Mactor Report
Model Aktor dalam Pengelolaan Sampah Plastik Lut pada Perikanan Tangkap Skala Kecil di Jakarta

SOMMAIRE

I. ACTOR PRESENTATION

1. LIST OF ACTORS

1. Masyarakat pesisir (MasPesisir)
2. Transportasi laut (TransLaut)
3. Wisatawan (Wisatawan)
4. Horeka di hilir (pesisir laut) (Horeca)
5. Industri plastik dan turunannya (IndPlastik)
6. Nelayan (Nelayan)
7. Pemerintah daerah (PemDa)
8. Pemerintah Pusat   (PemPus)

2. ACTOR DESCRIPTION

a) Masyarakat pesisir (MasPesisir)

Description :

Masyarakat yang tinggal di sekitar pesisir termasuk didalamnya pembudidaya dan pengolah hasil perikanan.

b) Transportasi laut (TransLaut)

Description :

Pelabuhan dan pelayaran.

c) Wisatawan (Wisatawan)

Description :

Wisatawan domestrik maupun mancanegara yang berada di wilayah pesisir dan laut.

d) Horeka di hilir (pesisir laut) (Horeca)

Description :

Hotel, pedagang, rumah makan/restoran dan UKM.

e) Industri plastik dan turunannya (IndPlastik)

Description :

Produsen dari plastik mentah menjadi produk turunan plastik.

f) Nelayan (Nelayan)

Description :

Nelayan 0 GT, 3 GT, 5 GT, 7 GT dan 10 GT.

g) Pemerintah daerah (PemDa)

Description :

Dinas lingkup Provinsi dan Kabupaten/Kota diantaranya Dinas Kelautan dan Perikanan, serta Dinas Lingkungan Hidup.

h) Pemerintah Pusat (PemPus)

Description :

Kementerian atau Lembaga terkait diantaranya Kementerian Koordinator Bidang Kemaritiman dan Investasi, Kementerian Kelautan dan Perikanan, serta Kementerian Lingkungan Hidup.

II. OBJECTIVE PRESENTATION

1. LIST OF OBJECTIVES

1. Tujuan Ekonomi (Ekonomi)
2. Tujuan Ekologi (Ekologi)
3. Tujuan Sosial (Sosial)

2. OBJECTIVE DESCRIPTION

a) Tujuan Ekonomi (Ekonomi)

Description :
Menghilangkan dampak ekonomi yang ditimbulkan akibat sampah plastik laut

b) Tujuan Ekologi (Ekologi)

Description :
Terwujudnya kelestarian dan meningkatkan kualitas kesehatan lingkungan pesisir dan laut sehingga terjaganya sumberdaya ikan secara berkelanjutan

c) Tujuan Sosial (Sosial)

Description :
Mewujudkan pengelolaan sampah plastik laut berbasis masyarakat

III. DATA INPUT MATRICES

1. MATRIX OF DIRECT INFLUENCES (MDI)

The Matrix of Direct Influences (MDI) Actor X Actor created from the actors' strategies table, describes the direct influences actors have on each other.

MDI	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus
MasPesisir	0	2	2	1	0	4	2	1
TransLaut	3	0	1	0	0	4	2	1
Wisatawan	2	1	0	2	0	3	1	1
Horeca	3	2	2	0	0	4	1	1
IndPlastik	3	2	2	1	0	4	3	3
Nelayan	3	1	1	1	0	0	4	4
PemDa	4	3	4	4	4	4	0	3
PemPus	4	4	3	3	4	4	4	0

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Influences are graded from 0 to 4 according to the importance of the actor's possible jeopardy:
0: No influence
1: Operating procedures
2: Projects
3: Missions
4: Existance

2. VALUED POSITION MATRIX (2MAO)

The matrix of valued positions Actor X Objective (2MAO) provides information on the actor's stance on each objective (pro, against, neutral or indifferent) and the hierarchy of its objectives.

2MAO	Ekonomi	Ekologi	Sosial
MasPesisir	4	4	4
TransLaut	0	-2	-1
Wisatawan	1	2	0
Horeca	1	-3	0
IndPlastik	0	-3	1
Nelayan	4	4	4
PemDa	3	3	3
PemPus	3	3	3

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The sign indicates whether the actor is likely to reach objective or not.

0: Objecive has a bleak outcome

1: Objective jeopardises the actor's operating procedures (management, etc...) / is vital for its operating procedures

2: Objective jeopardises the success of the actor's projects / is vital for the success of its projects

3: Objective jeopardises the accomplishment of the actor's mission / is indispensible for its missions

4: Objective jeopardises the actor's existence / is indispensible for its existence

IV. RESULTS OF THE STUDY

1. DIRECT AND INDIRECT INFLUENCES

1. Matrix of Direct and Indirect Influences (MDII)

The MDII matrix determines the direct or indirect influences of order 2 between actors. The utility of this matrix is its more complete vision of the games of competitiveness (an actor can reduce the number of choices of another by influencing it through an intermediary actor). The "sum" operation used to calculate the MDII does not produce (in this new matrix) the same scale of intensities adopted to evaluate direct influences in MDI. Despite this, values in MDII are a good indicator of the importance of direct and indirect influences actors have on each other. Two indicators are calculated from the MDII:
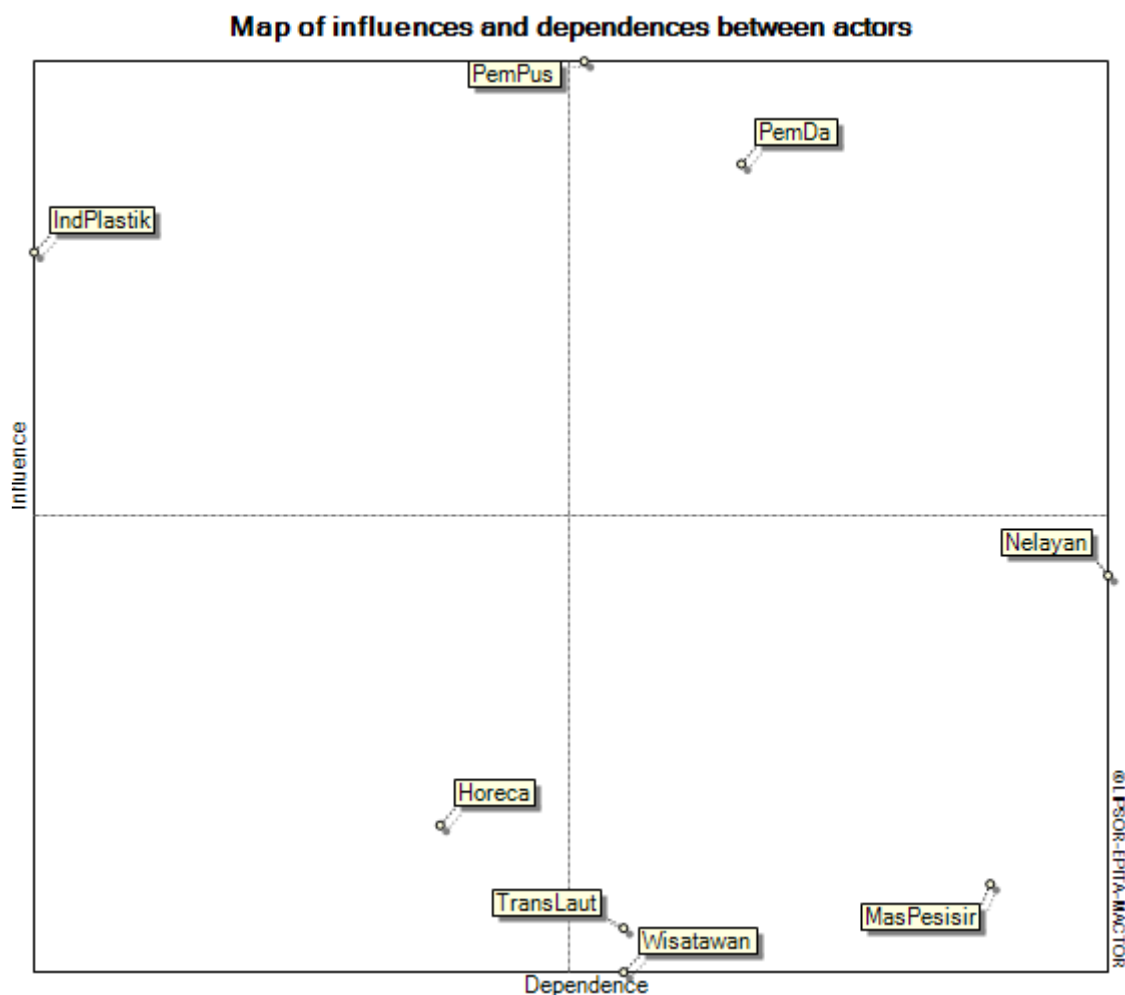
- The degree of direct and indirect influence of each actor (Ii, by summing rows).
- The degree of direct and indirect dependence of each actor (Di, by summing columns).

MDII	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus	Ii
MasPesisir	11	8	8	7	3	12	11	10	59
TransLaut	10	7	7	6	3	11	10	9	56
Wisatawan	10	8	8	6	2	10	9	8	53
Horeca	12	8	8	6	2	13	11	9	63
IndPlastik	17	13	13	11	6	18	16	14	102
Nelayan	14	12	12	10	8	14	13	11	80
PemDa	21	14	15	12	7	25	16	14	108
PemPus	22	15	15	12	8	26	17	14	115
Di	106	78	78	64	33	115	87	75	636

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Values represent direct and indirect influences between actors:
The higher the value, the more influence the actor has on the other.

2.   Map of influences and dependences between actors

Map of influence and dependence between actors is a graphic representation of actors' positions with respect to influences and dependences (direct or indirect: Di and Ii) between each other. Positions are calculated automatically by the Mactor software.

Map of influences and dependences between actors

3.   Net scale of influences (NS)

The net scale of direct and indirect influences measures, for every couple of actors, the distance between the direct and indirect influence. Each actor exerts (receives) direct and indirect influences of order 2 (from) each actor. The net influence scale will indicate for each couple of actors the surplus influence either exerted or received. If the scale is positive (+ sign), actor i (rows of NS matrix) has more direct and indirect influence on actor j (columns of NS matrix) than it receives from this actor. This is the opposite when the scale has a negative (-) sign. The next step is to calculate for each actor the total difference of direct and indirect influences by adding up the net influence scales on the rest of the actors.

NS	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus	Sum
MasPesisir		-2	-2	-5	-14	-2	-10	-12	-47
TransLaut	2		-1	-2	-10	-1	-4	-6	-22
Wisatawan	2	1		-2	-11	-2	-6	-7	-25
Horeca	5	2	2		-9	3	-1	-3	-1
IndPlastik	14	10	11	9		10	9	6	69
Nelayan	2	1	2	-3	-10		-12	-15	-35
PemDa	10	4	6	1	-9	12		-3	21
PemPus	12	6	7	3	-6	15	3		40

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Values are relative whole numbers:
The (+) sign indicates the actor exerts more influence than it receives.
The (-) sign indicates the actor exerts less influence than it receives.

4. MDII competitiveness

a) MDII competitiveness vector

The Matrix of Direct an Indirect Influences (MDII) provides two types of useful information:

- The direct and indirect influences actor i has on actor j (MDII)ij where i!=j and are equivalent, by definition, to the direct and indirect dependence actor j has with respect to actor i.

- The indirect influences actor i has on itself coming through an intermediary actor. This is called retroaction (MDII)ii. When an actor is more competitive so will be its influence, but its dependence and retroaction will be quite weak. It is foolish to think that only the actor's influence measures its competitiveness. An actor can be very influential, be also very dependent and at the same time be very retroactive: this would result in a weak competitiveness. However, an actor being moderately influential, and having no dependence or retroaction will be very competitive.

