

Title	大気汚染物質の推計：EDEN1990を対象に
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Author	鷺津, 明由(Washizu, Ayu) 金, ユン慶(Kimu, Yunkyon)
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Abstract	本稿では，1990年について推計されたEDENの結果を用いていくつかの係数値を計算し，各国におけるCO₂，SO₂の発生量やエネルギーの消費量に関するファクトファイニングを報告する。[Table EDEN Data 1990]まずTable 1では，対象国別に，EDENで燃料種別に推計したエネルギー消費量に基づいて，それらを熱量換算した値，およびそれらに起因して発生するCO₂，SO₂の推計量の総額をまとめている。また，総額を各国の人口で割って1人あたりにならした数値も示している（1人あたりの値のうち，かつこ内は家計が消費したエネルギーのみをとりあげている）。すると総量では中国と日本の占める割合が大きく，とりわけ中国のSO₂発生量が突出している。また1人あたりについてみると，日本，シンガポール，台湾，韓国など，先進経済国における値が大きくなっている。EDENの推計結果をより詳しく観察するために洛国ごとに以下の計数値を算出した。1.各部門の生産額1US\$あたりCO₂，SO₂発生量および熱消費量（Tablet～4）2.各部門の消費熱量1Tca1あたりCO₂，SO₂発生量（Table5～6）3.各財の最終消費US\$あたりによって誘発されるCO₂，SO₂，発生量または熱消費量（Table7～9）各財の最終消費1単位あたりによって誘発されるCO₂，SO₂発生量または熱消費量E[記号]ベクトルの計算式（国を示すサフィックスは省略してある）は次の通りである。[計算式]これらの計算を，上記の8ヶ国について行った。ここで[記号]は各財の生産過程で発生するCO₂，SO₂の量，または消費される熱量を生産額（US\$表示）単位あたりの大きさで示した係数ベクトル，[記号]は各財を消費する過程における同様の係数ベクトルである。簡単にいうと，これらの式の右辺第1項は各財を生産する過程で直接間接に発生するCO₂，SO₂と消費される熱量の大きさを示し，第2項はエネルギー財を使う（燃焼させる）過程における量を示す。結果を簡単に見てみると，同じ1\$を生産するため1こ発生するCO₂，SO₂の量，および消費される熱量（Table2～4）はいずれも中国が最も大きく日本が最も小さい傾向である。とりわけ国間のばらつきはSO₂の量について顕著である。消費熱量のTotalで国間格差をみると，日本が1\$の生産あたり0.496Tcalのエネルギーを消費するのに対し，中国は6.092Tcalと12倍も消費していることになる。しかし，過去の研究によれば日本と中国の購買力平価は実際の為替レートとの4倍程度とされているので，生産量実物単位あたりのエネルギー消費の格差はより小さくなる可能性がある。次に，消費熱量1TcalあたりのCO₂，SO₂発生量は（Table5，6），SO₂の場合より国間の格差が大きい，これはエネルギーミックスの相違によるものと思われる。同様のことは一つの国の産業間格差についても言える。SO₂の場合，鉄鋼産業や火力発電などエネルギー多消費産業における消費熱量あたり発生量がいずれの国でも意外に小さく，その一方で軽工業や食品産業で発生量が多い。最後にTable7～9は，ある財を1US\$消費したとき直接間接に発生するCO₂，SO₂や消費される熱量が，どの国で消費がされたかに依存して大きく違うことを示している。たとえば肉製品（14部門）を1US\$消費した場合に直接間接に消費されたエネルギーの熱量は，日本で1.59Tcal，韓国で2.16Tcal，中国で7.09Tcal，タイでは4.69Tcalといった具合である。しかし同じ1US\$でも実際に買うことのできる肉の量は国間で大きく異なると予想される。従って表に見られる数値の差を，各国の生産技術の格差に起因する部分と価格差による部分とに分離していくことが今後の研究課題としてあげられる。また，いずれの計算結果を見てもSO₂発生量の場合に国間の格差が特に大きくなっている。現在SO₂については脱硫アクティビティを普及させることがアジア地域で重要視されており，今後はこの問題を推計に盛り込んでいくことが必要であろう。
Notes	表紙上部に"日本学術振興会未来開拓学術研究推進事業複合領域「アジア地域の環境保全」"の表示あり
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大気汚染物質の推計 ： EDEN1990 を対象に

鷺 津 明 由
金 ユ ン 慶

No.G-73

学振未来 WG1-12

大気汚染物質の推計

: EDEN1990 を対象に

本稿では、1990 年について推計された EDEN の結果を用いていくつかの係数値を計算し、各国における CO₂、SO₂ の発生量やエネルギーの消費量に関するファクトファイングを報告する。

Table1 EDEN Data 1990

country	Total			per capita (by household only)					
	Calory (Terra)	CO ₂ (1000Ton)	SO ₂ (Ton)	Calory (Terra)		CO ₂ (1000Ton)		SO ₂ (Ton)	
Japan	3,900,866	1,097,167	3,597,988	31.58	(3.71)	8.88	(9.72)	29.13	(0.03)
Korea	957,496	247,462	1,556,076	22.34	(4.17)	5.77	(1.26)	36.30	(5.42)
China	6,493,762	2,297,434	16,288,989	5.62	(0.64)	1.99	(0.23)	14.10	(1.81)
Singapore	143,255	42,016	97,838	46.80	(2.64)	13.73	(0.58)	31.96	(0.02)
Thailand	415,372	154,084	1,166,204	7.47	(0.50)	2.77	(0.14)	20.98	(0.20)
Indonesia	437,334	251,080	76,614	2.39	(0.44)	1.37	(0.02)	0.42	(0.04)
Philippines	132,877	38,464	437,236	2.19	(0.19)	0.63	(0.04)	7.19	(0.11)
Taiwan	705,495	131,477	627,697	34.66	(1.03)	6.46	(0.20)	30.84	(0.00)

(出所)「EDEN Data Base Reference 1990」、KEO discussion paper、No.41、産業研究所、1998

まず Table1 では、対象国別¹に、EDEN で燃料種別に推計したエネルギー消費量に基づいて、それらを熱量換算した値、およびそれらに起因して発生する CO₂、SO₂ の推計量の総額をまとめている。また、総額を各国の人口で割って1人あたりにならした数値も示している（1人あたりの値のうち、かつこ内は家計が消費したエネルギーのみをとりあげている）。すると総量では中国と日本の占める割合が大きく、とりわけ中国の SO₂ 発生量が突出している²。また1人あたりについてみると、日本、シンガポール、台湾、韓国など、

¹ EDEN で推計の対象としたのは日本、韓国、中国、マレーシア、シンガポール、タイ、インドネシア、フィリピン、台湾の9ヶ国であるが、本稿では推計結果について一応の確認作業を終えたマレーシアを除く8ヶ国について報告する。マレーシアについては、現在確認作業を継続中である。

² SO₂ 発生量であり、排出量ではないことに注意しなければならない。日本の場合、脱硫

先進経済国における値が大きくなっている。

EDEN の推計結果をより詳しく観察するために、各国ごとに以下の計数値を算出した。

- 1.各部門の生産額 1US\$あたり CO₂, SO₂ 発生量および熱消費量 (Table2~4)
- 2.各部門の消費熱量 1Tcal あたり CO₂, SO₂ 発生量 (Table5~6)
- 3.各財の最終消費 1US\$あたりによって誘発される CO₂, SO₂ 発生量または熱消費量 (Table7~9)

各財の最終消費 1 単位あたりによって誘発される CO₂, SO₂ 発生量または熱消費量 $E_{perunit}$ ベクトルの計算式 (国を示すサフィックスは省略してある) は次の通りである。

$$E_{perunit} = e^p (I - A)^{-1} I + e^c I \quad (1)$$

これらの計算を、上記の 8 ヶ国について行った。ここで e^p は各財の生産過程で発生する CO₂, SO₂ の量、または消費される熱量を生産額 (US\$表示) 単位あたりの大きさを示した係数ベクトル、 e^c は各財を消費する過程における同様の係数ベクトル³である。簡単にいうと、これらの式の右辺第 1 項は各財を生産する過程で直接間接に発生する CO₂, SO₂ と消費される熱量の大きさを示し、第 2 項はエネルギー財を使う (燃焼させる) 過程における量を示す。

結果を簡単に見てみると、同じ 1\$を生産するために発生する CO₂, SO₂ の量、および消費される熱量 (Table2~4) はいずれも中国が最も大きく日本が最も小さい傾向である。とりわけ国間のばらつきは SO₂ の量について顕著である。消費熱量の Total で国間格差をみると、日本が 1\$の生産あたり 0.496Tcal のエネルギーを消費するのに対し、中国は 6.092Tcal と 12 倍も消費していることになる。しかし、過去の研究によれば日本と中国の購買力平価は実際の為替レート⁴の 4 倍程度とされているので、生産量実物単位あたりのエネルギー消費の格差はより小さくなる可能性がある⁴。次に、消費熱量 1Tcal あたりの CO₂, SO₂ 発生量は (Table5,6), SO₂ の場合より国間の格差が大きい、これはエネルギーミックスの相違によるものと思われる。同様のことは一つの国の産業間格差についても言える。

アクティビティが広く普及しているから、実際に排出される SO₂ は発生量のうちの 30%程度である。

³ 各財を消費する過程で CO₂, SO₂ や熱量が発生するのは、エネルギー財を使ったときだけである。従って、 e^c は石油・石炭などエネルギー関係の財に対応する要素にのみ正の数値がはいり、それ以外はゼロであるようなベクトルである。

⁴ この可能性から考えれば、日本と中国の間には 12/4=3 倍くらいの違いが現れる。

SO₂ の場合、鉄鋼産業や火力発電などエネルギー多消費産業における消費熱量あたり発生量がいずれの国でも意外に小さく、その一方で軽工業や食品産業で発生量が多い。最後に Table7～9 は、ある財を 1US\$消費したとき直接間接に発生する CO₂、SO₂ や消費される熱量が、どの国で消費がされたかに依存して大きく違うことを示している。たとえば肉製品（14 部門）を 1US\$消費した場合に直接間接に消費されたエネルギーの熱量は、日本で 1.59Tcal、韓国で 2.16Tcal、中国で 7.09Tcal、タイでは 4.69Tcal といった具合である。しかし同じ 1US\$でも実際に買うことのできる肉の量は国間で大きく異なると予想される。従って表に見られる数値の差を、各国の生産技術の格差に起因する部分と価格差による部分とに分離していくことが今後の研究課題としてあげられる。また、いずれの計算結果を見ても SO₂ 発生量の場合に国間の格差が特に大きくなっている。現在 SO₂ については脱硫アクティビティを普及させることがアジア地域で重要視されており、今後はこの問題を推計に盛り込んでいくことが必要であろう。

Table2 CO2/CT index for EDEN Data 1990 (USDollar)

