



NEW ENERGY

Renewable + Non-Carbon Energy



GLS GLOBAL
LOCATION
STRATEGIES®



Renewables in Recent GLS Projects



Chemical Manufacturer

\$3B - 175 New Jobs – 1.2 GW

Required 100% renewable energy due to the nature of the product produced, which is focused on environmental transformation.



Metal Manufacturer

\$2.5B - 800 New Jobs – 245 MW

Required 100% renewable and 10% generation on site or PPA with new renewable generation.



Composites Manufacturer

\$325MM - 200 New Jobs – 35 MW

Interested in renewable energy due to the eco-friendly products it produces and its associated branding.



Pet Food Manufacturer

\$85MM - 100 New Jobs – 2 MW

Requires 100% renewables at all locations as a result of its commitment to using eco-friendly materials.

What is Renewable Energy?



Renewable Energy

Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed.

Source: United Nations – Climate Action

Key Characteristics:

- Capable of short-term regeneration
- Renewed at or above the rate of consumption
- Most are intermittent (solar, wind) and require back-up generation and/or utility scale storage.
- May require significant acreage to develop



Non-Renewable Energy

Non-Renewable Energy is energy derived from natural sources that are NOT replenished at a higher rate than they are consumed.

Key Characteristics:

- Consumed at a higher rate than the resource can be regenerated
- Results in some level of emission & waste material
- Are not intermittent in nature (base load).
- In some cases (coal, nuclear), fuel can be stored on site enhancing reliability.

Renewable vs. Non-Carbon Generation

Renewable Energy Sources



Renewable Energy Sources?



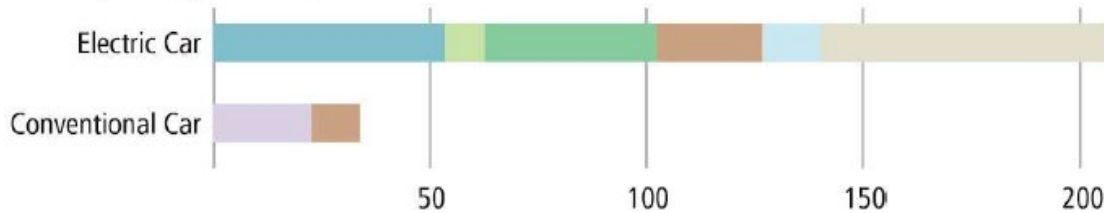
Non-Carbon Energy Sources



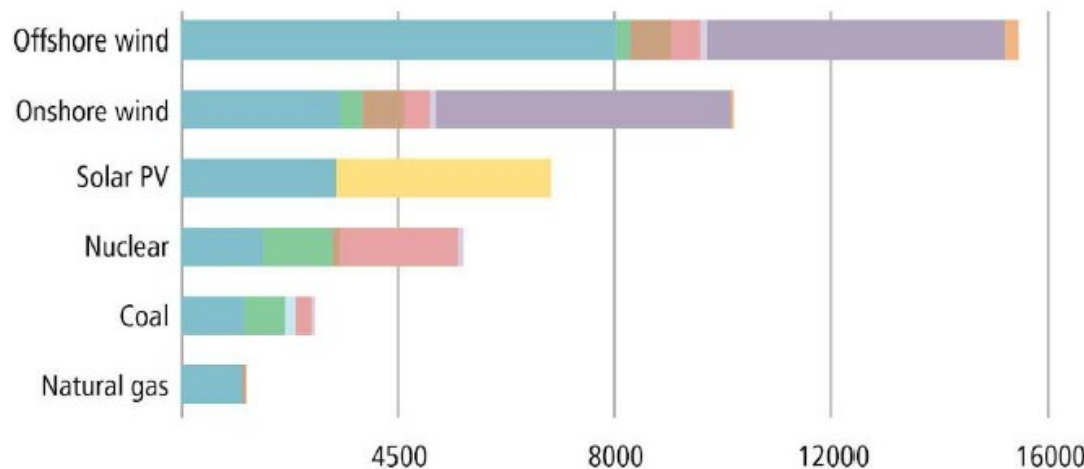
Constrains of Renewable Supplies

Minerals Used in Green Technologies

Transport (kg/vehicle)



