



The Stella Group, Ltd.

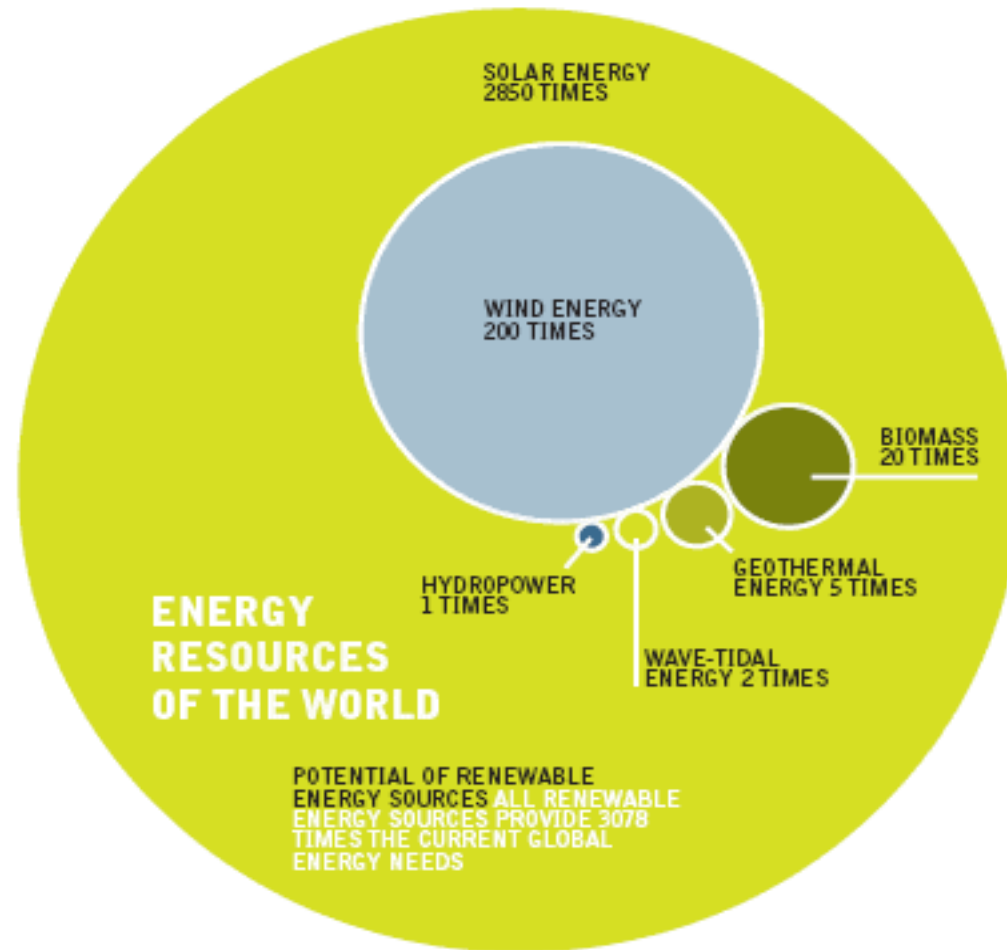
The Stella Group, Ltd.. is a strategic technology optimization and policy firm for clean distributed energy users and companies which include advanced batteries and controls, energy efficiency, fuel cells, geexchange, heat engines, microhydropower (including tidal and wave), modular biomass, photovoltaics, small wind, and solar thermal (including CSP, daylighting, water heating, industrial preheat, building air-conditioning, and electric power generation). Scott Sklar serves as Steering Committee Chair of the Sustainable Energy Coalition, composed of the renewable and energy efficiency associations, national environmental groups, and analytical groups, and sits on the national Boards of Directors of the non-profit Business Council for Sustainable Energy and The Solar Foundation, teaches two unique interdisciplinary sustainable energy course at The George Washington University, Scott Sklar was awarded the prestigious The Charles Greely Abbot Award by the American Solar Energy Society (ASES) and on April 26, 2014 was awarded the Green Patriot Award by George Mason University in Virginia, and serves as Chair of the US Department of Commerce Renewable Energy & Energy Efficiency Advisory Committee, term ending 2016.

