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CHANGES IN THE IMPACT ASSESSMENT FAMILY 2003–2014: IMPLICATIONS FOR CONSIDERING ACHIEVEMENTS, GAPS AND FUTURE DIRECTIONS

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Over 150 forms of impact assessment can be identified using Google searches, with several new forms appearing since 2003. Since then, the popularity of the various members of the impact assessment family has changed, partly in response to legislative and regulatory changes, and general trends in society. The information explosion and expansion of the internet has resulted in a 32 fold increase in the number of hits for “impact assessment”, now over 12 million. The conventional methods most frequently mentioned in 2003 had relatively low proportional change over the last 10 years but remain amongst the most frequently mentioned in 2014: risk assessment, public participation, cost-benefit analysis, public involvement, environmental monitoring, and project evaluation. The terms with highest proportional change (i.e. the super-hot topics) were primarily social concerns, including: equality impact assessment, welfare impact assessment, mental health impact assessment, disability impact assessment, human impact assessment, social impact assessment, and social risk assessment. Other terms that had high proportional change included life cycle impact assessment. Information about the relative popularity of the various forms of impact assessment is used in this paper to discuss issues and trends in the broad field of impact assessment.

Keywords: Impact assessment terminology; impact assessment nomenclature; family of impact assessment; impact assessment typology; environmental impact assessment; social impact assessment.

Introduction and Methodology

In 2003 I identified over 140 forms of impact assessment by doing internet searches using Google (Vanclay, 2004a). In 2014, I repeated the data collection exercise. This opinion piece presents the results of my internet searches and an analysis of the relative frequencies of mention (i.e. hits) of the various members of the impact assessment family and changes over the period 2003–2014 as a basis to comment on issues and trends in the impact assessment family.

The research in 2003 initially involved internet searching using Google for all terms known to be part of the impact assessment family and for other words related to “impact assessment”, “impact analysis”, “environmental assessment”, “environmental analysis”. The results of these searches were carefully scanned and a cumulative listing of all terms containing these and other words that made meaningful concepts related to the impact assessment field was compiled. As an established impact assessment academic (e.g. Vanclay and Bronstein, 1995; Vanclay, 2002, 2003, 2004a, 2004b, 2006, 2012, 2014a, 2014b; Vanclay and Esteves, 2011), my personal knowledge of the field was used in developing the listing. Any relevant term I came across in my scanning of search results was included in the listing. I also included some comparison terms closely related to impact assessment. Those comparison terms were augmented in 2014.

All searches were undertaken with the term contained within “double quote-marks” to ensure that the exact phrase was being searched for. Close variants and alternative spellings were included. For the 2004 paper, the compilation of terms took place in early 2003 with enumeration of all terms occurring on 19 May 2003. For the current paper, re-enumeration took place on 1 November 2014. The number of hits for all terms was double-checked. Any apparent oddities or anomalies, and terms specifically mentioned in the paper were triple-checked perhaps a day or so later. Adjustments were made where appropriate. Scopus and Google Scholar were used to validate the existence of some terms. With limited reliability and validity, Google searches and analyses in the way undertaken are not robust or accurate, but at a minimum do provide a general overview of trends in the field. There is however a considerable potential for misidentification. One issue is that Google seems to ignore punctuation, so word strings that include commas, semi-colons and periods between the words can also be included in the output. The results therefore are imprecise and no count should be taken as being accurate, thus caution must be taken in the use or interpretation of this data. Therefore this paper does not purport to be accurate or thorough, but does give a sense of what is happening in the broad field of impact assessment. The hit count data are primarily used as a way of identifying trends and

developments. Finally, it is appropriate to highlight that this analysis is only of the English language terms, thus this paper does not consider whatever trends may be happening in other languages where there will also be developments in impact assessment.