Power generation (kg/MW)



- Copper
- Lithium
- Nickel
- Manganese
- Cobalt
- Graphite
- Chromium
- Molybdenum
- Zinc
- Rare earths
- Silicon
- Others

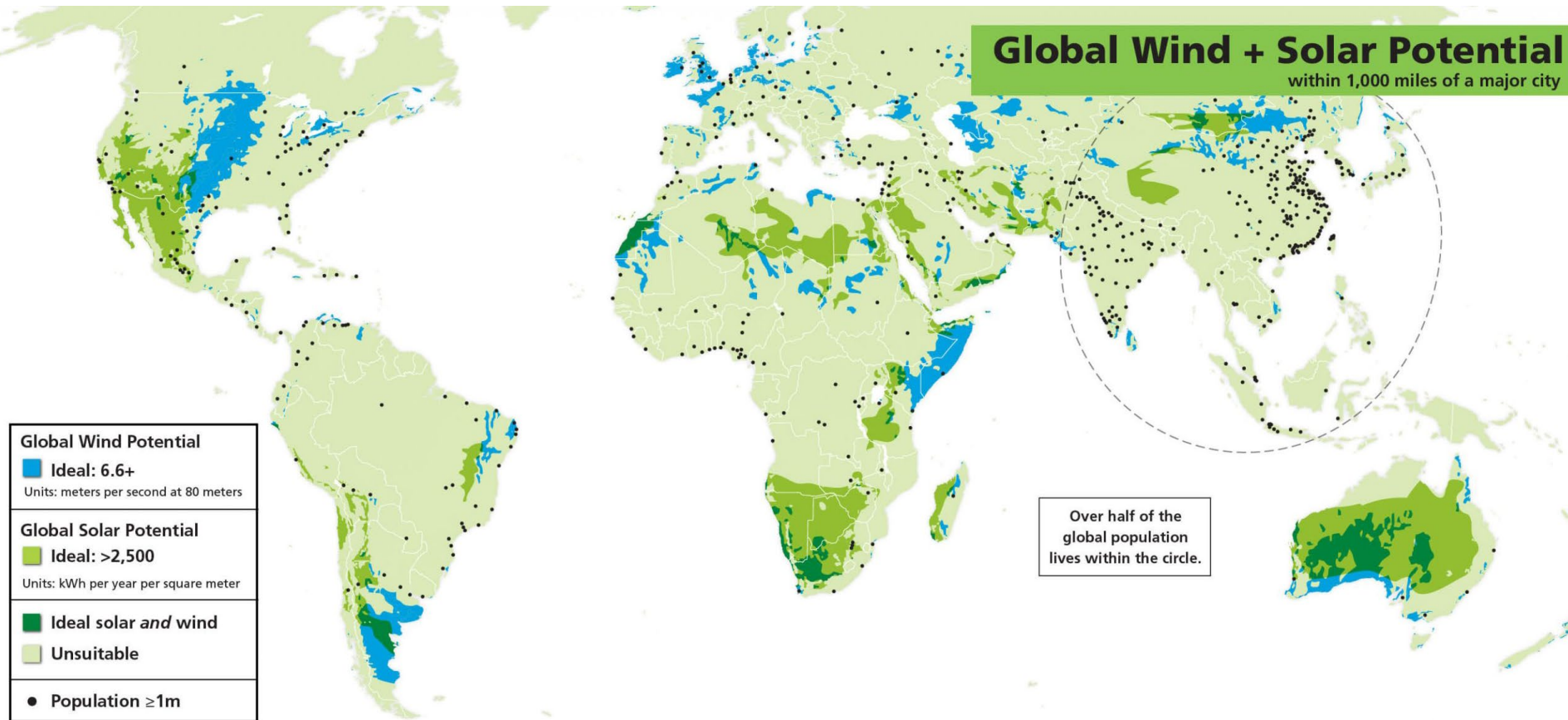
Russia Impacts

- 6.4% global exports
- 22% traded nickel
- 6% global exports
- 6% global production

Source: IEA

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Constrained Solar & Wind Potential



Sources: NREL, DOE, IRENA, and EPA

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Who Wants Renewable Energy?



