



Green Conflict Minerals: The fuels of conflict in the transition to a low-carbon economy

Presented by Clare Church
November 15, 2019



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The fuels of conflict in the transition to a low-carbon economy

IISD REPORT

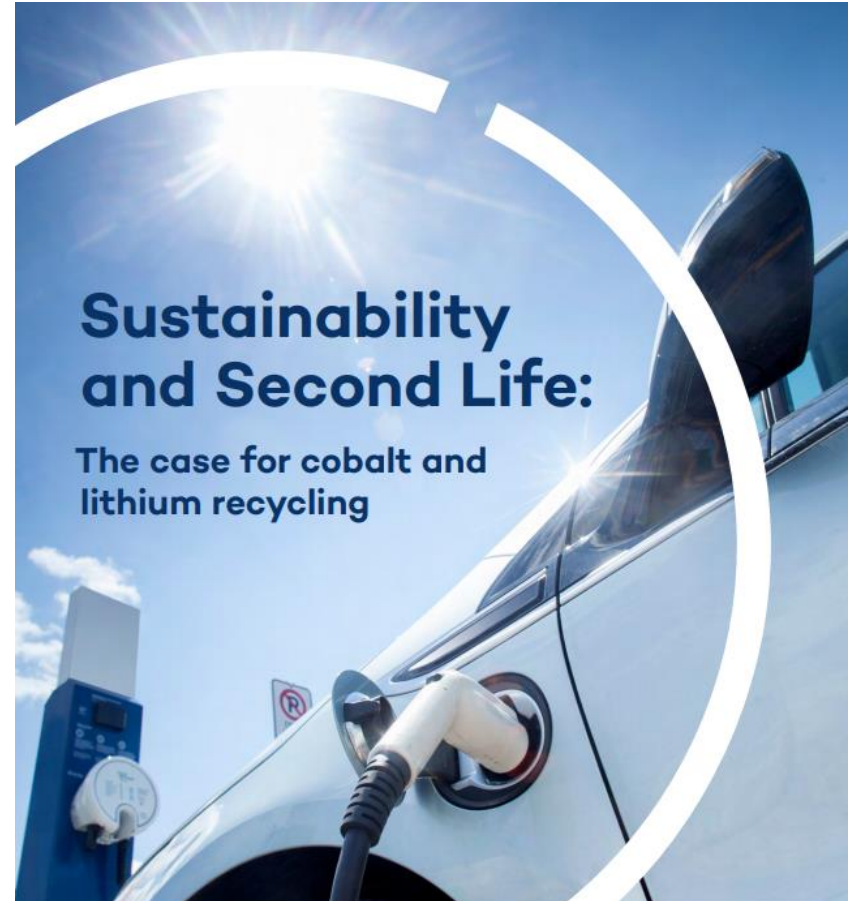


Clare Church
Alec Crawford
August 2018

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[Bit.ly/green-minerals](https://bit.ly/green-minerals)

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Sustainability and Second Life:

The case for cobalt and lithium recycling



Clare Church
Laurin Wuennenberg
March 2019

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Framing Principles



The transition to a low-carbon economy is underway and necessary.

The mining sector will play a crucial role in this transition.



The Growing Role of Minerals and Metals for a Low Carbon Future



June 2017



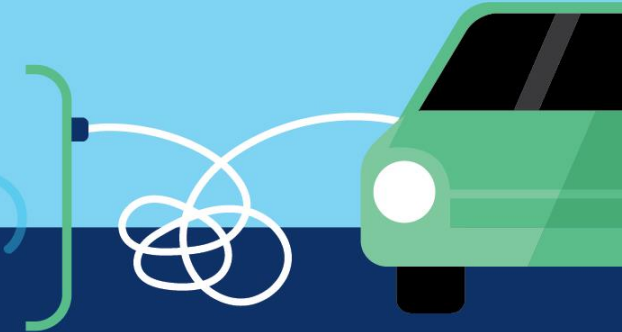
SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE, JUSTICE AND STRONG INSTITUTIONS 	17 PARTNERSHIPS FOR THE GOALS 	



Minerals Required for Green Energy Technologies



Al Bauxite & Aluminum	Ge Germanium	Ni Nickel	Te Tellurium
Cd Cadmium	In Indium	Se Selenium	Sn Tin
Cu Copper	Fe Iron	Si Silicon	Zn Zinc
Ga Gallium	Pb Lead	Ag Silver	