Results: Changes in Impact Assessment Terminology Usage 2003–2014

Table 1 shows the changes in terminology use between 2003 and 2014 for the field of impact assessment. The term, “impact assessment”, for example, went from 377,000 to 12.1 million hits over that time. The ratio of 12,100,000:377,000 (i.e. 32:1) can be accepted as being equivalent to the anticipated (or typical) increase in the number of hits over that time due to the information explosion and expanding reach of the internet. The proportional change — or “relative hotness score” — for each search term can be calculated by dividing the 2014:2003 ratio for each term by 32 as a way of standardising or calibrating each term against the expected increase in numbers, or at least against “impact assessment”. Thus, terms with a relative hotness score of greater than 1.0 have greater proportional change over time than the term “impact assessment”, while terms with a relative hotness score of less than 1.0 have less proportional change than “impact assessment”. Table 2 presents terms identified in 2014 that were likely not to have been in use in 2003 (because they were not detected then). Table 3 presents some terms considered worthwhile to mention in this paper, but which, for one reason or another, were not considered in 2003 and for which it is reasonable to presume that they would have been in use in 2003.

To give some sense of the information explosion, in 2003 there were only 26 impact assessment terms that had more than 10,000 hits, while 55 terms had more than 1,000 hits. By 2014, the number of terms with more than 10,000 hits had reached over 110, while more than 180 terms had over 1,000 hits. The two terms that experienced the greatest proportional change between 2003 and 2014 were “equality impact assessment” (2 hits in 2003 and 366,000 hits in 2014) and “welfare impact assessment” (22 hits in 2003 and 1,910,000 hits in 2014). These two topics connect to recent political and social priorities. For example, various pieces of legislation in the United Kingdom including the 2010 Equality Act have required all UK public institutions to conduct equality impact assessments. Thus a concept largely unknown in 2003 has now become a major issue of discussion, in certain circles at least — even though “equality impact assessment” has 366,000 Google hits, the concept has only 2,780 Google Scholar hits and only 10 hits in

Table 1. Comparison of impact assessment terms between 2003 and 2014.

(The number of hits refers to the number of search results using the Google Search Engine with the term (and indicated variations) in double inverted commas. Searches performed on or about 19 May 2003 and 1 November 2014).

Impact assessment term	Hits 2003	Hits 2014	Relative hotness score
impact assessment	377,000	12,100,000	1
risk assessment	1,290,000	31,900,000	0.8
environmental management system	118,000	14,700,000	3.9
impact assessment	377,000	12,100,000	1.0
environmental impact assessment	171,000	10,800,000	2.0
technology assessment	291,000	10,500,000	1.1
public consultation	254,000	8,160,000	1.0
environmental monitoring	283,000	6,500,000	0.7
cost benefit analysis	322,000	5,920,000	0.6
public participation	472,000	5,150,000	0.3
social impact assessment	13,600	3,590,000	8.2
public involvement	298,000	2,070,000	0.2
welfare impact assessment	22	1,910,000	2705.0
project evaluation	145,000	945,000	0.2
stakeholder analysis/assessment/mapping*	15,000	565,000	1.2
triple bottom line	33,600	557,000	0.5
health technology assessment	24,800	545,000	0.7
social analysis	49,100	503,000	0.3
social monitoring	5,120	445,000	2.7
environmental risk assessment	24,100	437,000	0.6
project appraisal	36,000	415,000	0.4
sustainability assessment	5,980	401,000	2.1
environmental audit	50,000	400,000	0.2
health impact assessment	10,400	395,000	1.2
strategic environmental assessment	14,700	395,000	0.8
equality impact assessment	2	366,000	5701.7
social assessment	15,600	351,000	0.7
economic impact assessment	6,510	344,000	1.6
ecological assessment	15,000	341,000	0.7
policy assessment	13,800	299,000	0.7
environment impact assessment	6,060	297,000	1.5
social impact analysis	4,020	281,000	2.2
poverty assessment	13,500	250,000	0.6
visual impact assessment	2,760	240,000	2.7
regulatory impact assessment	14,300	233,000	0.5
environmental health assessment	3,360	192,000	1.8
socio-economic impact assessment	1,820	182,000	3.1
privacy impact assessment	1,820	170,000	2.9

Table 1. (Continued)