* units : CO2 1000 Ton/1,000,000 USD

EDEN	Classification	country								
Code		Japan	Korea	China	Singapore	Thailand	Indonesia	Philippines	Taiwan	
1	Paddy	0.03218	0.05260	0.49849	0.00000	0.02367	0.00013	0.00000	0.00144	
2	Fruits	0.02035	0.06084	0.46714	0.00000	0.21037	0.00197	0.00000	0.00144	
3	Dairy farming and Livestock raising (Inc.	0.00570	0.10019	0.39798	0.01924	0.65378	0.02314	0.00000	0.00144	
4	Other edible crops	0.08203	0.09382	0.35462	0.14342	0.15494	0.00378	0.00000	0.00144	
5	Non-edible crops	0.13001	0.08385	0.53200	0.00000	0.07932	0.01665	0.00000	0.00144	
6	Agricultural services	0.17056	0.19233	0.00000	0.00000	1.44408	0.00000	0.00000	0.01344	
7	Forestry	0.11122	0.02837	0.25135	0.00000	0.08033	0.04411	0.38556	0.00144	
8	Fishing	0.76537	1.19658	0.64594	0.37573	2.03814	0.09202	0.32837	1.17873	
9	Coal	0.04633	0.07252	2.70243	0.65277	0.72690	4.40618	1.32512	0.08955	
10	Crude oil and Natural gas	0.03818	0.00000	1.34675	0.00000	0.91222	0.00980	1.70629	0.00001	
11	Metal ores mining	0.03601	0.22180	1.60365	0.00000	1.01630	0.26319	1.62348	0.11351	
12	Non-metallic ores mining	0.06681	0.37985	2.43102	0.00000	0.39114	0.05191	0.68141	0.11351	
13	Dairy products	0.08444	0.11854	0.34866	0.10908	0.22406	0.01006	0.06745	0.11638	
14	Meat and meat products	0.01360	0.03172	0.54856	0.08006	0.30044	0.00422	0.06745	0.11638	
15	Other foods	0.06034	0.14287	1.27100	0.11812	0.42207	0.01201	0.12650	0.11638	
16	Animal feeds	0.01951	0.03553	0.24649	0.00000	0.61766	0.00918	0.06745	0.11638	
17	Tea and coffee	0.05460	0.26881	2.30987	0.32560	0.97744	0.01082	0.06745	0.11637	
18	Beverages	0.05820	0.13947	1.83960	0.31493	0.20226	0.02660	0.11254	0.11638	
19	Tobacco	0.01054	0.02461	0.26838	0.05219	0.50105	0.00630	0.07001	0.11638	
20	Spinning and weaving	0.04067	0.16440	0.89288	0.10473	0.16299	0.01683	0.35146	0.20458	
21	Knitting	0.02096	0.12377	0.36995	0.00000	0.08084	0.01270	0.28549	0.20458	
22	Wearing apparel and other fabricated textile	0.06502	0.19982	0.22254	0.02118	0.11252	0.00871	0.12455	0.20458	
23	Leather and leather products	0.02606	0.06996	1.07004	0.02437	0.04038	0.00651	0.11175	0.03724	
24	Timber and Wooden products	0.01482	0.12666	3.01641	0.06534	0.51097	0.22601	0.13071	0.00823	
25	Wooden furnitures	0.01259	0.05409	0.34767	0.02645	0.07244	1.45691	0.43340	0.00823	
26	Pulp, paper and paper products	0.46041	0.37275	2.92846	0.06862	1.11011	3.11573	0.99203	0.65754	
27	Printing and publishing	0.00806	0.03537	0.31984	0.02696	0.10619	0.00675	0.11175	0.00558	
28	Fertilizer	1.01279	0.40503	8.29627	0.00000	0.16015	0.06394	0.30047	2.07635	
29	Drugs and medicine	0.01403	0.05613	1.52596	0.01057	0.07962	0.00698	0.10973	0.10551	
30	Soap, detergent and toiletries	0.04432	0.09575	1.54559	0.04618	0.29279	0.01245	0.17298	0.10551	
31	Other chemical products	0.17359	0.25946	3.75970	0.06435	0.36613	0.16241	0.14862	0.65593	
32	Petroleum refinery products	0.08330	0.27217	1.80834	1.57761	0.42823	0.00738	0.00148	2.25259	
33	Coke and other coal products	2.00753	2.66368	33.13447	0.03905	0.00000	0.21477	3.73448	0.65221	
34	Rubber products	0.07385	0.16892	1.61268	0.01977	0.37685	0.04027	0.19545	0.25754	
35	Plastic products	0.02697	0.11059	0.58961	0.03097	0.12577	0.00653	0.11328	0.07891	
36	Cement	3.51185	4.95673	13.05899	0.03845	4.15836	61.02703	4.32523	2.66424	
37	Glass and glass products	0.37384	1.24883	4.32871	0.40602	1.47319	0.07674	1.61659	1.29574	
38	Other non-metallic mineral products	0.21168	0.67221	3.94971	0.40140	1.39170	5.03609	0.18939	1.79387	
39	Iron and steel	0.83360	0.82146	16.34397	0.21739	0.46002	77.82803	0.20220	1.82490	
40	Iron and steel products	0.22590	0.26781	3.31295	0.16447	0.26162	0.03763	0.21108	1.30878	
41	Non-ferrous metal products	0.17649	0.27464	1.13632	0.12009	0.93434	0.09486	0.22307	0.05488	
42	Metallic furniture	0.02130	0.17757	0.52586	0.02598	0.09619	0.01724	0.11175	0.05014	
43	Other fabricated metal products	0.03140	0.07087	1.21347	0.03778	0.21125	0.03399	0.20543	0.05391	
44	Household electrical appliances	0.00731	0.02270	0.07602	0.02447	0.04852	0.01893	0.11217	0.00000	
45	Other electrical machinery and apparatus	0.01166	0.03796	1.20961	0.00584	0.14114	0.11039	0.11175	0.01441	
46	Motor vehicle	0.01578	0.04182	1.00564	0.01321	0.11606	0.02870	0.11175	0.02204	
47	Ship building and repairing	0.02063	0.03762	0.63389	0.04589	0.00000	0.05888	0.11175	0.02204	
48	Other transport equipments	0.04084	0.03726	4.05719	0.08467	0.59428	0.00761	0.11175	0.02204	
49	Precision instruments	0.01099	0.03122	0.86146	0.02215	0.12483	0.03515	0.11175	0.06504	
50	Other machinery and equipments	0.01744	0.04797	0.89921	0.04498	0.14017	0.00905	0.12055	0.01285	
51	Other manufactured products	0.01896	0.05729	2.29641	0.02434	0.07338	0.02166	0.11175	0.06504	
52	Thermal power	5.48754	11.79888	64.94044	4.86771	20.65423	71.07020	7.01243	13.81502	
53	Other power	1.01115	0.49270	18.24109	0.00000	9.66909	0.70599	0.04396	0.15490	
54	Gas supply	2.95964	8.01306	10.71668	3.84897	34.51487	637.80745	0.00000	0.00221	
55	Water supply	1.44346	1.04816	8.71744	0.01210	0.07394	0.06909	9.96966	0.00921	
56	Buildings	0.01205	0.03634	0.27086	0.08844	0.03737	0.14688	0.03557	0.02895	
57	Civil engineering	0.03650	0.15750	0.34507	0.69105	0.19607	0.21538	0.03557	0.02895	
58	Commerce	0.02550	0.23328	0.75497	0.19684	0.04100	0.02184	0.07203	0.02848	
59	Railway transport	0.03188	1.14989	4.50813	0.00000	1.64136	0.30754	3.82089	0.27605	
60	Road transport	0.75536	1.91510	1.46852	1.65429	2.99178	0.32540	4.92325	4.46677	
61	Water transport	1.05377	3.16396	1.07268	0.88606	3.54871	0.22558	2.33711	2.68048	
62	Air transport	1.15432	1.41263	2.34616	2.25856	1.67489	0.40859	0.72921	1.57168	
63	Other transport and transport relating services	0.01234	0.31230	1.55445	0.52395	0.25759	0.08144	0.07509	0.01681	
64	Eating and drinking place	0.05182	0.54457	0.36735	0.26533	0.20753	0.04904	0.46961	0.01344	
65	Hotels and other lodging place	0.04816	0.71951	0.24931	0.08104	0.05958	0.05353	0.31884	0.01344	
66	Postal and telecommunication services	0.00951	0.03465	1.08077	0.05349	0.07792	0.01995	0.03418	0.01893	
67	Financial and insurance services	0.00349	0.05213	0.64176	0.08060	0.03604	0.00320	0.03012	0.00294	
68	Real estate services	0.00904	0.02745	0.80358	0.02721	0.01145	0.00256	0.00483	0.05385	
69	Business services	0.02122	0.09621	0.47846	0.25300	0.15074	0.01821	0.07280	0.00525	
70	Public administration	0.05370	0.22910	0.95247	0.15888	0.00000	0.00000	0.09465	0.15630	
71	Education	0.05111	0.12367	0.49234	0.17503	0.09797	0.01323	0.05670	0.01344	
72	Medical and health services	0.05458	0.20431	0.22366	0.04404	0.07656	0.02336	0.03938	0.01344	
73	Repair of motor vehicles	0.01057	0.00000	3.70781	0.01404	0.08668	0.02439	0.11175	0.01344	
74	Miscellaneous repair services	0.00419	0.21993	2.21937	0.04541	0.01821	0.02314	0.02397	0.01344	
75	Other services	0.05069	0.20800	1.01802	0.04651	0.14060	0.01909	0.03220	0.01344	
76	Non-elsewhere classified	0.06842	0.09089	0.00000	0.73929	0.19674	0.07452	0.00000	0.01344	
201	household expenditure	0.07083	0.39952	1.42918	0.11398	0.14922	0.05921	0.07232	0.06453	
	Total	0.13976	0.34515	2.15557	0.37699	0.66844	0.93857	0.33248	0.40264	

Table3 SO2/CT index for EDEN Data 1990 (USDollar)

