Supplementary Materials

Global Potential of Rare Earth Resources and Rare Earth Demand from Clean Technologies

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Table S1. The global rare earth deposits.

Deposit	Country	Mineral	Ore (Mt)	REO (%)	REO (Mt)	References
Brockman	Australia	bertrandite, bastnaesite	41.4	0.21%	0.086	[1]
Browns Range	Australia	xenotime	8.98	0.63%	0.056	[2,3]
Charley Creek (JV)	Australia	monazite, xenotime	805.3	0.03%	0.235	[4]
Corkwood Yard	Australia	xenotime	0.359	0.00%	0.000	[5]
Crown	Australia	NA	37.7	1.16%	0.437	[6]
Cummins Range	Australia	monazite	4.9	1.74%	0.085	[7]
Dubbo	Australia	eudialyte, bastnasite	73.2	0.75%	0.549	[8]
John Galt	Australia	xenotime	0.051	0.35%	0.000	[5]
Korella	Australia	xenotime	13.72	0.07%	0.009	[5]
Mary Kathleen	Australia	apatite, titanite, garnet	5.5	6.40%	0.352	[5]
Milo	Australia	IOCG	176	0.06%	0.109	[9]
Mt Weld CLD	Australia	monazite, churchite	15	8.80%	1.319	[10]
Mt Weld Duncan	Australia	monazite, churchite	8.2	4.70%	0.385	[10]
Narraburra	Australia	monazite	73	0.03%	0.023	[11]
Nolans Bore	Australia	fluorapatite, allanite	56	2.60%	1.456	[12]
Olympic Dam	Australia	monasite, bastnasite	10400	0.42%	43.68	[13]
Swan	Australia	NA	13.7	1.51%	0.206	[14]
Yangibana	Australia	monazite	12.362	1.10%	0.135	[1]
Araxá	Brazil	monazite	28.28	4.22%	1.193	[15]
Catalão I	Brazil	monazite	119	5.50%	6.545	[16]
Catalão II	Brazil	REE-phosphates	25	0.98%	0.245	[17]
Poços de Caldas	Brazil	bastnaesite	7	2.89%	0.202	[17]
Serra Verde	Brazil	monazite, xenotime	911	0.00%	1.093	[18]
Morro dos Seis Lagos	Brazil	monazite	2900	1.50%	43.5	[19]
Tapira	Brazil	anatase, hydroxlapatite	150	0.03%	0.045	[20]
Barra do Itapirapuã	Brazil	bastnaesite	44.8	0.70%	0.313	[17]
Pitinga	Brazil	xenotime, gargarinite	164	0.00%	0.246	[19]
Guarapari	Brazil	monazite	0.00095	60.04%	0.001	[20]
Prado	Brazil	monazite	0.0045	19.98%	0.001	[20]
Gakara	Burundi	bastnaesite, monazite	0.2565	54.30%	0.139	[21]
Karonge	Burundi	bastnasite, monazite	0.06	1.59%	0.001	[20]
Kasagwe	Burundi	bastnasite	0.067	1.50%	0.001	[20]
Atlin-Ruffner	Canada	allanite	0.036	2.29%	0.001	[20]
Ashram Main	Canada	monazite, bastnaesite	249.07	1.89%	4.707	[22]
Ashram MHREO	Canada	monazite, bastnaesite	9.34	1.61%	0.150	[22]
Buckton	Canada	ionic clay	3433.5	0.03%	1.030	[23]
Buckton South	Canada	ionic clay	496.7	0.03%	0.149	[23]
Clay-Howells	Canada	monazite, aptite, silicate	8.477	0.73%	0.061	[24]
Eco Ridge	Canada	monazite	86.6	0.11%	0.098	[25]
Elliot Lake	Canada	brannerite, monzite	51.60	0.19%	0.098	[26]
Foxtrot	Canada	allanite, fergusonite	9.35	1.11%	0.103	[27]
Grande-Vallée	Canada	ionic clay	1040	0.06%	0.624	[28]
Hoidas Lake	Canada	allanite	4.823	1.64%	0.079	[29]

Kipawa	Canada	eudialyte, mosandrite	23.45	0.42%	0.097	[30]
Lavergne-Springer	Canada	synchysite	16.899	1.16%	0.196	[31]
Montviel	Canada	huanghoite/cebaite	266.6	1.45%	3.865	[32]
Niobec	Canada	monazite	1058.6	1.73%	18.356	[33]
Oka	Canada	apatite	210	0.13%	0.2667	[19]
Strange Lake	Canada	allanite	492.48	0.09%	0.441	[34]
Thor Lake (Nechalacho)	Canada	allanite, monazite	269.36	1.47%	3.946	[35,36]
Two Tom	Canada	monazite, cerium-calcium silicate	40.635	1.18%	0.480	[37]
St. Honoré	Canada	bastnasite, pyrochlore	16	0.01%	0.001	[20]
Bayan Obo	China	bastnaesite, monazite	NA	5%	159	[38,39]
Xunwu	China	ion clay	NA	0.11%	0.781	[38,40]
