The World Heritage status and extractive industry threats

EXTENT AND TRENDS

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Preface

For over 30 years the World Heritage Convention is an important mechanism to protect the most vulnerable and unique monuments and areas in the world, both man-made as natural. The modern society, population growth and the associated increased demand for natural resources makes the protection of these areas an even bigger challenge. UNESCO, IUCN and other non-governmental organisations are expressing their concerns about the growing pressure on protected areas to allow mining development and oil and gas extraction.
This study concentrates on the threats of the extractive industries towards natural and mixed World Heritage sites and is commissioned by the IUCN National Committee of the Netherlands. It focuses on the extent and trend concerning extractive industry threats towards World Heritage sites, but it also on various factors influencing whether or not World Heritage sites are affected.

The study is also my final thesis as part of the BSc Tropical Forestry study programme at the Van Hall-Larenstein University of Applied Science in Velp, the Netherlands. IUCN NL was kind to provide me with the opportunity to conduct this study for them and to provide me with an inspiring working environment at their office in Amsterdam.

I want to thank all the staff of the IUCN NL office in Amsterdam for sharing their knowledge and supporting me with difficult parts of the study. A special thanks to Mark van der Wal of IUCN NL for his patience, knowledge and support in the progress. Another special thanks to Peter van der Meer, professor at Van Hall-Larenstein University of Applied Science, for his patience, support and time. Without their input, conducting this study was not possible. Finally I like to thank my wife for her on-going support which made it possible to conduct this research, for her patience and for designing the report layout.

Abbreviations

ASM-PACE	Artisanal Small Scale Mining in and around Protected Areas and Critical Ecosystems
EI	Extractive Industry
EIU	The Economist Intelligence Unit
ICMM	International Council on Mining and Minerals
IEP	Institute for Economy and Peace
IUCN	International Union for Conservation of Nature
OUV	Outstanding Universal Value
SOC	State of Conservation
TI	Transparency International
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WCMC	World Conservation Monitoring Centre
WH	World Heritage
WHC	World Heritage Committee
WWF	World Wide Fund for Nature

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Abstract

Natural and mixed World Heritage sites are international recognised areas with an outstanding value for humanity, which have to be protected for future generations. Non-profit organisations and institutions sounding the alarm about the increased amount of threats from the extractive industry towards protected areas. The international status of a World Heritage site should provide the best protection against all forms of natural resource extraction, although no study is done yet about the extent of extractive industry threats towards World Heritage sites.
This study concentrates on the extent, distribution and trends concerning extractive industry threats towards World Heritage Sites since 1986, as on the influence of site and country characteristics.
27% of all sites have reported threats since 1986. Oceania (50%) and North-America (41%) have the highest proportion of affected sites. Of the reported threats, 37% were actual activities and 63% were potential threats. Furthermore, 47% are located or aimed at a location inside a World Heritage site and 53% outside. A clear increment was found of the reported threats since 2010 compared to earlier years, with Africa as the continent with the highest growth in extractive industry threats. The site area has an significant correlation with the amount of reported threats, while no significant relation was found between the proportion of sites affected by extractive industry and the presence of a buffer zone or the IUCN protected area management category designation of a World Heritage site. There is both a significant correlation between the Democracy Index value and the amount of extractive industry threats, as between the Human Development Index value and the amount of threats. No correlation is determined between the amount of threats and the Corruption Index or the Global Peace Index. Furthermore, the World Heritage Committee decisions does not seem to have an effect on the degree of diversion of a threat.

Keywords: Mining, Extractive Industry Threat, World Heritage, Protected Area, World Heritage Committee Decisions

1. Introduction

1.1 Background

Due to rising economies and the ever increasing demand of the developed world, mineral resources like iron, copper and oil are more valuable than ever. Resource-rich countries, especially in Africa, are experiencing a significant expansion of extractive industry (see box 1) activities to answer to the increasing demand (Hayes & Burge 2003). Although the economic crisis is in some way slowing this growth or even reversing it, over the past decades the increase is still substantial (Ericsson & Hodge 2012; Ernst & Young 2012), also due to the growing economies of the BRIC-countries (Brazil, Russia, India and China). Moreover, decades of technological development have made unattractive or depleted mineral deposits interesting again for (further) exploitation. Though mineral extraction may be an important economic impulse for the often poor countries, it also puts an increased amount of pressure on protected and sensitive natural areas all over the world. Activities like open-pit mining could result in huge negative impact on the surrounding areas, especially when situated inside sensitive and unique areas. Not only natural vegetation is destroyed for the construction of infrastructure and the mining activities, but also chemical environmental damage can be significant (Lacerda 2003; Salomons 1994; Sousa et al. 2011). In addition, the negative social impact can be substantial. Social impacts like communities being affected by the loss of healthy sources of food and clean water, were and are often more rule rather than an exception (Joyce & MacFarlane 2001).
As an answer to these problems, different institutions and non-governmental organisations are paying an increasing amount of interest to these problems. Especially the unique, valuable and sensitive World Heritage (WH) sites (see box 2) are subject to this increased amount of interest and effort. Due to the uniqueness of these areas, extractive activities inside of the site boundaries are illegal (BBC 2011).Some extractive industry activities, even when carried out outside of the WH site property, could cause irreversible damage or could even completely destroy the uniqueness of the site. The International Council on Mining and Minerals (ICMM), consisting of various mining companies and Shell (the only petroleum company involved), made no-go-zone commitments for WH sites (ICMM 2003).

Box 1: Extractive industry description

Extractive Industry

The extractive industry is a broad term for all the companies working in the field of mineral extraction (mining) and gas- and oil extraction. Some types of extractive industry can be irreversibly damaging, like open-pit mining or surface mining. Other types of extraction have a limited spatial extent, but have a high risk in accidental pollution (e.g. oil extraction).
For any type of extraction, infrastructure and facilities have to be build. Due to the value of minerals, gas and oil, it is often profitable to extract these raw materials in really remote areas. To gain access to these remote areas, the area has to be made accessible by infrastructure which opens these remote areas for people with other intentions, like poaching or illegal natural resource extraction. The extractive work itself and the facilities around these sites of extraction also attract a lot of people in search of work or profit.
Artisanal mining is another type of extractive activity. Artisanal mining is an often illegal form of mining carried out by local people without any rules or regulations applied. It is small-scale but it can be abundant in a mineral-rich area. This type of mineral mining is not taken into account in this study, but can have a considerable impact in some areas.

Until now, criteria and rules are defined to protect the sensitive areas by excluding all extractive industry activities out of these areas. By excluding extractive industry operations, (local) economical impulses are lost which is especially important in countries dealing with poverty. The demand for economic growth and the demand for no-go-areas are two things not easily combined, although they are discussed in many meetings and conventions.
Right now, no extensive inventory has been done of the different extractive industry activities in or around natural and mixed WH sites (see box). On an expert meeting on criteria for no-go-zones in Brussels in March 2012, the IUCN Committee of the Netherlands committed itself to document and analyse the experiences of protected areas with the extractive industry since 1986. That year is in accordance with an earlier report of UNESCO (Bandarin 2007).
This commitment is done following the report of the IUCN (Turner 2012) about the impact of the extractive industry on WH sites and the roles of governments, the commercial sector and international organizations.
This study will focus only on the extractive industry problems concerning natural and mixed WH sites, but the desire of the IUCN and UNESCO is to extent this to a study also covering other types of protected areas.
A special request of the meeting in Brussels, was to look into the relation between the World Heritage Committee (WHC) decisions and the extent of diversion of extractive industry threats. These decisions are made by the World Heritage Committee in answer to known extractive industry threats. The WHC decisions do not have a law enforcement component, so it is limited in its actions against the known threats. Still, WHC decisions are important in averting threats, because more severe decisions can result in image damage of a country. WHC decisions are not the only factor influencing whether or not a WH site is affected by extractive industry, site and country characteristics could also be of influence.

1.2 The study

The overall objective of this study is to determine the extent and distribution of the extractive industry threats affecting natural and mixed World Heritage and the factors influencing whether or not a WH site is affected by extractive industry. The following study questions were formulated in order to answer the overall objective:

Box 2: World Heritage sites description and establishment

World Heritage sites

The designation of an area to be a World Heritage Site is done by the World Heritage Committee which is a part of United Nations Educational, Scientific and Cultural Organization (UNESCO). Ten criteria are composed (six for cultural sites and four for natural sites) and a potential World Heritage Site has to meet at least one criteria. These criteria regard to something called Outstanding Universal Value (OUV), referring to an asset of a site which is exceptional and unique and has to be preserved for future generations. When one of these criteria is met, a site may be inscribed as a World Heritage Site. (UNESCO 2012)
When the World Heritage Convention was established in 1972, the definition of cultural and natural World Heritage sites was set, respectively in article 1 and 2. A cultural World Heritage site can be composed out of either monuments, groups of buildings or sites, while a natural World Heritage site can be either unique physical and biological formations, geological and physiographical formations or unique natural areas from the point of view of science, conservation or natural beauty. A combination of both types is possible, which is called a mixed World Heritage site. (UNESCO 1972).

1. What percentage of natural and mixed WH sites is affected by extractive industry threats since 1986?
2. What are the global and continental trends concerning natural and mixed WH sites and extractive industry threats since 1986?
3. Which site and country characteristics are of influence on whether or not natural and mixed WH sites are affected by extractive industry threats?
4. How do the World Heritage Committee decisions influence the extent of diversion of extractive industry threats?

2. Data and Methods

2.1 Data collection

This study was done by reviewing documentation and literature. All 218 natural and mixed WH sites were included. Information about site area, presence of an official buffer zone and year of inscription were obtained from the WHC section on the UNESCO site (http://whc.unesco.org). All the information about extractive industry threats and the WHC decisions was derived from the information provided by the UNEP-WCMC, IUCN and UNESCO in the following documentation:

i) World Heritage Information Sheets (UNEP-WCMC & IUCN 2011),
ii) State of Conservation (SOC) reports (UNESCO & IUCN 1986-2012c),
iii) (Reactive) Monitoring Mission reports (UNESCO & IUCN 1986-2012b),
iv) Decision documents (UNESCO 1986-2012b),
v) Periodic Reporting reports (UNESCO 1986-2012a),
vi) Nomination Documents (UNESCO & IUCN 1986-2012a).

These information sources are the most complete and reliable sources available.
The IUCN Protected Areas Category designation data was derived from the World Heritage Information Sheets (UNEP-WCMC) and consists out of a total of six categories (see Appendix 9.2). Two additional categories were added, mixed and unassigned, respectively sites consisting out of multiple areas with different IUCN management categories and sites without any designated IUCN management category.
The Corruption Index data was obtained from Transparency International (www.transparency.org, (TI 2005, 2007, 2011)), an independent organisation aiming to stop corruption and promote transparency. The Democracy Index data was obtained from The Economist Intelligence Unit (www.eiu.com, (EIU 2006, 2008, 2011)), an independent organisation maintaining large country datasets. The Global Peace Index data was obtained from the Institute for Economy and Peace (www.economicsandpeace.org, (IEP 2008, 2011)), an initiative by a wide range of philanthropists, business people, politicians, religious leaders and intellectuals. Finally, the Human Development Index data was obtained from the United Nations Development Programme (www.undp.org,(UNDP 2005, 2008, 2011)). All index data is developed and maintained under strict evaluation of external third-parties.

2.2 Data management and analysis

The information derived from the selected data sources was entered into Microsoft Office Excel and Access documents to create manageable datasets. The data was stored in separate tables with unique codes to make cross-referencing possible.
The World Heritage Information Sheets of UNEP-WCMC were used to make the first separation of the sites with or without reported extractive industry threats. The information sheets were analysed by keyword searching (mining, mine, mineral, extraction, extractive, concession, exploration, petroleum, oil, gas and prospect). Of the sites with reported extractive industry threats, all other documents were analysed in the same keyword searching method. The detailed threat description, year of first reporting, the current status of the threat and the corresponding WHC decisions were recorded.

The data was analysed on site level, converting it into presence or absence data, where 1 = presence of threats and 0 = absence of threats. The absence and presence distribution was calculated on

global and continental level.
The threats were further analysed and grouped using two types of distribution; (i) whether the threat is an active or potential threat and (ii) whether the threat is located inside or outside the property boundaries.
(i) Active threats are actual activities inside or outside a property. These operations can also have been executed in the past (since 1985) and already ended by now. Potential threats are the precursor of operations and no actual activities take place in or around the property, but could have a potential impact in the future.
(ii) A threat can be located or aimed at an area inside or outside of the property boundaries of a WH site. A threat located inside a property is a clear violation of the WH status and will have a direct effect on the Universal Outstanding Value of the property. A threat located outside is not a direct violation of the WH status of the property, but could still have an impact on the Outstanding Universal Value.
The treats were also grouped according to three status types; (i) averted, (ii) partly averted and (iii) not averted. A partly averted status refers to a threat which had been adjusted to reduce the impact on the property or to cater to the demands of the WHC. Of all groupings, the distribution was calculated on global level and on continental level.
For the trend analysis, three-years time periods were created starting at the beginning of the year 1986. An extra time period “before 1986” was created to be able to capture the threats started before but which were still relevant in 1986. To determine the trend, the year in which the threat first was reported was used. Finally, for each time period the amount of newly reported threats per inscribed site was calculated. This procedure was repeated on a continental level.
For analysis of the relation between the country indexes and the absence or presence of extractive industry, only the index and threat data was used and analysed separately of the last three time periods (2004-2006, 2007-2009 and 2010-2012). This was done because the indexes were incomplete or not developed before 2004 and the index values vary over time. Due lack of clear data about the status of earlier reported threats, only new threats first reported in the relevant time period were taken into consideration. For this analysis, only the countries with more than two sites were used, resulting in 18-20 countries and a total of 100-120 sites (varies per time period). The index values and the proportion of sites with newly reported threats in that particular time period were plotted against each other in a regression graph.
Finally, the different decisions were grouped using the decision types as shown in Table 1. This grouping was derived from the decision documents of the WHC and enumerated in order of seriousness. In the situation a threat continues to exist, the WHC takes more serious decisions, eventually resulting in the ultimate decision to remove the property from the WH list.

Table 1: World Heritage Committee decision types used for grouping all recorded decisions.

No.	World Heritage Committee Decision Types
1	Accept the solutions provided by the State Party to solve the problems.
2	Request information or documents.
3	Expression of concerns about the threats and/or requested to terminate/end all threats.
4	Request to the State Party to invite an IUCN/UNESCO Reactive Monitoring Mission.
5	Consideration to place the property on the World Heritage in Danger list.
6	Placement of the property on the World Heritage in Danger list.
7	Delete the property from the World Heritage list.

2.3 Statistical testing

For this study, descriptive statistics were used to quantify the extent of WH sites affected by extractive industry. The number and percentage of the sites affected by extractive industry since 1986 was calculated. This was repeated while using the different factors and groupings described above. The number and percentage was also calculated of whether the threats were active or potential as for whether the threats were located inside or outside the boundaries of the property. For the extent and distribution of extractive industry threats, no further statistical analyses were needed because the calculated numbers and percentages were sufficient.

The area was logarithmic transformed to normalise the data and a one-way Analysis of Variance (ANOVA) test was employed to describe the correlation between the log site area and the amount of threats per site. The same analysis was employed to determine the correlation between the proportion of the sites with newly reported extractive industry threats (on country level) and the various indexes described above. Regression graphs were created to visualise the data.

To calculate the correlation between the IUCN Protected Area Management Category designation and the presence of extractive industry (0 or 1), a Fisher-Freeman-Halton exact test was used. The same test was used to determine the correlation between the World Heritage Committee decisions and the current status of the threats. To determine the correlation between the absence or presence of a buffer zone and the absence or presence of extractive industry threats, a Chi-squared test was used.

For all statistical analyses the programmes Microsoft Office Excel 2010, IBM SPSS 21 and Cytel StatXact 10 were used.

3. Results

3.1 Introduction to results

The results chapter consists out of five parts. Section 3.2 covers the extent of sites affected by extractive industry globally and by continent, regardless the type of threats involved or the moment in time the threats were reported. It is important to understand the difference between section 3.2 and 3.3. Section 3.3 shifts the focus to analysis of all 101 found threats, regardless the sites in which the threats are located. Section 3.4 focus on the trend since 1986, both globally as by continent. Section 3.5 describes the analysis of the extractive industry threats and their relation to specific site characteristics and country characteristics. Finally, section 3.6 zooms in on the relation between the WHC decisions and the status of a threat (whether or not it was averted).
The results does not cover individual cases. For more detailed information about the threats found at each WH site, tables from the original dataset can be found in Appendix 8.3. General information about each WH site can be found in Appendix 8.2 and detailed information about the WHC decisions can be found in Appendix 8.4.

