

THE WEALTH OF ARCTIC NATIONS



BETTER INFORMED & BETTER BALANCED

THE ARCTIC IS A SPECIAL PLACE ON EARTH: with unique landscapes and wildlife, an abundance of cherished renewable and non-renewable resources, subsistence economies and small populations of well adapted indigenous and newly arrived inhabitants.

Its frozen land and seas harbor what is estimated to be 30% of the globe's mineral resources in less than 2.5% of its area. These resources are valued and threatened by external forces of human consumption and climate change.

The Wealth of Arctic Nations Triangle Index is an impartial measurement of the Arctic and sub-Arctic areas of eight countries—Canada, Greenland, Iceland, Norway, Sweden, Finland, Russia, and the United States—with lands touching the Arctic Circle. These northern lands, chartered members of the Arctic Council, are compared by their natural riches, their means

to harvest these and their social systems to accomplish this in a sustainable way.

What is the Triangle Index?

The Triangle Index is comprised of 45 indicators weighted and divided evenly among three critical attributes—**Resource**, **Infrastructure** and **Society**—represented graphically as three sides of an equilateral triangle. The Index is descriptive more than prescriptive, designed to document the key drivers of the region and to see how actions in one part of the triangles can overload others.

The Index is an exclusive research part of the 'Warming Arctic: Voyage of Re-discovery' initiative of the Murrow Center of The Fletcher School of Law and Diplomacy at Tufts University. With the truism that "we measure what we treasure," the Triangle Index is a holistic means of weighing Arctic opportunities and imbalances in the context of some risk assessment methodologies.



Charter Members of Arctic Council



Russia (Arctic)



Greenland



Norway



Sweden



Finland



Canada (Arctic)



United States (Alaska)



Iceland

"Arctic" defined as land with temperature average colder than 10 degrees Celsius in mid-July

Individual or Multiple Sources Used for Each of 45 Index Indicators

RESOURCES

NON-RENEWABLE

Oil Reserve

- World Petroleum Assessment (Current, General)

Offshore Oil Reserves

- USGS Survey of Oil Reserves (USA, Russia, Arctic Canada, Greenland, Norway) (2008)
- Canada Newfoundland & Labrador Offshore Petroleum Board (Canada) (2009–2010)

Onshore Oil Reserves

- USGS Survey of Oil Reserves (USA, Russia, Arctic Canada, Greenland, Norway) (2008)
- Various Baku Today articles (Arctic Russia)

Coal Reserves

- Yukon Government (Arctic Canada) (2008)
- Air Water Land (Arctic Canada NWT) (2006)
- Various Barents Observer articles (Arctic Russia)

Other Mineral Reserves

- USGS (All countries) (2009 most current data)
- Yukon Government (\$\$\$ for minerals) (Arctic Canada) (2009)
- UN Industrial Development Organization: World Statistics on Mining and Utilities (Multiple) (2010) (Finland 62; Iceland 73; Norway 107; Russian 121; Sweden 131)
- "Minto Mine copper production in 2009 totaled 53.7 million pounds of concentrate, up 12.6% from 47.7 million pounds in 2008." (Arctic Canada) (2008)

RENEWABLE

Marine Fisheries Capture

- World Resources Institute Capture Production by Area: Marine waters (All Countries) (2005) ,
- World Resources Institute Capture Production: Crustaceans (All Countries) (2005)
- World Resources Institute Capture Production: Marine fish (All Countries) (2005) ,
- Science Daily (Arctic Canada, Arctic Russia, Alaska) (Annual Average Catch 1950–2006)

Aquaculture Production

- FAO, World fisheries production, by capture and aquaculture, by country (2009)
- Marine Conservation Alliance (AK, 2009)
- Northeast Atlantic Fisheries Alliance (Federation of Denmark (Greenland), EU, Iceland, Norway & Russian Federation; Canada as non-contracting party; used 2009 stats on Russian Federation catch in North Atlantic as proxy for Arctic region catch)
- Fisheries and Oceans and Aquaculture Canada
- Europe Stats (Arctic Russia, 2006)