Impact assessment term	Hits 2003	Hits 2014	Relative hotness score
cumulative impact assessment	2,120	166,000	2.4
disaster assessment	5,490	163,000	0.9
environmental health impact assessment	895	142,000	4.9
climate impact assessment	2,720	136,000	1.6
noise impact assessment	1,840	132,000	2.2
mental health impact assessment	31	113,000	113.6
life cycle impact assessment	15	101,000	209.8
climate change impact assessment	1,140	99,100	2.7
gender assessment	1,200	95,200	2.5
poverty and social impact assessment	601	82,500	4.3
development impact assessment	2,070	76,700	1.2
human impact assessment	229	74,700	10.2
heritage impact assessment	570	72,500	4.0
business impact assessment	1,990	62,100	1.0
sustainability impact assessment	2,290	60,000	0.8
poverty and social impact analysis	1,230	55,300	1.4
community impact assessment	1,550	52,900	1.1
air quality impact assessment	947	48,800	1.6
ecological impact assessment	1,260	48,700	1.2
cultural heritage assessment	568	46,800	2.6
human rights impact assessment	411	46,700	3.5
policy impact assessment	945	46,600	1.5
cumulative effects assessment	2,620	46,500	0.6
disability impact assessment	21	45,500	67.5
social risk assessment	209	44,300	6.6
gender impact assessment	1,980	44,100	0.7
rapid environmental (impact) assessment*	727	42,000	1.8
participatory poverty assessment	3,980	35,500	0.3
integrated impact assessment	1,280	35,300	0.9
site (environmental) impact assessment*	160	34,700	6.8
political impact assessment	15	33,400	69.4
regional impact assessment	536	32,600	1.9
landscape impact assessment	375	32,400	2.7
agriculture (agricultural) impact assessment*	74	30,000	12.6
fiscal impact assessment	408	28,700	2.2
cultural impact assessment	505	28,500	1.8
strategic environment assessment	556	28,300	1.6
cultural heritage impact assessment	241	28,100	3.6
archaeological impact assessment	906	27,600	0.9
benefit incidence analysis	547	24,500	1.4
beneficiary assessment	1,660	23,600	0.4

(Continued)

Table 1. (Continued)

Impact assessment term	Hits 2003	Hits 2014	Relative hotness score
comprehensive impact assessment	996	21,800	0.7
transport impact assessment	684	21,400	1.0
system impact assessment	444	20,700	1.5
risk impact assessment	351	20,500	1.8
strategic impact assessment	735	20,400	0.9
vibration impact assessment	267	20,000	2.3
drainage impact assessment	227	19,600	2.7
poverty impact assessment	404	17,500	1.3
GIS impact assessment	19	16,100	26.4
benefit cost assessment	1,060	15,900	0.5
biodiversity impact assessment	327	15,600	1.5
demographic impact assessment	35	15,000	13.4
water impact assessment	141	14,900	3.3
trade impact assessment	511	14,600	0.9
conflict impact assessment	1,240	14,300	0.4
rapid impact assessment	315	14,100	1.4
participatory impact assessment	444	14,000	1.0
psychosocial impact assessment	6	13,600	70.6
fisheries (+fishery) impact assessment*	231	13,000	1.8
technology impact assessment	484	13,000	0.8
odour impact assessment	158	12,500	2.5
coastal impact assessment	55	11,900	6.7
tourism impact assessment	215	11,600	1.7
ecology impact assessment	347	11,100	1.0
disaster impact assessment	136	9,980	2.3
transboundary impact assessment	88	9,940	3.5
equity impact assessment	47	9,790	6.5
infrastructure impact assessment	145	9,500	2.0
urban impact assessment	46	9,190	6.2
enterprise development impact assessment	835	8,860	0.3
historic(al) impact assessment*	39	8,800	7.0
legal impact assessment	33	8,250	7.8
aesthetic impact assessment	43	7,910	5.7
pesticide impact assessment	3,910	7,900	0.1
erosion impact assessment	39	7,250	5.8
social capital assessment	353	6,900	0.6
habitat impact assessment	196	6,540	1.0
wildlife impact assessment	362	5,780	0.5
facility impact assessment	15	5,390	11.2
social soundness analysis/assessment*	170	5,200	1.0
HIV/AIDS impact assessment (and HIV IA)*	190	5,000	0.8

Table 1. (Continued)