3.2 Sites

3.2.1 Total extent and distribution

The first request of the convention in Brussels was to determine the total extent of natural and mixed World heritage sites which dealt or are dealing with extractive industry. Since 1985, 59 of the total 218 sites had one or more reported extractive industry threats (27%) (Figure 1). All found threats per site can be found in Appendix 9.2. The extent of WH sites affected by extractive industry threats was determined per continent. Figure 2 gives a graphic presentation of the percentages per continent. The percentages vary from 13% of the European sites been affected to 50% of all the sites in Oceania. The percentages of the continents are significantly different ($\chi 2=14.417$, df=5, P=0.013, Chi-square test).

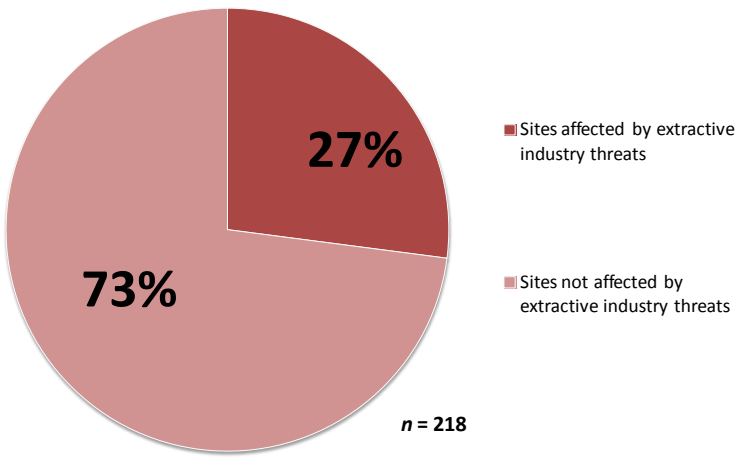

Figure 1: Total extent of all sites affected and not affected by extractive industry threats.

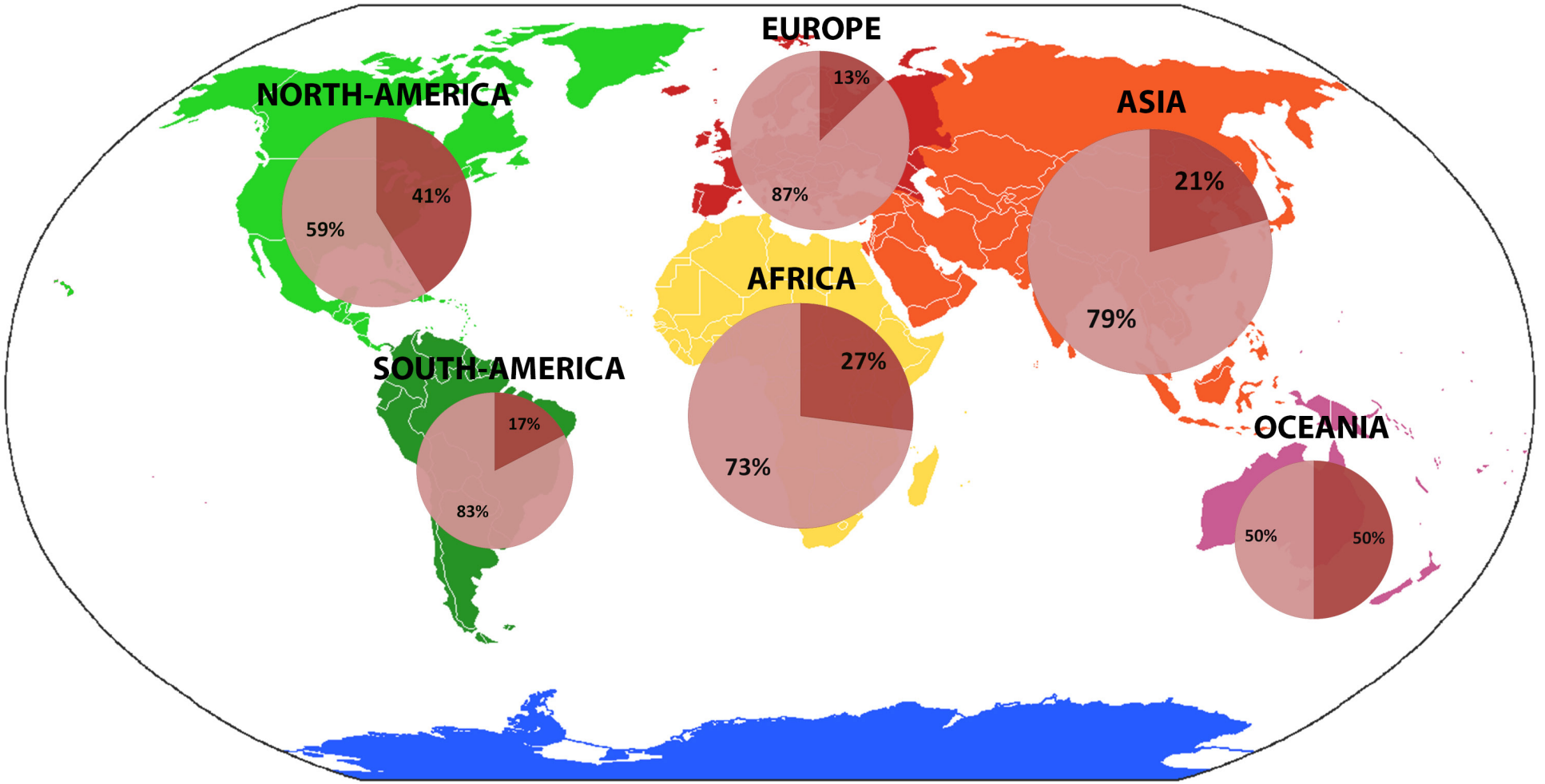

Figure 2: Percentages of WH sites affected by extractive industry threats since 1985 for each continent. The size of the pie-charts represents the amount of sites involved; North-America (n=34), South-America (n=23), Europe (n=31), Africa (n=48), Asia (n=58), Oceania (n=24). Some sites in overseas territories are allocated to other continents than the country of origin. One site of Portugal, two sites of Spain, one site of France and one site of the United Kingdom were allocated to Africa, being islands close to the African mainland. The island of Papua was allocated to Oceania, containing one site of Indonesia. Also one site of the United Kingdom and one site of France were allocated to Oceania, being islands in the Pacific Ocean. Finally the Russian Federation was allocated as a whole to Asia and Hawaii to North-America. (Source of map: http://upload.wikimedia.org/wikipedia/commons/1/19/Continents_vide_couleurs.png)

3.2.2 Amount of threats per site

The distribution of the sites by the amount of threats per site is shown in Figure 3. As showed earlier, 159 (73%) of the sites have zero reported extractive industry threats. The amount of sites decreases exponentially with an increased amount of threats per site. The highest amount of extractive industry threats in one site is five. The distribution by amount of threats per site is also shown by continent in Table 2. Africa is the only continent containing the site (Mount Nimba Strict Nature Reserve, Côte d'Ivoire/Guinea) with five reported extractive industry threats.

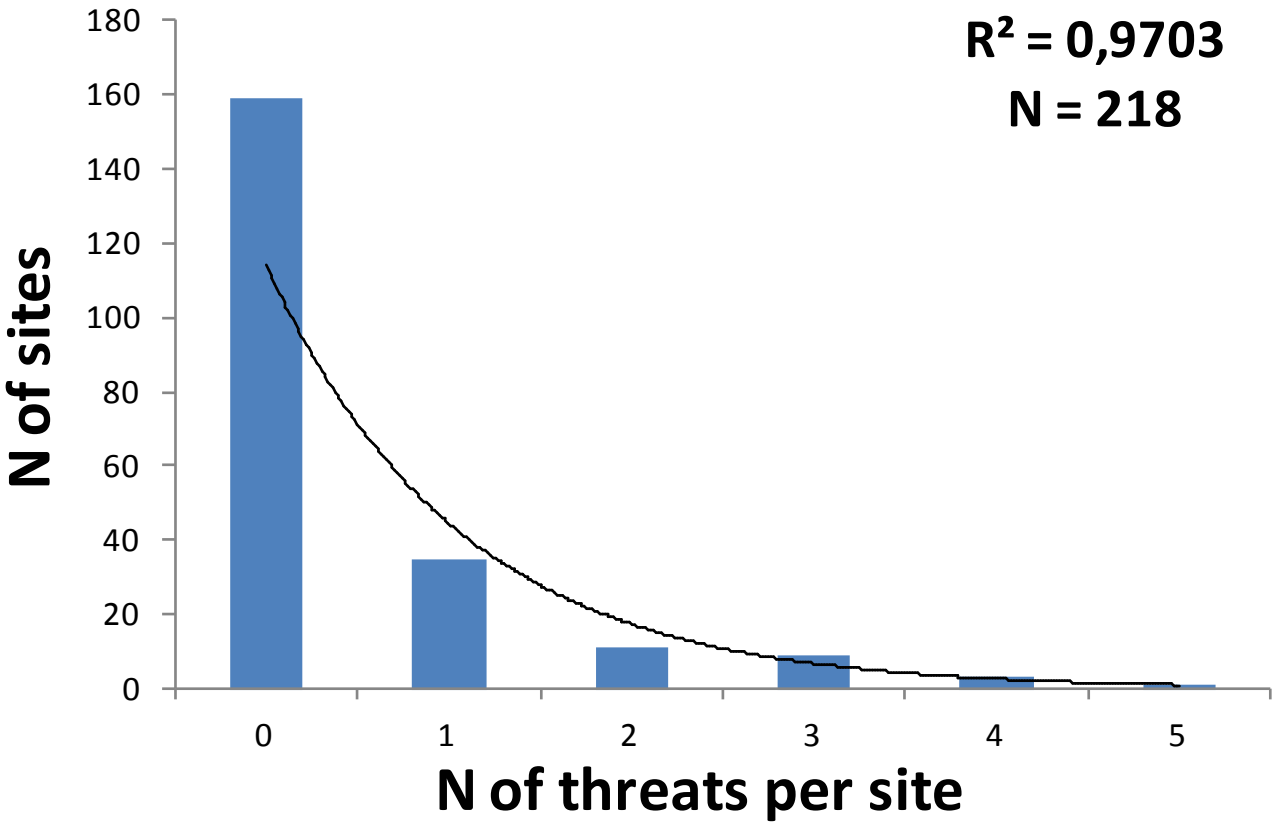

Figure 3: Distribution of the sites with 0 to 5 threats per site. 159 (73%) sites have 0 reported threats, 35 (16%) sites have 1 reported threat, 11 (5%) sites have 2 reported threats, 9 (4%) sites have 3 reported threats, 3 (1.5%) sites have 4 reported threats and 1 (0.5%) site has 5 reported threats. There is a strong exponential relation with a R2 value of 0.97.

Table 2: The WH sites divided over the amount of threats per site, by continent. It is shown by absolute numbers and proportions.

Continent	Total N	Numbers						Proportion of total amount of sites					
		0	1	2	3	4	5	0	1	2	3	4	5
Africa	48	35	6	1	3	2	1	0,73	0,13	0,02	0,06	0,04	0,02
Asia	58	46	6	2	3	1	0	0,79	0,10	0,03	0,05	0,02	0,00
Europe	31	27	3	1	0	0	0	0,87	0,10	0,03	0,00	0,00	0,00
North-America	34	20	11	3	0	0	0	0,59	0,32	0,09	0,00	0,00	0,00
Oceania	24	12	6	3	3	0	0	0,50	0,25	0,13	0,13	0,00	0,00
South-America	23	19	3	1	0	0	0	0,83	0,13	0,04	0,00	0,00	0,00
Total	218	159	35	11	9	3	1	0,73	0,16	0,05	0,04	0,01	0,00

3.3 Extractive industry threats

3.3.1 Threat type distribution

Divided over 59 sites (as described in section 3.2), a total of 101 extractive industry threats have been reported since 1985. Of these threats, 37 (37%) threats were active and 64 (63%) were potential. Also 47 (47%) of the threats were located or aimed at a location inside the property boundaries and 54 (53%) outside the boundaries.

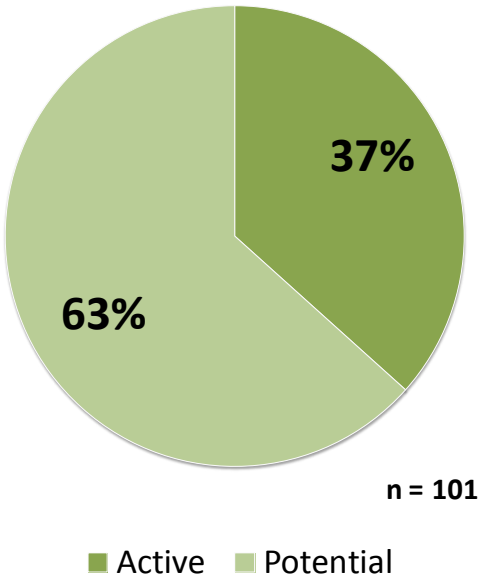

Figure 4: Distribution of active and potential threats. Active threats are actual activities affecting the Wold Heritage sites, while potential threats do not have an actual impact on the WH sites (yet).

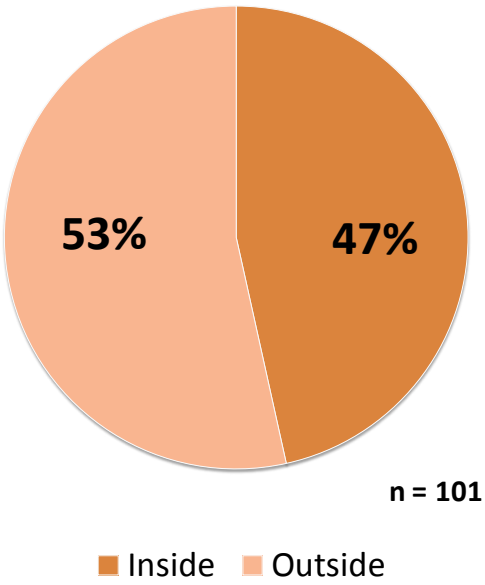

Figure 5: Distribution of threats located or aimed at a location inside or outside a World Heritage site.

The active and potential threats distributed by continents are shown in Table 3. The continents are not statistically different (df=5, P=0.162, Fisher-Freeman-Halton). Table 4 shows the distribution per continent for the location of the threats (inside/outside). The numbers of the continents are not statistically different (df=5, P=0.298, Fisher-Freeman-Halton).

Table 3: Distribution of active and potential threats per continent.

Continent	Total N of threat	Number		Proportion of total N	
		Active	Potential	Active	Potential
Africa	30	8	22	0,27	0,73
Asia	23	13	10	0,57	0,43
Europe	5	2	3	0,40	0,60
North-America	17	4	13	0,24	0,76
Oceania	21	7	14	0,33	0,67
South-America	5	3	2	0,60	0,40
Total	101	37	64	0,37	0,63

Table 4: Distribution of threat located or aimed at a location inside or outside the boundaries of a World Heritage site.

Continent	Total N of threat	Number		Proportion of total N	
		Inside	Outside	Inside	Outside
Africa	30	17	13	0,57	0,43
Asia	23	13	10	0,57	0,43
Europe	5	3	2	0,60	0,40
North-America	17	5	12	0,29	0,71
Oceania	21	7	14	0,33	0,67
South-America	5	2	3	0,40	0,60
Total	101	47	54	0,47	0,53

The active and potential threat type and the location combined result in Figure 6. Table 5 shows the same analysis per continent. No significant difference could be found between the different continents (df=15, P=0.118, Fisher-Freeman-Halton).

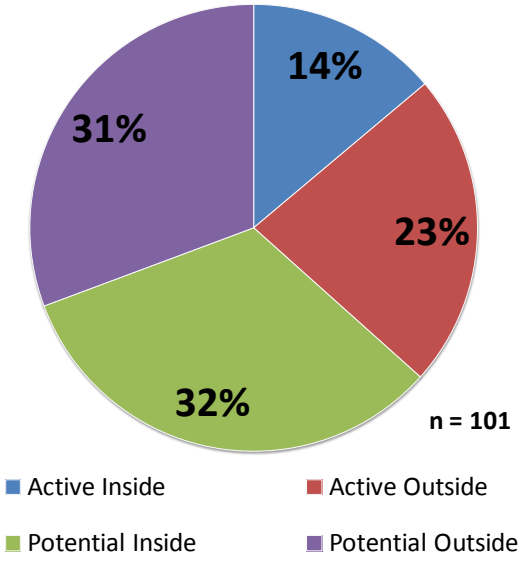

Figure 6: Distribution of combined active/potential and inside/outside threat type as part of all threats. The percentages are representative for the actual numbers, except the 32% potential inside represents 33 threats.

Table 5: Active and potential threat type combined with the location of the threat, shown per continent. The proportion is also shown as a part of the total amount of threats per continent.

