

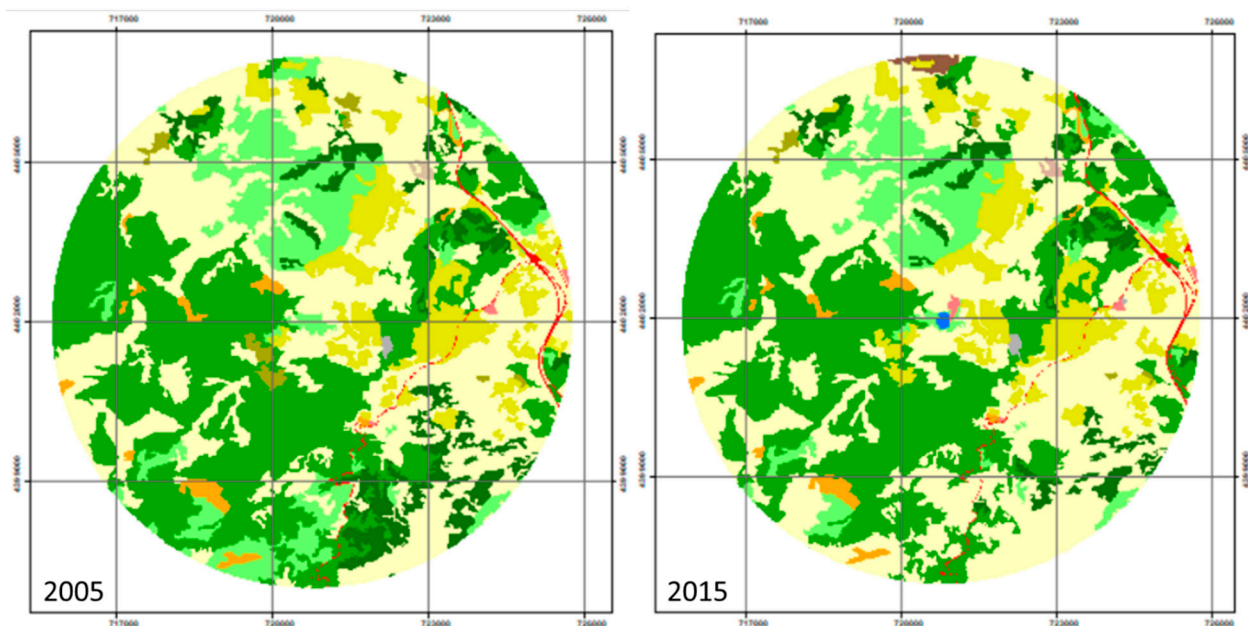
Table S1. Basic values of the evaluation factors (F_i) for every land use considered by the SIOSE and final value of the Weighted Environmental Index for a single-use polygon (WEI_k)

Code	Land use description	F_1	F_2	F_3	F_4	F_5	WEI_k
EDF	Buildings	20	40	20	15	5	20
ZAU	Artificial green zone and Urban trees	60	65	70	80	75	70
LAA	Artificial water body	65	85	85	65	50	70
VAP	Road, Parking or Pedestrian area	20	40	20	15	5	20
OCT	Other constructions	20	40	20	15	5	20
SNE	Soil without edifications	35	50	50	50	15	40
ZEV	Extraction zones	0	50	0	0	0	10
CHA	Rice crops	60	10	80	45	55	50
CHL	Other crops different from rice	60	65	80	75	70	70
LFC	Citrics	60	65	80	75	70	70
LFN	Non citrics	60	65	80	75	70	70
LVI	Vineyard	60	65	80	75	70	70
LOL	Olives	60	65	80	75	70	70
LOC	Other woody crops	60	65	80	75	70	70
PRD	Meadows	80	80	90	100	100	90
PST	Pastureland	80	80	80	80	80	80
FDC	Hardwood deciduous	100	100	100	100	100	100
FDP	Evergreen hardwoods	100	100	100	100	100	100
CNF	Conifers	100	100	100	100	100	100
MTR	Scrub	70	70	70	70	70	70
PDA	Sandy beaches	100	100	50	100	100	90
SDN	Bare soil	70	50	20	20	40	40
ZQM	Burned areas	0	50	0	0	0	10
RMB	Ravines	20	50	20	50	60	40
ACM	Marine cliffs	100	50	50	100	100	80
ARR	Rocky soil	80	50	30	30	60	50
CCH	Stone quarry	80	50	40	40	40	50
CLC	Lava flow	90	30	30	40	60	50
HPA	Marshes	80	50	30	80	60	60
HSA	Continental salines	90	30	40	80	60	60
HMA	Marshes	90	60	70	90	90	80
HSM	Marine salines	90	60	70	90	90	80
ACU	Water flows	100	100	100	100	100	100
ALG	Lakes and lagoons	100	100	100	100	100	100
AEM	Dams and artificial lakes	10	100	100	100	90	80
ALC	Coastal lagoons	100	100	100	100	100	100
AMO	Seas and Oceans	100	100	100	100	100	100
	Non predefined	50	50	50	50	50	50
OVD	Olives and Vineyard	60	65	80	75	70	70
AAR	Residential agricultural settlement	40	50	60	50	50	50
UER	Family orchard	60	65	75	70	80	70
UCS	Urban center	30	30	10	20	10	20
UEN	Urban expansion area	30	30	10	20	10	20
UDS	Discontinuous	30	30	10	20	10	20
IPO	Well sorted industrial area	30	30	10	20	10	20
IPS	Non sorted industrial area	30	30	10	20	10	20
IAS	Isolated industrial area	30	30	10	20	10	20
PAG	Agricultural, livestock	60	60	70	50	60	60
PFT	Primary forest	100	100	100	100	100	100
PMX	Extractive Mining	10	10	10	10	10	10
PPS	Fish farm	30	60	60	50	50	50
TCO	Commercial and offices	20	20	20	20	20	20
TCH	Hotels	20	20	20	20	20	20
TPR	Recreational park	20	20	20	20	20	20
TCG	Camping	20	40	40	50	50	40

EAI	Institutional administrative	20	20	20	20	20	20
ESN	Medical and sanitary	20	20	20	20	20	20
ECM	Cementery	20	20	20	20	20	20
EDU	Education	20	20	20	20	20	20
EPN	Penitentiary	20	20	20	20	20	20
ERG	Religious	20	20	20	20	20	20
ECL	Cultural	20	20	20	20	20	20
EDP	Sport	25	15	20	20	20	20
ECG	Golf course	40	10	70	50	80	50
EPU	Urban park	60	65	70	80	75	70
NRV	Streets and roads	10	10	10	10	10	10
NRF	Train	10	10	10	10	10	10
NPO	Port	10	10	10	10	10	10
NAP	Airport	10	10	10	10	10	10
NEO	Eolic plant	10	10	10	100	20	30
NSL	Solar plant	10	10	10	100	20	30
NCL	Nuclear plant	0	0	0	0	0	0
NEL	Electric plant	0	0	0	0	0	0
NTM	Thermal plant	0	0	0	0	0	0
NHD	Hydroelectric plant	10	10	10	10	10	10
NTC	Telecommunications plant	0	0	0	0	0	0
NDP	Waste and drinking water plant	10	20	10	100	10	30
NCC	Channels	0	0	0	0	0	0
NDS	Desalinization plant	0	0	0	0	0	0
NVE	Landfills	0	0	0	0	0	0
NPT	Treatment plant	0	0	0	0	0	0
UEN	Urban expansion area	30	30	10	20	10	20
UDS	Discontinuous	30	30	10	20	10	20
IPO	Well sorted industrial area	30	30	10	20	10	20
IPS	Non sorted industrial area	30	30	10	20	10	20
IAS	Isolated industrial area	30	30	10	20	10	20
PAG	Agricultural, livestock	60	60	70	50	60	60
PFT	Primary forest	100	100	100	100	100	100
PMX	Extractive mining	10	10	10	10	10	10

Figure S1. LCM and WEI Evolution over time for every landfill

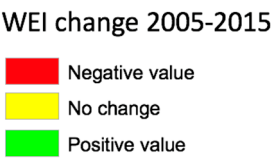
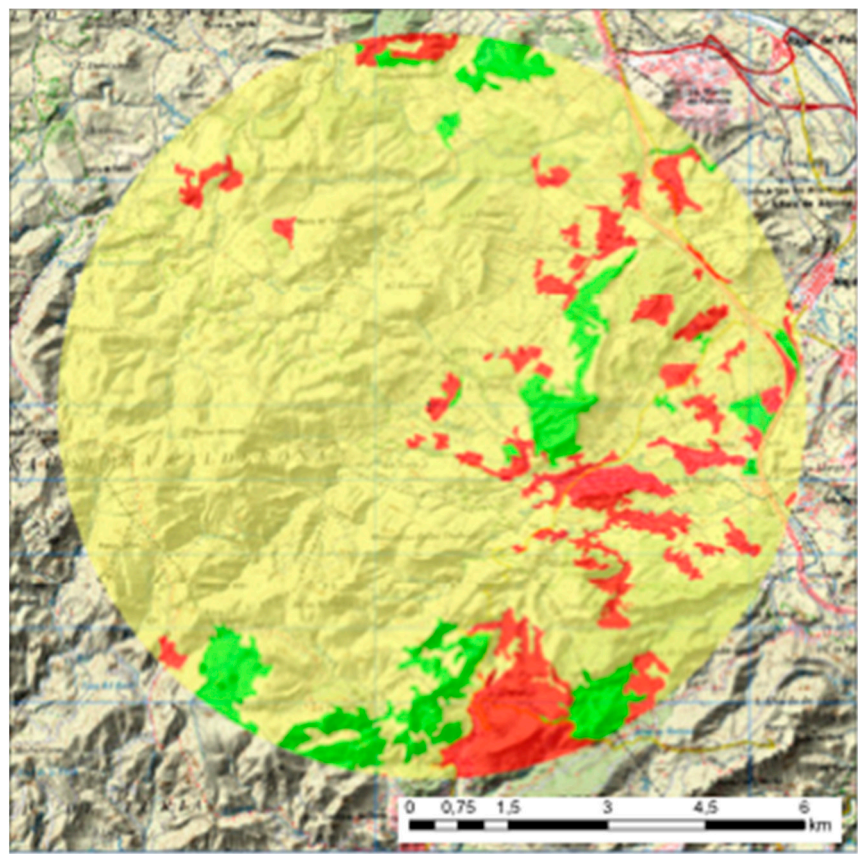
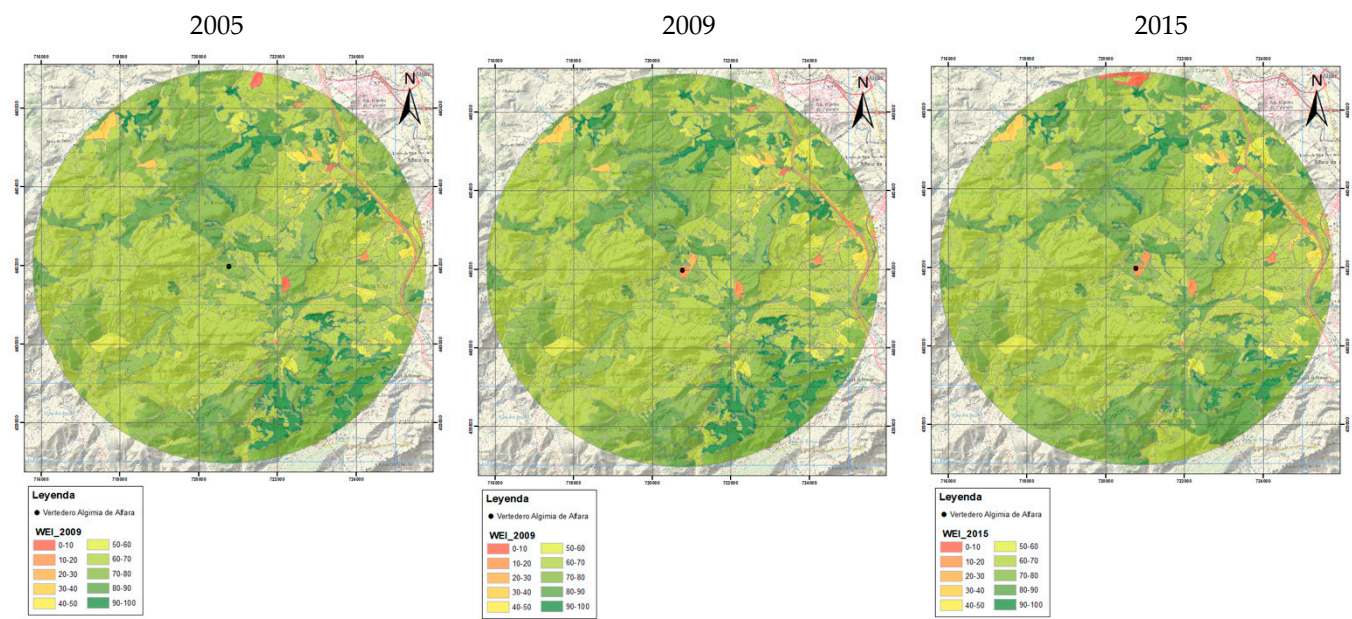
Algimia de Alfara landfill LCM