Impact assessment term	Hits 2003	Hits 2014	Relative hotness score
mining impact assessment	33	4,930	4.7
epidemiological impact assessment	4	4,580	35.7
greenhouse impact assessment	1	4,340	135.2
food impact assessment	4	4,040	31.5
fauna impact assessment	70	4,020	1.8
microfinance impact assessment (+micro finance IA)*	244	4,000	0.5
corporate impact assessment	19	3,960	6.5
consumer impact assessment	88	3,950	1.4
institutional impact assessment	65	3,780	1.8
historical resources impact assessment	137	3,680	0.8
GIS-based impact assessment	23	3,450	4.7
park(s) impact assessment*	125	3,200	0.8
family impact assessment	71	3,120	1.4
vegetation impact assessment	22	2,430	3.4
rural impact assessment	29	2,290	2.5
dam impact assessment	94	1,980	0.7
pest impact assessment	64	1,870	0.9
conflict risk and impact assessment	3	1,750	18.2
strategic integrated assessment	43	1,520	1.1
analytical strategic environmental assessment	177	1,460	0.3
forestry impact assessment	14	1,320	2.9
workforce impact assessment	5	1,180	7.4
uranium impact assessment	298	1,090	0.1
Arctic impact assessment	18	859	1.5
flora impact assessment	6	758	3.9
navigation impact assessment	4	704	5.5
peace impact assessment	4	675	5.3
leisure impact assessment	19	586	1.0
fisheries resource impact assessment	23	541	0.7
Aboriginal impact assessment	7	368	1.6
Indigenous impact assessment	1	271	8.4
overflight impact assessment	16	9	0.0
corporate privacy impact assessment	2	8	0.1
political risk impact assessment	1	2	0.1

*indicates an entry that is a composite of more than one search terms. The scores for these are somewhat less reliable than for the other terms.

Note: The relative hotness score is a measure of proportional change over the period 2003 to 2014, adjusted relative to the change for the term “impact assessment”. It is calculated by dividing the 2014:2003 ratio of hits for each search term by the ratio for the term “impact assessment” (i.e. 32.095). Scores greater than 1.0 indicate topics that have greater relative change (i.e. are hotter topics).

Table 2. New impact assessment terms since 2003.

Impact assessment term	Hits 2014
fire impact assessment	128,000
marine impact assessment	80,100
social life cycle assessment	27,900
animal welfare impact assessment	24,300
flood impact assessment	18,100
ecosystem services assessment	17,500
ecosystem impact assessment	16,600
land use impact assessment	15,900
health systems impact assessment	15,500
health and welfare impact assessment	11,200
social life cycle analysis	9,750
hydrologic impact assessment	9,300
territorial impact assessment	8,880
carbon impact assessment	8,880
community-based impact assessment	7,460
indicator-based impact assessment	6,950
toxicological impact assessment	6,570
wildfire impact assessment	6,240
drought impact assessment	5,790
youth impact assessment	5,710
health equity impact assessment	5,520
earthquake impact assessment	5,020
livelihood impact assessment	4,830
inequality impact assessment	4,570
child rights impact assessment	4,770
migration impact assessment	4,210
waste impact assessment	4,190
evolutionary impact assessment	4,110
social housing impact assessment	4,100
longitudinal impact assessment	3,910
food security impact assessment	3,610
resettlement impact assessment	3,230
flora and fauna impact assessment	3,150
vulnerability impact assessment	3,050
failure impact assessment	2,760
welfare reform impact assessment	2,680
recreation impact assessment	2,340
displacement impact assessment	2,140
sanitation impact assessment	1,840
local content assessment	1,640

Table 2. (Continued)

Impact assessment term	Hits 2014
social capital impact assessment	1,620
ecosystem services impact assessment	1,500
inflation impact assessment	1,420
disaster recovery impact assessment	1,130
human rights based impact assessment	1,120
resilience impact assessment	1,020
health inequality impact assessment	864
radioactivity impact assessment	665
bushfire impact assessment	356
fauna and flora impact assessment	345
catchment impact assessment	299
rural electrification impact assessment	244
Antarctic impact assessment	77
mitigation impact assessment	56*
enhancement impact assessment	18*
ethics impact assessment	18
liveability impact assessment	4

*number is particularly unreliable and may contain many misclassifications.

Scopus. The UK legal requirements were modified in 2011 and it is likely that less equality impact assessments will be done in the future (BBC News, 19 November 2012).

