考虑非能耗的煤炭产业碳排放驱动因素研究

LMDI

2005 - 2014 LMDI

LMDI

266590

250022

266590

2008

2050 2009

2020 GDP 2005 40% - 45%

70%

“ ”

ZR2014GM010 “ ”

2014LZ35 “ ” 14CGLJ26

LMDI STIRPAT IP DA ARDL LMDI Ang 2004 LMDI

LMDI Wang 2005 LMDI 1957-2000 2006 Ȝ Liu 2007 36

Ȝ Ȝ Ɔ 8 R Ɏ 0 . . 5

$C=\lambda_i E_i+24.5C_H+b$ 1

C λ_i i E_i i C_H

b

24.5 $C=\lambda_i E_i$ E_i

2

א ` 1/3 1.5

30 1998 596

2015

184

2004

א / P

$$\Delta C = C^t - C^0 = \sum_i S_i^t \times F_i^t \times I^t \times R^t \times Z^t \times n^t - \sum_i S_i^0 \times F_i^0 \times I^0 \times R^0 \times Z^0 \times n^0$$

$$=\Delta C_S+\Delta C_F+\Delta C_I+\Delta C_R+\Delta C_Z+\Delta C_n+\Delta C_{rsd} \qquad 5$$

5 ΔC_S ΔC_F ΔC_I ΔC_R ΔC_Z ΔC_n

$$D=\frac{C^t}{C^0}=D_S+D_F+D_I+D_R+D_Z+D_n+D_{rsd} \qquad 6$$

6 D_S D_F D_I D_R D_Z D_n

5 LMDI

$$\Delta C_S = \sum_i W_t' \ln\frac{S_i^t}{S_i^0} \quad \Delta C_F = \sum_i W_i' \ln\frac{F_i^t}{F_i^0}$$

$$\Delta C_I = \sum_i W_t' \ln\frac{I_i^t}{I_i^0} \quad \Delta C_R = \sum_i W_i' \ln\frac{R_i^t}{R_i^0}$$

$$\Delta C_Z = \sum_i W_t' \ln\frac{Z_i^t}{Z_i^0} \quad \Delta C_n = \sum_i W_i' \ln\frac{n_i^t}{n_i^0} \qquad 7$$

$$W_t' = \frac{C_i^t - C_i^0}{\ln(C_i^t / C_i^0)}$$

$$\omega = \frac{\ln D}{\Delta C} = \frac{\ln C^t - \ln C^0}{C^t - C^0}$$

D_S=exp $\omega\Delta C_S$ D_F=exp $\omega\Delta C_F$

D_I=exp $\omega\Delta C_t$ D_R=exp $\omega\Delta C_R$ 8

D_Z=exp $\omega\Delta C_Z$ D_n=exp $\omega\Delta C_n$

D_{rsd}=1

2005 2014

90%

GB/T2008

“ ”

2005

2005

7 8

1

2

	ΔC_S	D_S	ΔC_I	D_I	ΔC_R	D_R	ΔC_Z	D_Z	ΔC_n	D_n
2006	311892	1.021	-491529	0.967	789068	1.055	-3515689	0.789	3498642	1.266
2007	750298	1.053	-1175196	0.923	-759559	0.949	-928442	0.939	2337458	1.173
2008	1041868	1.075	-1623266	0.894	-287029	0.980	-1827461	0.881	2553433	1.193
2009	1383394	1.099	-2141905	0.864	586705	1.041	-5553369	0.685	6006656	1.506
2010	1721002	1.121	-2648848	0.838	699479	1.048	-4778691	0.728	6017649	1.492
2011	1963553	1.138	-3009365	0.820	-1117412	0.929	-2209606	0.865	5742370	1.459
2012	2244589	1.165	-3422588	0.792	-2782577	0.827	-852866	0.944	5137983	1.419
2013	2201081	1.158	-3359410	0.800	-1603465	0.899	-364039	0.976	4166641	1.319
2014	2213813	1.161	-3377760	0.797	-388571	0.974	-812085	0.947	3028101	1.226
	13831490		-21249867		-4863361		-20842248		38488933	