The Stella Group, Ltd. 1616 H Street, NW, 10th fl Washington, DC 20006

202-347-2214 (f-2215) www.TheStellaGroupLtd.com solarsklar@aol.com

**"Powering Community Infrastructure
Using High Value Energy Efficiency,
Energy Storage and On-Site Renewable
Energy"**

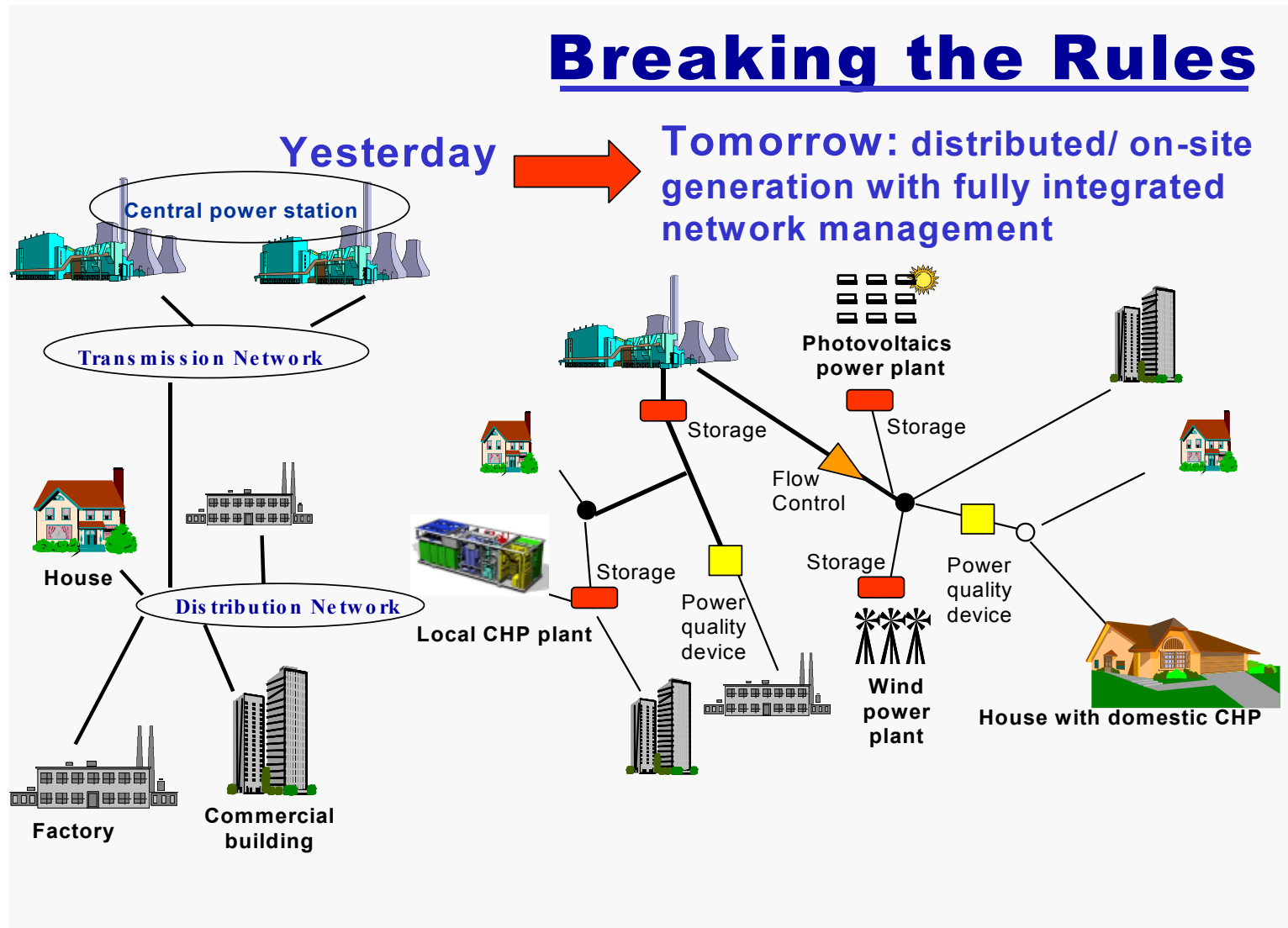
figure 30: energy resources of the world



