



Q4 2013 Quarterly Report: WilderHill Clean Energy Index[®], December 31, 2013

4th Quarter started with the Clean Energy Index[®] (ECO) about 65 and closed near 66 for a negligible change in Q4 of some +1%. ‘An unchanged’ Q4 was unlike the strong moves (up) Q1 through Q3. Look from Jan. 1, 2013 when ECO Index[®] had stood at 42, and it gained some two-thirds until October before declining (tracker going <\$6) then growing again. Or if most robustly started from a major bottom made in November 2012 near 36 in ECO (\$3.5 for an independent Index tracker), the Index/tracker rose most vividly by almost doubling up to 70 / \$6.9 within the 12 months from Nov. 2012 - Nov. 2013.

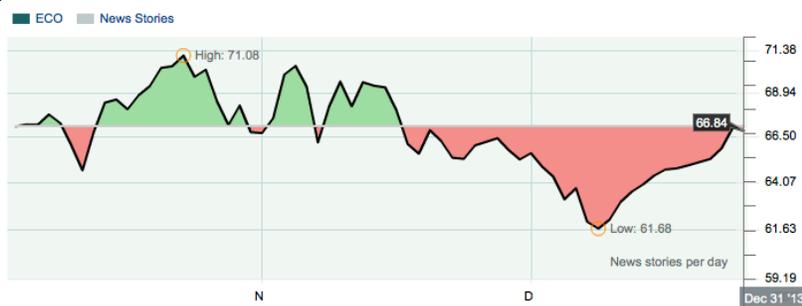
So on one hand the Index is well up by a bit over half-again over 2013. Note however on the other hand, that was only *after* an eyebrow-raising *plunge* 5 long years to late 2012. To have instead begun counting late 2007 as ECO peaked near 300 - one would have seen a terrific 5-year fall to a just-mentioned 36 by Nov. 2012 as clean energy’s theme and thus ECO had declined tremendously by some 6/7ths (and that could always resume).

Perhaps rather notable than this beaten-down theme was up 3 consecutive Quarters, sizably Q1-Q3. Q4 ECO hit an intra-Quarter high in October near 71 - tracker near \$7 - before falling back some by end Q4/2013. That’s quite unlike prior Q3 when the Index ended September not only at its high for 3rd Quarter but its high-to-then in 2013.

Yes before 2007 there’d been prior *years* of gains in ECO - but not since to 2012. That said it’s impossible to say if a recent upturn of 2013 may - or may *not* continue - especially since clean energy’s full story contains several still-consolidating solar names.

As usual we’ll look too at a much different Progressive Energy Index[®] (WHPRO) that excludes solar, wind, or renewable pure plays - WHPRO is instead a ‘brown’ Index theme for de-carbonizing today’s energy portrait and improving dominant energy and efficiency. As usual again that theme was also less volatile - Q4 & 2013 saw less movement upside. WHPRO started 2013 near 240, an independent tracker (PUW) near \$26; WHPRO by late 2013 was roughly ‘just’ around 298 and an independent tracker about \$32.

In sum 2013 saw non-negligible volatility (upward) in clean energy and so ECO in the year. That was broad, led by solar including upstream PV manufacturers, and energy efficiency stories, plus a high-end electric pure play carmaker that may offer mainstream price points ahead. Below is a Chart for ECO Index over recent Q4 2013:



Source: bigcharts.com

Or to sum 2013 comparatively, a ‘brown’ WilderHill® Progressive Energy Index was up but relatively less so vis-à-vis WilderHill New Energy Global Innovation (NEX) for clean energy mainly outside of the U.S. - while a ‘leader’ in 2013 was Clean Energy ECO. Global NEX (1st Index for new energy worldwide) was in middle (though very often NEX leads): NEX & a tracker (PBD) this time ended just a little less than ECO (& tracker PBW) for 2013.

But to see a bigger picture and spotlight a *huge* fall of 2008-2012 addressed in Reports, let’s step back and next see last 7 years, 2007 through late 2013, This shows an interesting story. Here perhaps the most dramatic is a *huge* fall in Natural Gas (**orange**) - it fell harder than even a pure-solar Index(!), more even than an active alternative energy fund with some solar; note that Natural Gas this period was down near 90%. (Of course as a practical matter that means Natural Gas-fired power plants are now thorny competitors to all renewables even against dirty coal & costly nuclear too, by becoming so relatively low-cost a fuel. But that’s a different story).

So at far bottom we see a tracker for **Natural Gas, orange**. Above barely is a tracker for **solar, green** (like several trackers doesn’t have history going full 7 years; yet this long time frame doesn’t well capture that *big* recent solar jump from Nov. 2012 - to present).

Next are stories nearly tied this period: an **active fund, brown** is in alternative energy (showing as noted by academics it’s hard for an active fund to consistently beat a passive Index by much especially after taxes, efficiency, transparency); and just above it is the **ECO Index in bold** which has done ‘better’ long-term than **solar alone** - but still well down - somewhat higher is global **new/clean energy NEX Index** in blue. Far above all as noted in prior Reports is **Progressive Energy (WHPRO, in tracker PUW)** in red for improving dirty, dominant energy of today - but it as shown below is up *least of all* in 2013:



Source: bigcharts.com

Yet while a past 7 years are useful to emphasize a plummet 2008-12 in trackers/ themes, it tends to obscure remarkable stories like great upwards moves in 2013. That isn’t visible in a Chart above, so look instead next at themes in just 2013 only. This can instead show what are so far clearly significant gains particularly in solar (up +100%!!) - interestingly perhaps that is an inverted story compared to last 7 years!

So now here are those same trackers for 2013 only up to December 1:



Source: bigcharts.com

Look above to Dec. 1st, and **natural gas** (of which there's a 'glut') remains bottom at nil. But **solar, green at very top** has gone from near-bottom-performer to clear top leader (off a very low bottom). An **active fund & ECO** mostly trade spots back & forth (active fund up YTD) with global **NEX** trailing this year but only by a bit - and clearly not always the case since longer periods it's higher than both. Up 'just 20%' in 2013 here is **WHPRO (PUW tracker, red)**; its relative non-volatility while 'helpful' in plummeting 2008-2012, seen here in an upturn has made it a comparative laggard.

