

Lampiran 1
Indikator Sustainability PT X

No	Indikator / Parameter	2005		2006		2007		2008		2009	
		nilai	grade	nilai	grade	nilai	grade	nilai	grade	nilai	grade
1	Kinerja Ekonomi										
	Pembayaran pajak (ECO-1)	1.618625	1.63E-05	2.261641	2.24E-05	1.84733	6.19E-05	5.068493	0.000139	33.5	0.002216
	Pendapatan Perusahaan / karyawan (ECOA1)	180373.8	0.042059	222874.8	0.050068	192917.8	0.039935	237455.7	0.041283	240468.8	0.064364
	Cadangan terbukti (ECOA2)	292	0.013036	201	0.008855	182	0.008018	189	0.008289	110.8	0.004755
2	Kinerja Sosial										
	Sistem Manajemen keselamatan (H&S-1)	5	1	5	1	5	1	5	1	5	1
	Laju Kecelakaan kerja (H&S-4)	1.35	0.288889	0.71	0.464789	0.64	0.515625	0.38	0.947368	0.34	0.794118
	Kontribusi perusahaan kepada masyarakat (SOC-8)	N/A		N/A		0.444026	0.002149	0.428847	0.001904	0.56726	0.001937
3	Kinerja Lingkungan										
	Tumpahan hidrokarbon ke lingkungan (ENV-1)	2	1	0	1	0	1	2	1	0	1
	Emisi gas rumah kaca (ENV-3)	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0
	Sistem Manajemen Lingkungan (ENV-6)	5	1	5	1	5	1	5	1	5	1
	karyawan	875		726		626		715		639	
	Revenue	1423.6		1459.5		1137.5		1859.1		1444.4	
	Rp / USD	9020		9020		9419		10950		9400	

Lampiran 2
FUZZIFIKASI INDIKATOR PT X

No	Indikator / Parameter	Data Normalisasi	Keanggotaan Fuzzy					
			Linguistik	Derajat	Nilai Integer	Linguistik	Derajat	Nilai Integer
1	Pembayaran pajak (ECO-1)	0.00221575	S	0.003693	1	R	0.996307	0
	Pendapatan Perusahaan / karyawan (ECOA1)	0.0643481	S	0.107247	1	R	0.892753	0
	Cadangan terbukti (ECOA2)	0.00475547	S	0.007926	1	R	0.992074	0
2	Sistem Manajemen keselamatan (H&S-1)	1	T	1	2	S	0	1
	Laju Kecelakaan kerja (H&S-4)	0.8049304	T	0.512326	2	S	0.487674	1
	Kontribusi perusahaan kepada masyarakat (SOC-8)	0.00193661	S	0.003228	1	R	0.996772	0
3	Tumpahan hidrokarbon ke lingkungan (ENV-1)	1	T	1	2	S	0	1
	Emisi gas rumah kaca (ENV-3)	0	S	0	1	R	1	0
	Sistem Manajemen Lingkungan (ENV-6)	1	T	1	2	S	0	1

RULE EKONOMI PT X

Rule Ekonomi			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Ekonomi	
Jika ECO-1	Jika ECOA1	Jika ECOA2	ECO-1	EOA1	EOA2	ECO-1	EOA1	EOA2		Derajat	Linguistik
S	S	S	0.003693	0.107247	0.007926	1	1	1	3	0.0000031	R
S	S	R	0.003693	0.107247	0.992074	1	1	0	2	0.0003929	J
S	R	S	0.003693	0.892753	0.007926	1	0	1	2	0.0000261	J
S	R	R	0.003693	0.892753	0.992074	1	0	0	1	0.0032707	SJ
R	S	S	0.996307	0.107247	0.007926	0	1	1	2	0.0008469	J
R	S	R	0.996307	0.107247	0.992074	0	1	0	1	0.1060039	SJ
R	R	S	0.996307	0.892753	0.007926	0	0	1	1	0.0070496	SJ
R	R	R	0.996307	0.892753	0.992074	0	0	0	0	0.8824067	SJ

SB = 0
 B = 0
 R = 0.0000031
 J = 0.0012659
 SJ = 0.9987309

RULE SOSIAL PT X

Rule Sosial			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Sosial	
Jika H&S-1	Jika H&S-4	Jika SOC-8	H&S-1	H&S-4	SOC-8	H&S-1	H&S-4	SOC-8		Derajat	Linguistik
T	T	S	1.000000	0.512326	0.003228	2	2	1	5	0.00165363	SB
T	T	R	1.000000	0.512326	0.996772	2	2	0	4	0.51067237	B
T	S	S	1.000000	0.487674	0.003228	2	1	1	4	0.00157406	B
T	S	R	1.000000	0.487674	0.996772	2	1	0	3	0.4860999	R
S	T	S	0.000000	0.512326	0.003228	1	2	1	4	0	B
S	T	R	0.000000	0.512326	0.996772	1	2	0	3	0	R
S	S	S	0.000000	0.487674	0.003228	1	1	1	3	0	R
S	S	R	0.000000	0.487674	0.996772	1	1	0	2	0	J

SB = 0.00165363
 B = 0.51224643
 R = 0.48609995
 J = 0
 SJ = 0

RULE LINGKUNGAN PT X

Rule Lingkungan			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Lingk	
Jika ENV-1	Jika ENV-3	Jika ENV-6	ENV-1	ENV-3	ENV-6	ENV-1	ENV-3	ENV-6		Derajat	Linguistik
T	S	T	1.000000	0.000000	1.000000	2	1	2	5	0	SB
T	S	S	1.000000	0.000000	0.000000	2	1	1	4	0	B
T	R	T	1.000000	1.000000	1.000000	2	0	2	4	1	B
T	R	S	1.000000	1.000000	0.000000	2	0	1	3	0	R
S	S	T	0.000000	0.000000	1.000000	1	1	2	4	0	B
S	S	S	0.000000	0.000000	0.000000	1	1	1	3	0	R
S	R	T	0.000000	1.000000	1.000000	1	0	2	3	0	R
S	R	S	0.000000	1.000000	0.000000	1	0	1	2	0	J

SB = 0
 B = 1
 R = 0
 J = 0
 SJ = 0

INDIKATOR GABUNGAN PT X

INDIKATOR	NORM DATA	R	S	T	SJ	J	R	B	SB
EKONOMI	0.000318				0.99873	0.00127	0.000003	0.00000	0.00000
ECO-1	0.002216	0.99631	0.00369	0.00000					
EOA1	0.064348	0.89275	0.10725	0.00000					
EOA2	0.004755	0.99207	0.00793	0.00000					
SOSIAL	0.628888				0.00000	0.00000	0.48610	0.51225	0.00165
H&S-1	1.000000	0.00000	0.00000	1.00000					
H&S-4	0.804930	0.00000	0.48767	0.51233					
SOC-8	0.001937	0.99677	0.00323	0.00000					
LINGKUNGAN	0.750000				0.00000	0.00000	0.00000	1.00000	0.00000
ENV-1	1.000000	0.00000	0.00000	1.00000					
ENV-3	0.000000	1.00000	0.00000	0.00000					
ENV-6	1.000000	0.00000	0.00000	1.00000					

RULE SUSTAINABILITY PT X

RULE SUSTAINABILITY			Nilai Tegas			Nilai Linguistik			Jumlah	SUSTAINABILITAS	
ECO	SOC	ENV	ECO	SOC	ENV	ECO	SOC	ENV		Derajat	Linguistik
R	SB	B	0.000003	0.001654	1.000000	2	4	3	9	5.1908E-09	H
R	B	B	0.000003	0.512246	1.000000	2	3	3	8	1.608E-06	FH
R	R	B	0.000003	0.486100	1.000000	2	2	3	7	1.5259E-06	FIH
J	SB	B	0.001266	0.001654	1.000000	1	4	3	8	2.0934E-06	FH
J	B	B	0.001266	0.512246	1.000000	1	3	3	7	0.00064846	FIH
J	R	B	0.001266	0.486100	1.000000	1	2	3	6	0.00061536	I
SJ	SB	B	0.998731	0.001654	1.000000	0	4	3	7	0.00165153	FIH
SJ	B	B	0.998731	0.512246	1.000000	0	3	3	6	0.51159636	I
SJ	R	B	0.998731	0.486100	1.000000	0	2	3	5	0.48548306	FIL

SUSTAINABILITY

VXL = 0
 XL = 0
 VL = 0
 L = 0
 FL = 0
 FIL = 0.4854831
 I = 0.5122117
 FIH = 0.0023015
 FH = 3.70132E-06
 H = 5.19078E-09
 VH = 0
 XH = 0
 VXH = 0

Lampiran 3
Indikator Sustainabilitas PT Y

No	Indikator / Parameter	2005		2006		2007		2008		2009	
		nilai	grade	nilai	grade	nilai	grade	nilai	grade	nilai	grade
1	Kinerja Ekonomi										
	Pembayaran pajak (ECO-1)	103.5	0.001045	116.6	0.001154	95.4	0.003194	208.2	0.005699	28.2	0.001865
	Pendapatan Perusahaan / karyawan (ECOA1)	302094.5	0.070441	378044.4	0.084925	418640.8	0.086661	602440.2	0.104737	296273.3	0.079301
	Cadangan terbukti (ECOA2)	171.6	0.007661	146.9	0.006471	146.7167	0.006463	105.9833	0.004648	231.95	0.009955
2	Kinerja Sosial										
	Sistim Manajemen keselamatan (H&S-1)	5	1	5	1	5	1	5	1	5	1
	Laju Kecelakaan kerja (H&S-4)	0.1	1	1.9	0.173684	0.47	0.702128	0.19	1	0.35	0.771429
	Kontribusi perusahaan kepada masyarakat (SOC-8)	0.9	0.006767	1.3	0.007647	1.5	0.00726	0.5	0.00222	1.29	0.004404
3	Kinerja Lingkungan										
	Tumpahan hidrokarbon ke lingkungan (ENV-1)	NA		NA		1	1	2	1	0	1
	Emisi gas rumah kaca (ENV-3)	NA	0	NA	0	NA	0	NA	0	NA	0
	Sistim Manajemen Lingkungan (ENV-6)	3	0.6	3	0.6	3	0.6	5	1	5	1
	karyawan	2053		2250		2575		2131		2254	
	Revenue	620.2		850.6		1078		1283.8		667.8	

Lampiran 4
FUZZIFIKASI INDIKATOR PT Y

No	Indikator / Parameter	Data Normalisasi	Keanggotaan Fuzzy					
			Linguistik	Derajat	Nilai Integer	Linguistik	Derajat	Nilai Integer
1	Pembayaran pajak (ECO-1)	0.0018653	S	0.003109	1	R	0.996891	0
	Pendapatan Perusahaan / karyawan (ECO1)	0.07933117	S	0.132219	1	R	0.867781	0
	Cadangan terbukti (ECO2)	0.00995476	S	0.016591	1	R	0.983409	0
2	Sistim Manajemen keselamatan (H&S-1)	1	T	1	2	S	0	1
	Laju Kecelakaan kerja (H&S-4)	0.79879567	T	0.496989	2	S	0.503011	1
	Kontribusi perusahaan kepada masyarakat (SOC-8)	0.00440395	S	0.00734	1	R	0.99266	0
3	Tumpahan hidrokarbon ke lingkungan (ENV-1)	1	T	1	2	S	0	1
	Emisi gas rumah kaca (ENV-3)	0	S	0	1	R	1	0
	Sistim Manajemen Lingkungan (ENV-6)	1	T	1	2	S	0	1

RULE EKONOMI PT Y

Rule Ekonomi			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Ekonomi	
Jika ECO-1	Jika ECOA1	Jika ECOA2	ECO-1	EOA1	EOA2	ECO-1	EOA1	EOA2		Derajat	Linguistik
S	S	S	0.003109	0.132219	0.016591	1	1	1	3	0.0000068	R
S	S	R	0.003109	0.132219	0.983409	1	1	0	2	0.0004042	J
S	R	S	0.003109	0.867781	0.016591	1	0	1	2	0.0000448	J
S	R	R	0.003109	0.867781	0.983409	1	0	0	1	0.0026530	SJ
R	S	S	0.996891	0.132219	0.016591	0	1	1	2	0.0021869	J
R	S	R	0.996891	0.132219	0.983409	0	1	0	1	0.1296207	SJ
R	R	S	0.996891	0.867781	0.016591	0	0	1	1	0.0143528	SJ
R	R	R	0.996891	0.867781	0.983409	0	0	0	0	0.8507308	SJ

