

Identifying Low-Carbon Investment Opportunities

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David Lunsford



**Compliance
Reporting**

(e.g. French Law &
TCFD Recs)



**Downside
risk reduction**



**Stock picking/
fund creation**

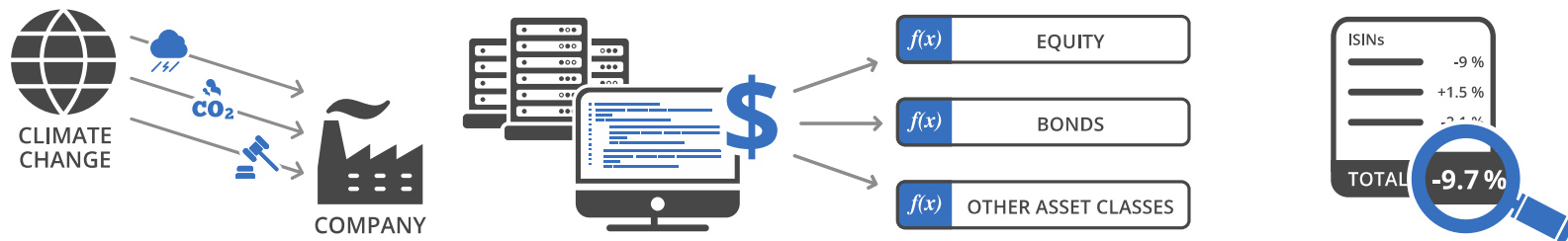


**Shareholder
engagement**



**CSR and
client reporting**

The Carbon Delta Process



Climate change impacts company A

CARBON DELTA calculates company A's cost of climate change

Carbon Delta shows impact on company A's stocks & bonds

CARBON DELTA calculates the possible impact on a portfolio including company A



Carbon Delta's Technology Opportunities Model

Growth of renewable energies has been constantly underestimated



U.S. Department of Energy prediction vs the real outcome

Topic	Prediction 2006	Reality 2016	Difference
CO2 emissions	6.79 bTons	5.17 bTons	- 25%
Coal TWh	2235 TWh	1240 TWh	- 45%
Natural Gas TWh	769 TWh	1380 TWh	+ 80%
Wind and solar TWh	58 TWh	280 TWh	+ 380%
Installed Solar	0.8 GW	39.3 GW	+ 4500%

America's clean energy revolution, NRDC, 2017



Significant growth opportunities have been missed in low carbon sectors

Aspirations for a low carbon future are delivering opportunities



Goal: From patent value to future revenues and investment opportunities

Technology Opportunities Model



1. Patent database \leftrightarrow Carbon Delta database
2. Value each patent according to its potential
3. Identify **low-carbon patents**
4. Compute the potential future **“green profits”** for each company
5. Establish the **future green growth opportunities**