	ΔC_S	D_S	ΔC_I	D_I	ΔC_R	D_R	ΔC_Z	D_Z	ΔC_n	D_n
2006	-142	1.000	-179496	0.943	162325	1.054	-723237	0.790	719730	1.265
2007	-1279	1.000	-423619	0.865	-151314	0.950	-184958	0.939	465652	1.173
2008	-320	1.000	-581078	0.814	-56010	0.980	-356604	0.881	498267	1.193
2009	-26	1.000	-758485	0.762	111547	1.041	-1055827	0.685	1142008	1.507
2010	-33	1.000	-927814	0.716	129672	1.048	-885893	0.727	1115576	1.493
2011	-282	1.000	-1045530	0.685	-203277	0.929	-401967	0.865	1044640	1.460
2012	-109	1.000	-1177889	0.635	-492415	0.827	-150926	0.943	909235	1.420
2013	-2	1.000	-1158327	0.648	-285749	0.899	-64874	0.976	742524	1.320
2014	-2	1.000	-1163944	0.643	-69058	0.974	-144325	0.947	538160	1.227
	-2195		-7416182		-854279		-3968611		7175792	

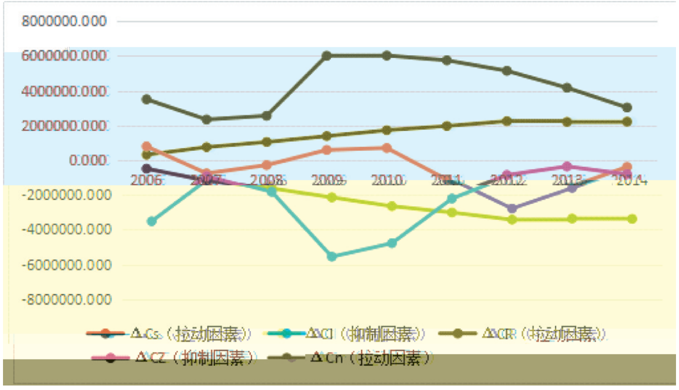
0 1 1 2

1

1

1

2



1

1

2

2

1

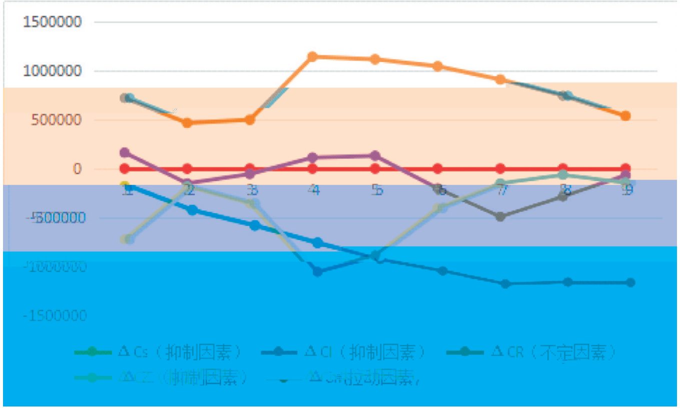
1

3

2

4

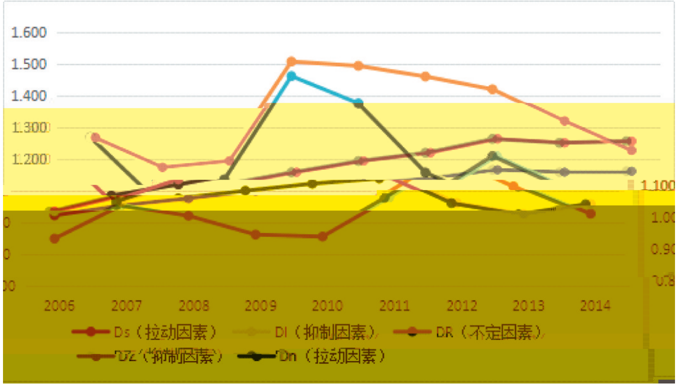
1



1

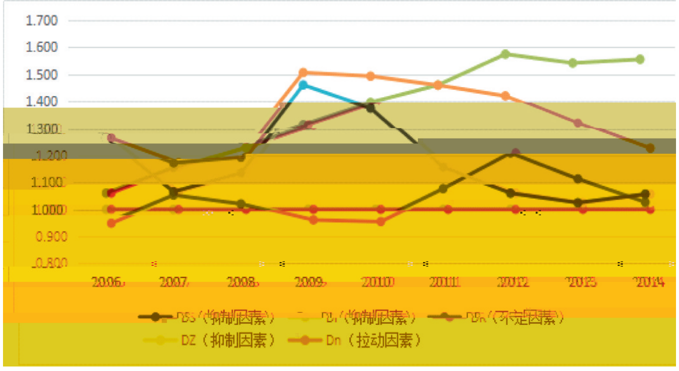
2006 2012 2013 2014

3



2

4



2

1 3 2006 2012

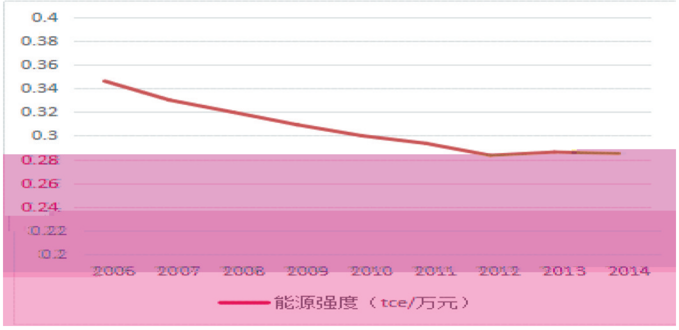
2013-2014

2006 2014 5 2005

2006 2012

2012

2012



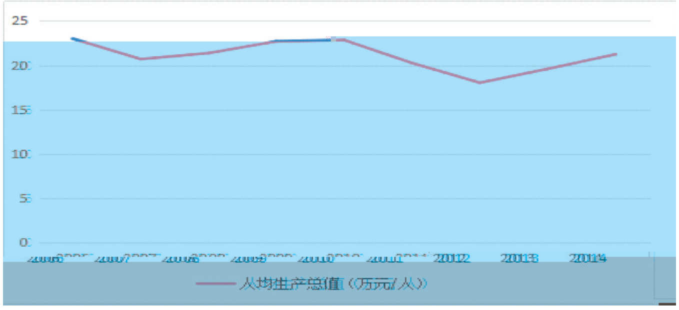
3

2005

2006 2009 2010

2007 2008 2011

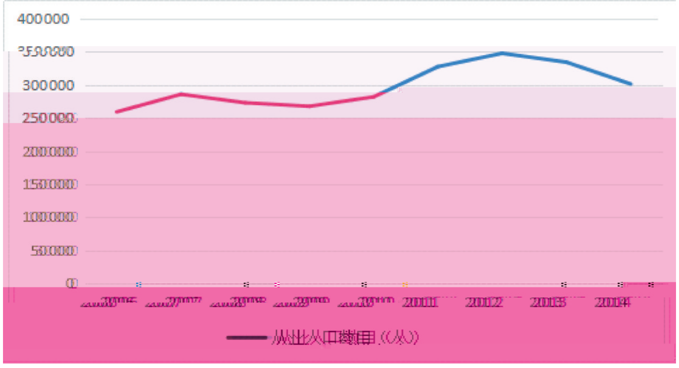
2014 1



6

4

1 2



1 3

2006 2007

2007 2009

2009 2013

2014

7

5

1 2

1

3

2009 1.507

2014 1.226

2012

2012 2012

2009

1. · 2015 4

2. STIRPAT · 2010 12

3. IPDA 2013 8

4. Zhao X, Ma Q, Yang R. Factors Influencing CO_2 Emissions in China 's Power Industry: Co-integration Analysis. Energy Policy Policy ζ Ͻ ' H H