SB = 0
 B = 0.0000000
 R = 0.0000068
 J = 0.0026358
 SJ = 0.9973573

RULE SOSIAL PT X

Rule Sosial			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Sosial	
Jika H&S-1	Jika H&S-4	Jika SOC-8	H&S-1	H&S-4	SOC-8	H&S-1	H&S-4	SOC-8		Derajat	Linguistik
T	T	S	1.000000	0.496989	0.007340	2	2	1	5	0.00364786	SB
T	T	R	1.000000	0.496989	0.992660	2	2	0	4	0.49334131	B
T	S	S	1.000000	0.503011	0.007340	2	1	1	4	0.00369206	B
T	S	R	1.000000	0.503011	0.992660	2	1	0	3	0.499318769	R
S	T	S	0.000000	0.496989	0.007340	1	2	1	4	0	B
S	T	R	0.000000	0.496989	0.992660	1	2	0	3	0	R
S	S	S	0.000000	0.503011	0.007340	1	1	1	3	0	R
S	S	R	0.000000	0.503011	0.992660	1	1	0	2	0	J

SB = 0.003647863
 B = 0.497033368
 R = 0.499318769
 J = 0
 SJ = 0

RULE LINGKUNGAN PT X

Rule Lingkungan			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Lingk	
Jika ENV-1	Jika ENV-3	Jika ENV-6	ENV-1	ENV-3	ENV-6	ENV-1	ENV-3	ENV-6		Derajat	Linguistik
T	S	T	1.000000	0.000000	1.000000	2	1	2	5	0	SB
T	S	S	1.000000	0.000000	0.000000	2	1	1	4	0	B
T	R	T	1.000000	1.000000	1.000000	2	0	2	4	1	B
T	R	S	1.000000	1.000000	0.000000	2	0	1	3	0	R
S	S	T	0.000000	0.000000	1.000000	1	1	2	4	0	B
S	S	S	0.000000	0.000000	0.000000	1	1	1	3	0	R
S	R	T	0.000000	1.000000	1.000000	1	0	2	3	0	R
S	R	S	0.000000	1.000000	0.000000	1	0	1	2	0	J

SB = 0
 B = 1
 R = 0
 J = 0
 SJ = 0

INDIKATOR GABUNGAN PT Y

INDIKATOR	NORM DATA	R	S	T	SJ	J	R	B	SB
EKONOMI	0.000662				0.99736	0.00264	0.000007	0.00000	0.00000
ECO-1	0.001865	0.99689	0.00311	0.00000					
EOA1	0.079331	0.86778	0.13222	0.00000					
EOA2	0.009955	0.98341	0.01659	0.00000					
SOSIAL	0.626082				0.00000	0.00000	0.49932	0.49703	0.00365
H&S-1	1.000000	0.00000	0.00000	1.00000					
H&S-4	0.798796	0.00000	0.50301	0.49699					
SOC-8	0.004404	0.99266	0.00734	0.00000					
LINGKUNGAN	0.750000				0.00000	0.00000	0.00000	1.00000	0.00000
ENV-1	1.000000	0.00000	0.00000	1.00000					
ENV-3	0.000000	1.00000	0.00000	0.00000					
ENV-6	1.000000	0.00000	0.00000	1.00000					

RULE SUSTAINABILITY PT Y

RULE SUSTAINABILITY			Nilai Tegas			Nilai Linguistik			Jumlah	SUSTAINABILITAS	
ECO	SOC	ENV	ECO	SOC	ENV	ECO	SOC	ENV		Derajat	Linguistik
R	SB	B	0.000007	0.003648	1.000000	2	4	3	9	2.4878E-08	H
R	B	B	0.000007	0.497033	1.000000	2	3	3	8	3.3897E-06	FH
R	R	B	0.000007	0.499319	1.000000	2	2	3	7	3.4052E-06	FIH
J	SB	B	0.002636	0.003648	1.000000	1	4	3	8	9.6152E-06	FH
J	B	B	0.002636	0.497033	1.000000	1	3	3	7	0.0013101	FIH
J	R	B	0.002636	0.499319	1.000000	1	2	3	6	0.00131612	I
SJ	SB	B	0.997357	0.003648	1.000000	0	4	3	7	0.00363822	FIH
SJ	B	B	0.997357	0.497033	1.000000	0	3	3	6	0.49571988	I
SJ	R	B	0.997357	0.499319	1.000000	0	2	3	5	0.49799924	FIL

SUSTAINABILITY

VXL = 0
 XL = 0
 VL = 0
 L = 0
 FL = 0
 FIL = 0.497999239
 I = 0.497036003
 FIH = 0.004951728
 FH = 1.30048E-05
 H = 2.48776E-08
 VH = 0
 XH = 0
 VXH = 0

Lampiran 5
Indikator Sustentabilitas BP

No	Indikator / Parameter	2005		2006		2007		2008		2009	
		nilai	grade	nilai	grade	nilai	grade	nilai	grade	nilai	grade
1	Kinerja Ekonomi										
	Pembayaran pajak (ECO-1)	13057	0,131889	19235	0,190446	14919	0,499565	22239	0,608787	10309	0,681857
	Pendapatan Perusahaan / karyawan (ECOA1)	2551830	0,595028	2828000	0,635293	2970826	0,614977	3989707	0,693629	3065230	0,820445
	Cadangan terbukti (ECOA2)	17893	0,798795	17700	0,779736	17814	0,784758	18147	0,795921	18292	0,785064
2	Kinerja Sosial										
	Sistem Manajemen keselamatan (H&S-1)	5	1	5	1	5	1	5	1	5	1
	Laju Kecelakaan kerja (H&S-4)	0,53	0,735849	0,48	0,6875	0,48	0,6875	0,43	0,837209	0,34	0,794118
	Kontribusi perusahaan kepada masyarakat (SOC-8)	95,5	0,718045	106,7	0,627647	135,8	0,657309	125,6	0,557726	106,8	0,364612
3	Kinerja Lingkungan										
	Tumpahan hidrokarbon ke lingkungan (ENV-1)	541	0,683919	417	0,707434	340	0,741176	335	0,629851	234	1
	Emisi gas rumah kaca (ENV-3)	78	0,797436	64,4	0,967391	63,5	0,932283	61,4	0,933225	65	0,863077
	Sistem Manajemen Lingkungan (ENV-6)	5	1	5	1	5	1	5	1	5	1
	karyawan	96200		97000		98100		92000		80300	
	Revenue	245486		274316		291438		367053		246138	

Lampiran 6
FUZZIFIKASI INDIKATOR BP

No	Indikator / Parameter	Data Normalisasi	Keanggotaan Fuzzy					
			Linguistik	Derajat	Nilai Integer	Linguistik	Derajat	Nilai Integer
1	Pembayaran pajak (ECO-1)	0.671	T	0.179	2	S	0.821	1
	Pendapatan Perusahaan / karyawan (ECOA1)	0.817	T	0.543	2	S	0.457	1
	Cadangan terbukti (ECOA2)	0.785	T	0.463	2	S	0.537	1
2	Sistem Manajemen keselamatan (H&S-1)	1.000	T	1.000	2	S	0.000	1
	Laju Kecelakaan kerja (H&S-4)	0.795	T	0.488	2	S	0.512	1
	Kontribusi perusahaan kepada masyarakat (SOC-8)	0.376	S	0.626	1	R	0.374	0
3	Tumpahan hidrokarbon ke lingkungan (ENV-1)	0.947	T	0.866	2	S	0.134	1
	Emisi gas rumah kaca (ENV-3)	0.866	T	0.664	2	S	0.336	1
	Sistem Manajemen Lingkungan (ENV-6)	1.000	T	1.000	2	S	0.000	1

RULE EKONOMI BP

Rule Ekonomi			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Ekonomi	
Jika ECO-1	Jika ECOA1	Jika ECOA2	ECO-1	EOCA1	EOCA2	ECO-1	EOCA1	EOCA2		Derajat	Linguistik
T	T	T	0.179	0.543	0.463	2	2	2	6	0.045	SB
T	T	S	0.179	0.543	0.537	2	2	1	5	0.052	SB
T	S	T	0.179	0.457	0.463	2	1	2	5	0.038	SB
T	S	S	0.179	0.457	0.537	2	1	1	4	0.044	B
S	T	T	0.821	0.543	0.463	1	2	2	5	0.206	SB
S	T	S	0.821	0.543	0.537	1	2	1	4	0.240	B
S	S	T	0.821	0.457	0.463	1	1	2	4	0.174	B
S	S	S	0.821	0.457	0.537	1	1	1	3	0.202	R

SB = 0.341198093

B = 0.457207334

R = 0.201594573

J = 0

SJ = 0

RULE SOSIAL BP

Rule Sosial			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Sosial	
Jika H&S-1	Jika H&S-4	Jika SOC-8	H&S-1	H&S-4	SOC-8	H&S-1	H&S-4	SOC-8		Derajat	Linguistik
T	T	S	1.000	0.488	0.626	2	2	1	5	0.306	SB
T	T	R	1.000	0.488	0.374	2	2	0	4	0.182	B
T	S	S	1.000	0.512	0.626	2	1	1	4	0.321	B
T	S	R	1.000	0.512	0.374	2	1	0	3	0.191	R
S	T	S	0.000	0.488	0.626	1	2	1	4	0.000	B
S	T	R	0.000	0.488	0.374	1	2	0	3	0.000	R
S	S	S	0.000	0.512	0.626	1	1	1	3	0.000	R
S	S	R	0.000	0.512	0.374	1	1	0	2	0.000	J

SB = 0.305575211

B = 0.503057878

R = 0.191366911

J = 0

SJ = 0

RULE LINGKUNGAN BP

Rule Lingkungan			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Lingk	
Jika ENV-1	Jika ENV-3	Jika ENV-6	ENV-1	ENV-3	ENV-6	ENV-1	ENV-3	ENV-6		Derajat	Linguistik
T	T	T	0.866	0.664	1.000	2	2	2	6	0.575	SB
T	T	S	0.866	0.664	0.000	2	2	1	5	0.000	SB
T	S	T	0.866	0.336	1.000	2	1	2	5	0.291	SB
T	S	S	0.866	0.336	0.000	2	1	1	4	0.000	B
S	T	T	0.134	0.664	1.000	1	2	2	5	0.089	SB
S	T	S	0.134	0.664	0.000	1	2	1	4	0.000	B
S	S	T	0.134	0.336	1.000	1	1	2	4	0.045	B
S	S	S	0.134	0.336	0.000	1	1	1	3	0.000	R

SB = 0.955043053

B = 0.044956947

R = 0

J = 0

SJ = 0

INDIKATOR GABUNGAN BP

INDIKATOR	NORM DATA	R	S	T	SJ	J	R	B	SB
EKONOMI	0.785				0.000	0.000	0.202	0.457	0.341
ECO-1	0.671	0.000	0.821	0.179					
EOA1	0.817	0.000	0.457	0.543					
EOA2	0.785	0.000	0.537	0.463					
SOSIAL	0.779				0.000	0.000	0.191	0.503	0.306
H&S-1	1.000	0.000	0.000	1.000					
H&S-4	0.795	0.000	0.512	0.488					
SOC-8	0.376	0.374	0.626	0.000					
LINGKUNGAN	0.989				0.000	0.000	0.000	0.045	0.955
ENV-1	0.947	0.000	0.134	0.866					
ENV-3	0.866	0.000	0.336	0.664					
ENV-6	1.000	0.000	0.000	1.000					