Whales

- IWC Whale Catches (Greenland, Iceland, Norway, Russia, USA) (2008/2009)
- World Council of Whalers
<http://www.worldwhalers.com/>
- IUCN Red List of Threatened Species (Good info but not summarized according to region)
- Whale Counts by Sea area: 13 Most Vulnerable Arctic Treasures (Multiple Countries, 2011)

Timber

- Energy, Mines & Resources Yukon Government (Arctic Canada) (Annual)
- Yukon Government (Arctic Canada) (2009)
- NWT Environment and Natural Resources (Arctic Canada) (2010)
- Map of Forests in Russia (Arctic Russia) (1995)
- Forests Monitor Database under construction (All Countries)
- PaperMill Websites and Data on standing wood reserves (Arctic Russia) (2004)
- Data on Forestry in Karelia (Arctic Russia) (2010)
- FSC Certification (2010) www.fsc.org

Fresh Water

- World Resources Institute (All) (2005)
- FAO (Alaska) Energy

Renewable Energy

- Nordic Energy Solutions (Iceland, Norway, Sweden, Finland)
- Folk Center (Greenland)
- Centre for Energy (Canada)
- AK Renewable Energy (Alaska)

ENVIRONMENT

Land Area

- Good Canadian data (statcan.ca)
- Russian data from CIA World Factbook
- Arctic Biodiversity Trends 2010
- Canada data from: Government of Yukon
- Greenland, Iceland, Norway, Sweden, Russia



45 Indicators Evenly Divided and Equally Weighted

Resources (15)

Renewable

- Marine fisheries resources
- Whales
- Timber
- Fresh water
- Renewable energy

Non-renewable

- Onshore/offshore oil reserves
- Offshore/onshore natural gas reserves
- Coal reserves
- Other mineral reserves (e.g. zinc, copper, platinum)

Environment

- Land area
- Sea area
- Endangered species/invasive species
- Major environmental spills since 2000
- Percent of land & sea mass protected
- Percent of permafrost land

Society (15)

Population

- Population
- Indigenous population (% of total)
- Unemployment rate
- Government subsidies per resident

Education and Health

- Life expectancy
- Literacy rate
- Hospital beds per thousand
- % of school aged children in educational institutions
- Pupils per teacher

Economic

- GDP & GDP growth rate
- Income per capita (PPP \$)
- Investment (% of GDP)
- International trade
- Arctic tourism (% of GDP)
- Ease of doing business

Infrastructure (15)

Physical

- All weather airports and ports
- Miles of pipeline
- Oil and gas major rigs
- Miles of road
- Number of Arctic ice breakers/ice navigator pilots
- Number of search & rescue teams

Information

- Telecommunications
- No. of research stations
- Internet penetration
- Radio penetration

Governance

- Environmental agreements (bilateral & multilateral)
- No. of disputes
- Self-determination of indigenous peoples (councils, NGOs, etc.)
- Voice & accountability
- Corruption perception index

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(entire country), and Finland data from: CIA World Factbook

- Alaska data from quickfacts.census.gov
- Russian comparative data, reference/country_studies/russia/GEOGRAPHY

Sea Area

- Arctic Council: Canada's North constitutes an area of 3.5 million square kilometers, or two-fifths of Canada's land mass and two-thirds of its coastline, and is home to over 100,000 people.
- Canada (entire country), Greenland, Iceland, Norway, Sweden, Finland, and Russia (entire country) data from CIA World Factbook
- Alaska data from 50states.com

Ratio of Land to People

- Figures calculated from land mass and population (indigenous and non-indigenous) figures

Endangered Species

- CA Species at Risk (SARA) Public Registry (2010)
- Canada data (entire country) from: Government of Canada (2004),
- Greenland, Norway, Sweden, Finland, and Russia (entire country) data from: The IUCN Red List of Threatened Species (2011)
- Alaska data from: US Fish & Wildlife Service (2011)
- Article that names # of endangered species in Arctic Russia (Arctic Russia) (2010)