Forward citations



Backward citations



Market coverage



CPC & IPC coverage



Glimpse into the patent database



1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1	ISIN	id	applicant	applicant_highest_p	applicant_original	applicant_assignee	assignee_highest_p	assignee_original	assignee_country	publication_number	application_number	inpadoc_family_id	title_english	title	abstract		
8488	CH0011037469	SYNN-VX	Syngenta AG	Syngenta AG	SYNGENTA PARTICIPATION	Syngenta AG	Syngenta AG	Syngenta AG	CH	NZ	NZ549678A	NZ549678A	20030306CA2457477 Self-processing plants	Self-processing plants	Disclosed		
9724	CH0011037469	SYNN-VX	Syngenta AG	Syngenta AG	SYNGENTA PARTICIPATION	Syngenta AG	Syngenta AG	Syngenta AG	CH	KR	KR2007007817A	KR20070020881A	20070116KR2007007817 SELF-PROCESSING	SELF-PROCESSING	The inven		
21802	CH0011037469	SYNN-VX	Syngenta AG	Syngenta AG	SYNGENTA PARTICIPATION	Syngenta AG	Syngenta AG	Syngenta AG	CH	AU	AU7377982	AU2001116631A	20010329AU20011669 Transgenic plants	exp	The inven		
26206	CNE100005976	002460-CH	Jiangsu Garfeng Lithium Co., Ltd	Jiangsu Garfeng Lithium Co., Ltd	Jiangsu Garfeng Lithium Co., Ltd	Jiangsu Garfeng Lithium Co., Ltd	Jiangsu Garfeng Lithium Co., Ltd	Jiangsu Garfeng Lithium Co., Ltd	CN	CN103545034B	CN201310485720A	CN201310485720A	20130126CN103545034B	Transgenic plants	exp	The inven	
29878	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORP	Nokia Corporation	Nokia Corporation	Nokia Corporation	FI	ZA	ZAZ00903191A	ZAZ0093191A	20101027ZZA00903191A	Service discovery in broadcast n			
30106	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORP	Nokia Corporation	Nokia Corporation	Nokia Corporation	FI	ZA	ZAZ00410263A	ZAZ00410263A	20031218CA248590A1	Apparatus and an associated me			
70519	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORP	Nokia Corporation	Nokia Corporation	Nokia Corporation	FI	RU	RU2316912C2	RU2005126428A	20060127RU2005126428A	METHOD, SYSTEM AND NETW			
72505	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	KR	KR954763B1	KR20077008355A	20070526KR20070539 REDUCTION OF POW	REDUCTION OF POW	REDUCTION OF POW	The inven	
72515	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	KR	KR766130B1	KR2005021345A	20060302KR20060189 ADAPTIVE POWER	ADAPTIVE POWER	ADAPTIVE POWER	The inven	
73410	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	KR	KR729418B1	KR2007105506A	20070618KR729418B A METHOD OF CONVA	A METHOD OF CONVA	A METHOD OF CONVA	The inven	
73434	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	KR	KR721776B1	KR20050713380A	20051004KR20050959 METHOD, SYSTEM	A METHOD, system and	A METHOD, system and	The inven	
75299	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	KR	KR2007053804A	KR2007008355A	20070526KR20070539 REDUCTION OF POW	REDUCTION OF POW	REDUCTION OF POW	The inven	
75937	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	KR	KR2006018846A	KR200507021345A	20060302KR20060189 ADAPTIVE POWER	ADAPTIVE POWER	ADAPTIVE POWER	The inven	
76025	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	KR	KR2005095056A	KR20050713380A	20051004KR20050959 METHOD, SYSTEM	A METHOD, SYSTEM	A METHOD, SYSTEM	The inven	
77138	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORP	Nokia Corporation	Nokia Corporation	NOKIA CORP	FI	JP	JP2010053867A	JP201016393A	20100402JP20100539 METHOD, SYSTEM	A METHOD, SYSTEM	A METHOD, SYSTEM	The inven	
87649	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA TELECOMMU	Nokia Corporation	Nokia Corporation	NOKIA CORP	FI	FI	FI199704148A	FI199704148A	19971105FI199704148A	Foerfarande foer att foerbaettra k			
87650	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA TELECOMMU	Nokia Corporation	Nokia Corporation	NOKIA CORP	FI	FI	FI199704149A	FI199704149A	19971105FI199704149A	Menetelmä parantaa radiolytyk			
103665	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	EP	EP1939754B	EP2013036744A	20050606EP1939754B	ADAPTIVE POWER	ADAPTIVE POWER	The inven	
103666	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	EP	EP1939754B	EP2013036744A	20050606EP1939754B	ADAPTIVE POWER	ADAPTIVE POWER	The inven	