RULE SUSTAINABILITY BP

RULE SUSTAINABILITAS			Nilai Tegas			Nilai Linguistik			Jumlah	SUSTAINABILITAS	
ECO	SOC	ENV	ECO	SOC	ENV	ECO	SOC	ENV		Derajat	Linguistik
SB	SB	SB	0.341	0.306	0.955	4	4	4	12	0.100	VXH
SB	SB	B	0.341	0.306	0.045	4	4	3	11	0.005	XH
SB	B	SB	0.341	0.503	0.955	4	3	4	11	0.164	XH
SB	B	B	0.341	0.503	0.045	4	3	3	10	0.008	VH
SB	R	SB	0.341	0.191	0.955	4	2	4	10	0.062	VH
SB	R	B	0.341	0.191	0.045	4	2	3	9	0.003	H
B	SB	SB	0.457	0.306	0.955	3	4	4	11	0.133	XH
B	SB	B	0.457	0.306	0.045	3	4	3	10	0.006	VH
B	B	SB	0.457	0.503	0.955	3	3	4	10	0.220	VH
B	B	B	0.457	0.503	0.045	3	3	3	9	0.010	H
B	R	SB	0.457	0.191	0.955	3	2	4	9	0.084	H
B	R	B	0.457	0.191	0.045	3	2	3	8	0.004	FH
R	SB	SB	0.202	0.306	0.955	2	4	4	10	0.059	VH
R	SB	B	0.202	0.306	0.045	2	4	3	9	0.003	H
R	B	SB	0.202	0.503	0.955	2	3	4	9	0.097	H
R	B	B	0.202	0.503	0.045	2	3	3	8	0.005	FH
R	R	SB	0.202	0.191	0.955	2	2	4	8	0.037	FH
R	R	B	0.202	0.191	0.045	2	2	3	7	0.002	FIH

SUSTAINABILITY

- VXL = 0
- XL = 0
- VL = 0
- L = 0
- FL = 0
- FIL = 0
- I = 0
- FIH = 0.00173
- FH = 0.04534
- H = 0.19646
- VH = 0.35485
- XH = 0.30204
- VXH = 0.09957

Lampiran 7

Indikator Sustentabilitas CHEVRON

No	Indikator / Parameter	2005		2006		2007		2008		2009	
		nilai	grade	nilai	grade	nilai	grade	nilai	grade	nilai	grade
1	Kinerja Ekonomi										
	Pembayaran pajak (ECO-1)	11098	0.112101	14838	0.146911	13479	0.451346	19026	0.520832	7965	0.526821
	Pendapatan Perusahaan / karyawan (ECOA1)	3623522	0.844921	3666512	0.823366	3618806	0.749112	4296036	0.746886	2791755	0.747246
	Cadangan terbukti (ECOA2)	11906	0.531518	11620	0.511894	10777.16	0.474765	11196	0.491053	11315	0.485622
2	Kinerja Sosial										
	Sistem Manajemen keselamatan (H&S-1)	5	1	5	1	5	1	5	1	5	1
	Laju Kecelakaan kerja (H&S-4)	0.41	0.95122	0.42	0.785714	0.35	0.942857	0.36	1	0.27	1
	Kontribusi perusahaan kepada masyarakat (SOC-8)	73.1	0.549624	90.8	0.534118	119	0.575992	160	0.71048	144	0.491612
3	Kinerja Lingkungan										
	Tumpahan hidrokarbon ke lingkungan (ENV-1)	846	0.437352	803	0.367372	826	0.305085	760	0.277632	798	0.293233
	Emisi gas rumah kaca (ENV-3)	62.2	1	62.3	1	65.4	0.905199	63.8	0.898119	63	0.890476
	Sistem Manajemen Lingkungan (ENV-6)	5	1	5	1	5	1	5	1	5	1
	karyawan	53440		55882		59161		61675		59963	
	Revenue	193641		204892		214091		264958		167402	

Lampiran 8
FUZZIFIKASI INDIKATOR CHEVRON

No	Indikator / Parameter	Data Normalisasi	Keanggotaan Fuzzy					
			Linguistik	Derajat	Nilai Integer	Linguistik	Derajat	Nilai Integer
1	Pembayaran pajak (ECO-1)	0.52525883	S	0.875431	1	R	0.124569	0
	Pendapatan Perusahaan / karyawan (ECOA1)	0.74724378	T	0.368109	2	S	0.631891	1
	Cadangan terbukti (ECOA2)	0.48563343	S	0.809389	1	R	0.190611	0
2	Sistem Manajemen keselamatan (H&S-1)	1	T	1	2	S	0	1
	Laju Kecelakaan kerja (H&S-4)	0.99979986	T	0.9995	2	S	0.0005	1
	Kontribusi perusahaan kepada masyarakat (SOC-8)	0.50585681	S	0.843095	1	R	0.156905	0
3	Tumpahan hidrokarbon ke lingkungan (ENV-1)	0.29308327	S	0.488472	1	R	0.511528	0
	Emisi gas rumah kaca (ENV-3)	0.89054637	T	0.726366	2	S	0.273634	1
	Sistem Manajemen Lingkungan (ENV-6)	1	T	1	2	S	0	1

RULE EKONOMI CHEVRON

Rule Ekonomi			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Ekonomi	
Jika ECO-1	Jika ECOA1	Jika ECOA2	ECO-1	EOCA1	EOCA2	ECO-1	EOCA1	EOCA2		Derajat	Linguistik
S	T	S	0.875431	0.368109	0.809389	1	2	1	4	0.2608293	B
S	T	R	0.875431	0.368109	0.190611	1	2	0	3	0.0614252	R
S	S	S	0.875431	0.631891	0.809389	1	1	1	3	0.4477353	R
S	S	R	0.875431	0.631891	0.190611	1	1	0	2	0.1054416	J
R	T	S	0.124569	0.368109	0.809389	0	2	1	3	0.0371144	R
R	T	R	0.124569	0.368109	0.190611	0	2	0	2	0.0087404	J
R	S	S	0.124569	0.631891	0.809389	0	1	1	2	0.0637100	J
R	S	R	0.124569	0.631891	0.190611	0	1	0	1	0.0150037	SJ

SB = 0
 B = 0.2608293
 R = 0.5462749
 J = 0.1778920
 SJ = 0.0150037

RULE SOSIAL CHEVRON

Rule Sosial			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Sosial	
Jika H&S-1	Jika H&S-4	Jika SOC-8	H&S-1	H&S-4	SOC-8	H&S-1	H&S-4	SOC-8		Derajat	Linguistik
T	T	S	1.000000	0.999500	0.843095	2	2	1	5	0.84267284	SB
T	T	R	1.000000	0.999500	0.156905	2	2	0	4	0.15682681	B
T	S	S	1.000000	0.000500	0.843095	2	1	1	4	0.00042185	B
T	S	R	1.000000	0.000500	0.156905	2	1	0	3	0.0000785	R
S	T	S	0.000000	0.999500	0.843095	1	2	1	4	0	B
S	T	R	0.000000	0.999500	0.156905	1	2	0	3	0	R
S	S	S	0.000000	0.000500	0.843095	1	1	1	3	0	R
S	S	R	0.000000	0.000500	0.156905	1	1	0	2	0	J

SB = 0.842672839
 B = 0.157248653
 R = 0.000078508
 J = 0
 SJ = 0

RULE LINGKUNGAN CHEVRON

Rule Lingkungan			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Lingk	
Jika ENV-1	Jika ENV-3	Jika ENV-6	ENV-1	ENV-3	ENV-6	ENV-1	ENV-3	ENV-6		Derajat	Linguistik
S	T	T	0.488472	0.726366	1.000000	1	2	2	5	0.3548095	SB
S	T	S	0.488472	0.726366	0.000000	1	2	1	4	0	B
S	S	T	0.488472	0.273634	1.000000	1	1	2	4	0.13366262	B
S	S	S	0.488472	0.273634	0.000000	1	1	1	3	0	R
R	T	T	0.511528	0.726366	1.000000	0	2	2	4	0.37155641	B
R	T	S	0.511528	0.726366	0.000000	0	2	1	3	0	R
R	S	T	0.511528	0.273634	1.000000	0	1	2	3	0.13997146	R
R	S	S	0.511528	0.273634	0.000000	0	1	1	2	0	J

SB = 0.354809502
 B = 0.505219036
 R = 0.139971462
 J = 0
 SJ = 0

INDIKATOR GABUNGAN CHEVRON

INDIKATOR	NORM DATA	R	S	T	SJ	J	R	B	SB
EKONOMI	0.513232				0.01500	0.17789	0.54627	0.26083	0.00000
ECO-1	0.525259	0.12457	0.87543	0.00000					
EOA1	0.747244	0.00000	0.63189	0.36811					
EOA2	0.485633	0.19061	0.80939	0.00000					
SOSIAL	0.960649				0.00000	0.00000	0.00008	0.15725	0.84267
H&S-1	1.000000	0.00000	0.00000	1.00000					
H&S-4	0.999800	0.00000	0.00050	0.99950					
SOC-8	0.505857	0.15691	0.84309	0.00000					
LINGKUNGAN	0.803710				0.00000	0.00000	0.13997	0.50522	0.35481
ENV-1	0.293083	0.51153	0.48847	0.00000					
ENV-3	0.890546	0.00000	0.27363	0.72637					
ENV-6	1.000000	0.00000	0.00000	1.00000					

RULE SUSTAINABILITY CHEVRON

RULE SUSTAINABILITY			Nilai Tegas			Nilai Linguistik			Jumlah	SUSTAINABILITAS	
ECO	SOC	ENV	ECO	SOC	ENV	ECO	SOC	ENV		Derajat	Linguistik
B	SB	SB	0.260829	0.842673	0.354810	3	4	4	11	0.07798492	XH
B	SB	B	0.260829	0.842673	0.505219	3	4	3	10	0.111044	VH
B	SB	R	0.260829	0.842673	0.139971	3	4	2	9	0.03076486	H
B	B	SB	0.260829	0.157249	0.354810	3	3	4	10	0.01455253	VH
B	B	B	0.260829	0.157249	0.505219	3	3	3	9	0.02072159	H
B	B	R	0.260829	0.157249	0.139971	3	3	2	8	0.00574094	FH
B	R	SB	0.260829	0.000079	0.354810	3	2	4	9	7.2655E-06	H
B	R	B	0.260829	0.000079	0.505219	3	2	3	8	1.0345E-05	FH
B	R	R	0.260829	0.000079	0.139971	3	2	2	7	2.8662E-06	FIH
R	SB	SB	0.546275	0.842673	0.354810	2	4	4	10	0.16332984	VH
R	SB	B	0.546275	0.842673	0.505219	2	4	3	9	0.23256802	H
R	SB	R	0.546275	0.842673	0.139971	2	4	2	8	0.06443321	FH
R	B	SB	0.546275	0.157249	0.354810	2	3	4	9	0.03047849	H
R	B	B	0.546275	0.157249	0.505219	2	3	3	8	0.04339882	FH
R	B	R	0.546275	0.157249	0.139971	2	3	2	7	0.01202369	FIH
R	R	SB	0.546275	0.000079	0.354810	2	2	4	8	1.5217E-05	FH
R	R	B	0.546275	0.000079	0.505219	2	2	3	7	2.1667E-05	FIH
R	R	R	0.546275	0.000079	0.139971	2	2	2	6	6.003E-06	I
J	SB	SB	0.177892	0.842673	0.354810	1	4	4	9	0.05318764	H
J	SB	B	0.177892	0.842673	0.505219	1	4	3	8	0.07573475	FH
J	SB	R	0.177892	0.842673	0.139971	1	4	2	7	0.02098239	FIH
J	B	SB	0.177892	0.157249	0.354810	1	3	4	8	0.00992519	FH
J	B	B	0.177892	0.157249	0.505219	1	3	3	7	0.01413264	FIH
J	B	R	0.177892	0.157249	0.139971	1	3	2	6	0.00391546	I
J	R	SB	0.177892	0.000079	0.354810	1	2	4	7	4.9553E-06	FIH
J	R	B	0.177892	0.000079	0.505219	1	2	3	6	7.0559E-06	I
J	R	R	0.177892	0.000079	0.139971	1	2	2	5	1.9548E-06	FIL
SJ	SB	SB	0.015004	0.842673	0.354810	0	4	4	8	0.00448593	FH
SJ	SB	B	0.015004	0.842673	0.505219	0	4	3	7	0.00638759	FIH
SJ	SB	R	0.015004	0.842673	0.139971	0	4	2	6	0.00176969	I
SJ	B	SB	0.015004	0.157249	0.354810	0	3	4	7	0.00083711	FIH
SJ	B	B	0.015004	0.157249	0.505219	0	3	3	6	0.00119197	I
SJ	B	R	0.015004	0.157249	0.139971	0	3	2	5	0.00033024	FIL
SJ	R	SB	0.015004	0.000079	0.354810	0	2	4	6	4.1793E-07	I
SJ	R	B	0.015004	0.000079	0.505219	0	2	3	5	5.951E-07	FIL
SJ	R	R	0.015004	0.000079	0.139971	0	2	2	4	1.6487E-07	FL