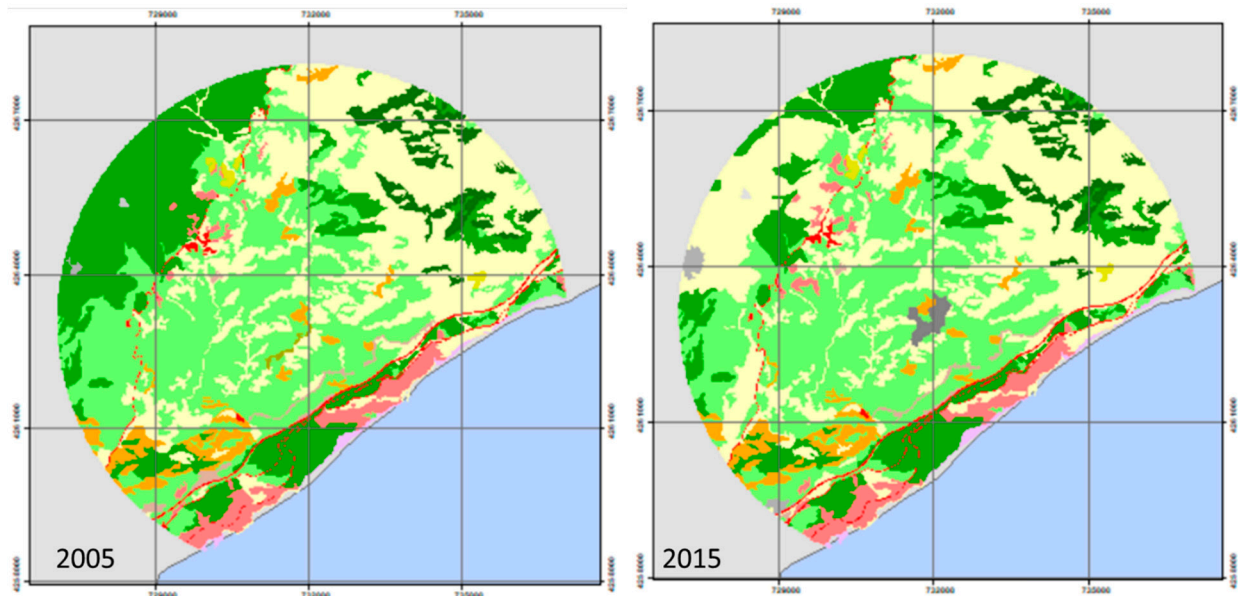
Categories	2005	2015	2005	2015	Diferences % 2015-2005
	Has		% Area		
Isolated industrial area	7,39	14,20	0,09	0,18	0,09
Railways	5,52	5,52	0,07	0,07	0,00
Road Networks	41,72	41,72	0,53	0,53	0,00
Urban discontinuous		1,17		0,01	0,01
Irrigated herbaceous crops	4,71		0,06		-0,06
Non-Irrigated herbaceous crops	0,96	0,96	0,01	0,01	0,00
Citric fruit trees	589,84	591,68	7,51	7,53	0,02
Non-Citric fruit trees	44,57	75,73	0,57	0,96	0,40
Non predefined mosaic	2977,93	3370,53	37,92	42,92	5,00
Olives	65,05	23,13	0,83	0,29	-0,53
Pastures	879,21	674,11	11,19	8,58	-2,61
Conifers	518,83	321,15	6,61	4,09	-2,52
Primary Forest	2609,07	2590,55	33,22	32,98	-0,24
Scrub	91,92	91,92	1,17	1,17	0,00
Soil without vegetation	10,32	10,32	0,13	0,13	0,00
Extraction or discharge zones	6,75	1,06	0,09	0,01	-0,07
Artificial water surface		5,87		0,07	0,07
Mining zones		8,52		0,11	0,11
Burned areas		25,63		0,33	0,33
TOTAL	7853,77				

2.52% of conifers and 2.6% of grassland areas have been lost. Crops have increased by 6% with respect to the total study area

Algimia de Alfara landfill WEI evolution



Campello landfill LCM

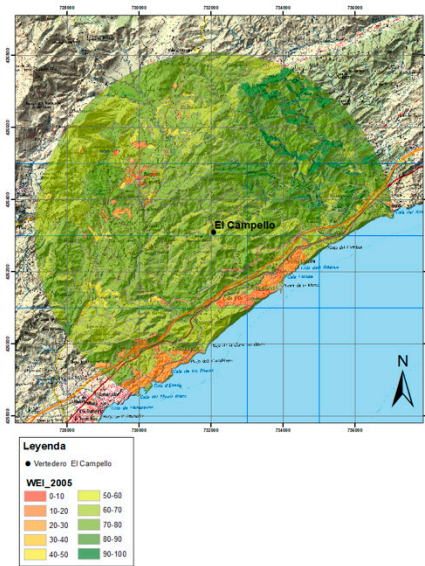


Category	2005	2015	2005	2015	Diferences % 2015-2005
	Has		% Area		
Isolated industrial area	1,59	1,03	0,03	0,02	-0,01
Railways	13,04	13,04	0,21	0,21	0,00
Road Networks	63,97	64,42	1,03	1,04	0,01
Urban center	10,18	10,18	0,16	0,16	0,00
Urban discontinuous	217,80	228,78	3,52	3,70	0,18
Non-Irrigated herbaceous crops	2,22	4,74	0,04	0,08	0,04
Non-Citric fruit trees	22,24	18,56	0,36	0,30	-0,06
Non predefined mosaic	1872,18	2433,13	30,29	39,37	9,08
Olives	8,53		0,14	0,00	-0,14
Pastures	2089,25	1977,48	33,80	32,00	-1,81
Conifers	216,57	216,57	3,50	3,50	0,00
Primary Forest	1360,53	867,26	22,01	14,03	-7,98
Scrub	210,02	208,35	3,40	3,37	-0,03
Soil without vegetation	47,56	32,58	0,77	0,53	-0,24
Extraction or discharge zones		37,75	0,00	0,61	0,61
Mining zones	4,34	27,06	0,07	0,44	0,37
Rocky soil	2,95	2,95	0,05	0,05	0,00
Sandy beaches	1,10	1,10	0,02	0,02	0,00
Marine cliffs	36,33	35,87	0,59	0,58	-0,01
TOTAL	6180,40				

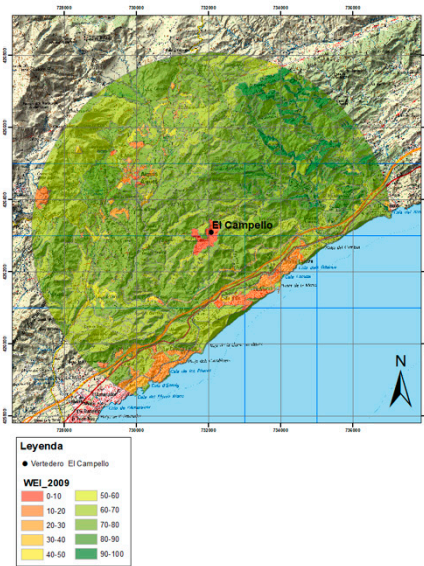
7.98% of forest association and 1.81% of grassland areas have been lost. Crop mosaics have increased by 9.08% and the landfill with its treatment plant has been installed within an area equal to 0.61% of the total study area.

Campello landfill WEI evolution

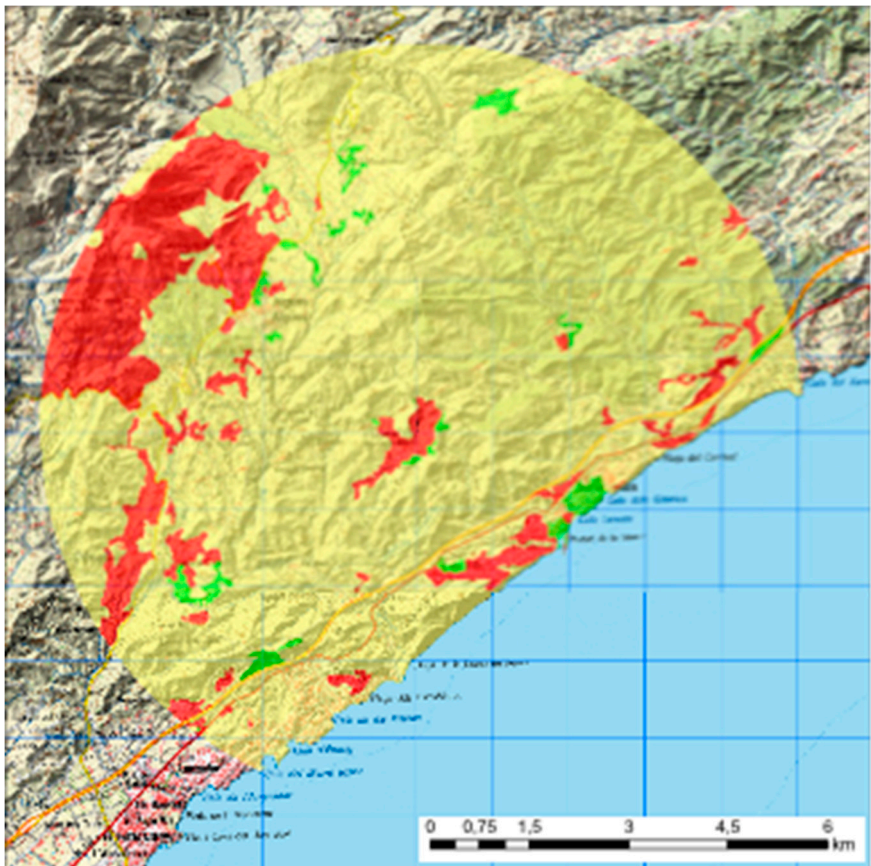
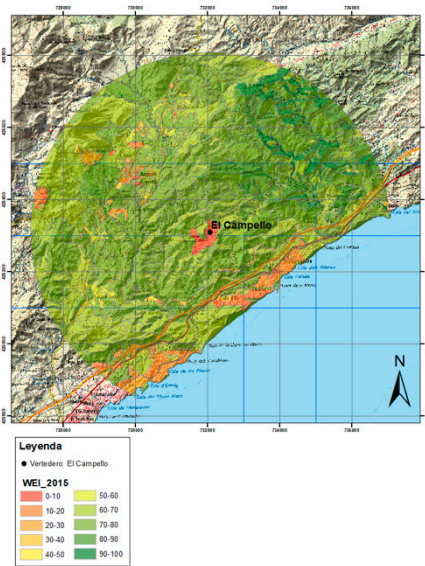
2005



