

DAFTAR PUSTAKA

Ameliyah, N. H. 2018. *Model Perencanaan Kawasan Permukiman Di Kabupaten Maros Berbasis Spasial* [Skripsi]. Makassar: Program Studi Geofisika, Jurusan Fisika, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Hasanuddin.

Arif, S. 2016. *Model Geospasial Sistem Penunjang Keputusan (Geospatial Decision Support System) Manajemen Lahan Pangan* [Disertasi]. Makassar: Program Pasca Sarjana Universitas Hasanuddin.

Arifin, A. Z dan Murni, A. 2001. *Algoritma Clustering Adaptif untuk Klasifikasi Citra Penginderaan Jauh Multispektral*. Depok: Proseding Seminar Nasional Kecerdasan Komputasional II ICIS. Vol. 2. No. 1. Universitas Indonesia.

Aronoff, Stan. 1989. *Geographic Information System: A Management Perspective*. Ottawa: WDL Publications.

Arsyad, S. 1989. *Konservasi Tanah dan Air*. Bogor: IPB Press.

Ashish, D. 2002. *Land-use classification of aerial images using artificial neural networks* [Thesis]. Athens, U.S.A.: M.S. Artificial Intelligence. University of Georgia.

Atkinson, P. and A. Tatnall. 1997. *Neural Network in Remote Sensing*. *International Journal of Remote Sensing*.



Baja, S. 2012. *Perencanaan Tata Guna Lahan dalam Pengembangan Wilayah*. Yogyakarta: Penerbit Andi.

Barlowe, R. 1986. *Land Resources Economic : The Economics of Real Estate Fourth Edition*. New Jersey: Prentice Hall. Inc. Englewood Cliffs.

Brinkman, A.R. dan A.J Smyth. 1973. *Land Evaluation for Rural Purposes*. Wageningen: ILRI Publ. No. 17.

Campbell, J. E., & Shin, M. 2012. *Geographic Information System Basics*. Los Angeles, California: Creative Commons.

Danoedoro, P., Sammut, J., Farda, N. M., dan Widyatmanti, W. 2008. *Combining Image Segmentation and Multispectral Classification for Generating Land-use Information: A Case Study of Maros Area, South Sulawesi, Indonesia*. Istanbul, Turkey: Paper presented at the Joint 4th EARSEL Special Interest Group on Developing Countries and 8th GISDECO Conference: Integrating GIS and Remote Sensing in a Dynamic World, 4-7 June 2008.

Delamater P, J., P. Messina, A. M. Shortridge, and S. C. Grady. 2012. *Measuring geographic access to healthcare: a raster and vector based approach*. International Journal of Health Geographics.

Di Gregorio, A., & Jansen, L. J. 2009. *Land Cover Classification System (LCCS): Classification Concepts and User Manual*. Rome: Food and Agriculture

Organization of the United Nations.



FAO and UNEP. 1999. *The Future of Our Land Facing the Challenge*. Rome: Land and Water Development Division of the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the United Nations Environment Programme (UNEP).

Gong P, Wang J, Yu L, Zhao YC, Zhao YY, Liang L, Niu ZG, Huang XM, Fu HH, Liu S, Li CC, Li XY, Fu W, Liu CX, Xu Y, Wang XY, Cheng Q, Hu LY, Yao WB, Zhang H, Zhu P, Zhao ZY, Zhang HY, Zheng YM, Ji LY, Zhang YW, Chen H, Yan A, Guo JH, Wang L, Liu XJ, Shi TT, Zhu MH, Chen YL, Yang GW, Tang P, Xu B, Giri C, Clinton N, Zhu ZL, Chen J, Chen J. 2013. *Finer resolution observation and monitoring of global land cover: first mapping results with Landsat TM and ETM+ data*. International Journal of Remote Sensing.

Jia K, Xiangqin W, Xingfa G, Yunjun Y, Xianhong X, Bin L. 2014. *Land cover classification using Landsat 8 Operational Land Imager data in Beijing, China*.

Kim SD, Mizuno K, Kobayashi S. 2002. *Analysis of land use Change System Using The Species Competition Concept*. Landscape and Urban Planning Elsevier Science B. V.

Lillesand MT, Kiefer RW. 1993. *Pengindraan Jauh dan Interpretasi Citra*. Yogyakarta: Gajah Mada University Press.

D. 2005. An Overview and Definition of GIS. *Journal of Geographical Information systems: Principles and applications*



Mas JF. 2004. *Mapping land use/cover in a tropical coastal area using satellite sensor data, GIS and artificial neural networks. Estuarine, Coastal and Shelf Science. 59: 219-230.*

Muin SF. 2009. Analisis perubahan penggunaan lahan terhadap limpasan permukaan (surface run off) dan kebutuhan air DAS Cimanuk [Skripsi]. Bogor (ID). Institut Pertanian Bogor.

Muiz, A. 2009. *Analisis Perubahan Lahan di Kabupaten Sukabumi* [Tesis]. Bogor: Sekolah Pasca Sarjana, Institut Pertanian Bogor

Nugroho, F.S. 2010. *Pengaruh Jumlah Saluran Spektral, Korelasi Antar Saluran Spektral, dan Jumlah Kelas Objek Terhadap Akurasi Hasil Klasifikasi Penutup Lahan Menggunakan Algoritma Maximum Likelihood Berdasar Citra ASTER VNIR+SWIR* [Skripsi]. Yogyakarta: Fakultas Geografi. Universitas Gadjah Mada.

Paharuddin. 2012. *Simulasi Geospasial Berbasis Cellular Automata Perubahan Penggunaan Lahan Untuk Prediksi Sedimentasi* [Disertasi]. Makassar: Program Pasca Sarjana Universitas Hasanuddin.

Peruge, T. V. 2013. *Model Perubahan Penggunaan Lahan Menggunakan Cellular Automata - Markov Chain di Kawasan Mamminasata* [Skripsi]. Makassar: Program Studi Geofisika, Jurusan Fisika, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universtas Hasanuddin.

T. 1994. *Neural Network for Chemical Engineers*. Amsterdam: Elsevier
ss.



Pijanowski BC, Daniel GB, Bradley AS, Gaurav AM. 2002. Using neural networks and GIS to forecast land use changes: a Land Transformation Model. *Computers, Environment and Urban Systems*. 26: 553–575.

Prahasta, Eddy. 2002. *Konsep-konsep Dasar Sistem Informasi Geografis*. Bandung: Informatika

Rumelhart, D., G. Hinton and R. Williams. 1986. *Learning Internal Representations by Error Propagation*. *Parallel Distributed Processing: Explorations in the Microstructures of Cognition*.

Running SW. 2008. *Climate change: ecosystem disturbance, carbon, and climate*. Science

Siswanto. 2006. *Evaluasi Sumberdaya Lahan*. Jawa Timur: UPN Press.

Soerianegara, I. 1977. *Pengelolaan Sumber Daya Alam*. Bogor: Sekolah Pascasarjana IPB.

Suhartono, D. 2012. Dasar Pemahaman Neural Network. Melalui: <https://socs.binus.ac.id/2012/07/26/konsep-neural-network/> [18/04/18]

Sutanto. 1986. *Penginderaan Jauh Jilid I*. Yogyakarta: Gadjah Mada University Press.

Vink, APA. 1975. *Landuse Inadvancing Africulture Springer Verlag*. New York Helderberg



Wulandhari, L, A. 2017. *Artificial Neural Network Part 1*. Melalui:

<<https://socs.binus.ac.id/2017/02/27/artificial-neural-network-part-1/>>

[18/04/18]

Wulandhari, L, A. 2017. *Artificial Neural Network Part 2*. Melalui:

<<http://socs.binus.ac.id/2017/03/20/artificial-neural-network-part-2/>>

[18/04/18]