Xinfeng	China	ion clay	NA	0.09%	0.146	[38,40]
Longnan	China	ion clay	NA	0.10%	0.048	[38,40]
Sichuan	China	bastnaesite	NA	3.70%	2.055	[38,39]
Weishan	China	bastnaesite	NA	3.71%	0.086	[38,39]
Guangdong	China	ion clay	NA	NA	0.731	[38]
Guangxi	China	ion clay	NA	NA	0.256	[38]
Fujian	China	NA	NA	NA	0.17	[38]
Hunan	China	monazite	NA	NA	0.25	[38]
Guizhou	China	ion clay	NA	NA	0.779	[38]
Yunnan	China	monazite, xenotime	NA	NA	0.04	[38]
Katajakangas	Finland	fergusonite, allanite	0.46	2.40%	0.011	[41]
Kontioaho	Finland	fergusonite-(Y), allanite	7.69	0.45%	0.034	[42]
Korsnas Mine	Finland	monazite	0.86	0.91%	0.007	[20]
Storkwitz	German	NA	4.5	0.45%	0.020	[43]
Karrat	Greenland	bastnasite, allanite	19.36	1.02%	0.197	[44]
Kvanefjeld	Greenland	lujavrite	673	1.09%	7.335	[45]
Motzfeldt (Aries)	Greenland	NA	340	0.26%	0.884	[46]
Sarfartoq ST1 Zone	Greenland	monazite, bastnaesite	14.1	1.50%	0.211	[47]
Sørensen	Greenland	lujavrite	242	1.10%	2.662	[45]
Tanbreez	Greenland	Eudialyte	4700	0.65%	30.55	[48]
Zone 3	Greenland	lujavrite	95	1.17%	1.111	[45]
Andhra Pradesh	India	monazite	3.72	50.00%	1.86	[49]
Jharkhand	India	monazite	0.22	50.00%	0.11	[49]
Kerala	India	monazite	1.9	50.00%	0.95	[49]
Odisha	India	monazite	2.41	50.00%	1.205	[49]
Tamil Nadu	India	monazite	2.46	50.00%	1.23	[49]
West Bengal	India	monazite	1.22	50.00%	0.61	[49]
Mrima Hill	Kenya	apatite, magnetite	159.4	3.85%	6.136	[50]
Ruri Complex	Kenya	monazite, bastnaesite	0.375	3.50%	0.013	[20]
AK-Tyuz	Kyrgyzstan	NA	15	1.00%	0.15	[19]
Karajilga	Kyrgyzstan	NA	0.967	0.70%	0.006	[19]
Kutessai II	Kyrgyzstan	quartz-chlorite	18	0.26%	0.046	[51]
Sarysai	Kyrgyzstan	NA	7	0.2	1.4	[19]
Tantalus	Madagascar	ionic clay	627.684	0.09%	0.564	[52]
Kangankunde	Malawi	monazite	2.53	4.24%	0.107	[53]
Songwe Hill	Malawi	synchysite, apatite	31.75	1.48%	0.469	[54]
Tundulu	Malawi	monazite	0.8	1.70%	0.013	[55]
Bou Naga	Mauritania	bastnasite, monazite	0.1	4.40%	0.004	[20]
Khaldzan-Buregtey	Mongolia	fergusonite, allanite	NA	NA	1.2	[56]
Lugin Gol	Mongolia	bastnaesite, synchysite	0.023	3.20%	0.001	[20]
Mushgai Khudag	Mongolia	apatite, bastnaesite	6.1	1.37%	0.083	[20]
Xiluvo	Mozambiqu		1.111099	2.05%	0.022	[57]
Eureka	Namibia	monazite	0.03	6.30%	0.001	[20]

Lofdal	Namibia	xenotime	6.16	0.29%	0.018	[58,59]
Ondurukurme Complex	Namibia	monazite, ancylite	8	3.00%	0.24	[20]
Barrytown	New Zealand	monazite	73.3	0.00%	0.0004	[20]
Biggejavri	Norway	davidite, xenotime	0.05	0.20%	0.0001	[60]
Fen	Norway	bastnasite, parisite	84	1.08%	0.907	[60,61]
Gloserhei	Norway		4	0.02%	0.001	[60]
Høgtuva	Norway	allanite, zircon	0.35	0.15%	0.001	[60]
Kodal	Norway	apatite	70	0.17%	0.119	[60]
Misværdalen	Norway	apatite	30	0.07%	0.021	[60]
Sæteråsen	Norway	euxenite, pyrochlore	8	0.52%	0.041	[60]
Tysfjord	Norway	zircon, allanite	100	0.13%	0.13	[60]
Afrikanda	Russia	NA	627	0.67%	4.201	[62]
Aktyuz	Russia	monazite, xenotime	37.06	0.16%	0.059	[63]
Alluaiv	Russia	NA	90	1.25%	1.125	[62]
Apatity Circus	Russia	NA	121	0.37%	0.447	[62]
Karnasurt	Russia	NA	23	1.35%	0.311	[62]
Kedykvyrpakhk	Russia	NA	13	1.45%	0.188	[62]
Koashvinskoe	Russia	NA	763	0.41%	3.128	[62]
Kukisvunchorr	Russia	NA	413	0.25%	1.032	[62]
Lovozero	Russia	Loparite	593	1.12%	6.641	[62,64]
N'orkpakhk	Russia	NA	67	0.38%	0.254	[62]
Oleniy ruchey	Russia	NA	400	0.38%	1.52	[62]
Partomchorr	Russia	NA	877	0.20%	1.754	[62]
Rasvumchorr	Russia	NA	763	0.41%	3.128	[62]
