Raising Living Standards In Rural Areas

Ty Yiu

2019-06-03

The concept itself is applicable for many industries/sectors/firms. The example of water/electricity provision utilising hydrogen technologies is solely for imaginative purposes and to visualise the fact that most of the problems have two-sides to consider in terms of *pain and relief*. A just as much adequate example could be the provision of internet access (or P2P local area networks), exotic food diversity using direct transactions as well as micro-transaction & micro-services to boost local economic development.

Entering rural area markets to improve communities

Rural areas in developing economies have a common *chicken-egg-dilemma*, in which there is hesitation of investment, especially such as electricity- /water-infrastructure grids. Many traditional supply chain mechanisms start to break down outside the developed, well connected urbanity of cities. The resulting *pain* for those not having access to many living standard raising products/services/utilities is immense and is wedging societies into polarised extrema of wealth. On the other hand, urban areas experience intense pressure of dense competition, leaving many firms unable to expand or even sustain. The proposed solution for both sides is *entering rural area markets using decentralised, blockchain governed, hydrogen powered utility systems.*

The realisation would be represented as an independent, self-contained, sustainable unit that provides electricity/water for a whole house/community. It's modular design allows expansion and easy setup for scale. It being contained allows for a decentralised network of utility provision made of self-sustaining nodes. A *Blockchain* would govern demand and supply as well as logistics via consensus. It would utilise smart contracts to balance surplus and shortages of utility and consensus for priority requiring situations.

In practice that could be achieved by a combination of solar power generation, short time battery storage, electrolysis/hydrolysis machines and long-term energy storage using hydrogen. Such systems could then be *leased* to communities to independently produce water and electricity. The resulting opportunities for economy, already starting at installation and maintenance of these systems

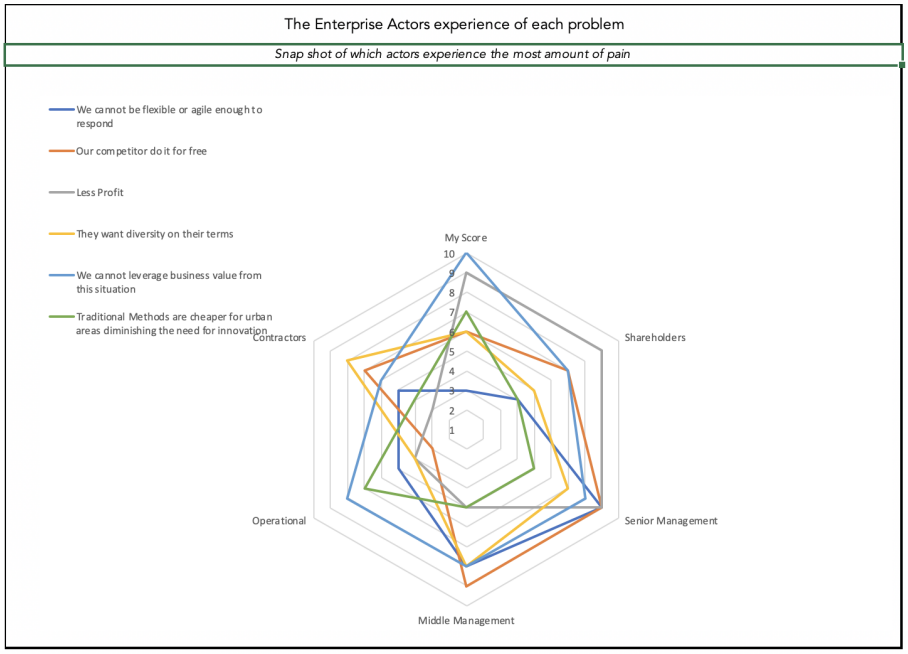
alone, will enable those communities to repay the lease *"À la grâce d'effet du multiplier"*.