So a period from mid-Nov. 2012 has seen a very sizeable bounce in solar. Yes, it only came after terrific prior fall of years ... yet that said it's impactful. During these same relatively sharp +90% gains in ECO in 12 months from mid-Nov. 2012 to mid-Nov. 2013, here's some brief snapshots for 12 months for **ECO clean energy (bold)** vs. S&P500, Nasdaq, Russell, and the Dow Jones Average as major 'other Index themes':



Source: bigcharts.com

12-month values in tracker alone since mid-November 2012 near \$3.5:



Source: bigcharts.com

Last for comparative purposes the 3 independent trackers: **PBW**, bold for WilderHill Clean Energy Index (ECO) with moves around +100% within a 12 month period; **PBD**, blue for WilderHill New Energy Global Innovation (NEX) with gains near +80%; and **PUW** for WilderHill Progressive Energy (WHPRO) with gains near +30% within that period.



Source: bigcharts.com

The conclusion of 2013 & looking to 2014 gives us an opportunity to pause and reflect on what has become nearly a decade of musings on clean energy in Reports. We'll post below early excerpts from a first ECO Quarterly Report from start of 2005. Interestingly this Q1/Q2 Report highlights a few constituents that are in ECO Index still in nearly a decade later as 2014 opens and future unfolds ahead. Happy New Year!

As noted here are excerpts from a 2005 ECO Report and this text addresses long-standing constituents CREE, IRF, ORA:



2005 Q1/Q2 Quarterly Report: WilderHill Index Clean Energy Index. June 30, 2005

This marks the first, of what will be regular Quarterly Reports for the WilderHill Clean Energy Index (ECO). These Quarterly Reports highlight relevant news and topics regarding clean energy in general, and more specifically the WilderHill (WH) Index. They should as well, help illuminate the intellectual vision behind this Clean Energy Index.

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Notable Events

For a newsworthy item that helps illuminate some ways a company may be evaluated in the WilderHill (WH) Index, consider Zoltek (ZOLT). Zoltek makes carbon fiber; notably they're a producer of the composite materials used in many large wind turbine blades. Their materials generally lighten and strengthen products. Zoltek was placed in ECO earlier in 2004, and is in the important 'Renewable Energy, Harvesting' sector.

The issue that's of concern here arose when ZOLT announced in mid-May, that they'd be late in filing their required 10-Q statement of Quarterly finances. That immediately resulted in their being down-listed by the SEC, changing their symbol from "ZOLT" to "ZOLTE" to denote SEC review. (The change didn't present problems for tracking their symbol in the WH Index, since automated systems followed it without hitch. And also just parenthetically, it also didn't create issues for the specialists at the tracking fund).

But that said, seeing an "E" appended at the end of a stock symbol is a warning signal to market investors. Not surprisingly, there was an immediate downturn in stock valuation for Zoltek with an impact on Index valuation, although muted, since they were just one of the 38 stocks then in ECO. Until that time, ZOLT often moved upwards to a prominent-weighting, usually being above 3.0% in the Index. (Weightings float by their individual stock prices starting at each rebalance, when all are reset to the maximum of 3%).

After speaking with the Zoltek CFO about their 10-Q filing, we were satisfied that these were likely resolvable issues of debt characterization, and they could be fixed within 10 days. Unlike past dismal loss-making at ZOLT a decade ago, when the carbon fiber industry had collapsed with declining military orders, ZOLT was now booking orders. For the Quarter ended March 31, ZOLT's net sales increased 37% to \$15.8 MM; operating losses were \$2.0 MM due in large part to capacity growth. One issue for Zoltek was delay restarting an Abilene, Texas facility idled due to prior lack of carbon product demand; that plant can produce 2,500 tons of carbon fiber. Another was expanding precursor acrylic production in Hungary; if done right, that can potentially help contain costs.

With the company delaying its 10-Q filing, their symbol temporarily 'ZOLTE', and their price therefore declining, we gave thought to what action if any, should be taken vis-à-vis ZOLT and the WH Index. Of considerable importance however, is the fact ECO is purposefully designed as an Indexing instrument, rather than an active-managed fund.

Importantly, Indexes are passive-managed. That means that unlike turnover in an active managed, say, technology mutual fund (which may have 100%+ turnover in a year) – the components in an Index are more 'sticky'. Putting aside a decline in ZOLT stock, we had to ask ourselves whether the ZOLT issue is: *Unrelated to its clean-energy relevance, *Likely to be only temporary, *Perhaps not uncommon for small firms in technology, and *Not one creating bankruptcy concerns. Our Index Rules generally do not allow intra-Quarter removal of a stock, except in exceptional circumstances like bankruptcy.

Importantly too it's worth considering that historically, most active-managed funds do not out-perform their comparable passive Indexes. In part, this seems due to the rather higher transaction costs associated with more active management. It may also be due to difficulty predicting stock movement: hence those associated with the 'random walk' school of thought may stress advantages of low costs, market, & tax efficiencies, and often prefer indexing. Plus there's risk that selling *after* price declines may mean buying near the top, and selling near the bottom, with a consequence of poor absolute returns.

Because the problem seemed rectifiable within days, we didn't contemplate removing ZOLT at Index rebalancing. Indeed, the next week, their revised 10-Q filing was accepted and their stock rebounded; with the full SEC compliance their symbol returned to ZOLT.

Zoltek's growth in wind blade material had made it remarkable to clean energy, and so to the WH Index. The growing wind industry is moving inexorably towards larger turbines, needing ever-larger rotor blades. In 1994, average capacity of the turbines from Germany was about 250 KW. In 2004, it was about 1,700 KW (1.7 MW). Presently, wind turbines have blades roughly 60-100 meters in size, and they're only becoming larger. As 1.5 MW, or 3+ MW and larger machines develop and blade lengths grow past 150 meters like on 10 MW+ turbines, then carbon fiber can be a material of choice to stiffen and lighten blades standing many stories high. Already a 10 MW offshore turbine with a 160 meter two blade rotor blade is being contemplated (and that too, may some day seem small).

Adding in lightness also helps. At Vestas, of Denmark, they reduced the mass to only 12.6 tonnes (British units) in their newer 59-meter blades. Using a wood+carbon fiber epoxy, the total head mass (THM) is only 210 tonnes (nacelle is 145 tonnes, and rotor 65 tonnes). A lighter THM with transformer placed at the base permits less pricey towers, built on foundations that are cheaper and smaller to boot. In this way, cost-savings can snowball.

Here in the U.S., wind power's growth has followed every renewal by the Congress of the crucial production tax credit (PTC). PTC renewal for 2005 has recently pushed for a re-energizing of existing wind sites, and for growing emplacement of new ones. Given that a 45 meter turbine blade delivers about twice the power of a 30 meter one, and carbon is important in extending blades to 45 meters and beyond, ZOLT has been notable for ECO.