* units SO2 Ton/1,000,000 USD									
EDEN Code	Classification	country							
		Japan	Korea	China	Singapore	Thailand	Indonesia	Philippines	Taiwan
1	Paddy	0.00009	0.15979	1.90077	0.00000	0.13722	0.00026	0.00000	0.00757
2	Fruits	0.00130	0.18378	1.78073	0.00000	1.22699	0.00493	0.00000	0.00757
3	Dairy farming and Livestock raising (Inc.	0.00613	0.28390	3.12786	0.02886	2.63677	0.05333	0.00000	0.00757
4	Other edible crops	0.00303	0.44447	1.35210	0.27580	0.68226	0.00836	0.00000	0.00757
5	Non-edible crops	0.00500	0.36498	2.16436	0.00000	0.35693	0.03855	0.00000	0.00757
6	Agricultural services	0.00000	1.32954	0.00000	0.00000	9.15346	0.00000	0.00000	0.05364
7	Forestry	0.01775	0.06001	0.38089	0.00000	0.46374	0.10239	7.39883	0.00757
8	Fishing	0.02057	4.88846	3.09489	0.99803	12.95211	0.21180	1.11370	4.63215
9	Coal	2.78664	0.57708	18.45224	1.79779	4.61208	6.76498	22.51174	0.55723
10	Crude oil and Natural gas	0.58107	0.00000	4.88323	0.00000	7.90498	0.02131	20.29582	0.00000
11	Metal ores mining	1.63491	1.24547	9.56225	0.00000	6.44259	0.43768	29.48199	0.61674
12	Non-metallic ores mining	0.01541	1.61292	15.96468	0.00000	0.90641	0.11975	12.45589	0.61674
13	Dairy products	0.00070	1.25157	2.68699	0.30979	2.76024	0.02514	1.11266	1.14090
14	Meat and meat products	0.00085	0.28751	4.42972	0.20014	1.03372	0.00897	1.11266	1.14090
15	Other foods	0.00407	1.70443	9.72846	0.29845	2.48316	0.04077	3.12365	1.14091
16	Animal feeds	0.00147	0.40863	1.84834	0.00000	2.86483	0.02203	1.11266	1.14090
17	Tea and coffee	0.00301	3.16508	18.78588	0.48840	2.68795	0.02436	1.11266	1.14081
18	Beverages	0.00041	1.67613	15.13835	0.84681	2.19027	0.06318	0.36933	1.14090
19	Tobacco	0.00316	0.32439	2.21121	0.13918	6.32763	0.01496	1.27744	1.14090
20	Spinning and weaving	0.00782	2.07664	7.03473	0.29674	2.05940	0.03866	6.24643	2.16551
21	Knitting	0.00085	1.55955	2.83835	0.00000	1.18380	0.02858	6.04084	2.16551
22	Wearing apparel and other fabricated textile	0.00062	2.54798	1.54802	0.04490	1.47284	0.02049	0.75120	2.16551
23	Leather and leather products	0.00107	0.78405	5.59437	0.03655	0.23962	0.01466	0.35229	0.38935
24	Timber and Wooden products	0.00949	1.21858	23.75640	0.14374	3.05828	0.08237	0.38879	0.07250
25	Wooden furnitures	0.00029	0.14513	2.56840	0.06171	0.56094	0.01013	0.97146	0.07250
26	Pulp, paper and paper products	0.00087	4.79624	23.36009	0.18489	16.11494	0.03675	19.73235	5.18741
27	Printing and publishing	0.00015	0.14172	2.33863	0.04393	0.63566	0.01620	0.35229	0.01973
28	Fertilizer	0.04869	4.90973	59.17406	0.00000	2.30622	0.14409	5.17260	0.01590
29	Drugs and medicine	0.00033	0.60821	12.15588	0.02466	0.58797	0.01512	1.85219	1.03675
30	Soap, detergent and toiletries	0.00092	0.96760	9.66661	0.12701	4.80386	0.02904	3.44434	1.03675
31	Other chemical products	0.03364	3.46996	21.32652	0.19764	2.22449	2.18125	2.52352	5.22498
32	Petroleum refinery products	0.00252	3.64976	7.42708	5.12232	3.86087	0.02530	0.01928	8.93351
33	Coke and other coal products	0.00032	5.84395	271.75809	0.07810	0.00000	0.42953	48.78569	2.69372
34	Rubber products	0.00632	2.07413	12.79707	0.04614	1.60975	0.08744	3.69558	2.51065
35	Plastic products	0.00017	0.83773	4.48464	0.08389	1.64683	0.01307	0.38499	0.77666
36	Cement	0.60058	30.92008	107.26687	0.15379	60.01158	5.51145	101.22655	11.45295
37	Glass and glass products	0.00357	13.43137	32.38896	1.20840	17.98350	0.17651	31.55945	8.26918
38	Other non-metallic mineral products	0.09586	4.74751	29.18196	1.43631	6.95506	8.06291	2.97719	9.25217
39	Iron and steel	0.00142	11.22086	87.52925	0.58953	5.84499	0.15879	3.68448	5.53438
40	Iron and steel products	0.00089	2.25737	19.36719	0.47284	3.16898	0.08611	3.90811	4.08391
41	Non-ferrous metal products	0.01022	2.71178	6.92062	0.45265	10.54965	0.40075	3.80326	0.50803
42	Metallic furniture	0.00012	1.03225	3.10367	0.04546	0.51132	0.01724	0.35229	0.46105
43	Other fabricated metal products	0.00498	0.46201	8.61300	0.06348	1.72739	0.34351	3.67828	0.49840
44	Household electrical appliances	0.00001	0.17276	0.55978	0.04706	0.24763	0.01893	0.36129	0.00000
45	Other electrical machinery and apparatus	0.01236	0.27039	7.89493	0.00754	1.75278	2.76214	0.35229	0.08727
46	Motor vehicle	0.00441	0.36871	7.30386	0.02503	1.29895	0.49186	0.35229	0.16167
47	Ship building and repairing	0.01637	0.24556	3.71364	0.09178	0.00518	0.60923	0.35229	0.16167
48	Other transport equipments	0.00070	0.17545	27.70271	0.19216	7.58224	0.03806	0.35229	0.16167
49	Precision instruments	0.00080	0.18611	5.10646	0.03323	1.24443	0.91397	0.35229	0.15596
50	Other machinery and equipments	0.00221	0.30025	6.09297	0.05520	1.64048	0.17877	0.54007	0.09900
51	Other manufactured products	0.00025	0.41175	15.12238	0.05476	0.54623	0.03250	0.35229	0.15596
52	Thermal power	0.44754	85.99969	517.59159	8.98089	208.43194	13.77146	134.64212	88.12242
53	Other power	0.02185	4.74225	146.70372	0.00000	41.97831	1.82037	1.84650	0.37567
54	Gas supply	0.00060	0.30525	63.60829	8.61924	199.55132	0.17159	0.00000	0.00123
55	Water supply	0.00051	13.52778	67.40107	0.03026	0.07394	0.15200	162.87359	0.02391
56	Buildings	0.01025	0.12159	0.95281	0.17059	0.20919	0.32678	0.19021	0.20432
57	Civil engineering	0.01792	0.54457	2.74592	1.70595	1.05261	0.46817	0.19021	0.20432
58	Commerce	0.00147	1.29090	5.67928	0.50842	0.14393	0.05020	1.07164	0.10515
59	Railway transport	0.00209	4.02928	30.77522	0.00000	10.42049	0.67028	12.04585	0.73973
60	Road transport	0.03078	4.84643	3.49607	1.70757	15.50309	0.80408	10.83935	3.60536
61	Water transport	0.03059	36.38071	2.07806	2.83060	41.64472	0.48262	37.24744	26.22439
62	Air transport	0.10133	1.02003	1.39169	2.97236	4.22605	1.00660	1.40370	0.10795
63	Other transport and transport relating services	0.00534	1.07632	4.17922	1.42232	0.33442	0.18717	1.22892	0.04727
64	Eating and drinking place	0.00532	1.70753	2.76293	0.34080	0.23647	0.09868	4.30334	0.05364
65	Hotels and other lodging place	0.00316	5.65866	1.62486	0.13397	0.12881	0.10295	2.39263	0.05364
66	Postal and telecommunication services	0.00086	0.12875	8.29197	0.04012	0.46996	0.04510	0.50627	0.01530
67	Financial and insurance services	0.00021	0.24061	4.76119	0.10996	0.06190	0.00736	0.49331	0.00646
68	Real estate services	0.00007	0.14565	6.17457	0.07092	0.01299	0.00614	0.07330	0.21501
69	Business services	0.00022	0.33426	1.69549	0.69078	0.18024	0.04248	1.18927	0.02095
70	Public administration	0.00000	0.99246	4.76848	0.33425	0.00000	0.00000	0.28972	0.51622
71	Education	0.00042	0.69079	3.27828	0.30630	0.57058	0.03050	0.32978	0.05364
72	Medical and health services	0.00033	1.58544	1.54115	0.09620	0.13589	0.05160	0.35832	0.05364
73	Repair of motor vehicles	0.00340	0.00000	27.04689	0.01404	0.41049	0.04990	0.35229	0.05364
74	Miscellaneous repair services	0.00231	0.21824	15.97415	0.04541	0.01821	0.04761	0.39354	0.05364
75	Other services	0.00040	1.39036	2.28349	0.10363	0.15638	0.04051	0.53796	0.05364
76	Non-elsewhere classified	0.00009	0.53783	0.00000	1.74262	1.74192	0.15969	0.00000	0.05364
201	household expenditure	0.00224	1.72242	11.46089	0.00364	0.21907	0.09597	0.21925	0.00073
	Total	0.02424	1.92138	13.56367	0.89404	5.06860	0.27501	3.73927	1.93475

Table4 Calory/CT index for EDEN Data 1990 (USDollar)