The terms that had the greatest absolute number of citations in 2014 were many of the conventional methods chosen for comparison purposes, such as: risk assessment (31.9 million), environmental management system (14.7 million), community engagement (8.6 million), public consultation (8.2 million), environmental monitoring (6.5 million), cost-benefit analysis (5.9 million), public participation (5.2 million), public involvement (2.1 million) and project evaluation (0.9 million). With the exception of environmental management system, these terms did not have high hotness scores. For the mainstream impact assessment terms, the most frequently used terms in 2014 were: impact assessment (12.1 million, hotness = 1.0), environmental impact assessment (10.8 million, hotness = 2.0), technology assessment (10.5 million, hotness = 1.1), and social impact assessment (3.6 million, hotness = 8.2). Typically, the terms most frequently used in 2014 were the same as the terms most frequently used in 2003, although the relative ordering of them was somewhat different.

Table 3. Impact assessment related terms not considered but likely to have been in use in 2003.

Impact assessment term	Hits 2014
community engagement	8,580,000
life cycle assessment	2,080,000
gender analysis	443,000
ecological risk assessment	416,000
noise assessment	241,000
free, prior and informed consent	184,000
socio-economic assessment	178,000
social return on investment	145,000
social licence (license) to operate	87,200
community risk assessment	54,800
environmental and social management system	49,300
human rights due diligence	39,700
cumulative environmental impact assessment	28,300
non-technical risk assessment	25,000
ex-ante impact assessment	23,900
environmental, social and health impact assessment	17,300
transboundary environmental assessment	13,900
social impact management plan	15,200
gender impact analysis	14,100
arms control impact assessment	6

Looking at hot topics that had a relatively large number of hits in 2014, it is interesting to note that many were social concepts (in order of hotness, with the number of hits in 2014): equality impact assessment (366,000), welfare impact assessment (1.9 million), life cycle impact assessment (101,000), mental health impact assessment (113,000), disability impact assessment (45,500), human impact assessment (74,700), social impact assessment (3.6 million), social risk assessment (44,300), environmental health impact assessment (142,000), poverty and social impact assessment (82,500), heritage impact assessment (72,500), and human rights impact assessment (46,700).

Given that the 2004 paper was a discussion about the plethorisation of terms and a critique of the triple bottom line (TBL) concept, it is appropriate to highlight here how TBL has fared. “Triple bottom line” increased from 33,600 in 2003 to 557,000 in 2014 and had a hotness score of 0.5, representing half the proportional change experienced by the term “impact assessment”. While prior to 2003 the impression was that TBL was in an ascendency, with TBL reports being produced

by many organisations, this is now not the case, with TBL reporting being largely replaced by integrated sustainability reporting (van der Ploeg and Vanclay, 2013).

Using the Numbers to Resolve Terminology Disputes

In all disciplines there are various terminological disputes, semantic arguments, nuances and political correctnesses — impact assessment is no different. Looking at the frequency data and changes over time can be informative in terms of identifying trends and fashions in terminology. For example, one long-running dispute has been around the terms: public participation (472,000 to 5.2 million), public involvement (298,000 to 2.1 million), public consultation (254,000 to 8.2 million) and community engagement (8.6 million in 2014, not considered in 2003). In 2003, public involvement was regarded as being the overarching concept, with public consultation being simply obtaining the views of the public, while participation meant actually involving them in decision making (Roberts, 1995, 2003). Now “community engagement” has replaced “public involvement” as the overarching term (Dare *et al.*, 2014), and public involvement has become the least important of these terms, as is clearly evident in the numbers. Although regarded by many as technocratic, public consultation is still widely used.

Another terminological controversy has been around the field of social impact assessment (Vanclay, 2004b, 2014a), with multiple terms being used, including: social impact assessment (13,600 to 3.6 million, hotness = 8.2); social impact analysis (4,020 to 281,000, hotness = 2.2); social assessment (15,600 to 351,000, hotness = 0.7); social analysis (49,100 to 503,000, hotness = 0.3); socio-economic impact assessment (1,820 to 182,000, hotness = 3.1); social soundness analysis/assessment (170 to 5,200, hotness = 1.0); social risk assessment (209 to 44,300, hotness = 6.6); cultural impact assessment (505 to 28,500, hotness = 1.8) and community impact assessment (1,550 to 52,900, hotness = 1.1). Whereas “social analysis” and “social assessment” were more frequently used than “social impact assessment” in 2003 (49,100 and 15,600 vs 13,600), this was no longer the case in 2014 (503,000 and 351,000 against 3.6 million). In fact, with a hotness score of 8.2, social impact assessment had experienced considerable growth. Social soundness analysis was the equivalent term mostly used in USAID contexts, while community impact assessment was the term used by the US Department of Transport. Although these terms have persisted in their own contexts, they have largely not expanded beyond the reach of those settings.