SUSTAINABILITY

VXL = 0
 XL = 0
 VL = 0
 L = 0
 FL = 1.64874E-07
 FIL = 0.000333
 I = 0.006891
 FIH = 0.054393
 FH = 0.203744
 H = 0.367728
 VH = 0.288926
 XH = 0.077985
 VXL = 0

Lampiran 9

Indikator Sostenabilitas TOTAL

No	Indikator / Parameter	2005		2006		2007		2008		2009	
		nilai	grade	nilai	grade	nilai	grade	nilai	grade	nilai	grade
1	Kinerja Ekonomi										
	Pembayaran pajak (ECO-1)	14688	0.148364	17227	0.170564	18603	0.622924	20806	0.569559	10811	0.715061
	Pendapatan Perusahaan / karyawan (ECOA1)	1232952	0.287496	2031282	0.456316	1900412	0.393396	2730113	0.474643	1900412	0.508667
	Cadangan terbukti (ECOA2)	11106	0.495804	11120	0.489868	10449	0.460308	10458	0.458684	10483	0.449914
2	Kinerja Sosial										
	Sistem Manajemen keselamatan (H&S-1)	5	1	5	1	5	1	5	1	5	1
	Laju Kecelakaan kerja (H&S-4)	0.72	0.541667	0.6	0.55	0.48	0.6875	0.42	0.857143	0.38	0.710526
	Kontribusi perusahaan kepada masyarakat (SOC-8)	NA		NA		170.6149	0.825822	222.0893	0.986187	292.914	1
3	Kinerja Lingkungan										
	Tumpahan hidrokarbon ke lingkungan (ENV-1)	NA		NA		766	0.328982	461	0.457701	472	0.495763
	Emisi gas rumah kaca (ENV-3)	NA		NA		59.2	1	57.3	1	56.1	1
	Sistem Manajemen Lingkungan (ENV-6)	5	1	5	1	5	1	5	1	5	1
	karyawan	95054		95070		96442		96959		96387	
	Revenue	117197		193114		217554		264709		183175	

Lampiran 10
FUZZIFIKASI INDIKATOR TOTAL

No	Indikator / Parameter	Data Normalisasi	Keanggotaan Fuzzy					
			Linguistik	Derajat	Nilai Integer	Linguistik	Derajat	Nilai Integer
1	Pembayaran pajak (ECO-1)	0.6793541	T	0.198385	2	S	0.801615	1
	Pendapatan Perusahaan / karyawan (ECOA1)	0.5071713	S	0.845286	1	R	0.154714	0
	Cadangan terbukti (ECOA2)	0.4499228	S	0.749871	1	R	0.250129	0
2	Sistem Manajemen keselamatan (H&S-1)	1	T	1	2	S	0	1
	Laju Kecelakaan kerja (H&S-4)	0.7198205	T	0.299551	2	S	0.700449	1
	Kontribusi perusahaan kepada masyarakat (SOC-8)	0.9560615	T	0.890154	2	S	0.109846	1
3	Tumpahan hidrokarbon ke lingkungan (ENV-1)	0.4892284	S	0.815381	1	R	0.184619	0
	Emisi gas rumah kaca (ENV-3)	1	T	1	2	S	0	1
	Sistem Manajemen Lingkungan (ENV-6)	1	T	1	2	S	0	1

RULE EKONOMI TOTAL

Rule Ekonomi			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Ekonomi	
Jika ECO-1	Jika ECOA1	Jika ECOA2	ECO-1	EOCA1	EOCA2	ECO-1	EOCA1	EOCA2		Derajat	Linguistik
T	S	S	0.198385	0.845286	0.749871	2	1	1	4	0.1257475	B
T	S	R	0.198385	0.845286	0.250129	2	1	0	3	0.0419446	R
T	R	S	0.198385	0.154714	0.749871	2	0	1	3	0.0230158	R
T	R	R	0.198385	0.154714	0.250129	2	0	0	2	0.0076772	J
S	S	S	0.801615	0.845286	0.749871	1	1	1	3	0.5081079	R
S	S	R	0.801615	0.845286	0.250129	1	1	0	2	0.1694855	J
S	R	S	0.801615	0.154714	0.749871	1	0	1	2	0.0930001	J
S	R	R	0.801615	0.154714	0.250129	1	0	0	1	0.0310213	SJ

SB = 0
 B = 0.1257475
 R = 0.5730684
 J = 0.2701628
 SJ = 0.0310213

RULE SOSIAL TOTAL

Rule Sosial			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Sosial	
Jika H&S-1	Jika H&S-4	Jika SOC-8	H&S-1	H&S-4	SOC-8	H&S-1	H&S-4	SOC-8		Derajat	Linguistik
T	T	T	1.000000	0.299551	0.890154	2	2	2	6	0.26664666	SB
T	T	S	1.000000	0.299551	0.109846	2	2	1	5	0.0329046	SB
T	S	T	1.000000	0.700449	0.890154	2	1	2	5	0.62350702	SB
T	S	S	1.000000	0.700449	0.109846	2	1	1	4	0.07694172	B
S	T	T	0.000000	0.299551	0.890154	1	2	2	5	0	SB
S	T	S	0.000000	0.299551	0.109846	1	2	1	4	0	B
S	S	T	0.000000	0.700449	0.890154	1	1	2	4	0	B
S	S	S	0.000000	0.700449	0.109846	1	1	1	3	0	R

SB = 0.923058282
 B = 0.076941718
 R = 0
 J = 0
 SJ = 0

RULE LINGKUNGAN TOTAL

Rule Lingkungan			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Lingk	
Jika ENV-1	Jika ENV-3	Jika ENV-6	ENV-1	ENV-3	ENV-6	ENV-1	ENV-3	ENV-6		Derajat	Linguistik
S	T	T	0.815381	1.000000	1.000000	1	2	2	5	0.8153807	SB
S	T	S	0.815381	1.000000	0.000000	1	2	1	4	0	B
S	S	T	0.815381	0.000000	1.000000	1	1	2	4	0	B
S	S	S	0.815381	0.000000	0.000000	1	1	1	3	0	R
R	T	T	0.184619	1.000000	1.000000	0	2	2	4	0.1846193	B
R	T	S	0.184619	1.000000	0.000000	0	2	1	3	0	R
R	S	T	0.184619	0.000000	1.000000	0	1	2	3	0	R
R	S	S	0.184619	0.000000	0.000000	0	1	1	2	0	J

SB = 0.815380698
 B = 0.184619302
 R = 0
 J = 0
 SJ = 0

INDIKATOR GABUNGAN TOTAL

INDIKATOR	NORM DATA	R	S	T	SJ	J	R	B	SB
EKONOMI	0.448386				0.03102	0.27016	0.57307	0.12575	0.00000
ECO-1	0.679354	0.00000	0.80161	0.19839					
EOA1	0.507171	0.15471	0.84529	0.00000					
EOA2	0.449923	0.25013	0.74987	0.00000					
SOSIAL	0.980765				0.00000	0.00000	0.00000	0.07694	0.92306
H&S-1	1.000000	0.00000	0.00000	1.00000					
H&S-4	0.719821	0.00000	0.70045	0.29955					
SOC-8	0.956061	0.00000	0.10985	0.89015					
LINGKUNGAN	0.953845				0.00000	0.00000	0.00000	0.18462	0.81538
ENV-1	0.489228	0.18462	0.81538	0.00000					
ENV-3	1.000000	0.00000	0.00000	1.00000					
ENV-6	1.000000	0.00000	0.00000	1.00000					

RULE SUSTAINABILITY TOTAL

RULE SUSTAINABILITY			Nilai Tegas			Nilai Linguistik			Jumlah	SUSTAINABILITAS	
ECO	SOC	ENV	ECO	SOC	ENV	ECO	SOC	ENV		Derajat	Linguistik
B	SB	SB	0.125748	0.923058	0.815381	3	4	4	11	0.0946431	XH
B	SB	B	0.125748	0.923058	0.184619	3	4	3	10	0.02142918	VH
B	B	SB	0.125748	0.076942	0.815381	3	3	4	10	0.007889	VH
B	B	B	0.125748	0.076942	0.184619	3	3	3	9	0.00178623	H
R	SB	SB	0.573068	0.923058	0.815381	2	4	4	10	0.43131642	VH
R	SB	B	0.573068	0.923058	0.184619	2	4	3	9	0.09765909	H
R	B	SB	0.573068	0.076942	0.815381	2	3	4	9	0.03595247	H
R	B	B	0.573068	0.076942	0.184619	2	3	3	8	0.00814039	FH
J	SB	SB	0.270163	0.923058	0.815381	1	4	4	9	0.20333639	H
J	SB	B	0.270163	0.923058	0.184619	1	4	3	8	0.04603963	FH
J	B	SB	0.270163	0.076942	0.815381	1	3	4	8	0.01694915	FH
J	B	B	0.270163	0.076942	0.184619	1	3	3	7	0.00383764	FIH
SJ	SB	SB	0.031021	0.923058	0.815381	0	4	4	8	0.02334799	FH
SJ	SB	B	0.031021	0.923058	0.184619	0	4	3	7	0.00528648	FIH
SJ	B	SB	0.031021	0.076942	0.815381	0	3	4	7	0.00194618	FIH
SJ	B	B	0.031021	0.076942	0.184619	0	3	3	6	0.00044066	I

SUSTAINABILITY

VXL = 0
 XL = 0
 VL = 0
 L = 0
 FL = 0
 FIL = 0
 I = 0.0004407
 FIH = 0.0110703
 FH = 0.0944772
 H = 0.3387342
 VH = 0.4606346
 XH = 0.0946431
 VXH = 0

Lampiran 11

Indikator Sustainability SHELL

No	Indikator / Parameter	2005		2006		2007		2008		2009	
		nilai	grade	nilai	grade	nilai	grade	nilai	grade	nilai	grade
1	Kinerja Ekonomi										
	Pembayaran pajak (ECO-1)	17999	0.181808	18317	0.181356	18650	0.624498	24344	0.666411	8302	0.54911
	Pendapatan Perusahaan / karyawan (ECOA1)	2814046	0.65617	2952269	0.66321	3420981	0.708161	4493735	0.781257	2754337	0.73723
	Cadangan terbukti (ECOA2)	11300	0.504464	11900	0.524229	10809	0.476167	10903	0.478202	14132	0.606524
2	Kinerja Sosial										
	Sistem Manajemen keselamatan (H&S-1)	5	1	5	1	5	1	5	1	5	1
	Laju Kecelakaan kerja (H&S-4)	0.5	0.78	0.42	0.785714	0.38	0.868421	0.36	1	0.28	0.964286
	Kontribusi perusahaan kepada masyarakat (SOC-8)	127	0.954887	140	0.823529	170	0.822846	148	0.657194	132	0.450644
3	Kinerja Lingkungan										
	Tumpahan hidrokarbon ke lingkungan (ENV-1)	560	0.660714	465	0.634409	392	0.642857	275	0.767273	264	0.886364
	Emisi gas rumah kaca (ENV-3)	93	0.668817	88	0.707955	82	0.721951	75	0.764	67	0.837313
	Sistem Manajemen Lingkungan (ENV-6)	5	1	5	1	5	1	5	1	5	1
	karyawan	109000		108000		104000		102000		101000	
	Revenue	306731		318845		355782		458361		278188	

Lampiran 12
FUZZIFIKASI INDIKATOR SHELL

No	Indikator / Parameter	Data Normalisasi	Keanggotaan Fuzzy					
			Linguistik	Derajat	Nilai Integer	Linguistik	Derajat	Nilai Integer
1	Pembayaran pajak (ECO-1)	0.56803361	S	0.946723	1	R	0.053277	0
	Pendapatan Perusahaan / karyawan (ECO1)	0.73763569	T	0.344089	2	S	0.655911	1
	Cadangan terbukti (ECO2)	0.60406311	T	0.010158	2	S	0.989842	1
2	Sistem Manajemen keselamatan (H&S-1)	1	T	1	2	S	0	1
	Laju Kecelakaan kerja (H&S-4)	0.96510839	T	0.912771	2	S	0.087229	1
	Kontribusi perusahaan kepada masyarakat (SOC-8)	0.46995787	S	0.783263	1	R	0.216737	0
3	Tumpahan hidrokarbon ke lingkungan (ENV-1)	0.88262489	T	0.706562	2	S	0.293438	1
	Emisi gas rumah kaca (ENV-3)	0.83665978	T	0.591649	2	S	0.408351	1
	Sistem Manajemen Lingkungan (ENV-6)	1	T	1	2	S	0	1