Invasive Species

- All data from: Invasive Species Specialist Group (2010),
- Yukon Invasive Species Council (2011)
- NWT Environment and Natural Resources
- Nunavut Invasive Species # (Arctic Canada) (2005)

Environmental Spills Since 2000

- All data from: Arctic Marine Activity Database for Accidents and Incidents (2004),

% Land Mass Protected

- Biodiversity Canada (Canada) (2009)
- Arctic Canada fig calculated from: Prospectors & Developers Association of Canada 2007
- Greenland, Iceland, Norway, Sweden, Finland, and Russia (entire country) (2006)
- Alaska (2011)
- Arkenhelsk Region Protected Areas (Russian Arctic)
- Great Arctic State Nature Reserve (Arctic Russia) (2011)

% Land Sea Protected

- Fisheries and Oceans Canada (Arctic Canada) (2011)
- Canada's first Arctic MPA: Tarnum Niruyait Marine Protected Area (2010) (Arctic Canada)

% of Land Covered with Permafrost

- Alaska permafrost.gi.alaska.edu and <http://www.alaskacenters.gov/permafrost.cfm>
- Greenland figure calculated from CIA World Factbook, Permafrost and Periglacial Processes 18.2
- Russia and Alaska (1994) "Permafrost in Alaska", The Geology of North America
- Canadian Cryospheric Information Network current Permafrost.aspx
- NOAA Arctic Report Card Update 2010 (All Countries)
- International Permafrost Association, Permafrost Map, Permanent Watch

SOCIETY

POPULATION

Total Population

- CIA Fact Book
- Comparative analysis of Arctic economies at macro level (Arctic Regions of CA, USA and Russia, Norway and Sweden)
- AK Dept. of Labor and Workforce Dev't

Population Density

- Calculated using population and land mass.

Indigenous Population

- Arctic Canada data from: Statistics Canada (2006) (2001)
- Greenland data from encyclopedia/inuit
- Iceland data from: The UN Refugee Agency (2004)
- The Sami data (Norway, Sweden, Finland, and Arctic Russia) from: The National Sami Information Centre (2005)
- Additional Arctic Russia data from: Russian Association of Indigenous Peoples of the North (RAIPON)
- Alaska data from (2009)
- Native Arctic Population of Russia (Arctic Russia) (1989)

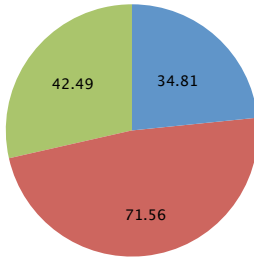
Non-indigenous Year Round Population

- Arctic Canada data from: Statistics Canada (2006)
- Greenland data from: CIA World Factbook (2011)
- Iceland, Norway, Sweden, and Finland data from: Index Mundi (2011)
- Arctic Russia figure calculated from the following sources: World Bank Development Indicators;

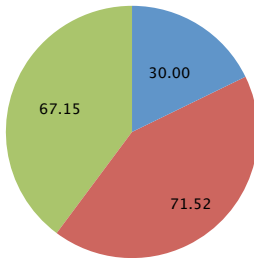
(CONTINUED ON PAGE 6)