	R_i^*
MasPesisir	0,46
TransLaut	0,55
Wisatawan	0,49
Horeca	0,76
IndPlastik	1,96
Nelayan	0,73
PemDa	1,38
PemPus	1,65

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Ri* is the competitiveness of actor i considering its max: influences; direct and indirect dependence; and feedback.

b) Histogram of MDII's competitiveness

The MDII competitiveness histogram is created from the MDII competitiveness vector.

Histogram of MDII's competitiveness

Masyarakat pesisir	0,5
Transportasi laut	0,6
Wisatawan	0,5
Horeka di hilir (pesisir	0,8
Industri plastik dan tur	2
Nelayan	0,7
Pemerintah daerah	1,4
Pemerintah Pusat	1,7

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c) **MDII competitiveness scale - Objective : Tujuan Ekonomi**

d)

MDII competitiveness scale

Objective : Ekonomi

MasPesisir
Wisatawan
Horeca
Nelayan
PemDa
PemPus

+ −

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Mactor - Method developed by © François Bourse and Michel Godet Free software funded by the CPA and 3IE EPITA

e) MDII competitiveness scale - Objective : Tujuan Ekologi

f)

MDII competitiveness scale

Objective : Ekologi

TransLaut
Horeca
IndPlastik

MasPesisir
Wisatawan
Nelayan
PemDa
PemPus

+ −

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g) MDII competitiveness scale - Objective : Tujuan Sosial

h)

MDII competitiveness scale

Objective : Sosial

TransLaut

MasPesisir
IndPlastik
Nelayan
PemDa
PemPus

5. Matrix of Maxima Direct and Indirect Influences (MMDII)

The MMDII is employed to determine the maximum level of influence an actor can have on another, either directly or indirectly (through an intermediary actor). However, in the MDII matrix we loose the sense the simple meaning used to construct the scale of intensities (of direct influences in the MDI matrix), the MMDII conserves this scale. There are two interesting results given by the MMDII:

- The degree of direct and indirect influence maxima of every actor (IMAXi) is calculated by adding the rows.

- The degree of direct and indirect dependence maxima of every actor (DMAXi) is calculated by adding the columns.

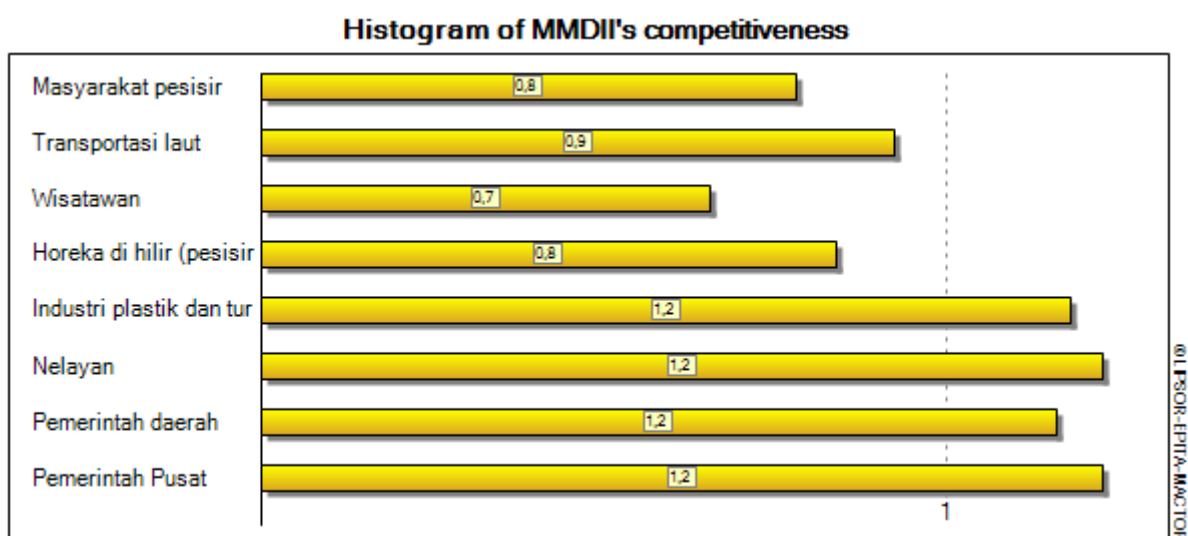| MMDII	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus	IMAXi
MasPesisir	0	2	2	2	2	4	4	4	20
TransLaut	3	0	2	2	2	4	4	4	21
Wisatawan	3	2	0	2	1	3	3	3	17
Horeca	3	2	2	0	1	4	4	4	20
IndPlastik	3	3	3	3	0	4	4	4	24
Nelayan	4	4	4	4	4	0	4	4	28
PemDa	4	3	4	4	4	4	0	4	27
PemPus	4	4	4	4	4	4	4	0	28
DMAXi	24	20	21	21	18	27	27	27	185

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Values represent maximum direct and indirect influences between actors:
The higher the value, the more influence the actor has on the other.

6. MMDII competitiveness

a) Histogram of MMDII's competitiveness

The MMDII competitiveness histogram is created from the MMDII competitiveness vector.

Histogram of MMDII's competitiveness

|	
Masyarakat pesisir	0,8
Transportasi laut	0,9
Wisatawan	0,7
Horeka di hilir (pesisir	0,8
Industri plastik dan tur	1,2
Nelayan	1,2
Pemerintah daerah	1,2
Pemerintah Pusat	1,2

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b) Position scale by valued objectives weighted competitiveness - Objective : Tujuan Ekonomi

c)

Position scale by valued objectives weighted competitiveness

Objective : Ekonomi

MasPesisir
Wisatawan
Horeca
Nelayan
PemDa
PemPus

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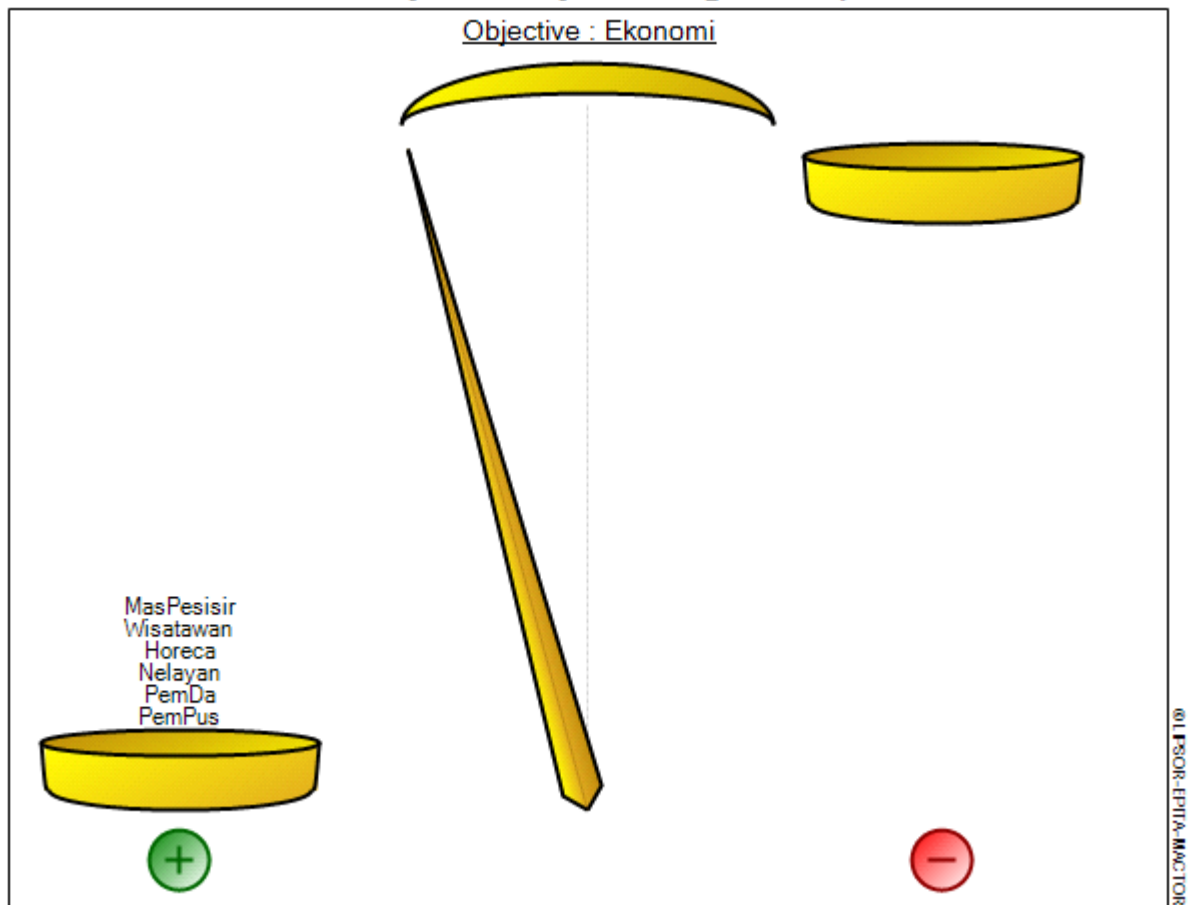
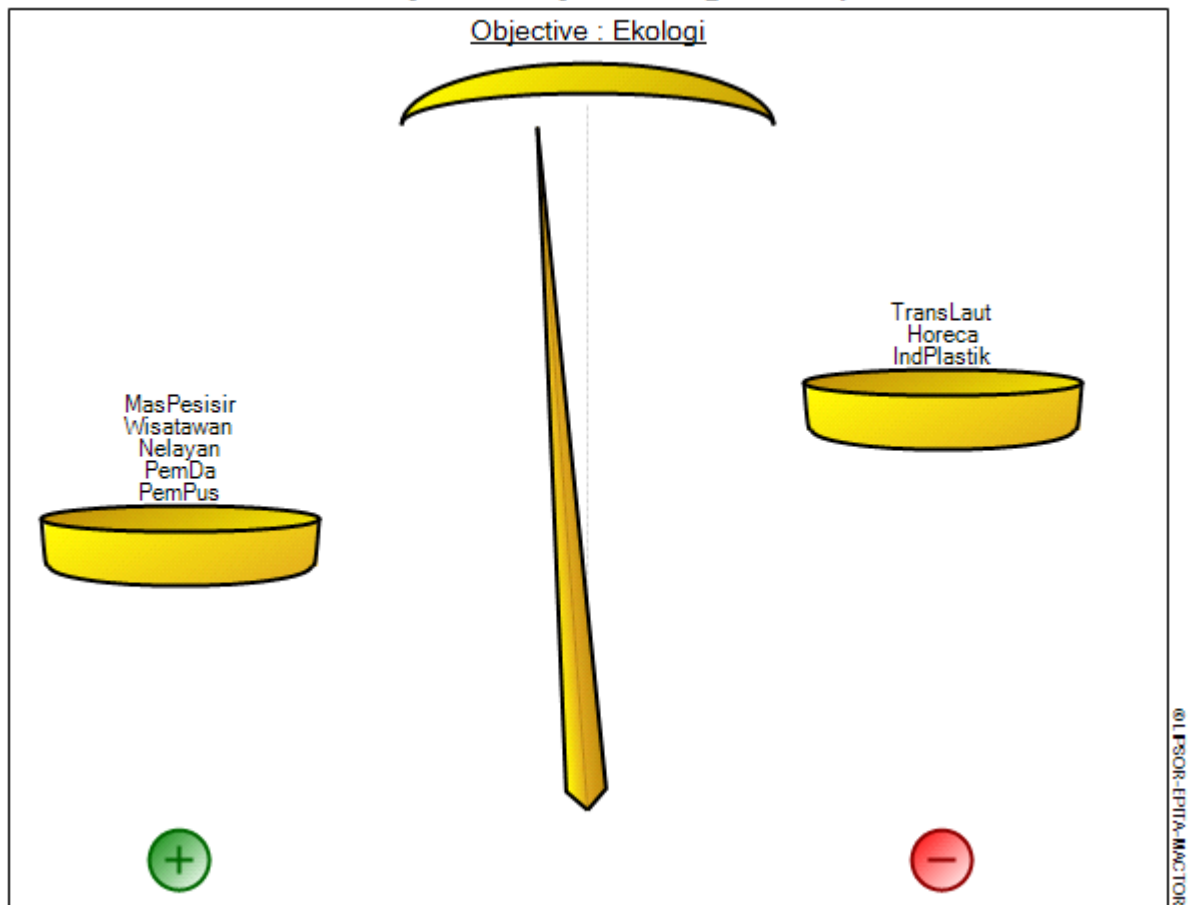**d) Position scale by valued objectives weighted competitiveness - Objective : Tujuan Ekologi**

e)