2009



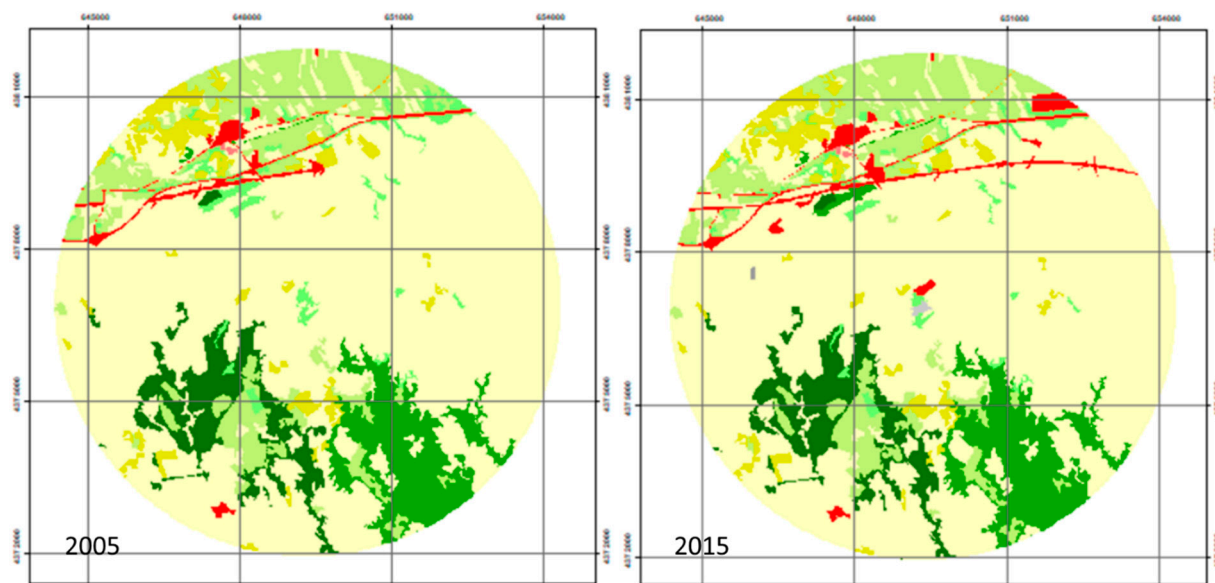
2015



WEI change 2005-2015

- Negative value
- No change
- Positive value

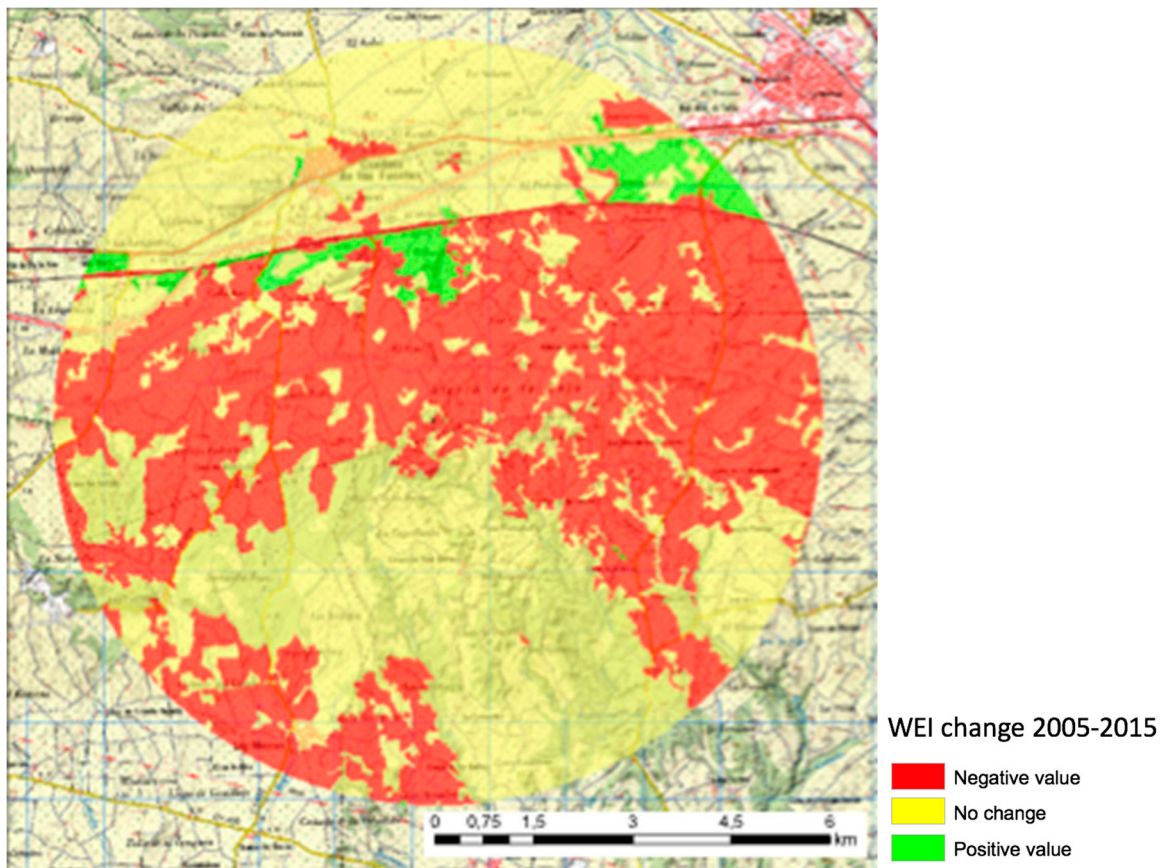
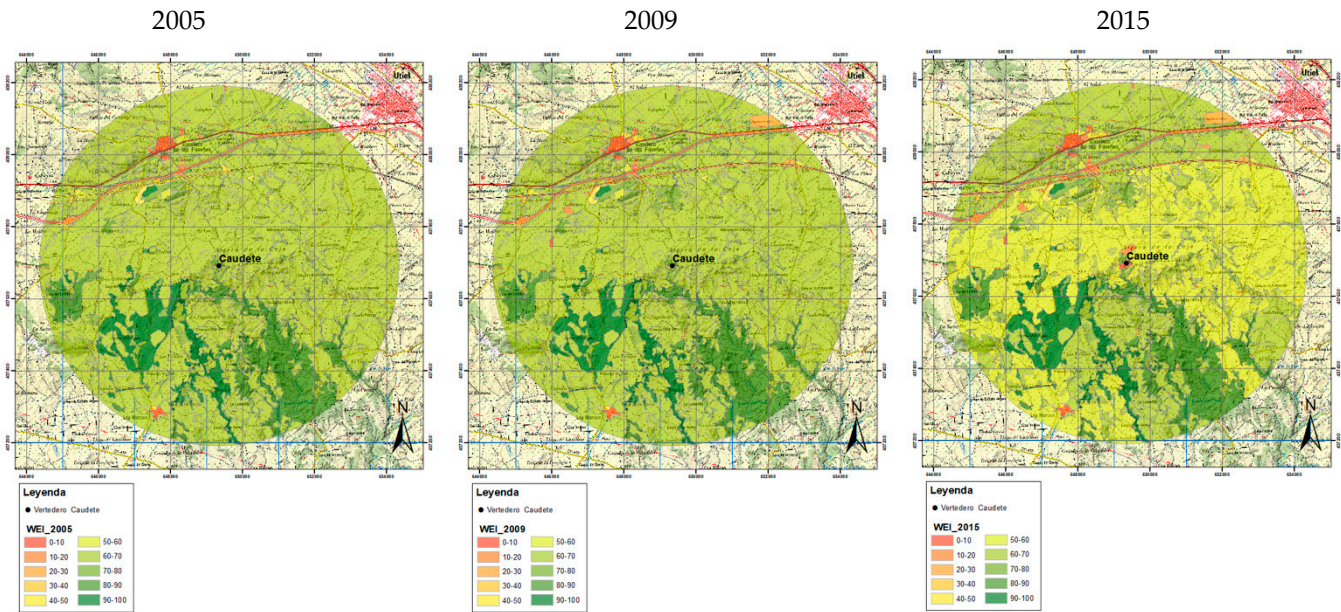
Caudete de las Fuentes landfill LCM



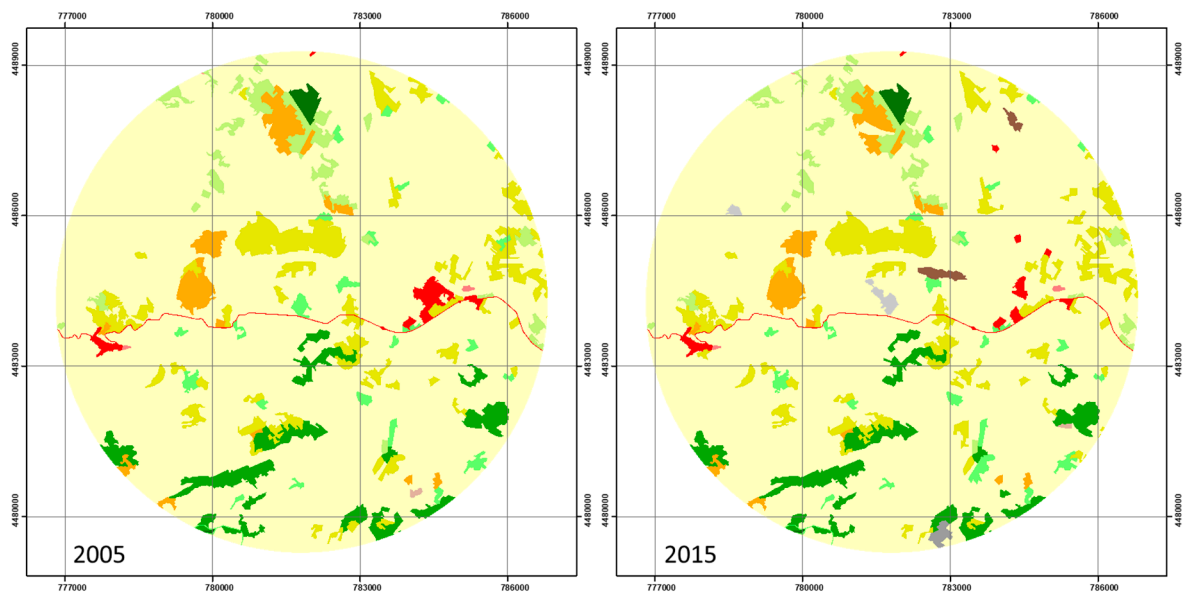
Category	2005	2015	2005	2015	Differences
	Has		% Area		% 2015-2005
Isolated industrial area	6,40	28,76	0,08	0,37	0,28
Railways	33,52	55,72	0,43	0,71	0,28
Road Networks	57,65	57,65	0,73	0,73	0,00
Well sorted industrial area	1,28	26,26	0,02	0,33	0,32
Urban center	29,00	31,06	0,37	0,40	0,03
Urban discontinuous	4,02	4,02	0,05	0,05	0,00
Non-Irrigated herbaceous crops	51,07	42,36	0,65	0,54	-0,11
Non-Citric fruit trees	276,46	276,98	3,52	3,53	0,01
Non predefined mosaic	5354,82	5325,37	68,18	67,81	-0,37
Olives	898,11	875,17	11,44	11,14	-0,29
Pastures	192,22	152,94	2,45	1,95	-0,50
Conifers	425,50	425,86	5,42	5,42	0,00
Primary Forest	520,92	540,74	6,63	6,89	0,25
Scrub	2,80	2,80	0,04	0,04	0,00
Extraction or discharge zones		2,53	0,00	0,03	0,03
Mining zones		5,55	0,00	0,07	0,07
TOTAL	7853,77				

0.5% of pasture areas have been lost. Urban zones have increased 0.91% with respect to the total study area.