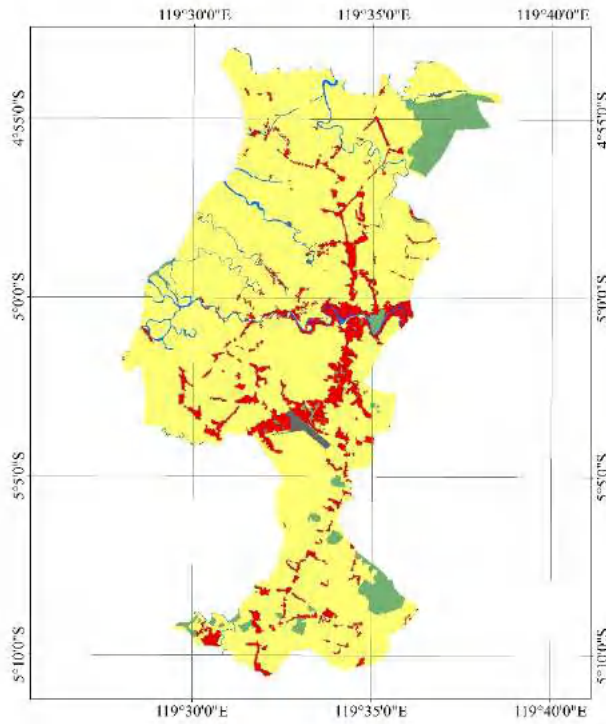


LAMPIRAN

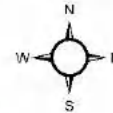


LAMPIRAN 1

Peta Tutupan Lahan

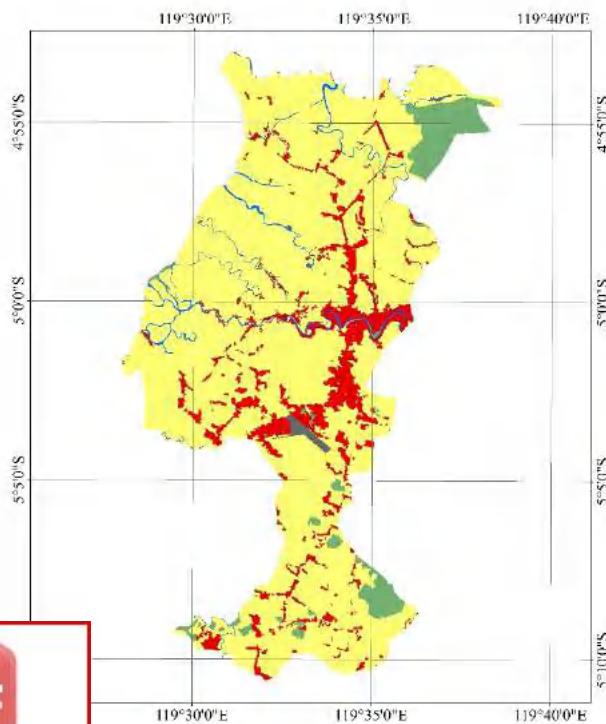


PETA TUTUPAN LAHAN TAHUN 2012

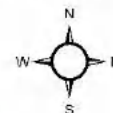


Legenda

- Hutan
- Lahan Lainnya
- Lahan Pertanian
- Permukiman
- Tubuh Air



PETA TUTUPAN LAHAN TAHUN 2015

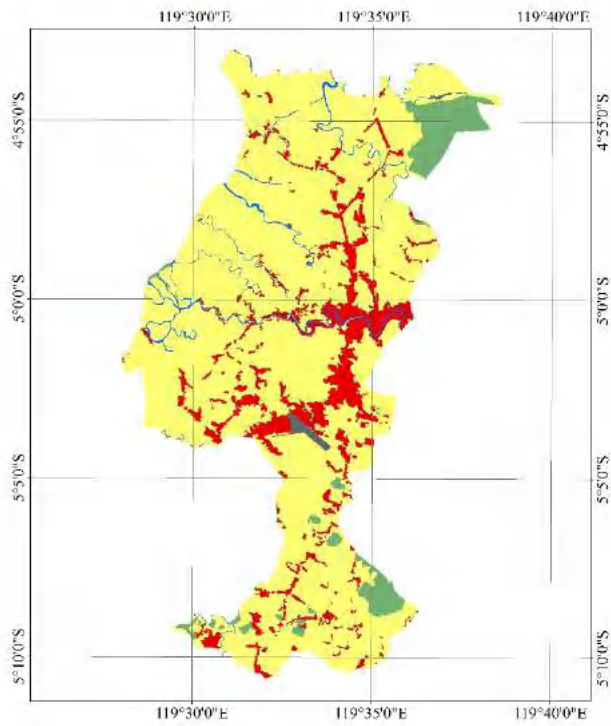


Legenda

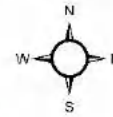
- Hutan
- Lahan Lainnya
- Lahan Pertanian
- Permukiman
- Tubuh Air



Optimization Software:
www.balesio.com

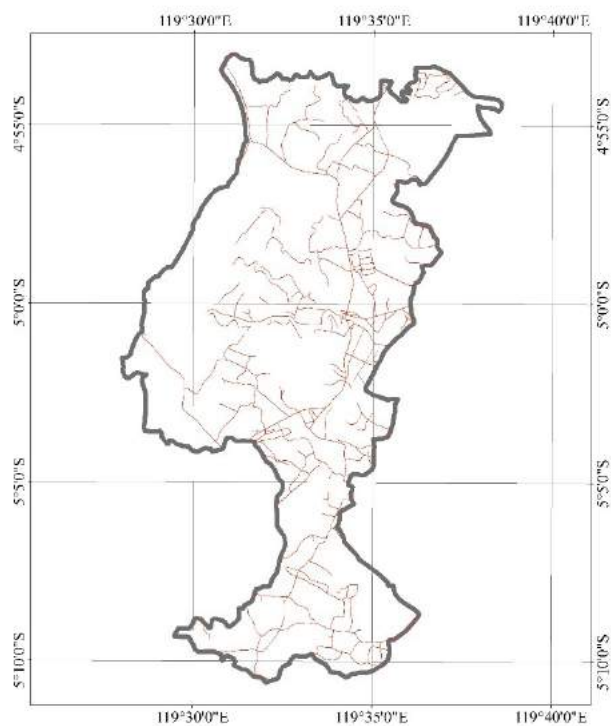


PETA TUTUPAN LAHAN TAHUN 2018

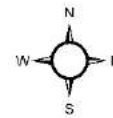


Legenda

- Hutan
- Lahan Lainnya
- Lahan Pertanian
- Permukiman
- Tubuh Air



PETA JALAN DAERAH PENELITIAN



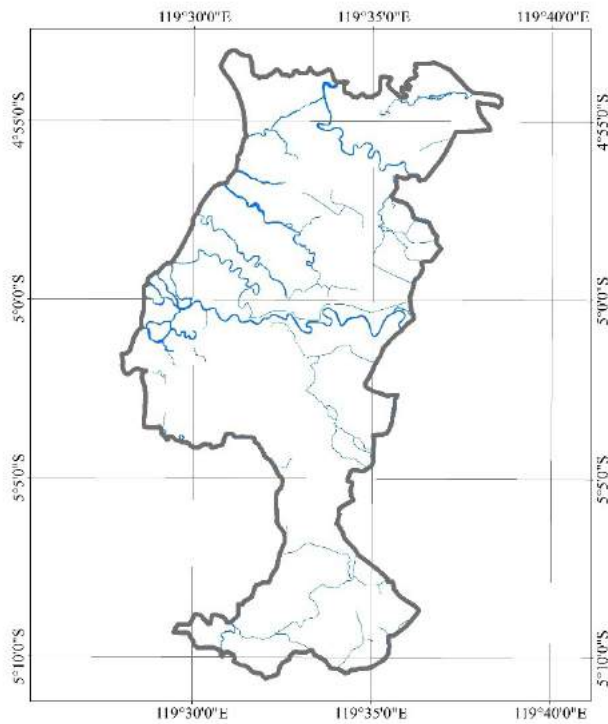
Legenda

- Jalan
- Daerah Penelitian

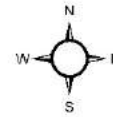




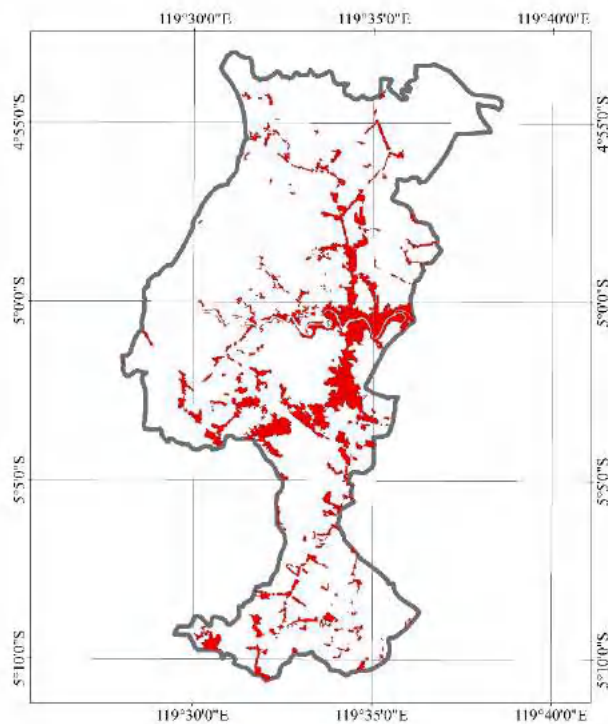
Optimization Software:
www.balesio.com



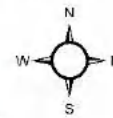
PETA TUBUH AIR DAERAH PENELITIAN



Legenda
■ Tubuh Air
□ Daerah Penelitian



PETA PERMUKIMAN DAERAH PENELITIAN



Legenda
■ Permukiman
□ Daerah Penelitian





Optimization Software:
www.balesio.com

LAMPIRAN 2

Uji Nilai Cramer's V

Evaluate : Jarak Ke Jalan

Test Explanatory Power

Add to Model

Cover Class :	Cramer's V :	P Value :
Overall V	0.2267	0.0000
Lahan Lainnya	0.3799	0.0000
Lahan Pertanian	0.3399	0.0000
Permukiman	0.2676	0.0000
Hutan	0.0569	0.0000
Tubuh Air	0.0000	1.0000