Al Bauxite & Aluminum	Fe Iron	Mo Molybdenum
Cr Chromium	Pb Lead	* Rare Earths
Co Cobalt	Mn Manganese	Zn Zinc
Cu Copper		

Al Bauxite & Aluminum	C Graphite	Li Lithium	* Rare Earths
Co Cobalt	Fe Iron	Mn Manganese	Si Silicon
Cu Copper	Pb Lead	Ni Nickel	Ti Titanium

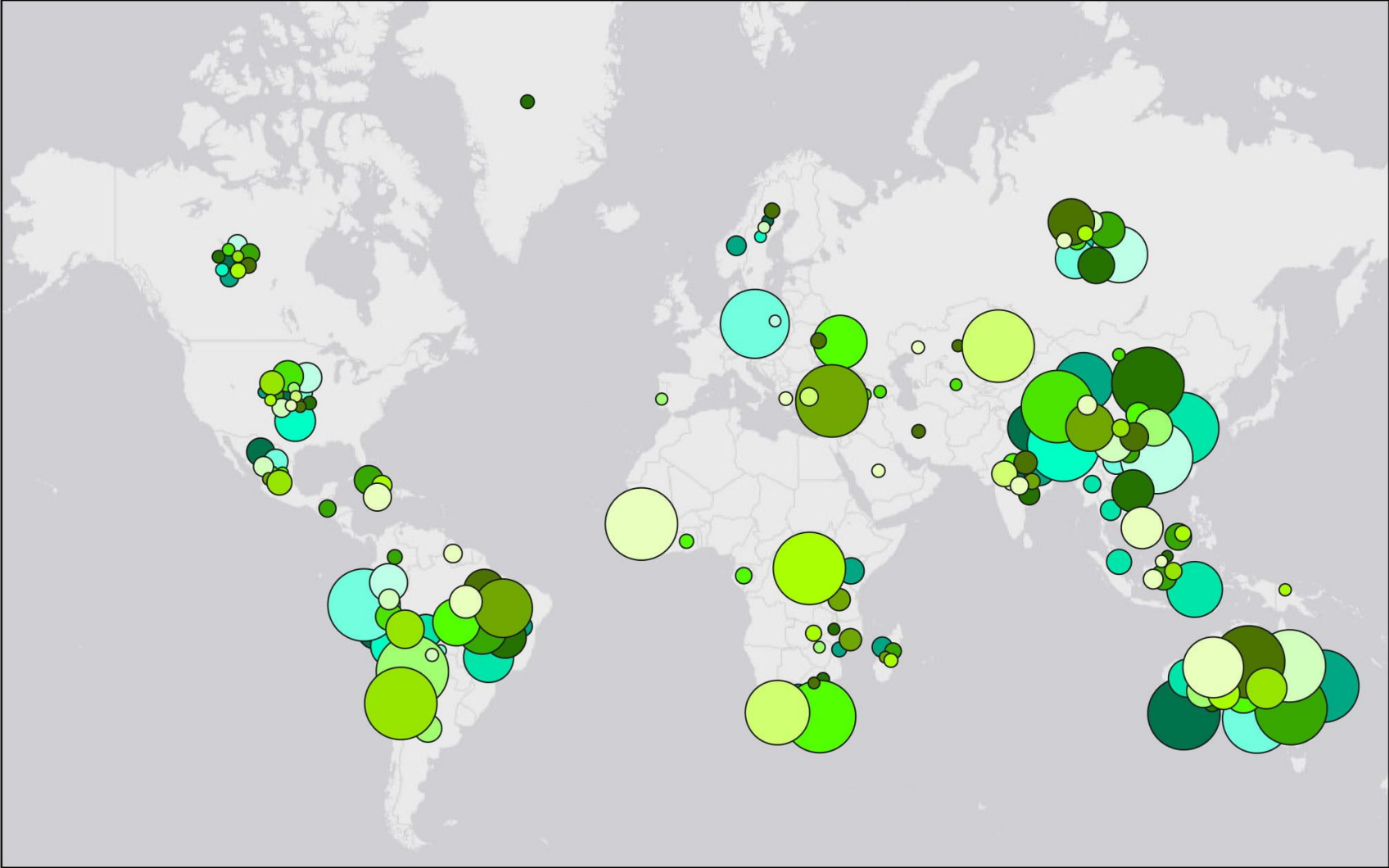
* The "Rare Earths" designation refers to 17 different elements, including dysprosium and neodymium (critical for wind technologies and energy storage), as well as praseodymium (critical for electric vehicles and energy storage).