Importantly too, ZOLT stock is moved by news of its wind blade sales. This was clearly seen following its \$80 - \$100 million sale to the largest wind firm, Vestas. And ZOLT stock rose again on announcement of another agreement to supply carbon fiber and CF-related materials for blades, to Gamesa Eolica's Spanish unit, Fiberblade, worth \$65 - \$75 million. Because newly-installed wind capacity has been growing by some 20%/year and larger machines are increasingly helped by the carbon fiber product, Zoltek's success in becoming a major carbon supplier for wind rotor blades made it Index-appropriate.

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Additions of IRF, ORA, CREE, to the Index

Three additions to the WilderHill Index in 2005 Q1/Q2 are next notable: International Rectifier (IRF), Ormat Technologies (ORA), and Cree (CREE).

IRF makes chips and systems emphasizing energy efficiency. These are used in products from air conditioners, lights, cars, electronics, to big industrial motors. Their integrated platforms help save energy in appliance motion controls, such as optimizing speeds at which washing machines spin clothes in wash cycles. Their IC electronic ballasts in lights can deliver energy savings over magnetic ballasts, and MOSFETs and components are used in hybrid cars, new 42-volt systems, and in power management, AC to DC, or DC to DC conversion and so can offer energy efficiencies for many diverse products. They also participate in a consortium for energy efficiency based in China, where much of the world's white goods are produced, and increasingly consumed. An emphasis at IRF on power-management has helped boost gross earnings by 44%. That growth was preceded by the company's move away from making simply commodity parts, and into proprietary innovative technologies for conserving energy. This has partly become their 'brand'.

Next, was adding Ormat Technologies (ORA) to the 'Renewable Energy, Harvesting' sector of the WH Index. This company has decades of experience in capturing heat, to make power. Their plants from 200 KW to 130 MW use geothermal, or waste heat capture (recovered energy generation); they also operate in biomass and solar. They now have geothermal plants in several countries and are expanding. Their work too in recovered energy cogeneration is an example of industrial ecology (such as their plant in Louisiana). They make gen sets built around sealed Rankine-cycle engines; these are automated and suitable for remote applications,

While the latter are the far end of what we desire for Index components, since they can (as with microturbines) be fueled by various 'dirtier fuels' like natural gas or even LPG, or diesel, we added ORA to ECO *for* their geothermal and waste-heat capture – and *despite* their less-pertinent devices that could use non-renewable, 'brownier' fuels. Given the value of geothermal in generating power without greenhouse gases or other pollutants, and sometimes in finding a middle ground on the Index (we cannot let 'perfect become the enemy of the good'), we added pure-play ORA.

Another addition is Cree (CREE), which rather like IRF, helps to conserve power: hence it is also in the 'Power Delivery and Conservation' sector of the Index. They manufacture semiconductors including most notably light emitting diodes (LEDs) and utilize silicon, silicon carbide, gallium nitride, and

related compounds. For 2005, they aimed to double their LED production from the year before. In 2004, their revenue increased 34% to \$307 million; gross margins grew 48% with cash flow from operations -\$152 million.

Their high-power, super-bright, energy efficient LED may lead towards applications in clever new devices like better lights, solid-state illumination appliances, automobile headlamps, displays, etc. It's perhaps surprising, but they state about 20% of energy use in the U.S. is for lighting; this doubtless is an area ripe to enable energy efficiencies (especially when one considers still-dominant incandescent light bulbs are mainly little heaters, requiring additional air conditioners to counteract consequences of their sparse output in the visible spectrum and so running hot). Cool white LEDs do not have such spurious output and are indeed far more efficient at lighting overall.

Some customers are using CREE blue LEDs in combination with phosphors, to create desired white light. In response to keen demand for high-power LEDs, their larger LEDs are about nine times larger than industry standard producing ten times more light; as packaged products these operate in the useful one-watt range. Other LEDs are designed for a 1/2 watt power range. While CREE also has other products like near UV Laser diodes for DVDs with shorter wavelenths that may allow higher data storage than red Laser diodes today (proposed blu-ray DVD's are significant here) – it's their work in LEDs and thus an important new clean energy technology that brought them into the Index.

Consider an article in *Science*, “The Spectre of Fuel-based Lighting” (27 May 2005, p. 1263) for potential benefits of solid-state, white light-emitting diodes (WLEDs) as in populous India and China. The enormity of this is difficult to grasp from the vantage-point of wealthy nations, but consider that one in four people – 1.6 billion globally, are without electricity today. In China, 20,000 villages are without power. In India, nearly 600 million people go without power. Many still need illumination at night, sometimes for eye-straining matters by candlelight, or using wick and fuels like kerosene. Classic candlelight is exceptionally dim and inefficient: industrialized nations now provide illumination on the order of 500 lux, yet a wick lantern offers only 1 lux at one meter.

The consumptive penalties of wick-based fuels add up. In aggregate, fuel-based lighting uses about 1.3 million barrels of oil per day. Annually, a wick lamp gives 12,000 lumen-hours, yet a 100-watt incandescent bulb does that in just 10 hours. Imagine then, poorer nations largely leapfrogging over incandescent bulbs, or even over relatively-efficient compact fluorescent lamps, to instead adopt WLEDs. The WLEDs have come a long way. Ten years ago, WLEDs gave just five lumens per watt. Today they're near 100 lumens using simple diffusing optics, and providing 10 to 100 times more light than a candle or wick light. An important thing too is these one-watt WLEDs can now be packaged with a small solar cell & AA battery, so they re-power over and over – and for free. Using 80% less power than a small compact fluorescent bulb, the one-watt solar/battery-powered WLEDs can be brought to market for about \$25, and used off-grid with ease. We use versions here at WilderHill/WilderShares, LLC, and are very impressed by the technology.

The economics are starting to make sense. Currently, costs of fuel-based lighting are very significant to Earth's impoverished people, at about \$77 per household equivalent. Solar WLEDs could pay for themselves in a year or less. Afterwards, the fuel savings (in the payments for fuel foregone) offer an annuity roughly equal to one month's income over every year, for a startling 1 billion people living on less than \$1 dollar/day. But on current trends if poor populations instead adopt wasteful incandescent bulbs, and forego soft energy paths, then greenhouse gas emissions will rise sharply as well.

In sum, as energy conservation technologies like WLEDs come to be better understood, they'll likely be considered as simply making economic sense. ...