* units : Terra calory /1,000,000 USD

EDEN Code	Classification	country							
		Japan	Korea	China	Singapore	Thailand	Indonesia	Philippines	Taiwan
1	Paddy	0.11486	0.18847	1.59527	0.00000	0.07716	0.00157	0.00000	0.01429
2	Fruits	0.07413	0.26543	1.49462	0.00000	0.65325	0.03650	0.07033	0.01448
3	Dairy farming and Livestock raising (Inc.	0.02081	0.38436	1.01891	0.13469	1.68389	0.45816	0.02320	0.01467
4	Other edible crops	0.30092	0.27613	1.13477	0.60677	0.46247	0.06961	0.00416	0.01436
5	Non-edible crops	0.47091	0.27072	1.52913	0.00000	0.20877	0.31278	0.00290	0.01358
6	Agricultural services	0.60089	0.58679	0.00000	0.00000	4.84948	0.00000	0.02684	0.07701
7	Forestry	0.39930	0.14871	0.81861	0.00000	0.26656	0.81648	1.17596	0.01636
8	Fishing	2.74300	3.85579	1.91925	1.62033	6.82100	1.64852	0.90587	3.97257
9	Coal	0.15798	0.81468	7.28167	2.21513	2.43555	10.83954	4.10962	0.58459
10	Crude oil and Natural gas	0.13780	0.00000	8.28685	0.00000	3.03609	0.15343	4.92376	0.01068
11	Metal ores mining	0.13324	1.68417	5.00708	0.00000	3.43000	1.30919	5.34230	0.38440
12	Non-metallic ores mining	0.22124	1.55454	7.40104	0.00000	1.52849	0.93497	2.04500	0.38347
13	Dairy products	0.29944	0.45563	0.92698	0.41451	0.89622	0.35705	0.36403	0.42113
14	Meat and meat products	0.04965	0.13067	1.61076	0.44031	0.84276	0.11868	0.36325	0.42104
15	Other foods	0.22209	0.53800	3.49183	0.49461	1.15546	0.26914	0.53858	0.42119
16	Animal feeds	0.07178	0.15290	0.64790	0.00000	1.56538	0.23131	0.36115	0.42119
17	Tea and coffee	0.19461	0.91402	6.17353	1.13959	2.93231	0.22462	0.36043	0.41586
18	Beverages	0.21065	0.49301	4.78269	1.11975	0.72314	0.63849	0.65922	0.42114
19	Tobacco	0.03666	0.08853	0.67411	0.38274	0.76506	0.13492	0.35043	0.42091
20	Spinning and weaving	0.14623	0.77275	2.76370	0.68656	1.27240	0.48988	1.83697	0.77597
21	Knitting	0.07548	0.56212	1.01351	0.00000	0.46389	0.36743	1.65355	0.77580
22	Wearing apparel and other fabricated textile	0.23495	0.78822	0.59893	0.12369	0.47879	0.19568	0.72723	0.77596
23	Leather and leather products	0.09202	0.28818	2.52484	0.10966	0.18722	0.26708	0.65764	0.13808
24	Timber and Wooden products	0.05337	0.66072	7.96636	0.36153	1.45744	3.61165	0.70724	0.09120
25	Wooden furnitures	0.04564	0.31938	0.93954	0.16456	0.44145	22.13525	1.50853	0.09124
26	Pulp, paper and paper products	1.39091	1.44902	8.66844	0.37550	2.22366	1.14738	4.04283	2.07834
27	Printing and publishing	0.03346	0.16393	0.89611	0.17273	0.53832	0.22815	0.65712	0.04390
28	Fertilizer	4.21948	1.65568	22.32802	0.00000	0.25825	1.19951	1.57262	9.35005
29	Drugs and medicine	0.07278	0.24301	4.49708	0.14090	0.37360	0.21986	0.66704	0.46373
30	Soap, detergent and toiletries	0.17074	0.35268	4.66886	0.26556	1.09162	0.34018	0.93274	0.46435
31	Other chemical products	1.01168	1.48467	12.86633	0.32896	1.59384	0.92274	0.81158	2.06298
32	Petroleum refinery products	1.31126	0.98934	7.87028	4.80204	1.68097	0.20566	0.00421	8.87144
33	Coke and other coal products	4.24196	11.93492	94.04430	0.23431	0.00000	4.18794	10.65363	2.13776
34	Rubber products	0.26837	0.88992	4.35257	0.23069	1.13156	0.75473	1.04256	0.93647
35	Plastic products	0.10532	0.53925	1.64625	0.44008	0.75817	0.22215	0.66072	0.31857
36	Cement	12.52113	13.65706	32.67327	0.66128	9.23132	21.27417	18.91809	7.07179
37	Glass and glass products	1.31477	4.25584	11.98155	1.89477	5.05805	1.74593	5.91637	4.25649
38	Other non-metallic mineral products	0.72988	2.31611	10.30884	1.40627	3.69718	14.58334	1.00109	5.23771
39	Iron and steel	4.02980	9.00527	36.41775	1.48120	2.43541	14.99308	1.16385	3.40524
40	Iron and steel products	0.60427	1.30379	16.36647	1.45964	1.64026	1.25546	1.19170	2.51372
41	Non-ferrous metal products	0.50676	1.40830	4.11517	0.43880	2.63040	1.71528	1.21472	0.21646
42	Metallic furniture	0.07976	0.64744	1.29642	0.14936	0.41766	0.36196	0.69653	0.29594
43	Other fabricated metal products	0.11452	0.37094	3.14310	0.26601	0.75643	0.47412	1.16175	0.23278
44	Household electrical appliances	0.02746	0.10723	0.25787	0.19389	0.23417	0.22720	0.65796	0.00000
45	Other electrical machinery and apparatus	0.04318	0.21324	3.55128	0.05788	0.65038	0.55502	0.66247	0.09036
46	Motor vehicle	0.05464	0.22073	2.84922	0.12414	0.45159	0.18915	0.85702	0.10138
47	Ship building and repairing	0.06995	0.16870	3.21601	0.27533	0.21770	0.88825	0.66721	0.10161
48	Other transport equipments	0.12723	0.19600	12.65120	0.45818	2.02876	0.31967	0.65770	0.10118
49	Precision instruments	0.03981	0.20573	2.52144	0.24812	0.60466	0.52729	0.64809	0.27694
50	Other machinery and equipments	0.06173	0.24364	2.76620	0.35163	0.57535	0.04451	0.68006	0.08144
51	Other manufactured products	0.06436	0.32637	6.05191	0.16581	0.29876	0.35384	0.65540	0.27715
52	Thermal power	18.90784	40.30759	165.63425	14.96450	37.51866	44.24067	21.84042	46.29424
53	Other power	2.65855	2.70972	50.22633	0.00000	25.49698	19.38328	0.40090	10.05193
54	Gas supply	14.26870	33.67960	35.74411	12.12017	79.75291	121.92837	0.00000	0.00768
55	Water supply	2.65547	5.25525	24.71147	0.31471	1.25184	2.25241	28.74620	0.31912
56	Buildings	0.04579	0.14370	1.04489	0.34447	0.15716	2.93702	0.10156	0.09729
57	Civil engineering	0.13285	0.53938	0.91750	2.59081	0.63540	4.17069	0.12370	0.09726
58	Commerce	0.09344	0.83090	2.07199	0.71739	0.25959	0.54409	0.31488	0.19912
59	Railway transport	0.11718	4.37730	11.94137	0.00000	5.65838	5.05467	10.56490	1.14912
60	Road transport	2.75948	6.41242	4.61572	5.67195	9.88433	5.87914	13.14927	15.21280
61	Water transport	3.58734	9.90427	3.42586	2.71607	11.85962	4.33097	6.89854	8.39108
62	Air transport	4.11034	4.77679	7.20499	7.18595	5.64225	7.29089	1.89660	5.32361
63	Other transport and transport relating services	0.04792	1.17314	4.82666	1.80152	1.07105	1.62599	0.28442	0.09057
64	Eating and drinking place	0.20777	2.05515	1.00860	1.23147	0.78677	1.26267	1.74805	0.06937
65	Hotels and other lodging place	0.19015	2.62678	0.77945	0.56729	1.12642	1.95267	1.75028	0.06996
66	Postal and telecommunication services	0.03614	0.23428	2.93128	0.19725	0.34202	0.52558	0.23220	0.11074
67	Financial and insurance services	0.01427	0.28310	1.71546	0.33270	0.24849	0.18433	0.21565	0.03767
68	Real estate services	0.03322	0.27662	2.11687	0.14019	0.06497	0.06628	0.02591	0.27868
69	Business services	0.07665	0.41694	1.53866	0.88946	0.60617	0.47134	0.41887	0.02717
70	Public administration	0.19613	0.80959	2.81706	0.63195	0.00000	0.00000	0.61446	0.55158
71	Education	0.18837	0.45628	1.45051	0.64386	0.50141	0.26755	0.38499	0.06951
72	Medical and health services	0.20691	0.80445	0.69321	0.28628	0.54835	0.65906	0.43362	0.06947
73	Repair of motor vehicles	0.03993	0.00000	10.16273	0.15911	0.46230	0.62652	0.65831	0.06907
74	Miscellaneous repair services	0.01533	0.97654	6.19921	0.24978	0.40067	0.59974	0.12824	0.06880
75	Other services	0.18858	0.88912	3.28457	0.29925	0.64609	0.85014	0.31960	0.06944
76	Non-elsewhere classified	0.21439	0.24164	0.00000	3.00998	0.32235	1.70335	0.00000	0.06960
201	household expenditure	0.26715	1.32611	4.04530	0.51696	0.53661	1.19662	0.37382	0.32890
	Total	0.49658	1.33548	6.09278	1.28435	1.79424	1.61536	1.14860	1.39195

