



THE MISSING MANUAL FOR SCALING CLIMATE TECH

2024 Edition

THE MISSING MANUAL FOR SCALING CLIMATE TECH



Introducing The Climate brick

The missing manual for anyone in European climate tech looking to understand the journey to scale and its resulting impact

THERE IS A GAP BETWEEN THE NEED FOR SCALING CLIMATE TECH AND THE AVAILABLE FRAMEWORKS TO UNLOCK A GLOBAL AT-SCALE TECHNOLOGY TRANSFORMATION

~270tn EUR investment opportunity in green businesses before 2050

Climate technologies have the **potential to abate 90%** of 2050 baseline man-made emissions

However, the climate tech journey and the associated **capital allocation process today is messy and inefficient** which is why a framework for climate tech fundraising is needed

THE CLIMATE BRICK ESTABLISHES A FRAMEWORK TO DE-MYSTIFY CLIMATE TECH SCALING

We analyzed data from 3,000+ climate tech ventures and interviewed ~100 founders, investors, policy-makers, and industry experts to **create the first seven bricks** - representing seven different tech scaling journeys

60+ COMPANIES HAVE UNITED TO CREATE THE SEVEN BRICKS

Participants in co-developing The Climate Bricks



Non-exhaustive, the full list can be found at climatebrick.com

THE CLIMATE BRICKS ARE DESIGNED TO ACCELERATE 7 DISTINCT CLIMATE TECH JOURNEYS

Input



3,000+ companies analyzed (primarily in Europe)



~12,000 data points modelled



~100 interviews with founders, investors, policy-makers, and industry experts conducted



60+ stakeholders represented at co-building workshop



Methodology

Identified 3000+ climate tech companies, which were categorized into 7 distinct bricks based on: BM, Risk profile, scaling & GTM journey

Analyzed quantitative data to identify **top-quartile performing companies for each brick** from 2020 onwards based on e.g.:

- Latest valuation and value trajectory
- Capital efficiency and growth rate
- Sustainability impact

These companies (excl. outliers) **make up the data for the quantitative figures on the bricks**

Out of these top-quartile ~100 companies were later selected (e.g., based on expert input of future value creation potential), and **subject to in-depth qualitative interviews**

Bricks covering Pre-Seed to Series D+, debt and/or project financing rounds have been added to the closest round when equity raised



Output

7 bricks identified to represent **different scaling** journeys



Gigascaling



Green Deployment



Asset-as-a-Service



Product Disruption



New Technology



Moonshot



Companion Software

To be updated annually...