Evaluate : Jarak Ke Tubuh Air

Test Explanatory Power

Add to Model

Cover Class :	Cramer's V :	P Value :
Overall V	0.1890	0.0000
Hutan	0.3635	0.0000
Permukiman	0.1565	0.0000
Lahan Lainnya	0.1330	0.0000
Lahan Pertanian	0.0842	0.0000
Tubuh Air	0.0000	1.0000

Evaluate : Jarak Ke Permukiman

Test Explanatory Power

Add to Model

Cover Class :	Cramer's V :	P Value :
Overall V	0.3528	0.0000
Lahan Lainnya	0.6516	0.0000
Permukiman	0.5321	0.0000
Lahan Pertanian	0.4329	0.0000
Hutan	0.1028	0.0000
Tubuh Air	0.0000	1.0000

Evaluate : PENDUDUK_MAROS

Test Explanatory Power

Add to Model

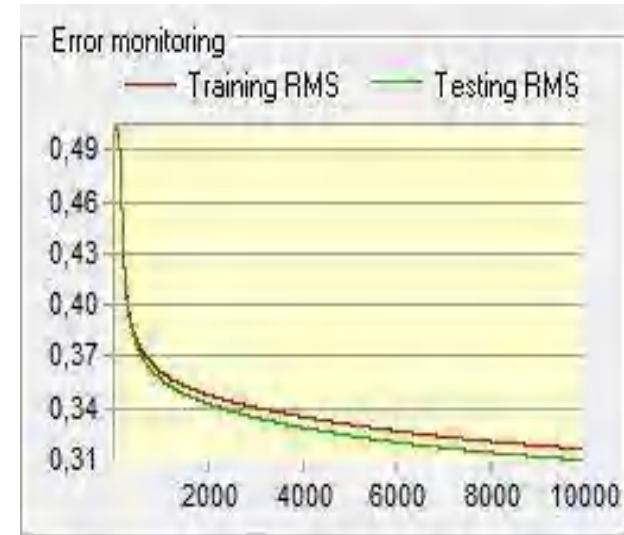
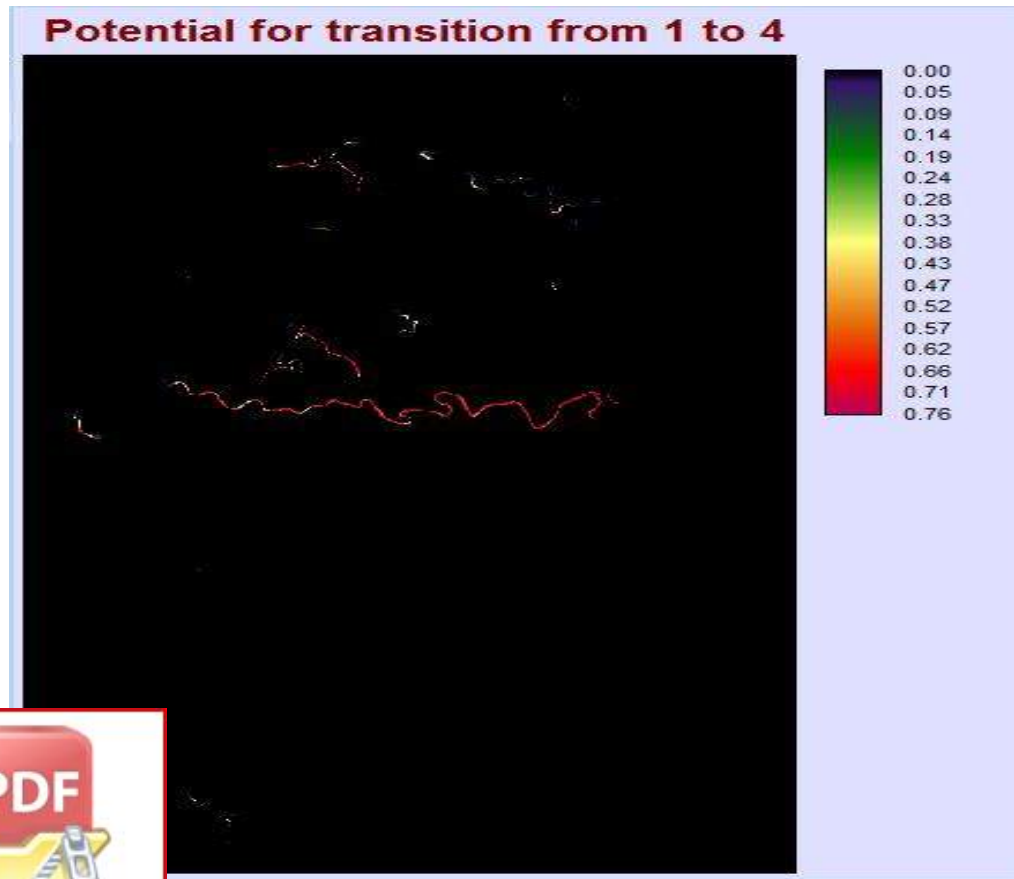
Cover Class :	Cramer's V :	P Value :
Overall V	0.4466	0.0000
Lahan Lainnya	0.8934	0.0000
Permukiman	0.7028	0.0000
Lahan Pertanian	0.4291	0.0000
Hutan	0.1254	0.0000
Tubuh Air	0.0000	1.0000



LAMPIRAN 3

Transition Potential

1. Tubuh Air – Permukiman

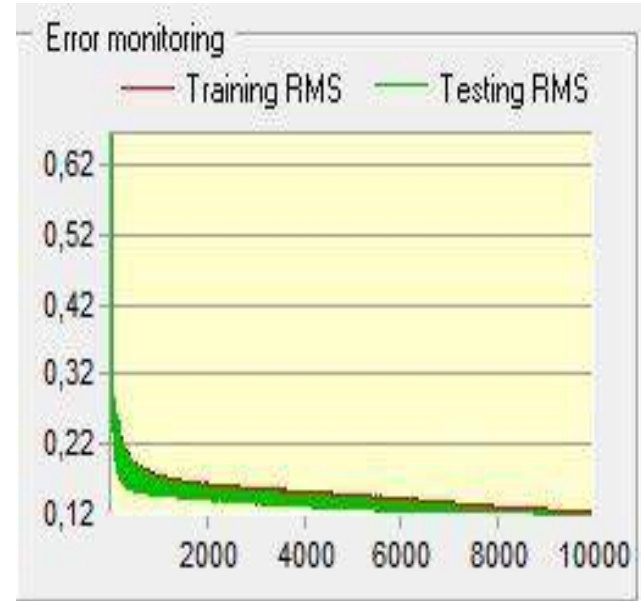


Running statistics

Iterations :	10000
Learning rate :	0.0001
Training RMS :	0.3137
Testing RMS :	0.3073
Accuracy rate :	86.85%