An empirical analysis. Energy Policy,2007,35(11):5892-5900
11. 2009 12
12. 2011 4
13. 1952 -2008 2012 1
14. —— DEA-Malmquist Tobit 2014 1
15. 2012 2
16. 2011 2
17. · 2015 4
18. · 2015 4
19. 2009 9
20. · 2010 7
21. LMDI 2012 1
22. 2012 1
23. LMDI 2016 5
24. 2016 2
25. 2016 3
26. 2015 11
27. 2015 28

—

By availing LMDI model into 2005-2014 time series data collected from Shandong province's coal industry, we conclude the influencing factors of carbon emission: energy consumption structure, energy intensity, per capita GDP for the coal industry, population intensity of coal enterprise and number of coal enterprises. With or without the CBM emission, contribution value and contribution rate of these factors are calculated respectively. Results show that per capita GDP for the coal industry, population intensity of coal enterprise and especially energy intensity have inhibiting effect on carbon emission, though the first factor fluctuates in its driving effect. Besides, energy consumption structure and number of coal enterprises consistently raise carbon emission. However, energy consumption structure 's driving effect converts into inhibiting one if CBM emission not taken into account, which reveals the great impact of CBM emissions on coal industry. Lastly, several relative strategic suggestions are offered.

LMDI; coal industry; carbon emission; factor decomposition; non-energy consumption