Position scale by valued objectives weighted competitiveness

Objective : Ekologi

TransLaut
Horeca
IndPlastik

MasPesisir
Wisatawan
Nelayan
PemDa
PemPus

+ −

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f) Position scale by valued objectives weighted competitiveness - Objective : Tujuan Sosial

g)

Position scale by valued objectives weighted competitiveness

Objective : Sosial

TransLaut

MasPesisir
IndPlastik
Nelayan
PemDa
PemPus

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2. ACTORS OBJECTIVES RELATIONSHIP

1. Order 1 relationship

a) Simple position matrix (1MAO)

The simple position 1MAO matrix shows the valency of each actor with respect to every objective (likely, unlikely, neutral, or indifferent). This matrix, result of Mactor's phase 3, is not made up of the initial data entries. Mactor recalculates it from 2MAO.

1MAO	Ekonomi	Ekologi.	Sosial	Absolute sum
MasPesisir	1	1	1	3
TransLaut	0	-1	-1	2
Wisatawan	1	1	0	2
Horeca	1	-1	0	2
IndPlastik	0	-1	1	2
Nelayan	1	1	1	3
PemDa	1	1	1	3
PemPus	1	1	1	3
Number of agreements	6	5	5	
Number of disagreements	0	-3	-1	
Number of positions	6	8	6	

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-1: actor unlikely to achieve objective
0: Neutral position
1: actor likely to achieve objective

2.   Order 2 relationship

a) Valued position matrix (2MAO)

The 2MAO matrix specifies the actor's position on each objective (pro, against, neutral or indifferent). This matrix is the initial information given by the user and also presents marginalities.

| 2MAO	Ekonomi	Ekologi.	Sosial
MasPesisir	4	4	4
TransLaut	0	-2	-1
Wisatawan	1	2	0
Horeca	1	-3	0
IndPlastik	0	-3	1
Nelayan	4	4	4
PemDa	3	3	3
PemPus	3	3	3

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The sign indicates whether the actor is likely to reach objective or not.
0: Objecive has a bleak outcome
1: Objective jeopardises the actor's operating procedures (management, etc...) / is vital for its operating procedures
2: Objective jeopardises the success of the actor's projects / is vital for the success of its projects
3: Objective jeopardises the accomplishment of the actor's mission / is indispensible for its missions
4: Objective jeopardises the actor's existence / is indispensible for its existence

b) Histogram of actor's implication towards its objectives 2MAO

This histogram is produced from the valued relationship matrix (order 2) between actors and objectives, 2MAO. It represents the actor's objectives mobilisation. The histogram is used to identify for each actor, the extent of its position with respect to the defined objectives, e.g. pro or against.

Histogram of actor's implication towards its objectives 2MAO
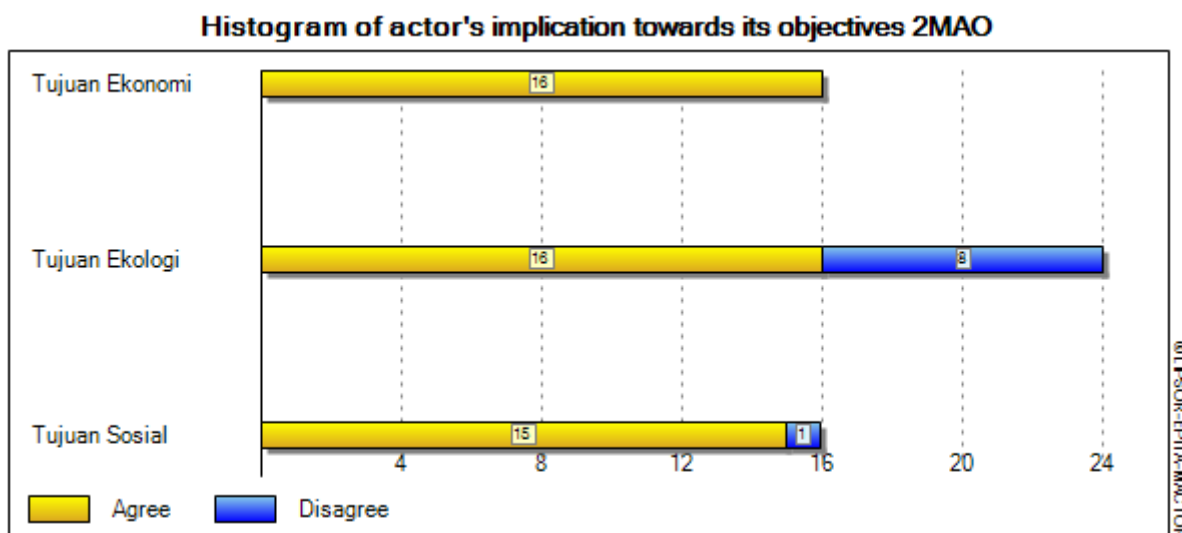
3. Order 3 relationship

a) Weighted valued position matrix (3MAO)

The weighted (with respect to competitiveness) valued position matrix (3MAO) describes each actor's position on every objective. This is taking into account its degree of opinion on every objective, its objective hierarchy and competitiveness between actors.

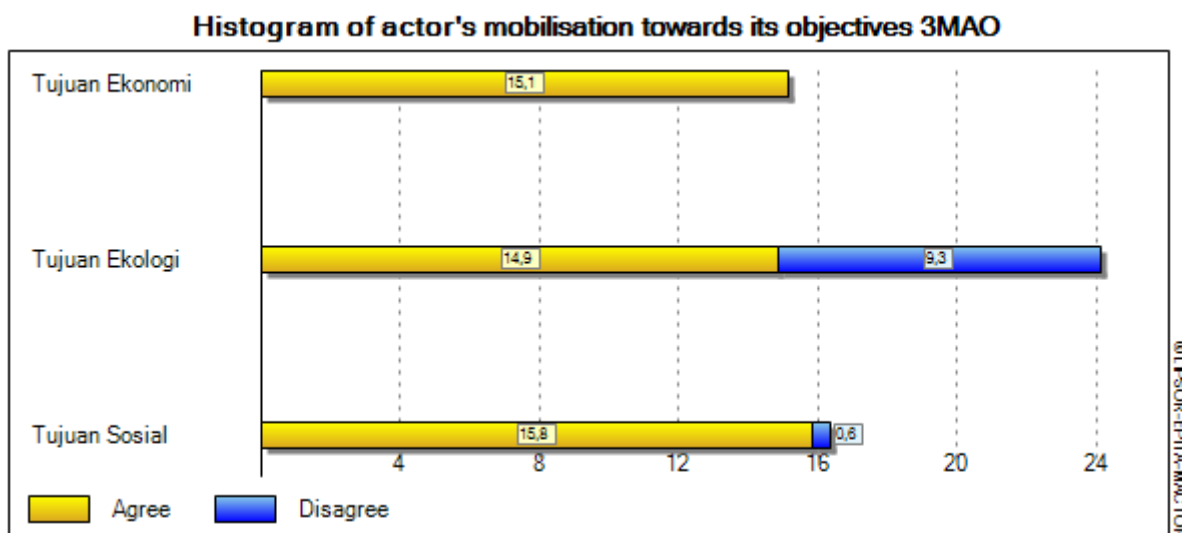| 3MAO	Ekonomi	Ekologi	Sosial	Mobilisation
MasPesisir	1,9	1,9	1,9	5,6
TransLaut	0,0	-1,1	-0,6	1,7
Wisatawan	0,5	1,0	0,0	1,5
Horeca	0,8	-2,3	0,0	3,1
IndPlastik	0,0	-5,9	2,0	7,8
Nelayan	2,9	2,9	2,9	8,8
PemDa	4,1	4,1	4,1	12,4
PemPus	5,0	5,0	5,0	14,9
Number of agreements	15,1	14,9	15,8	
Number of disagreements	0,0	-9,3	-0,6	
Degree of mobilisation	15,1	24,2	16,4	

Positive values represent the actor's mobilisation towards its objectives.
Negative values represent the rate of opposition.

b) Histogram of actor's mobilisation towards its objectives 3MAO

This histogram is produced from the valued relationship matrix (order 3) between actors and objectives, 3MAO. It represents the actions taken by actors towards objectives. The histogram is used to identify for each actor, the extent of its position with respect to the defined objectives, e.g. pro or against.

Histogram of actor's mobilisation towards its objectives 3MAO

c) Weighted valued position matrix (3MAO)

3MAO	Ekonomi	Ekologi	Sosial	Mobilisation
MasPesisir	1,9	1,9	1,9	5,6
TransLaut	0,0	-1,1	-0,6	1,7
Wisatawan	0,5	1,0	0,0	1,5
Horeca	0,8	-2,3	0,0	3,1
IndPlastik	0,0	-5,9	2,0	7,8
Nelayan	2,9	2,9	2,9	8,8
PemDa	4,1	4,1	4,1	12,4
PemPus	5,0	5,0	5,0	14,9
Number of agreements	15,1	14,9	15,8	
Number of disagreements	0,0	-9,3	-0,6	
Degree of mobilisation	15,1	24,2	16,4	

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Positive values represent the actor's mobilisation towards its objectives.
Negative values represent the rate of opposition.