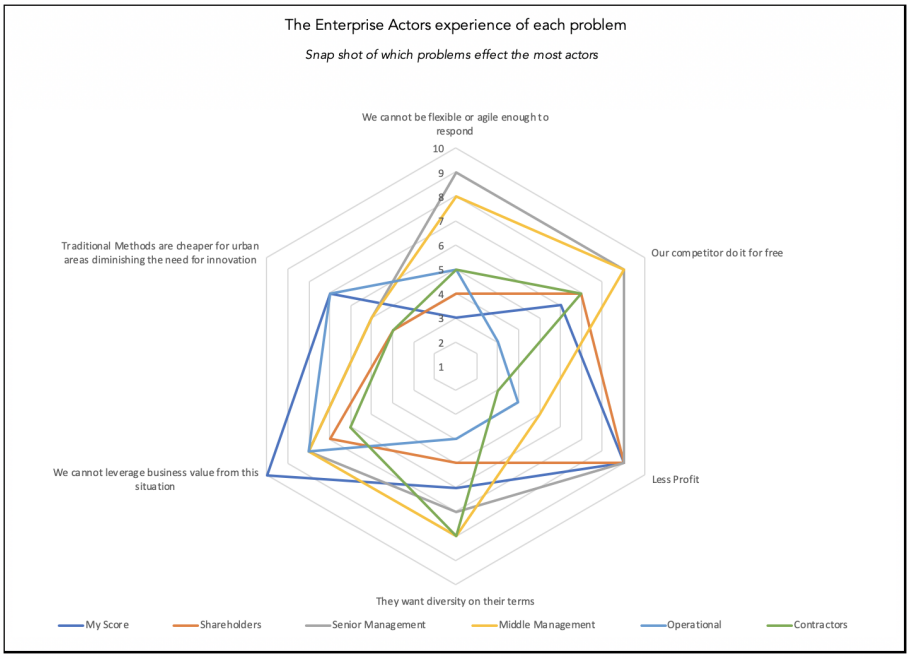
By using hydrogen as a long-term energy storage, shortages and surpluses can be balanced out by transporting said gas capsules to nearby nodes. This system not only generates electricity and water, but also fuel, which can be used for logistics sustainably and eco-friendly, without any exhaust gases and is cost efficient considering hydrogen's weight.

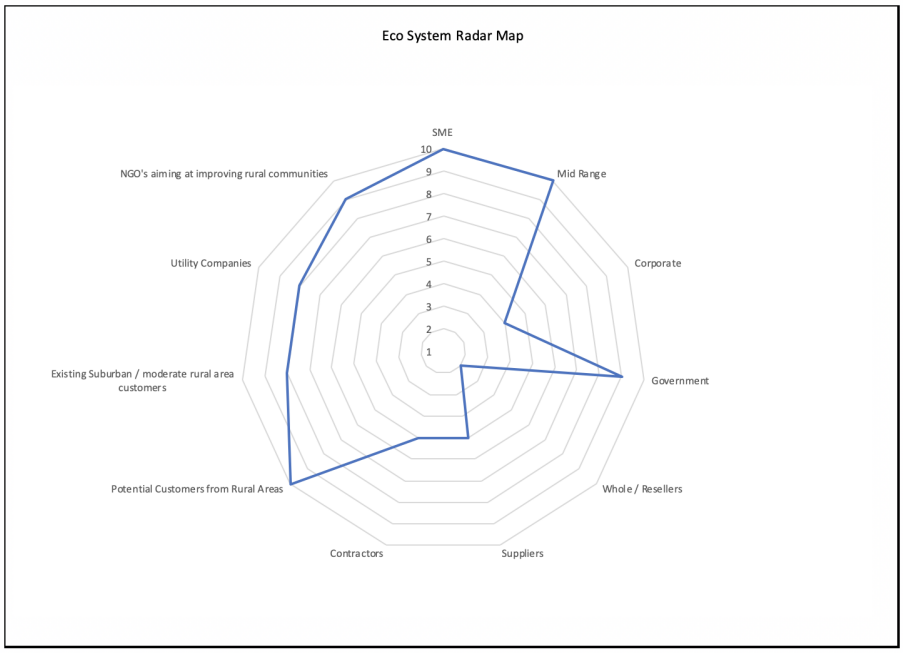
For a company experiencing *pain* in form of pressure from fear regarding revenue, potential of expansion, innovation or competition the change will affect different entities on different levels accordingly. Senior management will be mostly worried about market saturation, competition and potential blue-ocean industries or geographical areas for market entrance and will thus feel the most pressure to change. The trickle down effect will induce pain throughout the different other levels of the organisation caused by the implied e.g. *job-security prospect* based on decreasing economic performance. Operational staff will experience the most drastic change, while only experiencing mediocre pain, but there are long-term effects on their well-being counteracting short-term change resistance, e.g. *job-security & potential for career opportunities* based on innovation brought by the solution. Many firms have potential in concepts such as this, not only as direct competition, but also as contractors, suppliers, educators et cetera. Abstraction can be done to employ a similar concepts on a different industry, such as the decentralisation of food production using *vertical hydroponics* or *IOT* devices automating/relaying/performing specific tasks to form a P2P mesh network.