SOLAR TECHNOLOGY

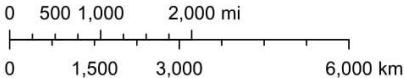
WIND TECHNOLOGY

ELECTRIC VEHICLES & ENERGY STORAGE

Green Conflict Minerals



1:147,914,382



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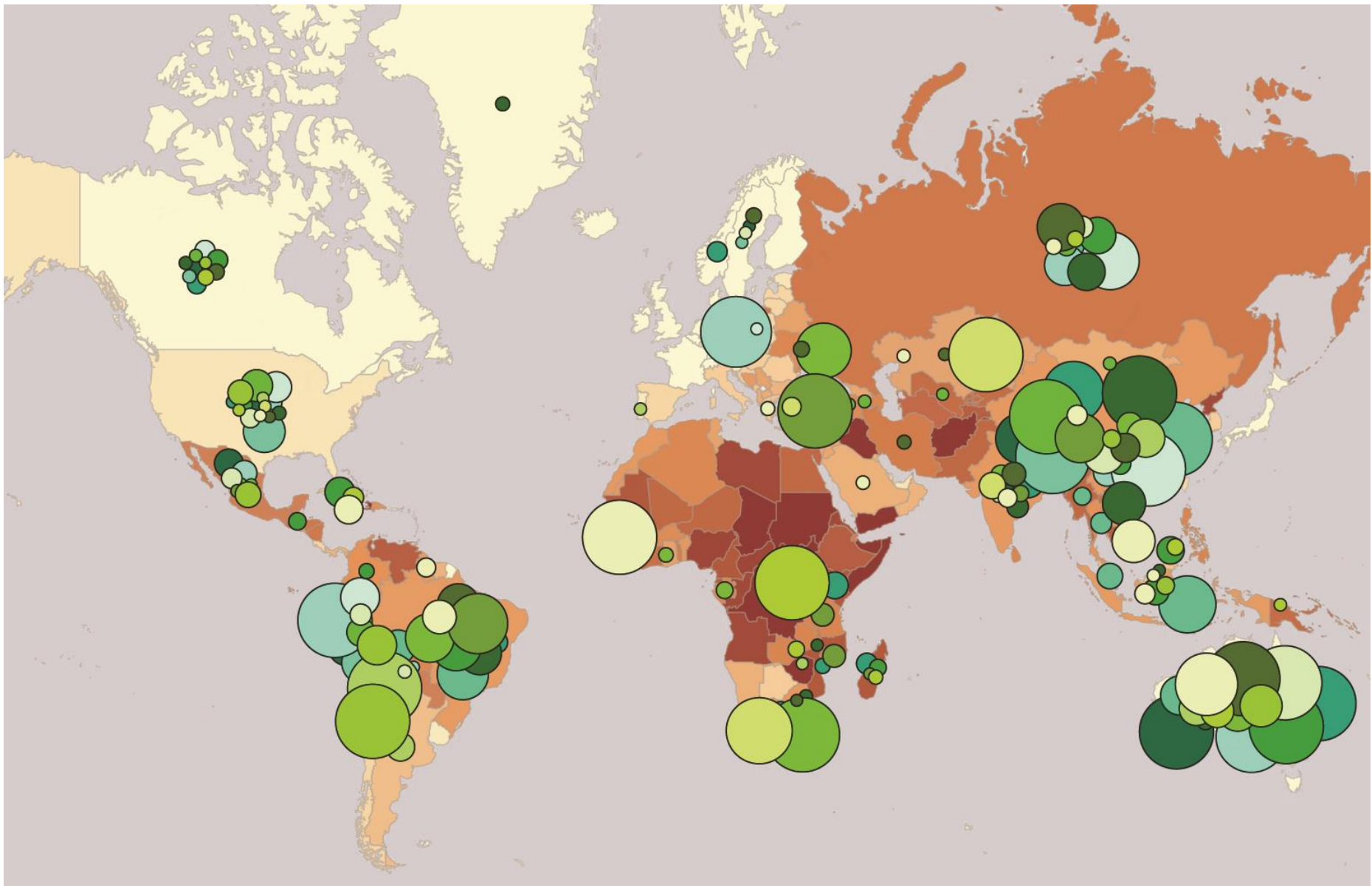