Sakharjok	Russia	NA	36	0.11%	0.038	[62]
Tomtor	Russia	loparite	150	12.00%	18	[65,66]
Umbozero	Russia	NA	406	1.05%	4.263	[62]
Yukspor	Russia	NA	530	0.39%	2.067	[62]
Ghurayyah	Saudi Arabia	aeschynite, xenotime	400	0.15%	0.612	[67,68]
Jabal Hamra	Saudi Arabia	monazite, bastnasite	18	0.76%	0.137	[68]
Jabal Sa'id	Saudi Arabia	brockite, allanite	23	0.60%	0.138	[68]
Jabal Tawlah	Saudi Arabia	pyrochlore, monazite	6.4	0.62%	0.039	[20]
Umm al Birak	Saudi Arabia	monazite, bastnaesite	6.6	0.14%	0.009	[68]
Glenover (JV)	South Africa	apatite, haematite	28.928	1.25%	0.362	[69]
Palabora	South Africa	apatite	123.8	0.11%	0.129	[20]
Pilansberg Complex	South Africa	britholite, eudialyte	13.5	0.70%	0.094	[20]
Richards Bay	South Africa	monazite	4980	0.01%	0.498	[20]
Steenkampskraal	South Africa	monazite	0.16952	15.85%	0.026	[70]
Zandkopsdrif	South Africa	monazite	42.5	2.23%	0.949	[71]
Pulmoddai	Sri Lanka	monazite	1.593	0.08%	0.001	[20]
Kiruna	Sweden	fluorapatite, monazite	2000	0.99%	19.8	[42,72]
Leveäniemi	Sweden	fluorapatite	390	0.50%	1.95	[42]
Malmberget	Sweden	fluorapatite	840	0.95%	7.98	[42]
Norra Kärr	Sweden	eudialyte	31.10916	0.61%	0.189	[73]
Olserum	Sweden	monazite, xenotime	7.8	0.61%	0.047	[74]

Tåsjö	Sweden	NA	200	0.11%	0.22	[62]
Wigu Hill	Tanzania	bastnaesite, monazite	3.3	2.60%	0.085	[75]
Ngualla	Tanzania	bastnasite	214.4	2.15%	4.609	[76]
Aksu Diamas	Turkey	Ilanite	494	0.07%	0.345	[77,78]
Kizilçaören	Turkey	bastnasite	4.695	2.78%	0.131	[19]
Bald Mountain	USA	monazite	18.1	0.08%	0.013	[20]
Bear Lodge	USA	bastnaesite, monazite	14.2	2.78%	0.394	[79]
Bokan Mountain	USA	kainosite, allanite	5.2282	0.65%	0.033	[80]
Cumberland Island	USA	monazite	241	0.01%	0.024	[20]
Diamond Creek	USA	monazite	5.8	1.22%	0.071	[19]
Elk Creek	USA	bastnaesite, parisite	39.4	1%	0.394	[19]
Gallinas Mountains	USA	bastnasite	0.046	2.95%	0.001	[19]
Gold Fork-Little Valley	USA	monazite	296	0.01%	0.029	[20]
Hall Mountain	USA	Thorite	0.1	0.05%	0.00005	[19]
Hick's Dome	USA	xenotime, bastnasite	14.7	0.42%	0.061	[19]
Horse Creek	USA	monazite, xenotime	19	0.03%	0.005	[20]
Iron Hill	USA	bastnasite, perovskite	2424	0.40%	9.696	[19]
La Paz	USA	monazite	128.2	0.37%	0.476	[81]
Lemhi Pass	USA	monazite, xenotime	0.5	0.33%	0.001	[19]
Mineville	USA	apatite	9	0.90%	0.081	[19]
Mountain Pass	USA	bastnaesite	16.7131	7.98%	1.333	[82]
Music Valley	USA	xenotime	0.05	8.60%	0.004	[19]
North Henry	USA	monazite	3.2	0.12%	0.003	[20]
Oak Grove	USA	monazite	174.6	0.09%	0.157	[20]
Pajarito Mountain	USA	eudialyte, monazite	2.4	0.17%	0.004	[19]
Pea Ridge	USA	monazite, xenotime	0.6	12%	0.072	[19]
Round Top	USA	bastnaesite,yttrofluorite	1050.872	0.05%	0.525	[83]
Scrub Oaks	USA	xenotime, bastnaesite	10	0.38%	0.038	[19]
Silica Mine	USA	monazite	26.7	0.01%	0.002	[20]
Wet Mountains	USA	apatite, bastnasite	13.957	0.42%	0.058	[19]
Dong Pao	Vietnam	bastnaesite, parisite	500	1.40%	7	[19,84,85]
Muong Hum	Vietnam	NA	NA	NA	0.4	[86]
Mau Xe North	Vietnam	bastnasite	557	1.40%	7.798	[19,84]
Then Chau	Vietnam	NA	NA	NA	0.194	[86]
Yen Phu	Vietnam	xenotime	NA	NA	0.05	[86,87]
Nkombwa Hill	Zambia	monazite, bastnaesite	21.8	1.17%	0.255	[88]

References

1. Hastings Rare Metals Ltd. Annual Reports 2016. Available online: http://hastingstechmetals.com/index.php/investor-relations/announcements-reports/annual-reports (accessed on 16 May 2017).