2. Hutan – Permukiman

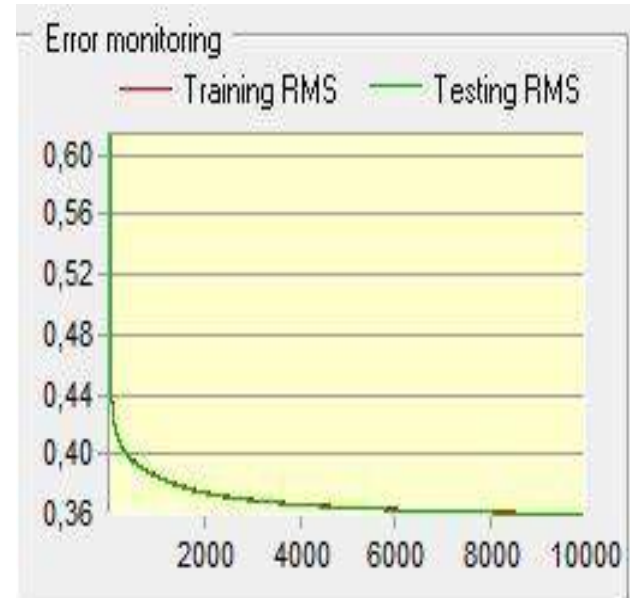
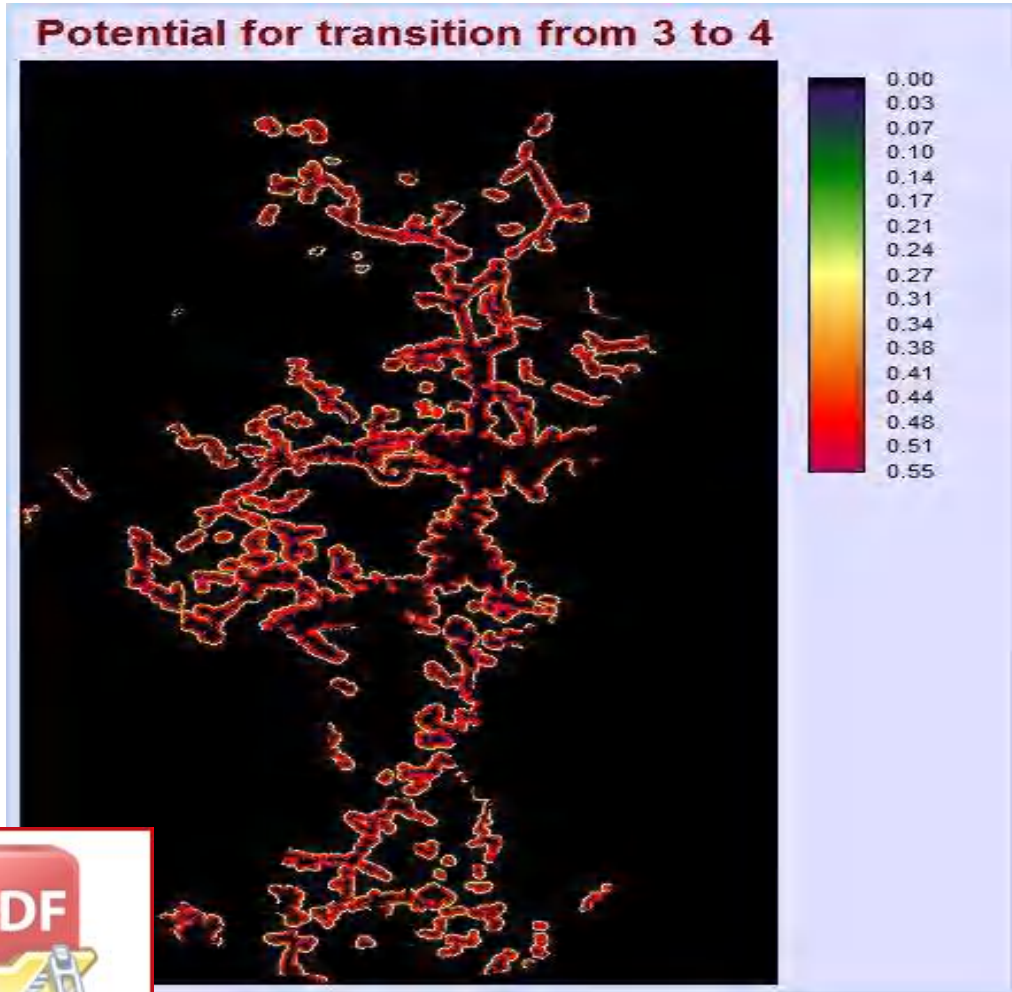


Running statistics

Iterations :	10000
Learning rate :	0.0001
Training RMS :	0.1278
Testing RMS :	0.1234
Accuracy rate :	98.28%



3. Lahan Pertanian – Permukiman

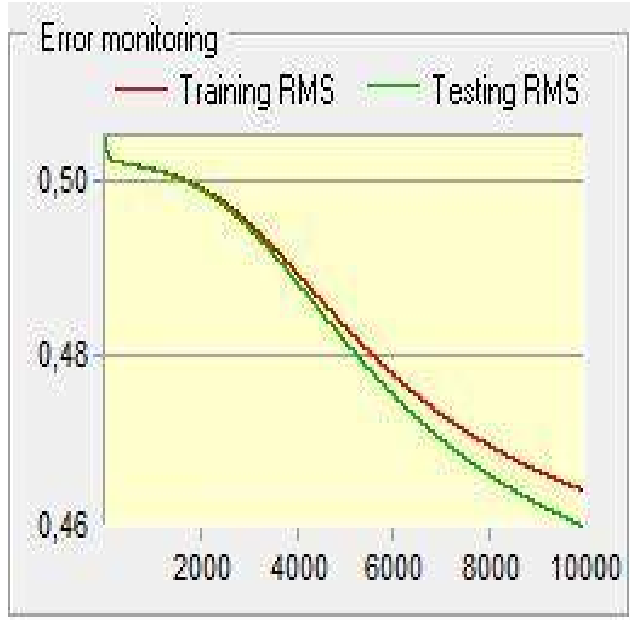


Running statistics

Iterations :	10000
Learning rate :	0.0001
Training RMS :	0.3621
Testing RMS :	0.3618
Accuracy rate :	95.44%

Optimization Software:
www.balesio.com

4. Lahan Lainnya - Permukiman



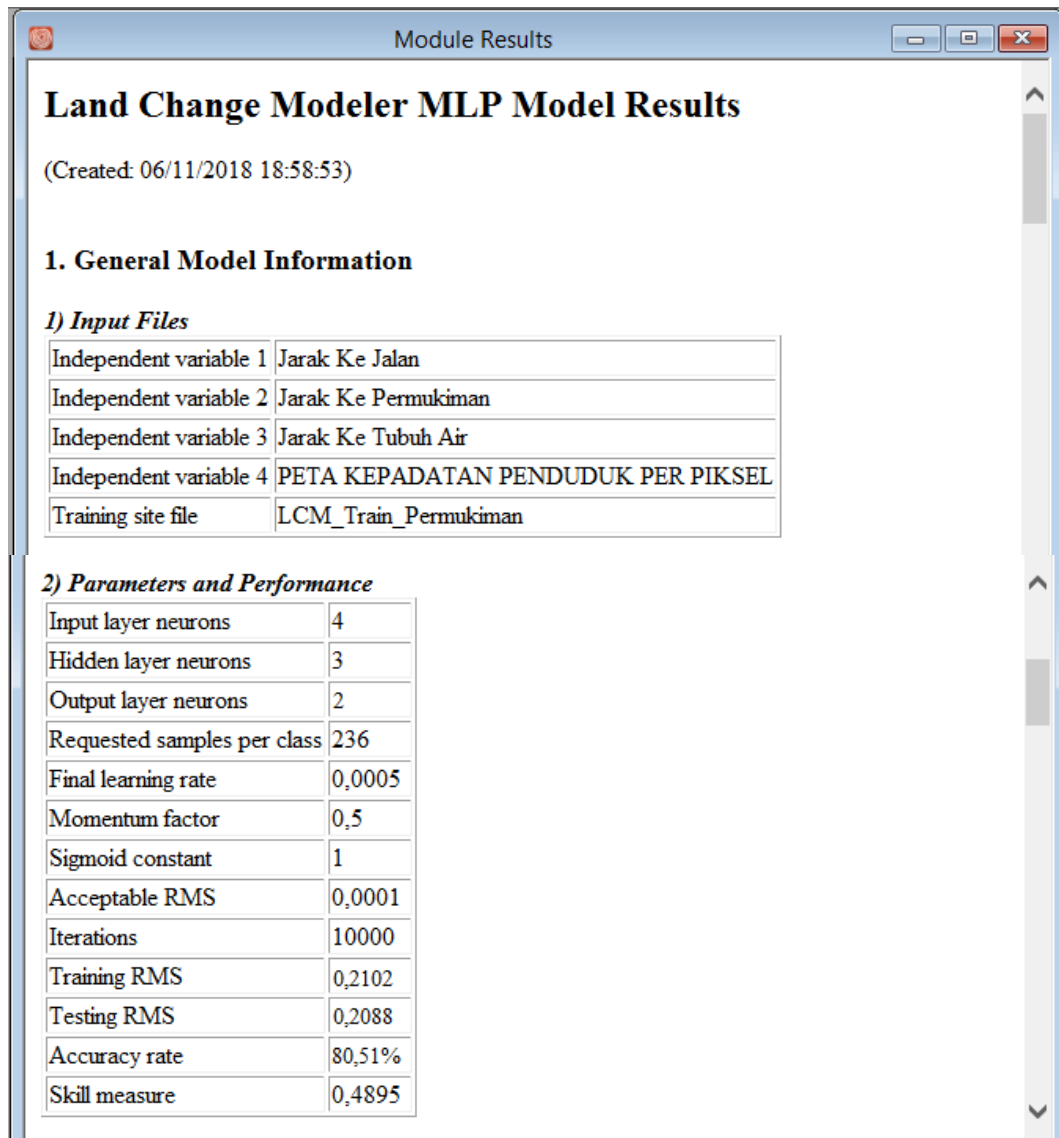
Running statistics

Iterations :	10000
Learning rate :	0.0001
Training RMS :	0.4617
Testing RMS :	0.4576
Accuracy rate :	81.36%

