



The Stella Group, Ltd.

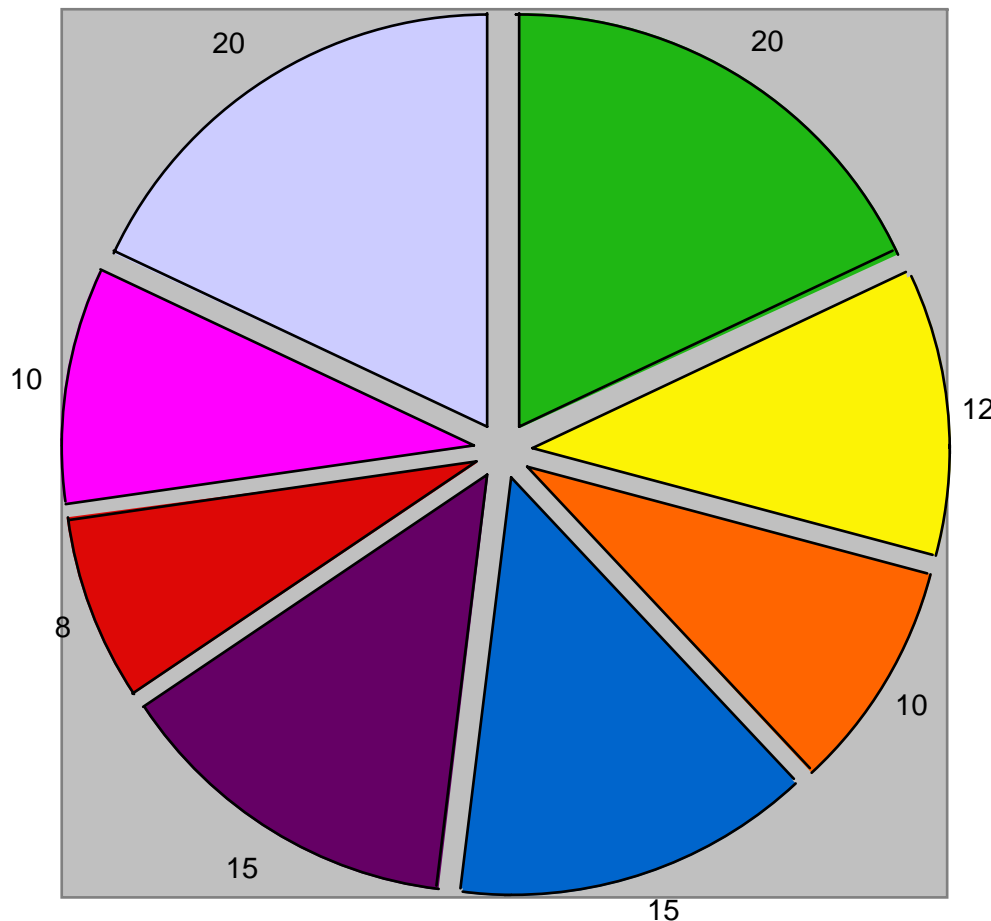
The Stella Group, Ltd.

The Stella Group, Ltd. is a strategic marketing and policy firm for clean distributed energy users and companies which include advanced batteries and controls, energy efficiency, fuel cells, heat engines, minigeneration (natural gas), microhydropower, modular biomass, photovoltaics, small wind, and solar thermal (including daylighting, water heating, industrial preheat, building air-conditioning, and electric power generation). The Stella Group, Ltd. blends distributed energy technologies, aggregates financing (including leasing), with a focus on system standardization.