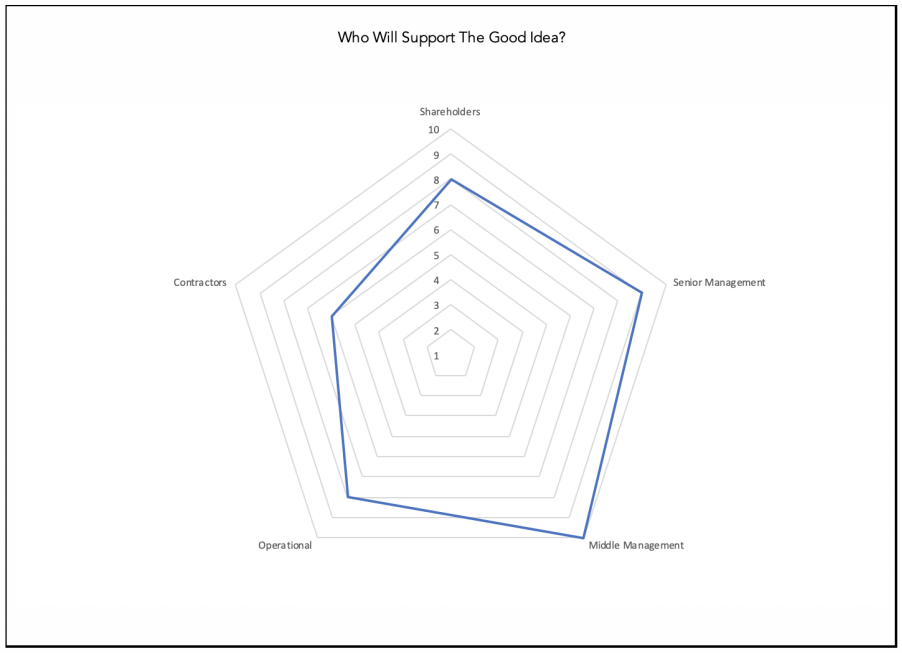
Thinking about the capabilities of *W3 & blockchain* and completing the *"Can it work?"* template, one comes to have good concrete ideas of how to implement a *good idea*.

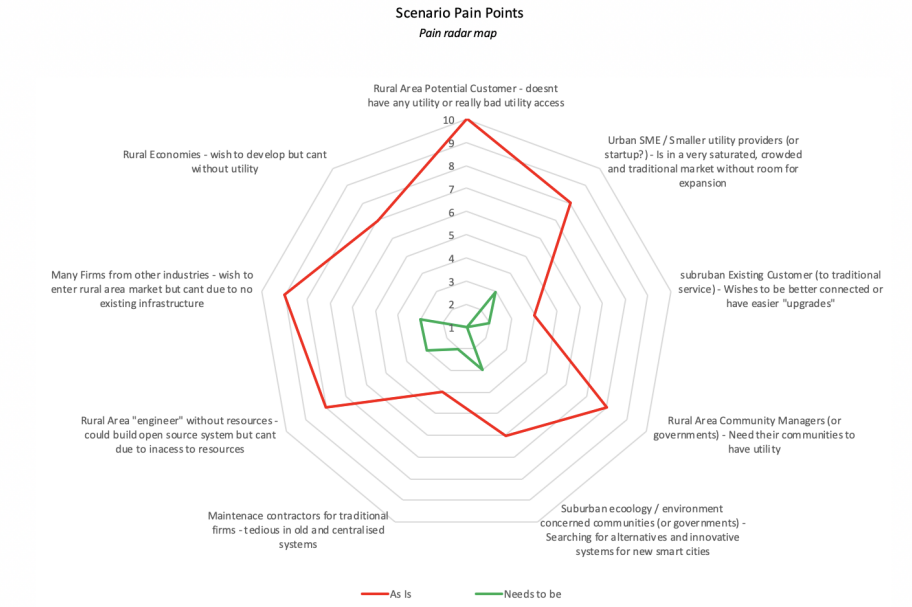
> *Attached are the findings of the "can it work?" template, containing more details regarding the realisation and w3/blockchain capabilities of the system.*