Table5 CO2/calory index for EDEN Data 1990

* units CO2 1000 Ton/Terra calory		country							
EDEN Code	Classification	Japan	Korea	China	Singapore	Thailand	Indonesia	Philippines	Taiwan
1	Paddy	0.28013	0.27909	0.31248	0.00000	0.30682	0.08333	0.00000	0.10099
2	Fruits	0.27448	0.22923	0.31255	0.00000	0.32203	0.05405	0.00000	0.09967
3	Dairy farming and Livestock raising (Inc.	0.27407	0.26066	0.39060	0.14286	0.38825	0.05051	0.00000	0.09836
4	Other edible crops	0.27260	0.33978	0.31250	0.23636	0.33503	0.05428	0.00000	0.10047
5	Non-edible crops	0.27609	0.30972	0.34791	0.00000	0.37993	0.05322	0.00000	0.10626
6	Agricultural services	0.28384	0.32777	0.00000	0.00000	0.29778	0.00000	0.00000	0.17446
7	Forestry	0.27855	0.19075	0.30704	0.00000	0.30137	0.05402	0.32787	0.08820
8	Fishing	0.27903	0.31033	0.33656	0.23188	0.29880	0.05589	0.36250	0.29672
9	Coal	0.29323	0.08901	0.37113	0.29469	0.29846	0.40649	0.32244	0.15319
10	Crude oil and Natural gas	0.27711	0.00000	0.16252	0.00000	0.30046	0.06389	0.34654	0.00065
11	Metal ores mining	0.27027	0.13169	0.32028	0.00000	0.29630	0.20103	0.30389	0.29528
12	Non-metallic ores mining	0.30199	0.24435	0.32847	0.00000	0.25590	0.05552	0.33321	0.29600
13	Dairy products	0.28199	0.26016	0.37613	0.26316	0.25000	0.02817	0.18529	0.27636
14	Meat and meat products	0.27401	0.24271	0.34056	0.18182	0.35650	0.03556	0.18569	0.27642
15	Other foods	0.27171	0.26555	0.36399	0.23881	0.36528	0.04463	0.23488	0.27632
16	Animal feeds	0.27179	0.23239	0.38043	0.00000	0.39458	0.03968	0.18677	0.27632
17	Tea and coffee	0.28055	0.29410	0.37416	0.28571	0.33333	0.04819	0.18714	0.27984
18	Beverages	0.27630	0.28289	0.38464	0.28125	0.27970	0.04167	0.17072	0.27636
19	Tobacco	0.28744	0.27795	0.39812	0.13636	0.65491	0.04669	0.19978	0.27650
20	Spinning and weaving	0.27811	0.21275	0.32308	0.15254	0.12810	0.03437	0.19133	0.26364
21	Knitting	0.27764	0.22019	0.36502	0.00000	0.17427	0.03279	0.17265	0.26369
22	Wearing apparel and other fabricated textile	0.27674	0.25351	0.37156	0.17123	0.23501	0.04450	0.17127	0.26364
23	Leather and leather products	0.28314	0.24276	0.42381	0.22222	0.21569	0.02439	0.16992	0.26966
24	Timber and Wooden products	0.27767	0.19171	0.37864	0.18072	0.35060	0.06258	0.18481	0.09028
25	Wooden furnitures	0.27586	0.16935	0.37004	0.16071	0.16410	0.06582	0.28730	0.09024
26	Pulp, paper and paper products	0.33101	0.25724	0.33783	0.18274	0.49923	2.71553	0.24538	0.31638
27	Printing and publishing	0.24082	0.21576	0.35692	0.15607	0.19726	0.02959	0.17005	0.12716
28	Fertilizer	0.24003	0.24463	0.37156	0.00000	0.62500	0.05330	0.19106	0.22207
29	Drugs and medicine	0.19271	0.23098	0.33932	0.07500	0.21311	0.03175	0.16450	0.22753
30	Soap, detergent and toiletries	0.25957	0.27150	0.33104	0.17391	0.26821	0.03659	0.18545	0.22723
31	Other chemical products	0.17159	0.17476	0.29221	0.19561	0.22972	0.17600	0.18312	0.31795
32	Petroleum refinery products	0.06353	0.27511	0.22977	0.32853	0.25475	0.03591	0.35088	0.25392
33	Coke and other coal products	0.47326	0.22318	0.35233	0.16667	0.00000	0.05128	0.35054	0.30509
34	Rubber products	0.27519	0.24485	0.37051	0.08571	0.33303	0.05335	0.18747	0.27501
35	Plastic products	0.25609	0.20509	0.35816	0.07038	0.16589	0.02941	0.17145	0.24770
36	Cement	0.28047	0.36294	0.39968	0.05814	0.45046	2.86860	0.22863	0.37674
37	Glass and glass products	0.28434	0.29344	0.36128	0.21429	0.29126	0.04396	0.27324	0.30441
38	Other non-metallic mineral products	0.29002	0.29023	0.38314	0.28544	0.37642	0.34533	0.18919	0.34249
39	Iron and steel	0.20686	0.09122	0.44879	0.14677	0.18889	5.19093	0.17373	0.53591
40	Iron and steel products	0.37384	0.20541	0.20242	0.11268	0.15950	0.02997	0.17712	0.52065
41	Non-ferrous metal products	0.34827	0.19502	0.27613	0.27368	0.35521	0.05530	0.18364	0.25355
42	Metallic furniture	0.26707	0.27427	0.40563	0.17391	0.23030	0.04762	0.16043	0.16942
43	Other fabricated metal products	0.27418	0.19107	0.38607	0.14205	0.27927	0.07170	0.17683	0.23160
44	Household electrical appliances	0.26607	0.21169	0.29478	0.12621	0.20719	0.08333	0.17048	0.00000
45	Other electrical machinery and apparatus	0.26991	0.17803	0.34061	0.10084	0.21701	0.19890	0.16868	0.15950
46	Motor vehicle	0.28882	0.18944	0.35295	0.10642	0.25701	0.15171	0.17008	0.21739
47	Ship building and repairing	0.29499	0.22299	0.19711	0.16667	0.00000	0.06628	0.16748	0.21689
48	Other transport equipments	0.32101	0.19008	0.32070	0.18480	0.29293	0.02381	0.16990	0.21783
49	Precision instruments	0.27597	0.15177	0.34165	0.08929	0.20645	0.06667	0.17242	0.23485
50	Other machinery and equipments	0.28249	0.19690	0.32507	0.12791	0.24362	0.20325	0.17726	0.15779
51	Other manufactured products	0.29457	0.17552	0.37945	0.14679	0.24563	0.06122	0.17050	0.23466
52	Thermal power	0.29023	0.29272	0.39207	0.32528	0.55051	1.60644	0.32108	0.29842
53	Other power	0.38034	0.18183	0.36318	0.00000	0.37922	0.03642	0.10966	0.01541
54	Gas supply	0.20742	0.23792	0.29982	0.31757	0.43277	5.23100	0.00000	0.28751
55	Water supply	0.54358	0.19945	0.35277	0.03846	0.05906	0.03067	0.33733	0.02885
56	Buildings	0.26324	0.25292	0.25923	0.25674	0.23777	0.05001	0.35022	0.29759
57	Civil engineering	0.27474	0.29201	0.37610	0.26673	0.30858	0.05164	0.28753	0.29769
58	Commerce	0.27292	0.28075	0.36437	0.27439	0.15794	0.04014	0.22876	0.14302
59	Railway transport	0.27204	0.26269	0.37752	0.00000	0.29008	0.06084	0.36166	0.24023
60	Road transport	0.27373	0.29866	0.31816	0.29166	0.30268	0.05535	0.37441	0.29362
61	Water transport	0.29375	0.31945	0.31311	0.32623	0.29923	0.05208	0.33878	0.31944
62	Air transport	0.28083	0.29573	0.32563	0.31430	0.29685	0.05604	0.38448	0.29523
63	Other transport and transport relating services	0.25745	0.26621	0.32205	0.29083	0.24051	0.05009	0.26400	0.18558
64	Eating and drinking place	0.24941	0.26498	0.36421	0.21545	0.26377	0.03884	0.26865	0.19367
65	Hotels and other lodging place	0.25329	0.27391	0.31985	0.14286	0.05290	0.02741	0.18217	0.19204
66	Postal and telecommunication services	0.26309	0.14788	0.36870	0.27119	0.22782	0.03795	0.14718	0.17098
67	Financial and insurance services	0.24473	0.18413	0.37410	0.24225	0.14505	0.01736	0.13967	0.07796
68	Real estate services	0.27202	0.09924	0.37961	0.19412	0.17627	0.03861	0.18638	0.19325
69	Business services	0.27689	0.23076	0.31096	0.28444	0.24867	0.03863	0.17379	0.19316
70	Public administration	0.27382	0.28298	0.33811	0.25142	0.00000	0.00000	0.15403	0.28337
71	Education	0.27131	0.27103	0.33943	0.27184	0.19538	0.04945	0.14728	0.19329
72	Medical and health services	0.26380	0.25397	0.32264	0.15385	0.13962	0.03545	0.09081	0.19339
73	Repair of motor vehicles	0.26474	0.00000	0.36484	0.08824	0.18750	0.03892	0.16975	0.19451
74	Miscellaneous repair services	0.27324	0.22521	0.35801	0.18182	0.04545	0.03858	0.18688	0.19528
75	Other services	0.26882	0.23394	0.30994	0.15543	0.21762	0.02245	0.10076	0.19347
76	Non-elsewhere classified	0.31914	0.37615	0.00000	0.24561	0.61033	0.04375	0.00000	0.19303
201	Household expenditure	0.28360	0.24860	0.35385	0.29791	0.37937	0.70312	0.29886	0.29377

Table6 SO2/calory index for EDEN Data 1990

* units : SO2 Ton/Terra calory										
EDEN Code	Classification	country								
		Japan	Korea	China	Singapore	Thailand	Indonesia	Philippines	Taiwan	
1	Paddy	0.00079	0.84780	1.19150	0.00000	1.77841	0.16667	0.00000	0.52982	
2	Fruits	0.01748	0.69241	1.19143	0.00000	1.87827	0.13514	0.00000	0.52293	
3	Dairy farming and Livestock raising (Inc.	0.29444	0.73863	3.06982	0.21429	1.56588	0.11640	0.00000	0.51604	
4	Other edible crops	0.01008	1.60967	1.19152	0.45455	1.47525	0.12007	0.00000	0.52709	
5	Non-edible crops	0.01063	1.34821	1.41542	0.00000	1.70968	0.12325	0.00000	0.55749	
6	Agricultural services	0.00000	2.26579	0.00000	0.00000	1.88751	0.00000	0.00000	0.69652	
7	Forestry	0.04445	0.40350	0.46529	0.00000	1.73973	0.12540	6.29174	0.46276	
8	Fishing	0.00750	1.26782	1.61255	0.61594	1.89886	0.12864	1.22943	1.16604	
9	Coal	17.63910	0.70835	2.53407	0.81159	1.89365	0.62410	5.47781	0.95319	
10	Crude oil and Natural gas	4.21687	0.00000	0.58927	0.00000	2.60367	0.13889	4.12202	0.00000	
11	Metal ores mining	12.27027	0.73952	1.90974	0.00000	1.87831	0.33432	5.51859	1.60441	
12	Non-metallic ores mining	0.06966	1.03755	2.15709	0.00000	0.59301	0.12808	6.09090	1.60830	
13	Dairy products	0.00233	2.74689	2.89865	0.74737	3.07986	0.07042	3.05648	2.70913	
14	Meat and meat products	0.01719	2.20024	2.75008	0.45455	1.22659	0.07556	3.06306	2.70971	
15	Other foods	0.01834	3.16809	2.78607	0.60341	2.14906	0.15147	5.79977	2.70874	
16	Animal feeds	0.02051	2.67248	2.85280	0.00000	1.83012	0.09524	3.08092	2.70877	
17	Tea and coffee	0.01549	3.46283	3.04297	0.42857	0.91667	0.10843	3.08704	2.74327	
18	Beverages	0.00196	3.39977	3.16524	0.75625	3.02884	0.09896	0.56025	2.70910	
19	Tobacco	0.08623	3.66425	3.28018	0.36364	8.27078	0.11089	3.64534	2.71054	
20	Spinning and weaving	0.05349	2.68735	2.54540	0.43220	1.61851	0.07891	3.40041	2.79071	
21	Knitting	0.01131	2.77443	2.80052	0.00000	2.55187	0.07377	3.65324	2.79132	
22	Wearing apparel and other fabricated textile	0.00263	3.23257	2.58466	0.36301	3.07618	0.10471	1.03295	2.79076	
23	Leather and leather products	0.01158	2.72072	2.21573	0.33333	1.27986	0.05488	0.53569	2.81965	
24	Timber and Wooden products	0.17777	1.84432	2.98209	0.39759	2.09839	0.02281	0.54973	0.79489	
25	Wooden furnitures	0.00639	0.45442	2.73367	0.37500	1.27069	0.00046	0.64398	0.79457	
26	Pulp, paper and paper products	0.00062	3.31000	2.69484	0.49239	7.24703	0.03203	4.88082	2.49594	
27	Printing and publishing	0.00441	0.86447	2.60976	0.25434	1.18082	0.07101	0.53612	0.44935	
28	Fertilizer	0.01154	2.96539	2.65022	0.00000	9.00000	0.12013	3.28915	0.00170	
29	Drugs and medicine	0.00451	2.50281	2.70308	0.17500	1.57377	0.06878	2.77672	2.23568	
30	Soap, detergent and toiletries	0.00542	2.74360	2.07044	0.47826	4.40066	0.08537	3.69272	2.23271	
31	Other chemical products	0.03325	2.33719	1.65755	0.60080	1.39568	2.36389	3.10938	2.53273	
32	Petroleum refinery products	0.00192	3.68907	0.94369	1.06670	2.29681	0.12299	4.58370	1.00700	
33	Coke and other coal products	0.00007	0.48965	2.88968	0.33333	0.00000	0.10256	4.57926	1.26007	
34	Rubber products	0.02357	3.00634	2.94012	0.20000	1.42259	0.11585	3.54472	2.68097	
35	Plastic products	0.00161	1.55353	2.72416	0.19062	2.17209	0.05882	0.58269	2.43796	
36	Cement	0.04797	2.26404	3.28302	0.23256	6.50087	0.25907	5.35078	1.61953	
37	Glass and glass products	0.00271	3.15599	2.70324	0.63776	3.55542	0.10110	5.33426	1.94272	
38	Other non-metallic mineral products	0.13133	2.04978	2.83077	1.02136	1.88118	0.55289	2.97395	1.76645	
39	Iron and steel	0.00035	1.24603	2.40348	0.39801	2.40000	0.01059	3.16576	1.62526	
40	Iron and steel products	0.00147	1.73139	1.18335	0.32394	1.93200	0.06859	3.27943	1.62465	
41	Non-ferrous metal products	0.02016	1.92558	1.68173	1.03158	4.01066	0.23363	3.13098	2.34706	
42	Metallic furniture	0.00152	1.59436	2.39404	0.30435	1.22424	0.04762	0.50578	1.55790	
43	Other fabricated metal products	0.04348	1.24552	2.74029	0.23864	2.28361	0.72453	3.16615	2.14112	
44	Household electrical appliances	0.00052	1.61116	2.17079	0.24272	1.05749	0.08333	0.54911	0.00000	
45	Other electrical machinery and apparatus	0.28632	1.26801	2.22313	0.13025	2.69501	4.97668	0.53179	0.96587	
46	Motor vehicle	0.08065	1.67039	2.56346	0.20160	2.87639	2.80043	0.53620	1.59469	
47	Ship building and repairing	0.23402	1.45562	1.15474	0.33333	0.02381	0.68588	0.52801	1.59105	
48	Other transport equipments	0.00549	0.89512	2.18973	0.41940	3.73737	0.11905	0.53565	1.59795	
49	Precision instruments	0.02016	0.90462	2.02521	0.13393	2.05806	1.73333	0.54359	0.56315	
50	Other machinery and equipments	0.03583	1.23237	2.20265	0.15698	2.85128	4.01626	0.79415	1.21556	
51	Other manufactured products	0.00388	1.26161	2.49878	0.33028	1.82830	0.09184	0.53752	0.56271	
52	Thermal power	0.02367	2.13359	3.12491	0.60015	5.55542	0.31128	6.16481	1.90353	
53	Other power	0.00822	1.75009	2.92085	0.00000	1.64640	0.09391	4.60592	0.03737	
54	Gas supply	0.00004	0.00906	1.77955	0.71115	2.50212	0.00141	0.00000	0.16033	
55	Water supply	0.00019	2.57415	2.72752	0.09615	0.05906	0.06748	5.66592	0.07493	
56	Buildings	0.22377	0.84613	0.91188	0.49521	1.33102	0.11126	1.87283	2.10003	
57	Civil engineering	0.13486	1.00962	2.99283	0.65846	1.65661	0.11225	1.53759	2.10076	
58	Commerce	0.01577	1.55362	2.74098	0.70871	0.55443	0.09226	3.40335	0.52806	
59	Railway transport	0.01784	0.92049	2.57719	0.00000	1.84160	0.13261	1.14018	0.64374	
60	Road transport	0.01115	0.75579	0.75743	0.30106	1.56845	0.13677	0.82433	0.23700	
61	Water transport	0.00853	3.67323	0.60658	1.04217	3.51147	0.11143	5.39932	3.12527	
62	Air transport	0.02465	0.21354	0.19316	0.41363	0.74900	0.13806	0.74012	0.02028	
63	Other transport and transport relating services	0.11149	0.91747	0.86586	0.78951	0.31224	0.11511	4.32079	0.52190	
64	Eating and drinking place	0.02563	0.83085	2.73938	0.27674	0.30056	0.07815	2.46180	0.77325	
65	Hotels and other lodging place	0.01661	2.15422	2.08463	0.23615	0.11436	0.05272	1.36700	0.76673	
66	Postal and telecommunication services	0.02388	0.54956	2.82879	0.20339	1.37410	0.08581	2.18029	0.13813	
67	Financial and insurance services	0.01493	0.84993	2.77546	0.33052	0.24908	0.03993	2.28752	0.17153	
68	Real estate services	0.00209	0.52655	2.91685	0.50588	0.20000	0.09266	2.82901	0.77155	
69	Business services	0.00281	0.80171	1.10192	0.77662	0.29735	0.09013	2.83926	0.77120	
70	Public administration	0.00000	1.22588	1.69272	0.52892	0.00000	0.00000	0.47151	0.93588	
71	Education	0.00222	1.51396	2.26009	0.47573	1.13795	0.11401	0.85659	0.77171	
72	Medical and health services	0.00161	1.97084	2.22319	0.33603	0.24782	0.07829	0.82634	0.77213	
73	Repair of motor vehicles	0.08526	0.00000	2.66138	0.08824	0.88793	0.07964	0.53515	0.77659	
74	Miscellaneous repair services	0.15070	0.22348	2.57681	0.18182	0.04545	0.07938	3.06888	0.77965	
75	Other services	0.00210	1.56374	0.69522	0.34629	0.24204	0.04765	1.68325	0.77243	
76	Non-elsewhere classified	0.00040	2.22572	0.00000	0.57895	5.40376	0.09375	0.00000	0.77068	
201	Household expenditure	0.02019	1.70015	2.46670	0.72463	3.00881	0.19799	3.55519	1.44777	