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Returning now to present and concluding Q4 2013 ...

Conclusion:

4th Quarter started with the Clean Energy Index[®] (ECO) about 65 and closed near 66 for a negligible change in Q4 of some +1%. 'An unchanged' Q4 was unlike the strong moves (up) Q1 through Q3. Look from Jan. 1, 2013 when ECO Index[®] had stood at 42, and it gained some two-thirds until October before declining (tracker going <\$6) then growing again. Or if most robustly started from a major bottom made in November 2012 near 36 in ECO (\$3.5 for an independent Index tracker), the Index/tracker rose most vividly by almost doubling up to 70 / \$6.9 within the 12 months from Nov. 2012 - Nov. 2013.

So on one hand the Index is well up by a bit over half-again over 2013. Note however on the other hand, that was only *after* an eyebrow-raising *plunge* 5 long years to late 2012. To have instead begun counting late 2007 as ECO peaked near 300 - one would have seen a terrific 5-year fall to a just-mentioned 36 by Nov. 2012 as clean energy's theme and thus ECO had declined tremendously by some 6/7ths (and that could always resume).

There were 5 Additions to Clean Energy Index[®] (ECO) to start Q1 2014: Broadwind Energy (BWEN) and Quantum Fuel (QTWW) both previously in ECO Index[®], and Cytex (CYT), Hydrogenics (HYGS), Pattern Energy (PEGI). 3 Deletions were CPL, MCP, ZOLT.

Over at 'brown' much different WilderHill Progressive Energy Index[®] (WHPRO) for reducing pollution/CO2 & improving efficiency in major energy today, there were 4 Additions: Kandi Technologies (KNDI) and Capstone Turbine (CPST) both previously in WHPRO, also China Recycling Energy (CREG), Remy (REMY). 1 Deletion there was ENI.

As always we welcome your thoughts and suggestions.
Sincerely,



Dr. Rob Wilder
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Appendix I:
ECO Index (via tracker PBW) Descending Weights & Components in late Q4 on 12/8/2013; or about 3 weeks before the rebalance to start Q1 2014:

NAME	TICKER	WEIGHT
Canadian Solar Inc	CSIQ	4.251247
SunEdison Inc	SUNE	3.672518
First Solar Inc	FSLR	3.310951
SolarCity Corp	SCTY	3.219282
FuelCell Energy Inc	FCEL	2.945472
SunPower Corp	SPWR	2.855164
Silver Spring Networks Inc	SSNI	2.846882
Gentherm Inc	THRM	2.841208
Advanced Energy Industries Inc	AEIS	2.801807
PowerSecure International Inc	POWR	2.512635
Trina Solar Ltd ADR	TSL	2.469555
China Ming Yang Wind Power ADR	MY	2.444969
Zoltek Cos Inc	ZOLT	2.365912
Quanta Services Inc	PWR	2.348197
Universal Display Corp	OLED	2.333396
EnerNOC Inc	ENOC	2.294744
JA Solar Holdings Co Ltd ADR	JASO	2.291889
GT Advanced Technologies Inc	GTAT	2.289455
OM Group Inc	OMG	2.24760
International Rectifier Corp	IRF	2.200098
Cree Inc	CREE	2.168250
Ormat Technologies Inc	ORA	2.135635
Calpine Corp	CPN	2.132875
ITC Holdings Corp	ITC	2.120896
Air Products & Chemicals Inc	APD	2.107992
Itron Inc	ITRI	2.058430
Hanwha SolarOne Co Ltd ADR	HSOL	2.033131
Polypore International Inc	PPO	1.997351
Cosan Ltd	CZZ	1.974161
CPFL Energia SA ADR	CPL	1.956316
Ameresco Inc	AMRC	1.921156
Yingli Green Energy HoldingADR	YGE	1.833264
Maxwell Technologies Inc	MXWL	1.768263
Aixtron SE ADR	AIXG	1.702607
Solazyme Inc	SZYM	1.674334
Sociedad Quimica de Chile ADR	SQM	1.664041
Tesla Motors Inc	TSLA	1.663166
ReneSola Ltd ADR	SOL	1.584662
Rubicon Technology Inc	RBCN	1.558906
Enphase Energy Inc	ENPH	1.541456
Renewable Energy Group Inc	REGI	1.525295
Molycorp Inc	MCP	1.455243

Fuel Systems Solutions Inc	FSYS	1.412468
Ballard Power Systems Inc	BLDP	0.554988
Amyris Inc	AMRS	0.522528
Echelon Corp	ELON	0.502268
KiOR Inc	KIOR	0.499433
Gevo Inc	GEVO	0.422492
STR Holdings Inc	STRI	0.400457
American Superconductor Corp	AMSC	0.320129
Rare Element Resources Ltd	REE	0.244828

ECO Index values, 1 year to Dec. 6, 2013: clean energy sector was remarkably Up thru all (is only in green) - although whether it may soon fall hard is of course unknown:



Source: bigcharts.com

Index seen by an independent tracker (PBW) over same 1 year to Dec 6, 2013:



Source: bigcharts.com

INDEX (ECO) SECTOR & STOCK WEIGHTS FOR START OF Q1 2014. 53 STOCKS.

Each stock freely floats according to its share price after rebalance.

*Stocks below \$200 million in size at rebalance are *banded with a 0.5% weight.

Renewable Energy Harvesting - 26% sector weight (11 stocks @2.31 each; +1 banded)

**Broadwind Energy*, BWEN. Wind power, producer of towers, gearing, services.

Canadian Solar, CSIQ. Solar, vertically integrated solar PV manufacturer, China.

China Ming Yang Wind, MY. Wind, large turbine manufacturer is a pure play.

Cytec, CYT. Carbon fiber, tidal energy generation; wind power; vehicle lightening.

First Solar, FSLR. Thin film, CdTe solar panels low-cost alternate to polysilicon.

Gentherm, THRM. Thermoelectrics, waste heat to energy harvesting for power.

Hanwha SolarOne, HSOL. Solar PV, integrated from poly through modules.

JA Solar, JASO. Solar, China-based sells PV modules in Asia, Europe, U.S., etc.

Ormat, ORA. Geothermal, working too in areas of recovered heat energy.

SunPower, SPWR. Solar, efficient PV panels have all-rear-contact cells.

Trina Solar, TSL. Solar, produces ingots, wafers, solar modules; China-based.

Yingli Green Energy, YGE. Solar, a large vertically integrated PV manufacturer.