The Raw Data for Each of the 45 Indicators

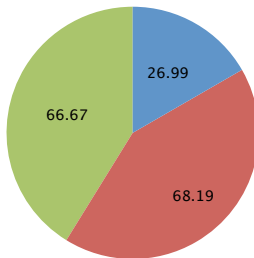
Iceland



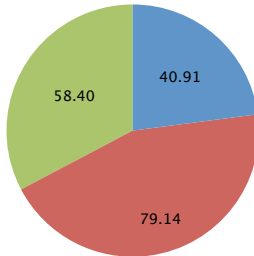
Sweden



Finland



Norway



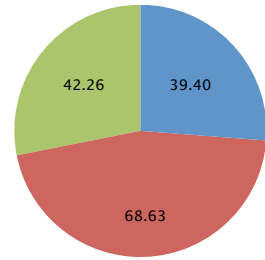
- RESOURCES
- SOCIETY
- INFRASTRUCTURE

		Arctic Canada	Greenland
RESOURCES (15)			
NON-RENEWABLE (4)			
Offshore/Onshore Oil Reserves	Barrels of Oil (BOE)	11,923,000,000	49,684,000,000
Offshore/Onshore Natural Gas Reserves	Cubic Meters	3,216,793,773,760	733,406,326,940
Coal Reserves	Millions of tons	2,644	183
Other Mineral Reserves	Data created by normalizing and totaling the metric tons of several other mineral resources	36	0
RENEWABLE (5)			
Marine Fisheries Resources	Capture production tonnes (Annual)	424	197,878
Aquaculture Production	Production Tonnes	30,900	0
Fisheries Resources	Total production Tonnes	31,324	197,878
Whales	# killed each year	1	181
Timber	Growing stock available for wood supply (million m3) - used in combination with % Timberland FSC Certified for ranking	59,000	-
% Timberland FSC Certified	used in combination with Timber to come up with ranking	0.08%	0.00%
Timber	Ave of growing stock and % FSC certified		
Fresh Water	Internal renewable water resources (km3)	1,083	603
Renewable Energy for Electricity	Geothermal, hydro, wind, biomass, fuel cell, wave	13%	40%
ENVIRONMENT (6)			
Land Area	Square km	3,739,499	2,166,086
Sea Area	Square km	594,109	-
Endangered Species	#	6	5
Invasive Species	#	48	20
Species Dynamics	# of endangered and invasive species	54	25
Major Environmental Spills Since 2000	#	1	-
% land mass protected	%	12	0
% sea protected	%	0.66%	0.50
% of land and sea protected	%	12	1
% of land covered with Permafrost	%	100.0%	66%
SOCIETY (15)			
POPULATION (4)			
Population Growth		5.9	0.05
Population Density	# of people/Sq. km	0.03	0.03
Total Population		111,324	57,670
Population	Combined population growth, density and total		
% of Population Indigenous		48.98%	79.95%
Non-indigenous year round population		56,795	6,344
Indigenous Population		54,529	46,108
Unemployment rate		10.23	9.30
Gov't subsidies per resident	Current LCU	5,978	12,392
EDUCATION AND HEALTH (5)			
Life Expectancy		73.1	71
Literacy Rate		50.33	100
Hospital Beds per Thousand		0.003	14
Pupils Per Teacher		10.94	12
% of school aged children in educational institutions	Data from original spreadsheet	60	80
ECONOMIC (6)			
GDP	\$ millions	8,794	1,989
GDP Growth Rate	%	3.77%	-2.00%
GNI per capita, PPP	(US\$ 2010)	\$39,400	\$36,500
International Trade	Exports as % of GDP	12.51%	24.38%
Investment as % of GDP		22.1	41
Arctic Tourism	% of GDP Spent on tourism	2.89%	3.00%
Ease of Doing Business	I=most business-friendly regulations	12	5
INFRASTRUCTURE (15)			
PHYSICAL (7)			
All weather airports	#	3	10
All weather ports	#	-	10
All weather airports & ports	#	3	20
Miles of "transmission" pipeline	km	870	-
Oil and gas majors	#	16	-
Oil rigs	#	1	2
Miles of road		3,864.93	40
Number of ice breakers	#	6	4
# of Search & Rescue Teams		12	0
INFORMATION (4)			
Satellite Mobile Phone Coverage	Ave % of Coverage of different services	74%	38%
Mobile phone cost	Ave cost of small/medium/large usage plans	420	-
Telecommunications	Combination of coverage and cost		
Research Stations	#	34	15
Internet penetration	% of individuals using internet (2010)	81.6	63
Radio penetration		4	1
GOVERNANCE (4)			
Environmental Agreements		7	15
# of Disputes		3	1
Self-determination of native/indigenous	Refer to Elizabeth rating	2	3
Voice and Accountability	Percentile rank among all countries (ranges from 0 (lowest) to 100 (highest) rank)	93.8388625592417	89.5734597156398

