Cleantech Group

Making sense of and uncovering opportunities from innovation in energy, mobility, industry and more

**Inputs**

**Secondary Information**
- Public Data
  - Public news, reports, data
  - Global web crawling

**Primary Information**
- Start-up interviews
  - Business model
  - Traction
  - Partnerships
- Proprietary Information
  - Ecosystem interviews
  - Boards and roundtables
  - CTG events insights

**Resources**

- Proprietary database
  - i3
  - 27k+ companies
  - 20k+ rounds
  - 21k partnerships
  - 4k M&A events
- Experienced Analysts

**Market Intelligence**

- **Innovation**: business model and/or technology – creating or capturing new sources of value
- **Opportunities and disruption**: from business activities all the way up to and across whole industrial sectors
- **Companies**: what are innovative companies doing? how do they make money? how do they compete and differentiate themselves?
- **Where to watch**: for new sources of innovation
- **Who**: is funding, investing, partnering to grow and commercialize innovative companies
One year on: record-breaking growth
Only 18 months ago...

- Processing transactions:
  - P2P & automated energy trading
- Executing smart contracts:
  - IoT and M2M comm's
- Recording transactions and ownership data:
  - Logistics and supply chain

- EV charging & mobility
- Land registry

- Coins & certificates

Logistics and supply chain companies include:
- skuchain
- Blockfreight

IoT and M2M comm's companies include:
- FILAMENT
- ChromaWay
We now track 160+ companies and $1.3b+ of funding

Core Energy (71)

Logistics (34)

Agriculture & Food (10)

Mobility (19)

IoT (24)
Deal-making peaked in Q1 2018

Investments

- FENBUSHI CAPITAL
- BLOCKCHAIN
- anthemis group
- TEPCO
- BRAEMAR ENERGY VENTURES
- centrica
- BRAEMAR ENERGY VENTURES
- enerchain
- LO3 ENERGY
- TEPCO
- IBM
- Siemens
- SAMSUNG
- HYPERLEDGER
- TELSTRA
- Co-tricity
- blockchain
- bigchainDB
- FILAMENT
- skuchain
- FILAMENT
- e6
- BTL
- Electron
- chia
- Electrify Asia
- XpanSiV
- Environ
- Electrify
- Restart Energy
- BlockCypher
- Energy Web
- Conserts
- Cleantech Group

Partnerships

- bp
- $3m seed
- $30m ICO
- $12m ICO
- $1m seed
- $30k seed

2016

- $5m seed
- $7.6m
- $3m
- $500k
- €3m
- $7.6m
- $5m
- $2m

2017

- $2m
- $4.5m
- $2.5m private coin offering
- $3m
- $3m
- $38m pre-ICO
- $34m ICO
- $3m pre-ICO
- $4.5m
- $100m ICO
- $40m ICO
- $30m ICO
- $300k seed
- $1m seed
- $1m seed
- $1m seed
- $69m ICO
- $25m to date 70+ affiliates

2018

- $40m ICO
- $25m
- $25m
- $3m
- $12m ICO
- £12m ICO
- $3m
- £12m ICO
- $30m ICO
- $100m ICO
- $7.8m series A
- $30m ICO
- $7.8m series A
- $100m ICO
Investment has sky-rocketed in the last 18 months.
But the 2018 number is hiding a recent slowdown
Propelled by a new type of financing

- Coin/Token Offering
- Growth Equity
- Seed
- Series A
Venture rounds are more numerous than ICOs
Usual suspects are only part of the picture

### Traditional Corps/VCs
- TEPCO
- innogy
- centrica
- BRAEMAR ENERGY VENTURES
- Cleantech Group

### Crypto-investors: the emerged part
- DIGITAL CURRENCY GROUP
- FILAMENT
- BIGCHAINDB
- Ledger
- Blockchain Capital
- WAVC
- POWER LEDGER
- FENBUSHI CAPITAL
- SCYTALE VENTURES
- energy web foundations
- LO3 Energy
18 months ago...

$113m funding for 22 companies

$17.8m funding for 15 companies
Europe now leading by a lot

- $140m funding
  - 38 companies

- $723m funding
  - 70 companies

- $1.6m funding

- $251m funding
  - 23 companies
Core energy use cases leading the charge

- Agriculture & Food
- Energy
- IoT
- Logistics
- Transportation

- 2013: $0
- 2014: $290m
- 2015: $298m
- 2016: $304m
- 2017: $12m
- 2018: $77m

Total: $819m
P2P & Retail leading energy investment

- P2P & Retail Trading: $341m
- "Green" Mining: $134m
- Renewable Project Financing: $72m
- Smart Home & Energy Efficiency: $19m
- Wholesale Trading: $12m
- Energy Certificates and Currencies: $10m
- Other: $5m
With all this funding, is blockchain in energy scaling up?
Some of the organizations we talked to
We asked about scale-up efforts and challenges

What is the current scale of blockchain in energy projects?

How long will it take to get to commercial/production scale?