2. Northern Minerals Limited. Browns Range Project Pre-Feasibility Study Executive Summary. Available online: http://northernminerals.com.au/wp-content/uploads/2014/03/1406-24-Browns-Range-PFS-combined.pdf (accessed on 22 April 2017).
3. Cook, N.J.; Ciobanu, C.L.; O'Rielly, D.; Wilson, R.; Das, K.; Wade, B. Mineral chemistry of Rare Earth Element (REE) mineralization, Browns Ranges. Western Australia. *Lithos* **2013**, *172–173*, 192–213, doi:10.1016/j.lithos.2013.04.012.
4. CROSSLAND Uranium Mines Ltd. Charley Creek Rare Earths Project Scoping Study Results. Available online: http://www.crosslanduranium.com.au/uploads/resources/ASX_Release_Charley_Ck_scoping_Study_15_Apr_13_Final.pdf (accessed on 20 April 2017).
5. Australia Government Geoscience Australia. Australia's Identified Mineral Resources 2013. Available online: https://d28rz98at9flks.cloudfront.net/78988/78988_AIMR_2013.pdf (accessed on 20 March 2017).
6. Lynas Corporation Ltd. Annual Report 2007. Available online: http://www.asx.com.au/asxpdf/20071030/pdf/315gh8h3j726mn.pdf (accessed on 15 March 2017).

7. Kimberley Rare Earths. Annual Report 2012. Available online: http://anovametals.com.au/wp-content/uploads/2012/11/206_KRE_2012_Annual_Report_to_Shareholders_Final.pdf (accessed on 11 March 2017).
8. Alkane Resources Ltd. Annual Report 2016. Available online: http://www.alkane.com.au/reports/annual-reports (accessed on 20 April 2017).
9. GBM Resources Ltd. Annual Report 2016. Available online: http://www.gbmr.com.au/rm_research_company_speculative_buy_profile_on_gbm_resources_ltd.15.html (accessed on 20 July 2017).
10. Lynas Corporation Ltd. Annual Report 2015. Available online: https://www.lynascorp.com/Pages/Reporting-centre-Annual-report.aspx (accessed on 11 March 2017).
11. Capital Mining Ltd. Annual Report 2013. Available online: http://www.capitalmining.com.au/announcements/annual-reports-cmy.html (accessed on 9 June 2017).
12. Arafura Resources. Annual Report 2016. Available online: http://www.arultd.com/investor-centre/reports/annual-reports.html (accessed 10 June 2017).
13. BHP Billiton Ltd. Annual Report 2016. Available online: http://www.bhp.com/investor-centre/annual-reporting-2016 (accessed on 5 July 2017).
14. Forge Resources Ltd. Forge Enters into Master Agreement with Lynas Corporation Ltd ("Lynas") for the Purchase and Potential Development of Designated Area Containing the Crown Rare Metals and the Swan Phosphate Deposits. Available online: http://www.asx.com.au/asxpdf/20110316/pdf/41xgl5xlqwl2px.pdf (accessed on 20 September 2016).
15. Clay, A.N.; Ackroyd, B. A Preliminary Economic Assessment in the Form of an Independent Technical Report on MbAc Fertilizer Corp. Araxá Project. Available online: http://s1.q4cdn.com/736877097/files/doc_downloads/teh_reports/PEA%20final%20Jan%202013%20filed.pdf (accessed on 25 March 2017).
16. Ribeiro, C.C. Geologia, Geometalurgia, Controles e Gênese dos Depósitos de Fósforo, Terras Raras e Titânio do Complexo Carbonatítico Catalão I. Ph.D. Thesis, Universidade de Brasília, Brasília, Brazil, 2008.
17. Rare Earth Industry: Technological, Economic and Environmental Implications Chapter 4- Potentiality of Rare Earth Elements in Brazil. Available online: https://www.researchgate.net/publication/317779578_Mining_industry_and_sustainable_development_Time_for_change (accessed on 15 March 2017).