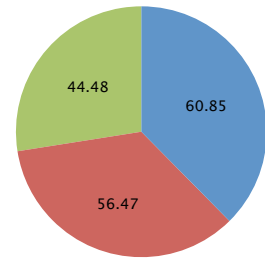
Behind the Scores and Rankings on Pages 6 and 7

Finland	Iceland	Norway	Arctic Russia	Sweden	Arctic US (AK)
-	-	6,538,000,000	79,921,099,032	-	17,000,000,000
-	-	2,215,000,000	18,448,432,539,908	-	6,266,518,152,580
-	-	5	242,000	-	5,300
1	-	8	-	13	16
154,592	1,141,869	2,524,437	403,275	203,413	1,843,433
13,627	5,165	961,840	8	8,540	430,912
168,219	1,147,034	3,486,277	403,275	211,953	2,274,345
-	38	536	116	-	38
1,867	-	671	-	2,566	153
0.02%	0.00%	0.02%	0.00%	0.45%	8.95%
107	170	382	451	171	800
30%	80%	99%	0%	40%	21%
303,815	100,250	304,282	1,637,774	410,335	571,951
34,330	2,750	19,520	3,700,000	39,960	86,051
2	6	7	20	5	14
98	32	105	8	124	53
100	38	112	28	129	67
-	-	7	-	-	3
9	4	5	2.55%	10	19
9	4	5	No good data	10	19
5%	20%	30%	67%	5%	85%
0.08	0.69	-0.4	-1.9	-0.8	6.7
17.31	3.10	15.42	6.72	22.15	1.24
5,259,250	311,058	4,691,849	11,000,000	9,088,728	710,231
0.11%	0.00%	0.85%	0.73%	0.22%	14.95%
5,253,250	311,058	4,651,849	1,927,750	9,068,728	592,305
6,000	-	40,000	80,000	20,000	106,168
8.40	8.30	3.60	8.50	8.30	7.30
8,777	594,487	123,555	5,804.37	60,833	1,434
79	81	80	64	81	77
100	99	100	100	99	89
7	6	4	10	4	2
15	10	11	10	12	17
96	94	97	93	98	96
186,000	11,820	255,300	244,530	354,700	45,861
3.10%	-3.50%	4.00%	4.00%	5.50%	1.90%
\$35,400	\$38,300	\$54,600	\$15,900	\$39,100	\$47,200
37.31%	38.94%	51.98%	36.00%	45.22%	9.06%
18.8	12	20.3	22	17.9	16
7.74%	12.35%	5.04%	0.00%	0.53%	4.36%
14	13	7	123	9	4
10	7	22	74	6	8
-	10	18	12	-	4
10	17	40	86	6	12
694	-	64	-	786	1,287
-	-	2	7	-	15
-	-	16	-	-	7
31,636	2,757	44,759	-	355,983	6,100
12	-	1	6	14	2
23	95	7	10	0	48
100%	100%	100%	65%	100%	75%
130	236	183	-	138	517
7	1	11	12	3	5
86.9	95	93.39	43	90	74
13	2	3	-	3	4
14	12	16	10	14	8
1	2	2	3	0	1
6	-	4	7	5	1
97.1563981042654	94.3127962085308	100	20.8530805687204	99.0521327014218	87.2037914691943