Caudete de las Fuentes landfill WEI evolution



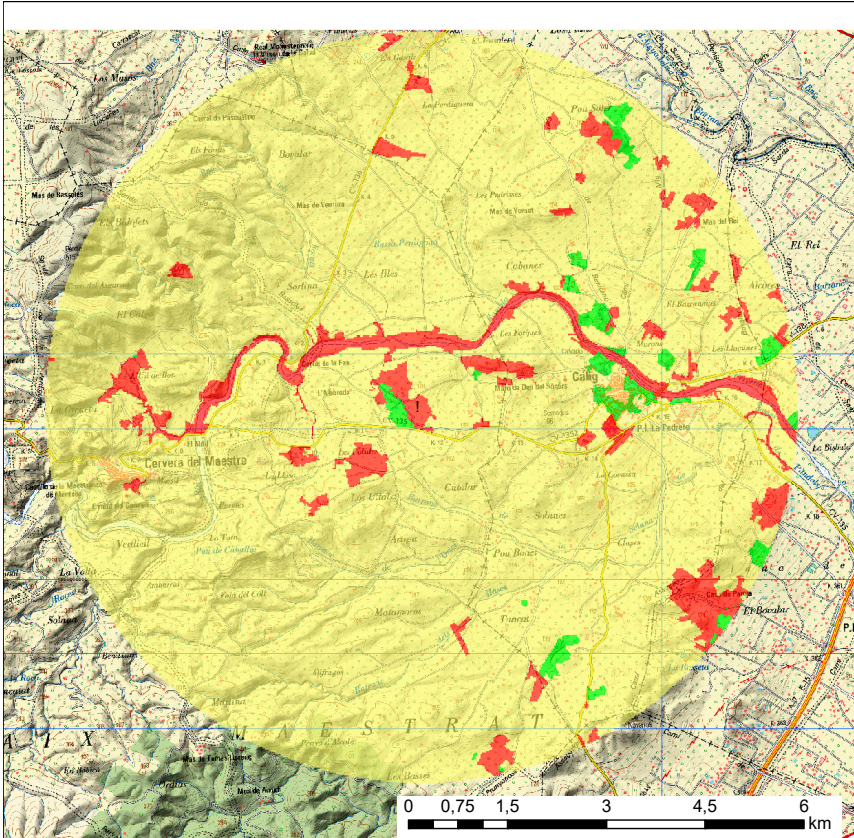
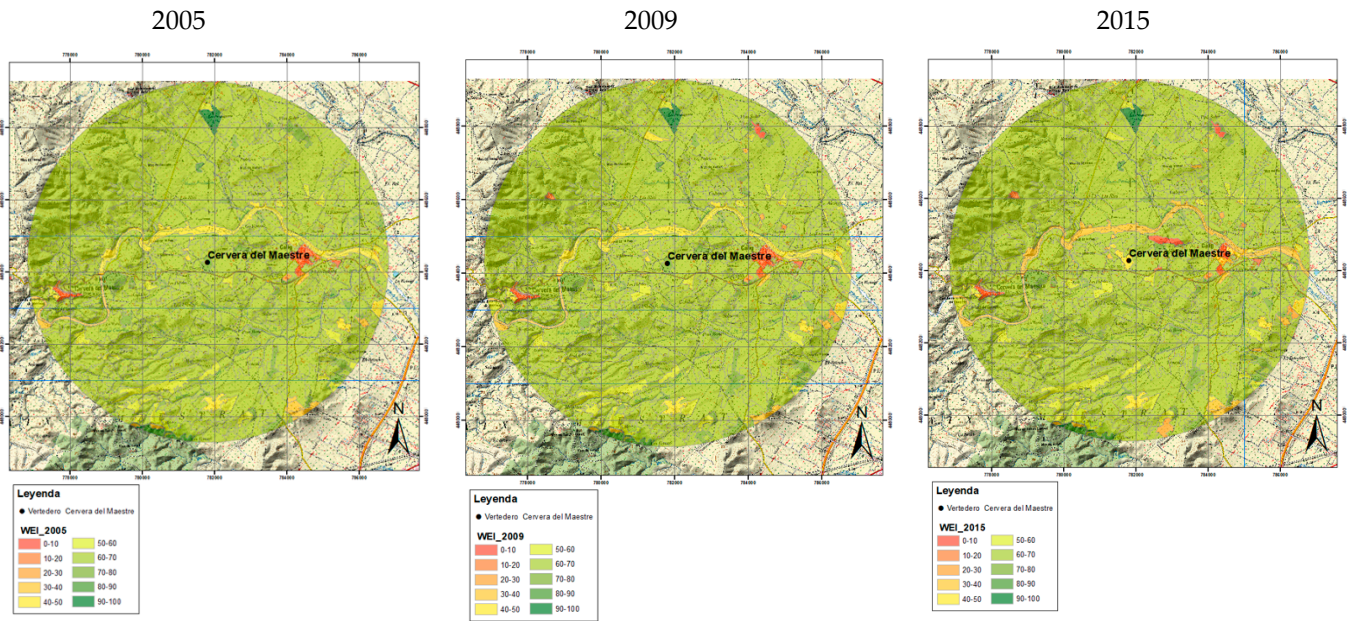
Cervera del Maestre landfill LCM



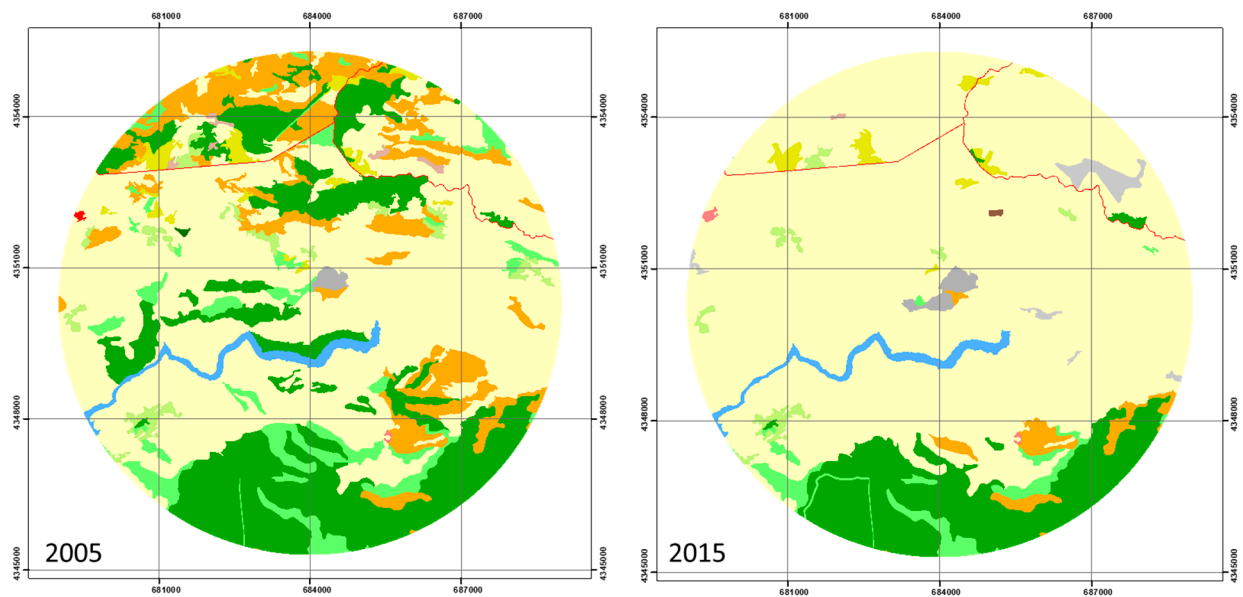
Category	2005	2015	2005	2015	Diferences % 2015-2005
	Has		% Area		
Isolated industrial area	9,91	13,32	0,13	0,17	0,04
Road Networks	19,22	19,22	0,24	0,24	0,00
Urban center	43,45	23,96	0,55	0,31	-0,25
Urban discontinuous	3,69	3,69	0,05	0,05	0,00
Non-Irrigated herbaceous crops	17,65	33,54	0,22	0,43	0,20
Non-Citric fruit trees	352,86	346,19	4,49	4,41	-0,08
Citric fruit trees	169,89	187,66	2,16	2,39	0,23
Non predefined mosaic	6447,43	6396,79	82,09	81,45	-0,64
Olives	192,78	192,78	2,45	2,45	0,00
Pastures	111,14	104,51	1,42	1,33	-0,08
Conifers	27,54	27,54	0,35	0,35	0,00
Primary Forest	278,68	278,71	3,55	3,55	0,00
Scrub	176,39	166,68	2,25	2,12	-0,12
Bare soil	3,13	2,27	0,04	0,03	-0,01
Extraction or discharge zones		14,08	0,00	0,18	0,18
Burned zones		22,81	0,00	0,29	0,29
Mining zones		20,02	0,00	0,25	0,25
TOTAL	7853,77				

0.64% of non-predefined mosaic areas have been lost. Urban zones have decreased 0.21% with respect to the total study area. Mining zones and extraction zones have increased 0.43% of the study area.

Cervera del Maestre landfill WEI evolution



Dos Aguas landfill LCM



Category	2005	2015	2005	2015	Differences % 2015-2005
	Has		% Area		
Rocky soil		77,19	0,00	0,98	0,98
Road Networks	20,31	20,31	0,26	0,26	0,00
Urban center	3,10		0,04	0,00	-0,04
Urban discontinuous	1,89	7,26	0,02	0,09	0,07
Non-Citric fruit trees	120,28	80,80	1,53	1,03	-0,50
Non predefined mosaic	4262,33	6177,94	54,27	78,66	24,39
Olives	139,92	77,38	1,78	0,99	-0,80
Pastures	489,87	199,50	6,24	2,54	-3,70
Conifers	2,92		0,04	0,00	-0,04
Primary Forest	1741,98	917,59	22,18	11,68	-10,50
Scrub	917,11	138,30	11,68	1,76	-9,92
Extraction or discharge zones	24,02	48,65	0,31	0,62	0,31
Bare soil	23,10	2,64	0,29	0,03	-0,26
Dams and artificial lakes	104,08	100,06	1,33	1,27	-0,05
Hydroelectric plant	2,87	2,80	0,04	0,04	0,00
Burned areas		3,36	0,00	0,04	0,04
TOTAL	7853,77				

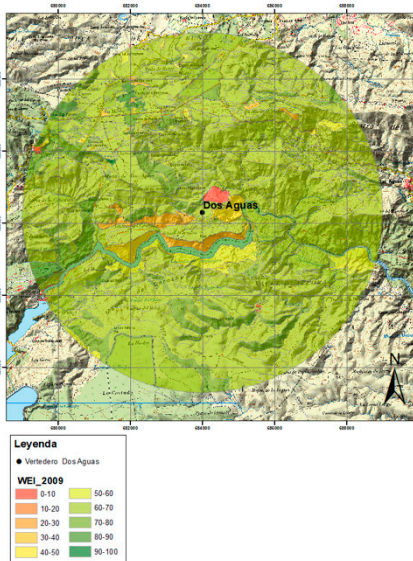
2015 land use data, although official, has inconsistencies that do not allow a real analysis of the land use change.

