The Tough Realities of Renewable Energy Businesses

Why Investors and Entrepreneurs are Struggling to Profit in Clean Energy

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The good news: The world's attention is *riveted* on clean energy solutions.

The bad news: There are hundreds of mistakes that are easy for entrepreneurs and investors to make as they enter this space.

Let me begin by introducing myself. I'm Craig Shields. My background is a blend of an undergraduate physics degree, followed by 30 years of business consulting and advocacy for clean technology. This has all culminated in my position as editor of 2GreenEnergy and Clean Energy Press – where my team and I provide information, services, and investment capital to companies in renewable energy, electric transportation, and sustainability more generally.

Why is that important? It's because what I've done on a day-to-day basis for the last few decades has provided me with experiences that I happily share – some of which may help you succeed as a businessperson in this space.

About a year ago, I sent out an open invitation for business ideas in clean energy -- and since that announcement I'd say conservatively that I've come across 500 business plans – some from friends – but most from people I'd never heard of – from all over the world. I'm much the better man for having laid out this solicitation, but it has forced me to read – or at least scan through -- the good, the bad, and the ugly in terms of business concepts.

So what have I done with these 500 +/- business plans? Frankly, I've dusted the vast majority of them. Most of them are sketchy ideas that wouldn't have flown even in the best of times – even if we had re-elected Jimmy Carter and everything had gone perfectly for clean energy ever since. And in the ***tough realities*** in which we live today, most of them appear pretty-much asinine.

In fact, shortly after I embarked upon this process, I began to build mental buckets for about 98% of these business plans that I could see were headed nowhere:

- Crackpot/fraudulent science
- A reasonable idea, but needs seed capital that should come from family and friends
- An idea the world really doesn't need - the guy thinks it's the next Google, but I don't see it
- An apparently strong idea, but implemented by a team of rookies

I've come to think of myself as 20% Johnny Appleseed, planting and nurturing ideas in this space – and 80% Dr. Jack Kevorkian – providing painless deaths for those great many ideas that are really a waste of time. And "mercy killing" is really quite an apt phrase here, I believe. I'm always tactful, but I know that I'm doing everyone a favor by politely dissuading people from wasting any more of their – and others' -- precious time.

So what are the differences between good and bad business concepts? What makes one business plan solid and another one utterly worthless? As it turns out, there are a few overarching principles that I'd like to present in this short piece.

Tough Reality #1: Finding a Market Position that Offers Some Level of Competitive Protection

Most of the business plans I favor contemplate owning a market niche that is very unlikely to be challenged – at least for the foreseeable future – by large competitors – especially those of Fortune-size. Do you want to sell a cleverly designed e-bike, specialized for the Caribbean? Do you have a proprietary technology for processing *in situ* the manure of North America's 7.6 *billion* chickens into energy? Let's talk. But manufacturing and mass-marketing a cheap, ugly, electric sedan and selling it against Nissan and a dozen other global auto giants, or building a biofuel plant without a guaranteed and inexpensive supply of sustainable feedstock, are simply bad ideas.

Part of the challenge here means being willing to move to a business model that may be somewhat different than the one you initially conceived. A brilliant associate of mine has a patented breakthrough LED lighting technology. (Yes, I know, a *lot* of people make the identical claim, but I'm convinced this guy really has something here.) The problem is that he wants to actually manufacture and distribute the product. He is essentially just another Ph.D. who thinks, "I'm smart. Just look at what I invented! The business side is going to be easy." Wrong. The business side will not be easy – at all.

I'm trying to lead him in the direction of licensing his technology, as I'm fairly familiar with this as a business strategy. If he makes a penny on the dollar of gross sales, he'll do very, very well.

Another point to be made in favor of flying beneath the radar of competitors is that while some of them play fairly, some most certainly do not. And if you think the corporate giants based in the US have a reputation for stealing ideas from start-ups, just wait until you see what happens in China. Your best strategy is probably not $400 per hour patent attorneys, but a clever business situation and a strategy that don't encourage large and unprincipled organizations to rip you off.

Tough Reality #2: Understanding Where the Fortune 25 are Going as a Bellwether for the Market Overall

I'm not invited to the board meetings of General Electric and Siemens, and I'm guessing you're not either. But that doesn't mean we can't pay attention to the obvious investment strategies that these giants are in the process of executing. I try to do this, and advise my clients accordingly.