Table 1. Mineral reserves in states with high fragility and high corruption⁵



Mineral	Fragility		Corruption	
	Global Reserves Located in Very Fragile States ^a	Global Reserves Located in Fragile or Very Fragile States ^b	Global Reserves Located in States Perceived as Very Corrupt ^c	Global Reserves Located in States Perceived as Corrupt or Very Corrupt ^d
Bauxite & Alumina	28%	44%	0%	68%
Cadmium	<i>Data not available</i>			
Chromium	0%	55%	0%	100%
Cobalt	56%	70%	56%	70%
Copper	4%	41%	4%	41%
Gallium	<i>Data not available</i>			
Germanium	<i>Data not available</i>			
Graphite	1%	73%	7%	100%
Indium	<i>Data not available</i>			
Iron	0%	42%	0%	60%
Lead	0%	49%	0%	49%
Lithium	0%	21%	0%	34%
Manganese	0%	66%	0%	86%
Molybdenum	0%	70%	0%	72%
Nickel	2%	42%	2%	59%
Rare Earths	0%	58%	0%	94%
Selenium	0%	76%	0%	76%
Silicon	<i>Data not available</i>			
Silver	0%	52%	0%	52%
Tellurium	0%	67%	0%	67%
Tin	6%	69%	3%	84%
Titanium	12%	57%	6%	62%
Zinc	0%	52%	0%	59%

Source: Fund for Peace, 2018; Transparency International, 2017; U.S. Geological Survey, 2018

^a Labelled as “alert,” “high alert” or “very high alert” on the 2018 Fragile States Index: receiving a score of 90.00 or higher (113.4 is the highest score, held by South Sudan).

^b Labelled as “elevated warning,” “high warning,” “alert,” “high alert” or “very high alert” on the 2018 Fragile States Index: receiving a score of 70.00 or higher (113.4 is the highest score, held by South Sudan).

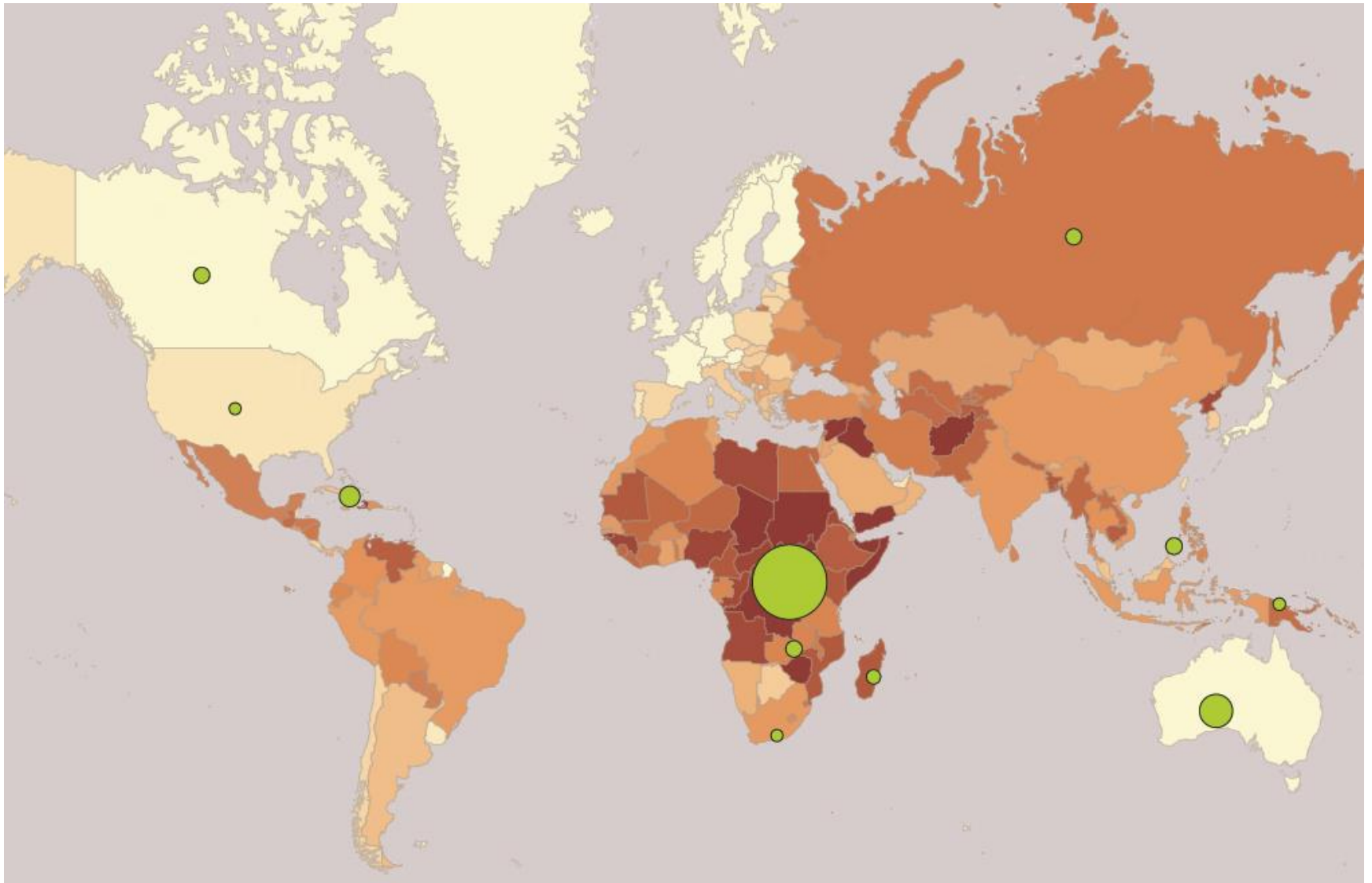
^c Receiving a score of 25.00 or lower on the 2017 Corruption Perceptions Index. A score of 1 denotes a highly corrupt state; a score of 100 denotes a very clean state.