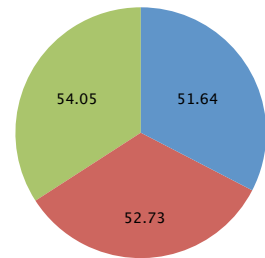
Greenland



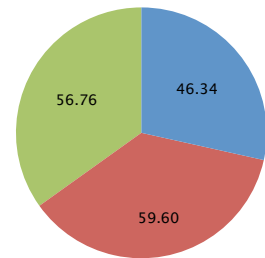
Arctic Russia



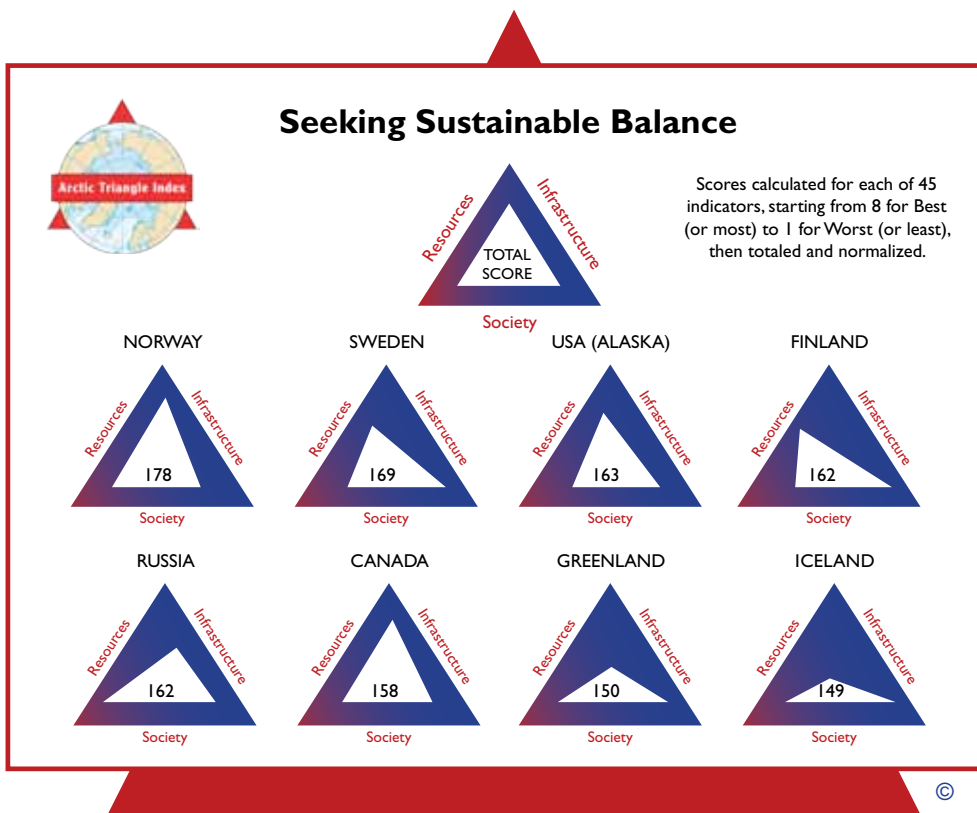
Arctic Canada



Arctic US (AK)



Color	Key
Light Blue	Country data instead of regional data used
Light Green	Estimate used (in some cases of Arctic Region as % of Country)
Red	No data available - used 0
Light Blue	Data Points are combined for Ranking
Light Green	Ave of respective combined data points ranks from Combined Ratings tab
###	Max - used for normalized ranking



(CONTINUED FROM PAGE 3)

“Russia presents vision for Arctic wealth”; RAIPON

- Alaska data from: quickfacts.census.gov (2009)

Unemployment Rate

- Government of Yukon, (Arctic Canada 2011) (Yukon, NWT, Nunavut) (Arctic Canada) (2011)
- Arctic Canada data from: Government of Nunavut (2011), Government of Yukon (2010), Government of Northwest Territories (April 2011)
- Greenland data from: Index Mundi (2009)
- Iceland, Norway, Sweden, and Finland data from: CIA World Factbook (2010)
- Russia data from .rian.ru/russia
- Alaska data from: Department of Labor and Workforce Development (2011)

Gov’t Subsidies per Resident (Current LCU)