Dos Aguas landfill WEI evolution

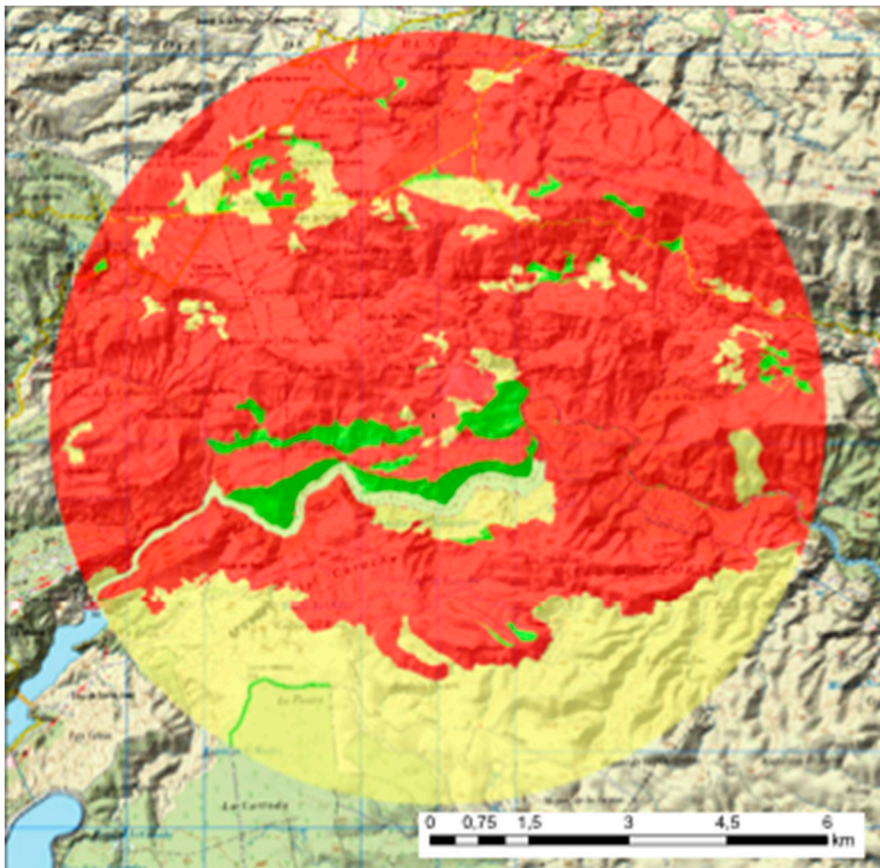
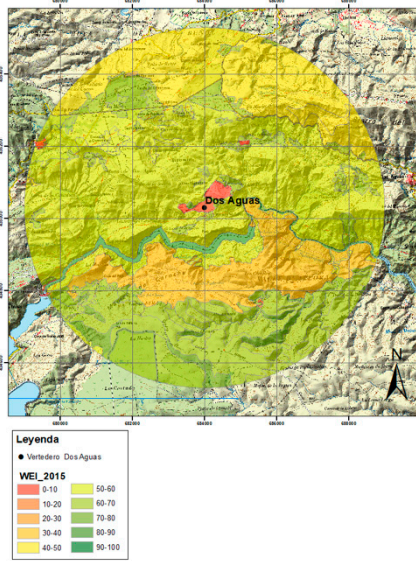
2005



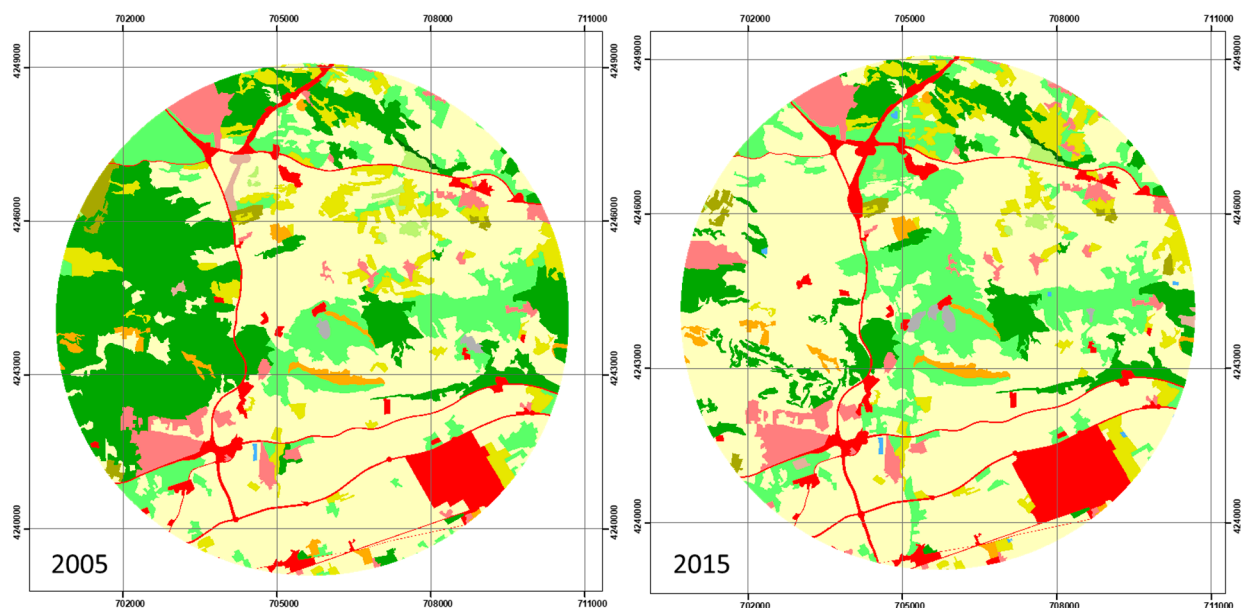
2009



2015



Elche landfill LCM

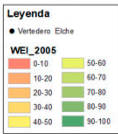
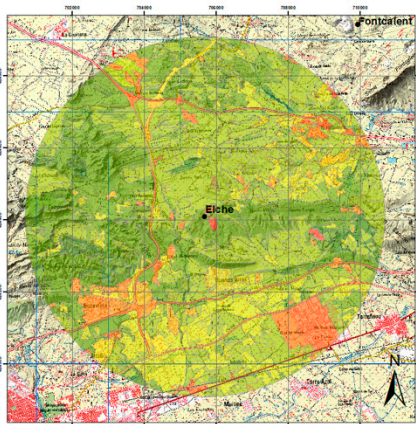


Category	2005	2015	2005	2015	Differences % 2015-2005
	Has		% Area		
Isolated industrial area	26,81	46,10	0,34	0,59	0,25
Railways	4,69	4,69	0,06	0,06	0,00
Road Networks	189,19	221,80	2,41	2,82	0,42
Well sorted industrial area	216,24	286,83	2,75	3,65	0,90
Urban center	21,93	27,76	0,28	0,35	0,07
Urban discontinuous	308,54	360,61	3,93	4,59	0,66
Citric fruit trees	61,80	84,24	0,79	1,07	0,29
Non-Citric fruit trees	432,54	329,50	5,51	4,20	-1,31
Non predefined mosaic	3266,95	4074,82	41,60	51,88	10,29
Non-Irrigated herbaceous crops	292,27	282,18	3,72	3,59	-0,13
Olives	46,98	34,71	0,60	0,44	-0,16
Vineyard	68,83	49,90	0,88	0,64	-0,24
Pastures	915,64	1149,11	11,66	14,63	2,97
Conifers	6,90	6,90	0,09	0,09	0,00
Primary Forest	1850,69	748,47	23,56	9,53	-14,03
Scrub	102,16	100,84	1,30	1,28	-0,02
Extraction or discharge zones	15,29	22,81	0,19	0,29	0,10
Mining zones		2,44	0,00	0,03	0,03
Bare soil	23,70	11,86	0,30	0,15	-0,15
Artificial water surface	2,62	8,19	0,03	0,10	0,07
TOTAL	7853,77				

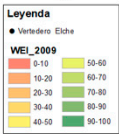
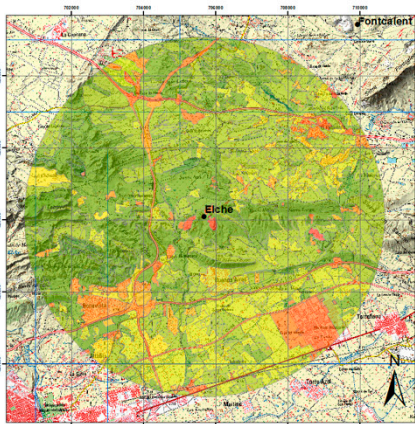
14.03% of forestry associations and 1.3% of fruit trees areas have been lost. Crop surfaces have increased by 10.29% and pastures by 2.97% with respect to the total study area.

Elche landfill WEI evolution

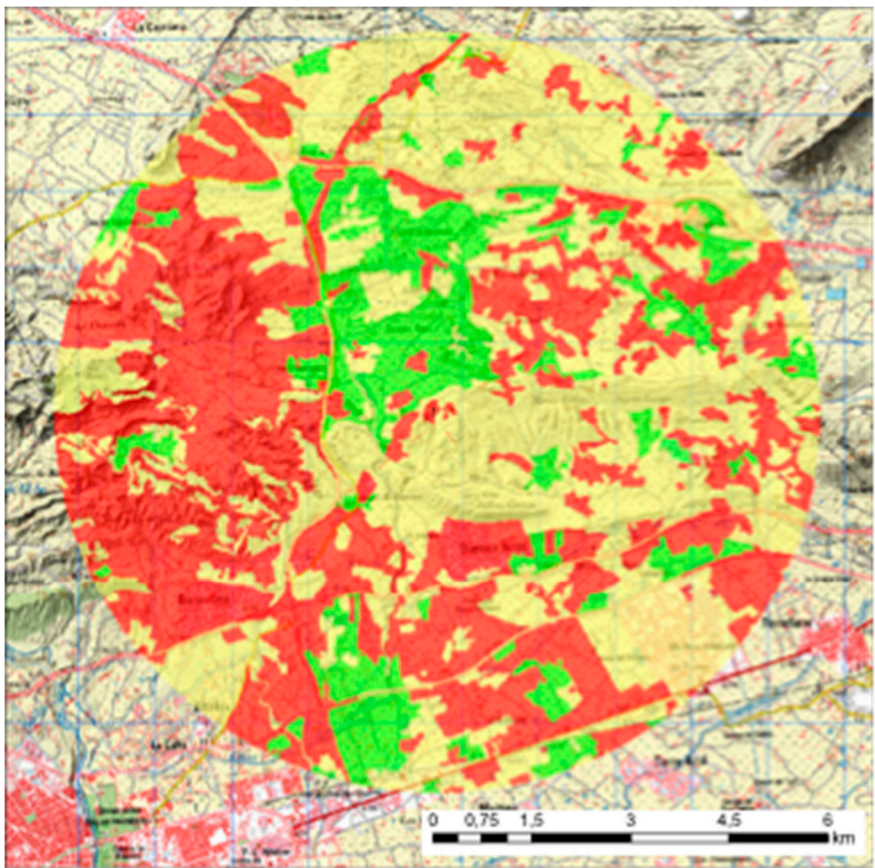
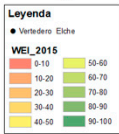
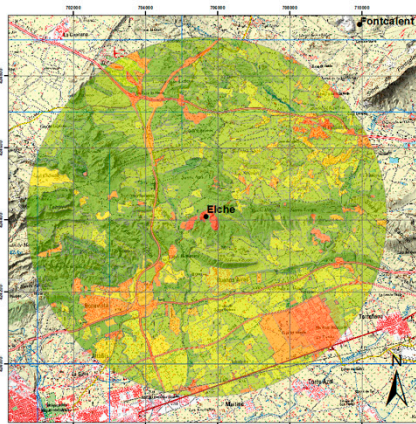
2005