127988	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	AU	AU199864017A	AU199864017A	19980305AUG68231B Estimating or using	Estimating or using	Estimating or using	The inven	
130862	FID009000681	NOKIV-FH	Nokia Corporation	Nokia Corporation	NOKIA TELECOMMU	Nokia Corporation	Nokia Corporation	NOKIA CORPORATION	FI	AU	AU199864017A	AU199864017A	19980305AUG68231B Estimating or using	Estimating or using	Estimating or using	The inven	
134964	FID009000681	NOKIV-FH	Nokia Siemens Networks SA	Nokia Siemens Networks SA	Nokia Siemens Networks SA	Nokia Siemens Networks SA	Nokia Siemens Networks SA	Nokia Siemens Networks SA	FI	EP	EP2467250A1	EP2011719061A	20120607WO20120727 METHOD OF TRANS	METHOD OF TRANS	METHOD OF TRANS	The inven	
162231	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	TW	TW2011304582A	TW2011110377A	20110301TW2011304582A	Pilot power control			
162652	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	RU	RU2010111140A	RU2010111140A	20110927RU2010111140A	The prese			
161219	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	KR	KR20071783A	KR200701783A	20070125KR67147A9B METHOD FOR DECI	BURST DURATION	BURST DURATION	The inven	
163136	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	RU	RU2010111140A	RU2010111140A	20110927RU2010111140A	The prese			
163153	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	KR	KR686541B1	KR200701783A	20070125KR686541B METHOD FOR IMPR	IMPR	IMPR	The inven	
209690	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	KR	KR686541B1	KR20023674A	20060631KR686541B TRANSMISSION MET	POWER CONTROL	POWER CONTROL	The inven	
209835	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	CN	CN103037409B	CN201110296355A	20110304CN103037409A				
210530	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	CN	CN102903596B	CN201111021349A	20110301CN10290359B Heterogeneous mobile	Heterogeneous mobile	Heterogeneous mobile	The inven	
210531	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	CN	CN102903596B	CN201111021349A	20110301CN10290359B Heterogeneous mobile	Heterogeneous mobile	Heterogeneous mobile	The inven	
210622	FR0000130007	ALU-FP	Alcatel-Lucent	Alcatel-Lucent	ALCATEL-LUCENT	Alcatel-Lucent	Alcatel-Lucent	Alcatel-Lucent	FR	CN	CN102903596B	CN201111021349A	20110301CN10290359B Heterogeneous mobile	Heterogeneous mobile	Heterogeneous mobile	The inven	
212666	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212667	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212706	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212707	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212708	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212709	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212710	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212711	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212712	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212713	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212714	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212715	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212716	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212717	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212718	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212719	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212720	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212721	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212722	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212723	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212724	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212725	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212726	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212727	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212728	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212729	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212730	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co	ALCATEL-LUCENT SHANGHAI BELL CO., LTD	CN	CN	CN103037482A	CN201110296374A	20110304CN103037482A	In a cellular communi	Method and device for Claims a r		
212731	ISIN	id	Alcatel-Lucent Shanghai Bell Co	Alcatel-Lucent Shanghai Bell Co													