Optimization Software:
www.balesio.com

LAMPIRAN 4

MLP Model Results



LAMPIRAN 5

Probabilitas Markov

Given :	Probability of changing to : 2021				
	Tubuh Air	Hutan	Lahan Pertanian	Permukiman	Lahan Lainnya
Tubuh Air	0.9859	0.0000	0.0000	0.0141	0.0000
Hutan	0.0000	0.9054	0.0000	0.0946	0.0000
Lahan Pertanian	0.0000	0.0000	0.9675	0.0325	0.0000
Permukiman	0.0000	0.0000	0.0000	1.0000	0.0000
Lahan Lainnya	0.0000	0.0000	0.0000	0.0081	0.9919

Given :	Probability of changing to : 2024				
	Tubuh Air	Hutan	Lahan Pertanian	Permukiman	Lahan Lainnya
Tubuh Air	0.9790	0.0000	0.0000	0.0210	0.0000
Hutan	0.0000	0.8616	0.0000	0.1384	0.0000
Lahan Pertanian	0.0000	0.0000	0.9516	0.0484	0.0000
Permukiman	0.0000	0.0000	0.0000	1.0000	0.0000
Lahan Lainnya	0.0000	0.0000	0.0000	0.0121	0.9879

Given :	Probability of changing to : 2027				
	Tubuh Air	Hutan	Lahan Pertanian	Permukiman	Lahan Lainnya
Tubuh Air	0.9721	0.0000	0.0000	0.0279	0.0000
Hutan	0.0000	0.8198	0.0000	0.1802	0.0000
Lahan Pertanian	0.0000	0.0000	0.9360	0.0640	0.0000
Permukiman	0.0000	0.0000	0.0000	1.0000	0.0000
Lahan Lainnya	0.0000	0.0000	0.0000	0.0162	0.9838



LAMPIRAN 6

Kappa Accuracy

Module Results

Proportional Crosstabulation

	0	1	2	3	4	5	Total
0	0.5265	0.0000	0.0000	0.0000	0.0000	0.0000	0.5265
1	0.0000	0.0080	0.0000	0.0000	0.0000	0.0000	0.0080
2	0.0000	0.0000	0.0248	0.0000	0.0001	0.0000	0.0249
3	0.0000	0.0000	0.0000	0.3775	0.0030	0.0000	0.3805
4	0.0000	0.0001	0.0009	0.0056	0.0514	0.0000	0.0580
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0023	0.0023
Total	0.5265	0.0080	0.0257	0.3831	0.0545	0.0023	1.0000