RULE EKONOMI SHELL

Rule Ekonomi			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Ekonomi	
Jika ECO-1	Jika ECOA1	Jika ECOA2	ECO-1	EOA1	EOA2	ECO-1	EOA1	EOA2		Derajat	Linguistik
S	T	T	0.946723	0.344089	0.010158	1	2	2	5	0.0033090	SB
S	T	S	0.946723	0.344089	0.989842	1	2	1	4	0.3224481	B
S	S	T	0.946723	0.655911	0.010158	1	1	2	4	0.0063076	B
S	S	S	0.946723	0.655911	0.989842	1	1	1	3	0.6146580	R
R	T	T	0.053277	0.344089	0.010158	0	2	2	4	0.0001862	B
R	T	S	0.053277	0.344089	0.989842	0	2	1	3	0.0181459	R
R	S	T	0.053277	0.655911	0.010158	0	1	2	3	0.0003550	R
R	S	S	0.053277	0.655911	0.989842	0	1	1	2	0.0345902	J

SB = 0.0033090

B = 0.3289420

R = 0.6331589

J = 0.0345902

SJ = 0

RULE SOSIAL SHELL

Rule Sosial			Nilai Tegas			Nilai Bahasa			Jumlah	Indikator Gabungan Sosial	
Jika H&S-1	Jika H&S-4	Jika SOC-8	H&S-1	H&S-4	SOC-8	H&S-1	H&S-4	SOC-8		Derajat	Linguistik
T	T	S	1.000000	0.912771	0.783263	2	2	1	5	0.71493985	SB
T	T	R	1.000000	0.912771	0.216737	2	2	0	4	0.19783113	B
T	S	S	1.000000	0.087229	0.783263	2	1	1	4	0.06832328	B
T	S	R	1.000000	0.087229	0.216737	2	1	0	3	0.01890575	R
S	T	S	0.000000	0.912771	0.783263	1	2	1	4	0	B
S	T	R	0.000000	0.912771	0.216737	1	2	0	3	0	R
S	S	S	0.000000	0.087229	0.783263	1	1	1	3	0	R
S	S	R	0.000000	0.087229	0.216737	1	1	0	2	0	J

SB = 0.714939845

B = 0.266154408

R = 0.018905747

J = 0

SJ = 0

RULE LINGKUNGAN SHELL

Rule Lingkungan			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Lingk	
Jika ENV-1	Jika ENV-3	Jika ENV-6	ENV-1	ENV-3	ENV-6	ENV-1	ENV-3	ENV-6		Derajat	Linguistik
T	T	T	0.706562	0.591649	1.000000	2	2	2	6	0.41803714	SB
T	T	S	0.706562	0.591649	0.000000	2	2	1	5	0	SB
T	S	T	0.706562	0.408351	1.000000	2	1	2	5	0.28852507	SB
T	S	S	0.706562	0.408351	0.000000	2	1	1	4	0	B
S	T	T	0.293438	0.591649	1.000000	1	2	2	5	0.17361231	SB
S	T	S	0.293438	0.591649	0.000000	1	2	1	4	0	B
S	S	T	0.293438	0.408351	1.000000	1	1	2	4	0.11982548	B
S	S	S	0.293438	0.408351	0.000000	1	1	1	3	0	R

SB = 0.880174518

B = 0.119825482

R = 0

J = 0

SJ = 0

INDIKATOR GABUNGAN SHELL

INDIKATOR	NORM DATA	R	S	T	SJ	J	R	B	SB
EKONOMI	0.575242				0.00000	0.03459	0.63316	0.32894	0.00331
ECO-1	0.568034	0.05328	0.94672	0.00000					
EOA1	0.737636	0.00000	0.65591	0.34409					
EOA2	0.604063	0.00000	0.98984	0.01016					
SOSIAL	0.924009				0.00000	0.00000	0.01891	0.26615	0.71494
H&S-1	1.000000	0.00000	0.00000	1.00000					
H&S-4	0.965108	0.00000	0.08723	0.91277					
SOC-8	0.469958	0.21674	0.78326	0.00000					
LINGKUNGAN	0.970044				0.00000	0.00000	0.00000	0.11983	0.88017
ENV-1	0.882625	0.00000	0.29344	0.70656					
ENV-3	0.836660	0.00000	0.40835	0.59165					
ENV-6	1.000000	0.00000	0.00000	1.00000					

RULE SUSTAINABILITY SHELL

RULE SUSTAINABILITY			Nilai Tegas			Nilai Linguistik			Jumlah	SUSTAINABILITAS	
ECO	SOC	ENV	ECO	SOC	ENV	ECO	SOC	ENV		Derajat	Linguistik
SB	SB	SB	0.003309	0.714940	0.880175	4	4	4	12	0.00208224	VXH
SB	SB	B	0.003309	0.714940	0.119825	4	4	3	11	0.00028347	XH
SB	B	SB	0.003309	0.266154	0.880175	4	3	4	11	0.00077517	XH
SB	B	B	0.003309	0.266154	0.119825	4	3	3	10	0.00010553	VH
SB	R	SB	0.003309	0.018906	0.880175	4	2	4	10	5.5062E-05	VH
SB	R	B	0.003309	0.018906	0.119825	4	2	3	9	7.4961E-06	H
B	SB	SB	0.328942	0.714940	0.880175	3	4	4	11	0.20699391	XH
B	SB	B	0.328942	0.714940	0.119825	3	4	3	10	0.0281798	VH
B	B	SB	0.328942	0.266154	0.880175	3	3	4	10	0.07705871	VH
B	B	B	0.328942	0.266154	0.119825	3	3	3	9	0.01049064	H
B	R	SB	0.328942	0.018906	0.880175	3	2	4	9	0.00547371	H
B	R	B	0.328942	0.018906	0.119825	3	2	3	8	0.00074518	FH
R	SB	SB	0.633159	0.714940	0.880175	2	4	4	10	0.39842905	VH
R	SB	B	0.633159	0.714940	0.119825	2	4	3	9	0.05424146	H
R	B	SB	0.633159	0.266154	0.880175	2	3	4	9	0.14832527	H
R	B	B	0.633159	0.266154	0.119825	2	3	3	8	0.02019275	FH
R	R	SB	0.633159	0.018906	0.880175	2	2	4	8	0.01053599	FH
R	R	B	0.633159	0.018906	0.119825	2	2	3	7	0.00143435	FIH
J	SB	SB	0.034590	0.714940	0.880175	1	4	4	9	0.02176664	H
J	SB	B	0.034590	0.714940	0.119825	1	4	3	8	0.00296327	FH
J	B	SB	0.034590	0.266154	0.880175	1	3	4	8	0.00810318	FH
J	B	B	0.034590	0.266154	0.119825	1	3	3	7	0.00110315	FIH
J	R	SB	0.034590	0.018906	0.880175	1	2	4	7	0.00057559	FIH
J	R	B	0.034590	0.018906	0.119825	1	2	3	6	7.836E-05	I

SUSTAINABILITY

- VXL = 0
- XL = 0
- VL = 0
- L = 0
- FL = 0
- FIL = 0
- I = 7.836E-05
- FIH = 0.003113
- FH = 0.042540
- H = 0.240305
- VH = 0.503828
- XH = 0.208053
- VXH = 0.002082

Lampiran 13

Indikator Sustainabilitas EXXON MOBIL

No	Indikator / Parameter	2005		2006		2007		2008		2009	
		nilai	grade	nilai	grade	nilai	grade	nilai	grade	nilai	grade
1	Kinerja Ekonomi										
	Pembayaran pajak (ECO-1)	99000	1	101000	1	29864	1	36530	1	15119	1
	Pendapatan Perusahaan / karyawan (ECOA1)	4288590	1	4451486	1	4830792	1	5751927	1	3736059	1
	Cadangan terbukti (ECOA2)	22400	1	22700	1	22700	1	22800	1	23300	1
2	Kinerja Sosial										
	Sistem Manajemen keselamatan (H&S-1)	5	1	5	1	5	1	5	1	5	1
	Laju Kecelakaan kerja (H&S-4)	0.39	1	0.33	1	0.33	1	0.36	1	0.3	0.9
	Kontribusi perusahaan kepada masyarakat (SOC-8)	133	1	170	1	206.6	1	225.2	1	235	0.802283
3	Kinerja Lingkungan										
	Tumpahan hidrokarbon ke lingkungan (ENV-1)	370	1	295	1	252	1	211	1	241	0.970954
	Emisi gas rumah kaca (ENV-3)	138	0.450725	146	0.426712	141	0.419858	131	0.437405	128	0.438281
	Sistem Manajemen Lingkungan (ENV-6)	5	1	5	1	5	1	5	1	5	1
	karyawan	83700		82100		80800		79900		80700	
	Revenue	358955		365467		390328		459579		301500	

Lampiran 14
FUZZIFIKASI INDIKATOR EXXON MOBIL

No	Indikator / Parameter	Data Normalisasi	Keanggotaan Fuzzy					
			Linguistik	Derajat	Nilai Integer	Linguistik	Derajat	Nilai Integer
1	Pembayaran pajak (ECO-1)	1	T	1	2	S	0	1
	Pendapatan Perusahaan / karyawan (ECO1)	1	T	1	2	S	0	1
	Cadangan terbukti (ECO2)	1	T	1	2	S	0	1
2	Sistem Manajemen keselamatan (H&S-1)	1	T	1	2	S	0	1
	Laju Kecelakaan kerja (H&S-4)	0.901	T	0.7525	2	S	0.2475	1
	Kontribusi perusahaan kepada masyarakat (SOC-8)	0.81001226	T	0.525031	2	S	0.474969	1
3	Tumpahan hidrokarbon ke lingkungan (ENV-1)	0.97097886	T	0.927447	2	S	0.072553	1
	Emisi gas rumah kaca (ENV-3)	0.43828042	S	0.730467	1	R	0.269533	0
	Sistem Manajemen Lingkungan (ENV-6)	1	T	1	2	S	0	1

RULE EKONOMI EXXON MOBIL

Rule Ekonomi			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Ekonomi	
Jika ECO-1	Jika ECOA1	Jika ECOA2	ECO-1	EOCA1	EOCA2	ECO-1	EOCA1	EOCA2		Derajat	Linguistik
T	T	T	1.000000	1.000000	1.000000	2	2	2	6	1.0000000	SB
T	T	S	1.000000	1.000000	0.000000	2	2	1	5	0.0000000	SB
T	S	T	1.000000	0.000000	1.000000	2	1	2	5	0.0000000	SB
T	S	S	1.000000	0.000000	0.000000	2	1	1	4	0.0000000	B
S	T	T	0.000000	1.000000	1.000000	1	2	2	5	0.0000000	SB
S	T	S	0.000000	1.000000	0.000000	1	2	1	4	0.0000000	B
S	S	T	0.000000	0.000000	1.000000	1	1	2	4	0.0000000	B
S	S	S	0.000000	0.000000	0.000000	1	1	1	3	0.0000000	R

SB = 1
 B = 0
 R = 0
 J = 0
 SJ = 0

RULE SOSIAL EXXON MOBIL

Rule Sosial			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Sosial	
Jika H&S-1	Jika H&S-4	Jika SOC-8	H&S-1	H&S-4	SOC-8	H&S-1	H&S-4	SOC-8		Derajat	Linguistik
T	T	T	1.000000	0.752500	0.525031	2	2	2	6	0.39508556	SB
T	T	S	1.000000	0.752500	0.474969	2	2	1	5	0.35741444	SB
T	S	T	1.000000	0.247500	0.525031	2	1	2	5	0.12994509	SB
T	S	S	1.000000	0.247500	0.474969	2	1	1	4	0.11755491	B
S	T	T	0.000000	0.752500	0.525031	1	2	2	5	0	SB
S	T	S	0.000000	0.752500	0.474969	1	2	1	4	0	B
S	S	T	0.000000	0.247500	0.525031	1	1	2	4	0	B
S	S	S	0.000000	0.247500	0.474969	1	1	1	3	0	R