Table7 The induced CO2 emission from per unit for EDEN Data 1990 (USDollar)

* units CO2 1000 Ton / 1unit production and 1 unit consumption		country							
EDEN Code	Classification	Japan	Korea	China	Singapore	Thailand	Indonesia	Philippines	Taiwan
1	Paddy	0.19658	0.17241	4.38684	0.00000	0.45939	0.20549	0.17052	0.44501
2	Fruits	0.18224	0.32025	4.21105	0.00000	0.64607	0.07307	0.24825	0.55382
3	Dairy farming and Livestock raising (Inc.	0.28955	0.50397	2.14724	0.33360	1.90345	0.53216	0.24013	0.76898
4	Other edible crops	0.30034	0.26588	3.31195	0.64881	0.68579	0.24608	0.14947	0.43774
5	Non-edible crops	0.31972	0.25485	3.89392	0.00000	0.59253	0.65320	0.25542	0.36522
6	Agricultural services	0.47266	0.43217	0.00000	0.00000	2.08468	0.40728	0.50186	0.50938
7	Forestry	0.33379	1.90877	1.65958	0.00000	27.65138	3.54612	0.82693	0.22259
8	Fishing	0.97777	1.51007	2.24245	0.94933	2.91017	0.52084	0.83893	1.76780
9	Coal	34.34157	0.78769	163.48280	1.20910	1.40031	5.09284	1.99333	1.15495
10	Crude oil and Natural gas	0.33035	0.00000	6.91707	0.00000	1.57352	0.20997	2.05234	540.01106
11	Metal ores mining	0.50987	1.10091	9.46375	0.00000	1.80041	0.64590	2.32580	2.31172
12	Non-metallic ores mining	0.47019	0.79301	9.54776	0.00000	1.77881	0.42983	1.20898	1.21050
13	Dairy products	0.45431	0.69728	2.22908	0.69042	1.90583	1.94156	0.63709	1.09870
14	Meat and meat products	0.29277	0.54391	2.52256	0.39596	1.81867	0.68025	0.38472	0.87992
15	Other foods	0.41604	0.57013	4.96289	0.72624	1.75739	0.44212	0.55612	0.97155
16	Animal feeds	0.39778	0.42228	4.04800	0.00000	1.94805	0.71068	0.33393	0.94190
17	Tea and coffee	0.33118	0.60485	6.46848	0.89474	1.99731	0.38906	0.32313	1.15135
18	Beverages	0.32323	0.52561	5.45993	0.89739	1.17648	1.68594	0.72007	0.88578
19	Tobacco	0.10647	0.18263	1.88433	0.37655	1.06632	0.87568	0.92648	0.36654
20	Spinning and weaving	0.45744	1.03862	4.89927	0.75456	3.89975	2.58040	1.59026	2.08388
21	Knitting	0.33405	0.93418	4.56389	0.00000	2.68328	2.31811	1.52038	1.62056
22	Wearing apparel and other fabricated textile	0.36705	1.00143	3.55151	0.55305	2.76192	1.83781	1.15587	1.57587
23	Leather and leather products	0.27151	0.63440	3.83922	0.43015	1.82777	1.74950	1.04285	1.06228
24	Timber and Wooden products	0.32925	0.59799	9.04328	0.69902	1.69123	1.01688	1.09327	0.97501
25	Wooden furnitures	0.28942	0.64965	6.08097	0.60583	1.75226	2.85486	1.06441	0.97542
26	Pulp, paper and paper products	1.06916	1.35528	9.09240	0.56829	4.26359	7.27618	2.83810	2.76907
27	Printing and publishing	0.32942	0.72863	6.31479	0.41160	2.70242	4.25360	1.59345	1.29333
28	Fertilizer	1.71071	1.47706	19.14782	0.00000	2.82233	2.00514	1.28681	4.03324
29	Drugs and medicine	0.28387	0.50605	5.40614	0.17335	2.91940	1.97265	0.75406	1.10152
30	Soap, detergent and toiletries	0.38232	0.71205	6.79507	0.50595	2.70265	2.19613	0.78679	1.48909
31	Other chemical products	0.75822	1.16864	11.45605	0.63848	6.15609	3.02597	1.08042	2.91768
32	Petroleum refinery products	5.61260	12.65567	88.20519	13.60552	11.70024	3.95192	9.81114	7.59168
33	Coke and other coal products	2.65975	36.24789	40.31153	0.93302	0.00000	74.38920	5.13854	1.88704
34	Rubber products	0.44603	0.86910	4.89191	0.41321	1.95682	1.05260	1.02647	1.61583
35	Plastic products	0.46599	0.94597	7.89154	0.59796	3.57316	2.79482	1.25003	1.82186
36	Cement	4.25297	6.13387	23.28487	1.15704	7.86427	66.25559	6.11063	3.79572
37	Glass and glass products	0.78238	2.03332	11.82531	1.12768	4.17572	2.74853	2.71116	2.78218
38	Other non-metallic mineral products	0.93921	2.07427	12.44472	1.19111	4.77944	10.23206	2.14681	3.59726
39	Iron and steel	2.28030	3.07960	28.73703	1.51218	6.85233	83.91455	1.62290	3.63937
40	Iron and steel products	1.45331	2.18622	15.21804	0.73013	5.76847	31.76144	1.63480	3.93369
41	Non-ferrous metal products	0.78273	1.39354	12.08188	0.83709	3.68822	1.86262	1.96150	1.14507
42	Metallic furniture	0.46053	1.13303	10.87145	0.71784	3.20787	8.33011	0.98528	1.18095
43	Other fabricated metal products	0.56881	1.18367	10.72948	0.83126	3.22581	10.55281	1.28904	1.77801
44	Household electrical appliances	0.30759	0.63963	6.63647	0.59978	2.03345	1.89519	0.98075	1.15598
45	Other electrical machinery and apparatus	0.30873	0.80052	8.39128	0.49680	2.68789	2.54677	1.17226	1.14016
46	Motor vehicle	0.38068	0.69815	7.27955	0.47064	2.35844	5.69310	1.06013	1.14052
47	Ship building and repairing	0.45910	0.93097	8.65163	0.65637	2.51409	9.48950	1.00228	1.18329
48	Air transport equipments	0.42472	0.75689	12.04948	0.61565	2.83485	3.81839	0.85605	1.62778
49	Precision instruments	0.25448	0.69307	7.24032	0.35380	1.99984	3.76093	0.94113	1.24074
50	Other machinery and equipments	0.37801	0.85026	8.42846	0.52450	2.28119	1.19334	0.90198	1.69922
51	Other manufactured products	0.35814	0.72403	7.22211	0.57306	1.75471	1.92088	0.83344	1.43228
52	Thermal power	5.72749	13.79485	69.78066	5.32091	30.03571	82.51674	7.76667	15.42416
53	Other power	1.12178	1.19875	22.97236	0.00000	17.83453	12.22639	0.24968	2.17301
54	Gas supply	5.60480	15.73883	23.82899	4.80760	37.45254	641.77168	0.00000	1.13875
55	Water supply	1.70378	2.74652	17.48846	0.27814	6.92992	5.88313	10.39888	0.99612
56	Buildings	0.30535	0.80432	8.73836	0.55611	2.45860	6.47091	0.94307	1.74068
57	Civil engineering	0.39739	0.80981	11.86652	1.34643	2.86831	5.47071	1.20268	1.58132
58	Commerce	0.16399	0.51151	3.78234	0.58992	0.63205	1.08827	0.56028	0.37837
59	Railway transport	0.35045	1.73980	7.37302	0.00000	3.33304	3.10222	4.77224	1.61485
60	Road transport	0.91948	2.17541	4.86141	2.25108	4.22610	1.06054	5.66690	5.22811
61	Water transport	1.58674	3.59924	3.26462	1.59760	4.64942	1.36355	2.96571	4.32761
62	Air transport	1.33272	1.80045	6.98799	3.40569	3.09703	1.65692	1.64312	2.41760
63	Other transport and transport relating services	0.22622	0.66206	6.71471	1.13628	1.46902	1.58691	0.90262	0.55179
64	Eating and drinking place	0.29757	1.00894	3.04472	0.82655	1.40648	2.25960	1.04590	0.50042
65	Hotels and other lodging place	0.34003	1.24742	2.40978	0.46858	2.76236	6.07042	1.07961	0.66764
66	Postal and telecommunication services	0.11152	0.19145	2.92832	0.14189	0.43972	1.54155	0.42180	0.24877
67	Financial and insurance services	0.08237	0.29726	0.94558	0.24123	0.67676	1.20417	0.43233	0.24339
68	Real estate services	0.05985	0.29815	4.14359	0.18083	0.20227	0.80613	0.24657	0.17416
69	Business services	0.14542	0.45557	4.82062	0.67033	1.40826	1.39338	0.76348	0.37564
70	Public administration	0.22900	0.62883	3.17165	0.47941	0.00000	0.00000	0.50715	0.69202
71	Education	0.20664	0.25338	4.27164	0.50186	0.83681	1.03983	0.49150	0.27175
72	Medical and health services	0.27678	0.56245	4.16625	0.32365	1.47046	1.97404	0.56555	0.55819
73	Repair of motor vehicles	0.24873	0.29335	9.52574	0.51489	2.06391	2.30737	1.07298	0.72647
74	Miscellaneous repair services	0.24940	0.52125	9.29856	0.54902	2.28451	2.20871	0.67697	0.73794
75	Other services	0.23156	0.58326	3.64406	0.31135	1.07495	3.44160	0.81230	0.39853
76	Non-elsewhere classified	0.41761	0.85482	1.40364	1.83624	2.90967	2.18157	0.00000	0.29944