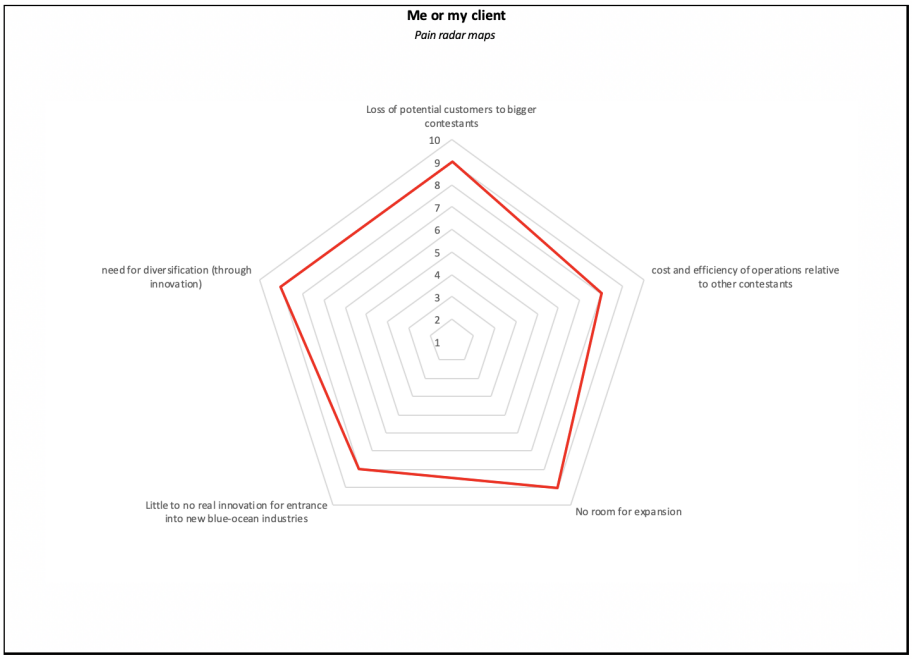

The Enterprise Actors experience of each problem
Snap shot of which actors experience the most amount of pain
We cannot be flexible or agile enough to respond
Our competitor do it for free
Less Profit
They want diversity on their terms
We cannot leverage business value from this situation
Traditional Methods are cheaper for urban areas diminishing the need for innovation
My Score
Shareholders
Senior Management
Middle Management
Operational
Contractors
10
9
8
7
6
5
4
3
2
1

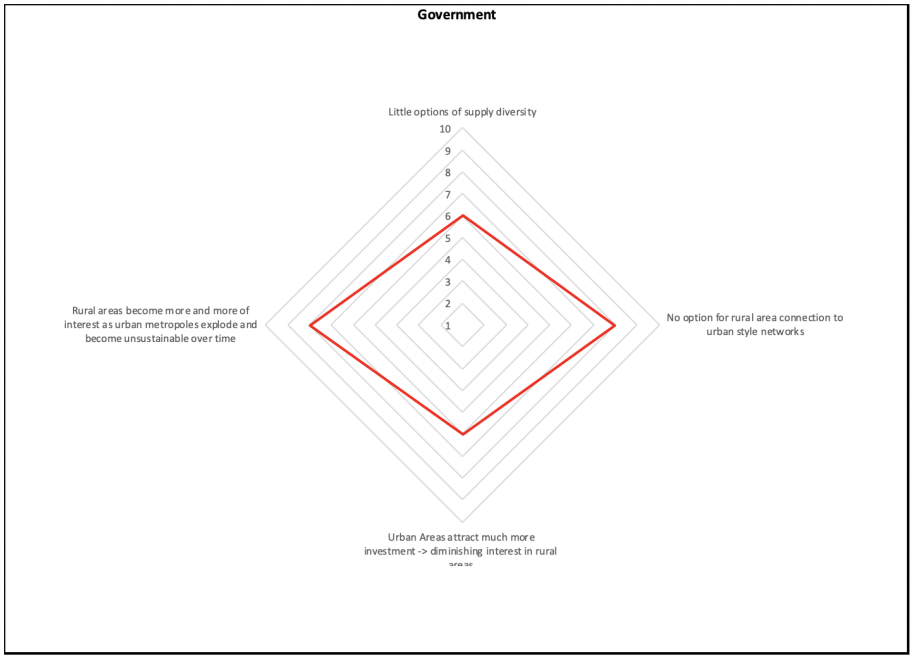

The Enterprise Actors experience of each problem
Snap shot of which problems effect the most actors
We cannot be flexible or agile enough to respond
Our competitor do it for free
Less Profit
They want diversity on their terms
We cannot leverage business value from this situation
Traditional Methods are cheaper for urban areas diminishing the need for innovation
10
9
8
7
6
5
4
3
2
1
My Score
Shareholders
Senior Management
Middle Management
Operational
Contractors