While social impact assessment might now clearly be the established term for the social version of impact assessment, another confusion has arisen. In the 1990s, social impact analysis was a term used in the World Bank and was

incorporated into their “poverty and social impact analysis” methodology from about 2002. However, since the mid 2000s the terms “social impact analysis” and to an extent “social impact assessment” have been adopted by the philanthropic sector to describe the assessment of the additional, non-financial outcomes, or “social return on investment”, of donor contributions. While there is an overlap in meaning with social impact assessment, the application context is quite different (see [New Economics Foundation, 2008](#)).

On other matters of terminological dispute, cumulative impact assessment is the preferred term to cumulative effects assessment (166,000 vs 46,500). Strategic **environmental** assessment with 395,000 hits is vastly preferred to strategic **environment** assessment (28,300), strategic impact assessment (20,400), or strategic integrated assessment (1,520).

The relative changes in gender impact assessment (1,980 to 44,100, hotness = 0.7) and gender assessment (1,200 to 95,200, hotness = 2.5) are interesting. Gender impact analysis (14,100) and gender analysis (443,000) are other terms that also exist, unfortunately they were not considered in 2003. Thinking about all these terms, why they have different frequencies, and why some were not considered in 2003, raises questions around what the words “assessment”, “analysis”, “impact assessment” and “impact analysis” mean precisely, and whether the majority of people who use these terms are aware of those meanings and use them in a consistent way.

Analysis (a noun, the verb is “to analyse”) is intended to mean something like a systematic process of examination of something in order to understand its component parts and how they inter-relate with each other (e.g. chemical analysis, financial analysis); and/or perhaps the rigorous application of a set of theories, methods and tools (a paradigm) to consider an issue (e.g. mathematical analysis, economic analysis, psychological analysis). Assessment (a noun, the verb is “to assess”) means something like a statement or judgement about the quantity, quality, value, worth or importance of something, usually for the purposes of evaluation or decision making. The act of assessing and the assessment are based on a structured process of inquiry, in other words, analysis. Therefore, in my view, while the words assessment and analysis have somewhat different meanings, this difference is irrelevant in terms of the selection of terms to consider for inclusion in the impact assessment family.

Use of the term “impact” might be considered to be an evident link to the impact assessment family. However, as indicated above, social impact analysis (and sometimes use of the term social impact assessment) has emerged in the philanthropic sector completely independent of the impact assessment family. Also, many terms that do not contain the word impact are unambiguously

part of the impact assessment family, for example, strategic environmental assessment and sustainability assessment. A confusion has also arisen about whether “impact” refers to impact on something, or the impact of something. Some impact assessments are studies to determine likely outcomes (the impact of a program or policy), while in the impact assessment family the interest is primarily impact on the environment (environmental impact assessment), society (social impact assessment), health (health impact assessment), etc. This becomes problematic, however, because for example a dam impact assessment is not an assessment of a project on a dam, rather it is an assessment of the dam on the environment and/or surrounding communities. Going through the terms in the various tables in this paper suggests there is little consistency in whether it is impact on, or impact of. This makes it hard to use linguistic usage as the basis to determine what is part of the family of impact assessment.

Emerging Topics and Trends

With 395,000 hits, health impact assessment (up from 10,400 in 2003) had a hotness score of 1.2, in other words about the same rate of increase as impact assessment overall. However, “mental health impact assessment” (which is included within health impact assessment) accounted for 113,000 of those hits. With only 31 hits in 2003, mental health impact assessment is a super-hot topic. Mental health impact assessment is a form of HIA that focusses specifically on mental or psychosocial health (Todman *et al.*, 2012). It is accompanied by psychosocial impact assessment with 13,600 hits in 2014 (up from 6 in 2003). It is increasingly recognised that fear and anxiety about projects and associated stress are amongst some of the more significant social impacts (Vanclay, 2012). There is also increasing acknowledgement of a harmful psychogenic nocebo effect associated with the way certain projects are perceived and discussed (see Chapman *et al.*, 2013). Nocebo is something like the opposite of a placebo and refers to an inert substance that has the potential to cause harm.