2009



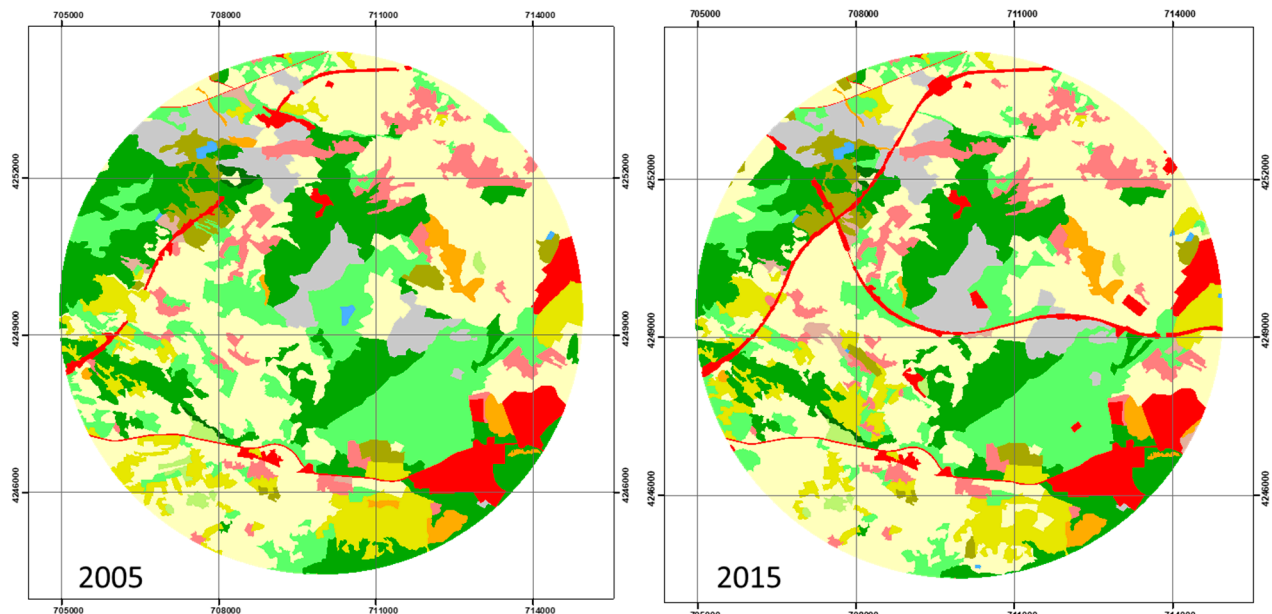
2015



WEI change 2005-2015



Fontcalent landfill LCM

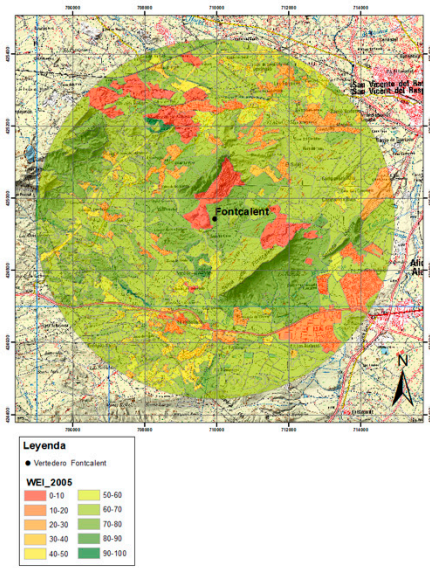


Category	2005	2015	2005	2015	Differences % 2015-2005
	Has		% Area		
Isolated industrial area	78,49	98,46	1,00	1,25	0,25
Railways	4,46	75,41	0,06	0,96	0,90
Road Networks	103,69	114,41	1,32	1,46	0,14
Well sorted industrial area	220,71	227,23	2,81	2,89	0,08
Urban center	12,84	13,41	0,16	0,17	0,01
Urban discontinuous	419,00	427,96	5,33	5,45	0,11
Citric fruit trees	232,60	215,30	2,96	2,74	-0,22
Non-Citric fruit trees	310,01	361,15	3,95	4,60	0,65
Non predefined mosaic	2689,61	2833,47	34,25	36,08	1,83
Non-Irrigated herbaceous crops	103,31	167,82	1,32	2,14	0,82
Olives	48,74	43,67	0,62	0,56	-0,06
Vineyard	192,25	182,98	2,45	2,33	-0,12
Pastures	1334,40	1118,14	16,99	14,24	-2,75
Conifers	23,11	15,24	0,29	0,19	-0,10
Primary Forest	1451,75	1280,55	18,48	16,30	-2,18
Scrub	147,24	136,11	1,87	1,73	-0,14
Extraction or discharge zones		48,73	0,00	0,62	0,62
Mining zones	429,81	426,05	5,47	5,42	-0,05
Bare soil	33,75	53,72	0,43	0,68	0,25
Artificial water surface	18,00	13,96	0,23	0,18	-0,05
TOTAL	7853,77				

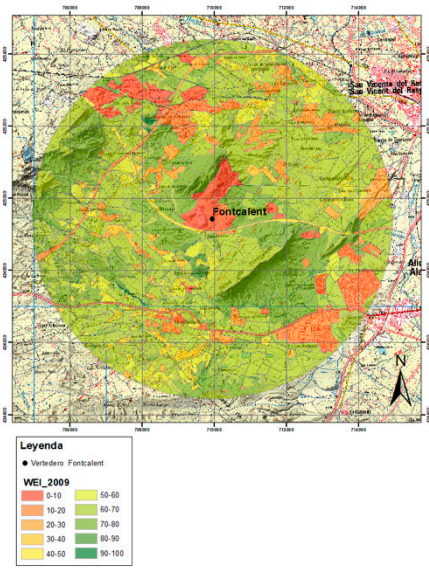
2.75% of grassland and 2.18% of forest association areas have been lost. Crops have increased by 1.83% with respect to the total study area.

Fontcalent landfill WEI evolution

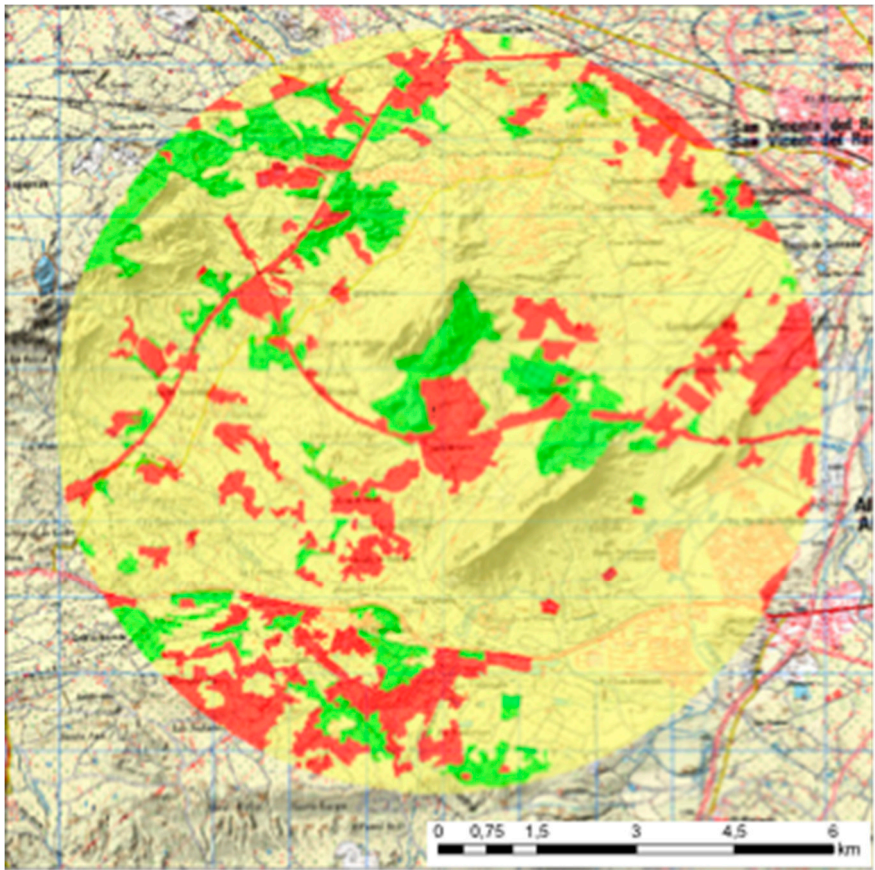
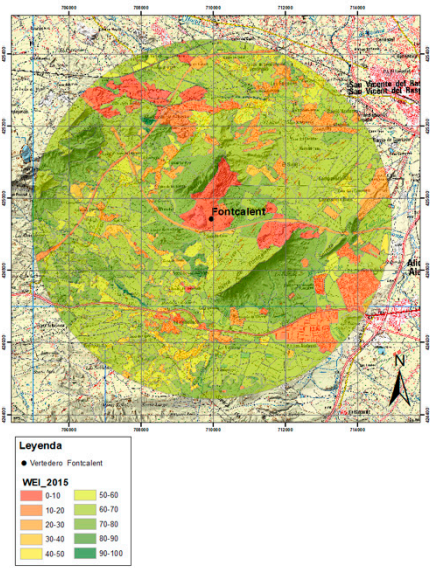
2005



