policy workers]
22. Process of development	"Despite the clear benefits for owners and occupiers, low carbon technology retrofitting initiatives are not being taken up sufficiently widely to have significant impact on reducing the carbon emissions of commercial buildings. We can no longer afford to ait for the traditional refurbishment and new development cycle to make significant improvements to building performance. The BBP Building

	Performance and Sustainable Retrofit Working Group, charged with identifying the barriers and informing possible solutions to stimulate broader implementation of building improvements within occupied buildings, commissioned a specialist research project to gain a deeper understanding of the issues which have until now restricted investment in this area." (p.2)
23. Organisation/structure/contents	Chairmen's Statement 2 Executive Summary 3 1. Introduction 5 2. Barriers to Low Carbon Retrofit 8 3. Solutions for Low Carbon Retrofit 16 4. Case Studies for Enabling Retrofit 27 4.1 Climate Change Capital 28 4.2 British Land 29 4.3 Hammerson 30 4.4 Legal & General Property 31 4.5 Cadillac Fairview and The Toronto Dominion Centre 32 4.6 London Development Agency RE:FIT Programme 33 4.7 Land Securities 34 4.8 Joanneum Research 35 4.9 Clinton Climate Initiative 37 5. Appendices 39 Appendix 1 – Building Low Carbon Retrofit Summary Sheet 39 – Porfolio Low Carbon Retrofit Summary Sheet 40 Appendix 2 – Low Carbon Retrofit Measures 41
FRAMEWORKS	
24. Framework structure	The Roadmap can be considered as a framework (p.4): 1. Set clear corporate retrofit goals to include energy saving and carbon reductions, introduction of new technologies and accelerated replacement of inefficient services equipment. These goals should be clearly articulated and in line with broader organisational emissions reduction targets. 2. Designate roles and define processes to ensure that a dedicated individual within the organisation is given the responsibility and authority to assess retrofit opportunities across the property portfolio. Develop a clearly defined internal approvals process specific to low carbon retrofit projects. 3. Prioritise buildings most suitable for retrofit by analysing portfolios against key selection criteria. 4. Engage occupiers to determine common goals, identify barriers and formulate solutions. The BBP Green Lease Toolkit provides an ideal platform to start this engagement process.

	5. Agree financing arrangements between owner and occupier typically via the service charge using an exceptional expenditure clause to repay costs through the Hard Services portion or through a sinking fund. Whichever option is considered, transparency is crucial to gain occupier buy-in. For high cost projects third party finance may be sought or performance contract options through an ESCO model. 6. Select appropriate technology best-suited to the constraints of the building and which minimise the level of disruption to the occupiers. 7. Delivery using a trusted supply chain with a performance guarantee. 8. Evaluate performance in-use to inform future internal retrofit projects as well as the wider market.
25. Relevant policy considerations	Yes
26. Resources for implementation identified	Yes
27. Specific assessment points/indicators/milestones/action plan for monitoring	Yes
28. ASPECTS OF SUSTAINABILITY COVERED BY RESOURCE (mark all that apply)	
People (social sustainability)	
Planet (environmental sustainability)	X
Prosperity (economic sustainability)	X
Peace	
Partnerships	
29. CROSS-CUTTING CONSIDERATIONS COVERED BY RESOURCE (mark all that apply)	
Gender perspectives	
North and South perspectives	
HOW THE RESOURCE CONTRIBUTES TO AGENDA 2030 AND THE SDGs	
HOW AGENDA 2030 AND THE SDGs FEATURE IN THE RESOURCE	
30. SDGs and Agenda 2030 specifically mentioned?	No
31. SDGs specifically mentioned?	No

32. SDG targets specifically mentioned?	No
33. SDG indicators specifically mentioned?	No
SDGs AND SDG TARGETS AND LINKAGES	
34. Comments on SDG linkages	The resource is most closely linked to SDG 12.6 (adopt sustainable practices and reporting), which helps support a number of targets around the sustainable use of natural resources (SDG 12.2), and SDG 12.7 (sustainable procurement), as well as SDG 13.3. (contributing to climate action). Development of sustainable infrastructure supports SDG 9.1 and retrofitting infrastructure supports SDG 9.4; using renewable energy supports SDG 7.2, and enhancing energy efficiency supports SDG 7.3; and reduces air pollution (SDG 11.6).
35. SDGs and SDG targets the resource helps advance	
SDG 7. Ensure access to affordable, reliable, sustainable and modern energy for all 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	Proportion of energy that comes from renewable sources. Date to achieve net zero, and milestones towards that date.
SDG 7. Ensure access to affordable, reliable, sustainable and modern energy for all 7.3 By 2030, double the global rate of improvement in energy efficiency	Reduction in energy use. Upgrade of old equipment to more efficient equipment. Uptake of renewable sources of energy.
SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic	Development of research-useful collections to support reliable, sustainable and resilient use by researchers and others. Number and proportion of collections facilities and stores that support economic development and human well-being. Number and proportion of collections facilities and stores that provide affordable and equitable access for all.

development and human well-being, with a focus on affordable and equitable access for all	Investment in collections facilities. Inclusion of collections information in regional and transborder initiatives, notably via digital access for discoverability.
SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Number and proportion of collections facilities that: 1.make efficient use of resources, with an ongoing drive for efficiencies and reductions in energy use and waste of all forms. 2. use clean and environmentally sound technologies, including climate-friendly energy sources and materials, with an ongoing commitment to reduce greenhouse gas emissions and waste of all forms. 3. adopt and/or prioritise collections-related processes and practices to reduce greenhouse gas emissions and waste of all forms.
SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Plans in place to reduce negative impacts on air quality, and volume and forms of waste. Plans in place to eliminate waste of all forms as soon as possible.
SDG 12 Ensure sustainable consumption and production patterns 12.2 By 2030, achieve the sustainable management and efficient use of natural resources	Reduction of material footprint in terms of reductions in consumption of biomass, fossil fuels, metal ores and non-metal ores.
SDG 12 Ensure sustainable consumption and production patterns	Clear visions, strategies and plans in place for all aspects of sustainability – environmental, social and economic (people, planet, prosperity)- across all areas of activity.

12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	Visions, strategies and plans relating to sustainability to be publicly available and incorporated into planning documents. Commitments to be in line with local, regional, national and/or international targets and ambitions. Incorporation of sustainability into reporting for funders and other stakeholders, including the public. Reporting to include commitments and progress towards targets.
SDG 12 Ensure sustainable consumption and production patterns 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities	Incorporation of sustainability considerations into procurement, in terms of advertisement and invitation to tender, contracts, and selection criteria for suppliers.
SDG 13. Take urgent action to combat climate change and its impacts 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	Plans in place to enhance positive contributions to addressing climate change through use of collections. Plans in place to ensure collections, collections institutions and broader society can adapt effectively to climate change. Plans in place for effective education and awareness raising on climate change mitigation, adaptation, impact reduction and early warning. Plans in place to reduce negative contributions of collections-related functions, e.g. measuring greenhouse emissions with plans and targets in place to reduce them.

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