3. CONVERGENCE BETWEEN ACTORS

1. Order 1 convergence

a) Convergence matrix (1CAA)

The Matrix of objectives convergences between actors or simple Convergences Actor X Actor (1CAA) identifies for a couple of actors the number of common positions they have on objectives (pro or against). This would identify the number of possible alliances. "Neutral" and "indifferent" positions (coded as "0") are not taken into consideration. This is a symmetrical matrix.

| 1CAA	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus
MasPesisir	0	0	2	1	1	3	3	3
TransLaut	0	0	0	1	1	0	0	0
Wisatawan	2	0	0	1	0	2	2	2
Horeca	1	1	1	0	1	1	1	1
IndPlastik	1	1	0	1	0	1	1	1
Nelayan	3	0	2	1	1	0	3	3
PemDa	3	0	2	1	1	3	0	3
PemPus	3	0	2	1	1	3	3	0
Number of convergences	13	2	9	7	6	13	13	13

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The values represent the degree of convergence: the higher the intesity, the more actors have common interests

b) Map of order 1 convergences between actors

The map of convergences between actors maps the actors with respect to their convergences (data in matrices 1CAA, 2CAA, 3CAA). That is, the closer actors are to each other, the more their convergence is intense. This map is used to create a graph of actors' convergences.
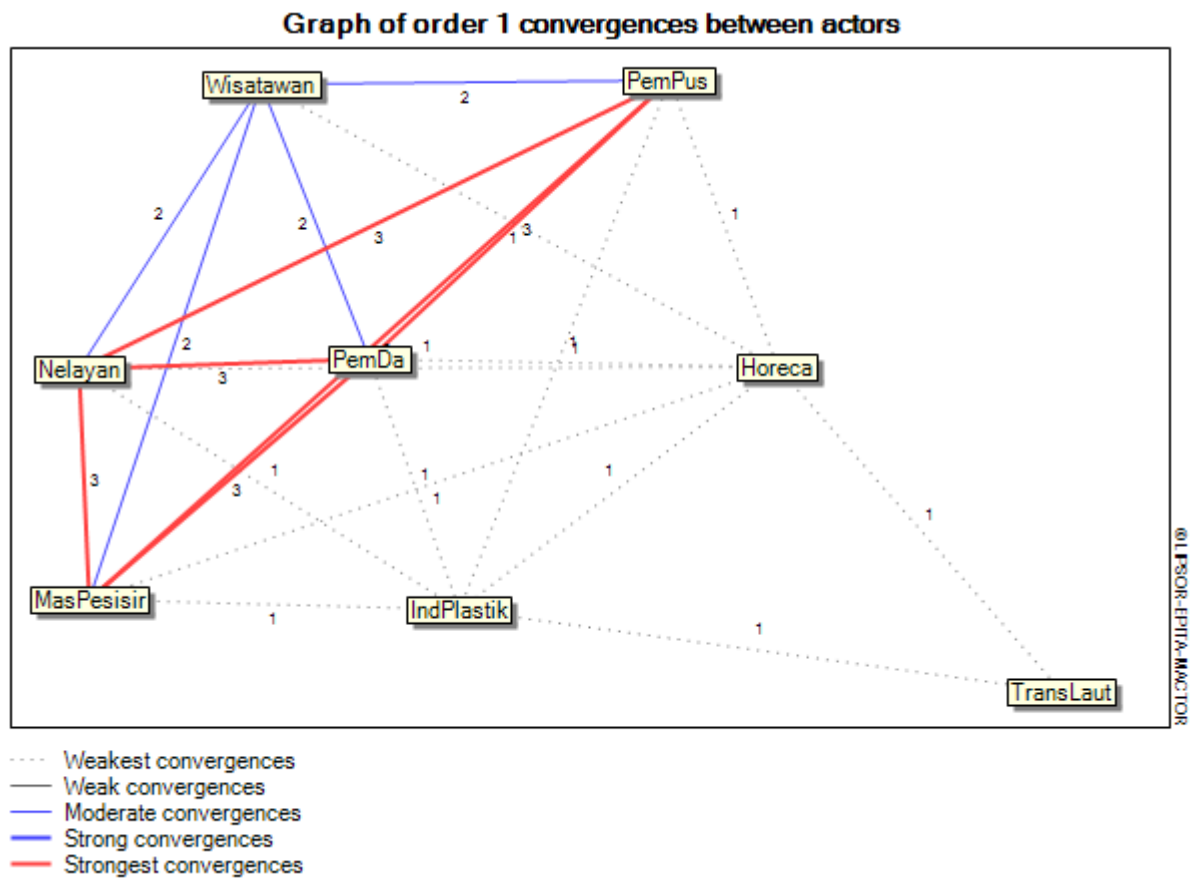
Map of order 1 convergences between actors
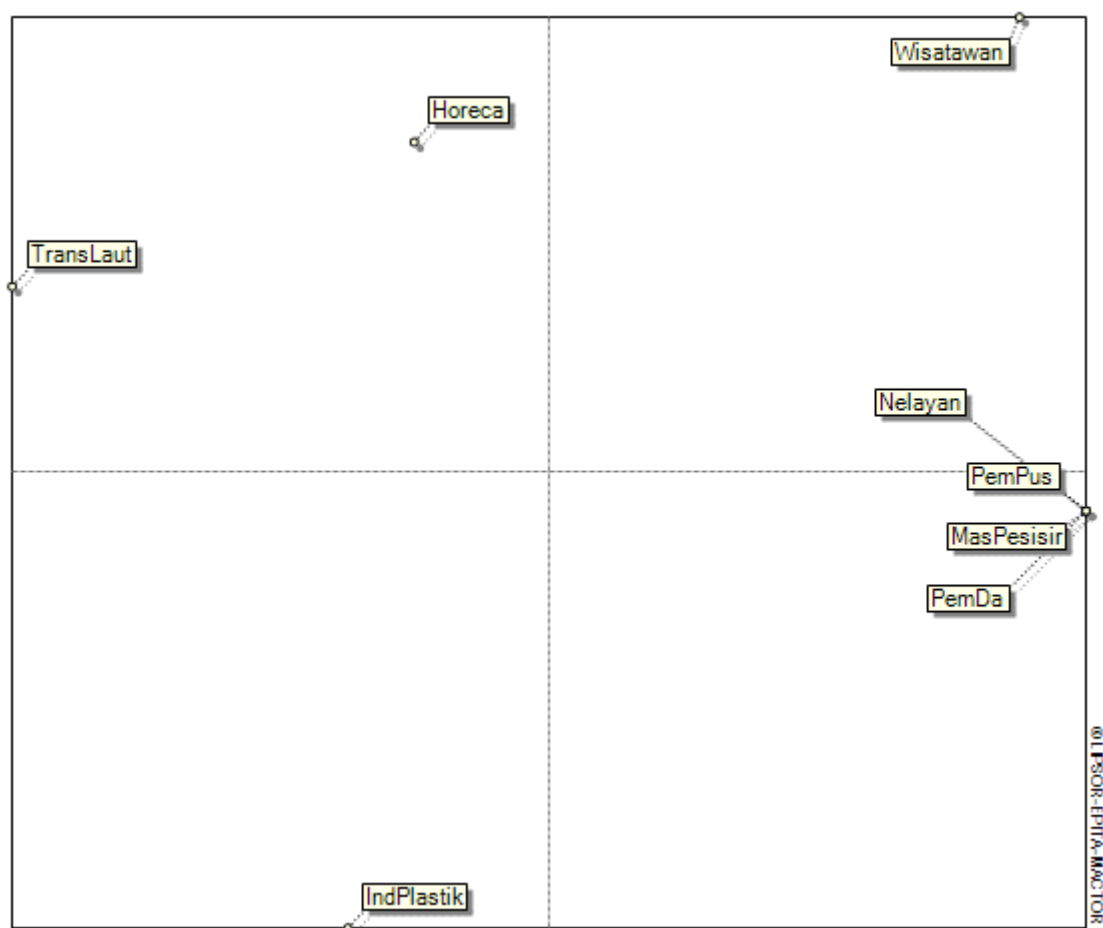
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c) Graph of order 1 convergences between actors

The graph of convergences between actors maps the actors with respect to their convergences (data in matrices 1CAA, 2CAA, 3CAA). That is, the closer actors are to each other, the more their convergence is intense.

Graph of order 1 convergences between actors

- · · · · Weakest convergences
- —— Weak convergences
- —— Moderate convergences
- —— Strong convergences
- —— Strongest convergences

2. Order 2 convergence

a) Valued convergence matrix (2CAA)

The valued convergence matrix or Valued Convergence Actors X Actors (2CAA) is related to the Matrix of valued positions Actors X Objectives (2MAO). This calculates the average convergence intensity between two actors, when these have the same degree (pro or against the objective). The values in this matrix do not measure the number of potential alliances (as in 1CAA), but the alliance intensity with the objectives hierarchy (preferences) of the couple of actors. This is a symmetrical matrix.

2CAA	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus
MasPesisir	0,0	0,0	5,5	2,5	2,5	12,0	10,5	10,5
TransLaut	0,0	0,0	0,0	2,5	2,5	0,0	0,0	0,0
Wisatawan	5,5	0,0	0,0	1,0	0,0	5,5	4,5	4,5
Horeca	2,5	2,5	1,0	0,0	3,0	2,5	2,0	2,0
IndPlastik	2,5	2,5	0,0	3,0	0,0	2,5	2,0	2,0
Nelayan	12,0	0,0	5,5	2,5	2,5	0,0	10,5	10,5
PemDa	10,5	0,0	4,5	2,0	2,0	10,5	0,0	9,0
PemPus	10,5	0,0	4,5	2,0	2,0	10,5	9,0	0,0
Number of convergences	43,5	5,0	21,0	15,5	14,5	43,5	38,5	38,5
Degree of convergence (%)	67,1							

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The values represent the degree of convergence: the higher the intesity, the more actors have common interests

b) Map of order 2 convergences between actors

The map of convergences between actors maps the actors with respect to their convergences (data in matrices 1CAA, 2CAA, 3CAA). That is, the closer actors are to each other, the more their convergence is intense. This map is used to create a graph of actors' convergences.

Map of order 2 convergences between actors

c) Graph of order 2 convergences between actors

The graph of convergences between actors maps the actors with respect to their convergences (data in matrices 1CAA, 2CAA, 3CAA). That is, the closer actors are to each other, the more their convergence is intense.

Graph of order 2 convergences between actors

---- Weakest convergences
—— Weak convergences
—— Moderate convergences
—— Strong convergences
—— Strongest convergences

3. Order 3 convergence

a) Weighted valued convergence matrix (3CAA)

The weighted valued matrix of convergences or weighted valued Convergences Actors X Actors (3CAA) is related to the weighted valued position matrix Actors X Objectives (3MAO). It identifies for a couple of actors the number of common positions they have on objectives (pro or against). This would identify the number of possible alliances also taking into account the actors' preferences in terms of objectives and their competitiveness. This is a symmetrical matrix.