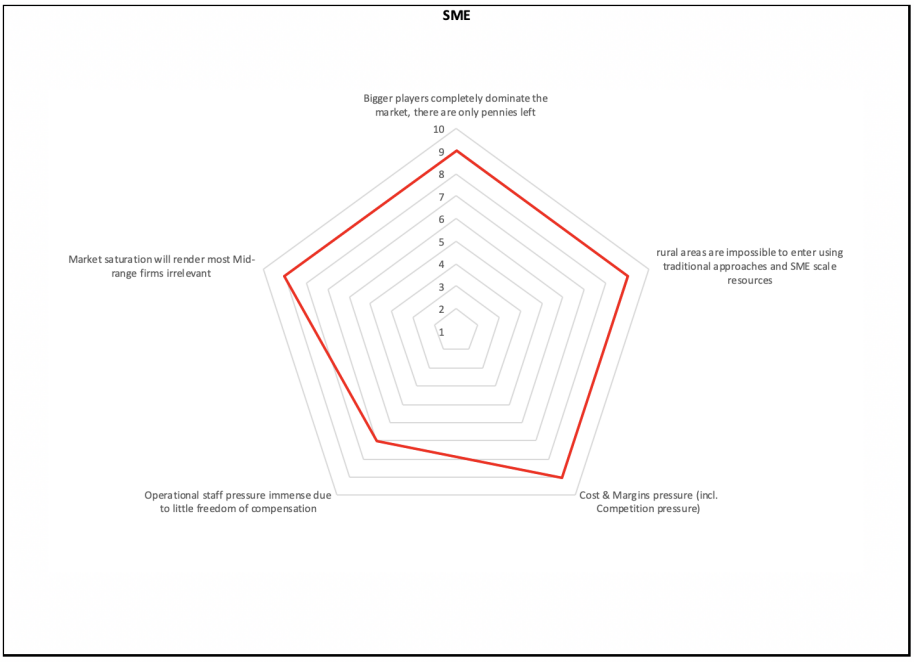

Eco System Radar Map
SME
Mid Range
Corporate
Government
Whole / Resellers
Suppliers
Contractors
Potential Customers from Rural Areas
Existing Suburban / moderate rural area customers
Utility Companies
NGO's aiming at improving rural communities
10
9
8
7
6
5
4
3
2
1

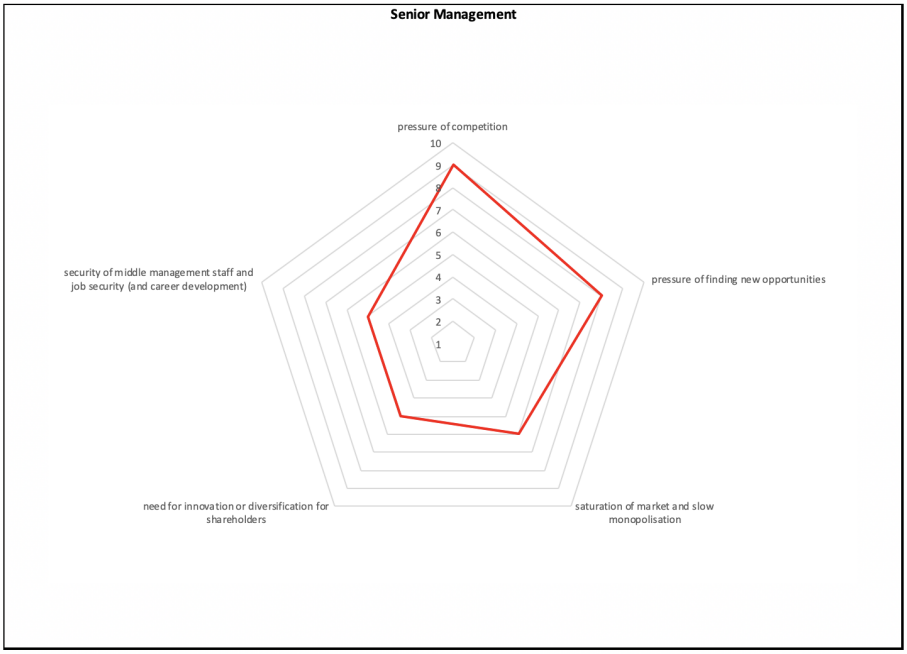

Who Will Support The Good Idea?
Shareholders
Senior Management
Middle Management
Operational
Contractors
10
9
8
7
6
5
4
3
2
1