^d Receiving a score of 43.00 or lower on the 2017 Corruption Perceptions Index. A score of 1 denotes a highly corrupt state; a score of 100 denotes a very clean state.

⁵ Cells are bolded to denote significance.

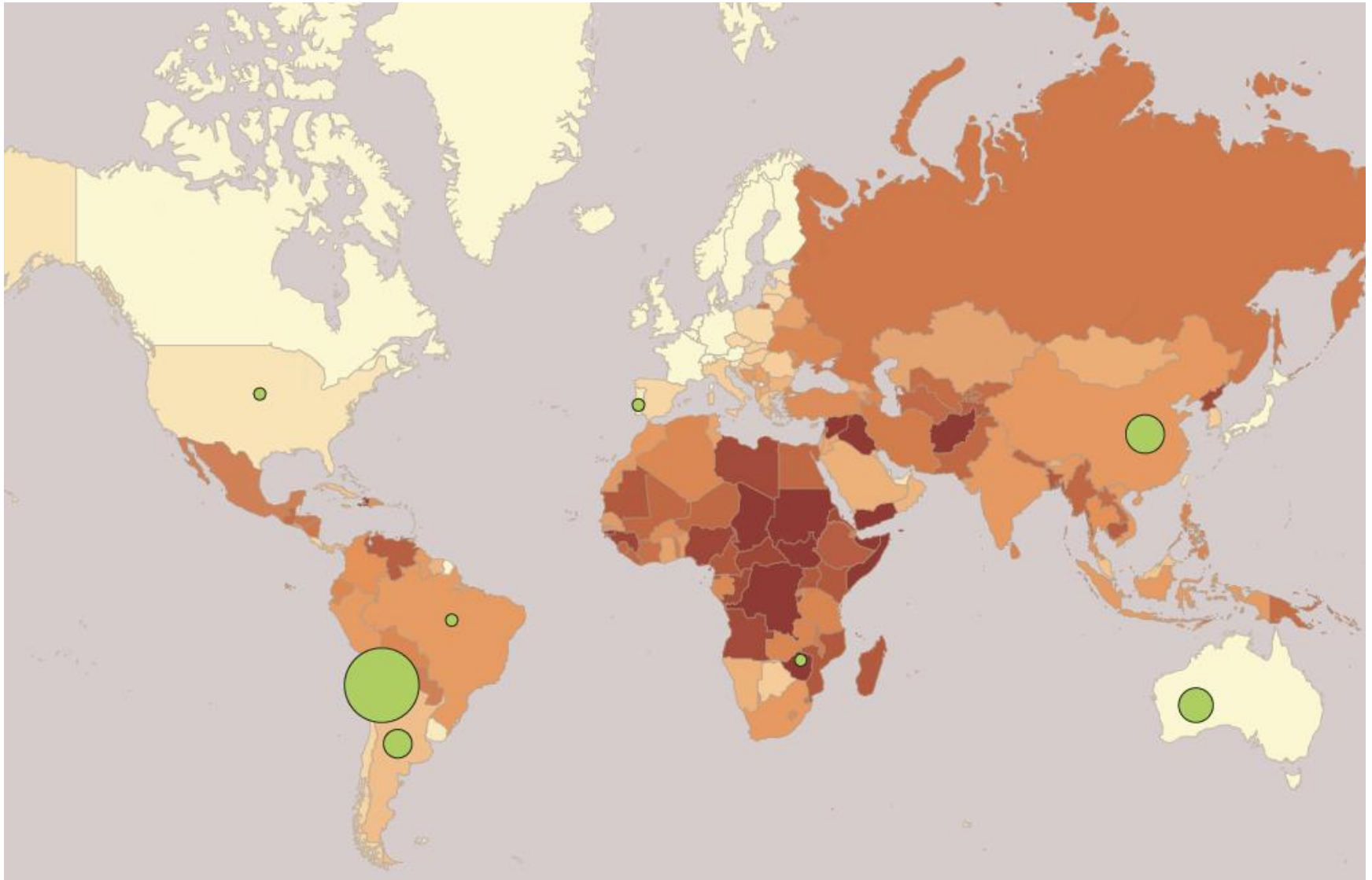
Cobalt

<https://arcg.is/0qW15G>



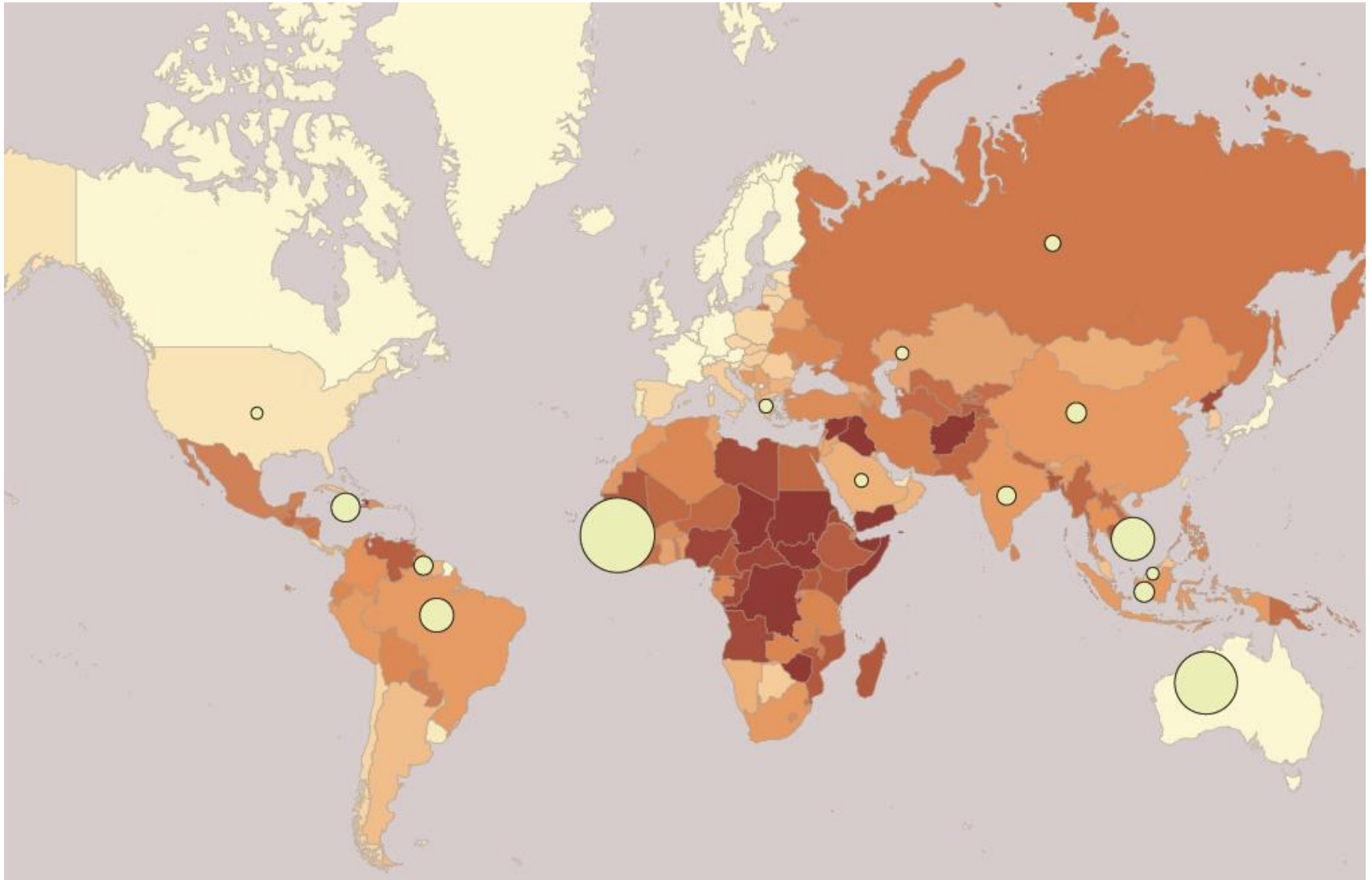
Lithium

<https://arcg.is/0qW15G>