source WBGU

Developing Countries: New paradigms are under development

Breaking the Rules



How It Looks



WHAT DO I MEAN BY INFRASTRUCTURE ? – ANY INVESTMENT THAT IS ESTABLISHED TO MEET THE ENTIRE PUBLIC GOOD:

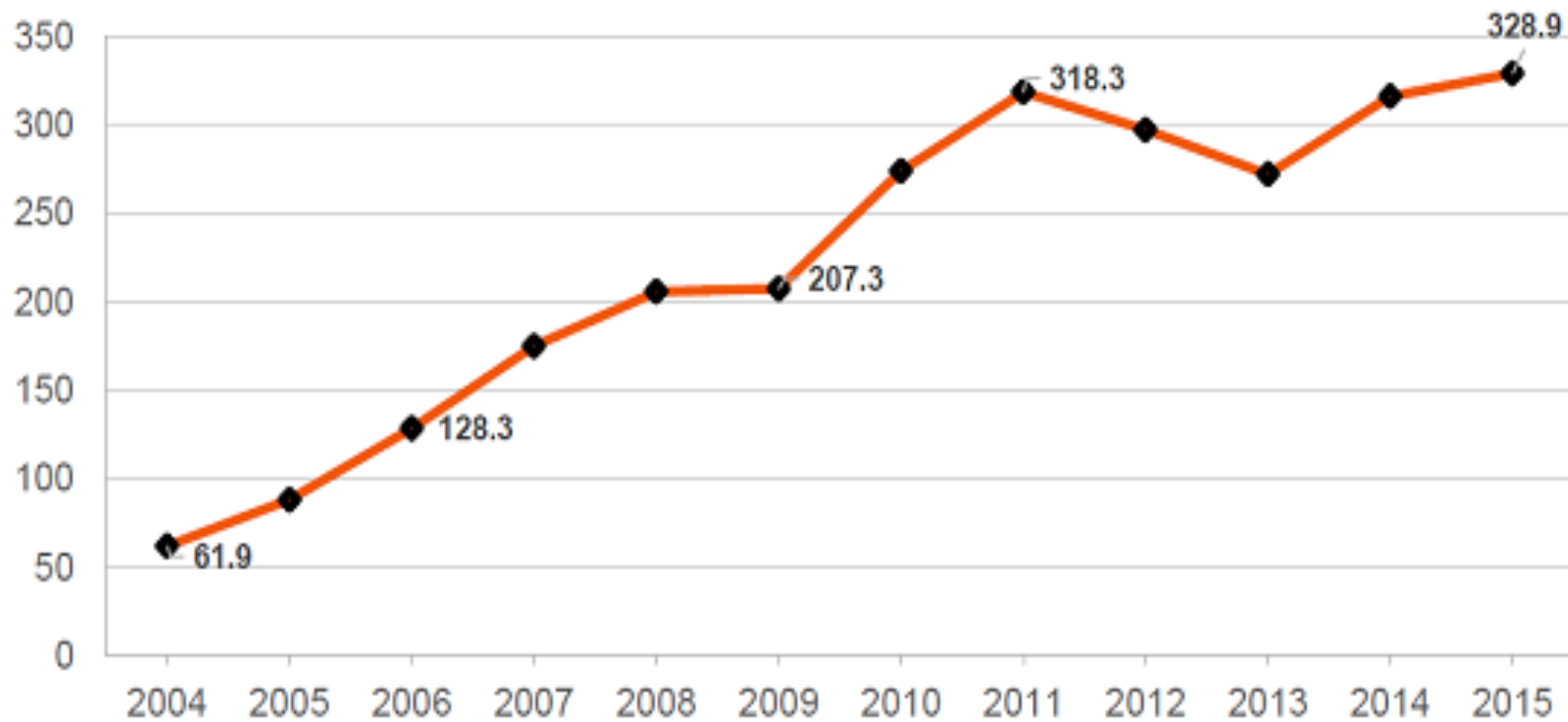
1. CELLULAR TOWERS, WIDE-AREA WIFI
2. PIPELINE PUMPS – WATER, SEWAGE, and FUELS
3. ROADWAY AND RAILWAY SIGNAL LIGHTING, STREET & MARKET LIGHTING
4. MUNICIPAL WATER & SEWAGE SYSTEMS
5. HOSPITALS, CLINICS, & MEDICAL LABORATORIES, VACCINE REFRIGERATION
6. SCHOOLS & TRAINING CENTERS
7. PUBLIC CELL-PHONE CHARGING & BANKING SERVICES & INTERNET CAFES
8. FOOD REFRIGERATION (STORES) or PUBLIC ACCESS REFRIGERATION
9. FARM IRRIGATION, FOOD PRESERVATION, RODENT CONTROL
10. WASTE MANAGEMENT – RECYCLING, RE-USE, RE-PURPOSE - ENERGY