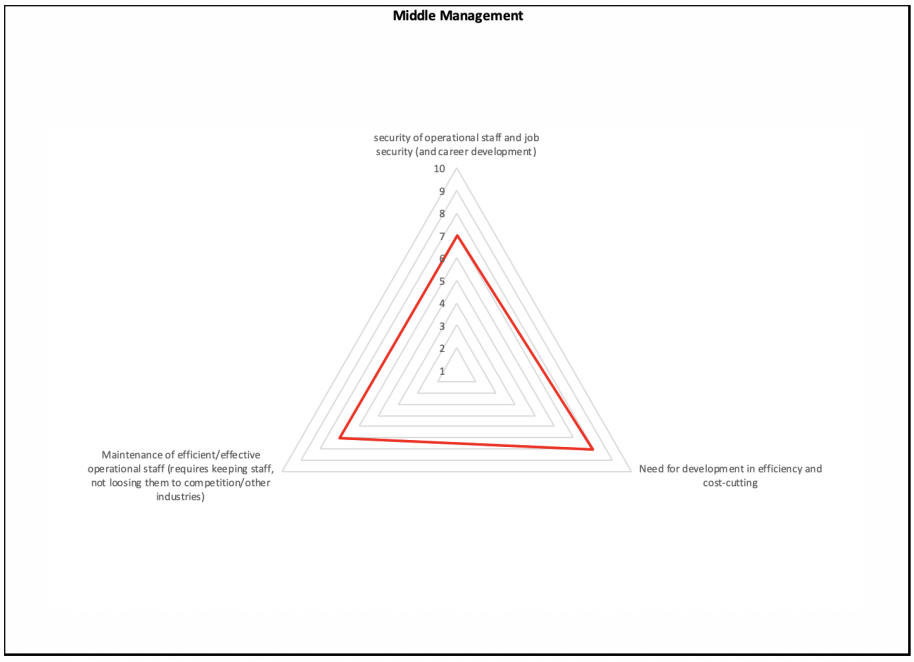

Scenario Pain Points
Pain radar map
Rural Area Potential Customer - doesnt have any utility or really bad utility access
Urban SME / Smaller utility providers (or startup?) - Is in a very saturated, crowded and traditional market without room for expansion
subruban Existing Customer (to traditional service) - Wishes to be better connected or have easier "upgrades"
Rural Area Community Managers (or governments) - Need their communities to have utility
Suburban ecology / environment concerned communities (or governments) - Searching for alternatives and innovative systems for new smart cities
Maintenace contractors for traditional firms - tedious in old and centralised systems
Rural Area "engineer" without resources - could build open source system but cant due to inacess to resources
Many Firms from other industries - wish to enter rural area market but cant due to no existing infrastructure
Rural Economies - wish to develop but cant without utility
10
9
8
7
6
5
4
3
2
1
As Is
Needs to be