Bauxite & Alumina

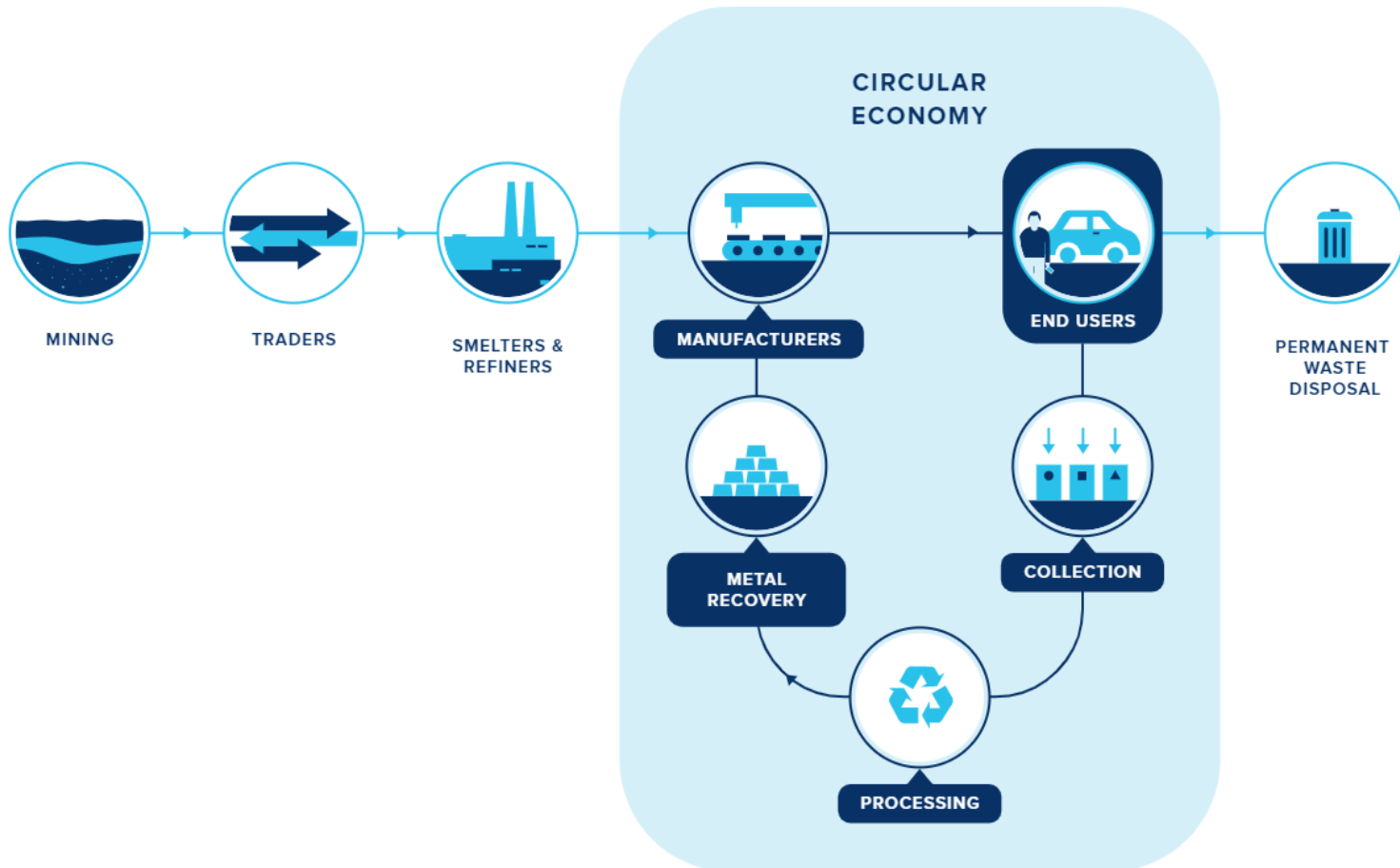
<https://arcg.is/0qW15G>





Solutions

Incorporate recycling into metal and mineral supply chains.