Continent	Total N of threat	Numbers				Proportion of total N			
		Active Inside	Active Outside	Potential Inside	Potential Outside	Active Inside	Active Outside	Potential Inside	Potential Outside
Africa	30	3	5	14	8	0,10	0,17	0,47	0,27
Asia	23	8	5	5	5	0,35	0,22	0,22	0,22
Europe	5	1	1	2	1	0,20	0,20	0,40	0,20
North-America	17	1	3	4	9	0,06	0,18	0,24	0,53
Oceania	21	0	7	7	7	0,00	0,33	0,33	0,33
South-America	5	1	2	1	1	0,20	0,40	0,20	0,20
Total	101	14	23	33	31	0,14	0,23	0,33	0,31

3.3.2 Current status (2012)

Of only 36 of the total of 101 threats the status has been reported in the data sources. Figure 7 shows a pie chart with the percentages of all reported threats in three different status types; averted, partly averted and not averted. The threats with an unknown status were not further included in the current status analysis.

The status per continent was determined, resulting in Table 6. The numbers per continent are significantly different (df=10, P=0.005, Fisher-Freeman-Halton). Of each continent, the status of more than half of the threats is unknown. Notable is the high proportion of not averted threats in Asia.

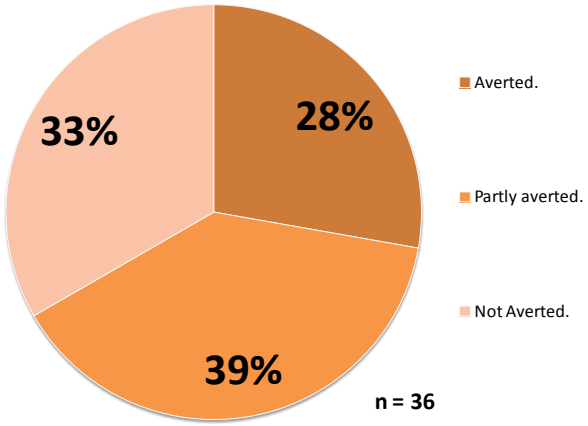

Figure 7: Distribution of 36 threats with a clear current status outcome. Of the other threats, the current status is unknown. The status of the threats is stable, but could change in the future.

Table 6: Distribution of threats with a known reported status, given per continent. The total amount of threats is given together with the amount of threats with a known reported status. Furthermore, the proportion of each status category is given as part of the total amount of threats.

Continent	Total N of threats	N of threats with known status	Numbers			Proportion of total threats with known status		
			Averted	Partly Averted	Not Averted	Averted	Partly Averted	Not Averted
Africa	30	12	1	7	4	0,08	0,58	0,33
Asia	23	10	0	3	7	0,00	0,30	0,70
Europe	5	2	2	0	0	1,00	0,00	0,00
North-America	17	5	3	2	0	0,60	0,40	0,00
Oceania	21	5	3	1	1	0,60	0,20	0,20
South-America	5	2	1	1	0	0,50	0,50	0,00
Total	101	36	10	14	12	0,36	0,10	0,14

3.4 Trends

The global trend is shown in Figure 8. The amount of reported extractive industry threats in the last time period more than doubles with respect to all earlier time periods which had a relatively constant amount of reports extractive industry threats. In the last time period, the sites have an average of 0,17 threats per site (one threat each 6 sites). Over the 217 sites in 2012, this gives a total amount of more than 32 newly reported threats in three years, more than 10 new threats per year.

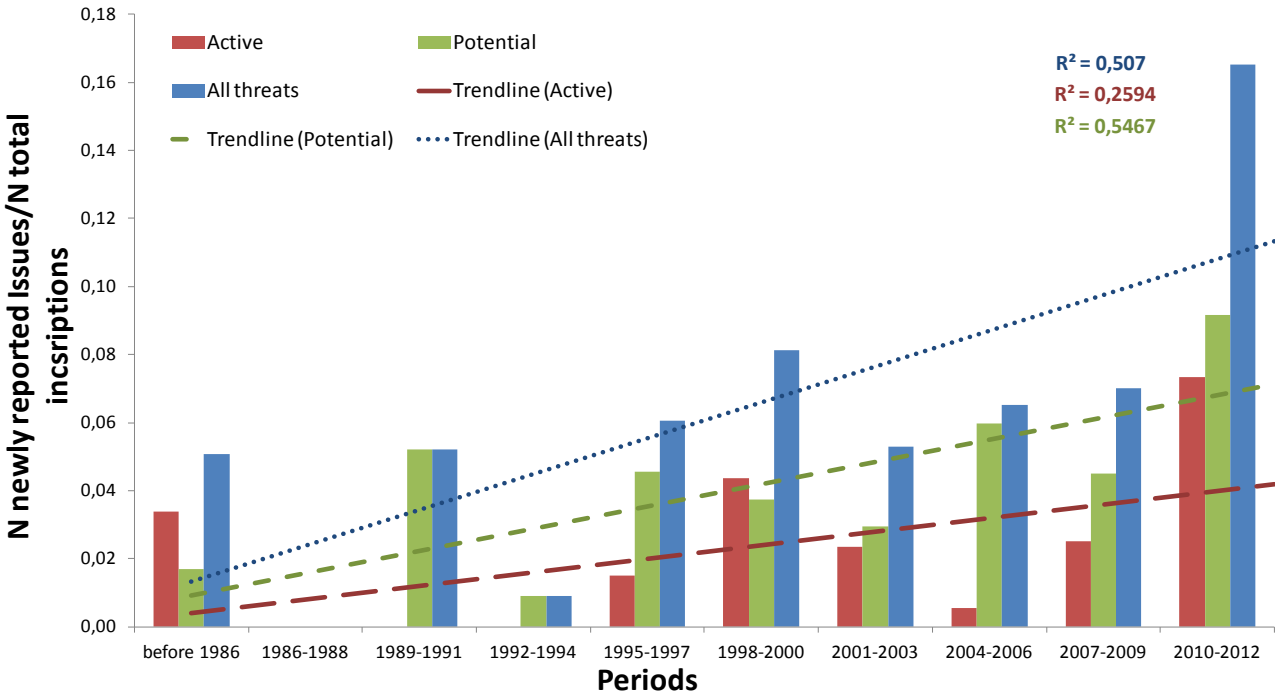

Figure 8: Trend of average amount of threats per inscribed site for ten time periods ranging from 1986 to 2012. The trend is given for active threats, potential threats and all threats. The last time period (2010-2012) gives an substantial increase in newly reported threats compared to the prior time periods. For each threat type, the regression is given, with R-squared values for active threats (0.2594), potential threats (0.5467) and all threats (0.507).

The trend per continent gives another view on the development of extractive industry threats globally. The cumulative chart (Figure 9) illustrates the trends for the six continents. Remarkable is the continuously high amount of extractive industry threats per WH site on the Oceania continent. The rapid increase of extractive industry threats in Africa since 2000 is also worth noting.

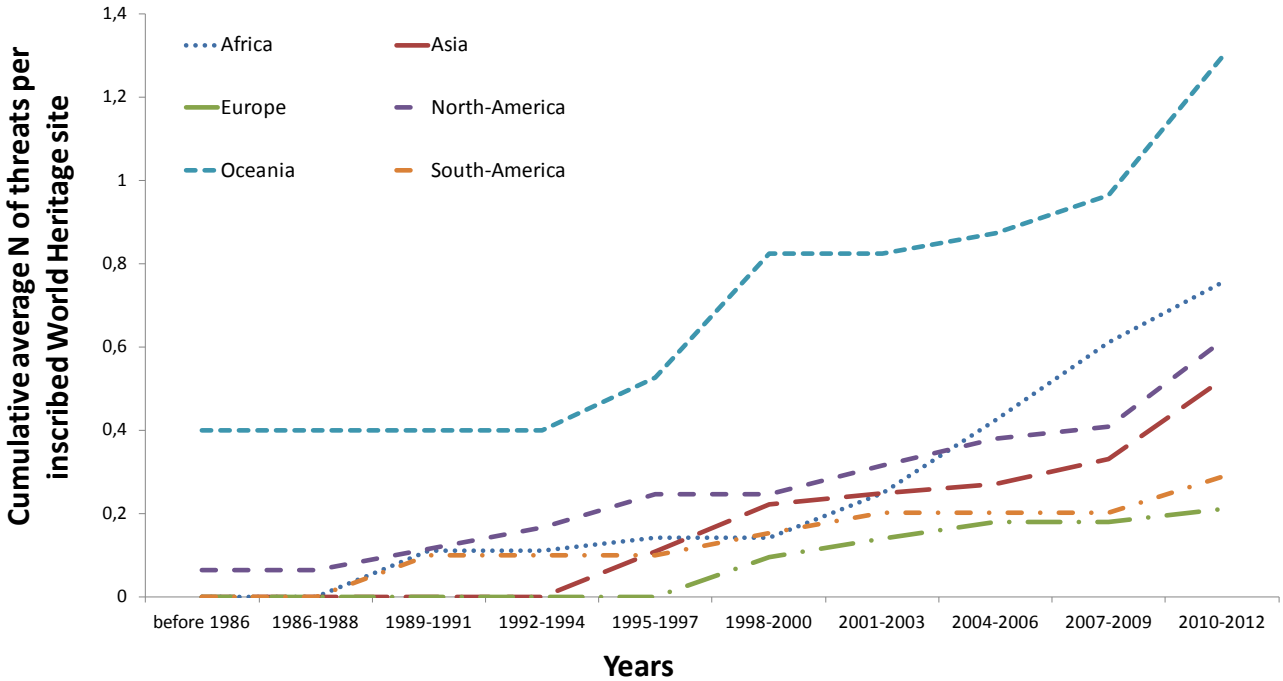

Figure 9: Trend per continent. The lines are based on cumulative amount of threats per inscribed site. Remarkable are the high amount of threats in Oceania and the rapid increase of Africa since the year 2000.

3.5 Site and country characteristics

3.5.1 Site characteristics

Site area size

The WH sites vary greatly in size. Varying from 40.8 million ha (Phoenix Islands Protected Area, Kiribati), 36.2 million ha (Papahānaumokuākea, USA) and 34.9 million ha (Great Barrier Reef, Australia) to the very small properties of only 70 ha (Giant's Causeway and Causeway Coast, UK), 42 ha (Messel Pit Fossil Site, Germany) and 20 ha (Vallée de Mai Nature Reserve, Seychelles).

Plotting the total amount of reported extractive industry threats against the log transformed site area, shows an increment of threats at sites with a higher area size (Figure 10). The log site area and the amount of extractive industry threats reported are significantly correlated ($F=25.064$, $R2=0.104$, $P<0.001$, ANOVA).

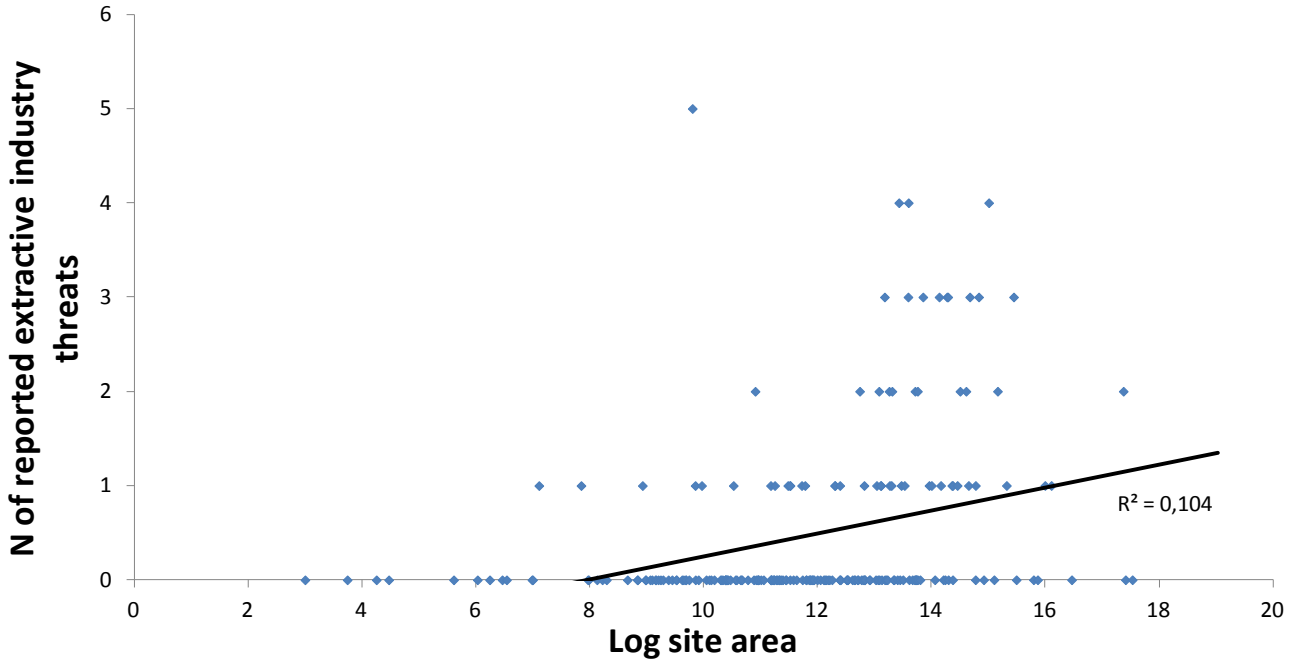

Figure 10: The total amount of reported threats of each individual site, plotted against the log transformed site area. The regression line is given with an R-squared of 0.104. The site area and amount of extractive industry threats are significantly correlated.

Official buffer zone presence

By far not all sites have an official buffer zone. Of the 218 natural and mixed WH sites, only 47 (22%) have an official buffer zone. These sites are less affected by extractive industry than the sites without an official buffer zone (Table 7), although no significant effect was found of buffer zone presence on the proportion of sites affected by extactive industry threats ($\chi2=2.273$, $df=1$, $P=0.132$, Chi-square test).

Table 7: Percentage of sites affected by extractive industry for sites with or without an official buffer zone. Sites with an official buffer zone are less affected than sites without an official buffer zone, although not significantly.

Presence bufferzone	total N of sites	N of sites with reported EI threats	% of total N
Yes	47	8	17%
No	171	51	30%

IUCN Protected Areas Management Categories designation

No significant difference could be found between the sites with a different IUCN Protected Area Management Categories (df=7, P=0.533, Fisher-Freeman-Halton). The sites with a IUCN II status and the ones without an IUCN status, have the highest percentage of the sites affected by extractive industry threats. Remarkable is the absence of extractive industry threats at the sites with a IUCN III status.

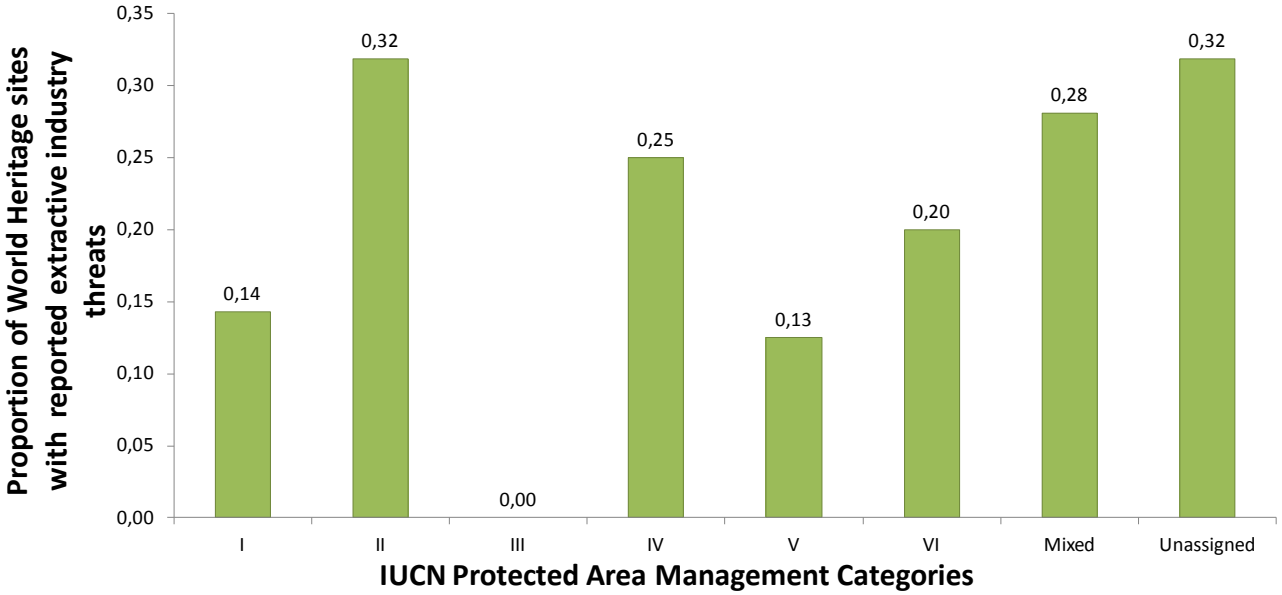

Figure 11: Proportion of WH sites with reported extractive industry threats. The WH sites are divided by their designated IUCN Protected Area Management Category. IUCN I (n=14), IUCN II (n=91), IUCN III (n=9), IUCN IV (n=12), IUCN V (n=8), IUCN VI (n=5), Mixed (n=57) and Unassigned (n=22). Presence of extractive industry threats does not vary significantly with IUCN Protected Area Management Category designation: df = 7, P = 0.4774, Fisher-Freeman-Halton exact test.