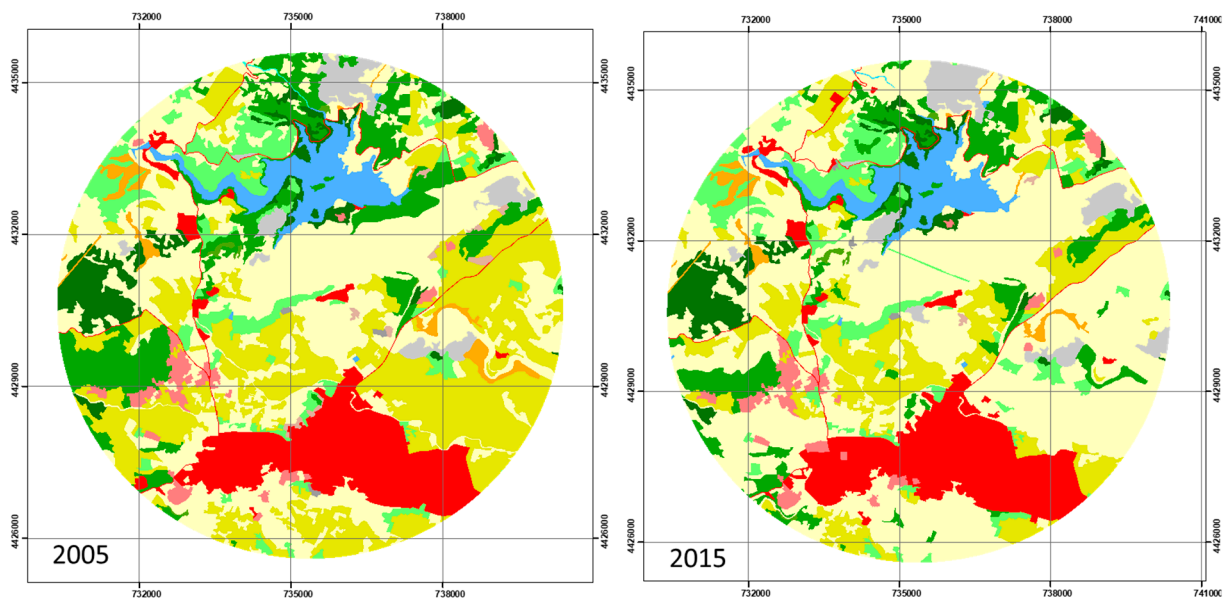
2009



2015



Onda landfill LCM

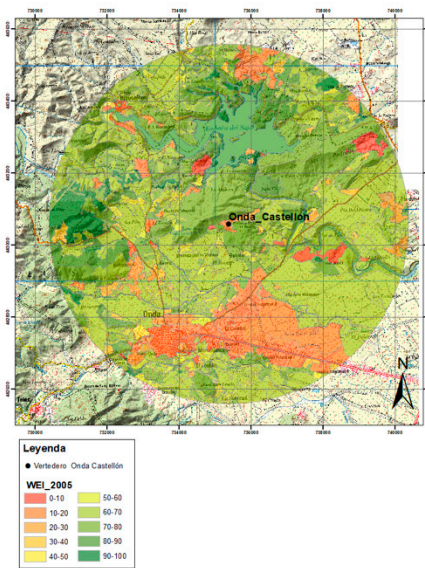


Category	2005	2015	2005	2015	Differences % 2015-2005
	Has		% Area		
Isolated industrial area	49,68	54,18	0,63	0,69	0,06
Road Networks	64,30	65,67	0,82	0,84	0,02
Well sorted industrial area	585,06	598,75	7,45	7,62	0,17
Urban center	161,35	163,13	2,05	2,08	0,02
Urban discontinuous	139,47	149,12	1,78	1,90	0,12
Citric fruit trees	1971,98	979,80	25,11	12,48	-12,63
Non-Citric fruit trees	1,87	1,87	0,02	0,02	0,00
Non predefined mosaic	2543,34	3752,76	32,38	47,78	15,40
Non-Irrigated herbaceous crops	35,52	4,80	0,45	0,06	-0,39
Pastures	520,05	508,34	6,62	6,47	-0,15
Conifers	313,48	310,26	3,99	3,95	-0,04
Hardwood evergreen	13,75	13,75	0,18	0,18	0,00
Primary Forest	786,79	595,85	10,02	7,59	-2,43
Scrub	114,16	82,41	1,45	1,05	-0,40
Extraction or discharge zones	8,29	5,62	0,11	0,07	-0,03
Mining zones	198,32	248,61	2,53	3,17	0,64
Rocky soil	3,07	3,07	0,04	0,04	0,00
Bare soil	31,55	5,81	0,40	0,07	-0,33
Ravines	3,91	2,50	0,05	0,03	-0,02
Dams and artificial lakes	304,50	303,80	3,88	3,87	-0,01
Artificial water surface	3,34	3,67	0,04	0,05	0,00
TOTAL	7853,77				

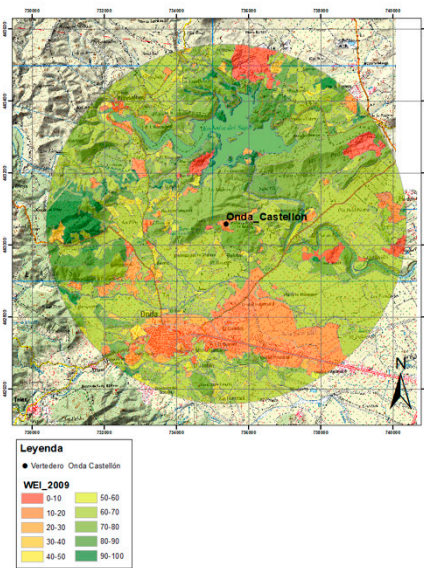
12.63% of grassland, 2.18% of fruit-bearing areas and 2.43% of primary forests have been lost. Crops have increased by 15.40%, with respect to the total study area.

Onda landfill WEI evolution

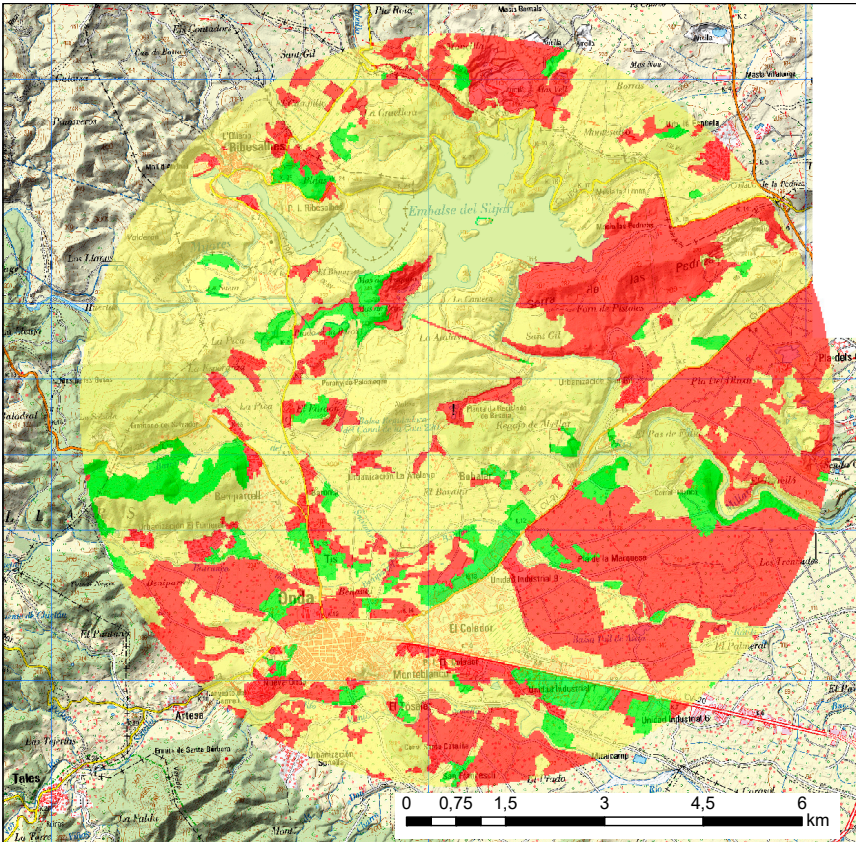
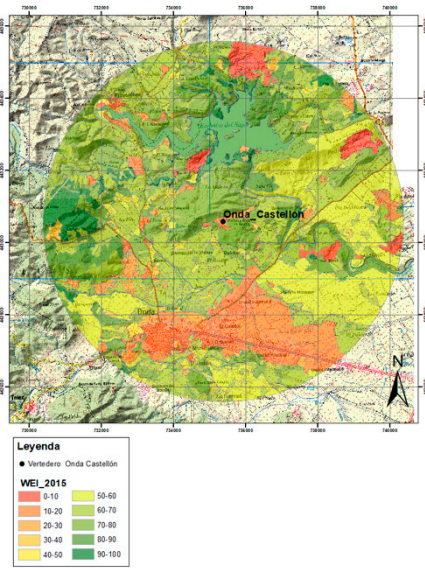
2005