Solutions

Encourage improvements in implementation and monitoring of responsible sourcing mechanisms.

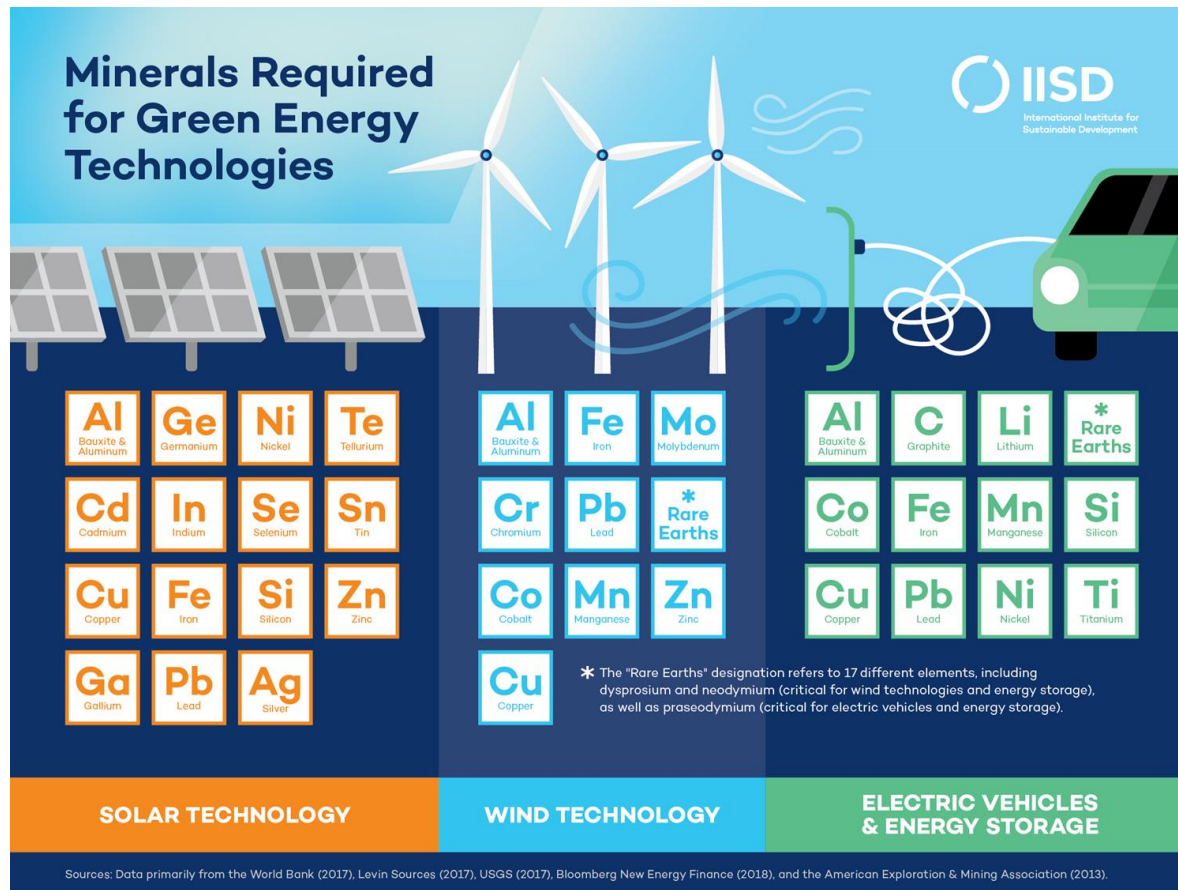
Companies engage in responsible sourcing mechanisms – whether through voluntary commitments or government-imposed obligations – for a number of reasons, including to:





Solutions

Expand existing supply chain regulations to apply to minerals beyond 3TG.





For more information, please go to:
[iisd.org](https://www.iisd.org)

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