Power Delivery & Conservation - 21% sector weight (9 stocks @2.22% each; +2 *banded)

Aixtron Aktiengesellschaft, AIXG. Deposition tools, efficient (O)LEDs, displays.

Ameresco, AMRC. Energy saving performance contracts, also in renewables.

**Echelon*, ELON. Networking, better management of whole energy systems.

EnerNoc, ENOC. Demand response for better energy management, smart grid.

GT Advanced, GTAT. Solar, LEDS, production lines for poly & ingot; LED sapphire.

Itron, ITRI. Meters, utility energy monitoring, precise measurement, management.

PowerSecure, POWR. Smart grid, demand response, distributed generation; LEDs.

Quanta Services, PWR. Infrastructure, modernizing grid and power transmission.

ReneSola, SOL. Wafers, for silicon PV, mono and multicrystalline, China-based.

**STR Holdings*, STRI. Encapsulants, broad technology for range of PV panels.

SunEdison, SUNE. Producer of polysilicon used in crystalline c-Si solar PV cells.

Energy Conversion - 17% sector weight (7 stocks @2.21% each; +3 *banded stocks)

Advanced Energy, AEIS. Power conditioning: inverters, thin film deposition.

**American Superconductor*, AMSC. Wind power converters; superconducting HTS.

**Ballard Power*, BLDP. Mid-size fuel cells; R&D, PEM FCs such as for transportation.

Cree, CREE. LEDs, manufacturer in power-saving lumens, efficient lighting.

Enphase, ENPH. Microinverters, PV panel DC becomes grid compliant AC.

FuelCell Energy, FCEL. Large fuel cells, stationary high-temp flex-fueled MCFCs.

International Rectifier, IRF. Energy-saving, power conversion and conditioning.

**Quantum Fuel Systems*, QTWW. Alternative Fuel Vehicles, propulsion system, FCEVs.

Rubicon, RBCN. Substrates, are used in the production of LEDs for lighting.

Universal Display, OLED. Organic light emitting diodes, very efficient displays.

Cleaner Fuels - 13% sector weight (6 stocks @2.0% each; +2 *banded stocks)

Air Products & Chemicals, APD. Hydrogen, is a supplier of industrial gases.

Amyris, AMRS. Biotech, speculative R&D in renewable fuels for transportation.

Cosan, CZZ. Biofuels, Brazil-based uses sugarcane feedstock, ethanol exporter.

**Gevo*, GEVO. Biotech, speculative R&D drop-in isobutanol, renewable biofuels.

*Hydrogenics, HYGS. Hydrogen, electrolysis generation & fuel cells, H2 storage.
 Kior, KIOR. Biofuels, catalytic process: cellulosic biomass/non-food feedstocks.
 Renewable Energy Group, REGI. Biodiesel, natural fats, oils, greases to biofuels.
 Solazyme, SZYM. Biofuels, microalgae grown w/o sun, drop-in diesel substitute.

Energy Storage - 12% sector weight (6 stocks @1.91% each; +1 *banded stock)
 Fuel Systems Solutions, FSYS. Gaseous fuels; systems for cleaner-burning vehicles.
 Maxwell, MXWL. Ultracapacitors, alternative supplement for batteries, hybrids, UPS.
 OM Group, OMG. Battery materials from cobalt etc; also in magnetics, cell etching.
 Polypore Intl., PPO. Separators, membranes used in Li-ion, Pb-acid battery cells.
 *Rare Element Resources, REE. Rare Earths, holdings for strategic lanthanides.
 Sociedad de Chile, SQM. Lithium, major Li supplier for batteries; also STEG storage.
 Tesla Motors, TSLA. Electric vehicles, pure-play in EVs and ESS energy storage.

Greener Utilities - 11% sector weight (5 stocks @2.20% each)
 Calpine, CPN. Geothermal, major North American producer, low-carbon assets.
 Pattern Energy, PEGI. Wind farms, solar being added in GW+ power agreements.
 ITC Holdings, ITC. Grid transmission, advanced integration for wind/renewables.
 Silver Spring Networks, SSNI. Smart grid, two-way communications aids Utilities.
 SolarCity, SCTY. Downstream, installs PV and leases rooftop DG energy systems.

Chart for independent ECO tracker (PBW) past 5 years to mid-Q4 2013:



Source: Bigcharts.com

As seen above by an ECO independent tracker (**PBW**, in **bold**) etc, last 5 years to Q4 2013 were rough for clean & alternative energy. For example look at ECO and despite ending this period well down some -20%, it's still 'above' a sample *Index* (not ours) for Global alternative energy (in *orange*), even well above a tracker for a *Solar-only* Index (in *blue*), and a tracker too for a *Natural Gas* Index (*brown*). So these were very tough years for several themes.

Yet a *green* line at top for (ironically 'brown') WilderHill *Progressive Energy* Index (WHPRO) 'puts them all to shame' this period at least. It ends up positive +100% in a tough time. WHPRO tracker (PUW) reached its bottom near \$13 in 2009, as broader markets were at a nadir, when clean energy moved differently from WHPRO. Since ECO highs late 2007 as a rough high-water mark for clean energy, the latter moved well apart from WHPRO. Rather like solar-then, ECO has been volatile, fallen far from its highs - and was lately at new lows late 2012.

Appendix III:
WHPRO Index (via tracker PUW) Descending Component weights late Q4 on 12/8/2013,
or about 3 weeks before the rebalance to start Q1 2014.