SB = 0.882445086
 B = 0.117554914
 R = 0
 J = 0
 SJ = 0

RULE LINGKUNGAN EXXON MOBIL

Rule Lingkungan			Nilai Tegas			Nilai Linguistik			Jumlah	Indikator Gabungan Lingk	
Jika ENV-1	Jika ENV-3	Jika ENV-6	ENV-1	ENV-3	ENV-6	ENV-1	ENV-3	ENV-6		Derajat	Linguistik
T	S	T	0.927447	0.730467	1.000000	2	1	2	5	0.67746988	SB
T	S	S	0.927447	0.730467	0.000000	2	1	1	4	0	B
T	R	T	0.927447	0.269533	1.000000	2	0	2	4	0.24997728	B
T	R	S	0.927447	0.269533	0.000000	2	0	1	3	0	R
S	S	T	0.072553	0.730467	1.000000	1	1	2	4	0.05299749	B
S	S	S	0.072553	0.730467	0.000000	1	1	1	3	0	R
S	R	T	0.072553	0.269533	1.000000	1	0	2	3	0.01955536	R
S	R	S	0.072553	0.269533	0.000000	1	0	1	2	0	J

SB = 0.67746988
 B = 0.30297476
 R = 0.01955536
 J = 0
 SJ = 0

INDIKATOR GABUNGAN EXXON MOBIL

INDIKATOR	NORM DATA	R	S	T	SJ	J	R	B	SB
EKONOMI	1.000000				0.00000	0.00000	0.00000	0.00000	1.00000
ECO-1	1.000000	0.00000	0.00000	1.00000					
EOA1	1.000000	0.00000	0.00000	1.00000					
EOA2	1.000000	0.00000	0.00000	1.00000					
SOSIAL	0.970611				0.00000	0.00000	0.00000	0.11755	0.88245
H&S-1	1.000000	0.00000	0.00000	1.00000					
H&S-4	0.901000	0.00000	0.24750	0.75250					
SOC-8	0.810012	0.00000	0.47497	0.52503					
LINGKUNGAN	0.914479				0.00000	0.00000	0.01956	0.30297	0.67747
ENV-1	0.970979	0.00000	0.07255	0.92745					
ENV-3	0.438280	0.26953	0.73047	0.00000					
ENV-6	1.000000	0.00000	0.00000	1.00000					

RULE SUSTAINABILITY EXXON MOBIL

RULE SUSTAINABILITY			Nilai Tegas			Nilai Linguistik			Jumlah	SUSTAINABILITAS	
ECO	SOC	ENV	ECO	SOC	ENV	ECO	SOC	ENV		Derajat	Linguistik
SB	SB	SB	1.000000	0.882445	0.677470	4	4	4	12	0.597830	VXH
SB	SB	B	1.000000	0.882445	0.302975	4	4	3	11	0.267359	XH
SB	SB	R	1.000000	0.882445	0.019555	4	4	2	10	0.017257	VH
SB	B	SB	1.000000	0.117555	0.677470	4	3	4	11	0.079640	XH
SB	B	B	1.000000	0.117555	0.302975	4	3	3	10	0.035616	VH
SB	B	R	1.000000	0.117555	0.019555	4	3	2	9	0.002299	H

SUSTAINABILITY

VXL = 0
 XL = 0
 VL = 0
 L = 0
 FL = 0
 FIL = 0
 I = 0
 FIH = 0
 FH = 0
 H = 0.002299
 VH = 0.052873
 XH = 0.346999
 VXH = 0.597830

Lampiran 15
ANALISA SENSITIVITAS TINGKAT SUSTAINABILITAS

SKENARIO	KEANGGOTAAN RANGKAIAN FUZZY													Indeks Sustainabilitas
	VXL	XL	VL	L	FL	FIL	I	FIH	FH	H	VH	XH	VXH	
PT X data standar	0	0	0	0	0	0.485	0.512	0.002	3.7.E-06	5.2.E-09	0.0.E+00	0	0	0.460
Data standar plus 10%	0	0	0	0	0	0.052	0.374	0.571	2.9.E-03	5.5.E-06	8.5.E-09	0	0	0.544
Data standar min 10%	0	0	0	0	0.026	0.223	0.514	0.236	1.0.E-03	1.3.E-06	1.7.E-09	0	0	0.497
Indikator ECO-1 plus 10%	0	0	0	0	0	0.485	0.512	0.002	3.9.E-06	5.7.E-09	0	0	0	0.460
Indikator ECOA1 plus 10%	0	0	0	0	0	0.485	0.512	0.002	4.1.E-06	5.7.E-09	0	0	0	0.460
Indikator ECOA2 plus 10%	0	0	0	0	0	0.485	0.512	0.002	4.0.E-06	5.7.E-09	0	0	0	0.460
Indikator H&S-1 plus 10%	0	0	0	0	0	0.485	0.512	0.002	3.7.E-06	5.2.E-09	0	0	0	0.460
Indikator H&S-4 plus 10%	0	0	0	0	0	0.312	0.685	0.003	5.0.E-06	7.0.E-09	0	0	0	0.474
Indikator SOC-8 plus 10%	0	0	0	0	0	0.485	0.486	0.002	3.9.E-06	5.7.E-09	0	0	0	0.459
Indikator ENV-1 plus 10%	0	0	0	0	0	0.485	0.512	0.002	3.7.E-06	5.2.E-09	0	0	0	0.460
Indikator ENV-3 plus 10%	0	0	0	0	0	0.081	0.490	0.427	1.9.E-03	3.1.E-06	4.3.E-09	0	0	0.529
Indikator ENV-6 plus 10%	0	0	0	0	0	0.485	0.512	0.002	3.7.E-06	5.2.E-09	0	0	0	0.460
Indikator ECO-1 min 10%	0	0	0	0	0	0.486	0.512	0.002	3.5.E-06	4.7.E-09	0	0	0	0.460
Indikator ECOA1 min 10%	0	0	0	0	0	0.486	0.512	0.002	3.3.E-06	4.7.E-09	0	0	0	0.460
Indikator ECOA2 min 10%	0	0	0	0	0	0.486	0.512	0.002	3.4.E-06	4.7.E-09	0	0	0	0.460
Indikator H&S-1 min 10%	0	0	0	0	0.121	0.492	0.385	0.002	2.8.E-06	3.9.E-09	0	0	0	0.439
Indikator H&S-4 min 10%	0	0	0	0	0	0.622	0.376	0.002	2.7.E-06	3.8.E-09	0	0	0	0.448
Indikator SOC-8 min 10%	0	0	0	0	0	0.512	0.512	0.002	3.5.E-06	4.7.E-09	0	0	0	0.459
Indikator ENV-1 min 10%	0	0	0	0	0	0.485	0.512	0.002	3.7.E-06	5.2.E-09	0	0	0	0.460
Indikator ENV-3 min 10%	0	0	0	0	0	0.081	0.490	0.427	1.9.E-03	3.1.E-06	4.3.E-09	0	0	0.529
Indikator ENV-6 min 10%	0	0	0	0	0.121	0.492	0.385	0.002	2.8.E-06	3.9.E-09	0	0	0	0.439

	VXL	XL	VL	L	FL	FIL	I	FIH	FH	H	VH	XH	VXH
De-fuzzifikasi	0	0.083333	0.166667	0.25	0.333333	0.416667	0.5	0.583333	0.666667	0.75	0.833333	0.916667	1

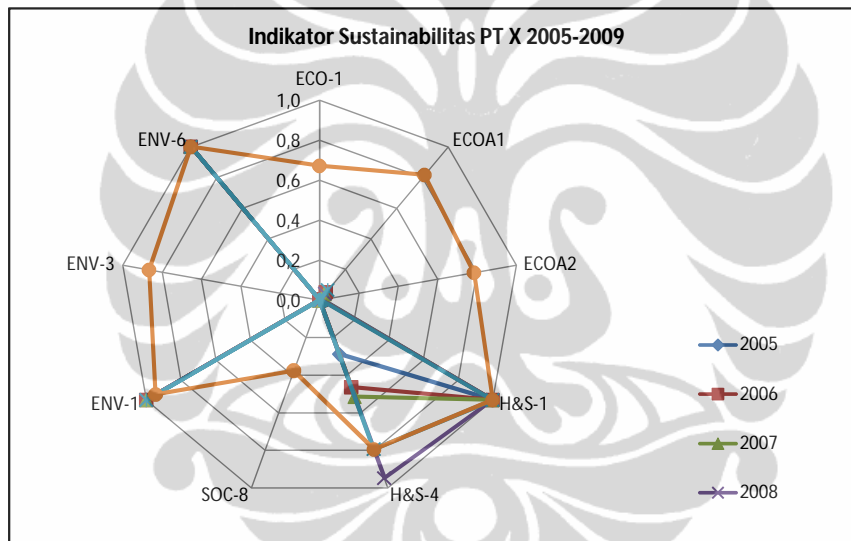
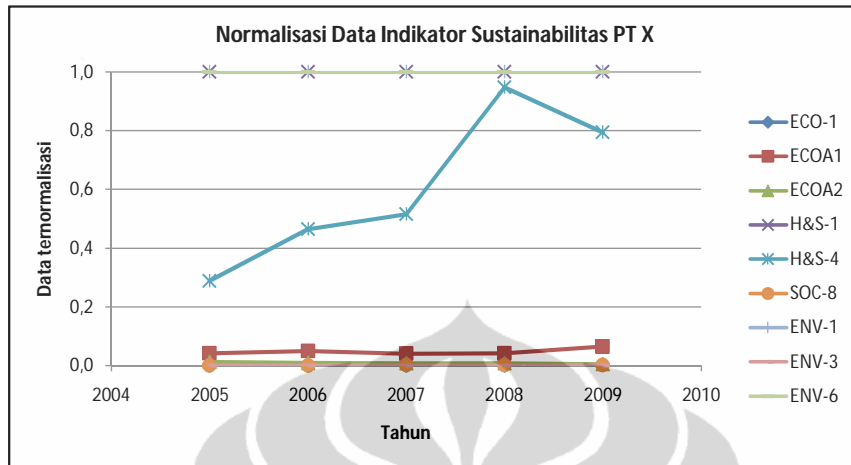
TINGKAT SUSTAINABILITAS PERUSAHAAN MINYAK DAN GAS BUMI