The world faces three energy challenges in one. Energy supply needs to substantially increase to power global economic growth and provide modern energy services to the roughly two-fifths of the world's population who lack them.² Overall, energy demand is likely to rise by more than a third by 2040. At the same time, energy systems around the world need to shift away from fossil fuels towards clean energy, to reduce air pollution and to mitigate climate change. Expanding the use of renewables and improving energy efficiency is also important for energy security, as it allows countries to reduce their dependence on imported fossil fuels, which are subject to volatile prices and supply disruptions.

Meeting this triple challenge will require a significant increase in clean energy investments. The good news is that, globally, there is no shortage of capital. In the countries of the Organization for Economic Co-operation and Development (OECD), high savings rates and historically low interest rates have led to a “search for yield” among many investors

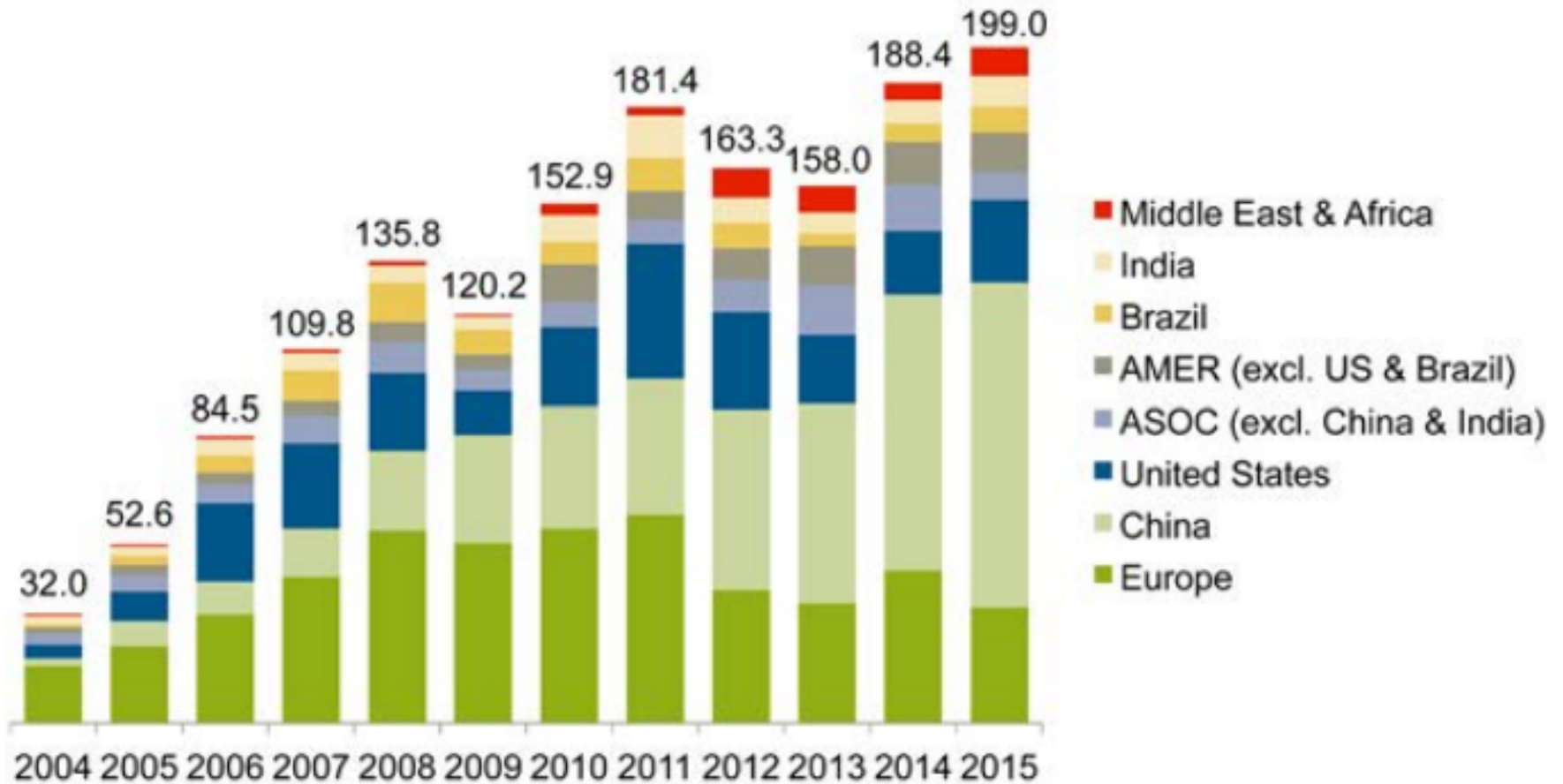
<http://2015.newclimateeconomy.report/wp-content/uploads/2016/04/Investing-a-trillion-in-clean-energy.pdf>

Clean energy investments in 2015 hit a new record of \$329 billion



Source: Bloomberg New Energy Finance

<http://www.eqmagpro.com/clean-energy-investments-in-2015-hit-a-new-record-of-329bn/>



Total values include estimates for undisclosed deals.

Asset finance investment in renewable energy by region, 2004-15, \$bn
 Bloomberg New Energy Finance, UNEP

HAITI's first microgrid – LesAnglais 47 families – Earthspark Nov 2015





Edna Adan Maternity Hospital is a non-profit charity hospital built in Hargeisa, Somaliland in 2002

SOLAR-DRIVEN WATER PUMPING & IRRIGATION



TELECOMMUNICATIONS, CATHODIC PROTECTION



Abu Dhabi National Oil Company: Bab-Maqta-Taweelah gas pipeline



Akon Africa – Solar Powered Street Lights – South Africa
answersafrica.com

On-Site Generation Utilization List

Cellular and WiFi - (distributed communications for internet, telecom, remote sensors, and security - fuel cells, advanced batteries, photovoltaics, small wind, pico-hydro, biogas, etc