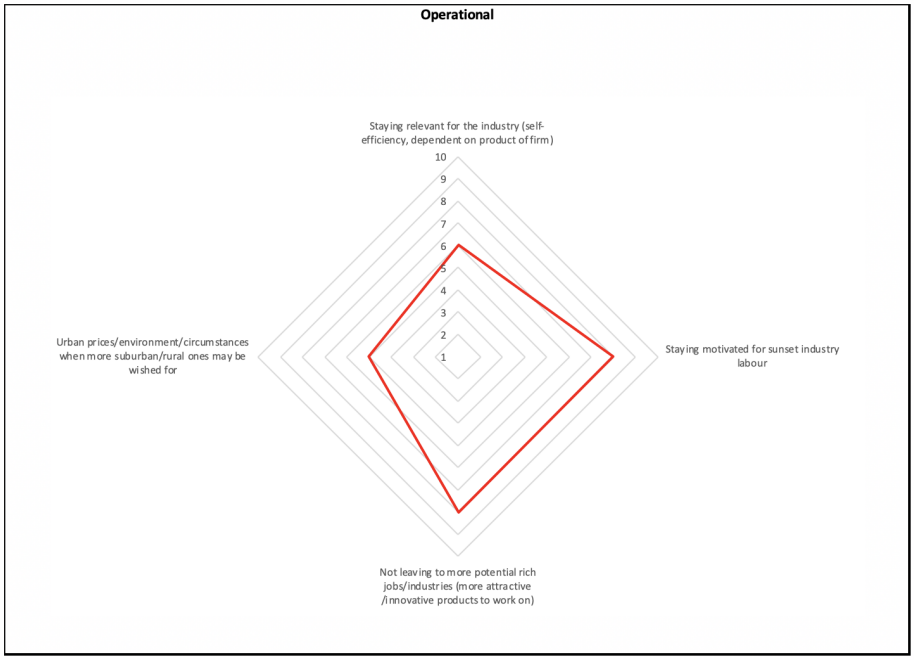

Me or my client
Pain radar maps
Loss of potential customers to bigger contestants
cost and efficiency of operations relative to other contestants
No room for expansion
Little to no real innovation for entrance into new blue-ocean industries
need for diversification (through innovation)
10
9
8
7
6
5
4
3
2
1

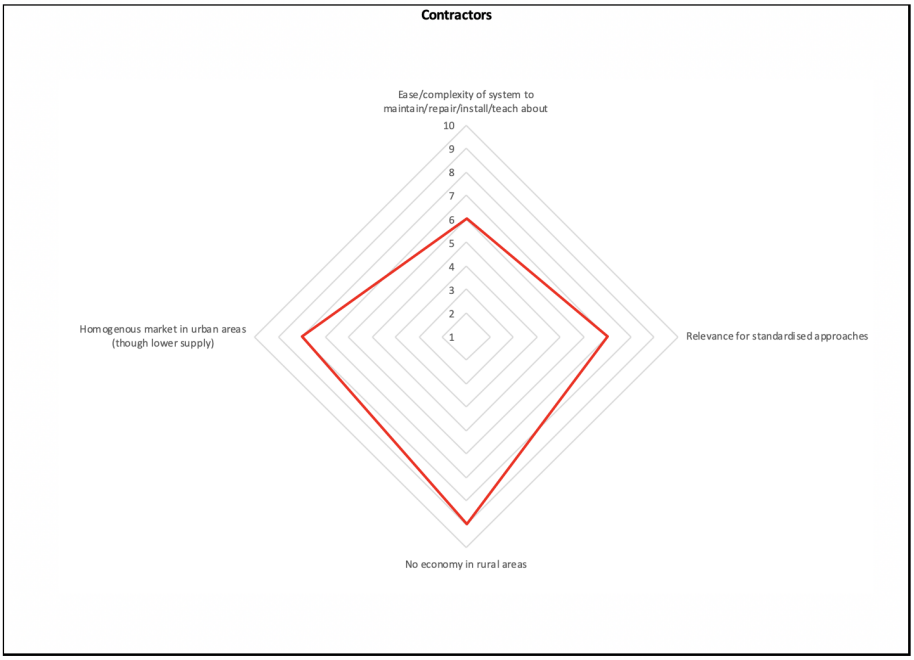

Government
Little options of supply diversity
10
9
8
7
6
5
4
3
2
1
No option for rural area connection to urban style networks
Urban Areas attract much more investment -> diminishing interest in rural
Rural areas become more and more of interest as urban metropoles explode and become unsustainable over time