3.5.2 Country characteristics

Political situation

The Democracy Index value of a country is significantly correlated with the proportion of the WH sites with newly reported extractive industry threats (F=4.781, R2=0.081, p=0.033, ANOVA). However, the situation of the periods 2004-2006 and 2007-2009 shows a different situation than the 2010-2012 period. The first two periods show a decrease of sites newly affected by extractive industry threats with an increasing index value (higher value indicates a more democratic country), while the 2010-2012 period shows no correlation (Figure 12).

For both the Global Peace Index (F=0.023, R2<0.001, p=0.879, ANOVA) and the Corruption Index (F=0.222, R2=0.004, p=0.640, ANOVA), no significant correlation was found between the index value of a country and the proportion of the WH sites with newly reported extractive industry threats.

Economic situation

The Human Development Index value of a country was significantly correlated with the proportion of the WH sites with newly reported extractive industry threats (F=4.844, R2=0.082, p=0.032, ANOVA). As with the Democracy Index, the situation of the periods 2004-2006 and 2007-2009 show a different situation than the period 2010-2012. The first two periods show a decrease of sites newly affected by extractive industry threats with an increasing index value (higher value indicates a more developed country), while the 2010-2012 period shows a slightly increase (Figure 13).

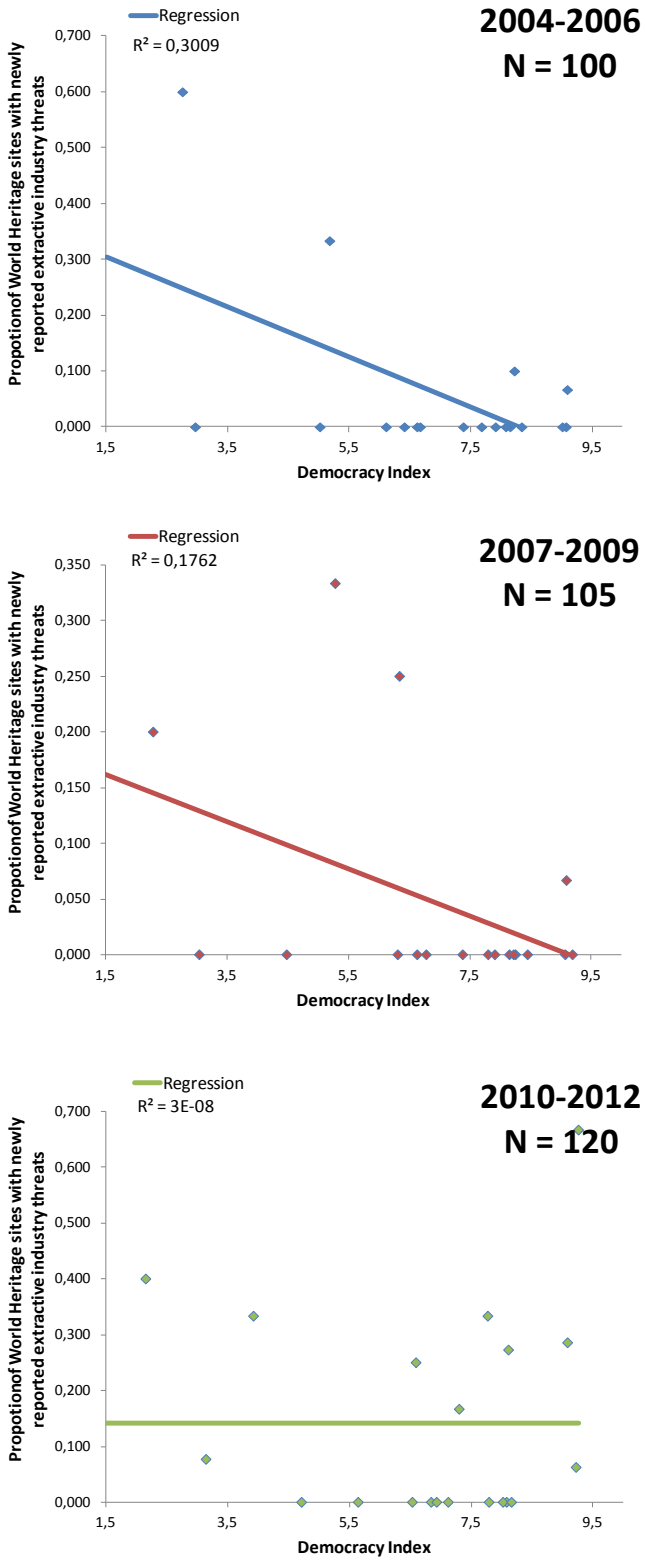

Figure 12: Regression graphs for the last three time periods (2004-2006, 2007-2009, 2010-2012) concerning the relation between the Democracy Index value of a country and the proportion of sites with new reported threats in that particular time period.

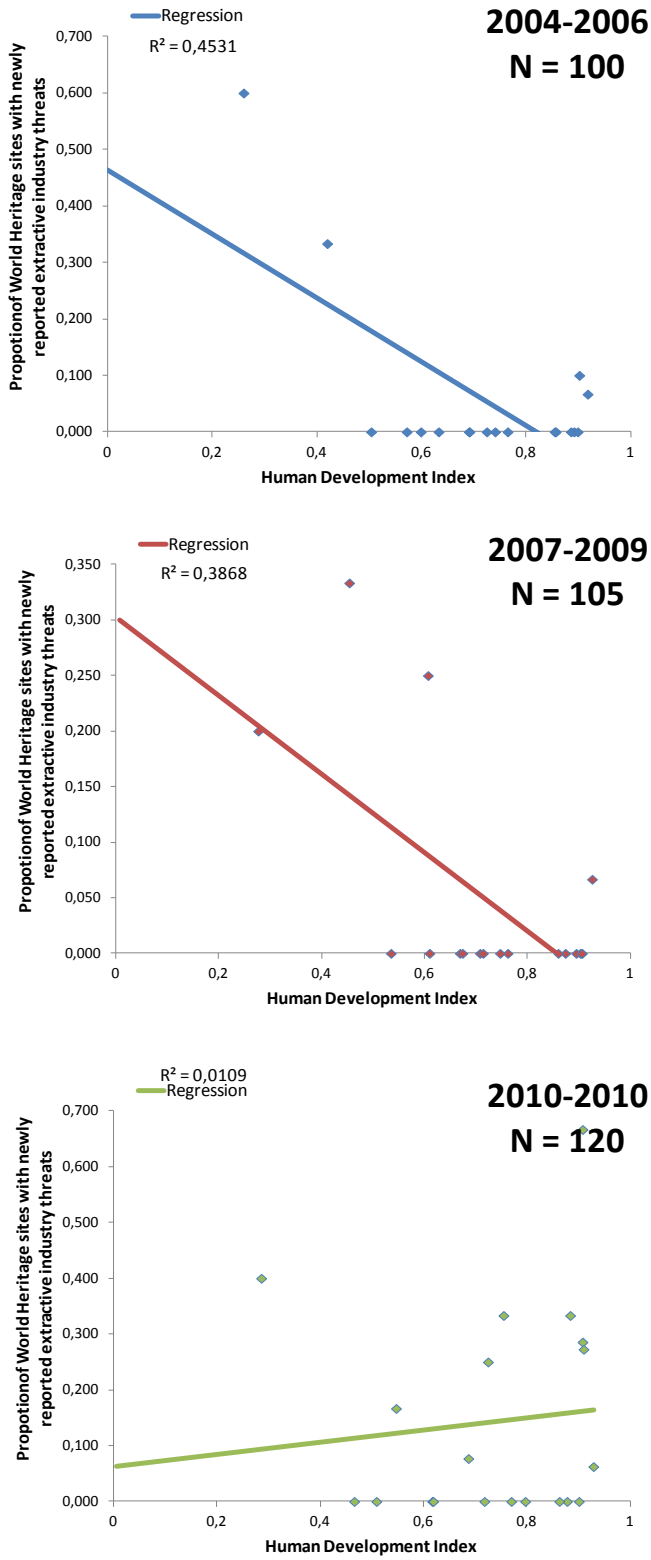

Figure 13: Regression graphs for the last three time periods (2004-2006, 2007-2009, 2010-2012) concerning the relation between the Human Development Index value of a country and the proportion of sites with new reported threats in that particular time period.

3.6 World Heritage Committee decisions

3.6.1 Overall distribution of World Heritage decisions

In total, 75 relevant WHC decisions towards extractive industry threats were recorded. This is less than the amount of threats reported (n=101). Some decisions were directed at multiple threats, while other threats had multiple decisions. Table 8 shows the distribution of all recorded WHC decisions.

Table 8: Distribution of all relevant World Heritage Committee decisions. Only 75 decisions were recorded, because some decisions are aimed at multiple threats.

No.	World Heritage Committee Decision Types	N of decisions	Proportion of total
1	Accept the solutions provided by the State Party to solve the problems.	2	0,03
2	Request information or documents.	10	0,13
3	Expression of concerns about the threats and/or requested to terminate/end all threats.	34	0,45
4	Request to the State Party to invite an IUCN/UNESCO Reactive Monitoring Mission.	17	0,23
5	Consideration to place the property on the World Heritage in Danger list.	7	0,09
6	Placement of the property on the World Heritage in Danger list.	4	0,05
7	Delete the property from the World Heritage list.	1	0,01
	TOTAL	75	1,00

3.6.2 Influence WHC decisions on threats

The relation between the WHC decisions and the extent of diversion of the extractive industry threats is shown in Table 9. Of the 36 threats with a known status, 34 could be combined with WHC decisions. The numbers are not statistically different (df=12, P=0.088, Fisher-Freeman-Halton). Moreover, the low numbers make it impossible to form a conclusion about the way the WHC decisions have an influence on the diversion of extractive industry threats.

Table 9: Relation between World Heritage Committee decisions and the status of the threats.

WHC Decisions	Total N	Numbers			Proportion		
		Averted	Partly Averted	Not Averted	Averted	Partly Averted	Not Averted
Accept the solutions provided by the State Party to solve the problems.	2	1	1	0	0,50	0,50	0,00
Request information or documents.	3	1	0	2	0,33	0,00	0,67
Expression of concerns about the activities/threats and/or requested to terminate/end all activities/threats.	11	3	4	4	0,27	0,36	0,36
Request to the State Party to invite an IUCN/UNESCO Reactive Monitoring Mission.	8	1	6	1	0,13	0,75	0,13
Consideration to place the property on the World Heritage in Danger list.	4	2	2	0	0,50	0,50	0,00
Placement of the property on the World Heritage in Danger list.	5	1	0	4	0,20	0,00	0,80
Delete the property from the World Heritage list.	1	0	0	1	0,00	0,00	1,00
Total	34	9	13	12	0,26	0,38	0,35

4. Discussion

Hardly any studies have been conducted concerning the extent and types of extractive industry threats towards protected areas, let alone concerning WH sites. The reports of Philips (2001), Bandarin (2007) and Turner (2012) do pay attention to this subject, although this is not the main focus of the reports. The Small Scale Mining in and around Protected Areas and Critical Ecosystems (ASM-PACE) programme of the World Wide Fund for Nature (WWF) does monitor the extent and impact of mining on protected areas, but only focuses on artisanal and small-scale mining projects. Other studies are available which cover certain parts of this study and to which will be referred to in this chapter.
As showed earlier, 27% of all the sites are in some way affected by extractive industry since 1985. This percentage is not consistent with the percentage in the report of Turner (2012), who states that 40% of WH sites have been affected by extractive industry since 1985. Turner only used the State of Conservation reports handed in at the 34th and 35th WHC session, which could explain the differences in percentage. Osti et al (2011) shows more corresponding percentages, stating that over 25% of the natural WH sites worldwide are estimated to be under pressure of extractive industry. It says that 27% of the natural WH sites in sub-Saharan Africa are being overlapped by oil and gas concessions. This percentage is in accordance with the global percentage and the percentage of Africa found in this study, although the study of Osti et al (2011) only focuses on oil and gas concessions.
As said in the report of Philips (2001): “the scale of the impact of extractive industry on all types of protected areas is impossible to gauge accurately”. The report of Phillips concentrates on the WH sites, because they are well-documented. The author gives a list of 13 WH sites which have been affected by extractive industry activities, while, according to this study, 29 sites have been affected by extractive industry by the year of 2001 (Phillips 2001). The 2007 UNESCO report “World Heritage – Challenges for the Millennium” (Bandarin 2007) gives almost the same numbers as this study. The UNESCO report indicates that 36 sites were affected from 1985 until 2004. This study gives a number of 39 affected sites, which lies close to the number of the UNESCO report. The reports do not mention the amount of threats per site in particular.

Due to the absence of clear description of the types of metal mined and the type of mining technique used, no distribution could be given of these characteristics of the threat. A less detailed threat type distribution gave that 37% of the threats are actual activities and 63% are potential threat. Furthermore, 47% of the threats are located or aimed at a location inside WH sites and 53% outside. Although the article of Ali (Ali 2011) mentions threats located outside the boundaries of a WH site could have an impact on the site itself, this study is the first one determining the extent of threats located or aimed at a location outside or inside the WH sites.
Unfortunately of most threats the current status has not been reported. Often a threat is mentioned in one or more reports but disappears from more recent reports without mentioning whether or not the threat is averted. The low sample size of 36 threats with a known status decreases the accuracy and reliability of this analysis.

Various (nature conservation) organisations, including UNESCO and IUCN, have major concerns about the increment of extractive industry threats in the last few years. The article of Ali (Ali 2011), expressed these concerns indicating that mining, oil and gas extraction are on the rise, especially in Africa. This study confirms these concerns, showing that in the period 2010-2012 the amount of new incidents per site has doubled compared to all time periods before. Africa shows the highest

increase in extractive industry threats since 2000, which indicates the WH sites are also subject to these trends. Other studies also review these recent trends, determining the recent strong growth of mining activities in (especially less developed) countries (Bebbington et al. 2008). Remarkable is that Oceania is the continent with the highest proportion of WH sites with extractive industry threats over all time periods, but only a few studies have been conducted determining the explosive growth of mining activities. Australia is responsible for contributing most to the growth of mining activities and the related increased pressure on protected areas, including WH sites (Mudd 2010).

Although it sounds like stating the obvious, the results of this report indicate a positive correlation between the size of the area and the amount of threats per site. The most plausible explanation would be that a larger area has a higher change to contain one or more mineral deposits. Although it could also be related to a negative correlation between the area size and the budget per km2 (James et al. 1999). Larger areas are harder to protect than smaller areas due to the budget and the spatial area size, so economic interesting projects are more likely to emerge. On the other hand, larger protected areas are more resistant to land-use change than smaller areas, although this is more applicable to the dominant land-use change pattern in the area and not to specific land-use changes like mining projects (Maiorano et al. 2008; Struhsaker et al. 2005).
Only 22% of the sites have an official buffer zone. Of these sites, 17% is affected by extractive industry threats, compared to 29% of the sites without an official buffer zone although this difference is not significant. This could shed a different light on the functioning of a buffer zone against extractive industry. A common problem with buffer zones is the uncertainty regarding the function of a buffer zone (Martino 2001; Neumann 1997). The Operation Guidelines of UNESCO do not give a clear statement how the buffer zone should protect a WH site, it leaves the interpretation of the function of the buffer zone to the State Party of the country in which the site is located (UNESCO 2012). This could explain the ineffectiveness of a buffer zone against extractive industry. This study only focuses on extractive industry, leaving the possibility that buffer zones are affective against other threats. However, reports show that buffer zones are often also ineffective against other threats like deforestation and agricultural expansion (Bennett & Mulongoy 2006; Mehring & Stoll-Kleemann 2011).
The IUCN protected area management categories designations of the WH sites seem to have no influence on the protection against extractive industry. No significant difference could be determined, which makes the function of the IUCN designation of WH sites questionable. One could expect that sites with a stricter IUCN management category designation (e.g. IUCN I and II) should have a higher protection against extractive industry than the ones with a less strict designation (e.g. IUCN V and VI). However, the designation is done by the country itself, which leaves the implementation and the degree of protection open for their own interpretation (Dudley 2008). At the 2nd World Conservation Congress in Amman (Jordan), the IUCN members adopted a recommendation which suggested that mining should not take place in category I-IV and only allow mining in category V and VI if it is compatible with the objectives of the protected areas. However, this recommendation is not in any way binding, making it controversial (IUCN 2001). Other studies indicate a higher proportion of WH sites affected by oil concessions than other sites with an IUCN management category designation. Sites without any designation were the sites least affected by concession overlap. An explanatory hypothesis is given that stricter protected area categories are designated in areas which contain higher threats for other land-uses (Osti et al. 2011).