What aspects of scaling up are hardest?

- Technical, energy market integration
- Technical, blockchain side
- Commercial
- Regulatory
- Capital, VC
- Capital, token
- Talent / recruiting

What are top technical challenges?

What are top commercial challenges?

How fast is the blockchain community solving challenges, compared to other techs?

Has your view on blockchain scalability changed in the past year?
What we learned

Disconnect between funding and commercial maturity
- Most use cases are currently trying to go from PoC to pilot
- Use cases around wholesale trading and digitization of energy data are most commercial
- But P2P is receiving most funding and attention – ICO bias

Start-ups, corporates and investors all see different scale-up challenges
- Corporates are the most bullish, pushing companies to think about commerciality, making bets
- Start-ups are focused on technical challenges: scaling public blockchains, governance, energy markets
- Investors are less skeptical than 18 months ago, but still see commercial scale as 1-2 years away

Despite flurry of activity and headlines, progressing at a regular pace
- Most players see blockchain applications evolving at regular innovation pace
- Partnerships with big corporates are deemed the best lever to accelerate scale
Looking ahead
2018-19 outlook

What to look for
1. The ICO market is rightly cooling down, may be bridged by a VC increase
2. The hype around blockchain is subsiding, putting pressure on innovators to demonstrate value creation
3. Early-movers maturing and bringing offerings to pre-commercial scale

What to test with companies
1. Go to market strategy and competitive advantage vs. existing solutions
2. Revenue and business model
3. Path to scale

For corporates & govs: impact on your current and/or future scope + value of experiment
Join us in New York to dive into the topic

EXECUTIVE SUMMIT

Blockchain in Energy & Mobility

New York City | October 24, 2018
Thank you.

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September 2018
## The scale-up race is on

<table>
<thead>
<tr>
<th></th>
<th>Start-ups</th>
<th>Corporates</th>
<th>Investors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Most advanced use case</strong></td>
<td>Energy data marketplace</td>
<td>Wholesale trading</td>
<td>Tokenization of assets</td>
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<tr>
<td><strong>Current scale</strong></td>
<td>Pilot</td>
<td>Proof of Concept</td>
<td>Proof of Concept</td>
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<tr>
<td><strong>Time to commercial scale</strong></td>
<td>Less than a year</td>
<td>Less than a year</td>
<td>1 to 2 years</td>
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<tr>
<td><strong>Scale-up Challenge level</strong></td>
<td>2.48</td>
<td>2.19</td>
<td>2.95</td>
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<tr>
<td><strong>Challenge #1</strong></td>
<td>Technical, blockchain side</td>
<td>Commercial</td>
<td>Regulatory</td>
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<tr>
<td><strong>Challenge #2</strong></td>
<td>Regulatory</td>
<td>Technical, energy side</td>
<td>Technical, blockchain side</td>
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<tr>
<td><strong>Challenge #3</strong></td>
<td>Raising token capital</td>
<td>Technical, blockchain side</td>
<td>Commercial</td>
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<tr>
<td><strong>What can help most?</strong></td>
<td>Partnerships and tech talent</td>
<td>Commercial talent</td>
<td>Partnerships</td>
</tr>
<tr>
<td><strong>Improvement pace</strong></td>
<td>Faster, but not by much</td>
<td>Faster, but more complex</td>
<td>Close to investment-ready</td>
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Business models are not convincing enough yet

“Most businesses are bulls**t or window-dressing. They don’t need blockchain to work.”
*Utility exec*

“A shake-out is coming. Hardcore guys will stick around, night flyers will disappear, then blockchain 2.0 will emerge.”
*Utility exec*

“No one has a business model today. If they have it, it’s not new.”
*VC investor*

“Lots of investing. Not much to show for the talk.”
*Utility exec*

“Our level of investment is justified by the progress made in the last 12 months.”
*CVC investor*

“In a complex environment, you make multiple bets. They're sensors, feed data. We're learning as we go.”
*Utility exec*

“We are close to max hype in the first cycle, and it won’t last long. But the rise of DR is unstoppable, and a distributed ledger is a perfect match for it.”
*Utility exec*

“This consortium process has been very positive – we're moving faster than we thought.”
*CVC investor*
“Putting an energy app on a private blockchain is easy. Scaling it on a public blockchain is mission impossible—we’re working on it.”
Start-up co-founder

“There is a big difference between using private and public blockchains. Not that many people are talented enough to build true decentralized systems.”
Start-up co-founder

“Some people are focusing on selling partially ready solutions. We’re heads-down on the tech.”
Start-up co-founder

“The hardest part is to scale governance, and to configure privacy”
Start-up co-founder

“There is a big chasm between press enthusiasm and interest from utilities, especially in the US.”
Start-up co-founder

“We’re tackling segment of markets that need it most: islands, microgrids, munis and coops”
Start-up co-founder

“We need to get large energy players much more comfortable with supplying data.”
Start-up founder

“Raising token capital is getting harder and harder, when you try to do it by the books.”
Start-up