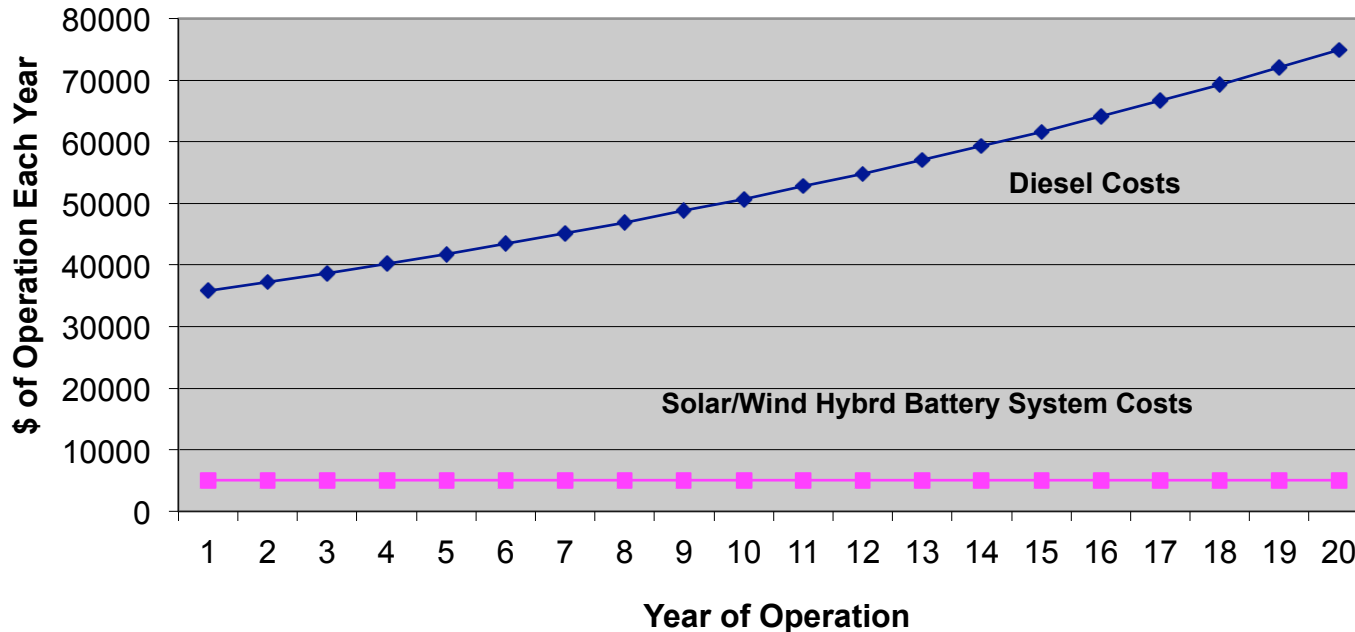


Sacred Power PV Refrigeration Systems on Flatbed

Containerized Power

**DHS Repeater Site – SkyBuilt
Solar+Wind+Batteries (no fuel solution)**

The Real Annual Cost of Diesel vs. Solar/Wind Hybrid ---Over 20 Years Fuel + Maintenance + Other



\$7,000 Capital Cost of a Diesel 10kW Generator - amortized over 20 years

\$100,000 Capital Cost of 10kW Mobile Power Station - amortized over 20 years

\$1.00 Diesel Fuel \$/gal.

\$1.01 Gal/hr.

24.24 Gal/day

8847.6 Gal/yr.

4.00 The Multiplier by which diesel fuel cost is multiplied in order to show Real Cost (includes maintenance, etc.,

4.00% Fuel cost increase/yr.

8,760 Number of hours in 1 year

INDUSTRY APPLICATION FOCUS AND TRENDS

Renewable energy and energy efficiency applications

HydroCoil®



Energy generation
from a
transformerless
turbine.