The first step here is understanding that a major transformation is in the process of taking place regarding the way in which Wall Street places a value on companies' stock. Traditionally, of course, this has been about earnings—pure and simple. Big earnings mean big valuations. Recently, however, it's become obvious that the earnings reported by most corporations are derived from unsustainable business practices that are rapidly depleting natural resources, and these earnings need to be severely discounted if we are to understand an individual company's true value on a long-term basis.

There are a handful of companies that clearly "get this," of which GE and IBM are the largest in the US. (Sanyo and Panasonic in Japan, and ABB and Siemens in Europe are leaders in their respective geographies.)

Now let's take an example. GE clearly wants to rule the world as the Earth "goes green" over the coming few decades. As far as I can discern, there is not a single major green product or service line that GE is overlooking. From its Louisville, KY smart appliance plant, in which each product is fitted with a computer that communicates wirelessly to and from a programmable controller in the customer's house, to its participation in Smart Grid, to its gearbox-less wind turbines, it's quite clear what GE is doing as a long-term corporate strategy.

So what should smart entrepreneurs infer from this, and what actions do they take accordingly? Probably many things. But let's look at a couple of obvious points:

1) As suggested above, if I were evaluating a business plan that suggests competing directly in one of these spaces, I'd be looking askance at the claim that anyone is going to beat GE in a head-on-head competition. I'd be much more sanguine on a plan that proposes to offer products or services that are complementary to the strategies of this behemoth.

   As Jigar Shah, CEO of the Carbon War Room, a participant in my book on renewables likes to say, "Where elephants dance is not a good place for squirrels."

2) A company with the vision and strength of GE is extremely unlikely to make a serious mistake when it comes to a major market strategy. I personally believe that the world is headed towards a green tomorrow – and I'm generally right more often than I'm wrong -- but you're still far better off trusting a $157 billion company when it comes to making this prediction.

Tough Reality #3: Taking the "A" Team onto the Field

One of the most common reasons I see business plans getting shot down is the "quality" of the people involved in the deal. As the old saying in venture capital goes, "I'd rather have an 'A' team and a 'B' plan than a 'B' team and an 'A' plan."

Think this through carefully before assembling and presenting a business plan. How credible is the proposition that these people will succeed in the business in question, given their track record -- or lack thereof? Are they seasoned managers with a demonstrable history record of accomplishment in relevant fields, or are they essentially newcomers?

A great volume of what I read actively sugarcoats partners' backgrounds, using deliberately vague language to cover up the obvious holes in key people's resumes. Some plans don't even recognize that the issue exists at all, and proudly present the CEO's son (whose credentials appear a mystery) as the VP Operations or some such.

Tough Reality #4: Understanding the Basics of Marketing as They Apply to Your Product

Most people understand that "build it and they will come" is fallacious business thinking; it may happen like that in the movies, but it rarely happens in real life. Yet I'm amazed to see business plans that provide the cost of building the product, or make speculations on unit sales out to three decimal places – yet omit any discussion that would suggest an understanding of the market into which the product or services will be sold. In my estimation, the most important aspect of a business plan is that masses of people will ultimately have to learn about the product and place an order through a channel that actually works.

I read a really well written piece for a unique approach to an electric boat that, after about 60 pages, ended without even mentioning anything like:

- Who's the ideal customer?
- Why? What benefits are going to make this compelling?
- Where and how do these people shop for boats now?
- On what information do they come across, trust, and ultimately base their decision?

- What channel partners need to be engaged to make this a success?

- Why do we believe that channel partners will be excited to represent this, versus competitive products?

In other words, the plan omitted the exact information that investors would find most compelling: How can you convince me that these revenues (and earnings) will be achieved?

Tough Reality #5: Grasping the Totality of the Market Infrastructure that Must Be Built

Regis McKenna was one of the most influential people of 20th Century business. I remember reading his books as a young man and being absolutely floored by his insights into how markets are formed. Largely credited as the strategist behind the personal computer boom in the early 1980s, McKenna's key concept was that a complete infrastructure surrounding a product is required if the product is to succeed.

For example, building the PC market required the machines to be manufactured, but also contemplated the presence of different layers of software, peripherals, luminaries, dealers, trade press, business press, and ultimately the customer. Moreover, the order in which these layers are constructed was important as well; for example, McKenna suggested not talking to the trade press until the dealer network was established.

There are, of course, other ways of looking at this. As a marketing consultant, I prefer to start with the customer – something I call "customer-centric" or "customer-focused" marketing. I pose various questions about the nature of the target customer, and then answer them with a series of surveys, conducting a statistically valid sample of one-on-one interviews with relevant people. I want to know:

- Which customer segments are going to buy this?