NAME	TICKER	WEIGHT
Andersons Inc/The	ANDE	2.586870
Methanex Corp	MEOH	2.353183
Power Solutions Intl Inc	PSIX	2.329568
GrafTech International Ltd	GTI	2.298545
Advanced Emissions Solutions	ADES	2.296570
Apogee Enterprises Inc	APOG	2.231558
Foster Wheeler AG	FWLT	2.205543
AO Smith Corp	AOS	2.193148
Cameco Corp	CCJ	2.146978
EnerSys Inc	ENS	2.145988
Energizer Holdings Inc	ENR	2.134398
Johnson Controls Inc	JCI	2.122459
NRG Yield Inc	NYLD	2.112550
Southwestern Energy Co	SWN	2.096445
Chicago Bridge & Iron Co NV	CBI	2.095551
Tata Motors Ltd ADR	TTM	2.085729
Altra Industrial Motion Corp	AIMC	2.076956
Denison Mines Corp	DNN	2.068426
Acuity Brands Inc	AYI	2.063548
Range Resources Corp	RRC	2.036052
Chesapeake Energy Corp	CHK	2.021144
Hexcel Corp	HXL	2.016357
Corning Inc	GLW	2.005550
Rockwood Holdings Inc	ROC	1.983859
Koninklijke Philips NV	PHG	1.976179
Tenneco Inc	TEN	1.952712
Regal-Beloit Corp	RBC	1.941676
Woodward Inc	WWD	1.934495
WABCO Holdings Inc	WBC	1.934350
Luxfer Holdings PLC ADR	LXFR	1.927144
Siemens AG ADR	SI	1.926633
ESCO Technologies Inc	ESE	1.919403
Emerson Electric Co	EMR	1.910866
McDermott International Inc	MDR	1.873666
Eaton Corp PLC	ETN	1.865231
LSB Industries Inc	LXU	1.838899
MasTec Inc	MTZ	1.826436
Sasol Ltd ADR	SSL	1.772456
Owens Corning	OC	1.758231
Golar LNG Ltd	GLNG	1.731046
Clean Energy Fuels Corp	CLNE	1.677817
General Cable Corp	BGC	1.669368
Rentech Inc	RTK	1.612717
Cia Energetica M. Gerais ADR	CIG	1.598475

Centrais Eletricas Brasileiras ADR	EBR	1.540165
Veeco Instruments Inc	VECO	1.495679
Enerdis SA ADR	ENI	1.453344
Covanta Holding Corp	CVA	1.446623
Chart Industries Inc	GTLS	1.381777
Westport Innovations Inc	WPRT	1.274490
Nuverra Environmental Solutions	NES	1.071101
Revolution Lighting Technol.	RVLT	0.536810
Hannon Armstrong Sustainable	HASI	0.504187
PMFG Inc	PMFG	0.491101
Global Power Equipment Group	GLPW	0.449950

WHPRO Index via an Independent tracker (PUW), early-2007 to just mid-2013:



Source: bigcharts.com

Chart for the WHPRO Index from early Nov. 2012 here just through early Nov. 2013:



Source: bigcharts.com

Looking at WilderHill Progressive Energy Index above (and independent tracker, PUW), it is suggested past highs around 290 on Index - or near \$31 on tracker may perhaps be a bit of a resistance level, 'difficult' to break through. Now in December 2013 which is beyond this Chart range (going to only mid, or Nov. 2013 so not in Charts) and just touching new highs, it may be interesting to see whether this Index (WHPRO)/tracker can - or cannot - more decisively break through that level in Quarters ahead in 2014.

Appendix IV:

WilderHill Progressive Energy Index (WHPRO) at Rebalance to start Q1 2014.

Sectors & Stock Weightings: WilderHill Progressive Energy Index (WHPRO) for start of Q1 2014. 58 stocks.

Each stock freely moves according to its share price after the rebalance;

*Banded stocks are those under \$400 million in size and weighted at 0.5%.

Alternative Fuel - 16% Sector Weight (7 stocks @2.21% each; +1 *banded stock)

Andersons, ANDE. Ethanol producer, corn-based; rail group is in fuel transport.

Cameco, CCJ. Uranium fuel, one of largest producers; also does fuel processing.

Chesapeake Energy, CHK. Natural gas, one of larger U.S. independent producers.

Denison Mines, DNN. Uranium fuel, also non-U.S; decommissions, recycling wastes.

Methanex, MEOH. Methanol, liquid fuel can be derived from fossil fuels or organics.

Range Resources, RRC. Natural gas, produces in Appalachian & Gulf Coast regions.

**Rentech*, RTK. Syngas & fuels from biomass and waste materials; Gas to Liquids.

Southwestern Energy, SWN. Natural gas, U.S. producer, also midstream services.

Conversion & Storage - 22% Sector weight (11 stocks @1.95% each; +1 banded)

Altra Holdings, AIMC. Mechanical power transmission, electromechanical conversion.

**Capstone*, CPST. Microturbines, distributed generation, combined heat/power, HEVs.

Chart Industries, GTLS. Natural gas, LNG; liquefied gas storage/transport, efficiency.

Chicago Bridge & Iron, CBI. Nat. gas; also better containment for next-gen nuclear.

Clean Energy Fuels, CLNE. Natural gas fleet vehicles, integration and distribution.

Covanta Holding, CVA. Incineration, converts waste to energy (WtE); conglomerate.

Energizer, ENR. Lithium, NiMH, various new battery and charger technologies.

EnerSys, ENS. Battery maker, for telecommunications, utilities, motive power.

Golar LNG, GLNG. LNG, major independent carrier, gas transport, regasification.

MasTec, MTZ. Engineering & construction: distribution of electricity, natural gas.

Wabco, WBC. Mechatronics, better vehicle mechanical/energy/braking controllers.

Westport Innovations, WPRT. Enables vehicles' use of natural gas, gaseous fuels.

Better Efficiency - 19% Sector Weight (10 stocks @1.80% each; +2 *banded stocks)

Acuity Brands, AYI. LED lights, OLEDs, and controls for indoor & outdoor lighting.

A.O. Smith, AOS. Energy efficiency innovations for water heating & monitoring.

Apogee, APOG. Advanced glass, for better efficiency, green building designs.

**China Recycling Energy*, CREG. Recycles waste heat, gas, pressure in industrial uses.

Emerson Electric, EMR. Broad work in energy efficiency, storage, lately biofuels.

Esco Technologies, ESE. Power grid, advances 2-way metering & communications.

General Cable, BGC. Power grid, high voltage transmission cable and wire products

Koninklijke Philips Electronics NV, PHG. Efficient LEDs, advanced industrial lighting.

LSB Industries, LXU. Greater energy efficiency in building end-use, heating, cooling.

Regal Beloit, RBC. Energy efficient motors, in commercial, industrial, homes etc.

**Revolution Lighting*, RVL. LED lights, multi-branded array and sign lighting.

Woodward, WWD. Energy controllers, optimization, industrial turbines in generation.

New Energy Activity - 19% Sector weight (10 stocks @1.80% each; +2 *banded)

Eaton, ETN. Hybrids, better electric and fluid power in truck & auto applications.

Foster Wheeler, FWLT. Infrastructure, engineering services in WtE, LNG, CCS.