- World Bank
- Canada (entire country), Iceland, Norway, Sweden, Russia figures calculated from: World Bank (2009); Finland from World Bank (2008) in current LCU
- Greenland figure calculated from: CIA World Factbook, in dollars
- Alaska figure calculated from: US Census data (2007), in dollars

EDUCATION AND HEALTH

Life Expectancy

- Arctic Human Development Report (All Countries) (1950–2001)
- Human Resources and Skills Development Canada (2007)
- Greenland, Iceland, Norway, Sweden, and Finland

- data from: Index Mundi (2011),
- Arctic Russia (2002) unrussia.ru/doc/Arctic
- Alaska (2011) worldlifeexpectancy.com

Literacy Rate

- World Bank – <http://data.worldbank.org/indicator/SE.ADT.LITR.ZS> (2009)
- Human Resources and Skills Development Canada (2007)
- All data from: CIA World Factbook
- Government of NWT Education Site (Arctic Canada) Site_map/Site_map
- US Dept of State: Russian Literacy Rates

Hospital Beds per Thousand

- Canada (entire country, 2008), Iceland (2007), Norway (2008), Finland (2008), and Russia (entire country, 2006) data from: World Bank Development Indicators
- Greenland (1970) and Sweden (2000) data
- Alaska (2009) data from statehealthfacts.org
- Health Transitions in Arctic Populations book

Pupils per Teacher

- Russia – huebler.blogspot.com/2008
- Canada (entire country), Iceland, Norway, Finland, Sweden, and Russia (entire country) data from: IES National Center for Education Statistics
- Greenland (1993) data from ankn.uaf.edu/IEW/edgreen
- Alaska data from statemaster.com

Number of School-aged Children in Educational Institutions

- Canada (entire country), Iceland, Norway, Sweden, Finland, and Russia (entire country) data from: World Bank Development Indicators (2008)
- Alaska figure calculated from: National Center for

Scores calculated for each of 45 indicators, starting from 8 for Best (or most) to 1 for Worst (or least), then totaled and normalized.

- Education Statistics (2010)
- Greenland figure estimated from: ArcticStat (2008), CIA World Factbook

ECONOMIC

GDP

- CIA World Factbook
- Government of NWT, Yukon (Arctic Canada) (2010)
- Article with information on Arctic Russia Contribution to GDP (Arctic Russia) (2011)

GNI per Capita

- CIA World Factbook

International Trade

- CIA World Factbook
- Statistics Canada
- US Census Bureau
- Nations Encyclopedia

Investment as % of GDP

- CIA Fact Book
- IMF Data and Statistics (Canada (entire country), Iceland, Norway, Sweden, Finland, Russia (entire country), and Alaska) (2010)
- Canada (entire country), Iceland, Norway, Sweden, Finland, Russia (entire country), and Alaska data (2010) from: IMF Data and Statistics, <http://www.imf.org>
- Greenland figure calculated from: “Greenland—Its Economy and Resources”, <http://arctic.synergiesprairies.ca/arctic/index.php/arctic/article/viewFile/1746/1725.pdf>

\$ Spent on Arctic Tourism

- Russian Federal Agency for Tourism <http://www.russiaturism.ru/en/>



How Do the Countries Rank?

RESOURCES	Normalized	Absolute		
Arctic Russia	60.85	8	74.00	6
Arctic Canada	51.64	7	80.00	7
Arctic US (AK)	46.34	6	81.00	8
Norway	40.91	5	60.50	3
Greenland	39.40	4	66.00	4
Iceland	34.81	3	50.00	1
Sweden	30.00	2	68.00	5
Finland	26.99	1	57.50	2

SOCIETY	Normalized	Absolute		
Norway	79.14	8	94.17	8
Iceland	71.56	7	68.33	4
Sweden	71.52	6	74.67	7
Greenland	68.63	5	67.50	5
Finland	68.19	4	66.50	6
Arctic US (AK)	59.60	3	60.50	3
Arctic Russia	56.47	2	59.67	2
Arctic Canada	52.73	1	52.17	1