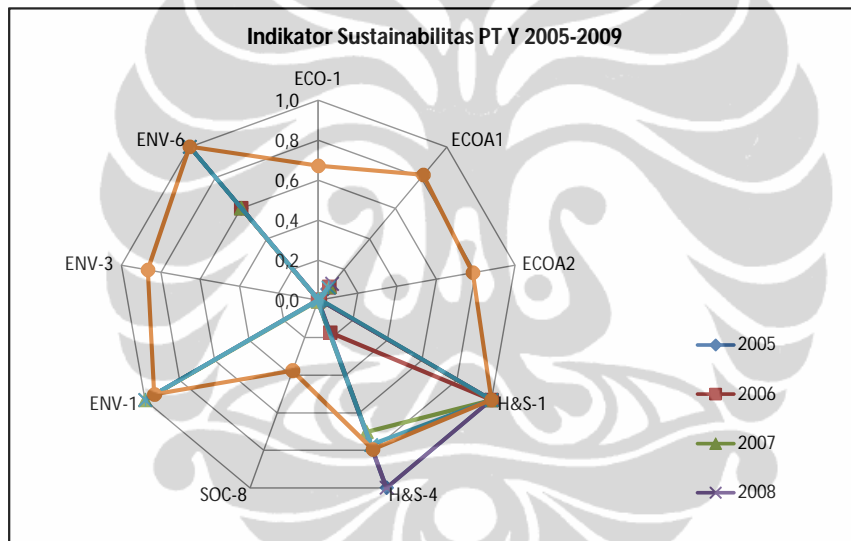
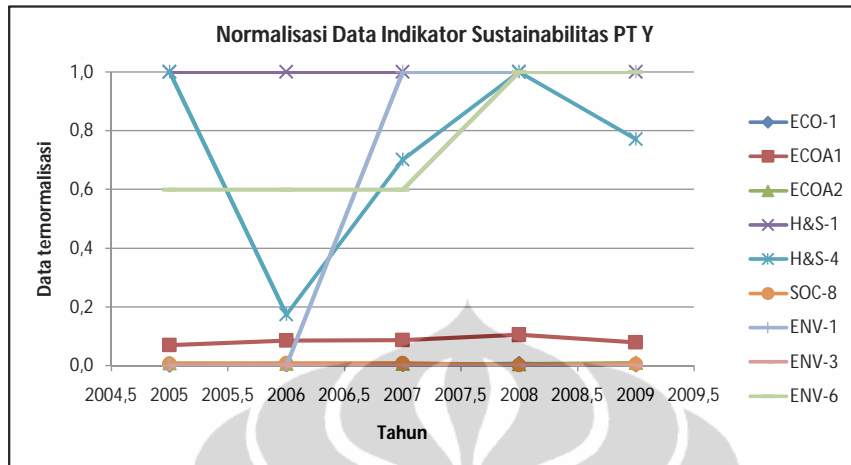
PERUSAHAAN	KEANGGOTAAN RANGKAIAN FUZZY													Indeks Sustainabilitas
	VXL	XL	VL	L	FL	FIL	I	FIH	FH	H	VH	XH	VXH	
PT X	0	0	0	0	0	0.485	0.512	0.002	4.E-06	5.E-09	0	0	0	0.45973549
PT Y	0	0	0	0	0	0.498	0.497	0.005	1.E-05	2.E-08	0	0	0	0.458914881
BP	0	0	0	0	0	0.000	0.000	0.002	0.045	0.196	0.355	0.302	0.100	0.850737906
CHEVRON	0	0	0	0	2.E-07	3.E-04	0.007	0.054	0.204	0.368	0.289	0.078	0.000	0.759196853
TOTAL	0	0	0	0	0	0.0000	0.000	0.011	0.094	0.339	0.461	0.095	0.000	0.794331757
SHELL	0	0	0	0	0	0.0000	0.000	0.003	0.043	0.240	0.504	0.208	0.002	0.823098193
EXXON MOBIL	0	0	0	0	0	0.0000	0.000	0.000	0.000	0.002	0.053	0.347	0.598	0.961696633

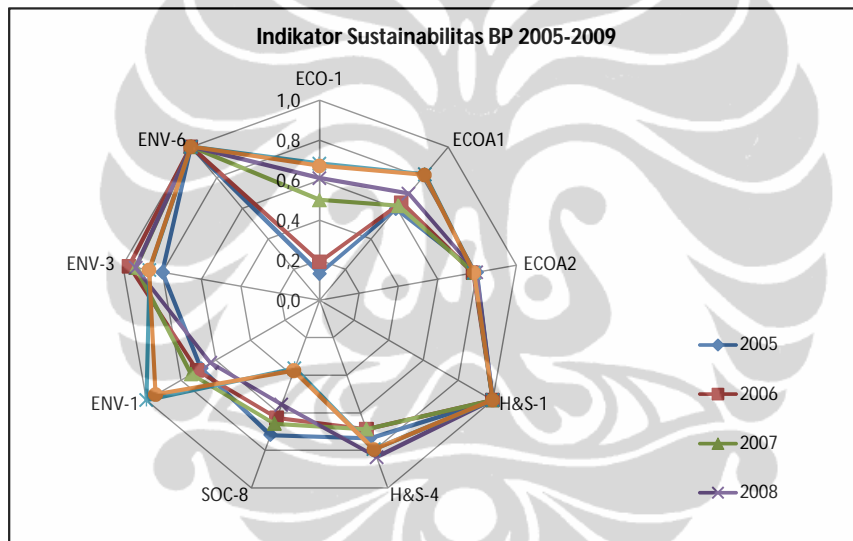
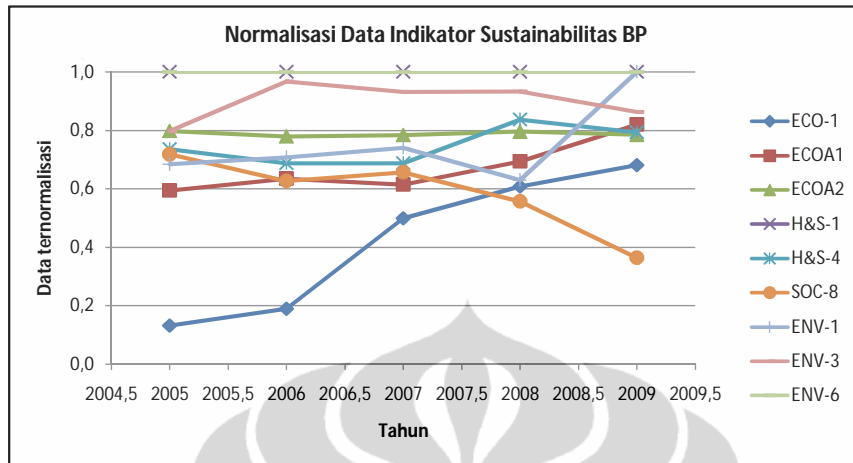
	VXL	XL	VL	L	FL	FIL	I	FIH	FH	H	VH	XH	VXH
De-fuzzifikasi	0	0.083333	0.166667	0.25	0.333333	0.416667	0.5	0.583333	0.666667	0.75	0.833333	0.916667	1

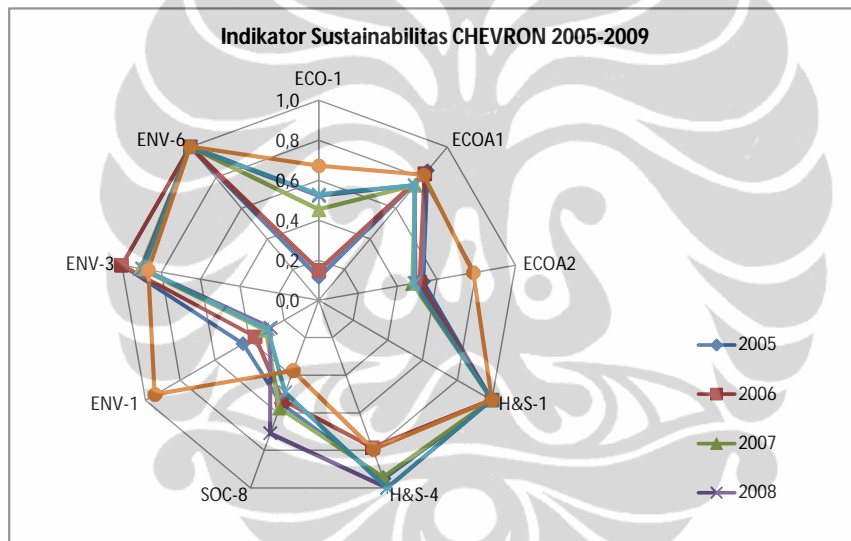
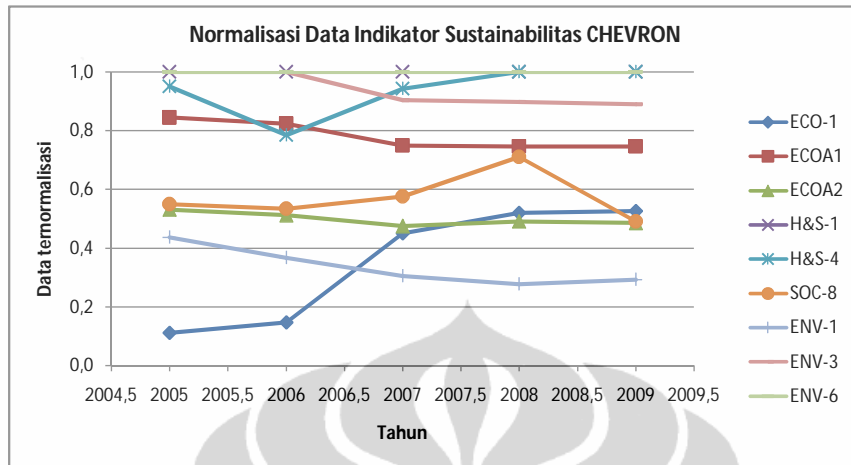
Lampiran 16
 INDIKATOR TERBAIK PERUSAHAAN MINYAK DAN GAS BUMI

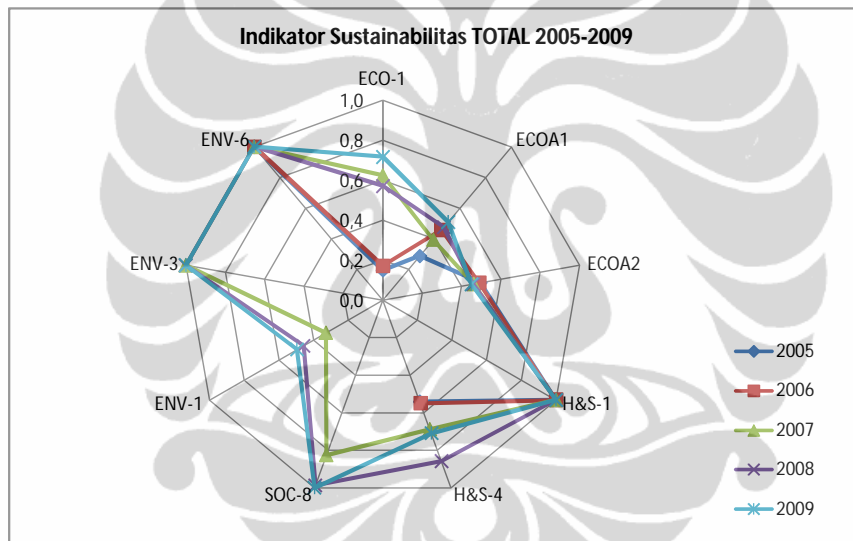
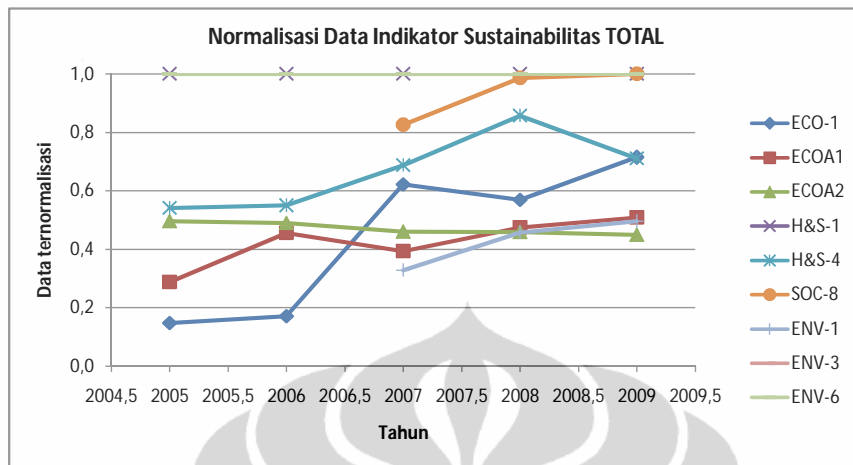
No	Indikator / Parameter	Data Indikator Terbaik					Keterangan
		2005	2006	2007	2008	2009	
1	Kinerja Ekonomi						
	Pembayaran pajak (ECO-1)	99000	101000	29864	36530	15119	Juta Dolar
	Pendapatan Perusahaan / karyawan (ECO1)	4288590	4451486	4830792	5751927	3736059	Dolar / karyawan
	Cadangan terbukti (ECO2)	22400	22700	22700	22800	23300	mmboe
2	Kinerja Sosial						
	Sistem Manajemen keselamatan (H&S-1)	5	5	5	5	5	sertifikat ISO 18001
	Laju Kecelakaan kerja (H&S-4)	0.39	0.33	0.33	0.36	0.27	kecelakaan / 200 ribu jam kerja
	Kontribusi perusahaan kepada masyarakat (SOC-8)	133	170	206.6	225.2	292.914	Juta Dolar
3	Kinerja Lingkungan						
	Tumpahan hidrokarbon ke lingkungan (ENV-1)	370	295	252	211	234	Jumlah frekwensi kejadian
	Emisi gas rumah kaca (ENV-3)	62.2	62.3	59.2	57.3	56.1	Juta ton CO ₂ eq
	Sistem Manajemen Lingkungan (ENV-6)	5	5	5	5	5	sertifikat ISO 18001