No significant relation was found between the Corruption Index Value of a country and the proportion of sites with newly reported threats. This is not in line with other studies, indicating that extrac-

tive industry is present in countries where conditions for corruption are most intense, often resulting in a vicious circle which promotes corruption (O'Higgins 2006; Robbins 2000). Initiatives like the Extractive Industry Transparency Initiative (EITI 2012) aim to fight the linkage between corruption and extractive industry, although on its own it lacks power to fight corruption (Hilson & Maconachie 2008; Kolstad & Wiig 2009). An explanatory hypothesis for the absence of a relation between corruption and affected WH sites could be that the international character of a WH status promotes transparency and reduces the chance corruption can influence decision making regarding extractive industry projects.

Like with the Corruption Index, no significant relation could be found between the Global Peace Index value of a country and extractive industry threats. However, reports indicate a strong relation between conflicts and instability and the exploitation of natural resources. The best example of this is the civil unrest in the Democratic Republic in Congo, with ethnic tensions fuelled by the presence of valuable minerals (Deibert 2008; Eichstaedt 2011). This affects also the extremely unique and valuable ecosystems present in the five WH sites found in the country, with three out of five sites affected by at least two distinctive threats. Although more factors can trigger conflicts and instability in a region, natural resources (especially metals and minerals) are associated with 40% of the civil wars the last 60 years (Grzybowski & Yahya 2012). Often a vicious circle can be found between conflicts and the presence of natural resources. The availability of natural resources can fuel a conflict, but conflict can also fuel the unsustainable exploitation of natural resources (Le Billon 2001). Exploitation of natural resources in a wrong way can easily drag a post-conflict country back into conflict (Le Billon 2008). The absence in this research of a relation between the Corruption Index value and WH sites affected by extractive industry is difficult to explain. The most plausible explanation could be found in the way the Global Peace Index is developed. It takes into account all kinds of violence and fear for violence, including indicators like terrorism, homicides and the amount of jailed people. These indicators are less linked unsustainable exploitation of natural resources. Remarkable is that the Global Peace Index report shows a strong relation between corruption and peace, while both have no significant relation with extractive industry threats towards WH sites.

Democracy Index values and extractive industry threats seem to have a significant negative correlation. This is conform to other studies indicating that natural resources exploitation influence corruption when democratic institutions are relatively poor. A weak or even absence form of democracy affects the correlation between natural resource exploitation and corruption (Bhattacharyya & Hodler 2010). As already mentioned, corruption on its turn, promoted extractive industry presence (O'Higgins 2006). Remarkable is the significant correlation between democracy and extractive industry threats and the absence of a corruption correlation, while both are entwined.

Another significant negative correlation could be found between the Human Development Index value of a country and extractive industry threats towards WH sites. Studies show that richer (or more developed) countries have a greater amount of protected areas and, more importantly, are more likely to create very strict protected areas . Also education (taken into account in the Human Development Index), has a positive effect on the integrity of protected areas. Especially the sub-Saharan countries experience difficulties in protecting areas against all forms of natural resource exploitation, due to the low per-capita GDP (McDonald & Boucher 2011). Furthermore, the connection is also the other way around. Low developed countries often have to deal with the so called “resource curse” or “paradox of plenty”. This is a principle that countries with an abundance of natural resources tend to have less economic growth than countries with fewer natural resources (Davis & Tilton 2005; Pegg 2006). This principle stimulates the development of more mining sites because each site does not bring the desired economic profit the State Party desires. Also foreign

mining companies plunder the resource-rich countries by tax evasion and corrupt mining deals (www.oecdwatch.org, (OECDWatch 2011)). Poverty drives the less developed countries to make deals with mining companies in hope to generate jobs and economic growth and protected areas or even WH sites are not safe for this principle. Both principles combined could be the explanatory hypothesis of the significant negative correlation between the Human Development Index and the extractive industry threats towards WH sites.

No significant difference could be found between the WHC decisions and the status of the threat at which the decision is aimed. The main reason for this is the low sample sizes. An increase of the sample sizes could be achieved by determining the status of all reported threats.

This study incorporated the best available data for the different analyses, but there were some limitations. Firstly, the reporting of the earlier years (mid-80 to mid-90) was incomplete and not detailed enough. The reporting quality increased over time, but it is possible that some extractive industry threats were not taken into account due to reporting limitations. Lack of detailed information made it also impossible to make a mining type (e.g. open-pit, underground, etc.) or mineral/metal type (e.g. gold, coltan, nickel, etc.) distribution. Furthermore, the threats are subject to own interpretation and it is possible that others would consider some issues concerning extractive industry not as a threat and vice versa. In addition, some threats were the reason to inscribe the site on the WH list, but this is not taken into consideration. Another limitation was the small sample size in various analyses. Of some samples it is not possible to extent the size, because all WH sites were included in this study.

5. Conclusions

Answering of the research questions, the following conclusions could be drawn:

1. What percentage of natural and mixed WH sites is affected by extractive industry threats since 1986?

27% of all sites is affected by extractive industry threats since 1986. This includes all actual activities (37%) and all potential threats (63%). This percentage is in line with other research. Oceania is the continent with the highest percentage (50%) of affected sites, while Europe has the lowest percentage (13%). Of the threats reported, 47% is located or aimed at a location inside a WH site and 53% outside. A negative exponential regression could be determined between the amount of sites and the amount of threats reported per site. One site has the highest amount of threats (5) and is located in Africa.

2. What are the global and continental trends concerning natural and mixed WH sites and ex tractive industry threats since 1986?

A clear substantial increment of extractive industry threats can be determined since 2010, confirming the concerns expressed by IUCN and UNESCO. In the period 2010-2012, twice as much threats were reported as were in the prior three-year periods. Oceania shows a continuously high growth of extractive industry threats and Africa shows an explosive growth since the year 2000, all other continents show a stable or slightly growing situation.

3. Which site and country characteristics are of influence on whether or not natural and mixed WH sites are affected by extractive industry threats?

The site area seems to have an influence on the number of reported threats. The larger the area, the more threats are reported. The IUCN protected area management category designation of a WH site does not seems to have an effect on extractive industry threats. There seems to be a difference between the sites with and the sites without an official buffer zone, but this difference is not significant.
The democracy and human development index values seem to have an influence on whether or not a WH site is affected by extractive industry threats over the last three time periods; although this influence seems to disappear in the last time period (2010-2012). The Global Peace and Corruption index values does not seem to have an influence on whether or not a WH site is affected by extractive industry threats

4. How do the WHC decisions influence the extent of diversion of extractive industry threats?

No relation could be found between the WHC decisions and the way they influence the status of the threats. This is mainly due to low sample size because the majority of the threats do not have a known averted status.

6. Recommendations

Based on the results of this study, the following recommendation surfaced. These recommendations are in the first place aimed at UNESCO and IUCN, because they mostly concern adjustment of reporting methods.

1) Information and details about extractive industry threats should be recorded more precisely and extensively. In the SOC reports, important details are not mentioned, which makes monitoring and determining impacts harder for policy makers who depend on these reports for information. A protocolshould be developed for recording extractive industry threats, which should be used by all State Parties, IUCN, UNESCO and other organisations involved in determining the state of conservation of a property. This protocol should e.g. include the following information:

- Type of mineral
- Type of mining practice
- Area of impact
  - » Area actually changed by mining practices
  - » Area which will eventually be affected by mining practices (e.g. size of profitable mineral deposit)
  - » Area which is impacted by pollution, sedimentation or other forms of impact than actual land change

2) Of most extractive industry threats in the past, the final outcome or status of the threat was never recorded. The threat is mentioned, sometimes multiple years in a row, but suddenly disappears out of the reports. UNESCO and IUCN should develop a better way of reporting so it will become clear which threats are still relevant and which threats are averted.

3) In general, more study should be done about the extent of extractive industry threats towards protected areas. This study only focuses on WH sites. Another study should be carried out about all other types of protected areas, especially protected areas with an IUCN Protected Areas Management category designation. Also protected area categories like Ramsar sites and UNESCO Biosphere Reserves should be included in this study.

4) A tool or method should be developed to determine the impact of mining practices or threats. Every extractive industry threat is unique and has a different impact on the surroundings and environment. Although Oceania has the highest percentage of affected WH sites, this does not mean the sites are as much impacted as some sites in other continents. Also some environments are more vulnerable for mining practices. In the method all aspects should be taken into account to determine the threat level.

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Source cover photos

Iguazú Falls, Argentina (background): http://justthetravel.com/iguazu-falls-the-beauty-that-separates-brazil-and-argentina/iguazu-falls-1/

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8. Appendices

8.1IUCN Protected Area Management Category description

IUCN Cat.	Protected area type	Definition
Ia	Strict nature reserve	*"Strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring."*
Ib	Wilderness area	*"Usually large unmodified protected areas or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition."*
II	National park	*"Large natural protected areas or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities."*
III	Natural monument or feature	*"Protected areas set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value."*
IV	Habitat/ species management area	*"Protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category."*
V	Protected landscape/ seascape	*"Protected areas where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values."*
VI	Protected area with sustainable use of natural resources	*"Protected areas conserving ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area."*

8.2 World Heritage site general information

WHS N°	Reference number (UNESCO)	Country	World Heritage Name	Type	IUCN Management Category	Year of inscription	Size property (in ha)	Site in Danger
001	179	Algeria	Tassili n'Ajjer	Mixed	II	1982	7.200.000	No
002	303	Argentina	Iguazú National Park	Natural	II \ VI	1984	55.000	No
003	966	Argentina	Ischigualasto / Talampaya Natural Parks	Natural	II	2000	275.369	No
004	145	Argentina	Los Glaciares National Park	Natural	II	1981	726.927	No
005	937	Argentina	Península Valdés	Natural	Ia \ II \ IV	1999	360.000	No
006	698	Australia	Australian Fossil Mammal Sites (Riversleigh / Naracoorte)	Natural	Unassigned	1994	10.300	No
007	630	Australia	Fraser Island	Natural	II	1992	184.000	No
008	368	Australia	Gondwana Rainforests of Australia	Natural	Ia \ Ib \ II \ IV	1986	370.000	No
009	154	Australia	Great Barrier Reef	Natural	Ia \ II \ IV \ V	1981	34.870.000	No
010	917	Australia	Greater Blue Mountains Area	Natural	Ib \ II	2000	1.032.649	No
011	577	Australia	Heard and McDonald Islands	Natural	Ia	1997	658.903	No
012	147	Australia	Kakadu National Park	Mixed	II	1981	1.980.995	No
013	186	Australia	Lord Howe Island Group	Natural	II	1982	146.300	No
014	629	Australia	Macquarie Island	Natural	Ia	1997	540.000	No
015	1369	Australia	Ningaloo Coast	Natural	Unassigned	2011	705.015	No
016	1094	Australia	Purnululu National Park	Natural	II	2003	239.723	No
017	578	Australia	Shark Bay, Western Australia	Natural	Ia \ II \ III \ IV \ VI	1991	2.200.902	No
018	181	Australia	Tasmanian Wilderness	Mixed	II \ III \ IV	1982	1.411.323	No
019	447	Australia	Uluru-Kata Tjuta National Park	Mixed	II	1987	132.566	No
020	486	Australia	Wet Tropics of Queensland	Natural	II \ Unassigned	1988	893.453	No
021	167	Australia	Willandra Lakes Region	Mixed	Unassigned	1981	240.000	No
022	798	Bangladesh	The Sundarbans	Natural	IV	1997	139.500	No
023	764	Belize	Belize Barrier Reef Reserve System	Natural	II \ III \ IV \ V	1996	96.300	Yes

024	967	Bolivia	Noel Kempff Mercado National Park	Natural	II	2000	1.523.446	No
025	893	Brazil	Atlantic Forest South-East Reserves	Natural	Ia \ II \ V	1999	468.193	No
026	1000	Brazil	Brazilian Atlantic Islands: Fernando de Noronha and Atol das Rocas Reserves	Natural	Ib \ II	2001	42.270	No
027	998	Brazil	Central Amazon Conservation Complex	Natural	Ia \ II \ V \ VI	2000	5.323.018	No
028	1035	Brazil	Cerrado Protected Areas: Chapada dos Veadeiros and Emas National Parks	Natural	II	2001	367.356	No
029	892	Brazil	Discovery Coast Atlantic Forest Reserves	Natural	Ia \ II	1999	111.930	No
030	355	Brazil	Iguaçu National Park	Natural	II	1986	170.086	No
031	999	Brazil	Pantanal Conservation Area	Natural	Ia \ II	2000	187.818	No
032	225	Bulgaria	Pirin National Park	Natural	Ib \ II \ Unassigned	1983	38.350	No
033	219	Bulgaria	Srebarna Nature Reserve	Natural	Ia	1983	638	No
034	407	Cameroon	Dja Faunal Reserve	Natural	VI	1987	526.000	No
035	304	Canada	Canadian Rocky Mountain Parks	Natural	II	1984	2.299.104	No
036	71	Canada	Dinosaur Provincial Park	Natural	II	1979	7.493	No
037	419	Canada	Gros Morne National Park	Natural	II	1987	180.500	No
038	1285	Canada	Joggins Fossil Cliffs	Natural	III	2008	689	No
039	686	Canada	Miguasha National Park	Natural	II	1999	87	No
040	24	Canada	Nahanni National Park	Natural	II	1978	476.560	No
041	256	Canada	Wood Buffalo National Park	Natural	II	1983	4.480.000	No
042	475	Central African Republic	Manovo-Gounda St Floris National Park	Natural	II	1988	1.740.000	Yes
043	1400	Chad	Lakes of Ounianga	Natural	Unassigned	2012	62.808	No
044	1388	China	Chengjiang Fossil Site	Natural	Unassigned	2012	512	No
045	1335	China	China Danxia	Natural	I \ II \ III \ IV \ V \ VI	2010	82.151	No
046	638	China	Huanglong Scenic and Historic Interest Area	Natural	III	1992	60.000	No
047	637	China	Jiuzhaigou Valley Scenic and Historic Interest Area	Natural	III	1992	72.000	No
048	779	China	Mount Emei Scenic Area, including Leshan Giant Buddha Scenic Area	Mixed	V	1996	15.400	No

049	547	China	Mount Huangshan	Mixed	III	1990	16.060	No
050	1292	China	Mount Sanqingshan National Park	Natural	II	2008	22.950	No
051	437	China	Mount Taishan	Mixed	III	1987	25.000	No
052	911	China	Mount Wuyi	Mixed	IV \ V	1999	99.975	No
053	1213	China	Sichuan Giant Panda Sanctuaries - Wolong, Mt Siguniang and Jiajin Mountains	Natural	II \ V \ Unassigned	2006	924.500	No
054	1248	China	South China Karst	Natural	V \ Unassigned	2007	47.588	No
055	1083	China	Three Parallel Rivers of Yunnan Protected Areas	Natural	I \ II \ III \ IV	2003	939.441	No
056	640	China	Wulingyuan Scenic and Historic Interest Area	Natural	V	1992	26.400	No
057	711	Colombia	Los Katíos National Park	Natural	II	1994	72.000	Yes
058	1216	Colombia	Malpelo Fauna and Flora Sanctuary	Natural	IV	2006	857.500	No
059	928	Costa Rica	Area de Conservación Guanacaste	Natural	II \ IV \ Unassigned	1999	147.000	No
060	820	Costa Rica	Cocos Island National Park	Natural	II	1997	199.790	No
061	227	Côte d'Ivoire	Comoé National Park	Natural	II	1983	1.150.000	Yes
062	195	Côte d'Ivoire	Taï National Park	Natural	II	1982	330.000	No
063	98	Croatia	Plitvice Lakes National Park	Natural	II	1979	29.482	No
064	839	Cuba	Alejandro de Humboldt National Park	Natural	II	2001	71.140	No
065	889	Cuba	Desembarco del Granma National Park	Natural	II	1999	41.863	No
066	136	Dem. Republic of Congo	Garamba National Park	Natural	II	1980	500.000	Yes
067	137	Dem. Republic of Congo	Kahuzi-Biega National Park	Natural	II	1980	600.000	Yes
068	718	Dem. Republic of Congo	Okapi Wildlife Reserve	Natural	II	1996	1.372.625	Yes
069	280	Dem. Republic of Congo	Salonga National Park	Natural	II	1984	3.600.000	Yes
070	63	Dem. Republic of Congo	Virunga National Park	Natural	II	1979	800.000	Yes
071	1149	Denmark	Ilulissat Icefjord	Natural	Unassigned	2004	402.400	No
072	814	Dominica	Morne Trois Pitons National Park	Natural	II	1997	6.857	No