VALUATION AND ROUND SIZES ARE DETERMINED BY CREATING A RANGE AROUND THE MEDIAN, BASED ON THE TOP QUARTILE COMPANIES

Valuation illustration¹

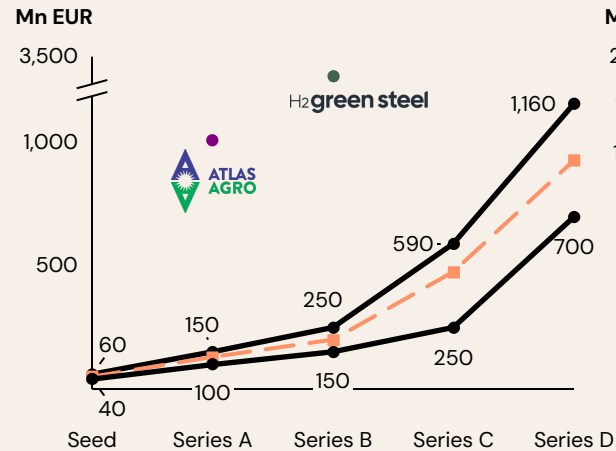
Preliminary Indicative

— Median for the top-quartile companies in bricks¹

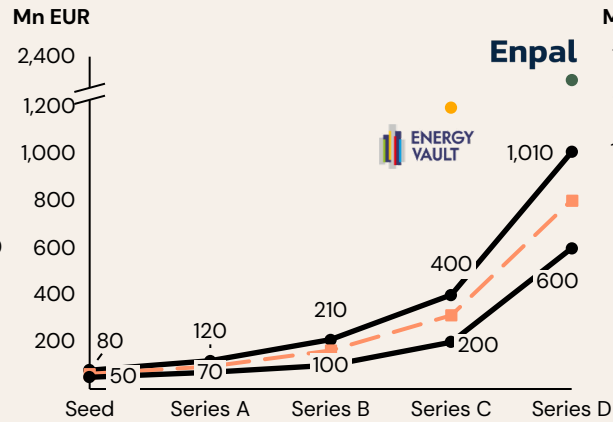
— Higher/Lower boundary of ranges

● Prominent outliers

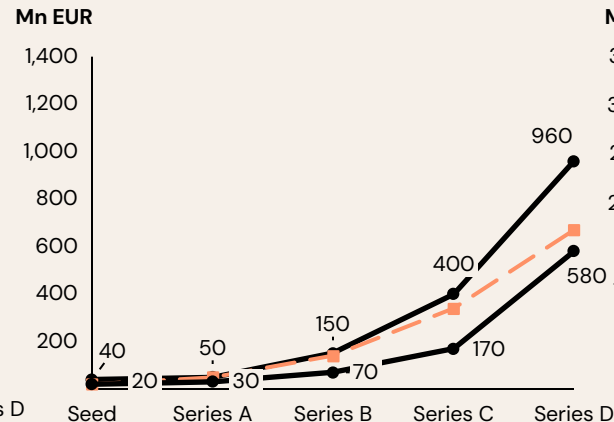
Gigascaling



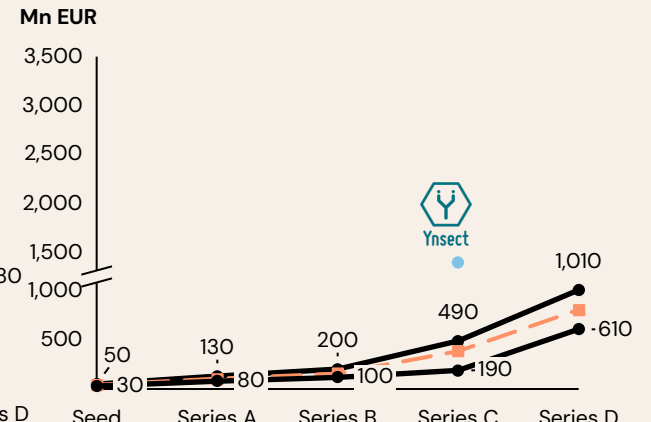
Green deployment



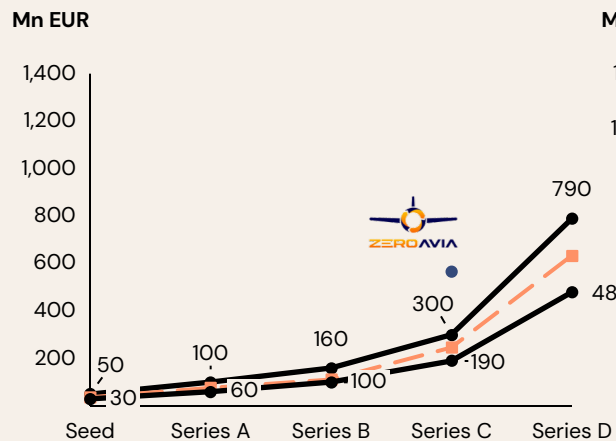
Asset-as-a-Service



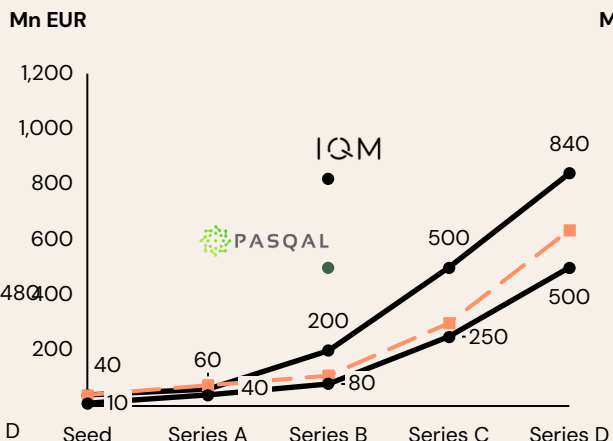
Product disruption



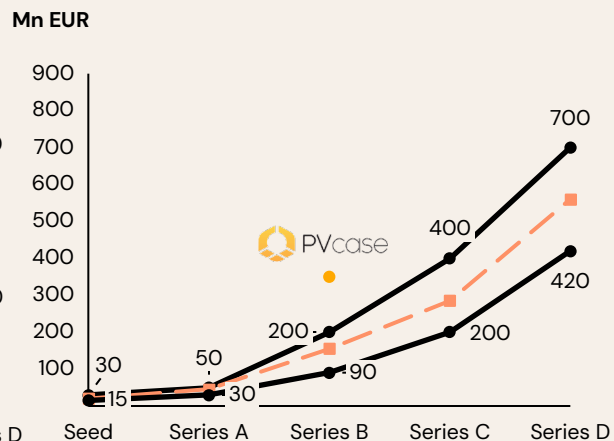
New technology



Moonshot



Companion software



SEE THE DETAILED METHODOLOGY HERE

1. Valuation and round-size are based on top-quartile performing companies e.g., in terms of valuation, future value trajectory and sustainable impact. Ranges in the row represent +/- ~25% of the median from this top quartile, hence some data points of top-performing companies excluded as these are >25% from the median. Data only includes rounds after 2020.































BRICK VOCABULARY

Abbreviation	Explanation
ARR	Annual recurring revenue
Beta	Early version of a program or application for early testing with customers
BMS	Building management system
CAC	Customer acquisition cost
CAPEX	Capital expenditure
CCUS/CCS	Carbon capture, utilization and storage
Churn	Percentage of accounts that cancel or do not renew their subscription
DtV	Design-to-Value
EPC	Company delivering a complete package of resources to complete project
EV	Electrical vehicle
FEED	Front-End Engineering Design
FID	Final investment decision
FOAK	First of a kind
GM	Gross margin

Abbreviation	Explanation
GTM	Go-to-market
LOI	Letter of intent
LTV	Lifetime value
Moat	Products or services that protect a company from incursions by competitors
MOU	Memorandum of understanding
MVP	Minimum viable product
NRR	Net revenue retention
OEMs	Original equipment manufacturers
PMF	Product-market fit
RFQ	Request for quote
SaaS	Software-as-a-service
SPVs	Special purpose vehicles