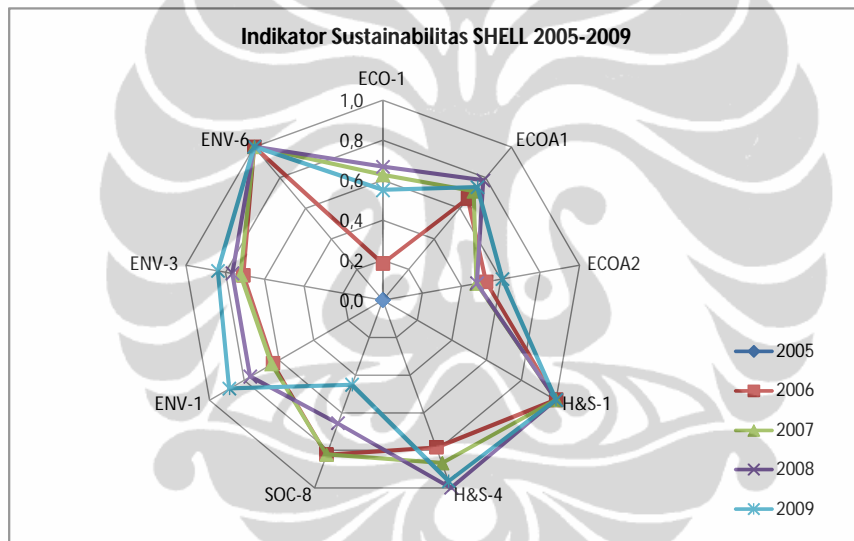
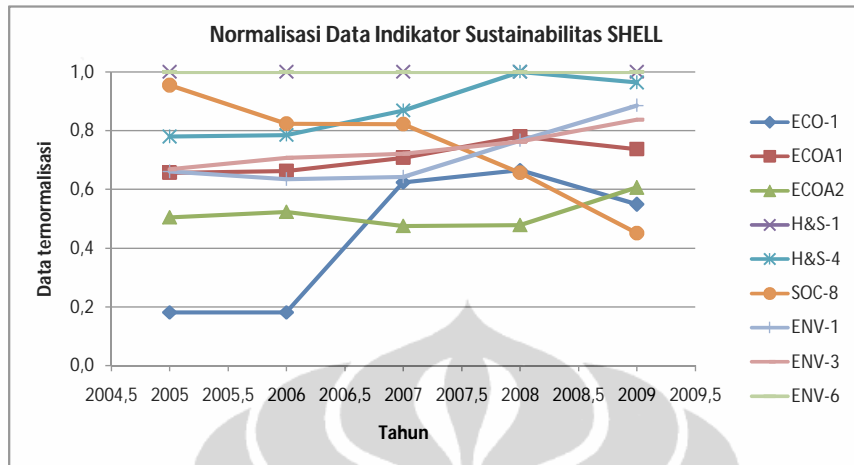


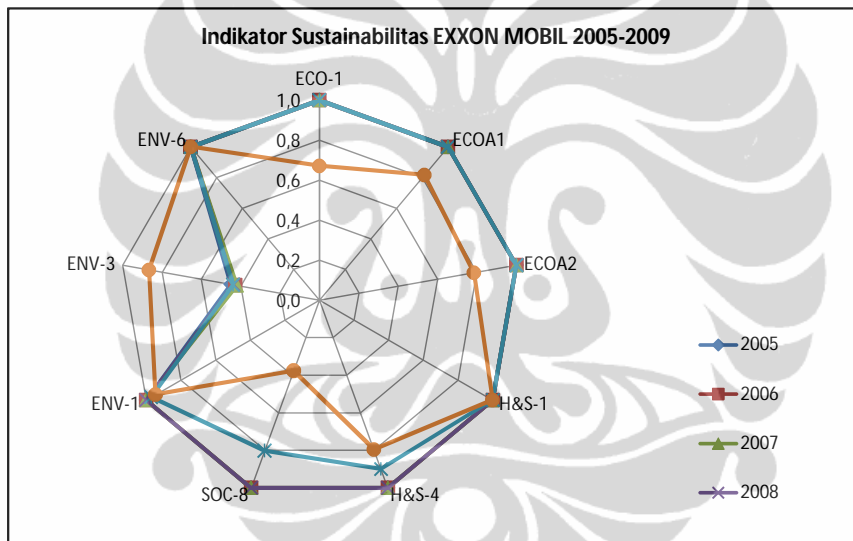
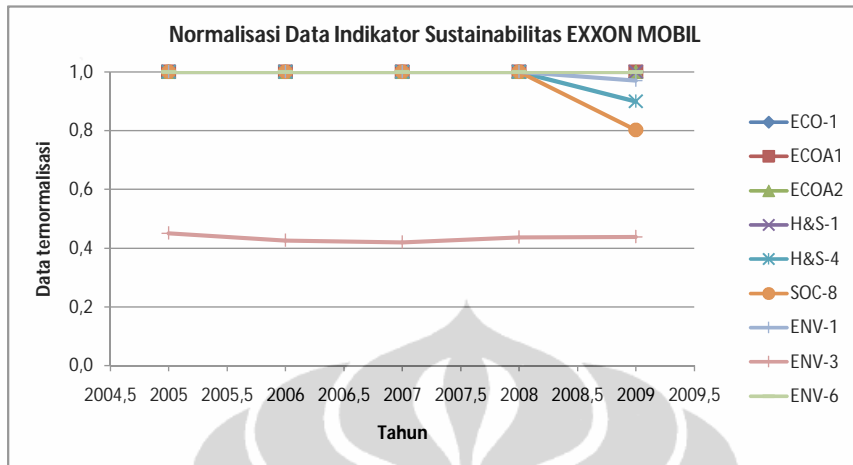




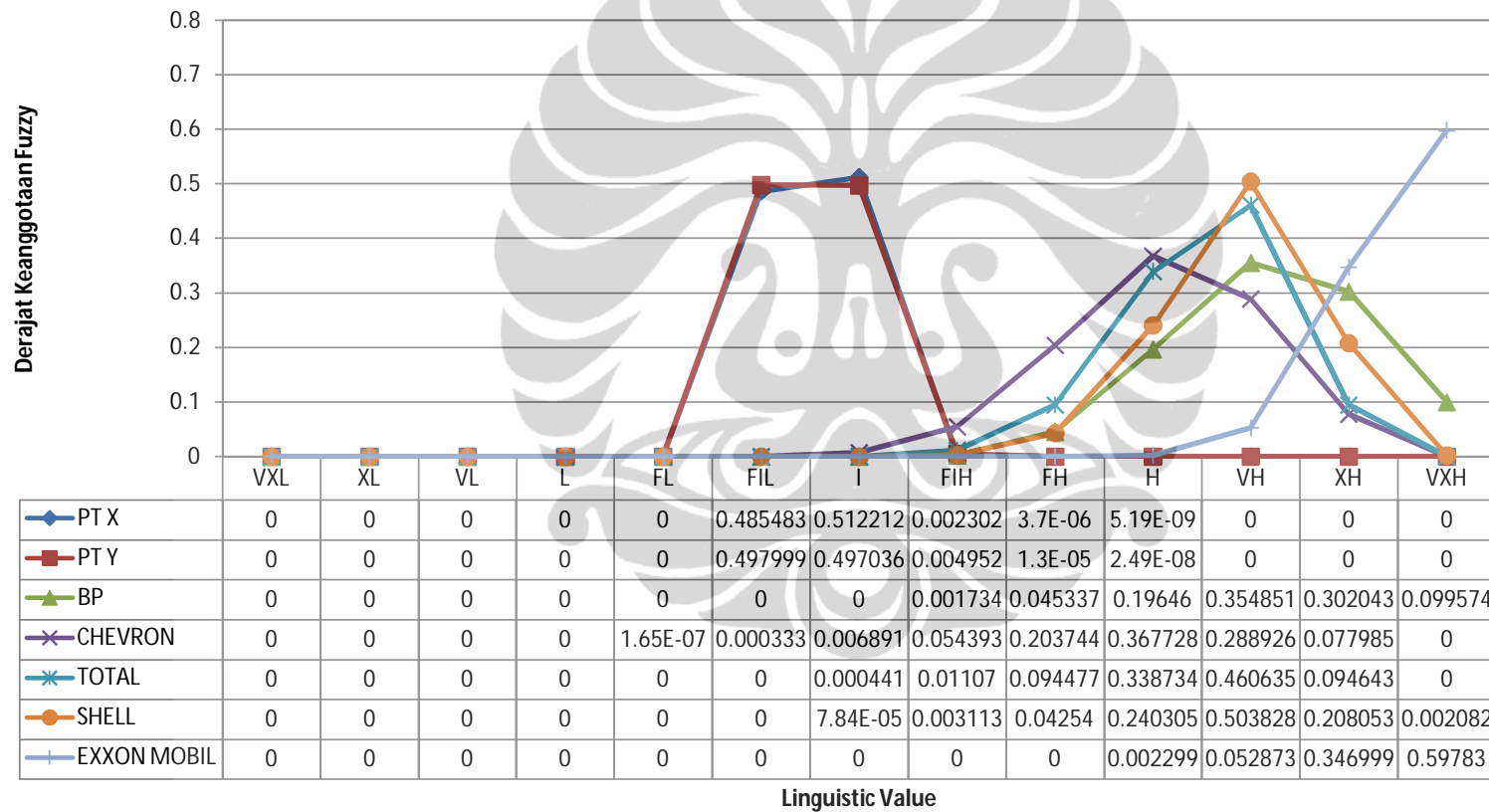




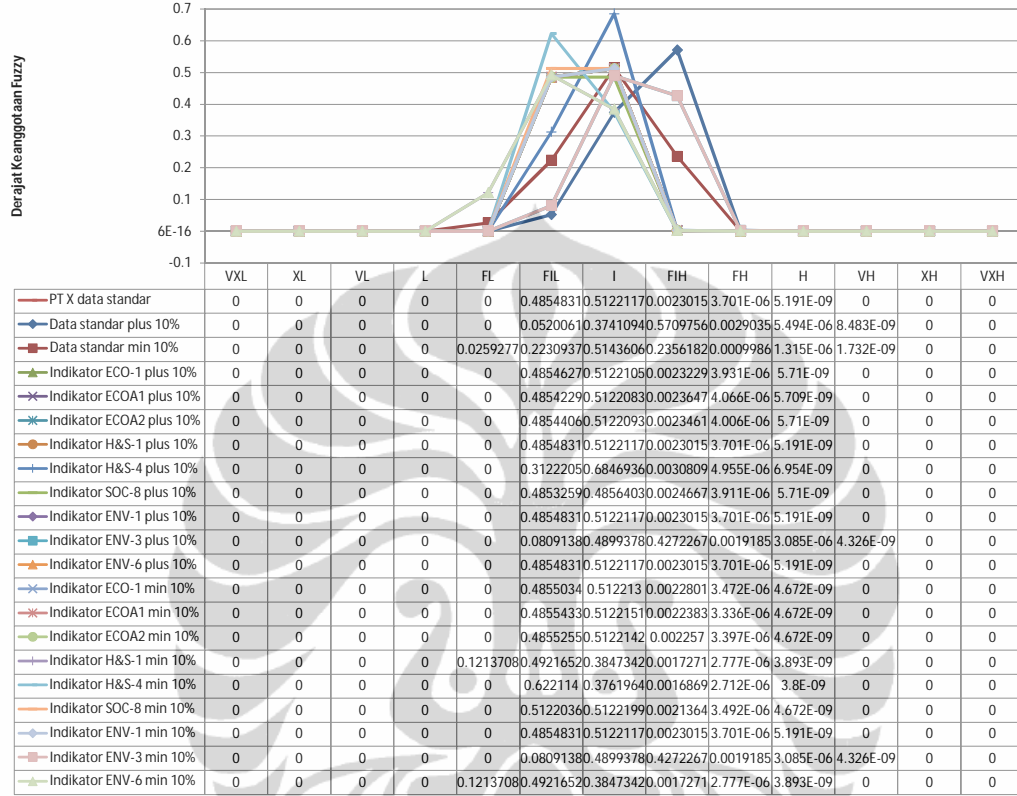




Derajat Keanggotaan Fuzzy dari Indikator Gabungan Perusahaan Minyak dan Gas Bumi



Analisa Sensitivitas dengan Perubahan +/- 10% terhadap Indikator PT X



Linguistic Value