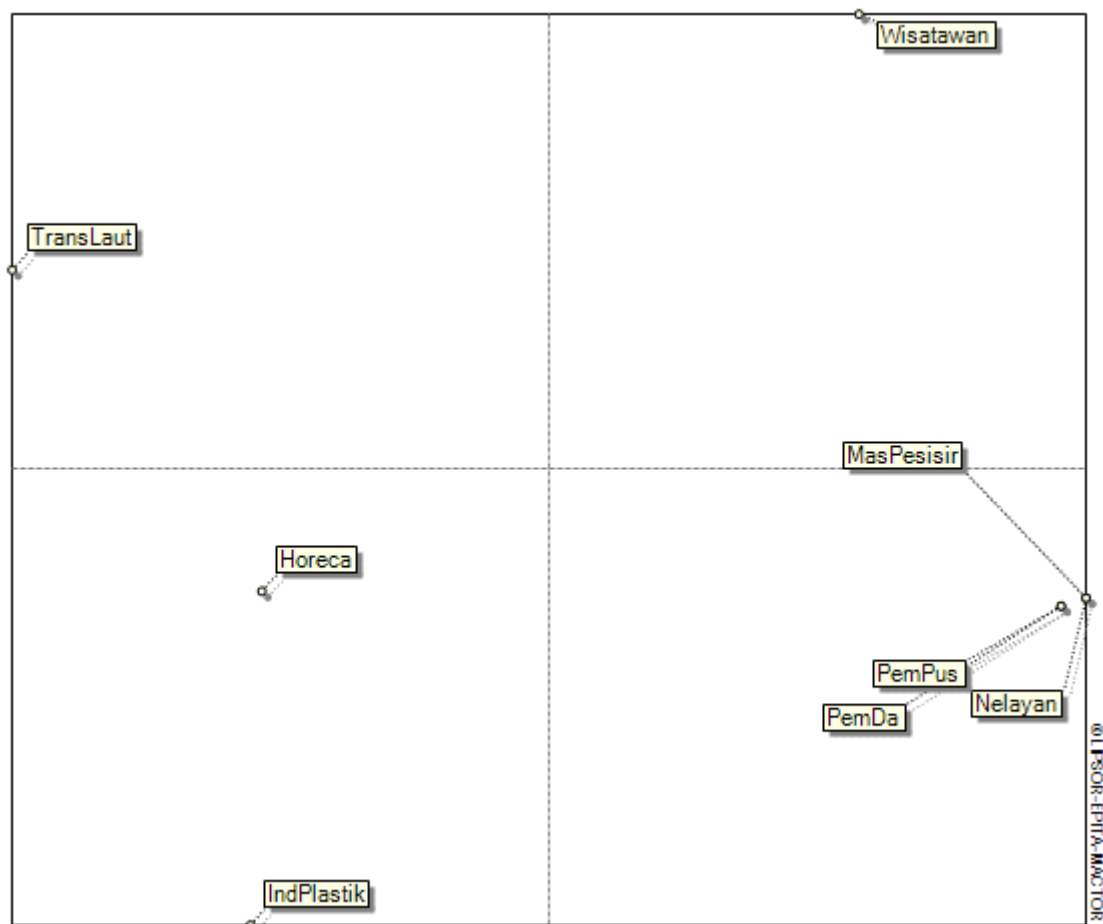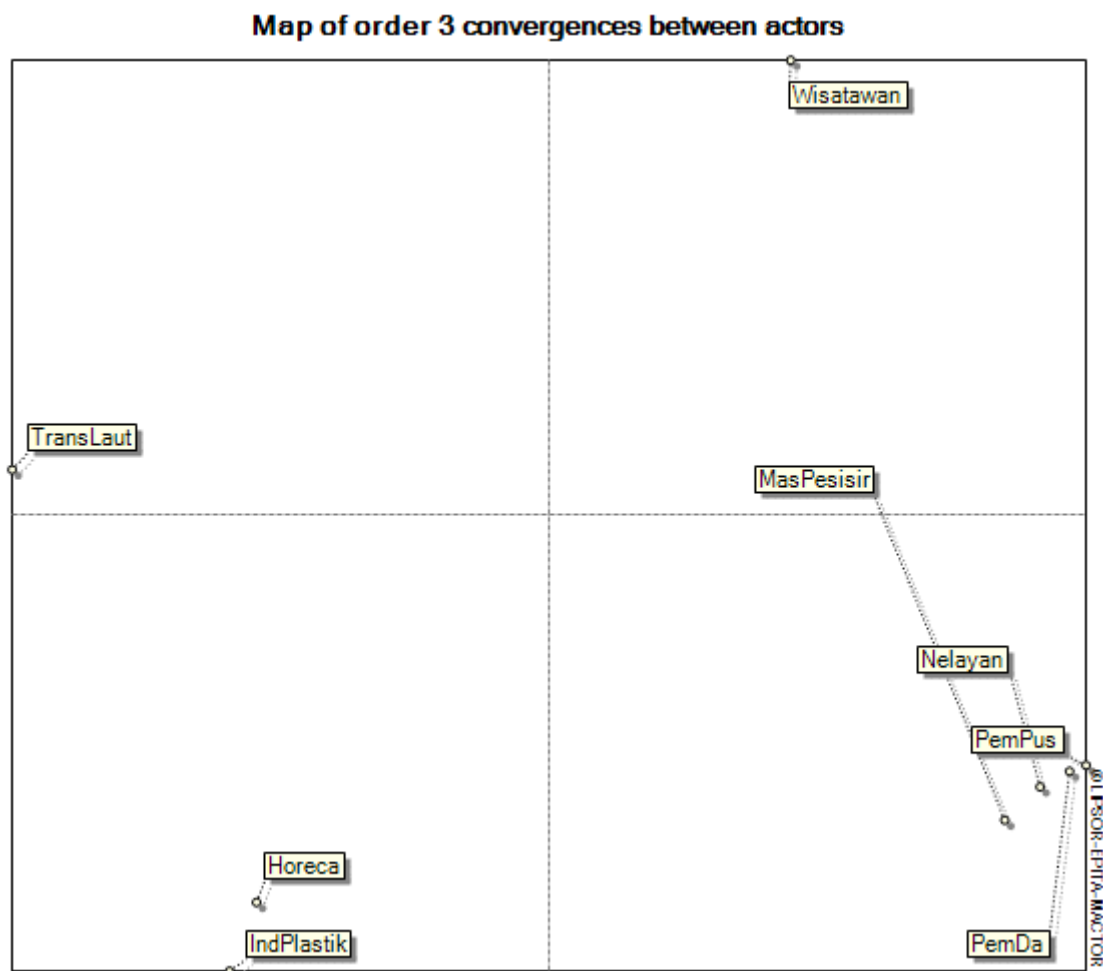| 3CAA	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus
MasPesisir	0,0	0,0	2,6	1,3	1,9	7,2	9,0	10,2
TransLaut	0,0	0,0	0,0	1,7	3,5	0,0	0,0	0,0
Wisatawan	2,6	0,0	0,0	0,6	0,0	3,7	4,9	5,7
Horeca	1,3	1,7	0,6	0,0	4,1	1,8	2,4	2,9
IndPlastik	1,9	3,5	0,0	4,1	0,0	2,4	3,0	3,5
Nelayan	7,2	0,0	3,7	1,8	2,4	0,0	10,6	11,8
PemDa	9,0	0,0	4,9	2,4	3,0	10,6	0,0	13,6
PemPus	10,2	0,0	5,7	2,9	3,5	11,8	13,6	0,0
Number of convergences	32,2	5,2	17,5	14,9	18,4	37,6	43,6	47,7
Degree of convergence (%)	0,0							

The values represent the degree of convergence: the higher the intesity, the more actors have common interests
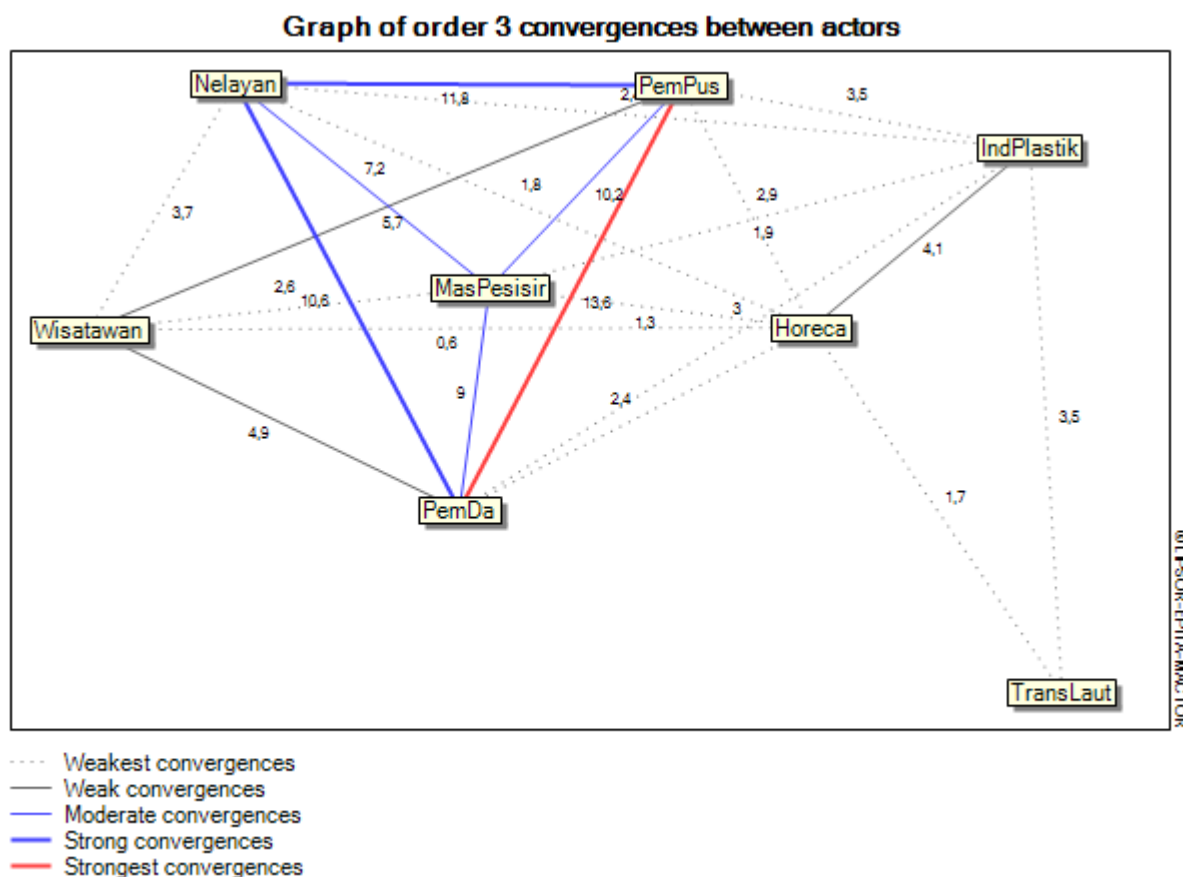
b) Map of order 3 convergences between actors

The map of convergences between actors maps the actors with respect to their convergences (data in matrices 1CAA, 2CAA, 3CAA). That is, the closer actors are to each other, the more their convergence is intense. This map is used to create a graph of actors' convergences.

Map of order 3 convergences between actors

c) Graph of order 3 convergences between actors

The graph of convergences between actors maps the actors with respect to their convergences (data in matrices 1CAA, 2CAA, 3CAA). That is, the closer actors are to each other, the more their convergence is intense.

Graph of order 3 convergences between actors

---- Weakest convergences
—— Weak convergences
—— Moderate convergences
—— Strong convergences
—— Strongest convergences

4. DIVERGENCE BETWEEN ACTORS

1. Order 1 divergence
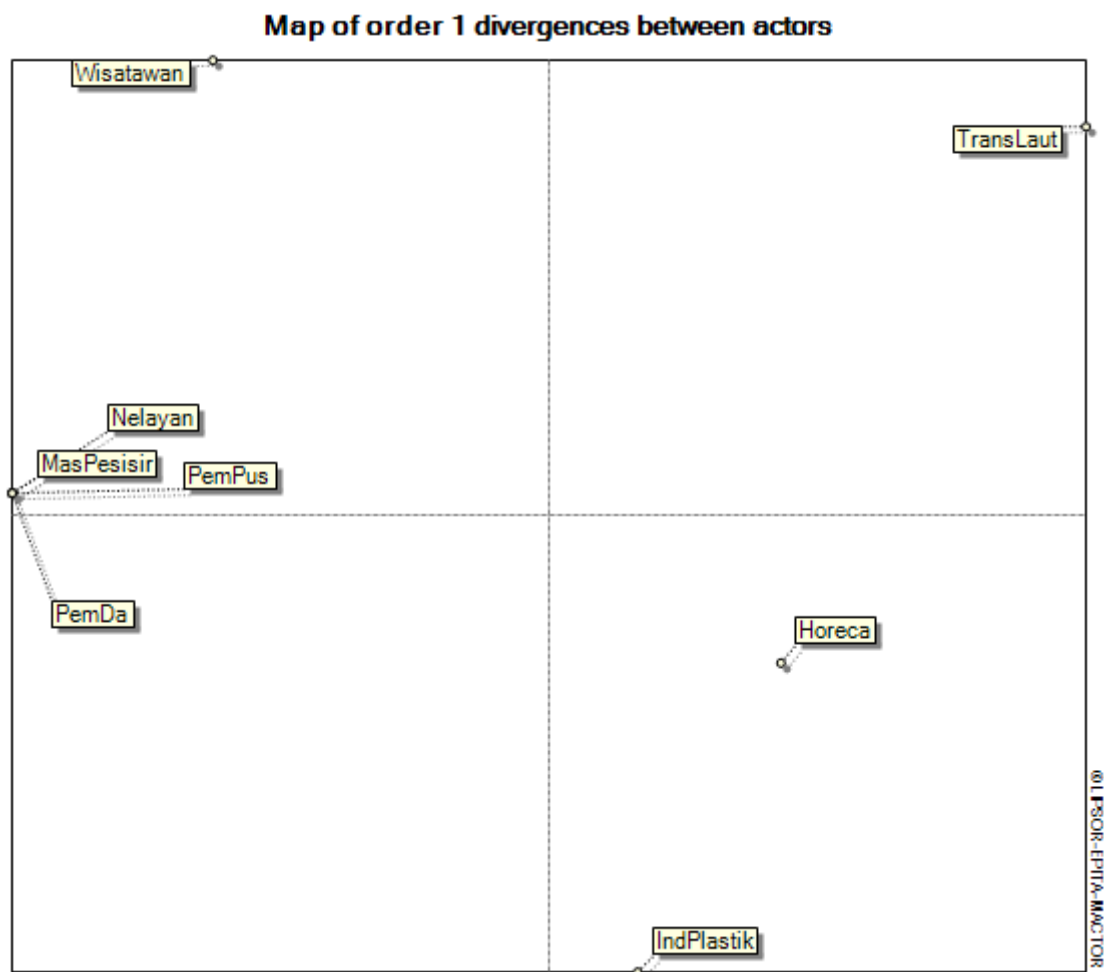
a) Divergence matrix (1DAA)

The Matrix of divergences of objectives between actor or simple Divergences Actors X Actors (1DAA) identifies for each couple of actors the number of objectives on which these actors do not hold the same position (one actor is pre the objective and the other is against it). In other words it describes the number of potential conflicts. "Neutral" and "indifferent" positions (with code "0") are not taken into consideration. This is a symmetrical matrix.