SW	Software
Top-quartile	The top-quartile is the upper 25% of companies in terms of performance
TRL	Technology readiness level ² (1-9)

1. TRL level definition: 1 – Basic research; 2 – Applied research; 3 – Critical function or POC established; 4 – Lab testing/validation of alpha prototype component/process; 5 – Laboratory testing of integrated/semi-integrated system; 6 Prototype system verified; 7 – Integrated pilot system demonstrated; 8 – System incorporated in commercial design; 9 – System proven and ready for full commercial deployment

7 BRICKS TO ACCELERATE CLIMATE TECH, EACH WITH THEIR UNIQUE CHARACTERISTICS

Climate Brick	Description	Example sectors	Example companies
 Gigascaling	Building CAPEX-intensive large-scale plants for green production	<ul style="list-style-type: none"> Green steel Battery manufacturing Green fuels and large-scale H2 dev. 	  
 Green deployment	Operating, deploying, or owning green assets	<ul style="list-style-type: none"> Solar Wind Battery park and charging infrastructure 	  
 Asset-as-a-Service	Providing green assets-as-a-service	<ul style="list-style-type: none"> Micromobility Electrical Vehicle-as-a-Service 	  
 Product disruption	Creating green products by disrupting design and/ or process	<ul style="list-style-type: none"> Transport vehicles, including e-aircraft, equipment, gadgets 	  
 New technology	Developing disruptive green technology	<ul style="list-style-type: none"> CCS/CCUS New materials (for e.g., food, chemicals, cosmetics, agriculture or healthcare) 	   
 Moonshot	Establishing highly novel, game-changing science	<ul style="list-style-type: none"> Fusion Quantum computing 	  
 Companion software	Enabling hardware through software	<ul style="list-style-type: none"> Utilization optimization and resource usage reduction software BMS and Grid management 	   

1. Other software solutions like marketplaces or plug-and-play SaaS are not in scope as existing research already covers this (e.g., Point Nine for SaaS Napkin, Balderton Capital for B2B sales)



GIGASCALING

This brick is for companies ...