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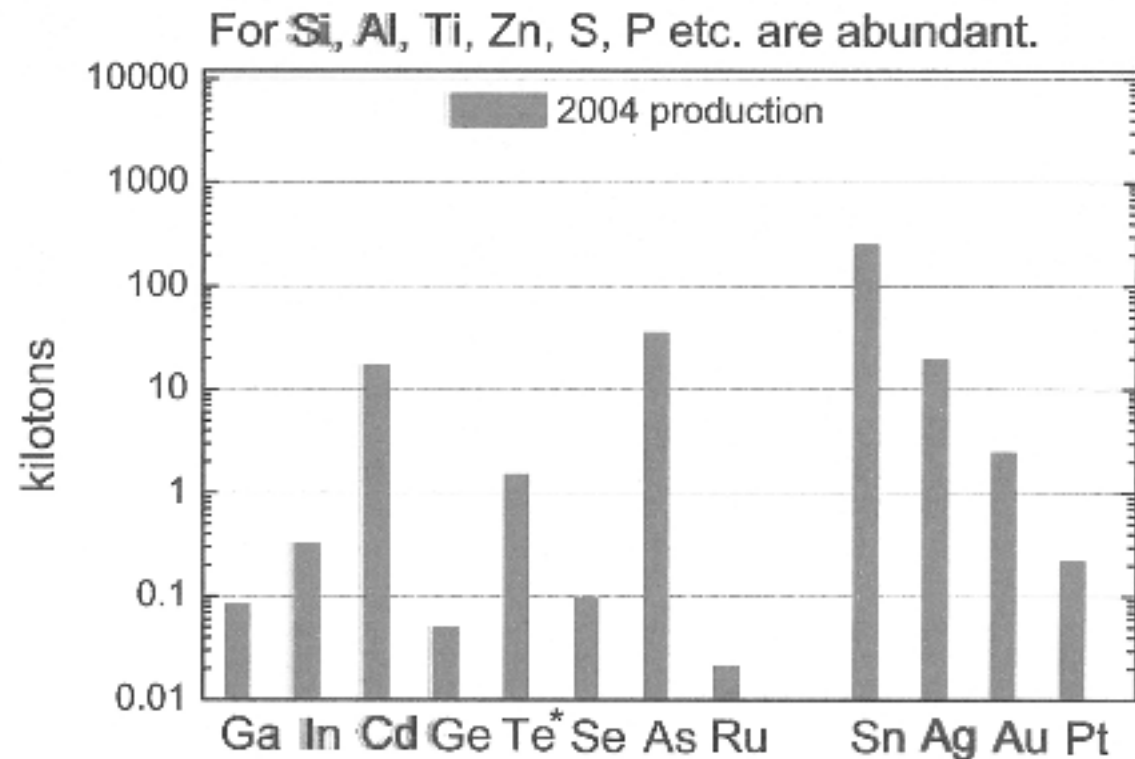
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Percentage of Clean Energy in 21st Century



- **20% Biomass Power**
- **12% Building RE: GCHP/SI**
- **10% Geothermal**
- **15% Solar-Concentrated Sol**
- **15% Solar-Distributed PV/S**
- **8% Waste Heat**
- **10% Water Energy**
- **20% Wind Energy**

Existing PV Material production



Mostly obtained as refinement by-products of zinc and copper ores.

•Extracted from United States Geological survey. (<http://minerals.usgs.gov/minerals/pubs/commodity/>)

(*)data incomplete

WIND: INDUSTRIAL METALS / MINERALS: Why rare earth

metals matter *Tom Vulcan, rare earth metals reporter for HardAssetsInvestor.com, recently had the chance to speak in Washington, D.C., with Mark Smith, CEO of Molycorp Minerals LLC.*

<http://www.mineweb.com/mineweb/view/mineweb/en/page72102?oid=83419&sn=Detail>

“We believe that may be changing as hybrid cars become more popular and the use of wind turbines becomes more widespread. Clearly, on a volumetric basis, these two new clean energy technologies could easily overtake hard disk drives in terms of the volume of permanent rare earth magnets required. Let's take a look at wind turbines. In certain applications, *two tons* of rare earth magnets are required in the permanent magnet generator that goes on top of the turbine. If the permanent magnet is two tons, then 28% of that, or 560 lbs, is neodymium. None of the supply and demand graphs that we use in Washington, D.C., takes into account the use of neodymium iron boron magnets in wind turbines, because it's so new. What concerns me is that this is a big, big use of rare earth magnets that we have not accounted for in our supply-and-demand estimates.”

BIOPOWER CAST COMPONENTS

Biopower utilizes several cast components, including industrial fans, pumping equipment, piping and turbines. Fans are typically large centrifugal cast blowers. Iron and steel pipes and tubing are at least partially cast components. According to the USDOE biopower generated around \$16.3 billion in revenues, with the U.S. enjoying 16% of those sales. The value of biopower equipment manufactured in the U.S. in 2004 was more than \$1 billion, of which \$450 million was intended for U.S.-based production.

<http://www.allbusiness.com/energy-utilities/utilities-industry-electric-power-power/7063977-1.html>

Geothermal: Ores and Castings

Six main castings used in the production of geothermal power. Field machinery, well casings and piping, etc. Casting-heavy applications, such as pumps and pumping equipment, are vital to geothermal power production. These include centrifugal, propeller and mixed flow pumps. In the U.S., geothermal energy generates 40% more energy than wind technologies and 26 times as much solar energy.

HYDRPOWER & WATER ENERGY

Water-powered generators have a large pole inside with metal wires wrapped around it. On the inside walls of the generator there are magnets and as the turbine poles spin, the magnets also whirl about the metal wires and draw electrons from them. These electrons are sent down other wires as electricity. Worldwide, hydropower plants produce about 24 percent of the world's electricity and supply more than 1 billion people with power. The world's hydropower plants output a combined total of **675,000 megawatts**, the energy equivalent of 3.6 billion barrels of [oil](#), according to the [National Renewable Energy Laboratory](#). There are more than 2,000 hydropower plants operating in the United States, making hydropower the country's largest renewable energy source. Freeflow hydropower, tidal, wave, and ocean currents and thermal are on the upswing .