1DAA	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus
MasPesisir	0	2	0	1	1	0	0	0
TransLaut	2	0	1	0	1	2	2	2
Wisatawan	0	1	0	1	1	0	0	0
Horeca	1	0	1	0	0	1	1	1
IndPlastik	1	1	1	0	0	1	1	1
Nelayan	0	2	0	1	1	0	0	0
PemDa	0	2	0	1	1	0	0	0
PemPus	0	2	0	1	1	0	0	0
Number of divergences	4	10	3	5	6	4	4	4

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The values represent the degree of divergence: the higher the intesity, the more actors have diverging interests
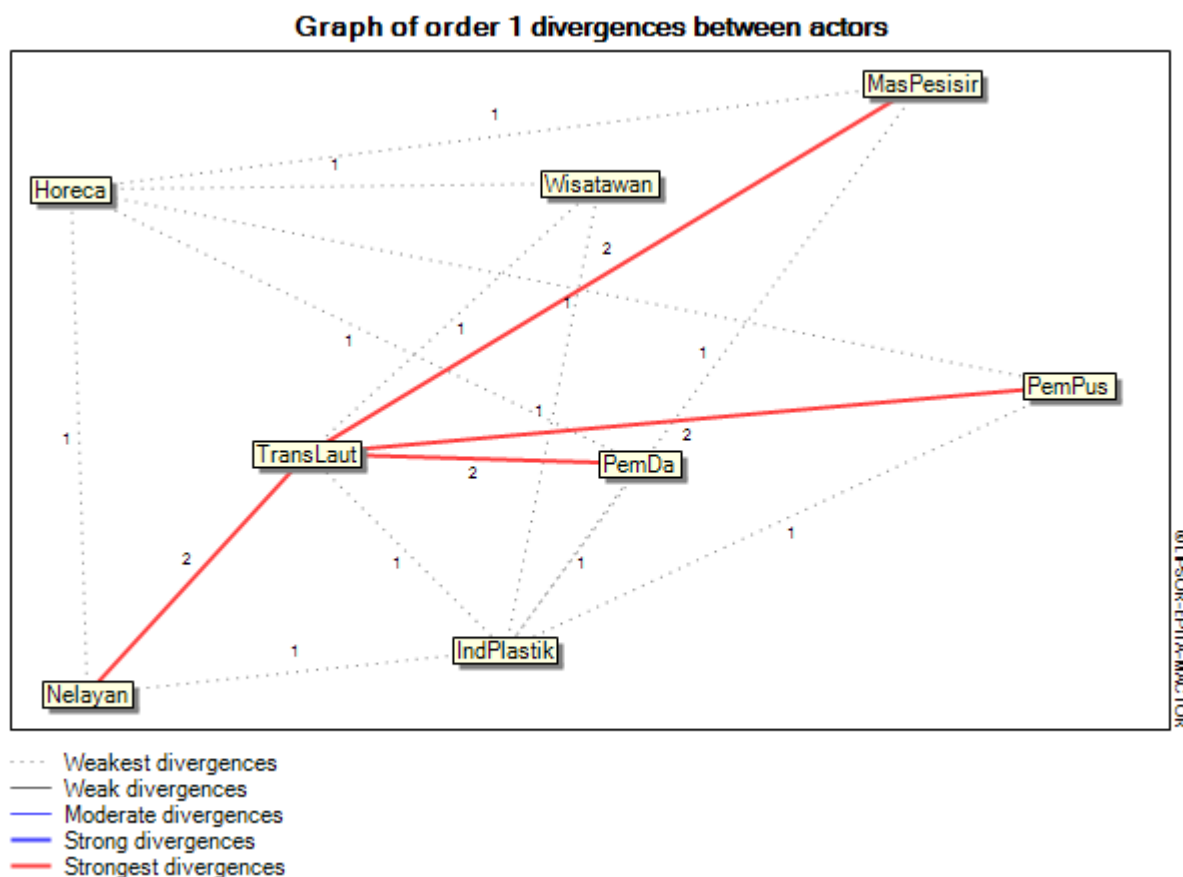
b) Map of order 1 divergences between actors

This maps the actors' positions according to their valued divergences (data found in Matrix 2DAA). That is, the further apart actors are to each other, the more their divergence is intense.

Map of order 1 divergences between actors

c) Graph of order 1 divergences between actors

The graph of divergences between actors, maps the actors of order 2 with respect to their divergences (data in matrices 1DAA). It helps to identify potential alliances and conflicts.

Graph of order 1 divergences between actors

- ······ Weakest divergences
- ——— Weak divergences
- ——— Moderate divergences
- ━━━ Strong divergences
- ━━━ Strongest divergences

2. Order 2 divergence

a) Valued divergence matrix (2DAA)

The Matrix of valued divergences or valued Divergences Actors X Actors (2DAA) is related to the Matrix of valued positions Actors X Objectives (2MAO). It identifies for each couple of actors the number of objectives for which these actors do not hold the same position (one actor is pro the objective and the other is against it). The values in this matrix do not measure the number of potential conflicts (as in 1DAA), but rather the conflict intensity with the objectives hierarchy (preferences) of the couple of actors. This is a symmetrical matrix.

| 2DAA	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus
MasPesisir	0,0	5,5	0,0	3,5	3,5	0,0	0,0	0,0
TransLaut	5,5	0,0	2,0	0,0	1,0	5,5	4,5	4,5
Wisatawan	0,0	2,0	0,0	2,5	2,5	0,0	0,0	0,0
Horeca	3,5	0,0	2,5	0,0	0,0	3,5	3,0	3,0
IndPlastik	3,5	1,0	2,5	0,0	0,0	3,5	3,0	3,0
Nelayan	0,0	5,5	0,0	3,5	3,5	0,0	0,0	0,0
PemDa	0,0	4,5	0,0	3,0	3,0	0,0	0,0	0,0
PemPus	0,0	4,5	0,0	3,0	3,0	0,0	0,0	0,0
Number of divergences	12,5	23,0	7,0	15,5	16,5	12,5	10,5	10,5
Degree of divergence (%)	32,9							

The values represent the degree of divergence: the higher the intesity, the more actors have diverging interests

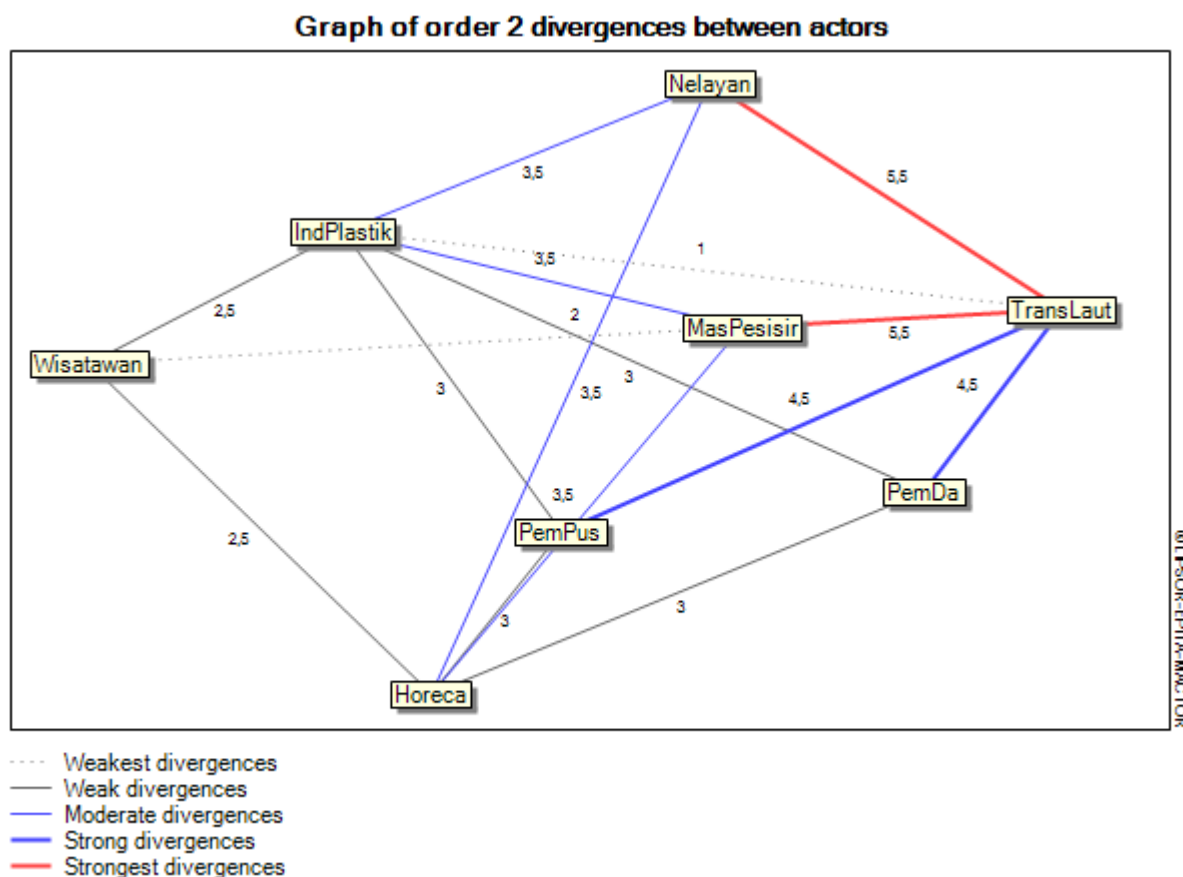### b) Map of order 2 divergences between actors

This maps the actors' positions according to their valued divergences (data found in Matrix 2DAA). That is, the further apart actors are to each other, the more their divergence is intense.