Low carbon technology examples (1)



Composite Binders at Heidelberg



- Alternative binder in the cement production
- Reduces the CO₂ footprint of cement production

Patent: 20150304EP2842925A1, CALCIUM SULFOALUMINATE COMPOSITE BINDERS

Smart Grids at Siemens



- Improves the electricity network
- Saves overall energy and makes the society more efficient

Patent: 20140912WO2014137655A1, DEMAND SHAPING IN AN ELECTRICAL POWER GRID

Low carbon technology examples (2)



Nuclear Fusion at Lockheed Martin



- Small and compact nuclear fusion reactors
- Ready for market in 5-10Y.

Patent: 20141009CA2908480A1, MAGNETIC FIELD PLASMA CONFINEMENT FOR COMPACT FUSION REACTOR

Biotechnology at Novartis



- Improves the production of chemicals
- Saves general amounts of used materials, heat with biocatalysis.

Patent: 20150115CA2916905A1, MULTIPLE PROTEASES DEFICIENT FILAMENTOUS FUNGAL CELLS AND METHODS OF USE THEREOF



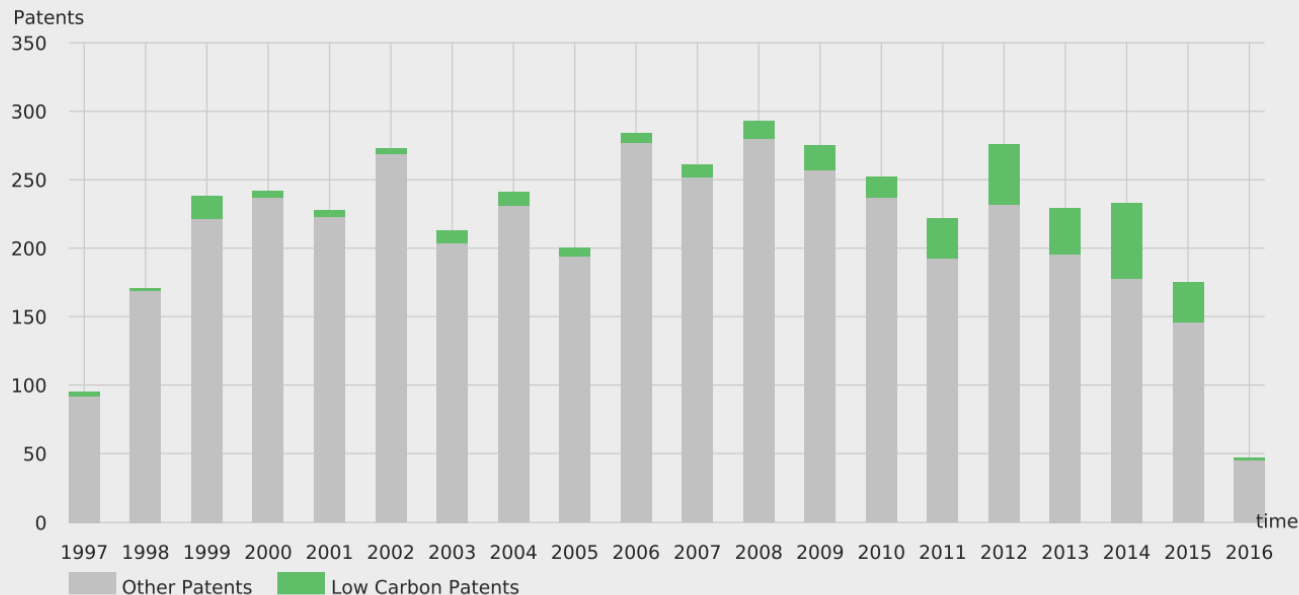
Sample Results

Exxon Mobil Corp – Technology Opportunities Leader

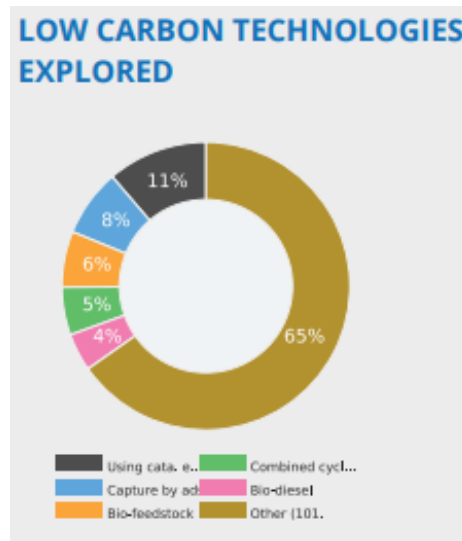
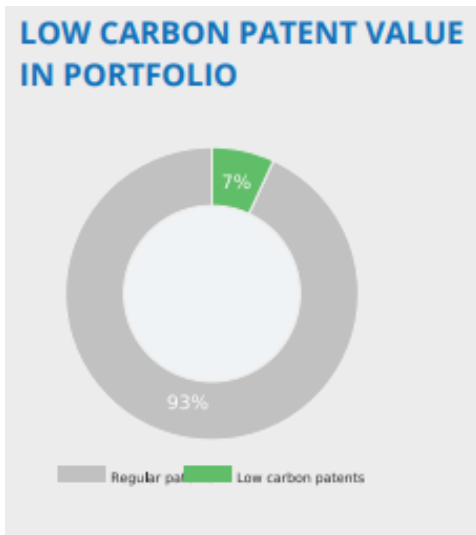


LOW CARBON PATENT FILINGS OVER TIME

The below bar chart displays the quantity of patents filed by Exxon Mobil Corp each year for the past 20 years. Low carbon patents are represented as green in each bar while other patents are colored grey.