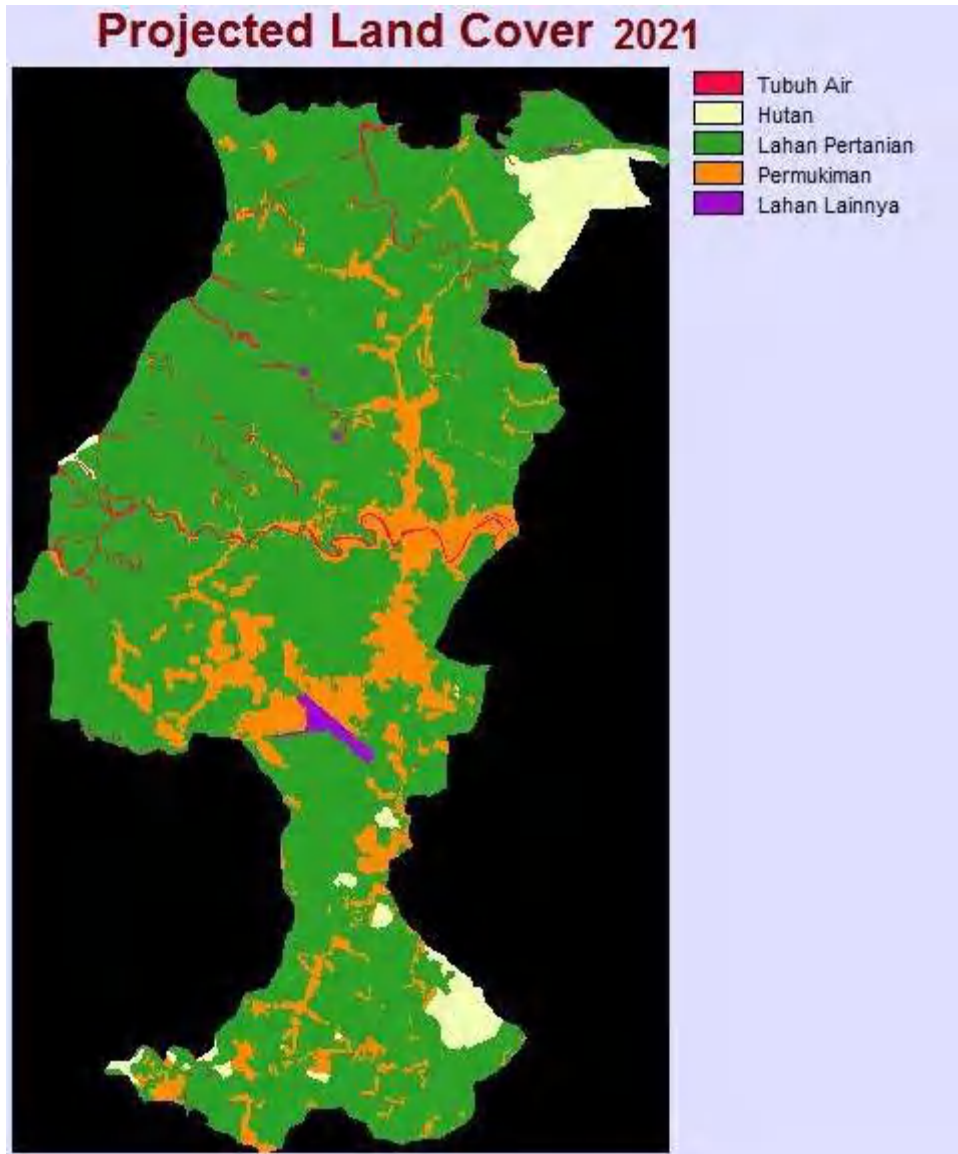
Overall Kappa 0.9832

Print Contents Save to File Copy to Clipboard Close Help

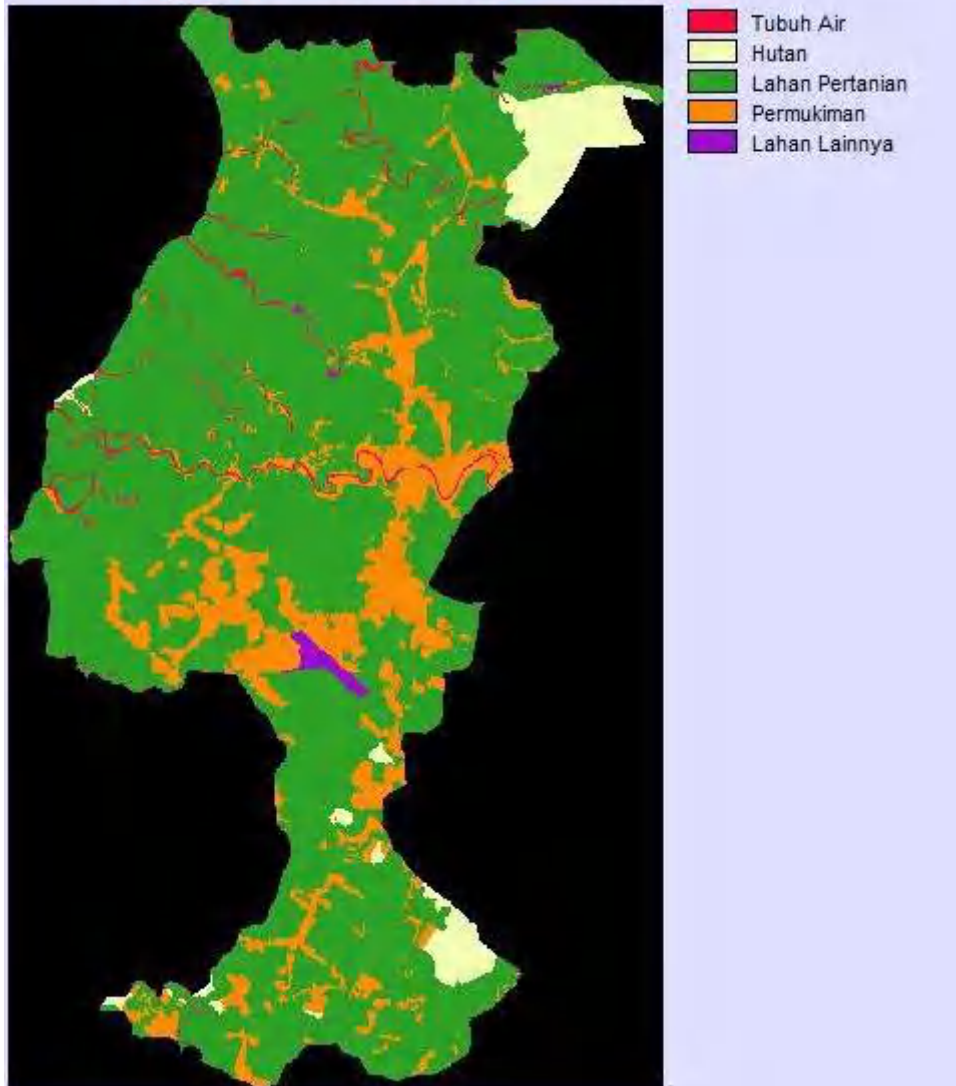


LAMPIRAN 7

Model Simulasi Tutupan Lahan *Artificial Neural Network*

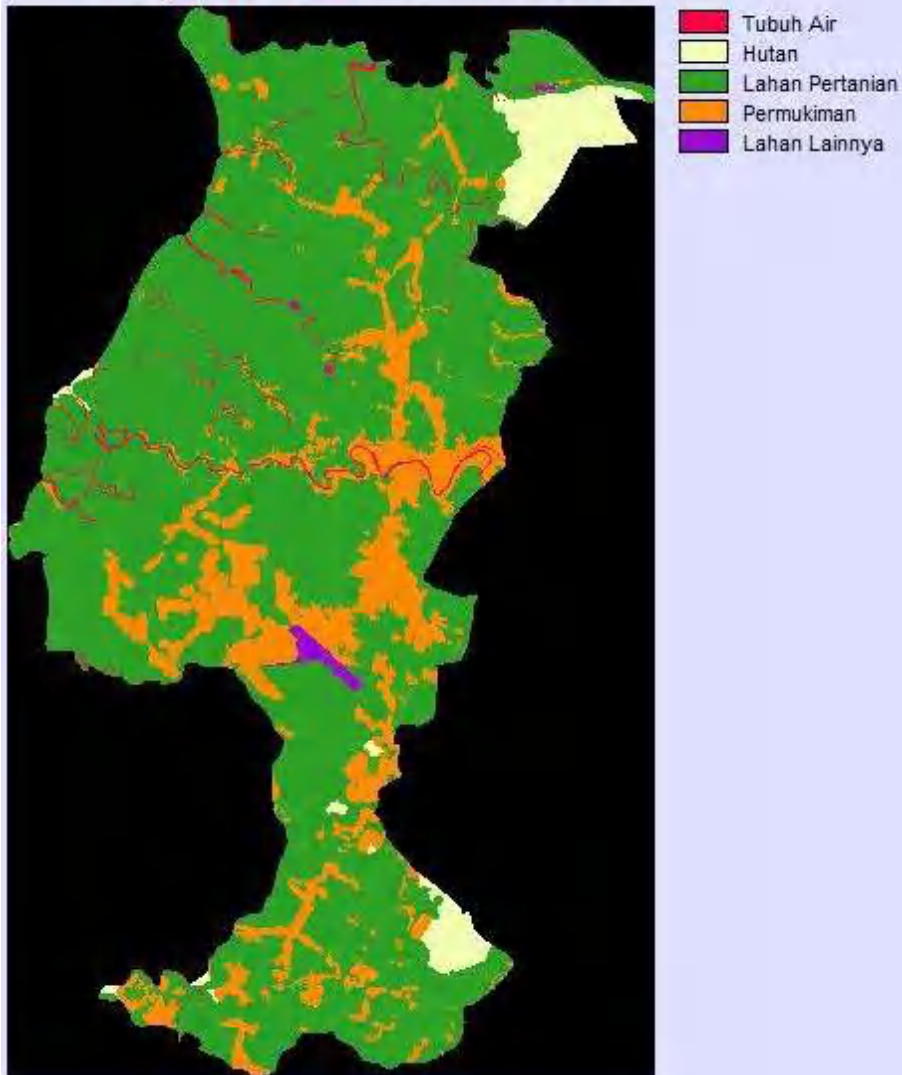


Projected Land Cover 2024



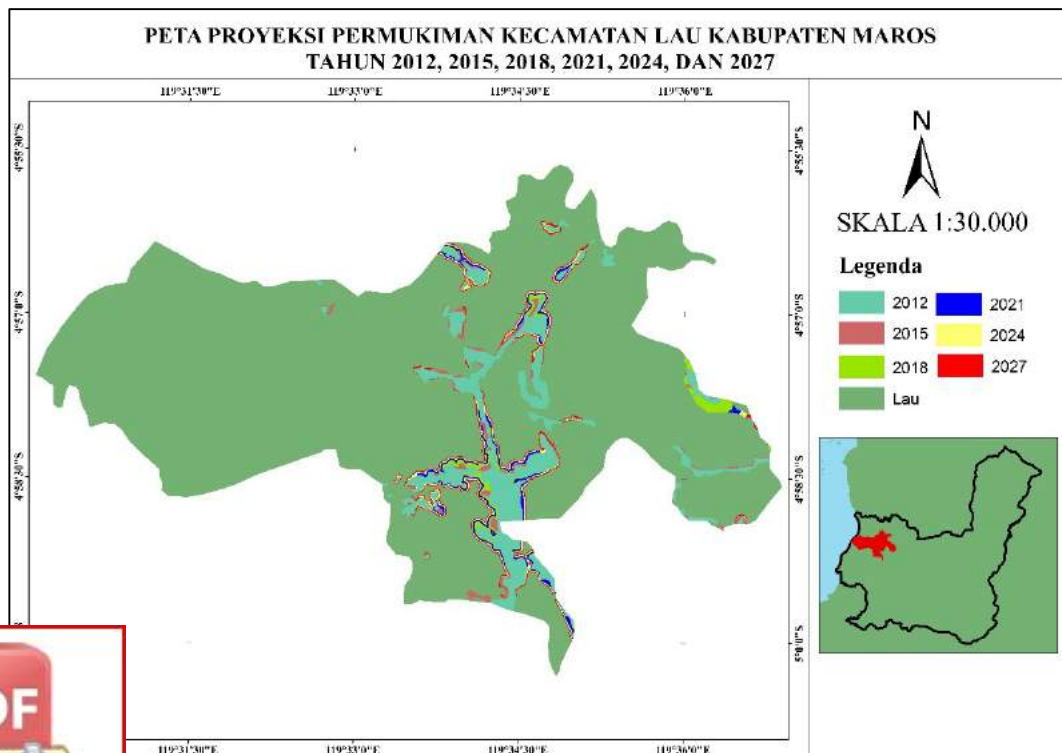
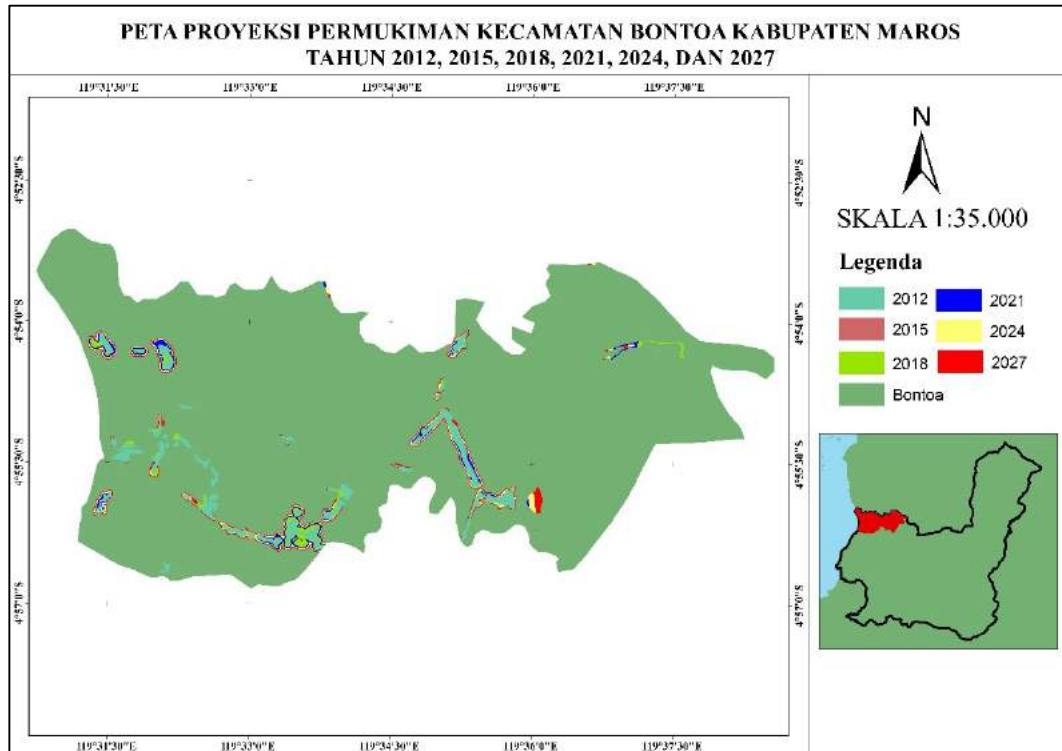
Optimization Software:
www.balesio.com