Table8 The induced SO2 emission from per unit for EDEN Data 1990 (USDollar)

* units : SO2 Ton / 1 unit production and 1 unit consumption

UNITS : SO2 Ton / 1 unit production and 1 unit consumption										
EDEN	Classification	country								
Code		Japan	Korea	China	Singapore	Thailand	Indonesia	Philippines	Taiwan	
1	Paddy	0.40356	1.12801	29.96139	0.00000	3.41391	0.19724	2.31378	1.85732	
2	Fruits	0.49965	2.37497	28.78400	0.00000	4.58857	0.05877	3.29620	2.30179	
3	Dairy farming and Livestock raising (Inc.	0.83777	3.22881	15.01014	0.74139	11.64276	0.25355	3.30153	3.92449	
4	Other edible crops	0.88687	1.85006	22.56009	1.45264	4.58364	0.18684	1.96438	1.78216	
5	Non-edible crops	0.68637	1.71409	26.38024	0.00000	4.26878	0.50084	3.23935	1.58732	
6	Agricultural services	1.09005	2.96111	0.00000	0.00000	14.25503	0.32990	8.23171	2.44334	
7	Forestry	0.82700	7.39620	10.14834	0.00000	14.34502	0.53852	12.83429	0.58342	
8	Fishing	2.76063	7.24547	13.88421	2.28234	19.66808	0.33945	7.88229	7.41891	
9	Coal	156.94653	5.50049	1344.28263	6.81914	9.11984	7.40872	31.12267	6.55638	
10	Crude oil and Natural gas	0.87810	0.00000	37.19477	0.00000	13.04397	0.10641	25.48324	5.73402	
11	Metal ores mining	1.35882	7.62390	67.35492	0.00000	12.66199	0.68557	39.51586	12.22788	
12	Non-metallic ores mining	1.13984	4.56451	67.95679	0.00000	12.42758	0.38665	19.11168	5.99182	
13	Dairy products	1.68870	5.53518	15.83719	1.63857	16.51096	0.66351	9.99251	6.56412	
14	Meat and meat products	0.88575	3.63390	18.21528	0.90265	11.10216	0.26922	5.17531	4.84387	
15	Other foods	1.30222	4.60723	34.86224	1.66537	12.87816	0.26732	9.31214	5.32920	
16	Animal feeds	1.24827	3.23293	27.30719	0.00000	12.28875	0.38660	4.97319	5.25198	
17	Tea and coffee	1.19452	5.66813	48.05862	1.79842	10.35028	0.17182	4.86151	6.70438	
18	Beverages	1.27938	4.77949	40.36696	2.22719	9.85999	0.68649	9.94297	5.01144	
19	Tobacco	0.37035	1.58199	13.42345	0.88515	11.96869	0.34256	15.27409	2.55983	
20	Spinning and weaving	1.30981	9.71313	35.19171	1.76842	32.18407	1.63398	26.62295	14.25511	
21	Knitting	1.12849	8.67375	32.11016	0.00000	22.58891	1.43716	26.59896	11.35232	
22	Wearing apparel and other fabricated textile	1.19171	9.56280	25.10452	1.22922	22.99287	1.15170	17.95797	10.87535	
23	Leather and leather products	0.88032	5.45048	24.43302	0.92254	13.21093	0.96171	14.88659	6.46479	
24	Timber and Wooden products	0.94968	4.37758	67.06188	1.52742	12.59273	0.45916	12.62544	4.73231	
25	Wooden furnitures	0.98826	4.66525	42.95249	1.34257	13.71584	0.63576	9.96288	5.00533	
26	Pulp, paper and paper products	9.16973	13.73877	68.30445	1.29887	46.88234	1.17200	52.17255	18.27905	
27	Printing and publishing	1.89770	6.34741	46.19859	0.90827	24.50018	0.90015	26.22234	8.00567	
28	Fertilizer	2.05053	13.96061	138.87059	0.00000	21.48138	2.27038	20.03890	10.38567	
29	Drugs and medicine	1.03963	4.03623	39.82975	0.42599	21.64671	1.73811	11.84010	6.88066	
30	Soap, detergent and toiletries	1.62495	6.19730	45.96494	1.22659	22.47200	1.83406	13.14615	9.74248	
31	Other chemical products	2.35297	11.41455	75.57844	1.64001	40.92133	4.50967	16.83321	19.52487	
32	Petroleum refinery products	1.02660	14.20592	49.30381	6.57792	35.26392	6.32565	42.70350	11.31871	
33	Coke and other coal products	3.17693	223.49682	324.03525	2.54727	0.00000	853.35940	67.38815	8.90093	
34	Rubber products	1.34351	8.12793	35.30241	0.94117	13.51413	0.81493	17.28096	10.70065	
35	Plastic products	1.37356	8.23700	54.60176	1.39036	26.59646	3.17743	18.64484	11.88596	
36	Cement	18.44485	39.03470	184.13201	2.47849	92.56146	7.03006	129.04399	17.58367	
37	Glass and glass products	2.26969	19.88812	85.48587	3.01366	39.04371	1.28846	49.69689	16.55022	
38	Other non-metallic mineral products	3.32491	13.88530	91.75438	3.32617	39.68761	9.47499	40.24611	17.56789	
39	Iron and steel	16.85031	29.29133	179.09306	3.38808	63.98028	1.93831	26.46018	14.42075	
40	Iron and steel products	7.42368	19.60666	101.39243	1.76789	53.13870	1.67979	26.74521	14.80522	
41	Non-ferrous metal products	2.10959	10.97140	87.62585	2.16660	34.17602	1.21378	33.03344	6.56634	
42	Metallic furniture	1.97064	9.00436	71.24346	1.61925	28.14956	0.88837	13.67692	6.15291	
43	Other fabricated metal products	2.32777	9.85825	73.89099	1.83143	28.80775	1.39124	20.72683	8.61145	
44	Household electrical appliances	1.15740	4.98156	46.06301	1.30250	16.39094	1.43155	11.79381	5.87421	
45	Other electrical machinery and apparatus	1.06125	6.28109	58.28065	1.07344	23.62506	4.78522	16.88219	5.97257	
46	Motor vehicle	1.32567	5.73182	50.70776	1.01858	20.54816	1.47616	12.12783	5.26407	
47	Ship building and repairing	1.87075	7.70122	58.40298	1.41031	21.73353	1.70827	14.32984	5.36820	
48	Other transport equipments	1.62876	5.92748	82.52431	1.37267	27.89565	0.94760	10.43242	7.33992	
49	Precision instruments	0.89027	5.34481	49.74681	0.72682	17.38156	1.92035	12.83988	6.18959	
50	Other machinery and equipments	1.52226	6.82719	57.98238	1.09285	20.17612	0.69102	11.69766	7.23648	
51	Other manufactured products	1.25467	5.84978	49.59134	1.32474	14.83123	1.11545	11.97505	7.56146	
52	Thermal power	10.69718	91.30377	551.79349	10.37304	272.66455	17.02734	144.82212	96.32760	
53	Other power	3.75989	9.68779	179.83033	0.00000	89.11826	4.59400	5.11625	12.43901	
54	Gas supply	1.31868	1.33532	157.80058	11.40869	219.93966	0.84053	0.00000	4.71344	
55	Water supply	26.90663	26.17694	132.80609	0.60392	39.85799	2.02948	174.83658	5.73315	
56	Buildings	1.11866	5.70490	62.64209	1.28071	22.22361	1.48957	13.16527	7.85669	
57	Civil engineering	1.30062	5.27818	81.43060	3.38095	24.88641	1.39625	20.11243	6.87222	
58	Commerce	0.50695	3.07930	27.39231	1.42473	5.00515	0.32500	6.82344	1.96169	
59	Railway transport	1.31389	8.27150	51.16253	0.00000	25.18251	1.42139	25.86236	7.47162	
60	Road transport	1.71449	6.98904	26.27872	3.19660	25.17102	1.06818	20.35628	6.82808	
61	Water transport	5.03845	39.37519	16.52209	4.78128	51.13279	0.80345	45.33655	38.91007	
62	Air transport	0.72848	3.85178	32.51187	5.60709	13.92847	1.45392	12.12965	2.89947	
63	Other transport and transport relating services	0.97859	3.45058	43.46691	2.87558	10.41000	0.61652	9.24564	2.66592	
64	Eating and drinking place	1.09764	4.53576	21.57389	1.60344	9.30509	0.55659	13.13814	2.77868	
65	Hotels and other lodging place	1.68540	9.15689	17.08792	0.96849	23.27779	1.10545	13.92175	3.85169	
66	Postal and telecommunication services	0.33381	1.16916	21.67831	0.23750	3.40873	0.43875	5.45927	1.17869	
67	Financial and insurance services	0.31373	1.77519	6.84165	0.45337	5.48168	0.29871	6.04355	1.17576	
68	Real estate services	0.18430	1.90425	30.52343	0.42855	1.61169	0.19538	3.82109	0.80565	
69	Business services	0.49763	2.91518	32.28913	1.62860	10.80463	0.46611	10.11676	1.85247	
70	Public administration	0.94660	3.87766	19.76736	1.07566	0.00000	0.00000	5.95909	3.06439	
71	Education	0.74228	1.58296	30.46359	1.03448	7.08052	0.33100	6.96547	1.46987	
72	Medical and health services	0.90273	4.11490	30.24689	0.71897	11.44862	0.88279	8.07963	3.07263	
73	Repair of motor vehicles	0.84507	2.10919	68.00971	1.10211	17.36430	0.86078	15.49024	3.49896	
74	Miscellaneous repair services	0.86653	2.43496	65.30151	1.11950	19.00607	0.82389	9.52317	3.47525	
75	Other services	0.78788	3.93755	20.93294	0.68865	7.79342	0.99004	12.13806	2.22008	
76	Non-elsewhere classified	1.69251	6.30359	9.91941	4.38588	23.65731	1.81780	0.00000	1.50661	