2009



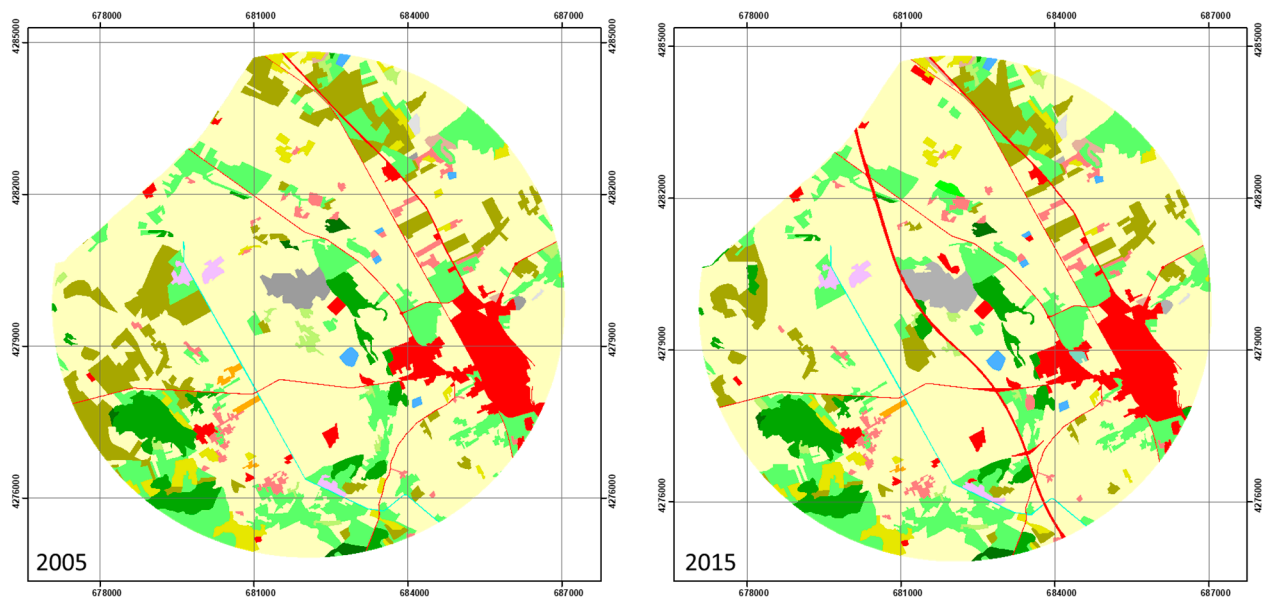
2015



WEI change 2005-2015

- Negative value
- No change
- Positive value

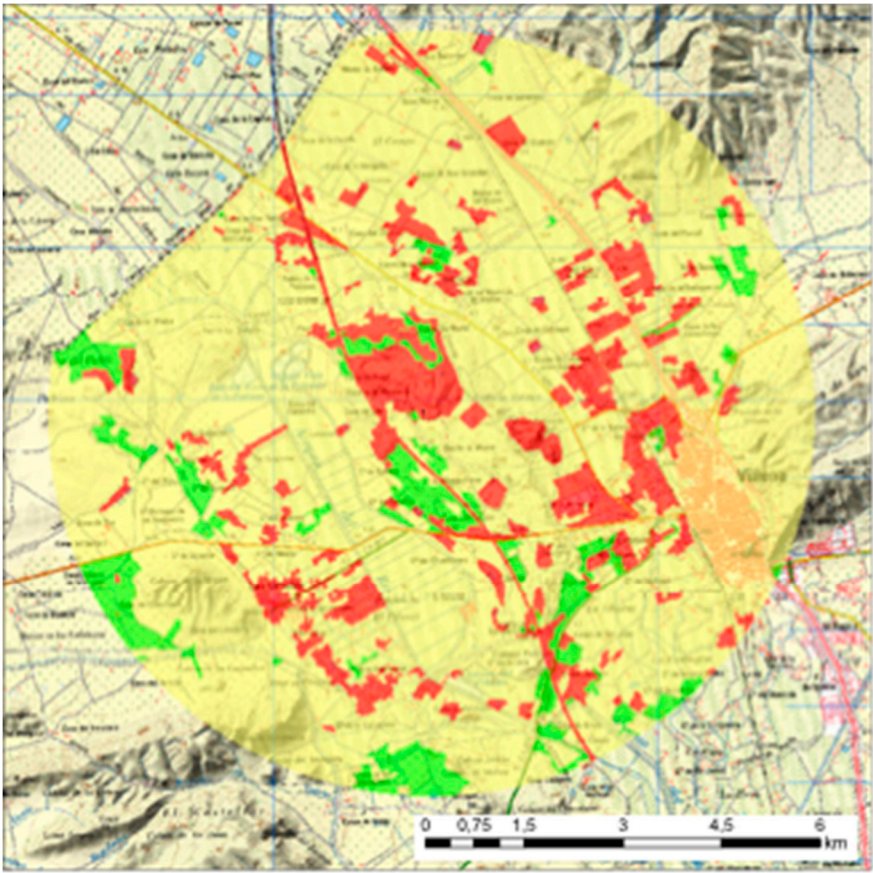
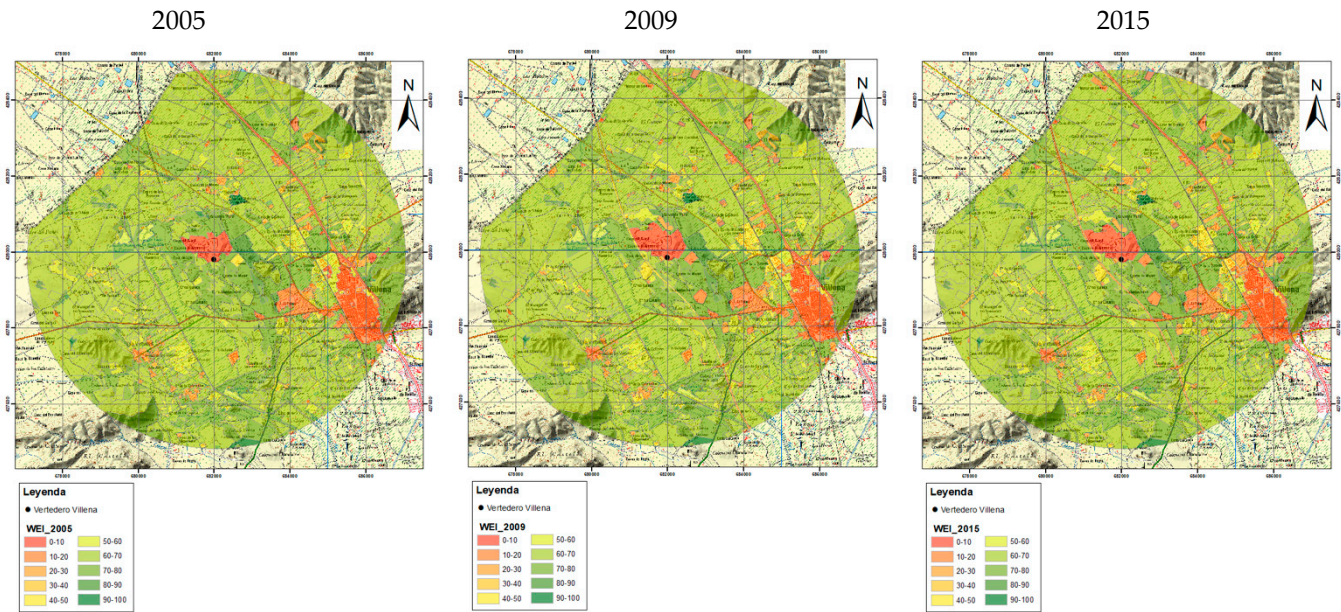
Villena landfill LCM



Category	2005	2015	2005	2015	Differences % 2015- 2005
	Has		% Area		
Isolated industrial area	41,02	64,61	0,55	0,87	0,32
Road Networks	69,04	75,14	0,93	1,01	0,08
Railways	14,72	59,85	0,20	0,81	0,61
Well sorted industrial area	89,54	91,27	1,21	1,23	0,02
Urban center	221,45	213,43	2,99	2,88	-0,11
Urban discontinuous	103,46	107,87	1,39	1,45	0,06
Citric fruit trees	2,04	2,04	0,03	0,03	0,00
Non-Citric fruit trees	158,77	149,10	2,14	2,01	-0,13
Non predefined mosaic	2041,90	3132,57	27,53	42,23	14,70
Non-Irrigated herbaceous crops	2485,06	1562,77	33,50	21,07	-12,43
Pastures	950,36	902,92	12,81	12,17	-0,64
Golf course		8,68	0,00	0,12	0,12
Primary Forest	296,38	322,77	4,00	4,35	0,36
Conifer	26,37	23,31	0,36	0,31	-0,04
Olives	57,96	43,91	0,78	0,59	-0,19
Vineyard	669,78	448,47	9,03	6,05	-2,98
Scrub	16,13	8,45	0,22	0,11	-0,10
Continental salines	33,62	35,63	0,45	0,48	0,03
Extraction or discharge zones	75,52	95,99	1,02	1,29	0,28
Mining zones	8,14	8,70	0,11	0,12	0,01
Bare soil	16,05	19,69	0,22	0,27	0,05
Channels	17,25	17,37	0,23	0,23	0,00
Artificial water surface	22,69	22,69	0,31	0,31	0,00
TOTAL	7417,22				

12.43% of grassland and 2.98% of vineyard areas have been lost. Crops have increased by 14.70% with respect to the total study area.

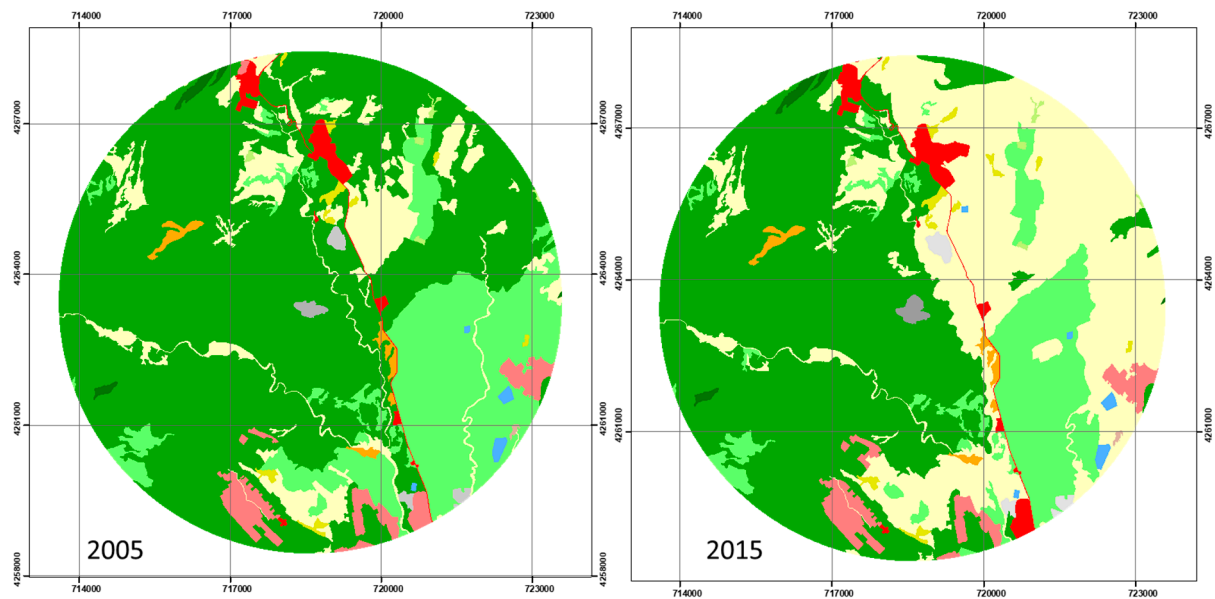
Villena landfill WEI evolution



WEI change 2005-2015

- Negative value
- No change
- Positive value

Xixona landfill LCM

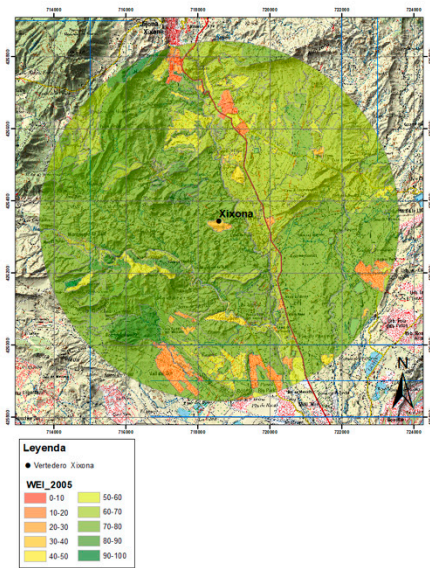


Category	2005	2015	2005	2015	Diferences % 2015- 2005
	Has		% Area		
Isolated industrial area	11,90	11,90	0,15	0,15	0,00
Road Networks	20,41	20,27	0,26	0,26	0,00
Well sorted industrial area	53,69	98,77	0,68	1,26	0,57
Urban center	16,61	21,16	0,21	0,27	0,06
Urban discontinuous	216,32	196,86	2,75	2,51	-0,25
Non-Citric fruit trees	38,93	47,58	0,50	0,61	0,11
Non predefined mosaic	616,59	2522,60	7,85	32,12	24,27
Non-Irrigated herbaceous crops	207,82	34,41	2,65	0,44	-2,21
Pastures	1483,08	999,85	18,88	12,73	-6,15
Primary Forest	5033,25	3725,88	64,09	47,44	-16,65
Conifers	28,50	28,50	0,36	0,36	0,00
Olives	12,85	12,85	0,16	0,16	0,00
Scrub	47,74	47,74	0,61	0,61	0,00
Extraction or discharge zones	14,83	22,50	0,19	0,29	0,10
Mining zones	28,44	38,41	0,36	0,49	0,13
Bare soil	2,61	2,61	0,03	0,03	0,00
Artificial water surface	20,22	21,90	0,26	0,28	0,02
TOTAL	7853,77				

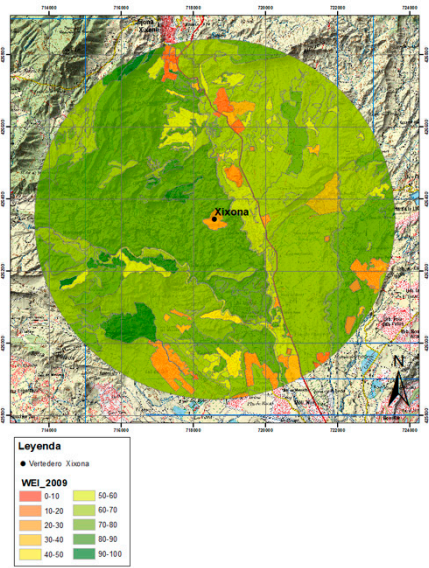
16.65% of forest, 6.15% of grassland areas and 2.21% of rainfed herbaceous crops have been lost. Crop mosaics have increased by 24.27% with respect to the total study area.

Xixona landfill WEI evolution

2005



2009



2015