Building CAPEX-intensive, large-scale plants for established green production methods, such as green steel, batteries, and green fuels



What you should consider if you are

- **A founder:** Develop and execute a clear roadmap to achieve cost competitiveness compared to peers. Prioritize execution – build a FOAK plant and scale rapidly. Ensure take-or-pay commitment offtakes to unlock non-dilutive financing.
- **An investor:** Prioritize investments based on large-scale off-takes and proven CAPEX optimization to ensure high upfront investment repayment. Support founders in the early stages by, for example, introducing them to potential large-scale customers, helping them identify reliable supply chain partners, or assisting in obtaining site approvals.
- **A policymaker:** Pre-approve regulatory land requirements for sites to facilitate rapid scaling



GIGASCALING

Building CAPEX-intensive large-scale plants for green production

Preliminary Indicative

CRITICAL UNLOCKS

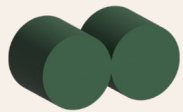
- I Develop and execute on clear roadmap to cost competitiveness incl. proven green
- II This is an execution game – build FOAK plant and scale rapidly
- III Ensure committed take-or-pay offtakes to unlock non-dilutive capital and equity.

EUR	PRE-SEED	SEED	SERIES A	SERIES B	SERIES C	SERIES D+ ⁵	
This brick depicts the scaling formula of top quartile companies from a valuation perspective. Companies founded 2009 beyond, valuation rounds up to Series X 2020-202x. To avoid skewed data, outliers have been excluded.	Time to take off: founding team and idea based on large-scale TAM	Initial LOIs and execution roadmap in place	Continue secure LOIs while having plant feasibility and plant manager in place	Convert LOIs to off-takes Focus on sourcing and permits for FOAK	"Majority of planned capacity covered in offtakes"	Production starts: FOAK ready and cost leadership demonstrated	
FINANCING (INDICATORS)	Total raised ^{1,2} Median Valuation ¹ Post money	8-15m 40-60m	25-40m 100-150m	30-50m 150-250m	60-120m 250-590m	145-250m⁴ 700-1,200m+⁴	
Capital stack Indicative %		10-30% 70-90%	10-20% 70-90%	0-20% 25-50% 0-10% 35-50%	15-25% 30-50% 0-10% 30-40%	20-30% 30-50% 0-10% 25-35%	
<ul style="list-style-type: none"> ■ Debt ■ Project financing ■ Non-dilutive grants ■ Equity 	Equity funding (angel investors) <i>Alternative financing methodology if corporate spin-off</i>	Equity funding (VC, strategic investments from customers/suppliers). Government financing and grants secured. Debt often raised between equity rounds	Equity funding (VC, strategic investments from customers/suppliers). Government financing and grants secured. Debt often raised between equity rounds	Project financing to de-risk balance sheet in addition to government financing and grants. Equity remains key source of funding. Debt often raised between equity rounds	Project financing to de-risk balance sheet in addition to government financing and grants. Equity remains key source of funding. Debt often raised between equity rounds	Raise debt as profitability picks up. Equity still key source of funding	
COMMERCIAL	Revenue ³ Indicative range Off-take ³ Indicative % of annual capacity for FOAK plant	Pre-revenue Pre-offtake	Pre-revenue Pre-offtake	Pre-revenue 0-30%	Pre-revenue 40-80+%	10m+ 60-100%	200m+⁴
GTM	Interest for potential future off-takers demonstrated	Initial LOIs from some target customers/off-takers in place (no binding commitment with regards to volume or pricing)	Order book with LOIs (contractual stability targeting >5 years period) starting to convert to term sheets	Take or pay committed off takes secured for 40-80+% of plant	60-100% of planned capacity for first plant is covered through binding take-or-pay agreements	First at scale revenues with delivery on take-or pay agreements	
PRODUCT AND OFFERING	Offering, app, impact	Value proposition for customers identified, including aspired sustainability value add articulated (e.g., CO2 abatement)	Demand potential defined over time, incl. potential lead customers. Sustainability value add detailed (e.g., LCA analysis) with proven green as critical unlock	Process to measure Sustainability value add (vs. alternatives) established (e.g., CO ₂ abatement)	Robust business model in place (e.g., PMF, off-takes committed) – including learnings from customer feedback.	Sustainability value add (vs. alternatives) measured and proven	