**Global Power Equipment*, GLPW. Designs, engineering for gas, hydro, nuclear.
GrafTech, GTI. Graphite, advanced electrodes for power generation, fuel cells.
**Hannon Armstrong*, HASI. Capital: Infrastructure & finance for energy efficiency.
Hexcel, HXL. Lighter composites, advanced structural reinforcement materials.
Johnson Controls, JCI. Building controls, also advanced hybrid vehicle systems.
Owens Corning, OC. Materials lightening, building insulation composite materials.
Remy International, REMY. Electric & hybrid motors, OEM for cars, trucks, trains.
Rockwood Holdings, ROC. Lithium battery recycling, lithium & cobalt supply.
Siemens AG, SI. Conglomerate, is diversified across energy innovation globally.
Veeco Instruments, VECO. Design, manufactures equipment for LED production.

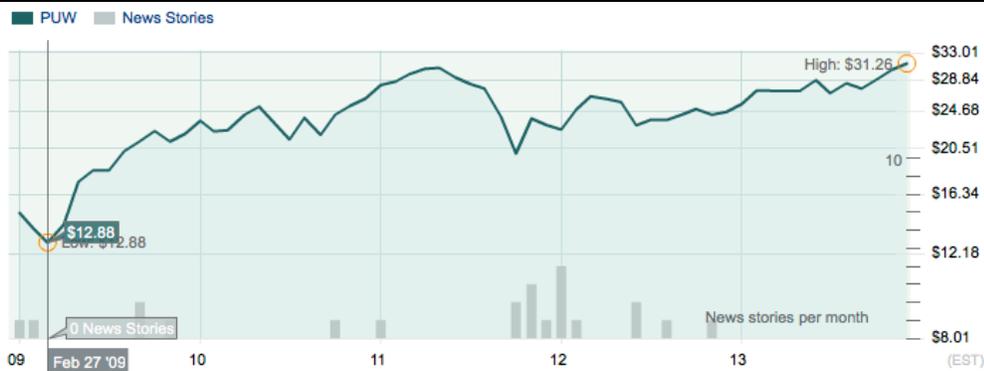
Emission Reduction - 18% Sector Weight (9 stocks @1.88% each +2 *banded stock)

ADA-ES, ADES. Coal emissions reduction, mercury, NOX, CO2, noxious pollutants.
Corning, GLW. Diverse activity includes emissions reduction, filters, and catalysts.
**Kandi Technologies*, KNDI. Developing small urban all-electric cars & trucks.
Luxfer Holdings PLC, LXFR. Advanced materials: reduced emissions, gaseous storage.
McDermott, MDR. Infrastructure: reduces coal emissions, constructs WtE facilities.
Nuverra, NES. Natural gas: recycling water & spill prevention; used oil recycling.
**Peerless*, PMFG. Pollution reduction: effluent separation & filtration systems.
Power Solutions, PSIX. Flex-fuel low-emission engines; nat. gas, biogas, hybrid etc.
Sasol Ltd, SSL. Syngas to synthetic fuel; potential CO2 capture/sequestration (CCS).
Tata Motors, TTM. Smaller & 'nano' vehicles, India-based with worldwide sales.
Tenneco, TEN. Automotive end-of-pipe emissions controls, catalytic converters.

Utility - 6% Sector weight (3 stocks @2.00% each)

Companhia Energetica de Minas Cemig, CIG. Brazilian Utility, large hydroelectric.
Centrais Electricas Brasileiras, EBR. Brazilian Utility, large hydro, also nuclear.
NRG Yield, NYLD. Contracted power generation and thermal, also some renewables.

Chart for an independent WHPRO tracker (PUW) past 5 years to late 2013:



Source: Bigcharts.com

Here again is a WHPRO tracker (PUW) from late-2008 near \$15 - to late 2013 near \$31; we can see a (so far) closing Low just below \$13 in Feb. 2009 as broad markets were at a nadir too. Then a peak near \$31 in late 2013, near the highs of March 2011 (& June 2007 predating this Chart). Quite unlike ECO Index® then we see in these years WHPRO was less volatile, hasn't dropped near its March 2009 values since that low, and has returned nearer its highs so far.

Appendix V: WilderHill New Energy Global Innovation Index (NEX) in late Q4 2013 via tracker (PBD) on 12/8/2013, or about 3 weeks before Rebalance to start Q1 2014:

NAME	TICKER	WEIGHT
SunEdison Inc	SUNE	2.581175
SolarCity Corp	SCTY	2.326815
First Solar Inc	FSLR	2.272770
Silver Spring Networks Inc	SSNI	2.247834
AO Smith Corp	AOS	2.019294
Johnson Controls Inc	JCI	2.007498
China Everbright International Ltd	257	1.975470
Nibe Industrier AB	NIBEB	1.962710
SunPower Corp	SPWR	1.926544
Acuity Brands Inc	AYI	1.924999
Hanergy Solar Group Ltd	566	1.828289
Universal Display Corp	OLED	1.812393
Rockwool International A/S	ROCKB	1.803776
Xinjiang Goldwind Science & Tech.	2208	1.742855
GCL-Poly Energy Holdings Ltd	3800	1.732906
Kingspan Group PLC	KSP	1.718933
International Rectifier Corp	IRF	1.714850
Meidensha Corp	6508	1.687829
Cree Inc	CREE	1.675941
Seoul Semiconductor Co Ltd	46890	1.675628
Power Integrations Inc	POWI	1.659762
Itron Inc	ITRI	1.626369
Meyer Burger Technology AG	MBTN	1.595417
Fortum OYJ	FUM1V	1.575876
Novozymes A/S	NZYMB	1.567001
Epistar Corp	2448	1.552167
SMA Solar Technology AG	S92	1.512713
Huaneng Renewables Corp Ltd	958	1.501144
China Suntien Green Energy Corp Ltd	956	1.490083
Sao Martinho SA	SMT03	1.454488
Vestas Wind Systems A/S	VWS	1.422431
China Longyuan Power Group Corp	916	1.417491
Veeco Instruments Inc	VECO	1.415770
Cosan SA Industria e Comercio	CSAN3	1.379326
Innergex Renewable Energy Inc	INE	1.376772
Enel Green Power SpA	EGPW	1.355323
Aixtron SE	AIXA	1.354742
REC Silicon ASA	REC	1.327038
Tesla Motors Inc	TSLA	1.289402
LSB Industries Inc	LXU	1.287707
Brookfield Renewable Energy LP/CA	BEP-U	1.287478
Abengoa SA	ABG/P	1.282612
Gamesa Corp Tecnologica SA	GAM	1.263160
Ormat Technologies Inc	ORA	1.256652
Covanta Holding Corp	CVA	1.249915
Contact Energy Ltd	CEN	1.222232