Projected Land Cover 2027

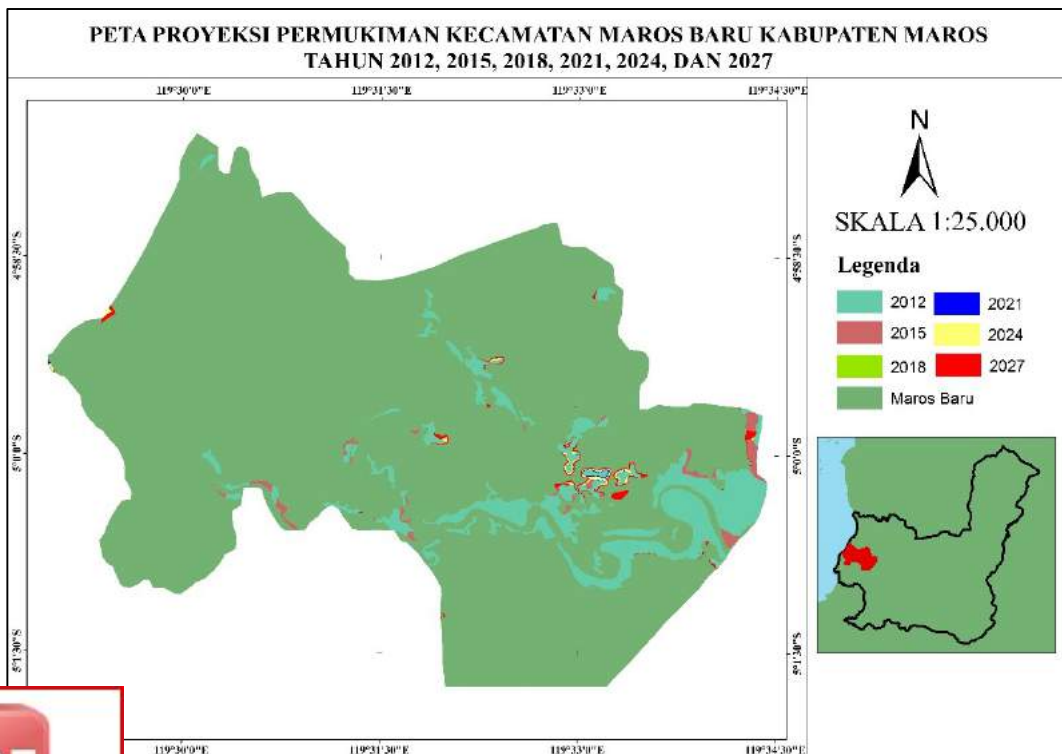
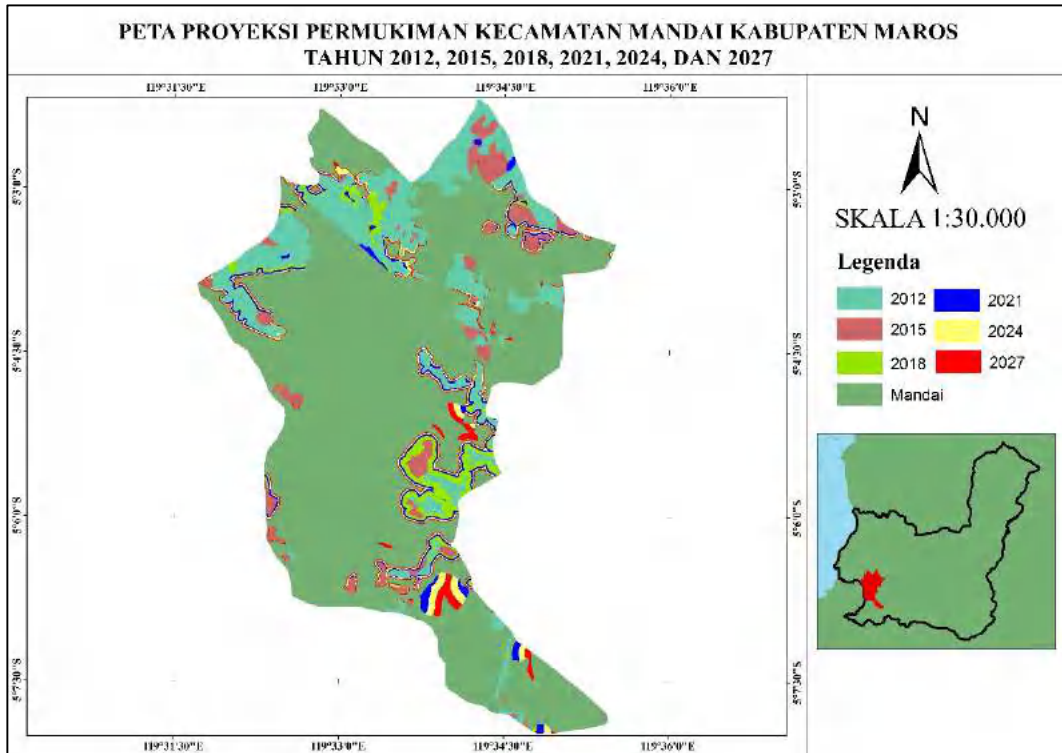


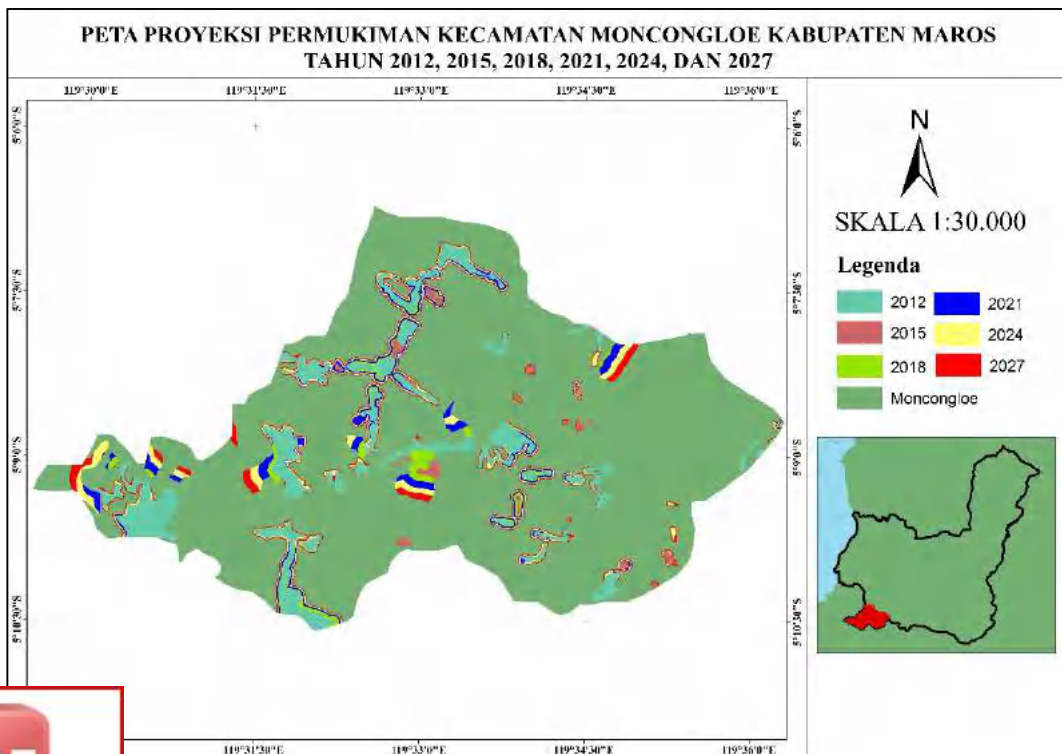
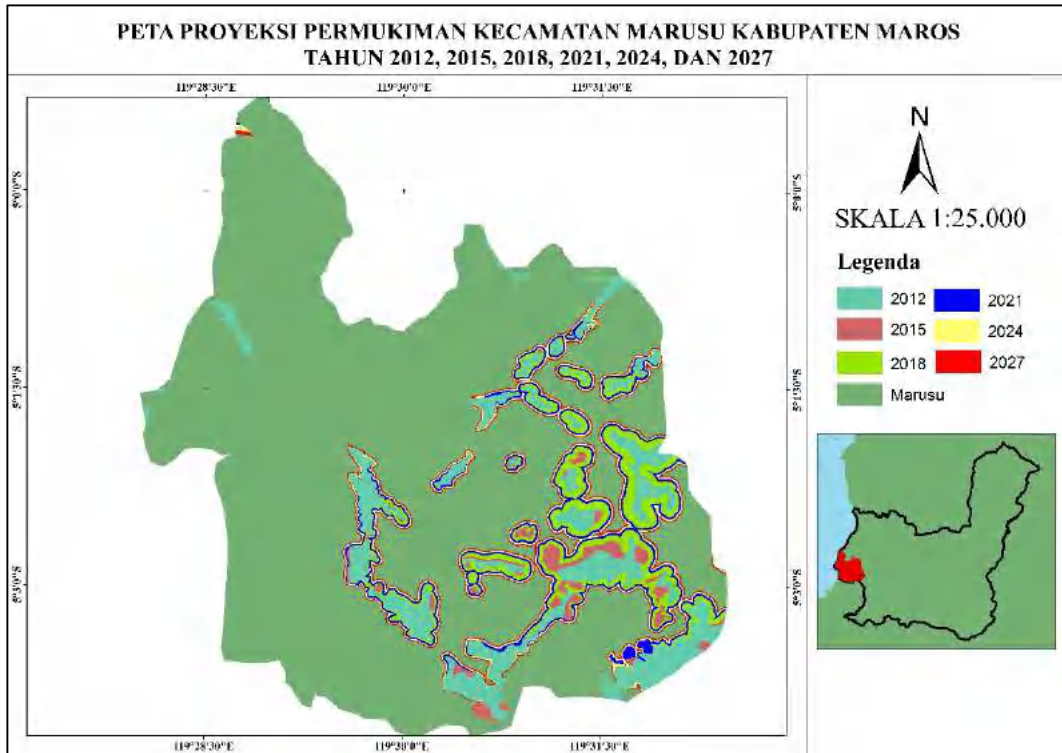
LAMPIRAN 8