Map of order 2 divergences between actors
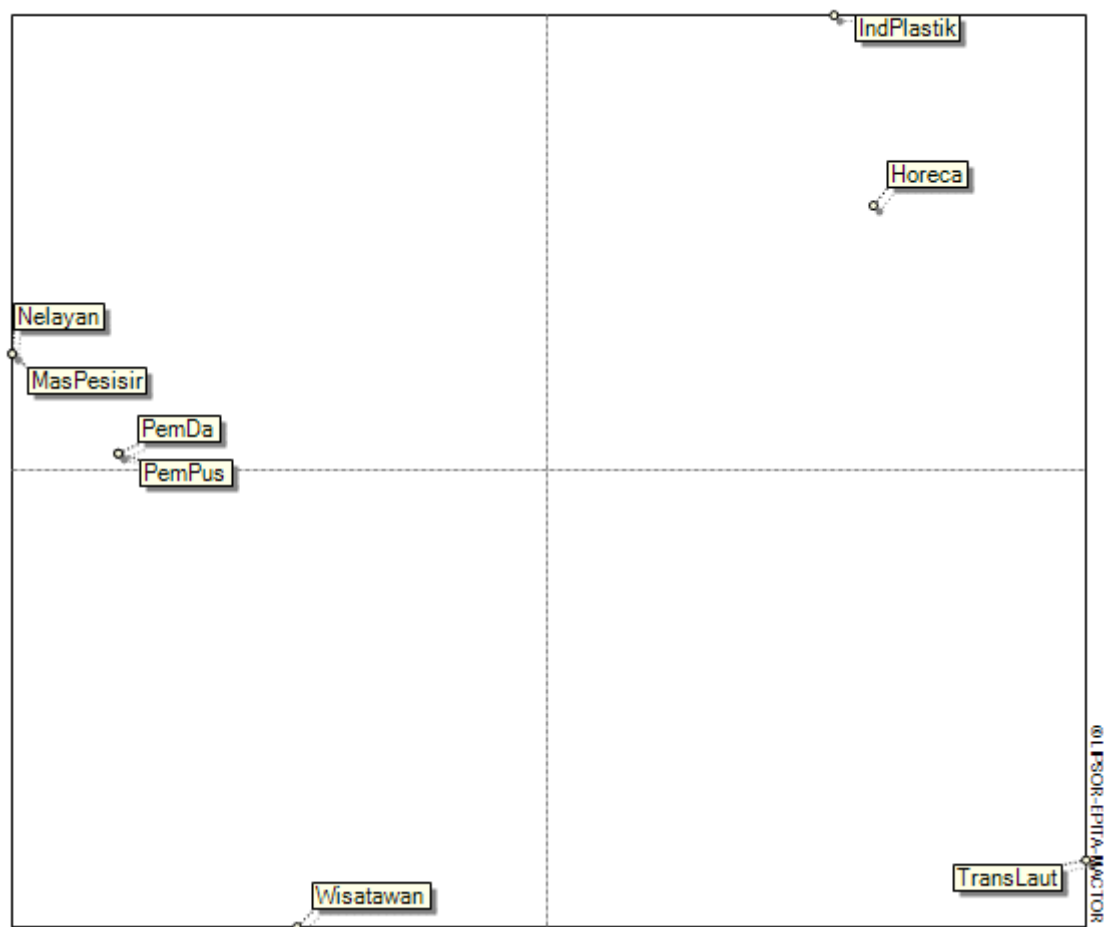
c) Graph of order 2 divergences between actors

The graph of divergences between actors, maps the actors of order 2 with respect to their divergences (data in matrices 2DAA). It helps to identify potential alliances and conflicts.

Graph of order 2 divergences between actors

- ···· Weakest divergences
- — Weak divergences
- — Moderate divergences
- — Strong divergences
- — Strongest divergences

3.   Order 3 Divergence

a) Weighted valued divergence matrix (3DAA)

The weighted valued matrix of divergences or weighted valued Divergences Actors X Actors (3DAA) is related to the weighted valued position matrix Actors X Objectives (3MAO). It identifies for each couple the average divergence intensity for those two actors who do not hold the same position (one actor is pro the objective and the other is against it). The values of this Matrix measure the conflict intensity with, for every couple, their objectives hierarchies (preferences) and their competitiveness. This is a symmetrical matrix.

| 3DAA	MasPesisir	TransLaut	Wisatawan	Horeca	IndPlastik	Nelayan	PemDa	PemPus
MasPesisir	0,0	2,7	0,0	2,1	3,9	0,0	0,0	0,0
TransLaut	2,7	0,0	1,0	0,0	1,3	3,8	5,0	5,8
Wisatawan	0,0	1,0	0,0	1,6	3,4	0,0	0,0	0,0
Horeca	2,1	0,0	1,6	0,0	0,0	2,6	3,2	3,6
IndPlastik	3,9	1,3	3,4	0,0	0,0	4,4	5,0	5,4
Nelayan	0,0	3,8	0,0	2,6	4,4	0,0	0,0	0,0
PemDa	0,0	5,0	0,0	3,2	5,0	0,0	0,0	0,0
PemPus	0,0	5,8	0,0	3,6	5,4	0,0	0,0	0,0
Number of divergences	8,6	19,5	6,1	13,2	23,4	10,8	13,2	14,8
Degree of divergence (%)	0,0							

The values represent the degree of divergence: the higher the intesity, the more actors have diverging interests

b) Map of order 3 divergences between actors

This maps the actors' positions according to their valued divergences (data found in Matrix 3DAA). That is, the further apart actors are to each other, the more their divergence is intense.

Map of order 3 divergences between actors
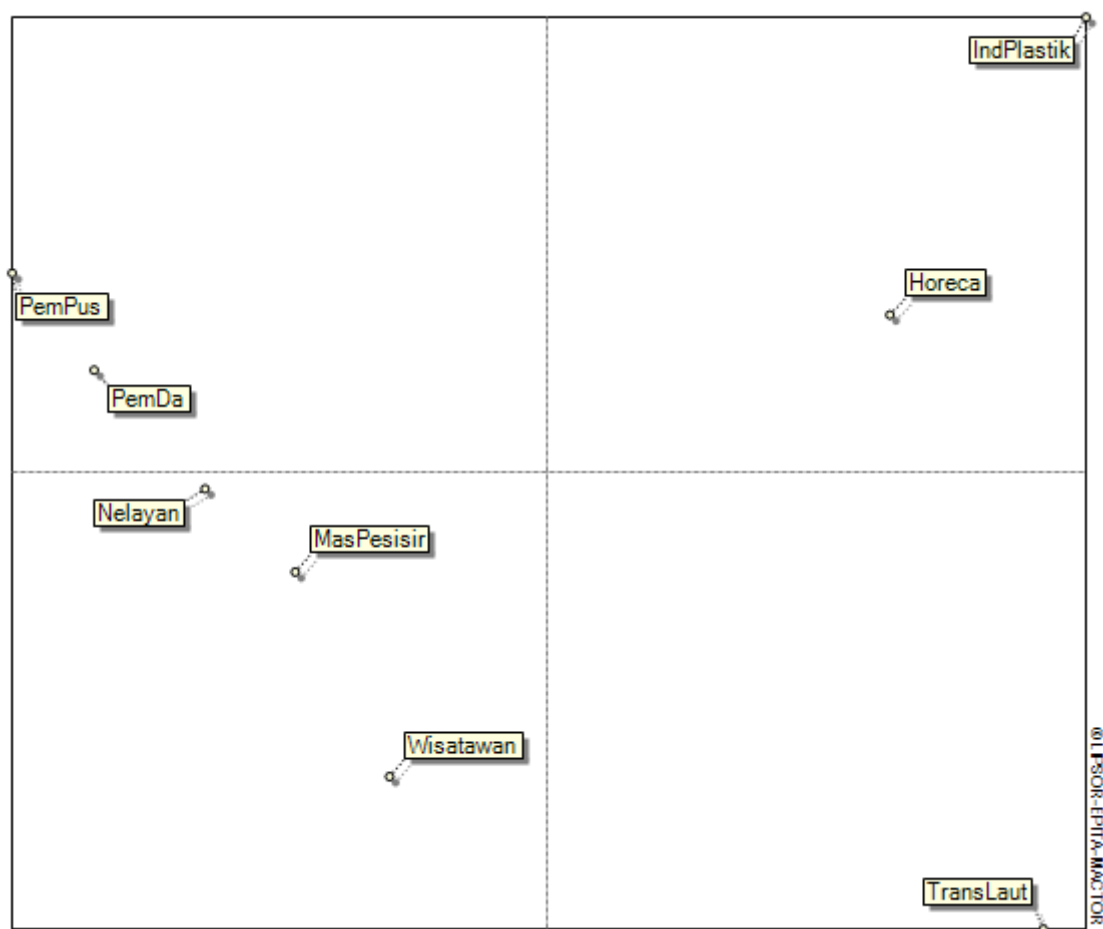
c) Graph of order 3 divergences between actors

The graph of divergences between actors, maps the actors of order 3 with respect to their divergences (data in matrices 3DAA). It helps to identify potential alliances and conflicts.

Graph of order 3 divergences between actors

Legend:
- ···· Weakest divergences
- — Weak divergences
- — Moderate divergences
- — Strong divergences
- — Strongest divergences

## 5. ACTOR AMBIVALENCE

1. Actor's ambivalence matrix

Two actors can share both converging and diverging positions on different objectives. Hence, we call this couple of actors ambivalent. If they wish to become allies, they have to work only on those common objectives, and put aside their diverging objectives. Actor ambivalence is calculated with three equilibrium indicators using their simple, valued, then valued and weighted positions.

	EQI[1]	EQI[2]	EQI[3]
MasPesisir	0,2	0,2	0,2
TransLaut	0,2	0,1	0,1
Wisatawan	0,2	0,1	0,1
Horeca	0,8	0,6	0,6
IndPlastik	0,8	0,6	0,6
Nelayan	0,2	0,2	0,2
PemDa	0,2	0,2	0,2
PemPus	0,2	0,2	0,2

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This indicator varies from 1 (very ambivalent actors) to 0 (not ambivalent actors).