18. Mineração Serra Verde. Mineração Serra Verde Nomeia Eric Noyrez Como Diretor. Available online: http://mineracaoserraverde.com.br/ (accessed on 2 October 2016).
19. Long, K.R.; Van Gosen, B.S.; Foley, N.K.; Cordier, D. The Principal Rare Earth Deposits of the United States—A Summary of Domestic Deposits and a Global Perspective. Available online: https://pubs.usgs.gov/sir/2010/5220/ (accessed on 28 March 2015).
20. Orris, G.J.; Grauch, R.I. Rare Earth Element Mines, Deposits, and Occurrences. Available online: https://pubs.usgs.gov/of/2002/of02-189/ (accessed on 25 August 2015).
21. Rainbow Rare Earths. The Gakara Project. Available online: http://www.rainbowrareearths.com/the-gakara-project/overview/ (accessed on 25 January 2017).
22. Gagnon, G.; Rousseau, G.; Camus, Y.; Gagné, J. NI 43-101 Technical Report, Preliminary Economic Assessment of Ashram Rare Earth Deposit for Commerce Resoruces Corp. Available online: https://www.commerceresources.com/assets/docs/reports/2015-01-07_GG-PEA-Report.pdf (accessed on 5 March 2017).
23. APEX Geoscience Ltd. National Instrument 43-101 Technical Report Updated and Expanded Mineral Resource Estimate for the Buckton Zone, SBH Property, Northeast Alberta. Available online: http://dnimetals.com/presentations/ (accessed on 12 June 2015).
24. Daigle, P. Technical Report on the Clay-Howells Fe-REE Project, Ontario, Canada. Available online: http://www.canadarareearth.com/upload/documents/technical-report-on-the-clay-howells.pdf (accessed on 25 July 2017).
25. Pele Mountain Res. Inc. Technical Report on the Eco Ridge Mine Project, Elliot Lake, Ontario, Canada. Available online: http://www.pelemountain.com/pdfs/SEDAR_RPA%20Pele%20Mountain%20Eco%20Ridge%20FINAL%20-%20June%2020,%202012.pdf (accessed on 25 December 2016).
26. Workman, A.; Breede, K.; Goode, J. Update Report on the Appia Energy Corp. Uranium-REE Property, Elliot Lake District, North Central Ontario, Canada. Available online: http://www.marketwired.com/press-release/appia-energy-files-technical-report-on-elliot-lake-uranium-rare-earth-property-1821159.htm (accessed on 25 June 2016).

27. Katharine, M.M.; Ian, C.W.; John, R.G. Technical Report on the Foxtrot Project, Newfoundland & Labrador, Canada. Available online: http://www.searchminerals.ca/assets/pdf/technical_reports/RPA-Search-Foxtrot-Project-NI43-101.pdf (accessed on 10 August 2017).
28. Orbite Aluminae Inc. NI 43-101 Revised Technical Report, Preliminary Economic Assessment on Orbite Aluminae Inc. Metallurgical Grade Alumina Project, Quebec, Canada. Available online: http://edrsilver.com/_resources/reports/Terronera_PEA_Master_Document_May_12_2015.pdf (accessed on 25 March 2017).
29. Dunn, B.M. NI43-101 Technical Report Update to Resource Estimate on the Hoidas Lake Property, Saskatchewan Canada. Available online: http://naviscorp.com/storage/app/media/Projects/Hoidas%20Lake/2014%20Hoidas%20Lake%2043-101.pdf (accessed on 15 April 2017).
30. Saucier, G.; Roy, A.; Casgrain, P.; Cote, P.; Thomassin, Y.; Bilodeau, M.; Cannus, Y.; Hayden, A. NI 43-101 Report Preliminary Economic Assessment Study for Kipawa Project. Available online: http://www.matamec.com/vns-site/uploads/documents/Rep_Matamec-Fin-PEA-000-20120314-SEDAR-Com.pdf (accessed on 5 July 2017).
31. Daigle, P. Technical Report and Resource Estimate of the Lavergne-Springer REE Project, Ontario, Canada. Available online: http://www.canadarareearth.com/upload/documents/springer-technical-report.pdf (accessed on 23 March 2017).
32. Belzile Solutions Inc.; G Mining Services Inc. NI 43-101 Techical Report Montviel Rare Earth Project Québec, Canada. Available online: http://ressourcesgeomega.ca/wp-content/uploads/2015/07/Geomega%20NI%2043-101%20Resource%202015-07-30%20FINAL.pdf (accessed on 25 June 2017).
33. Grenier, L.; Tremblay, J.F. NI43-101 Technical Report, Updated Mineral Resource Estimate for Rare Earth Elements, 2012 Niobec Mine Property. Available online: https://www.sec.gov/Archives/edgar/data/1203464/000119312514010943/d654919dex992.htm (accessed on 25 March 2017).