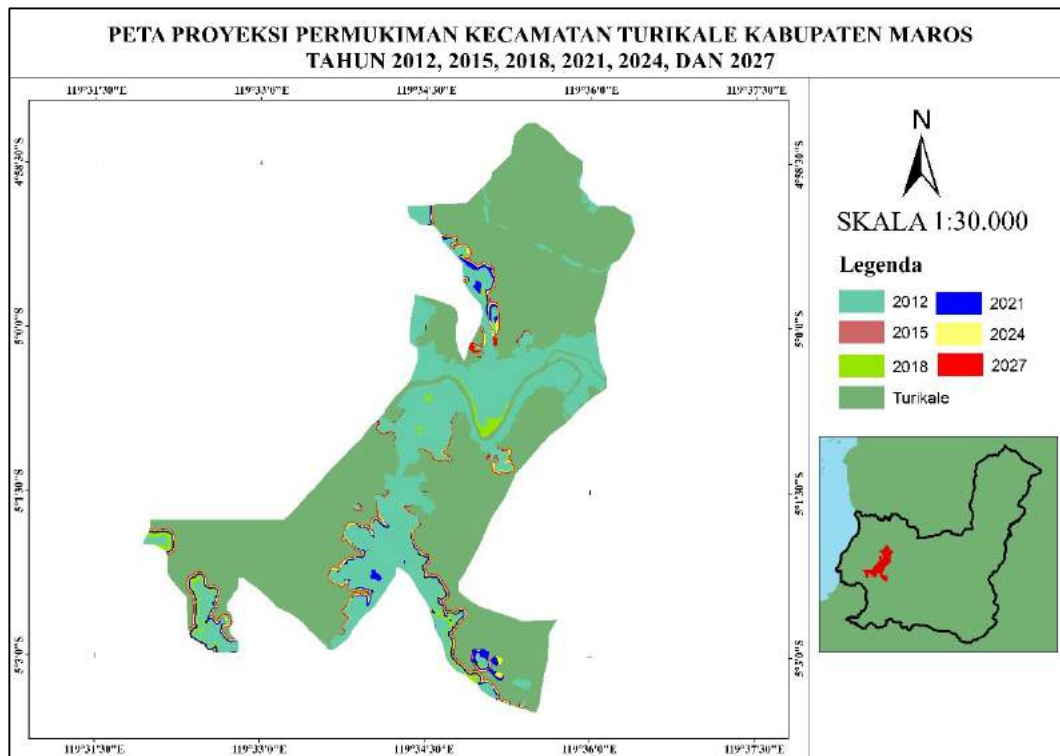
Vektor Perubahan Permukiman



Optimization Software:
www.balesio.com







LAMPIRAN 9

Matriks Transisi Tutupan Lahan

Penggunaan Lahan 2012	Penggunaan Lahan 2015					Total 2012
	Hutan	Lahan Lainnya	Lahan Pertanian	Permukiman	Tubuh Air	
Hutan	1.660	0	0	84	0	1.744
Lahan Lainnya	0	145	0	1	0	146
Lahan Pertanian	0	0	24.556	409	0	24.965
Permukiman	0	0	0	2.695	0	2.695
Tubuh Air	0	0	0	4	509	513
Total 2015	1.660	145	24.556	3.192	509	30.062

Penggunaan Lahan 2015	Penggunaan Lahan 2018					Total 2015
	Hutan	Lahan Lainnya	Lahan Pertanian	Permukiman	Tubuh Air	
Hutan	1.630	0	0	30	0	1.660
Lahan Lainnya	0	145	0	1	0	145
Lahan Pertanian	0	0	24.319	237	0	24.556
Permukiman	0	0	0	3.192	0	3.192
Tubuh Air	0	0	0	0	509	509
Total 2018	1.630	145	24.319	3.460	509	30.062

Penggunaan Lahan 2018	Penggunaan Lahan 2021					Total 2018
	Hutan	Lahan Lainnya	Lahan Pertanian	Permukiman	Tubuh Air	
Hutan	1.502	0	1	127	0	1.630
Lahan Lainnya	0	143	0	1	0	145
Lahan Pertanian	1	0	23.598	714	5	24.318
Permukiman	0	1	153	3.305	1	3.460
Tubuh Air	0	0	5	8	495	508
Total 2021	1.503	144	23.758	4.155	501	30.062



Penggunaan Lahan 2021	Penggunaan Lahan 2024					Total 2021
	Hutan	Lahan Lainnya	Lahan Pertanian	Permukiman	Tubuh Air	
Hutan	1.430	0	0	73	0	1.503
Lahan Lainnya	0	143	0	1	0	144
Lahan Pertanian	0	0	23.368	391	0	23.759
Permukiman	0	0	1	4.154	0	4.155
Tubuh Air	0	0	0	3	498	502
Total 2024	1.430	143	23.369	4.621	498	30.062

Penggunaan Lahan 2024	Penggunaan Lahan 2027					Total 2024
	Hutan	Lahan Lainnya	Lahan Pertanian	Permukiman	Tubuh Air	
Hutan	1.361		0	69	0	1.430
Lahan Lainnya	0	143	0	1	0	143
Lahan Pertanian	0	0	22.985	384	0	23.369
Permukiman	0	0	1	4.621	0	4.622
Tubuh Air	0	0	0	3	495	498
Total 2027	1.361	143	22.986	5.078	495	30.062



LAMPIRAN 10

Jumlah Penduduk dan Laju Pertumbuhan Penduduk di Kabupaten Maros

Kecamatan	Jumlah Penduduk (Ribu)				Laju Pertumbuhan Penduduk Per Tahun (%)		Persentasi Penduduk (%)	Kepadatan Penduduk (Km2)
	2012	2013	2014	2015	2010-2015	2014-2015		
Mandai	36.397	37.004	37.617	38.224	1,58	1,61	18,51	778,33
Moncongloe	17.593	17.887	18.183	18.476	1,58	1,61	8,95	394,19
Maros Baru	24.697	25.000	25.303	25.599	1,23	1,17	12,39	476,17
Marusu	25.907	26.192	26.476	26.752	1,12	1,04	12,95	362,35
Turikale	42.419	42.877	43.335	43.778	1,11	1,02	21,20	1462,68
Lau	24.917	25.223	25.529	25.827	0,95	1,17	12,50	480,68
Bontoa	27.176	27.416	27.655	27.884	0,95	0,83	13,50	298,16
Total	199.106	201.599	204.098	206.540	8,52	8,45	100,00	515,38