CONSUMERS



COMPANIES



INVESTORS



GOVERNMENTS



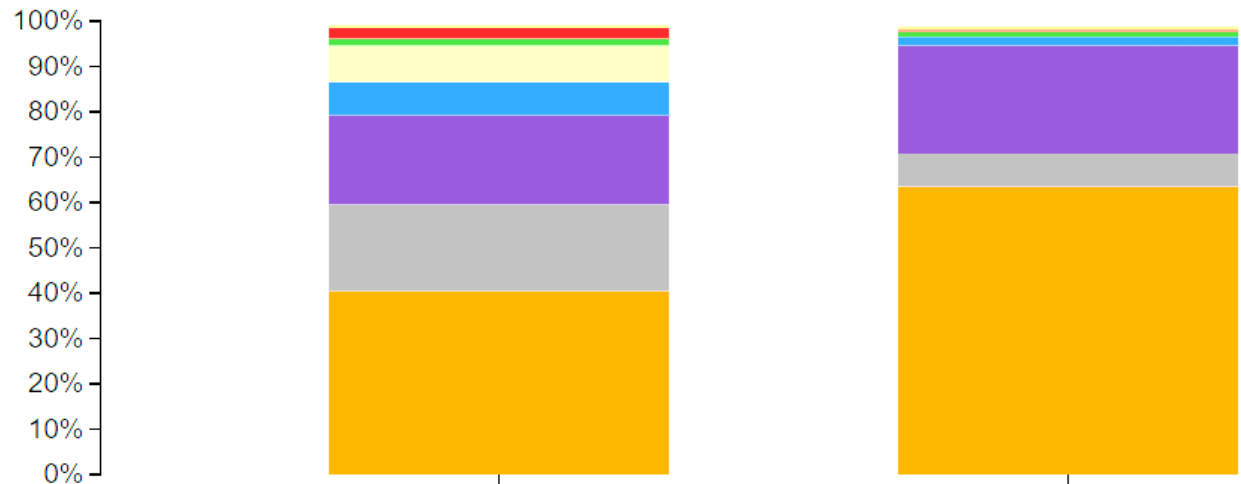
FINDING ONLY THE WORLD'S BEST SITES

How Do Companies Get Renewable Energy?

First Review: Generation Mix

- Each area's electric grid is supplied by various generation sources.
- Each source contributes to the overall generation mix.
- Users will review this mix to see what percentage of the mix is renewable and/or non-carbon

Generation



- Gas (63.6 %)
- Coal (7 %)
- Nuclear (24.1 %)
- Hydro (1.8 %)
- Wind (0 %)
- Biomass (1.2 %)
- Solar (0.2 %)
- Oil (0.8 %)
- Geothermal (0 %)
- Other Fossil Fuel (1.2 %)
- Other Unknown Fuel (0.2 %)

Second Review: Renewable Options

- **Power Purchase Agreement (PPA):** a bespoke arrangement in which a third-party developer installs, owns, and operates an energy system and the customer purchases the system's output for a set period of time.
- **Virtual Power Purchase Agreement (VPPA):** Similar to a PPA, a VPPA allows a customer to purchase the attributes of a generation system, but they do not own the generation.
- **Green Tariff:** a tool that allows users to purchase electricity from a renewable energy project as well as the renewable attributes through a bundled "off-the-shelf" product.
- **Renewable Energy Credit (REC):** a market-based instrument that represents the property rights to the environmental, social, and other non-power attributes of renewable electricity generation.