34. Quest Rare Minerals Ltd. NI43-101 Technical Report on the Preliminary Economic Assessment (PEA) for the Stange Lake Property, Quebec, Canada. Available online: https://www.questrareminerals.com/pdfs/Strange%20Lake%20PEA%20NI%2043-101%20Report%20FINAL%209%20April%202014%20REV%20E.pdf (accessed on 15 September 2016).
35. Avalon Rare Metals Inc. Technical Report Disclosing the Results of the Feasibility Study of the Nechalacho Rare Earth Elements Project. Available online: http://avalonadvancedmaterials.com/_resources/projects/may_2013_ni43_report.pdf (accessed on 10 June 2016).
36. Avalon Rare Metals Inc. Avalon Reports on Summer Work Program at the Nechalacho Rare Earth Elements Project and Provides Mineral Resource Update. Available online: http://www.goldseiten.de/artikel/180033--Avalon-Reports-on-Summer-Work-Program-at-the-Nechalacho-Rare-Earth-Elements-Project-and-Provides-Mineral-Resource-Update.html (accessed on 5 May 2016).
37. Daigle, P. Resource Estimate and Technical Report for the Two Tom REE Deposit of the Red Wine Complex, Labrador, Canada. Available online: http://www.canadarareearth.com/upload/documents/twotom-43-101.pdf (accessed on 22 March 2017).
38. Medium- and Long-Term Development Plan of Rare Earth Industry in Baotou. Available online: https://max.book118.com/html/2017/0701/119454060.shtm (accessed on 11 June 2016). (In Chinese)
39. Che, L. Present situation and development trend of rare earth ore beneficiation in China. *Express Inf. Min. Ind.* **2006**, *444*, 16–23. (In Chinese)
40. Guide Line on the Development of Rare Earth Industry in Ganzhou. Available online: http://xxgk.ningdu.gov.cn/bmgkxx/xjmw/fgwj/gfxwj/201107/t20110729_62718.htm (accessed on 10 October 2015). (In Chinese)
41. Sarapää, O.; Ani, T.A.; Lahti, S.I. Rare Earth Exploration Potential in Finland. *J. Geochem. Explor.* **2013**, *133*, 25–41, doi:10.1016/j.gexplo.2013.05.003.
42. Development of a Sustainable Exploitation Scheme for Europe's Rare Earth Ore Deposits. Available online: http://promine.gtk.fi/documents_news/promine_final_conference/8_50_PASPALIARIS_EURARE_project_promine.pdf (accessed on 9 July 2017).
43. Deutsche Rohstoff AG. Semi Annual Report 2013. Available online: http://rohstoff.de/en/investor-relations/ (accessed on 9 January 2017).
44. Avannaa Resources Ltd. Karrat REE Summary April 2011. Available online: https://www.yumpu.com/en/document/view/13255217/karrat-ree-summary-april-2011-avannaa-resources (accessed on 19 January 2017).

45. Greenland Minerals and Energy Ltd. Annual Report 2016. Available online: http://www.ggg.gl/investor-information/asx-announcements/ (accessed on 13 January 2017).
46. RAM Resources Ltd. Maiden Inferred Resource of the 340 Million Tonnes for Aries Project. Available online: http://www.asx.com.au/asxpdf/20120427/pdf/425vdqmzhqgxp0.pdf (accessed on 15 January 2017).
47. Hudson Resources Inc. Hudson Reports Robust Preliminary Economic Assessment (PEA) for the Sarfartoq Rare Earth Project in Greenland. Available online: http://www.marketwired.com/press-release/hudson-reports-robust-preliminary-economic-assessment-pea-for-sarfartoq-rare-earth-project-tsx-venture-hud-1595761.htm (accessed on 16 January 2017).
48. Tanbreez Mining Greenland. Tanbreez. Project Overview. Available online: http://tanbreez.com/en/project-overview/resource-calculation/?page=1 (accessed on 16 May 2017).
49. Indian Bureau of Miners. Indian Minerals Yearbook 2015. Available online: http://ibm.nic.in/index.php?c=pages&m=index&id=551 (accessed on 19 April 2017).
50. Pollard, B.; Mapleson, D. NI 43-101 Technical Report for the Mrima Hill Niobium and Rare Earth Project, Kwale District, Kenya. Available online: http://www.pacificwildcat.com/_content/documents/524.pdf (accessed on 22 March 2017).
51. Stans Energy Corp. Announces Kutessay II JORC Resource Estimate, and Final Five Years of Soviet Mining Data. Available online: http://unified-communications.tmcnet.com/news/2011/03/23/5398746.htm (accessed on 23 April 2017).
52. Tantalus Rare Earths AG. NI 43-101 Technical Report Resources for the Tantalus Rare Earth Ionic Clay Project Northern Madagascar. Available online: http://www.tre-ag.com/~/media/Files/T/Tantalus-Rare-Earths/Attachments/pdf/SGS-Competent-Persons-Report-December-2014.pdf (accessed on 25 March 2017).
53. Yager, T.R. 2010 Minerals Yearbook Malawi. Available online: https://minerals.usgs.gov/minerals/pubs/country/2010/myb3-2010-mi.pdf (accessed on 19 March 2016).