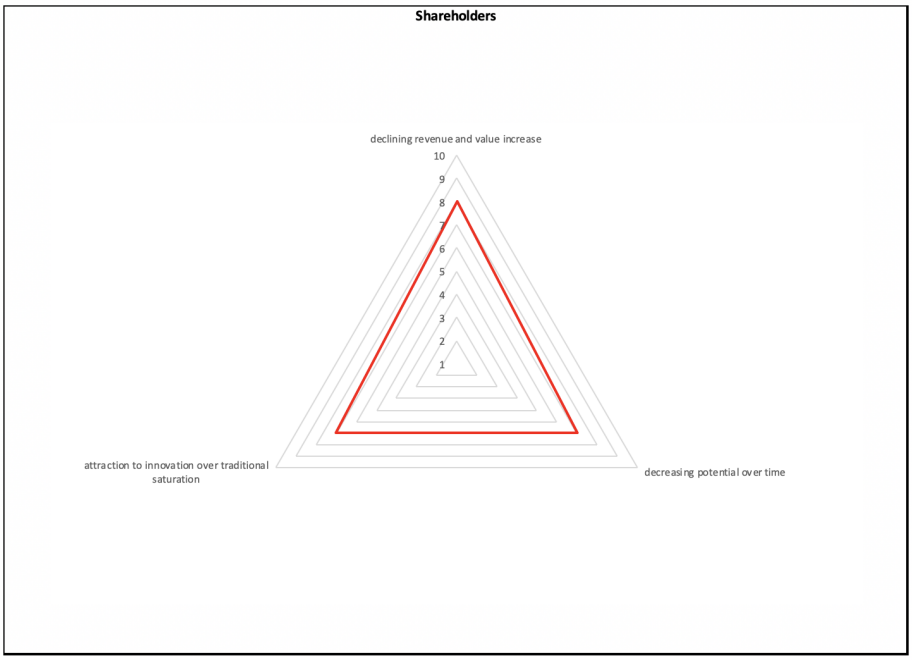

SME
Bigger players completely dominate the market, there are only pennies left
10
9
8
7
6
5
4
3
2
1
rural areas are impossible to enter using traditional approaches and SME scale resources
Cost & Margins pressure (incl. Competition pressure)
Operational staff pressure immense due to little freedom of compensation
Market saturation will render most Mid-range firms irrelevant


Senior Management
pressure of competition
10
9
8
7
6
5
4
3
2
1
pressure of finding new opportunities
saturation of market and slow monopolisation
need for innovation or diversification for shareholders
security of middle management staff and job security (and career development)


Middle Management
security of operational staff and job security (and career development)
10
9
8
7
6
5
4
3
2
1
Need for development in efficiency and cost-cutting
Maintenance of efficient/effective operational staff (requires keeping staff, not loosing them to competition/other industries)


Operational
Staying relevant for the industry (self-efficiency, dependent on product of firm)
10
9
8
7
6
5
4
3
2
1
Staying motivated for sunset industry labour
Not leaving to more potential rich jobs/industries (more attractive /innovative products to work on)
Urban prices/environment/circumstances when more suburban/rural ones may be wished for


Contractors
Ease/complexity of system to maintain/repair/install/teach about
10
9
8
7
6
5
4
3
2
1
Relevance for standardised approaches
No economy in rural areas
Homogenous market in urban areas (though lower supply)



Scenario To Be Radar Map

Pain radar map

Capabilities	Web3 Offerings
End to end supply chain	Leasing independent self-contained and self-sustaining units requires accountability throughout the production process but also post-production for fair compensation from leasing parties regarding damages and maintenance.
Demand aggregation chain	Scalable by being modular, the unit can be stacked. In reality that could look like a big system for a community and/or units for houses.
Exchange and supply/demand matching	By also being open source, anyone could build these systems themlseves, given they possess the required knowledge - which could be provided with the benefits the system provides. Exchange could occur in the form of sole parts or sole services such as maintenace or educational training regarding repair/maintenance/build/setup.
Self service for all	By being open source and offering the system as a product / service and being accessible from every unit, the accessibility and self-service capability will increase over time. (e.g. every unit is wirelessely communicating and relaying service to enable accessibility to more chains.
Self generating smart contracts with machine readable conditions	Distributed / Decentralised approaches to energy/water/utility/service provision allow measurable metrics to be used for balancing forces such as demand and supply. Measurable metrics such as energy consumption, amount left in reserve et cetera can be used to smartly and automatically transfer hydrogen capsules from a nearby surplus area to a shortage area to balance the "grid".
Transparent auditing and compliance	Usage and demand for outside generated service/electricity/water needs to be transparent for both parties to agree on the truthness of the consumption numbers. Thus internal processes of how these metrics are measured should be open source and crowd sourced.
Governance framework	Priority of need for utility may be a factor sometimes, such as in the case of a hospital needing utility relative to a diner. The governance framework should enable democratic process powered decision making regarding the neccesary re-routing.
Tokenised incentive system	Lowering one owns consumption and exporting more due to that should be rewarded, thus a tokenised system for sharing utility could be implemented. Though the thought of "the mining craze" comes to mind.