- How do they shop? What information sources do they use and trust? And, in particular,

- What's keeping them up at night? What are the gut-wrenching emotional issues that are causing them distress in their careers for which this product or service can be demonstrated as a solution?

Whether or not you accept this customer-centric vision versus McKenna's more product-centric concept is not so much the point. Rather, the point is that, whether you look at this process from the front or from the rear, at the end of the day you need an entire infrastructure if you're going to launch a product.

Note also that this is particularly important for disruptive innovation where such infrastructure probably may not exist at all. Thus, we would do well to call special attention to it, given that so much of what we're talking about in renewables, electric transportation and sustainable living is, in fact, disruptive to the market it will be entering. In many cases where we use the term "infrastructure," we're using it in two important senses of the word simultaneously:

a) The market infrastructure described by McKenna, and

b) The literal infrastructure, by which, for instance, EVs are charged, electric power is distributed, ideas are disseminated, etc.

I've been speaking with a great number of people about ammonia as fuel recently, so let's use this as an example. Here we have an industry that has numerous holes in it from the perspective of infrastructure – in both senses of the word. Some of the world's brightest minds are working hard to perfect the process of solid-state ammonia synthesis (SSAS), formulating ammonia directly from water and atmospheric nitrogen. But at the same time, you have the US Department of Energy (DoE) and the Environmental Protection Agency (EPA), neither of which even considers ammonia a fuel! How much attention can we expect to be paid to developing a fuel delivery infrastructure of a chemical that isn't a fuel?

Thus, even when SSAS is perfected, we will have a product with no demand. The breakthrough -- even when it happens – will be like developing the I-Pad -- in 1958. We have a world in which there is very little capital -- financial or political -- behind ammonia as fuel -- in both the public and private sectors. So here, we have a great deal of work to do in terms of developing this from the ground up – including the market infrastructure that Regis McKenna describes.

Tough Reality #6: Learning Not to Expect the Impossible from Government

I learned many things in the process of writing my soon-to-be-released book, Renewable Energy – Facts and Fantasies. Here's one of the great fantasies: we irrationally expect our elected leaders to take actions on our behalf whose benefit will not be seen until after

the next election cycle. There is one thing on which you can bet: politicians will back only those initiatives that will help them get re-elected. Do not expect any other behavior; you'll be deeply disappointed if you do.

I struggle to find a single person who voted for Obama who isn't disappointed in his performance. The people who hoped that he would move to end US involvement in the Mideast wars, that we'd have meaningful reform in financial regulation, healthcare, campaign finance, etc. are all rightfully saddened by what they've seen in the last 18 months. Though I know very little about healthcare reform, I do happen to know a bit about renewable energy. And I'm disappointed myself – I'd even say I'm shocked – in the decisions that the DoE has made in allocating stimulus money to large, clunky, bureaucratic organizations, versus small, nimble groups with hot ideas. But again, this is reality. Decisions are made on the basis of election cycles, period.

So what can we learn from this? Unless you somehow represent a big constituency of voters, you'll win the lottery before you'll get the government to hand you a check to develop your business idea. Consider this carefully before you invest a great deal of valuable time and much-needed cash applying for grants that you'll be very unlikely to receive.

Tough Reality #7: Understanding Technology Readiness (TR) and Its Implications

Obviously, nascent technologies based on even the best ideas have, by definition, longer monetization runways. But perhaps more daunting than the runway itself is the risk of failure, due to dozens of factors: changing market conditions, emergence of competitive solutions, breakdowns in capital formation, etc.

Of course, this TR concept has come into full public view with the DoE grants for innovation surrounding clean energy. An idea that is already off the back of a napkin and has some concept sketches is Level 1. One that has been drawn up (with preliminary 'best-guess' dimensions), scale models have been built, and the math equations for the predicted performance (that have been vetted) are passing through Level 2. From this level you go through the next level where small-scale models can be built and tested in a laboratory environment -- Level 3, small-scale prototype fabrication and deployment in the environment is Level 4, etc.

Again, low TR numbers are going to be rightly viewed as inherently risky. Traditionally, asking for funding for anything pre-revenue is a tall request. And in today's economy,

asking for money to develop a working model of an invention is very probably a non-starter.