Human impact assessment arose in Finland in the 1990s as a way of integrating social impact assessment and health impact assessment because of awareness of their considerable overlap (Kauppinen, 2011; den Broeder and Vanclay, 2014). Although human impact assessment has become well-established within Finland (Kauppinen *et al.*, 2002), looking at Google Scholar and Scopus suggests that it has not been widely taken up in the academic literature. Nevertheless, it recorded 74,700 hits in Google and had a hotness score of 10.2; and is acknowledged by the World Health Organisation (<http://www.who.int/hia/tools/toolkit/whohia033/en/>).

The place of human rights within impact assessment has been the topic of discussion for some time (Vanclay, 2003; Esteves *et al.*, 2012; Kemp and Vanclay, 2013). Appearing in the late 1990s, human rights impact assessment has moderately increased (411 to 46,700, hotness = 3.5). Human rights impact assessment, although not specifically mentioned, was given a boost by the passage of the *United Nations Guiding Principles on Business and Human Rights* in 2011. The UN Guiding Principles advocated for the use of “human rights due diligence”, which received 39,700 hits in 2014. Interest in human rights has also led to advocacy around child rights, and a “child rights impact assessment” has been mooted, having 4,770 hits in 2014.

Heritage and cultural heritage are other concepts that have experienced increasing attention. Heritage impact assessment (570 to 72,500, hotness = 4.0) and its subcomponent, cultural heritage impact assessment (241 to 28,100, hotness = 3.6) have seen steady growth. There is also a cultural heritage assessment (568 to 46,800), but this probably refers to a survey of existing cultural heritage resources rather than to the impact of a project on cultural heritage. In addition, there is archaeological impact assessment (906 to 27,600, hotness = 0.9).

An important trend in the field of impact assessment has been a shift from a focus on mitigation of harm to enhancement of benefit (João *et al.*, 2011). This raises the questions of whether there is “mitigation impact assessment” or “enhancement impact assessment”? Mitigation impact assessment records about 56 hits, but an investigation of these alleged hits indicates that most of them are misidentified (typically there being punctuation between the terms, for example in a list of keywords). However, cross-referencing with Google Scholar and Scopus suggests that some of the hits may be real, referring to an assessment of the impact of mitigation attempts, especially in the context of disasters, flood control, and climate change. Similarly, enhancement impact assessment recorded 18 hits, which were mostly misclassifications, but at least some of the hits did refer to an assessment of the impact of enhancement measures, particularly in relation to habitat restoration and attempts to assist in the regeneration of fish stocks. Local content and local procurement are important components of the enhancement of social issues (Esteves *et al.*, 2012; Esteves and Vanclay, 2009), but as yet no local content or local procurement impact assessment has been recorded. However, “local content assessment”, referring to an assessment of the actual and/or potential contribution of local content to a project, received 1,640 hits.

Since 2003 two new forms of impact assessment have arisen in European Commission circles. What might have been regarded as policy impact assessment or regulatory impact assessment in other circles is being called “ex ante impact assessment” in the EC (with 23,900 hits in 2014). Territorial Impact

Assessment (TIA) has also emerged as an ex-ante mechanism intended to identify potential spatial disparities and differential spatial impacts of European policy at national, regional and local levels in European Member States to help identify and minimise potential policy conflicts or inconsistencies (Fischer *et al.*, 2015). Arguably it is variant of policy impact assessment, but with “territory”, “territoriality” and “territorial cohesion” (all referring to spatial variation) having become prominent in Eurospeak (the jargon of the European Union), it was inevitable that a TIA would emerge. In 2014, territorial impact assessment had 8,880 hits. It is highly likely that this form of impact assessment will grow rapidly in the near future.

Community-based impact assessment is another new development. Instead of impact assessment aiding and abetting corporations in achieving legal and social licences to operate, community-based impact assessment refers to the idea that impact assessment should be a process that assists local communities to understand what may happen to them should a project proceed. This is particularly important to fulfil the “informed” element in a Free, Prior and Informed Consent (FPIC) negotiation (see Hanna and Vancley, 2013). Community-based impact assessment received 7,460 hits in 2014.

Within social impact assessment there has been a shift from encouraging production of a statement of impacts (like a social equivalent of an environmental impact statement) to a focus on social impact management plans (Franks and Vancley, 2013). Not considered in 2003 but likely to have had some use then, “social impact management plan” had 15,200 hits in 2014.