073	1	Ecuador	Galápagos Islands	Natural	II \ VI	1978	14.066.514	No
074	260	Ecuador	Sangay National Park	Natural	II	1983	271.925	No
075	1186	Egypt	Wadi Al-Hitan (Whale Valley)	Natural	Ia	2005	20.015	No
076	9	Ethiopia	Simien National Park	Natural	II	1978	13.600	Yes
077	258	France	Gulf of Porto: Calanche of Piana, Gulf of Girolata, Scandola Reserve	Natural	V	1983	11.800	No
078	1115	France	Lagoons of New Caledonia: Reef Diversity and Associated Ecosystems	Natural	Unassigned	2008	1.574.300	No
079	1317	France	Pitons, cirques and remparts of Reunion Island	Natural	Ia \ Ib \ IV \ Unassigned	2010	105.838	No
080	1147	Gabon	Ecosystem and Relict Cultural Landscape of Lopé-Okanda	Mixed	II	2007	491.291	No
081	720	Germany	Messel Pit Fossil Site	Natural	Unassigned	1995	42	No
082	455	Greece	Meteora	Mixed	III	1988	272	No
083	454	Greece	Mount Athos	Mixed	Unassigned	1988	33.042	No
084	64	Guatemala	Tikal National Park	Mixed	Ia	1979	57.600	No
085	196	Honduras	Río Plátano Biosphere Reserve	Natural	II	1982	350.000	Yes
086	1267	Iceland	Surtsey	Natural	Ia	2008	3.370	No
087	337	India	Kaziranga National Park	Natural	II	1985	42.996	No
088	340	India	Keoladeo National Park	Natural	II	1985	2.873	No
089	338	India	Manas Wildlife Sanctuary	Natural	IV	1985	39.100	No
090	335	India	Nanda Devi and Valley of Flowers National Parks	Natural	Ia \ II	1988	71.783	No
091	452	India	Sundarbans National Park	Natural	Ia	1987	133.010	No
092	1342	India	Western Ghats	Natural	Unassigned	2012	795.315	No
093	609	Indonesia	Komodo National Park	Natural	Ia \ II \ VI	1991	219.322	No
094	955	Indonesia	Lorentz National Park	Natural	II	1999	2.350.000	No
095	1167	Indonesia	Tropical Rainforest Heritage of Sumatra	Natural	II	2004	2.595.124	Yes
096	608	Indonesia	Ujung Kulon National Park	Natural	Ia \ II	1991	78.525	No
097	908	Italy	Isole Eolie (Aeolian Islands)	Natural	IV	2000	1.216	No
098	1237	Italy	The Dolomites	Natural	II \ IV \ V \ Unassigned	2009	141.903	No
099	1362	Japan	Ogasawara Islands	Natural	Unassigned	2011	7.939	No

100	663	Japan	Shirakami-Sanchi	Natural	Ib	1993	16.971	No
101	1193	Japan	Shiretoko	Natural	Ia \ IV \ V	2005	71.100	No
102	662	Japan	Yakushima	Natural	Ia \ V	1993	10.747	No
103	1377	Jordan	Wadi Rum Protected Area	Mixed	V	2011	74.180	No
104	1102	Kazakhstan	Saryarka – Steppe and Lakes of Northern Kazakhstan	Natural	Ia	2008	450.344	No
105	1060	Kenya	Kenya Lake System in the Great Rift Valley	Natural	II	2011	32.034	No
106	801	Kenya	Lake Turkana National Parks	Natural	II	1997	161.485	No
107	800	Kenya	Mount Kenya National Park/Natural Forest	Natural	II \ IV	1997	142.020	No
108	1325	Kiribati	Phoenix Islands Protected Area	Natural	Unassigned	2010	40.825.000	No
109	1264	Korea, Republic of	Jeju Volcanic Island and Lava Tubes	Natural	IV \ V	2007	9.475	No
110	99	Macedonia	Natural and Cultural Heritage of the Ohrid region	Mixed	II	1979	83.350	No
111	1257	Madagascar	Rainforests of the Atsinanana	Natural	II	2007	479.661	No
112	494	Madagascar	Tsingy de Bemaraha Strict Nature Reserve	Natural	Ia \ II	1990	152.000	No
113	289	Malawi	Lake Malawi National Park	Natural	II	1984	9.400	No
114	1013	Malaysia	Gunung Mulu National Park	Natural	II	2000	52.864	No
115	1012	Malaysia	Kinabalu Park	Natural	II	2000	75.370	No
116	516	Mali	Cliff of Bandiagara (Land of the Dogons)	Mixed	III	1989	327.390	No
117	506	Mauritania	Banc d'Arguin National Park	Natural	Ia \ II	1989	1.200.000	No
118	1182	Mexico	Islands and Protected Areas of the Gulf of California	Natural	II \ VI	2005	688.558	No
119	1290	Mexico	Monarch Butterfly Biosphere Reserve	Natural	VI	2008	13.552	No
120	410	Mexico	Sian Ka'an	Natural	II	1987	528.000	No
121	554	Mexico	Whale Sanctuary of El Vizcaino	Natural	Unassigned	1993	370.950	No
122	100	Montenegro	Durmitor National Park	Natural	II	1980	32.100	No
123	284	Nepal	Royal Chitwan National Park	Natural	II	1984	93.200	No
124	120	Nepal	Sagarmatha National Park	Natural	II	1979	124.400	No
125	877	New Zealand	New Zealand Sub-Antarctic Islands	Natural	Ia \ Unassigned	1998	76.458	No
126	551	New Zealand	Te Wahipounamu – South West New Zealand	Natural	Ia \ Ib \ II \ III \ IV \ Unassigned	1990	2.600.000	No

127	421	New Zealand	Tongariro National Park	Mixed	II	1990	79.596	No
128	573	Niger	Air and Ténéré Natural Reserves	Natural	Ia \ IV	1991	7.736.000	Yes
129	749	Niger	W National Park of Niger	Natural	II	1996	220.000	No
130	1195	Norway	West Norwegian Fjords – Geirangerfjord and Nærøyfjord	Natural	I \ III \ V	2005	122.712	No
131	654	Oman	Arabian Oryx Sanctuary	Natural	Unassigned	1994	2.750.000	DEL-ISTED
132	1286	Palau	Rock Islands Southern Lagoon	Mixed	Unassigned	2012	100.200	No
133	1138	Panama	Coiba National Park and its Special Zone of Marine Protection	Natural	II	2005	270.125	No
134	159	Panama	Darien National Park	Natural	II	1981	575.000	No
135	274	Peru	Historic Sanctuary of Machu Picchu	Mixed	V	1983	32.592	No
136	333	Peru	Huascarán National Park	Natural	II	1985	340.000	No
137	402	Peru	Manú National Park	Natural	II	1987	1.716.295	No
138	548	Peru	Río Abiseo National Park	Mixed	II	1990	274.520	No
139	652	Philippines	Puerto-Princesa Subterranean River National Park	Natural	II	1999	5.753	No
140	653	Philippines	Tubbataha Reefs Natural Park	Natural	II	1993	130.028	No
141	934	Portugal	Laurisilva of Madeira	Natural	Ia \ II \ V	1999	15.000	No
142	588	Romania	Danube Delta	Natural	II	1991	312.440	No
143	766	Russian Federation	Central Sikhote-Alin	Natural	Ia \ IV \ Unassigned	2001	406.177	No
144	768	Russian Federation	Golden Mountains of Altai	Natural	Ia \ III \ IV	1998	1.611.457	No
145	754	Russian Federation	Lake Baikal	Natural	Ia \ II \ IV	1996	8.800.000	No
146	1299	Russian Federation	Lena Pillars Nature Park	Natural	II \ III	2012	1.272.150	No
147	1023	Russian Federation	Natural System of Wrangel Island Reserve	Natural	Ia	2004	916.300	No
148	1234	Russian Federation	Putorana Plateau	Natural	Ia	2010	1.887.251	No
149	719	Russian Federation	Virgin Komi Forests	Natural	Ia \ II \ Unassigned	1995	3.280.000	Yes

150	765	Russian Federation	Volcanoes of Kamchatka	Natural	Ia \ IV \ V	1996	3.830.200	No
151	900	Russian Federation	Western Caucasus	Natural	Ia \ IV	1999	298.903	No
152	1161	Saint Lucia	Pitons Management Area	Natural	VI	2004	2.909	No
153	25	Senegal	Djoudj National Bird Sanctuary	Natural	II	1981	16.000	No
154	153	Senegal	Niokolo-Koba National Park	Natural	II	1981	913.000	Yes
155	185	Seychelles	Aldabra Atoll	Natural	Ia	1982	35.000	No
156	261	Seychelles	Vallée de Mai Nature Reserve	Natural	IV	1983	20	No
157	390	Slovenia	Škocjan Caves	Natural	III	1986	413	No
158	854	Solomon Islands	East Rennell	Natural	IV	1998	37.000	No
159	1007	South Africa	Cape Floral Region Protected Areas	Natural	Ib \ II \ IV \ Unassigned	2004	553.000	No
160	914	South Africa	iSimangaliso Wetland Park	Natural	II	1999	239.566	No
161	985	South Africa	uKhahlamba / Drakensberg Park	Mixed	Ib \ II	2000	242.813	No
162	1162	South Africa	Vredefort Dome	Natural	VI	2005	30.000	No
163	685	Spain	Doñana National Park	Natural	II	1994	54.252	No
164	380	Spain	Garajonay National Park	Natural	II	1986	3.984	No
165	417	Spain	Ibiza, Biodiversity and Culture	Mixed	IV	1999	8.564	No
166	1258	Spain	Teide National Park	Natural	II \ Unassigned	2007	18.990	No
167	1203	Sri Lanka	Central Highlands of Sri Lanka	Natural	Unassigned	2010	56.844	No
168	405	Sri Lanka	Sinharaja Forest Reserve	Natural	II	1988	8.864	No
169	1017	Suriname	Central Suriname Nature Reserve	Natural	II	2000	1.600.000	No
170	774	Sweden	Laponian Area	Mixed	Ia \ II \ IV	1996	940.000	No
171	1037	Switzerland	Swiss Alps Jungfrau-Aletsch	Natural	IV	2001	82.400	No
172	1179	Switzerland	Swiss Tectonic Arena Sardona	Natural	Unassigned	2008	32.850	No
173	403	Tanzania, United Rep. of	Kilimanjaro National Park	Natural	II	1987	75.575	No
174	39	Tanzania, United Rep. of	Ngorongoro Conservation Area	Mixed	VI	2010	809.440	No
175	199	Tanzania, United Rep. of	Selous Game Reserve	Natural	IV	1982	5.078.714	No

176	156	Tanzania, United Rep. of	Serengeti National Park	Natural	II	1981	1.476.300	No
177	590	Thailand	Dong Phayayen-Khao Yai Forest Complex	Natural	II	2005	615.500	No
178	591	Thailand	Thungyai-Huai Kha Khaeng Wildlife Sanctuaries	Natural	IV	1991	622.200	No
179	33	Transboundary (Belarus / Poland)	Belovezhskaya Pushcha / Białowieża Forest	Natural	Ia \ II	1979	92.669	No
180	1380	Transboundary (Central African Republic / Congo)	Sangha Trinational	Natural	II	2012	746.309	No
181	354	Transboundary (Canada / United States of America)	Waterton Glacier International Peace Park	Natural	II	1995	457.614	No
182	72	Transboundary (Canada / United States of America)	Kluane / Wrangell-St. Elias / Glacier Bay / Tatshenshini-Alsek	Natural	Ib \ II	1979	9.839.121	No
183	205	Transboundary (Costa Rica / Panama)	Talamanca Range-La Amistad Reserves / La Amistad National Park	Natural	Ia \ II \ IV	1983	570.045	No
184	155	Transboundary (Côte d'Ivoire / Guinea)	Mount Nimba Strict Nature Reserve	Natural	Ia	1981	18.000	Yes
185	898	Transboundary (Finland / Sweden)	High Coast / Kvarken Archipelago	Natural	Ia \ II \ III \ IV \ V \ Unassigned	2000	194.400	No
186	773	Transboundary (France / Spain)	Pyrénées - Mont Perdu	Mixed	II	1999	30.639	No
187	1133	Transboundary (Germany / Slovakia / Ukraine)	Primeval Beech Forests of the Carpathians and the Ancient Beech Forests of Germany	Natural	Ia \ II \ V	2007	33.670	No

188	1314	Transboundary (Germany / The Netherlands)	The Wadden Sea	Natural	Unassigned	2009	982.004	No
189	725	Transboundary (Hungary / Slovakia)	Caves of Aggtelek Karst and Slovak Karst	Natural	II	1995	56.651	No
190	1090	Transboundary (Italy / Switzerland)	Monte San Giorgio	Natural	V	2010	1.089	No
191	769	Transboundary (Mongolia / Russian Federation)	Uvs Nuur Basin	Natural	Ia \ II	2003	898.064	No
192	509	Transboundary (Zambia / Zimbabwe)	Mosi-oa-Tunya / Victoria Falls	Natural	II \ III	1989	6.860	No
193	8	Tunisia	Ichkeul National Park	Natural	II	1980	12.600	No
194	357	Turkey	Göreme National Park and the Rock Sites of Cappadocia	Mixed	V	1985	9.884	No
195	485	Turkey	Hierapolis-Pamukkale	Mixed	Unassigned	1988	1.077	No
196	682	Uganda	Bwindi Impenetrable National Park	Natural	II	1994	32.092	No
197	684	Uganda	Rwenzori Mountains National Park	Natural	II	1994	99.600	No
198	1029	United Kingdom	Dorset and East Devon Coast	Natural	V	2001	2.550	No
199	369	United Kingdom	Giant's Causeway and Causeway Coast	Natural	IV	1986	70	No
200	740	United Kingdom	Gough and Inaccessible Islands	Natural	Ia	1995	7.900	No
201	487	United Kingdom	Henderson Island	Natural	Unassigned	1988	3.700	No
202	387	United Kingdom	St Kilda	Mixed	IV	1986	24.201	No
203	721	United States of America	Carlsbad Caverns National Park	Natural	II	1995	18.926	No
204	76	United States of America	Everglades National Park	Natural	II	1979	592.920	Yes
205	75	United States of America	Grand Canyon National Park	Natural	II	1979	493.077	No
206	259	United States of America	Great Smoky Mountains National Park	Natural	II	1983	209.000	No

207	409	United States of America	Hawaii Volcanoes National Park	Natural	II	1987	87.940	No
208	150	United States of America	Mammoth Cave National Park	Natural	II	1981	21.191	No
209	151	United States of America	Olympic National Park	Natural	II	1981	369.660	No
210	1326	United States of America	Papahānaumokuākea	Mixed	III	2010	36.207.499	No
211	134	United States of America	Redwood National and State Parks	Natural	II	1980	56.883	No
212	28	United States of America	Yellowstone National Park	Natural	II	1978	898.349	No
213	308	United States of America	Yosemite National Park	Natural	II	1984	308.283	No
214	701	Venezuela	Canaima National Park	Natural	II	1994	3.000.000	No
215	672	Viet Nam	Ha Long Bay	Natural	Unassigned	1994	150.000	No
216	951	Viet Nam	Phong Nha-Ke Bang National Park	Natural	II	2003	85.754	No
217	1263	Yemen	Socotra Archipelago	Natural	Unassigned	2008	1.740.958	No
218	302	Zimbabwe	Mana Pools National Park, Sapi and Chewore Safari Areas	Natural	II	1984	676.600	No

8.3 Reported Extractive Industry Threats

WHS N°	Threat nr.	Active or planned	Inside or outside	Extractive Industry Threat description	
009	THR001	Planned	Inside	Plans exist for development of a Liquified Natural Gas (LNG) plant close to the property.	2011
009	THR002	Planned	Inside	Various extractive industry proposals were submitted for approval to the State Party.	2011
010	THR003	Active	Outside	Coal, limestone and sand mines outside of the property causing pollution and landslides	2000-2012
010	THR004	Planned	Outside	Proposal for a 27 million tonne sand and clay mine directly adjacent to the property	2004
010	THR005	Planned	Inside	Proposal for gas exploration covering a large area, including the property.	2009-2012
012	THR006	Active	Outside	Uranium mine (Ranger mine) operative in enclave causing pollution	1970-2012
012	THR007	Planned	Outside	Plans and preparing for construction of second uranium mine in other enclave (Jabiluka)	1997
015	THR008	Active	Outside	Hydrocarbon and gas exploration off-shore outside of the property which could increase the pollution threat.	2011-2012
017	THR009	Planned	Inside	Potential salt mining within the property	1996
017	THR010	Planned	Inside	Government granted a oil exploration permit for a site located within the property	1998
018	THR011	Planned	Inside	Small-scale osmiridium mining licence within the property untill 2011	1982-2011
021	THR012	Active	Outside	Developent of mineral sands mining in adjecent land, which require large volumes of water. This could affect the property.	2000 - 2011
023	THR013	Planned	Inside	Granted oil concessions within the property	2010