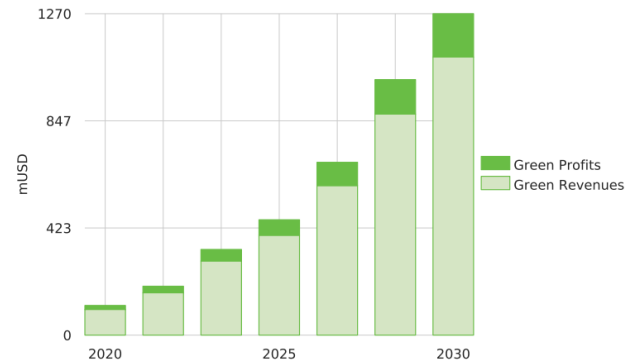
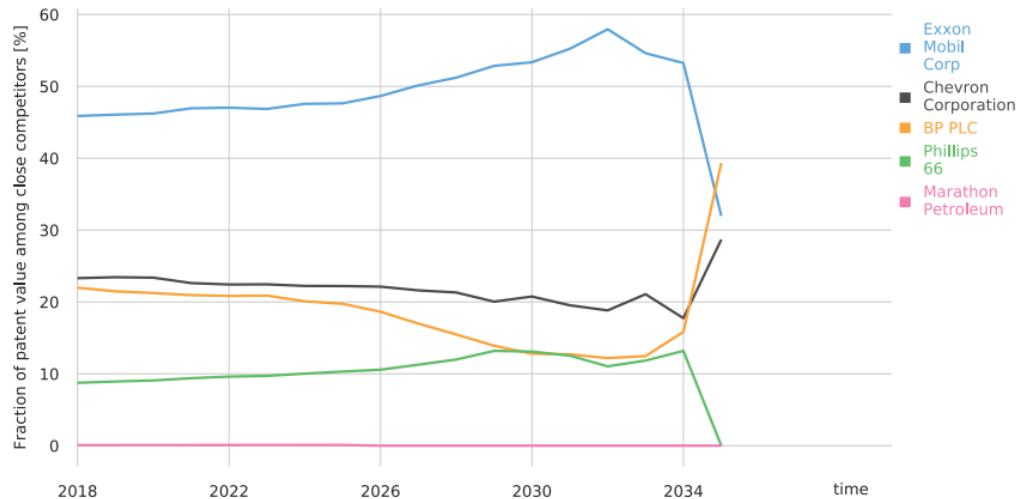


Exxon Mobil Corp – Technology Opportunities Leader



Exxon owns technologies to **reduce emissions**, improve **marine structures**, supply **hydrogen fuel cells** and improve **biofuels**

We expect Exxon to continue generating green profits and outperform its peers



Our assessment using a Dividend Discount Model: Exxon's stock price is currently **undervalued by 0.7%**

Companies have very different patent portfolios within their sector



Company in Oil and Gas Sector	Quality score of all low carbon patents	Quality score of all patents
Exxon	269	3879
Chevron	140	1567
Total	119	1292
BP	113	1031
Phillips 66	43	201



The **value of Exxon's patents stand out** from those filed by sector competitors.



- 1) **Investor value and insights** are embedded **within quantitative patent analysis**
- 2) **Use big data and smart statistical methods** to uncover new and useful datasets
- 3) **Combine quantitative and qualitative analysis** for a more holistic sustainability assessment approach
- 4) **Use new datasets to sort through pure rhetoric** and understand what companies are really doing to become more sustainable



CARBON DELTA
the environmental fintech

Thank You.

Feldeggstrasse 4
8008 Zürich
Switzerland

www.carbon-delta.com
contact@carbon-delta.com



Goal:

- Better return on investment when using patent information to select a set of top performers

Procedure:

- Basis: Nasdaq 100
- Select top-/flop-10 companies according to patent portfolio (patent quality index (PQI))
- Invest 1'000 Euro for the years 2010 - 2017



Test 1: Return on investment (1'000 €)

• 10 top stocks according to stock performance (retrospective):	11'440 €
• 10 top stocks according to patent portfolio (PQI):	7'410 €
• Random generator 1:	4'990 €
• Random generator 2:	4'880 €
• Random generator 3:	4'420 €
• Random generator 4:	4'380 €
• All stocks equal weighted:	4'230 €
• Random generator 5:	3'960 €
• Random generator 6:	3'740 €
• Random generator 7:	3'570 €
• Random generator 8:	3'400 €
• Random generator 9:	3'250 €
• Random generator 10:	3'010 €
• 10 flop stocks according to patent portfolio (PQI):	2'840 €
• 10 flop stocks according to stock performance (retrospective):	1'340 €



Take home message

- Patent Information adds additional value to the asset management
 - Good results for (Nasdaq 100)
 - Patent information is so far not considered adequately in stock market
 - Findings suggest that strategic patent use is of importance for big technology based companies
 - Further studies required to confirm findings on technology based companies
- Stock performance is related to many factors, patents may be one of them