2. Histogram of actor's ambivalence

This histogram is produced from the actor ambivalence vector.
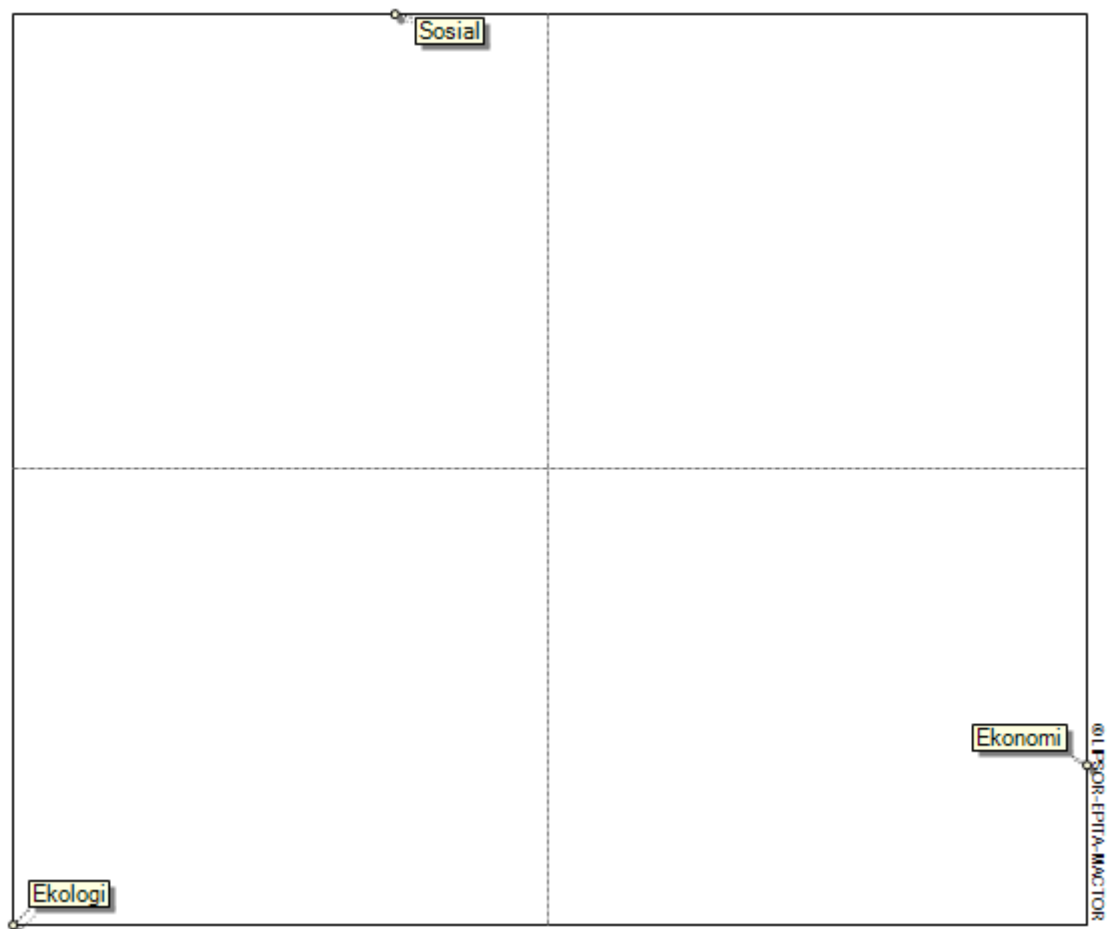
Histogram of actor's ambivalence
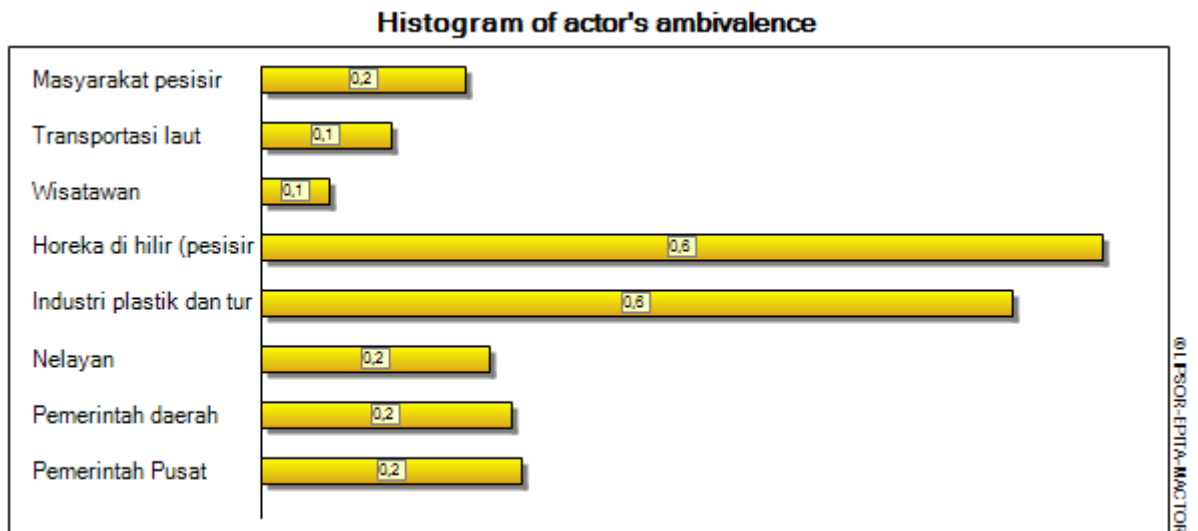
6. NET DISTANCE BETWEEN OBJECTIVES

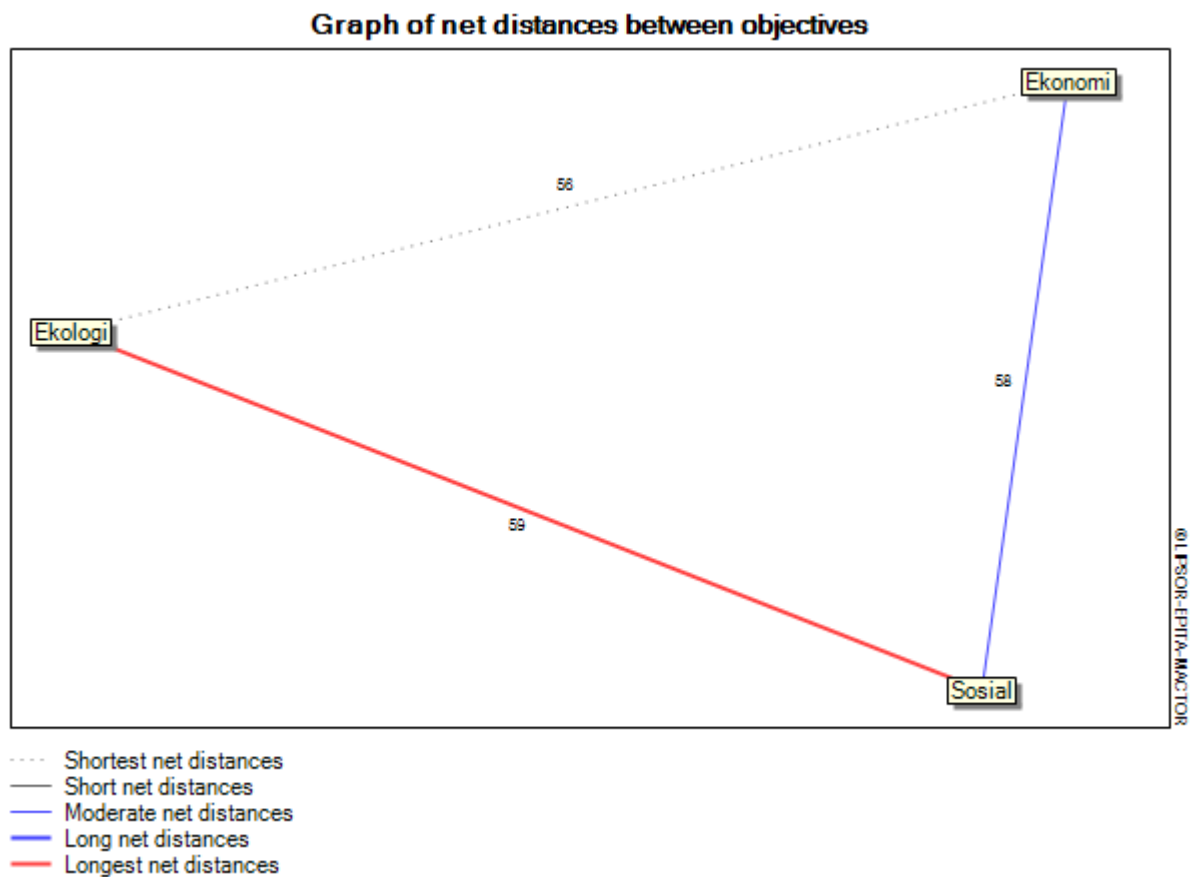### 1. Map of net distances between objectives

This map is used to identify objectives on which actors take the same position (either pro or against). It hence enables to isolate groups of objectives where there is a strong convergence (when objectives are close together) or divergence (when objectives are far apart) on the part of actors' opinion. It also maps objectives with respect to the net scale (the difference between the valued convergence matrix and the valued divergence matrix, respectively 2COO and 2DOO).

Map of net distances between objectives

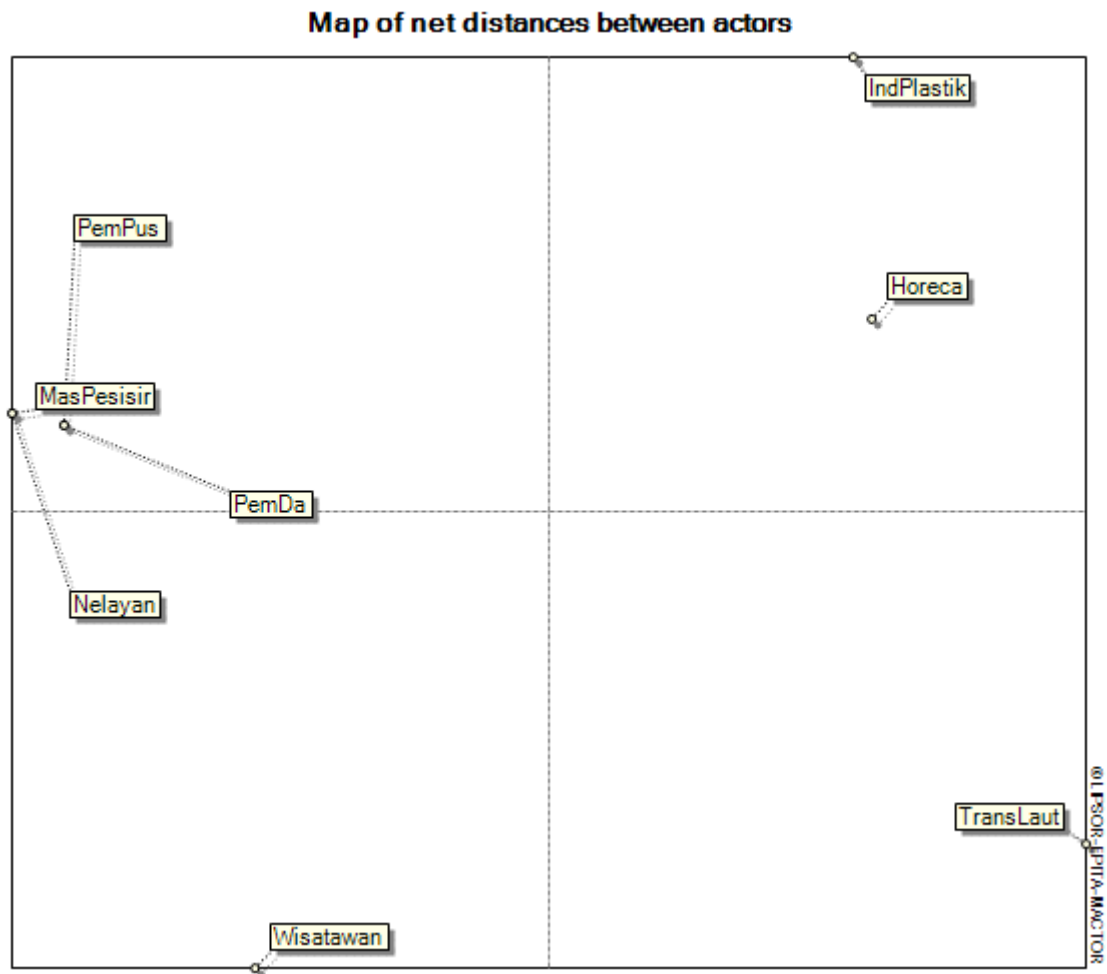## 2. Graph of net distances between objectives

This graph is used to identify objectives on which actors take the same position (either pro or against). The stronger the link between objectives, the higher the convergence of actors' opinions on these objectives.

Graph of net distances between objectives

- Shortest net distances
- Short net distances
- Moderate net distances
- Long net distances
- Longest net distances

7. NET DISTANCES BETWEEN ACTORS

1. Map of net distances between actors

The map of net distances between actors is used to recognise potential alliances while taking into account divergences and convergences between actors of order 2.

Map of net distances between actors

2.   Graph of net distances between actors

The graph of net distances between actors is used to recognise potential alliances while taking into account divergences and convergences between actors of order 2.

Graph of net distances between actors

- .... Shortest net distances
- ——— Short net distances
- ——— Moderate net distances
- ——— Long net distances
- ——— Longest net distances