Third Review: Details

RENEWABLE
PRODUCTS

Attribution

The ability to uniquely assign renewable generation to the end user if purchased.

Additionality

Companies are now considering whether their demand for renewable energy will be provided in a way that displaces an existing user of that renewable energy. In this case, the demand is for net new renewable generation.

Proximity

Corporate users are increasingly interested in where the renewable generation is located.

Reliability

It is important to offer renewable attributes and maintain reliable base load power. Companies are not willing to sacrifice reliability while pursuing renewables.

Rates & Rate Structure

Companies continue to demand the lowest cost options for electricity and renewable attributes.

How Does this Apply to Me?



COMPETITION

Corporate Values

- Quickly evolving from a **preference** to a **requirement**
- Extending beyond electricity (i.e supply chain & building)

Competition

- Renewable Options
- Community Attitudes

ESG Evaluation:

Companies are now including Environmental and Social impacts in their comparative models, and it impacts nearly every category of consideration. Some categories impacted include:

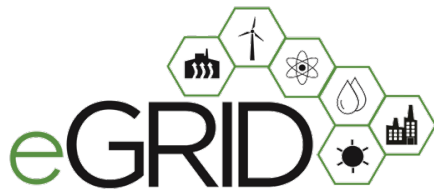
- Site and Civil
- Utilities
- Logistics & Transportation
- Quality of Life

What Should I Do?

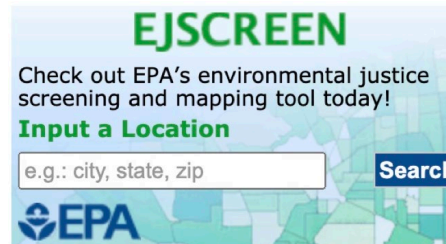
Learn

- Learn about the programs and resources available in your area.
- Know what programs and services your competitors may offer.
- Be able to explain the various energy programs that may be available and coordinate with service providers to compete.
- Understand which industries might have more stringent requirements and adjust your approach accordingly.

Resources



EPA Emissions & Generation
Resource Integrated Database
(eGRID)



EPA EJ Screening



American Council on
Renewable Energy (ACORE)



MATCHING
COMPANIES AND
COMMUNITIES FOR
MUTUAL, LONG-
TERM PROSPERITY

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FINDING ONLY THE WORLD'S BEST SITES

Appendix

Utility Perspective

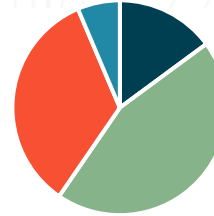
While GLS is involved in multiple global site selection projects each year, our clients represent only a small subset of all location and expansion projects. To gain a better understanding of the impact of electricity on corporate location decisions, GLS surveyed 56 electricity providers nationwide.

According to the providers surveyed, **reliability and price of energy** were identified as the electricity-related considerations most important to new investment projects over the past year. Eighty-two percent of respondents said that price of electricity was either “frequently” or “very frequently” cited as important to the investment decision, while 76% said that reliability of energy was cited “frequently” or “very frequently.”

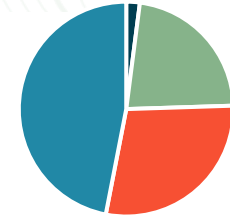
By comparison, only 40% of respondents said that renewable energy was cited “frequently” or “very frequently” as important to investment decisions in the past year. Only 12% of respondents said that rate structure flexibility was “frequently” cited.

In the past year, how frequently were the following cited as important to the new investment projects you pursued?