54. Swinden, S.; Hall, M. NI 43-101 Technical Report and Mineral Resource Estimate for the Songwe Hill Rare Earth Element (REE) Project, Phalombe District, Republic of Malawi. Available online: http://www.mkango.ca/s/news.asp?ReportID=559636 (accessed on 29 June 2017).
55. Dill, H.G. A review of mineral resources in malawi: With special reference to aluminium variation in mineral deposits. *J. Afr. Earth Sci.* **2007**, 47, 153–173, doi:10.1016/j.jafrearsci.2006.12.006.
56. Kovalenko, V.I.; Tsaryeva, G.M.; Goreglyad, A.V.; Yarmolyuk, V.V.; Troitsky, V.A.; Hervig, R.L.; Farmer, G.L. The peralkaline granite-related Khaldzan-Buregtey rare metal (Zr, Nb, REE) deposit, western Mongolia. *Econ. Geol.* **1995**, *90*, 530–547, doi:10.2113/gsecongeo.90.3.530.
57. Southern Crown Resources Ltd. Resource Estimate on Xiluvo REE Project. Available online: http://www.asx.com.au/asxpdf/20111110/pdf/422f9sww87t3fz.pdf (accessed on 18 March 2017).
58. Swinden, H.S.; Siegfried, P. Amended 43-101 Technical Report on the Rare Earth Element Occurrences in the Lofdal Carbonatite Complex, Kunene Region, Khorixas District, Namibia. Available online: http://www.namibiarareearths.com/lofdal.asp (accessed on 23 January 2017).
59. Namibia Rare Earths Inc. Lofdal Rare Earths Project. Available online: http://www.namibiarareearths.com/lofdal.asp (accessed on 16 February 2017).
60. REE Mineralisation in Norway, The EURARE Project Founded by the European Commission. Available online: http://www.eurare.eu/countries/norway.html (accessed on 19 February 2017).
61. The Fen Rare Earth Element Deposit, Ulefoss, South Norway. Available online: http://reeminerals.no/about_us/geology_reports/content_4/filelist_9b8647e2-ec74-4cbe-8fde-f8f53916cef0/1485356709997/r21_21stnorth_significance_of_fen_ree_deposit.pdf (accessed on 19 February 2017).
62. Fennoscandian Mineral Deposits Application, Ore Deposits Database and Maps. Available online: http://en.gtk.fi/informationservices/databases/fodd/ (accessed on 12 July 2016).
63. Stans Energy Corp. Prognosticated Resources of the Aktyuz Licensed Area. Available online: http://www.stansenergy.com/AOF1.htm (accessed on 16 June 2017).
64. Zaitsev, V.A.; Kogarko, L.N. Sources and Perspectives of REE in the Lovozero Massif (Kola Peninsula, Russia). Available online: http://meetingorganizer.copernicus.org/EMC2012/EMC2012-290.pdf (accessed on 23 March 2017).
65. Pakhomov, A.A.; Danilov, Y.G.; Grigoriev, V.P. Problems and prospects of development of Tomtor niobium–rare earth deposits. *Eurasian Min.* **2015**, *2*, 44–47, doi:10.17580/em.2015.02.11.

66. Lazareva, E.V.; Zhmodik, S.M.; Dobretsov, N.L.; Tolstov, A.V.; Shcherbov, B.L. Main minerals of abnormally high-grade ores of the Tomtor deposit (Arctic Siberia). *Russ. Geol. Geophys.* **2015**, *56*, 844–873, doi:10.1016/j.rgg.2015.05.003.
67. Tertiary Minerals Plc. Ghurayyah Tantalum-Niobium-Rare-Earth Project (Saudi Arabia). Available online: http://www.tertiaryminerals.com/projects/other-projects/ghurayyah (accessed on 30 June 2017).
68. Drysdall, A.R.; Jackson, N.J.; Ramsay, C.R.; Douch, C.J.; Hackett, D. Rare element mineralization related to Precambrian alkali granites in the Arabian Shield. *Econ. Geol.* **1984**, *79*, 1366–1377, doi:10.2113/gsecongeo.79.6.1366.
69. Geological Report and Resource Estimate for the Glenover Carbonaite Project. Available online: https://www.galileoresources.com/projects/Glenover%20Geological%20and%20Resource%20Report%203%20August%202012.pdf (accessed on 11 March 2017).
70. Great Western Minerals Group Files NI 43-101 Resource Estimate and Technical Report on Steenkampskraal Rare Earth Property. Available online: http://www.marketwired.com/press-release/great-western-minerals-group-files-ni-43-101-resource-estimate-technical-report-on-steenkampskraal-tsx-venture-gwg-1664122.htm (accessed on 21 February 2017).
71. Frontier Rare Earths Limited. Zandkopsdrift-Africa's Leading Rare Earth Project. Available online: http://frontierrareearths.com/wp-content/uploads/2015/01/Frontier-Corporate-Presentation_Jan-2015.pdf (accessed on 20 March 2017).