INFRASTRUCTURE	Normalized	Absolute		
Sweden	67.15	8	68.50	6
Finland	66.67	7	74.00	7
Norway	58.40	6	80.50	8
Arctic US (AK)	56.76	5	67.50	5
Arctic Canada	54.05	4	52.73	4
Iceland	42.49	3	49.50	2
Arctic Russia	44.48	2	48.50	1
Greenland	42.26	1	51.50	3

OVERALL	Normalized	Absolute		
Norway	178.45	8	235.17	8
Sweden	168.67	7	211.17	7
Arctic US (AK)	162.70	6	209.00	6
Finland	161.84	5	198.00	5
Arctic Russia	161.81	4	183.17	2
Arctic Canada	158.42	3	196.67	4
Greenland	150.29	2	166.83	1
Iceland	148.86	1	185.00	3

Normalized results derived from the following formula: $(\frac{x}{x_{max}}) \times 8$, where x is the value of interest for a particular country and category, x_{max} is the largest value that any country has in that category, and 8 is the largest possible score.

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- Karelia Government investment money into developing tourism (2011–2016) http://www.gov.karelia.ru/gov/Info/2010/eco_tourism10_e.html
- Russian Government of Tourism and Sport
- Statistics Finland (2007) and Finland Tourism Strategy (2020)
- Sweden gives share of GDP
- Norway (2004)
- Alaska (2010)
- Statistics Iceland (2008, www.statice.is)

Ease of Doing Business

- World Bank <http://data.worldbank.org/indicator/IC.BUS.EASE.XQ>

INFRASTRUCTURE

PHYSICAL

All Weather Airports

- Aircraft Charter (All countries) (2011)
- Our Airports Nunavut, NWT (Arctic Canada) (2011)

All Weather Ports

- Association of Canadian Port Authorities (Canada) (2011)

Miles of Transmission Pipeline (Oil & Gas)

- Canadian Energy Pipeline Association (Canada)
- State of Canadian Transmission Pipeline Industry (Arctic Canada, Canada) (2011)
- Enbridge Norman Wells Pipeline, Yukon (Arctic Canada) (2011)

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- CIA Fact Book
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Panning for Key Findings

- Norway is consistently top of the Arctic nations in overall scores combining the 45 indicators utilized in absolute or normalized calculations.
- Canada (northern territories) and US (Alaska) are the best balanced between natural resources, infrastructure and social systems to help allow equitable, environmentally aware Arctic development.
- Russia and Iceland are the most imbalanced.
- Pollution problems in the Far North come mostly from outside the Arctic.
- Emergency oil spills—land or sea—represent a major risk due to limited capacities in distant, dark, icy Arctic conditions.
- Territorial disputes are an irritant but do not seem a source of political conflict to handicap Arctic resource development.
- Recent example of Russia and Norway cooperation in North Atlantic / Barents Sea fish catch may be a model for all area countries.
- The Arctic Council, celebrating its 12th anniversary, is a repository of balanced research and consensus decision-making in the North.

THE ARCTIC INDEX is the research component of the “Warming Arctic: Voyage of Re-discovery” undertaken by the Murrow Center of The Fletcher School of Law and Diplomacy at Tufts University in cooperation with the Institute of the North and Rasmuson Foundation in Anchorage and the consulate of Norway in New York. The other components are policy discussions with statesmen and scholars from the eight Arctic Council countries and reporting and public awareness with media partners *Global Post* (online), *Living on Earth* (Public Radio), and *Alaska Dispatch* (online).

The Index with sources, backup data and methodology is available for public and private enterprises for a fee and can be used as a comparative risk assessment for the future of the Arctic.



Index Authors

Crocker Snow Jr., *Director of the Murrow Center,
The Fletcher School*
Wilford Welch, *Founder of Beyond Sustainability*

Index Research

Karin Chamberlain, *Sustainable Business Consultant*

Interns:

Elizabeth Joyce
Emilie O'Malley
Alex McInturf