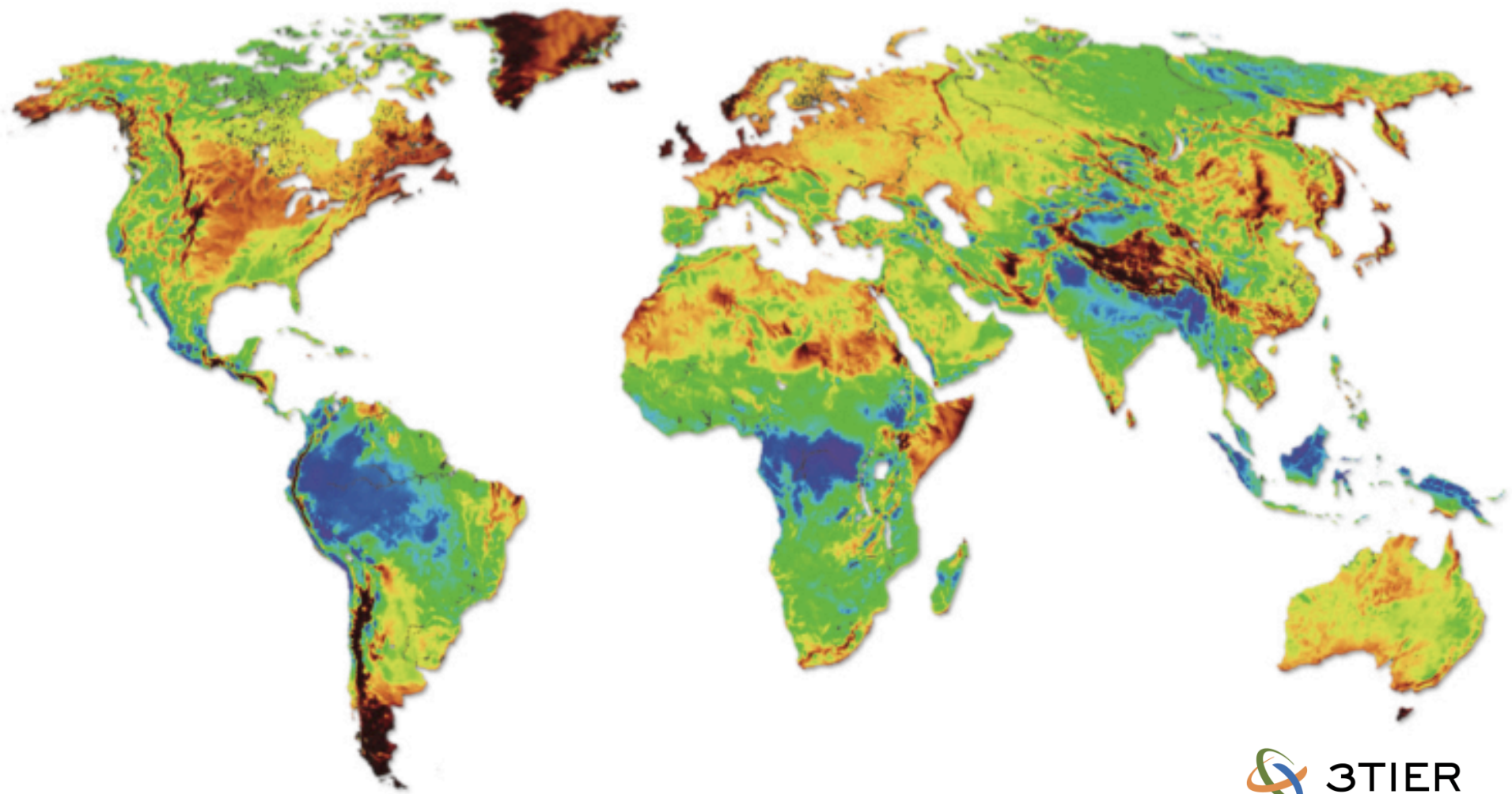
Biomass Gasifier: Distributed Energy

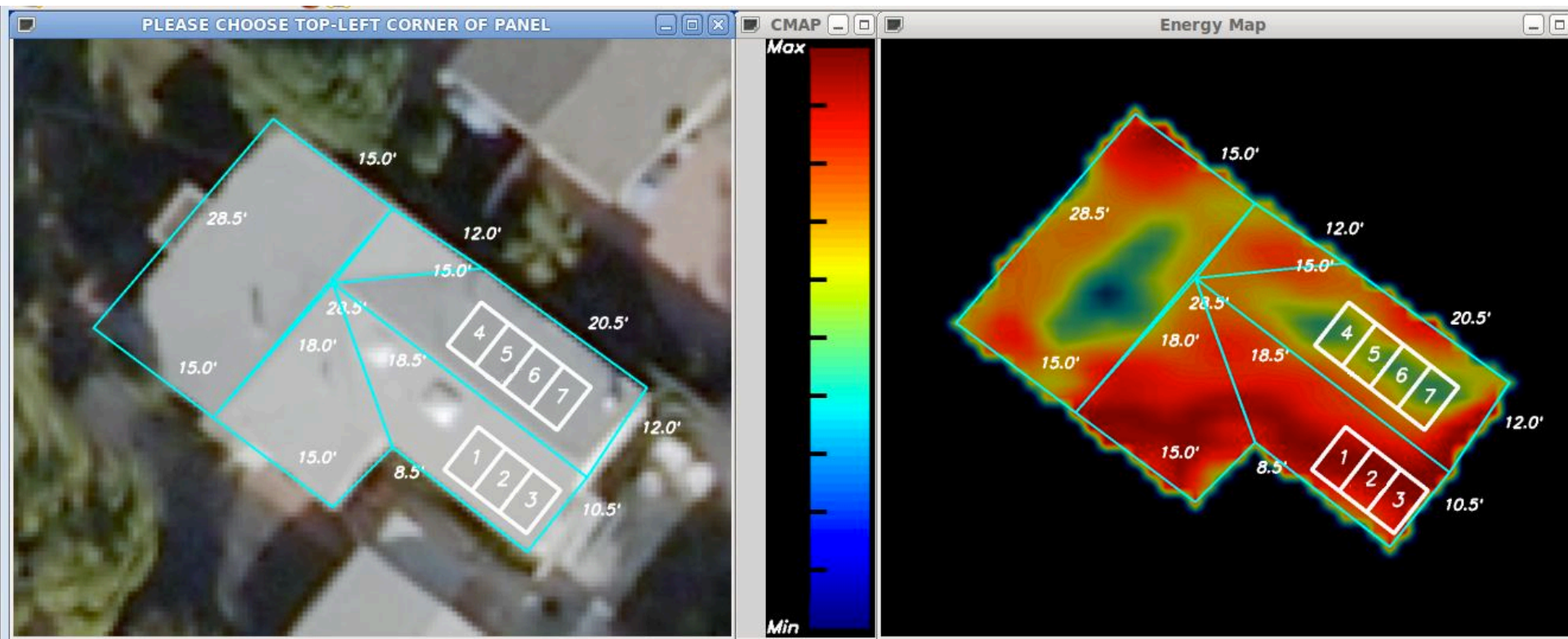


DG 24-7 Solar/Wind powered disaster and emergency water filtering unit also removes arsenic and lead

- **Ultrafiltration removes 99.99% of bacteria, viruses, cysts, pathogens, medical waste**
- **Filtration media removes 99.99% of arsenic, lead and other heavy metals**
- **Robust, scalable with a small foot print**
 - 6500 gallons per day on solar power, 13000 gallons per day with upscaled solar power
- **Minimal/Versatile power requirements**
 - 24-7 can be solar/wind powered or attached to power grid/generator
- **Rapid deployment**
 - Small size, 6x6x5ft, designed to fit 463L pallet
 - Air, surface or surface ship deliverable
 - Setup in less than 30 minutes
- **Simple and reliable components**
 - Proven water filtering capability in austere environments







Solar Energy Siting Software
www.solar-red.net

THERE ARE NO DUMB QUESTIONS !!

solarsklar@aol.com



Good planets are hard to find.