72. Kurmies, I. The Magnetite-Apatite Ore of the Kiruna District, Northern Sweden. Available online: http://www.geo.tu-freiberg.de/oberseminar/os03_04/Ines%20Kurmies.pdf (accessed on 21 March 2017).
73. Gates, P.; Horlacher, C.F.; Reed, G. Amended and Restated Preliminary Economic Assessment NI 43-101 Technical Report for the Norra Kärr (REE-YZr) Deposit, Gränna, Sweden. Available online: http://leadingedgematerials.com/norra-karr/#1469720516282-79394c55-a397 (accessed on 19 April 2017).
74. Tasman Submits Mining Lease Application over Olserum Heavy Rare Earth Element Project, Sweden. Available online: http://www.marketwired.com/press-release/tasman-submits-mining-lease-application-over-olserum-heavy-rare-earth-element-project-tsx-venture-tsm-1813562.htm (accessed on 19 February 2017).
75. Eggleston, T.; Sides, E. Wigu Hill Rare Earth Element Project, Eastern Tanzania NI 43-101 Technical Report. Available online: http://www.monteromining.com/projects/pdf/MONWiguHill-43101.pdf (accessed on 19 June 2017).
76. Peak Resources Ltd. Ngualla Rare Earth Project. Available online: http://www.peakresources.com.au/irm/content/ngualla-rare-earth-project.aspx?RID=304, 2017 (accessed on 21 March 2017).
77. Deady, E.; Goodenough, K.; Lacinska, A.; Hardy, L.; Shaw, R. Rare earth element placer deposits and alkaline volcanics: A case study from Aksu Diamas, Çanakli, Turkey. *Trans. Inst. Min. Metall. Sect. B* **2016**, *125*, 79–80, doi:10.1080/03717453.2016.1166621.
78. Cox, J.J.; Masun, K.M.; Fayram, T. Technical Report on the Aksu Diamas Rare Earth Element and Minor Metals, Isparta district, Southwest Turkey NI-43-101 Report. Available online: http://www.amrmineral.com/download/corporate/AMR_Aksu_Diamas_REE_NI43-101_PEA_May_6_2013_FINAL.pdf (accessed on 29 May 2017).
79. Noble, A.C. Bear Lodge Project Canadian NI 43-101 Technical Report on the Mineral Reserves and Resources and Development of the Bull Hilll Mine. Available online: http://www.rareelementresources.com/App_Themes/NI43-101PreFeasibilityStudyReport/HTML/files/assets/common/downloads/publication.pdf (accessed on 5 May 2017).
80. Preliminary Economic Assessment on the Bokan Mountain Rare Earth Element Projcet, Near Ketchikan, Alaska. Available online: http://ucore.com/documents/PEA.pdf (accessed on 9 May 2017).
81. NI 43-101 Technical Report La Paz Rare Earth Project, La Paz County, Arizona, USA. Available online: https://hotcopper.com.au/documentdownload?id=tuE7JrfFgm%2FOGe3kZX2CB2%2BkQ0UI4A2%2ByA3%2Bg4RbkqsqSuvSSYkRXQpgPRqgxVAYgj98bt9MfIGlodnNAIc%2FyeEjZA%3D%3D (accessed on 20 May 2017).
82. Molycorp. Annual Review 2013. Available online: http://www.annupedia.com/annual-reports/15119/molycorp-del (accessed on 21 May 2017).
83. Hulse, D.E.; Newton, M.C.; Malhotra, D. NI 43-101 Preliminary Economic Assessment Round Top Project Sierra Blanca, Texas. Available online: http://tmrcorp.com/_resources/pdf/TRER_NI43-101_PEA_FINAL_10Jan2014.pdf (accessed on 15 May 2017).

84. Kušnir, I. Mineral resources of Vietnam. *Acta Montan. Slov.* **2000**, *5*, 165–172.
85. Chau, N.D.; Jadwiga, P.; Adam, P.; Hao, D.V.; Phon, L.K.; Pawel, J. General characteristics of rare earth and radioactive elements in Dong Pao deposit, Lai Chau, Vietnam. *Vietnam J. Earth Sci.* **2017**, *39*, 14–26, doi:10.15625/0866-7187/39/1/9181.
86. Moody, M.D. Mother Load: The Untapped Rare Earth Mineral Resources of Vietnam. Available online: http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA594225 (accessed on 18 May 2017).
87. Study on Yen Phu Rare Earth Ore Concentrate Treatment Technology and Separation of Major Heavy Rare Earth Elements by Solvent Extraction Method. Institute for Technology of Radioactive & Rare Elements. Available online: http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/35/095/35095860.pdf (accessed on 16 May 2017).
88. VastRes. JORC Resource Declared for Nkombwa Hill Phosphate and Rare Earth Element Project. Available online: http://inpublic.globenewswire.com/releaseDetails.faces?rId=2048501 (accessed on 16 June 2016).