Renewable Energy



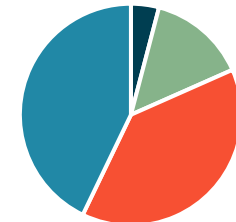
Reliability of Energy



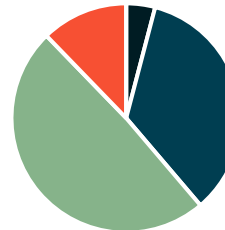
Redundancy of Energy



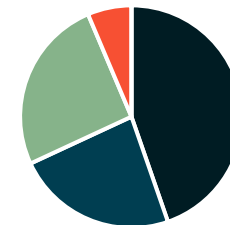
Price of Energy



Rate Structure Flexibility



Unregulated Market



■ Never ■ Rarely ■ Sometimes
■ Frequently ■ Very frequently

Utility Perspective

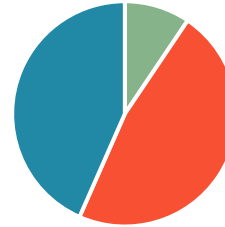
GLS also asked providers about their expectations of how important various electricity-related considerations will become to industrial clients in the next five years.

Ninety-one percent of respondents expect that renewable energy will become either “somewhat more important” or “much more important” to industrial clients in the next five years. This compares to 53% of respondents who believe that the price of energy will become “somewhat more important” or “much more important,” and 42% of respondents who believe the price of energy will remain at the same level of importance.

Fifty-eight percent of respondents believe that reliability of energy will become somewhat or much more important to industrial clients; and 47% believe that rate structure flexibility will become somewhat or much more important to industrial clients.

Compared to today, how important do you anticipate each of the following criteria will become to your industrial clients in the next 5 years?

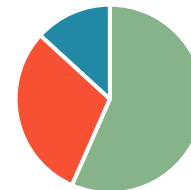
Renewable Energy



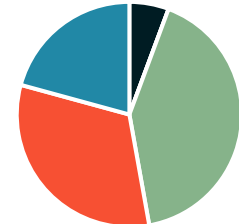
Reliability of Energy



Redundancy of Energy



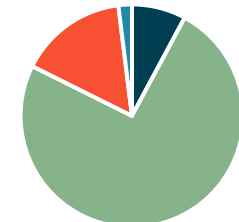
Price of Energy



Rate Structure Flexibility



Unregulated Market



■ Much less important
 ■ Somewhat less important
 ■ Will stay the same
■ Somewhat more important
 ■ Much more important

Site Selector's Perspective

RENEWABLES
SIGNIFICANCE

For public facing companies, such as Facebook (Meta) and Procter & Gamble, being environmentally and socially conscious is core to their brand. For others, especially early-stage companies seeking financing, investors are choosing companies with the most compelling environmental story that can also turn profits.

GLS projects over the last several years can be categorized into one of the following sustainability-related categories:

1. Companies making new products that are environmentally better than the products they are replacing. For example, a client recently announced an R&D center to advance its novel advanced reactor technology that will complement renewable energy sources.
2. Companies making traditional products in new ways that are more environmentally-sensitive than previous production methods. Two recent examples include a client that will convert natural gas to gasoline, and a client who will make low-carbon, low-cost transportation fuels from household garbage.
3. Companies making traditional products in traditional ways, but incorporating sustainability into their production, such as focusing on water conservation, reduced electricity requirements, and a reduction in waste. This is a trend we've seen among our paper, metals, and composites clients.

There are practically no projects that GLS has worked in the last 5 years where sustainability has not been a part of the conversation, and we expect that this will continue grow in importance in the near to medium term.

According to the Governance & Accountability Institute (G&A), 90% of companies on the S&P 500 published sustainability or corporate responsibility reports in 2019. This is compared to 2011, when under 20% of S&P 500 companies reported on these issues.

Global Location Strategies has seen the prevalence of this trend in our site selection work, with companies increasingly interested in opportunities to lower their environmental footprint. This spans all aspects of the site selection process, from considering brownfield redevelopment opportunities, to incorporating graywater and minimizing waste in the production process.

With increasing frequency, our clients ask for sustainably-generated electricity as either a preference or a requirement. This includes projects of all sizes, from 1.5 MW projects to a recent 1.2 GW project. While price sensitivity will continue to be of interest, particularly for projects with significant utility requirements, incorporating renewable energy into project specifications has become a key consideration for many of our clients. Recent examples are included below.