Along with the rise of the concept of social licence to operate (Prno and Slocombe, 2012; Dare *et al.*, 2014) with its 87,200 hits, there have been other terminological developments of interest. Social impacts are now being expressed in risk language (Mahmoudi *et al.*, 2013). New concepts such as “social risk” and “non-technical risk” are being frequently used by project managers. Consequently, social risk assessment (44,300 hits in 2014, up from 209 in 2003, hotness = 6.6) and non-technical risk assessment (25,000 in 2014, not considered in 2003) are also being used.

Conclusion: What does all this tell us about Future Directions for Impact Assessment?

The above analysis shows that the broad field of impact assessment and its many components are alive and well. While the plethorisation of terms is potentially problematic and perhaps annoying, it is inevitable and something we all need to

live with. While looking at the numbers can answer some terminological disputes, it cannot provide the answer to all the questions we might have. In this conclusion, therefore, I make some personal comments about what I think are issues for impact assessment.

The field of impact assessment is expanding, and impact assessment is becoming much more integrated with project development, corporate social responsibility and social performance. Despite my having started with a search for terms related to “impact assessment” and “impact analysis”, in some ways I believe that was a flawed approach. As my data and analysis have shown, there are many relevant terms, not necessarily containing the word string, “impact assessment”. The integration of impact assessment into planning and project management is a good thing because, especially for social impacts, the impacts happen as soon as there are rumours about a project (Vanclay, 2012). Thus management of the social and environmental impacts, speculation and project-induced in-migration (colloquially called the honey-pot effect) must also take place from the moment the project is conceived. Impact assessment as a regulatory tool has failed to protect society from harm because it occurs too late in the project cycle. Furthermore, governments have been too eager to endorse projects, frequently citing the national interest (Hanna *et al.*, 2014), and have used this as a justification to fast-track projects that arguably should have been better planned. Embedding greater awareness of the social and non-technical risks of projects (including the human rights risks) into project planning is essential. Related to this is that national regulatory agencies have largely been replaced by other actors and the “competent authority” is an outdated concept — the regulators of projects are industry organisations, financial institutions (especially Equator Principles banks), international standards (especially the International Finance Corporation’s Performance Standards), and civil society in local and international settings (notably watchdog NGOs). The permit to produce is now as much the “social licence to operate” as it is a legal permit.

Likely these comments will shock if not rile some old-fashioned impact assessment practitioners and academics. To them I say it is time that they got out of their disciplinary silos and ivory towers. A major limitation facing (academic) impact assessment is its failure to keep abreast of what is happening on the ground, at the coal face, at the project site. There is still room for considerable improvement in practice, and different companies have different business models and business strategies, but overall and over time there has been considerable improvement in the way that project management occurs. In my view, the conventional model of regulatory impact assessment is anachronistic and largely irrelevant.

One of the many weaknesses in ex ante assessment and approval processes is that there is no mechanism for the reconsideration of licencing conditions after the event. It is unrealistic to presume that impact assessment can be all knowing and all powerful. While impact assessment may or may not be good at predicting impacts, projects change over time, and new, unanticipated outcomes frequently occur. The social and political context can also change over time. This is particularly evident, for example, in the Groningen gasfield where, amongst other outcomes, a series of unanticipated earthquakes caused by project-induced subsidence are occurring, significantly changing the experience of impacts that was first considered (van der Voort and Vanclay, 2015).

Other gaps in the impact assessment skillbase include a lack of capacity and understanding around the social issues in resettlement and livelihood restoration and enhancement. Many large projects require the relocation of peoples and communities, typically leading to displacement and impoverishment. Cash compensation can be particularly harmful. While there is generally an obligation to improve or at least restore livelihoods, experience tends to show that people are made worse-off (Scudder, 2011). There is a desperate need to improve the capacity of resettlement practitioners and companies so that resettlement can be part of the development process that leads to mutual benefit and shared value.

Finally, while there has been an increased focus on human rights (Kemp and Vanclay, 2013), there is also a need for impact assessment practitioners to be more aware of ethical practice (Vanclay *et al.*, 2013). While journal publishers and other institutional actors (universities and research funders) are increasing their expectations of author researchers, philosophically these same ethical standards should apply to all practitioners who interact with people. Impact assessment is a people practice, and we need to demonstrate best practice in professional ethics, including treating people and communities with respect.

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