028	THR014	Active	Outside	Mining for quartz crystals, amethyst and gold occurs in various locations near the boundary of the property. This could produce medium scale impact in limited areas by stream pollution.	2001-2012
034	THR015	Active	Outside	The company GEOVIC is preparing a mining site for a cobalt, nickel and manganese mine 40 km from the Eastern border. These mining activies could affect the property.	2003-2012
034	THR016	Planned	Inside	Exploration concession within the property (covering 20%)	2012
034	THR017	Planned	Outside	Limestone deposits discovered in the bed of the Dja River. Exploitation would result in displacement of the river bed. This will affect the property	2012
035	THR018	Planned	Outside	Plans for development of an open-pit coal mine within 2 km of the boundary of the property. This proposal is supported by a EAI, challenged by conservation groups.	1997-2012
036	THR019	Planned	Inside	Proposal for natural gas drilling within the property.	1992
040	THR020	Active	Outside	Mineral, oil and gas exploitation in the resource rich area upstream of the property threatenes the watershed of the property.	2012
040	THR021	Planned	Outside	Permits issued for development and re-use of abandoned zinc, lead, silver and copper mines, upstream of the property which high potential (toxic) pollution risks for the watersheds in the property.	2002-2012
041	THR022	Active	Outside	Petroleum and tar sands developments upstream on the Athabaska River could pose a pollution threat to the property.	2012
055	THR023	Active	Inside	Well established and extensive legal mines, previously overlooked, exist in the Hongshan sub-unit.	2003-2010
055	THR024	Planned	Inside	Large-medium scale mineral deposits have been found within and adjacent to the property and could become a threat when exploited.	2010
061	THR025	Planned	Inside	Ministry of the Environment issues licenses for mining exploration within the property.	2009

064	THR026	Planned	Inside	Nickel mining concessions granted within the property and its periphery.	2009
067	THR027	Planned	Inside	Exploitation concessions were granted within the property.	2006-2012
067	THR028	Planned	Outside	Mining concessions totally encroaching the property.	2006-2012
068	THR029	Active	Outside	Gold exploration without a EIA at the Adumbi site very close to the property.	2011
068	THR030	Planned	Inside	Exploitation concessions were granted within the property.	2006-2012
068	THR031	Planned	Outside	Mining concessions totally encroaching the property.	2006-2012
070	THR032	Active	Inside	Aeromagnetic and aerogravimetric oil prospection by SOCO and TOTAL.	2011-2012
070	THR033	Planned	Outside	Canadian company intends to obtain oil explorations close to the properties Northern boundary.	2002
070	THR034	Planned	Inside	Mining and oil exploration concessions within the property.	2006-2008
070	THR035	Planned	Inside	Granting of oil prospection and exploitation permits covering almost all of Virunga NP.	2008-2012
078	THR036	Active	Outside	Pollution of a hugh open-cast nickel-cobalt mine at Goro-Nickel affecting the Yves Merlet Special Marine Reserve. Intensive mining around the property releases sediments into the sea, affecting the property.	2008-2012
078	THR037	Planned	Outside	A world-class deposit of high grade ore at Koniambo, close to the property, is soon to be developed by the Swiss XStrata Nickel company together with a new seaport cutting through coral reefs.	2012
078	THR038	Planned	Outside	Permits were granted for cobalt exploration in mineral sands adjacent to the property. Exploitation could have significant adverse impacts on the property.	2011
080	THR039	Planned	Inside	A company holds diamond-exploitation rights for the whole region.	2007-2012

092	THR040	Active	Inside	Strictly controlled small-scale sand mining.	2012
092	THR041	Active	Outside	Extensive amount of mine sites are found in the area, which were carefully excluded out of the property at time of nomination.	2012
092	THR042	Planned	Inside	An recently closed (by verdict of Dupreme Court of India) inactive large iron-ore mine is situated in the centre of Kundremukh National Park which holds the potential to be reactivated.	2010-2012
093	THR043	Active	Outside	Gold exploration by a Chinese comsortium on the island of Flores within the bufferzone of the property.	2009
094	THR044	Active	Outside	The Grasberg copper and gold mines of the company Freeport McMoRan close to the property causing a lot of pollution and environmental damage to the surroundings, although a 2008 RMM report indicates it is not affecting the property.	1999-2010
094	THR045	Planned	Outside	Mining concessions totally surrounding the western and northern boundaries.	1999-2012
094	THR046	Planned	Inside	One concession held by Conoco Enterprise Ltd remains in the Park on the southeastern edge.	1999-2012
097	THR047	Active	Inside	Pumice mining continued in the property having major impact on the OUV. The operations are carried out in the guise of "removal and use of stockpiles material".	2000-2008
117	THR048	Active	Outside	Oil exploration and exploitation adjacent to the property.	2002-2012
125	THR049	Planned	Outside	Plans for offshore oil exploration.	2012
126	THR050	Active	Outside	Some small-scale gold mining practices on the beaches and in some rivers of the West Coast.	2012
129	THR051	Planned	Inside	Potential exploitation of a phosphate mine within the property deferred pending evaluation of environmental and social impact.	2002-2005
130	THR052	Planned	Inside	Plans and potential for further development of viable mining and quarrying in and around the property.	2005-2012

131	THR053	Active	Inside	Legal oil exploration inside the property.	1999-2007
131	THR054	Active	Inside	A new management plan was submitted by the State Party reducing the site with 90% in favor of mineral extraction.	2007
131	THR055	Planned	Inside	A submitted management plan allowes all types of mineral extraction within the property.	2005
132	THR056	Active	Outside	Sand-mining operation adjacent to Makeald reef under environmental permit and causing only localized impacts. The permit expires in 2012 and has the potential to be renewed.	2012
134	THR057	Planned	Inside	Mining prospection concessions granted inside the park.	1990-1997
136	THR058	Active	Inside	Nine (of the 78) mining consessions within and arround the property are 2012 operating (dominant by Antamina and Barrick) and causing pollution, residue dumping, degrading of the landscape and disturbing of wildlife.	2012
136	THR059	Planned	Outside	Plans for development of one of the world's largest copper and zinc deposits 20 km east of the property. Construction and operation of this mine will require use of roads adjacent or traversing the property posing threats to the property.	1998-2012
137	THR060	Active	Outside	Oil exploration adjacent to the property.	2010
140	THR061		Outside	Hydrocarbon concession adjacent to the property could threaten the property in the future.	2012
145	THR062	Planned	Outside	Potential exploration and exploitation of the Kholodninskoye poly-metal deposit. And the intention of politicians to change the law in benefit of these explorations/exploitations.	2010-2012
148	THR063	Active	Outside	Little control of small-scale mining in the bufferzone.	2012
149	THR064	Active	Inside	Various mining practices in the Northern part of the property.	1995-2012
149	THR065	Active	Inside	Development of the Chudnoye open-pit gold mine.	2011-2012

149	THR066	Active	Inside	The State Party decided to change the boundaries of the property in favour of gold mining practices, without approval of the World Heritage Committee.	2010
149	THR067	Planned	Inside	Gold mining project "Chudnoye" proposal.	1997-2011
150	THR068	Active	Outside	Development of gold and nickel/copper/cobalt mining sites adjacent to the property. Initially it looked like the boundary was unoffically changed by the State Party to allow the gold mining.	1997-2012
150	THR069	Planned	Inside	Mining potential in part of the property, while no plans exist for exploitation of deposits inside the property.	2012
158	THR070	Planned	Outside	Mining proposals on West Rennell which could have a significant effect on the property.	2010-2012
163	THR071	Active	Outside	The Aznalcollar zinc and silver mine, upstream of the property, released a flow of toxic mining tails due to a dam break. The toxic flow was mostly stopped before it entered the property, but still it caused extensive pollution.	1998
163	THR072	Planned	Outside	New gas extraction sites outside the property with potential effect on the property.	2011
169	THR073	Active	Inside	Several mining companies are prospecting for gold in the north of the property.	2000-2012
169	THR074	Planned	Outside	Large bauxite deposits have been discovered west of the property and potential development could affect the property.	2000-2012
169	THR075	Planned	Outside	Several large-scale mining concessions exist or being awarded close to the boundaries of the property.	2000-2012
175	THR076	Active	Inside	Uranium exploration and mining site preparation.	2008-2012
175	THR077	Active	Inside	Mineral and oil prospecting within the property.	2006-2012
175	THR078	Planned	Inside	Uranium deposits found (Madaba uranium deposits) in the heart of the property with a priority conservation status.	2008-2012

180	THR079	Active	Outside	Mining activities takes place in the bufferzone and direct perifery of the property.	2012
181	THR080	Planned	Outside	Serious oil, gas and coal extraction development plans in the Flathead watershed, having a irreveribly effect on the property if carried out.	2004-2010
182	THR081	Active	Inside	Mining within the property is allowed to continue on valid existing claims but new locations are prohibited.	1979-2012
183	THR082	Planned	Inside	Potential granting of a 56.000 ha oil exploration concession within the property.	1991-1992
183	THR083	Planned	Outside	Proposals for mining exploration permits near the property.	2012
184	THR084	Planned	Inside	Proposal for an iron-ore mining project in the Guinean side of the property.	1991-1992
184	THR085	Planned	Inside	Proposal for boundary changes by the State Party in favor of iron-ore mining project.	1991-1994
184	THR086	Planned	Outside	Proposed mining operations by SMFG directly adjacent to the property in the newly formed mining enclave. No ESIA is available for these practices.	1995-2012
184	THR087	Planned	Inside	Plans for iron-ore exploration by Tata Steel Company inside the Ivorian side of the property.	2008-2011
184	THR088	Planned	Outside	Plans for iron-ore exploration by Acelor-Mittal 20 km outside the property in Liberia.	2011-2012
197	THR089	Planned	Inside	Kileme Mines Ltd. has a kaolin mining claim within the property and tries to re-open the Kaolin querry within the property.	2006
198	THR090	Planned	Inside	Permissions for mineral extraction exist in two areas (Portland and Charlton Bay)	2001-2012
203	THR091	Planned	Outside	Potential for oil and gas exploration and exploitation outside of the property, which could have a substancial negative impact on the caves of the property.	2006-2012
204	THR092	Planned	Outside	A 10-years limestone quarrying permit has been granted North and East of the property. This limestone quarrying could affect the water quality of the property.	2002-2012

205	THR093	Planned	Outside	Enormous increase in uranium mining claims around the property. When moratorium is being lifted in the future, uranium mining can develop and could pose a high pollution threat to the property.	2012
208	THR094	Active	Outside	Increase of oil and gas exploration in adjacent areas, has increased the risks of spillages into the properties groundwater system.	2012
212	THR095	Planned	Outside	Proposed New World gold mine, 4.2 km from the northeast corner of the property in the headwaters of three streams. This would result in toxic waste flowing into the property and affecting wildlife and ecosystem.	1995-1996
212	THR096	Planned	Outside	The property is surrounded by mining claims, which makes the protection of the bufferzone controversial.	2012
217	THR097	Planned	Outside	Further development and increment of limestone quarrying outside of the property could have a negative impact on the property.	2008-2012
218	THR098	Active	Outside	Copper, gold and uranium prospection on the Zambia site of the Lower Zambezi Catchment which could result in indirect impact on the property.	2008-2011
218	THR099	Planned	Inside	Mobil oil was about to begin oil exploration inside the property with seismic surveys and trace lines.	1989
218	THR100	Planned	Outside	High interest of mining companies to develop mining operations on the Zambia site of the Lower Zimbazi Catchment.	2008-2011
218	THR101	Planned	Outside	Permits for uranium mining development in areas situated 100 to 200 km upstream of the property could result in pollution.	2011

8.4 World Heritage Committee Decisions

WHS N°	Decision nr.	WHC Decision	Reaction on WHC Decision	Outcome
009	DEC001	The WHC expressed its great concerns about the approval of the LNG plant and about the various submitted extractive industry proposals.	None reported.	None reported.
009	DEC002	One of the reasone the WHC requested the State Party to invite a Reactive Monitoring Mission.	The RMM was invited by the State Party.	The RMM was carried out in 2012, addressing all the threats towards the property.
009	DEC003	The WHC considered to inscribe the site on the WH in Danger list if the State Party doesn't take measures to avoid the degradation of the site (including extractive industry threats).	None reported.	None reported.
010	DEC004	Request the State Party to keep the WHC and IUCN informed on the status of the proposed sand and clay mine adjacent tot the property and the proposed measures to acoid any potential impact it may have on the property.	None reported	None reported
010	DEC005	None reported	Not applicable	Not applicable
012	DEC006	Considered to put the site on the World Heritage in Danger list.	Government campaigne (supported by US and UK) against this movement of UNESCO	Office of the Supervising Scientist stated that the effects on health and ecology would be negligible.
012	DEC007	Expressed concerns about the effects on Aboriginal cultural grounds	Postphoned the establishment of the new uranium mine pending an investigation about the cultural effects.	See Outcome 3

012	DEC008	Called for more effective management of the uranium mines with an independent scientist involved.	None specified	Aboriginals got veto right in future development of uranium mines and the Jabiluka mine was put on long-term.
015	DEC009	None reported	Not applicable	Not applicable
017	DEC010	By voice of IUCN Australia, the WHC recommended that no exploration or exploitation should take place inside the property.	The State Party supported the recommendations of IUCN Australia.	According to the State Party, no extractive industry activities should take place inside the property or which would damage the property in another way.
	DEC011	Requested information about the potential threat of salt mining.	The State Party provided the WHC with a detailed report.	The State Party ensures the salt mining practices are carried out outside of the property and all possible EIA's are carried out.
018	DEC012	No action required	Not applicable	Not applicable
021	DEC013	None reported	Not applicable	Not applicable
023	DEC014	One of the reasons for the WHC to enlisted the property as a World Heritage site in Danger	No recorded response from the State Party. Public pressure supported by civil and environmental organizations towards State Party decisions.	(Still) no actual oil exploration within the property. Oil concessions relinquished by OPIC are not immediately re-issued, but oil concessions are not (yet) eliminated.
028	DEC015	No action needed. Extractive industry operations were already known at time of inscription.	Not applicable	Not applicable

034	DEC016	Request State Party to invite RMM	The RMM was invired by the State Party.	The RMM reported that GEOVIC was planning to carry out an EIA and that various actions have to be taken by GEOVIC to ensure that the mining activities will not affect the property.
034	DEC017	Request State Party to invite RMM.	The RMM was invired by the State Party.	The RMM reported that mining development could pose a serious threat to the property.
034	DEC018	Request State Party to invite RMM.	The RMM was invired by the State Party.	The RMM reported that no further development of GEOVIC mine had taken place since 2009, but that other concessions were granted outside or within the property.
034	DEC019	The WHC requested the State Party to review and update the Environmental and Social Impact Assessment (ESIA) provided by GEOVIC and to submit an Environmental and Social management plan to mitigate the direct and indirect negative impacts of the mining project. It also strongly urged the State Party to suspend the implementation work for the GEOVIC mining activities until the conclusion of the new ESIA.	Only in 2012, the new ESIA was submitted, but it did not meet the international standards and the WHC rated it unsufficient.	The WHC and IUCN are concerned about reports which state that mining preparation activities appear to continue in spite of the fact that no sufficient ESIA was submitted. The WHC reiterated that the mining should be suspended until a new ESIA is submitted.
034	DEC020	Due to the granting of new mining exploration concessions and the still not suspended GEOVIC mining operations, the WHC considers to place the property on the World Heritage in Danger list if certain conditions, regarding inter alia mining practices, are not fulfilled.	No responses reported, since the decisions were made at the most recent session (36th, Saint-Petersburg)	Not applicable

034	DEC021	None reported	Not applicable	Not applicable
035	DEC022	Expressed its concerns about the proposed coal mine and requested the State Party to provide detailed information on the proposel open-pit coal mine.	Provided the WHC with detailed information and announced that a Whitehorse Wildland Park will be developed between the mining site and the property to improve the ecological integrity of the property.	Untill now, the threats are not averted and besides the alternative solutions provided by the State Party, no other outcomes are reported.
035	DEC023	Requests the State Party to ensure that adverse impacts of the operation of the Cheviot mine on the integrity of the property are minimized and mitigated.	Non reported	Not applicable
036	DEC024	Accepted the proposal to delete 1415 acres from the property for natural gas exploitation and compensate it by adding 1478 acres of higher geological value.	Not applicable	The boundary was changed with deleting areas from and adding areas to the property. This was beneficial for both parties.
040	DEC025	Expressed its concerns about the mining developments upstream of the property and requested to be kept informed by the State Party.	Reports were provided by the State Party indicating the mining developments and the possible threats to the property.	The mining company (CZN) concluded that the property will not be affected by the mining practices in any way. The WHC remains concerned about the potential threats to the property.
040	DEC026	None reported	Not applicable	Not applicable
041	DEC027	None reported	Not applicable	Not applicable
055	DEC028	Request the State Party to take all necessary steps to ensure that mining does not take place within the boundaries of the property.	Request from the State Party for small boundary changes to exclude the mining sites out of the property.	The legal mining sites are now adjacent to the property and the State Party ensures that the mining practices comply with international evnironmental and health standards.