This concept is amplified if the invention in question stretches the accepted laws of physics. I'm not saying that these "laws" are written in concrete; in fact, I'm quite confident that the people of the 22nd Century will look back on the reverence we had to the physics of 2010 with a mixture of pity and contempt. But if your idea appears to violate the conservation of energy (and I've seen literally dozens of assertions to this effect in the last year), be prepared to produce a working model. Don't embarrass yourself by asking for money to develop an idea that has been shown to be theoretically impossible.

Tough Reality #8: Understanding Corruption -- and Not Whining About It

Of course, "corruption" is a harsh term. But, as I've never been one to mince words, it's the one I choose to describe an environment where hidden deals are made that contort market forces and unfairly promote one solution over another. History is rife with completely proven examples – now living in infamy as scandals. Of course, most of these scandals are *alleged*. But want a challenge? Go to New Jersey, pick up a newspaper, scan through the articles, and try *not* to find a story about an elected official who had cleverly gained the trust of the people and then brazenly betrayed that trust – and has been *convicted* of selling his influence for money.

The older we get and the more experiences we have under our belts, the more likely we are to have run into the bold, ugly truth of the ways of the world. Many of the world's best products *never come to market*. Most of the world's people, even in developed countries, live with the intrusion of corrupt power that is ruining their lives: promoting degraded entertainment for their kids, selling the fatty chemical-ridden garbage we call food, or actively dissuading them away from natural and effective remedies for disease. All this is essentially due to corruption: people with lots of money creating an environment in which to make even more money. Now couple this with corporate entities committing despicable but legal acts, like buying the Los Angeles trolley system and shutting it down to force Angelinos into automobiles. Or sitting on the patents for nickel metal hydride batteries to impede the development of electric vehicles.

Smart investors do not run into roadblocks like these. They develop insight into the true power structure – both the visible and invisible – so as to avoid walking into an abyss in which a good idea is doomed to failure because it threatened a large vested interest.

Tough Reality #9: Understanding that Ideas (Even Dubious Ones) that Come from Big Names and Big Money Wind Up on the Fast Track – Ahead of Yours and Mine

A good example of this is Project Better Place in the electric vehicle space, the brainchild of business mogul Shai Agassi. Better Place is built on the concept that charging infrastructure is the one major obstacle in the migration path from internal combustion engines to EVs. For the foreseeable future, batteries – even expensive lithium-ion packs -- will severely limit EV drivers' range, and there is no way to refuel in a way that is at all analogous to gasoline, with its fast, ubiquitous and safe filling stations. Agassi's concept: build an enormous battery-swapping infrastructure that his company would own and manage, and charge drivers by the mile, not unlike the plans by which cell phone users are charged by the minute.

Better Place is making great strides in places that are especially conducive to the EV migration: small land masses, dense populations in fairly localized roadways, e.g., Israel. Even Australia with its much larger size overall is headed in this direction, I presume due to the concentration of the population along the southern coast. But here's my point: is Better Place a possibility here in the US? No. We have 3.5 million square miles of land – we're 450 times the size of Israel – with population centers dotted throughout.

But believe it or not, Agassi had an extensive set of very positive meetings with San Francisco Mayor Gavin Newsom and California Governor Arnold Schwarzenegger, paving the way towards a battery-swap system here in the US. I'm not sure where this has gone recently, but my point is simply this: Even ideas that apparently have no future can go big with the right names behind them. Want other examples? Witness corn ethanol (terrible energy solution) and Microsoft (operating system from hell).

Tough Reality #10: Presenting Attractive Reward Given the Risk

Using the principles we have discussed thus far, understand the level of risk that you're asking investors to take, and make sure that the reward is commensurate. Some of my partners and I are looking at a large run-of-river hydro project in Turkey, offered by some fine people whom I've come to know and trust – folks with incredible pedigrees. To use the parlance above, it's an "A" team, to be sure. But its IRR (internal rate of return) for investors is about 16%. That's not particularly attractive, considering the perceived risk

of dealing in a developing country with rules and customs that are foreign to most people in the developed world.

Keep in mind what venture capitalists normally do when they admit a new company to their portfolio: take controlling interest, and leave the founding entrepreneur(s) with a fairly small chunk of equity. Even given these fairly attractive conditions for the VC, they still turn down 95% of the deals they are offered.

Tough Reality #11: Not Being Shy about Asking for Help

As always, we here at 2GreenEnergy are available to provide general advice for free, to bring entrepreneurs with hot ideas together with investors on a contingency basis, and to perform a myriad of specific/detailed tasks on a fee-for-service basis. Please feel free to write or call anytime.

Best regards,

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