Table9 The induced Calory from per unit of for EDEN Data 1990 (USDollar)

* units : Terra Calory / 1unit production and 1unit consumption										
EDEN Code	Classification	country								
		Japan	Korea	China	Singapore	Thailand	Indonesia	Philippines	Taiwan	
1	Paddy	0.75360	0.68396	12.27510	0.00000	1.27805	0.33900	0.59350	1.70692	
2	Fruits	0.69216	1.36582	11.78024	0.00000	1.82347	0.15174	0.91075	2.10829	
3	Dairy farming and Livestock raising (Inc.	1.05154	1.97929	5.94873	1.29125	4.88050	1.12707	0.83807	2.83263	
4	Other edible crops	1.13710	0.99476	9.27478	2.40041	1.96383	0.43634	0.51083	1.66725	
5	Non-edible crops	1.20474	0.99662	10.78484	0.00000	1.54513	1.20176	0.85527	1.39018	
6	Agricultural services	1.66635	1.53608	0.00000	0.00000	6.59731	0.65526	1.58808	1.91806	
7	Forestry	1.23078	26.10181	4.79130	0.00000	62.61635	27.23066	2.53638	0.79623	
8	Fishing	3.56386	5.17711	6.54642	3.58388	9.22064	2.07909	2.53018	6.13923	
9	Coal	111.47469	3.61114	404.36364	7.81038	4.45371	12.31550	6.37760	4.49985	
10	Crude oil and Natural gas	1.13542	0.00000	5948.05968	0.00000	4.80971	0.42221	6.21537	2324.66498	
11	Metal ores mining	1.77848	5.20529	26.63017	0.00000	5.56474	1.88377	7.73184	8.54186	
12	Non-metallic ores mining	1.69639	3.20654	27.15363	0.00000	4.85672	1.49535	3.84235	4.27837	
13	Dairy products	1.59998	2.78070	6.15884	2.54006	5.08799	2.33377	2.39256	3.98009	
14	Meat and meat products	1.05764	2.16254	7.09160	1.57513	4.69844	1.24093	1.41025	3.22216	
15	Other foods	1.50482	2.18202	13.91652	2.68691	4.59371	0.92013	1.94120	3.51735	
16	Animal feeds	1.43964	1.65880	11.43465	0.00000	5.11066	1.20813	1.26096	3.46509	
17	Tea and coffee	1.17898	2.29882	17.86781	3.16565	5.51783	0.73892	1.20827	4.24565	
18	Beverages	1.14986	2.13533	14.99367	3.28462	3.24721	2.36826	2.75937	2.92837	
19	Tobacco	0.38939	0.74041	5.30551	1.56454	2.03592	1.13373	3.48129	1.31447	
20	Spinning and weaving	1.70075	4.51958	14.41482	3.06039	9.92348	3.40581	6.38039	7.62272	
21	Knitting	1.24676	4.02383	13.37608	0.00000	6.86625	3.06038	6.35333	5.92362	
22	Wearing apparel and other fabricated textile	1.34718	4.18369	10.23967	2.15207	7.13638	2.58603	4.78670	5.75402	
23	Leather and leather products	0.98451	2.64390	10.26047	1.63120	4.68309	2.21927	4.17393	3.83245	
24	Timber and Wooden products	1.19004	2.56136	24.82121	2.60992	4.25709	5.04022	3.77138	3.62617	
25	Wooden furnitures	1.04962	2.87828	17.32151	2.29043	4.48589	25.00967	3.75973	3.47379	
26	Pulp, paper and paper products	3.44604	5.34552	26.15454	2.17759	9.29496	4.46957	10.76844	9.77057	
27	Printing and publishing	1.14140	2.97606	18.16078	1.58632	6.53489	3.18024	6.16093	4.63342	
28	Fertilizer	6.88421	6.26647	52.38273	0.00000	6.85015	3.84223	4.89147	16.52619	
29	Drugs and medicine	1.07029	2.05760	15.57758	0.73472	7.41323	2.80356	3.01809	4.08217	
30	Soap, detergent and toiletries	1.42577	2.97417	19.95222	1.95140	7.07170	2.99513	3.10780	5.34474	
31	Other chemical products	3.33219	5.47801	35.04372	2.33957	15.38415	4.14477	4.07162	10.09963	
32	Petroleum refinery products	21.39215	44.86081	284.73878	44.18855	37.26555	64.72419	29.42068	29.14382	
33	Coke and other coal products	6.31217	95.08865	113.76480	3.21894	0.00000	181.33781	14.97901	6.79421	
34	Rubber products	1.73291	3.81001	13.91968	1.86353	5.06440	2.34658	4.26355	5.74554	
35	Plastic products	1.84681	4.23233	23.21118	2.53815	9.06396	3.87185	4.66977	6.50443	
36	Cement	15.09964	18.25738	60.44257	4.60435	17.17768	26.08174	24.71453	11.13559	
37	Glass and glass products	2.81673	7.31594	33.50693	4.59010	11.53923	4.32389	9.62251	9.57900	
38	Other non-metallic mineral products	3.30658	7.03611	33.73523	4.27046	11.85531	18.42215	8.48793	11.13370	
39	Iron and steel	9.24081	23.56530	70.19066	5.93917	18.10270	20.23914	6.32441	9.42591	
40	Iron and steel products	5.23191	14.68618	50.42184	3.48410	15.07195	10.85312	6.36389	9.61898	
41	Non-ferrous metal products	2.33230	6.27660	34.57108	2.93970	9.64329	4.44778	6.98103	4.09037	
42	Metallic furniture	1.65621	5.87515	29.95131	2.73386	8.42146	4.48208	3.94072	4.00550	
43	Other fabricated metal products	2.01734	6.87572	30.23642	3.29507	8.50743	5.41881	5.19263	5.42524	
44	Household electrical appliances	1.09298	2.92237	19.10538	2.36056	5.35993	2.31626	3.91389	3.75474	
45	Other electrical machinery and apparatus	1.08779	3.58555	24.07786	1.91604	7.08704	3.22669	4.50378	3.85976	
46	Motor vehicle	1.35850	3.62526	20.72673	1.82840	6.22119	2.89765	4.05761	3.45281	
47	Ship building and repairing	1.64221	5.28130	26.22971	2.55592	6.53655	5.49587	3.83674	3.48958	
48	Other transport equipments	1.48138	3.87872	35.54464	2.48143	8.10442	3.17952	3.36321	4.75609	
49	Precision instruments	0.89758	3.13743	20.77107	1.48598	5.33563	3.61015	3.71046	4.18012	
50	Other machinery and equipments	1.33753	4.61457	24.19384	2.16710	6.14462	0.93389	3.63203	4.84766	
51	Other manufactured products	1.29735	3.19659	20.16102	2.23249	4.55458	2.64173	3.25897	4.82893	
52	Thermal power	19.76991	77.42069	238.66500	26.52753	73.97876	71.47969	36.28104	63.69673	
53	Other power	3.02374	5.39704	63.90289	0.00000	45.04303	27.99319	1.09356	17.93110	
54	Gas supply	26.81010	65.44061	72.57485	28.38980	87.40013	203.52531	0.00000	4.26958	
55	Water supply	3.58806	11.85042	48.61813	1.22078	16.44978	6.85935	31.12111	3.95075	
56	Buildings	1.09481	3.38344	24.77259	2.10414	6.22470	7.26732	3.33393	5.26368	
57	Civil engineering	1.38824	3.38955	31.17206	4.94123	7.52140	7.29785	4.50458	4.75118	
58	Commerce	0.57725	1.91372	10.54157	2.06645	1.65648	1.57978	1.86292	1.48653	
59	Railway transport	1.16703	6.70208	20.15389	0.00000	10.09211	7.76996	13.66332	5.68906	
60	Road transport	3.46688	7.49488	14.89986	7.65170	13.25316	6.86345	15.59595	18.07331	
61	Water transport	5.50246	11.66073	10.23021	5.06071	15.05314	5.68225	8.94332	13.82778	
62	Air transport	4.83424	6.33471	21.37837	10.86059	9.67954	9.44181	4.90644	8.37657	
63	Other transport and transport relating services	0.76963	2.53811	18.75896	3.84193	3.93715	3.12348	2.79353	2.01718	
64	Eating and drinking place	1.05739	3.90328	8.49270	3.18330	3.82167	3.04248	3.63434	1.87811	
65	Hotels and other lodging place	1.14581	4.67002	6.83264	1.91162	6.99567	5.65926	4.25530	2.54120	
66	Postal and telecommunication services	0.38845	0.85001	8.09580	0.51897	1.19339	2.05723	1.56192	0.93516	
67	Financial and insurance services	0.28745	1.23819	2.57946	0.89846	1.72896	1.31626	1.53820	0.91689	
68	Real estate services	0.20928	1.34760	11.27824	0.69083	0.51863	0.95096	0.87937	0.71953	
69	Business services	0.51078	1.86055	13.89989	2.36319	3.63256	1.79875	2.72971	1.25266	
70	Public administration	0.77839	2.58223	9.20518	1.79802	0.00000	0.00000	2.02336	2.40387	
71	Education	0.71969	0.97001	11.99043	1.81714	2.15695	1.15425	1.82802	1.03406	
72	Medical and health services	0.99150	2.23254	11.93679	1.28324	3.80302	2.62129	2.26980	2.07336	
73	Repair of motor vehicles	0.89549	1.19466	26.96735	2.03316	5.42825	2.53784	4.12655	2.38749	
74	Miscellaneous repair services	0.87712	2.24819	26.17515	2.12032	5.88782	2.42951	2.36053	2.33608	
75	Other services	0.81023	2.35949	10.72104	1.23166	2.79734	3.76468	2.89239	1.48744	
76	Non-elsewhere classified	1.44155	3.27801	3.92602	6.99218	7.39603	4.43866	0.00000	0.99223	