055	DEC029	Request to invite a Reactive Monitoring Mission to investigate the impact of the mining sites to the OUV.	No responses reported, since the decisions were made at the most recent session (36th, Saint-Petersburg)	Not applicable
055	DEC030	None reported	Not applicable	Not applicable
061	DEC031	Expresses its utmost concern about the granting of mining exploration licences covering the property, urges the State Party to take the necessary steps to ensure the withdrawal of these licenses.	No response reported	Not applicable
061	DEC032	Requests the State Party to confirm officially that no mining exploration licenses covering the property have been granted.	No response reported	Not applicable
064	DEC033	Strongly requested to eliminate the mining concessions granted within the property and those in the periphery that could seriously and irreversibly affect its OUV.	State Party assures that no actual mining is taking place within the property, but no further reaction on the request to eliminate the mining concessions.	No actual mining, but concessions are still active.
067	DEC034	Expressed its concerns, requested more information and requested the State Party to terminate all mining practices.	State Party reluctant in reaction on WHC decision.	One exploitation concession within the property was revoked in 2011. The other exploitation concession within the property are still in place.
067	DEC035	Expressed its concerns, requested more information and requested the State Party to terminate all mining practices.	No response reported	Nothing is yet reported about the encroaching mining concessions. They are still in place and not revoked.
068	DEC036	An EIA should be conducted and submitted to the WHC. This EIA should identify the potential negative impacts on the OUV of the property.	Lack of cooperation of the State Party and mining services.	No EIA is yet conducted and submitted. Outcome is unclear.

068	DEC037	Expressed its concerns, requested more information and requested the State Party to terminate all mining practices.	Lack of cooperation of the State Party and mining services.	Concessions are still situated within the property and some are even active. Nothing has been reported that concessions are revoked.
068	DEC038	Expressed its concerns, requested more information and requested the State Party to terminate all mining practices.	Lack of cooperation of the State Party and mining services.	Nothing reported whether the concessions are revoked.
070	DEC039	Requested the State Party to enforce the legislation prohibiting mining and other resource extraction activities within the WHS and gives careful consideration to evaluate Environmental Impact.	Company informed no exploration will take place within the boundaries of the property.	This problem was replaced by the problem of the large oil prospection and exploitation concessions.
070	DEC040	Expressed its concerns about the exploration concessions and requested the State Party to revoke the concessions.	Various meetings were held by organizations and the State Party to solve the problems.	This problem was replaced by the problem of the large oil prospection and exploitation concessions.
070	DEC041	Expressed its concerns about the exploration concessions and requested the State Party to revoke the concessions.	Various meetings were held by organizations and the State Party to solve the problems.	The State Party decided to suspend oil exploration within the property, pending the Strategic Environmental Assessment.
070	DEC042	Expresses its deep concern over aeromagnetic and aerogravimetric data gathering campaign, which appears to contradict the Government's decisio to suspend petroleum exploration pending a strategic environmental assessment and reiterates its request to the State Party to revise its authorizations and not to grant new authorizations for petroleum and mining exploration and exploitation within the property boundaries and recalls its position on the incompatibility of petroleum and mining exploration and exploitation with World Heritage status;	No response reported	In contradiction to the earlier decision by the State Party, oil prospection is still going on within the property.

078	DEC043	Expressed its serious concern about the permits granted to the mining company GEOVIC to explore and possible exploitate cobalt sands.	None reported	Not applicable
078	DEC044	Request the State Party to submit Environmental Impact Assessment.	None reported.	None reported.
078	DEC045	None reported	Not applicable	Not applicable
080	DEC046	None reported	Not applicable	Not applicable
092	DEC047	None reported. The WHC enlisted the property with knowing the current extractive industy operations. These operations were no reason not to enlist the property.	Not applicable	Not applicable
093	DEC048	None reported	Not applicable	Not applicable
094	DEC049	The WHC requested to resolve the problems concerning the overlapping Conoco concession.	None reported	No indications that the problems concerning the overlapping Conoco concession is resolved.
094	DEC050	The WHC also requested a monitoring mission to address various problems including the Grasberg mine problems.	In 2008 a RMM was carried out after been invited by the State Party.	In 2008 a RMM was carried out indicating that the Grasberg mine didn't affect the property, so no further action was needed.
094	DEC051	None reported	Not applicable	Not applicable
097	DEC052	Requested information and urged to prohibit all expansion of pumice extraction.	State Party reported that no new pumice quarries had been opened and no extensions had been granted.	Not applicable
097	DEC053	Requested the State Party to invite a monitoring mission to assess the state of conservation of the property.	The RMM was invited by the State Party.	A monitoring mission report was created addressing the threats on the property.

097	DEC054	Requested a progress report from the State Party addressing all recommendation of the monitoring mission report. The WHC threatened to put the property on the Danger List if the State Party didn't take sufficient measures in addressing the recommendations according to the progress report.	The progress report was provided by the State Party.	The decisions and pressure of the WHC resulted in the extermination of all pumice mining activities and the implementation of sufficient measures to address all recommendations of the monitoring report.
117	DEC055	Urgently encourages the State Party to sign the 1992 International Convention on Civil Liability for Oil Pollution, enabling it to have access to the International Oil Pollution Compensation Funds (IOPC Funds).	Few and slow responses from the State Party.	The State Party signed the 1992 International Convention on Civil Liability for Oil Pollution convention in 2006, but until 2012 the State Party didn't put much effort in implementing further protective laws and measures.
125	DEC056	None reported	Not applicable	Not applicable
126	DEC057	None reported	Not applicable	Not applicable
129	DEC058	None reported	Not applicable	Not applicable
130	DEC059	None reported. These threats were known before inscription as a WHS. The State Party ensured that all operations and future development will be subject to strict EIA's. These operations/threats were no reason not to enlist the property.	Not applicable	Not applicable
131	DEC060	Expressed its serious concerns about the oil exploration inside the property and requested the State Party to provide the WHC with information.	A version of the management plan was submitted in 2004.	The oil exploration continued.

131	DEC061	Requested the State Party to invite a RMM to assess the state of conservation of the property.	The RMM was invited by the State Party.	The RMM carried out in 2007 took note of the extreem reduction of 90% of the size of the property and the ongoing oil exploration.
131	DEC062	Decided to delete the Arabian Oryx Sanctuary (Oman) from the World Heritage List.	Non reported.	The Arabian Oryx Sanctuary is no longer recognized as a World Heritage site due to the reduction of the size of the Sanctuary by the State Party of Oman, which was seen as a destruction of the OUV of the property.
132	DEC063	None reported. The WHC enlisted the property with knowing the current extractive industy operations. These operations were no reason not to enlist the property.	Not applicable	Not applicable
134	DEC064	None reported. The concessions were eventually revoked by the president.	Not applicable	Not applicable
136	DEC065	No decisions were reported concering the active legal mining operations around the property. For the new mining development, the WHC agreed and supported the already proposed "Working Group" in which IUCN Peru was also participating. It also requested various reports of this "working group".	This "Working Group" focusses on monitoring and decreasing the effects of the use of the roads adjacent and traversing the property. The WHC received report of this "workin group" and were held up-to-date about the situation.	No final outcome had been reported.
136	DEC066	None reported	Not applicable	Not applicable
137	DEC067	Requested EIA's from the State Party of the oil exploration adjacent to the property.	The State Party provided the WHC with the requested reports.	The EIA was received by the WHC.

137	DEC068	Requested the State Party to invite a RMM.	The RMM was invited by the State Party.	The RMM was carried out in 2011, examining the state of conservation. No oil pipe will be constructed traversing the property. The future oil concession development still remains a threat to the property.
140	DEC069	The WHC welcomed the boundary changes to oil concession areas near to the extended property which will reduce their potential impacts and encouraged the State Party to ensure that concession holders respect the Outstanding Universal Value and integrity of the property.	None reported	None reported. The oil concessions are still in place and probably sufficient measures have been taken to ensure the safety of the property.
145	DEC070	Requested the State Party to confirm that no mining or mineral exploration will be permitted within the property. It also expressed it concerns about the threats of changing the law to make mineral extraction development easier within the property.	None reported	Still no clear outcome is reported about the status of the potential mineral operations development within the property.
148	DEC071	None reported	Not applicable	Not applicable
149	DEC072	Expressed its concerns, requested more information and requested the State Party to terminate all mining practices.	The State Party stated that the mining practices were already carried out at times of inscription and mentioned that boundary changes were legally adopted by State Party to exclude the mining sites.	The boundary changes are not (yet) submitted for approval by the WHC but the development of the open-pit gold mine is in progress since 2011.
149	DEC073	Request State Party to invite RMM.	The RMM was invited by the State Party.	The RMM was carried out in 2010.
149	DEC074	Considers to inscribe the property on the World Heritage in Danger list.	Not enough was done by the State Party to avoid inscription.	The WHC decided to inscribe the property on the World Heritage in Danger list.

149	DEC075	Decided to inscribe the property on the World Heritage in Danger list.	No change reported	Not applicable
150	DEC076	Expressed its concerns, requested more information and requested the State Party to terminate all mining practices.	First, the WHC received conflicting information about development of gold mining and boundary changes. In 2004 the WHC received a SOC report of the State Party.	The boundary changes to exclude sites for gold mining were already submitted at times of inscription.
150	DEC077	Request State Party to invite RMM.	The RMM was invited by the State Party.	The RMM was carried out in 2004 indicating that the boundary changes were legal and submitted at times of inscription.
150	DEC078	None reported	Not applicable	Not applicable
158	DEC079	None reported	Not applicable	Not applicable
163	DEC080	Expressed its concerns about the Aznalcollar mining tailing disaster.	None reported.	The State Party invited a Reactive Monitoring mission before the WHC session in 1998. Already serieus measures were taken place in cooperation with IUCN and UNESCO to restore the area and mitigate the pollution.
163	DEC081	Expressed its concerns about the reopening of the Aznalcollar mine without taking certain measures to avoid future accidents.	None reported.	Cleaning work took place from 1998 till after 2005, costing over 200 million euros. The area is now considered as cleaned, although the toxic heavy metals are still present in the soil at some places.

163	DEC082	None reported.	The State Party reported the gas projects were still undergoing EIA's and would only continue when they are environmental feasible.	Nothing reported. The EIA's are still in progress.
169	DEC083	None reported. The WHC enlisted the property with knowing the current extractive industy operations. These operations were no reason not to enlist the property.	Not applicable	Not applicable
175	DEC084	The mineral and oil prospection threats was one of the reasons the WHC requested the State Party to invite a RMM.	The RMM was invired by the State Party.	The RMM was carried out in 2007, reporting that the mineral and oil prospection applications were not approved yet, but pressure from government departments remain high. Although in 2012, mineral prospection was still going on within the property. The oil exploration agreement for Selous was relinquished by Dominion Petroleum but still remain a threat.
175	DEC085	The WHC expressed its utmost concerns about the uranium exploration within the property and requeted the State Party to invite another RMM.	The RMM was invited by the State Party.	The RMM was carried out in 2008, reporting that uranium prospection was carried out within the property on its southern boundary.

175	DEC086	The WHC expressed its concerns about the uranium prospection and the other mineral and oil prospection within the property and reiterated that mining is incompatible with the World Heritage status of the property. It also stated that these mining practices are a reason to consider placing the site on the World Heritage in Danger list.	The State Party requested minor boundary changes to the property to be able to develop an uranium mine.	The boundary modification is not officially accepted by the WHC, but the boundary modification process in underway. The WHC considers to accept the boundary modification as an exeptional case, but requests the State Party to make sure the influance on the property of the mining practices can be mitigated. The WHC still considers placing the property on the World Heritage in Danger list.
180	DEC087	None reported. The WHC enlisted the property with knowing the current extractive industy operations. These operations were no reason not to enlist the property. The nomination file reports that the mining practices in the bufferzone were seen as "illegal" and the State Parties were taking action to end these practices.	Not applicable	Not applicable
181	DEC088	Notes its concerns about the threats concerning extractive industry development and urges te State Parties not to permit any further development in the area. The WHC also requested improved transboundary coopertation.	The State Parties signed a "Memorandum of Understanding" (MOU) for het whole region, including the property, addressing the extractive industry development threats. This coopertation was strenghtened by the RMM.	The MUO was a significant response to the threats and further extraction operations are halted in the Flathead watershed. Further revisions of management plans and protection by law is needed to permanently prohibit extractive industry development.

181	DEC089	Requested the State Parties to invite a RMM to the property to identify the state of conservation of the property.	The RMM was invited by the State Parties	The RMM was carried out in 2010 identifying the threats and strate of conservation of the property. The RMM report did contribute to outcome 1.
182	DEC090	None reported. The extractive operations are probably not a problem. These operations were known at times of inscription and were no reason not to enlist the property.	Not applicable	Not applicable
183	DEC091	The WHC expressed its concerns about the oil exploration threats and also suggested to nominate the site for the World Heritage List in Danger list.	The State Party reported that the oil exploration permit was not granted.	The oil exploration threat was averted.
183	DEC092	The WHC expressed its concerns about the unresolved situation concerning the mining exploration permits and requested the State Parties to address the issues.	Non reported	Too soon to report an outcome
184	DEC093	One of the many reasons for incribing and maintaining the property on the World Heritage in Danger List.	1993: The State Party of Guinea stated that they didn't have the intention to include the iron-ore deposits and thus made a boundary error at times of inscription. 2006: The SMFG expressed its committment to minimize the impact of mining operations on the property.	The property is still on the World Hertitage in Danger List, due to ongoing threats from the extractive industry. The mining operation by SMFG on the Guinean side of the property still don't have a ESIA which makes future mining operation impacts uncertain.

184	DEC094	The WHC requested to send an RMM to the site to examine the state of the property.	Not Applicable.	The RMM was carried out in 1993, indicating that the State Party of Guinea indeed not wanted to include the iron-ore deposits at times of inscription. New boundary changes both extending the property and excluding the iron-ore deposits was accepted by the WHC in 1993.
184	DEC095	Request State Parties to invite RMM.	The RMM was invited by the State Parties.	The RMM was carried out in 2007. See Decision 1 outcome for more information.
184	DEC096	Expressed its concerns, requested more information and requested the State Party revoke the mining exploration plans.	The IUCN, World Heritage Centre and the Tata Steel Company dicussed the situation.	The Tata Steel Company officially redrawn itself from the exploration plans. No new iron-ore exploration plans are issued by the State Party of Côte d'Ivoire.
184	DEC097	None reported	Not applicable	Not applicable
197	DEC098	The WHC requested the State Party to keep them up to date about the issues around the Kilembe mining claim.	The State Party reported that Kilembe Mines Ltd. Had suspended surveying and prospecting activities within their concession pending further consultation with Uganda Wildlife Authority.	The re-opening of the kaolin querry was halted in 2006 and the Uganda Wildlife Authority (UWA) is in on-going consultation on the matter with the parent ministry about the mining claim of Kilembe.

198	DEC099	None reported. The WHC enlisted the property with knowing the current extractive industy operations/issues. These operations were no reason not to enlist the property. Also the State Party has the oppinion that the mining claims are unlikely to be reactivated.	Not applicable	Not applicable
203	DEC100	None reported	Not applicable	Not applicable
204	DEC101	The WHC requested information about the permits and the potential impacts of the limestone quarrying permits.	By the mouth of US Army Corps of Engineers the State Party said: "The permits are compatible with the larger Comprehensive Everglades Restoration Plan and are part of the legislatively endorsed Lake Belt Plan to mesh environmental restoration with the public's needs for construction aggregate, clean fill material, and cement products."	No outcome reported.
205	DEC102	None reported. Although uranium mining claims are issued, the moratorium is still in place protecting the property.	Not applicable	Not applicable
208	DEC103	None reported	Not applicable	Not applicable
212	DEC104	Placed the site on the World Heritage Site in Danger list.	Vigorously challenged by defenders of national sovereignty over property rights in the U.S.	Ultimatelly, the project was stopped by President Clinton and financially compensated by the State Party. Also clearing up local mine contamination was compensated.
212	DEC105	None reported	Not applicable	Not applicable

217	DEC106	None reported. The WHC enlisted the property with knowing the current extractive industy operations/issues. These operations were no reason not to enlist the property.	Not applicable	Not applicable
218	DEC107	Expressed its concerns, requested more information and requested the State Party to terminate all mining practices.	None reported	None reported
218	DEC108	Expressed its concerns and requested more information.	The State Party of Zambia didn't approve the exploration and prospection	The prospection is still continuing in some parts of the Lower Zambezi Catchment.
218	DEC109	Request State Parties to invite RMM.	The RMM was invited by the State Party of Zimbabwe.	The RMM was carried out in 2011.
218	DEC110	Requested the State Parties to implement monitoring practices to avoid pollution of the Zambezi river.	None reported	None reported