China Datang Corp Renewable Power	1798	1.200510
Verbund AG	VER	1.197334
EDP Renovaveis SA	EDPR	1.176664
Mighty River Power Ltd	MRP	1.161922
Nordex SE	NDX1	1.156241
Energy Development Corp	EDC	1.128592
Acciona SA	ANA	1.122171
Byd Co Ltd	1211	0.714741
Aerovironment Inc	AVAV	0.636229
GS Yuasa Corp	6674	0.59280
Neo Solar Power Corp	3576	0.571112
Polypore International Inc	PPO	0.55610
ALBIOMA	ABIO	0.522668
Energy Absolute PCL	EA	0.520763
EnerNOC Inc	ENOC	0.513376
Wasion Group Holdings Ltd	3393	0.506084
Sino-American Silicon Products Inc	5483	0.497541
Motech Industries Inc	6244	0.473668
Trina Solar Ltd ADR	TSL	0.468311
China Singyes Solar Tech. Holdings Ltd	750	0.465386
GT Advanced Technologies Inc	GTAT	0.446805
JA Solar Holdings Co Ltd ADR	JASO	0.444504
Ameresco Inc	AMRC	0.444281
KiOR Inc	KIOR	0.432607
Japan Wind Development Co Ltd	2766	0.424706
Falck Renewables SpA	FKR	0.410971
China High Speed Transmission Equip.	658	0.409922
West Holdings Corp	1407	0.398990
Dialight PLC	DIA	0.381127
Takuma Co Ltd	6013	0.376172
Taewoong Co Ltd	44490	0.359057
SPCG PCL	SPCG	0.356619
Yingli Green Energy Holding Ltd ADR	YGE	0.355271
Zoltek Cos Inc	ZOLT	0.354726
Solazyme Inc	SZYM	0.354540
Akenerji Elektrik Uretim AS	AKENR	0.351006
Nexolon Co Ltd	110570	0.344733
Lynas Corp Ltd	LYC	0.344674
Rubicon Technology Inc	RBCN	0.343641
Enphase Energy Inc	ENPH	0.325711
Renewable Energy Group Inc	REGI	0.324471
Molycorp Inc	MCP	0.316345
Unison Co Ltd/South Korea	18000	0.250907
American Superconductor Corp	AMSC	0.218789
Saft Groupe SA	SAFT	0.201935
FuelCell Energy Inc	FCEL	0.186692
Maxwell Technologies Inc	MXWL	0.138170
Fuel Systems Solutions Inc	FSYS	0.090048
Trony Solar Holdings Co Ltd	2468	0.068788

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For current values of the NEX, see

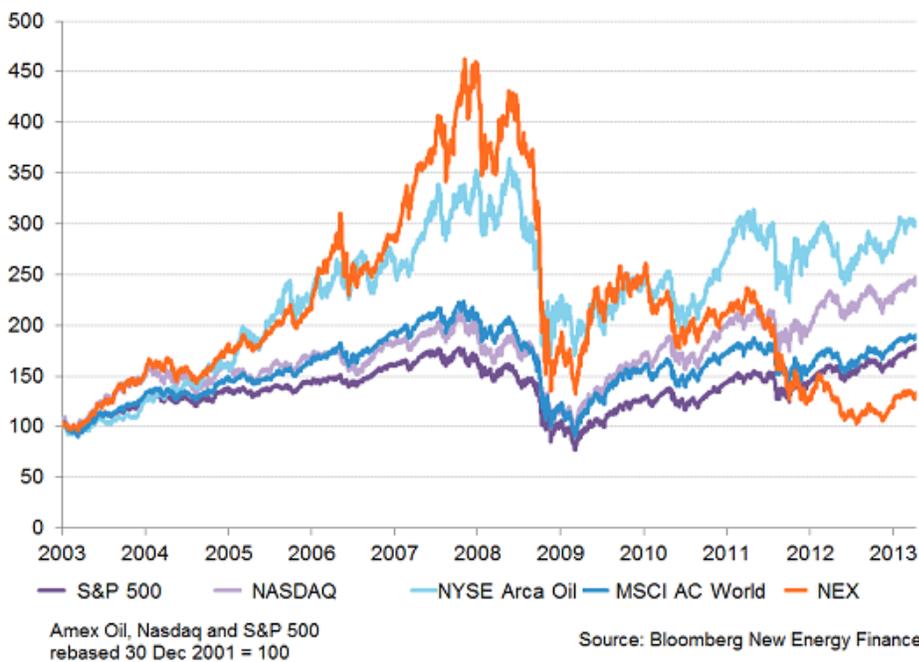
http://www.nex-index.com/Constituents_And_Weightings.php

or see also for more NEX data: http://www.nex-index.com/Constituents_And_Weightings.php

Here are links to quotes to NEX Index available on the web:

NEX Quotes & Data	Ticker	Bigcharts	Bloomberg	Marketwatch	Yahoo
USD Price Index	NEX	51599W10	NEX:IND	NEX	^NEX
EUR Price Index	NEXEU	26499Z42	NEXEU:IND	NEXEU	^NEXEU
GBP Price Index	EXBP	26499Z40	NEXBP:IND	NEXBP	^NEXBP
JPY Price Index	NEXJY	26499Z38	NEXJY:IND	NEXJY	^NEXJY
USD Total Return Index	NEXUST	26499Z43	NEXUST:IND	NEXUST	^NEXUST
EUR Total Return Index	NEXEUT	26499Z41	NEXEUT:IND	NEXEUT	^NEXEUT
GBP Total Return Index	NEXBPT	26499Z39	NEXBPT:IND	NEXBPT	^NEXBPT
JPY Total Return Index	NEXJYT	26499Z37	NEXJYT:IND	NEXJYT	^NEXJYT

Below is the NEX Index vs. NYSE Oil vs. Nasdaq vs. S&P500 vs. MSCI World for a past 10 years to late 2013. Note that Global NEX that had been well up - indeed at very top in late 2007 at 450, instead finishes this period to late 2013 far down at bottom nearest 100 seen a decade ago:



AMEX Oil, Nasdaq, S&P 500 rebased 30 Dec 2001 = 100

Source: Bloomberg New Energy Finance

*(The global NEX Index only is a unique co-equal partnership as between Bloomberg New Energy Finance; Josh Landess, CEO of First Energy Research based in U.S., and Dr. Rob Wilder, CEO of WilderHill Indexes based in the U.S.; the NEX is addressed in prior reports).