Cost performance	First view of cost competitiveness vs. alternatives available	Cost competitiveness demonstrated (i.e., cost advantages such as better sourcing alternatives, or factory cost)	Contractually protect floor in price mechanism established. Competitive production price point demonstrated and progressed in cost-plus negotiations for guaranteed minimum margin to support debt coverage ratios (as required for bankability/ project)		Roadmap to cost parity or leadership identified. Show traction in cost-out strategy and renegotiation with suppliers	Cost/out ability (e.g., DtV, clean sheet) to reach cost leadership demonstrated. CAPEX reduction plant by plant	
I Develop and execute on clear roadmap to cost competitiveness vs. peers (i.e., theoretical minimum cost calculations)							
TECHNOLOGY	Commercial phase: Oftentimes high technological readiness (TLR 8) expected to be in place for core product from the get-go, i.e., Advanced Development ready for integration into the intended operational environment for further testing						
VALUE CHAIN	Supply conversations initiated	LOIs with scalable and reliable partners in place	Supply for first wave of pilot deliveries guaranteed	Sourcing for FOAK plant secured	Long-term contracts with high-quality suppliers secured for at-scale production	Feedstock sourcing advantages demonstrated through procurement scale and long-term partnerships	
ECOSYSTEM	Policy dialog and regulatory support for site(s) initiated. Define key stakeholders (e.g. policy makers)	Infrastructure needs identified along with infrastructure and permitting plans		Infrastructure development. Necessary permits assured			
EXECUTION	Production	Potential sites identified	Site location decided. Ambitious production plan in place	Plant feasibility (e.g., RFQ) confirmed, EPC contracting strategy in place	FEED with first estimate of CAPEX needs and suppliers completed. Land agreement in place	Plant FID (CAPEX set and secured) and EPC contracts in place, incentivizing attractive NPV	Completed construction of FOAK plant with plan for additional sites. Partnerships with EPCs secured and transfer
II This is an execution game – build FOAK and scale rapidly							
Talent	2 potential starting points: <ul style="list-style-type: none"> • Start-up: CEO / COO and core founding team • Spin-off: Experienced project team (e.g., industry, tech, commercial) 	Experienced CEO appointed (if not already in place)	Plant manager in place, with proven experience in building plants at scale COO (if not already in place), CCO, CTO, CFO with project financing experience, and supply chain manager are appointed	Experienced policy person		Project and technical organization assigned	



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Source: Data bases; Expert interviews; Company interviews; Press search; Team analysis



GREEN DEPLOYMENT

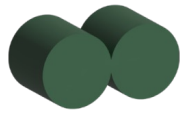
This brick is for companies ...

Operating, deploying, or owning green assets, such as solar, wind, and battery parks.



What you should consider if you are

- **A founder:** Set up scalable organization to out-execute peers on operations and commercial traction. This is an execution game – ramp up value, sales, and scale rapidly. Develop and execute a clear roadmap to profitable unit economics and outcompete peers
- **An investor:** Prioritize investments based on early order book traction and rapid sales, while also considering vertical integration and geographical expansion. Support founders in the early stages by assisting them in identifying effective deployment models to achieve a competitive advantage or by connecting them with suitable deployment partners. Also, take into account the financial and risk implications of owning versus leasing assets.
- **A policymaker:** Engage with companies to comprehend emerging industry needs. This will drive public acceptance and provide long-term, stable, and predictable support. This will ultimately facilitate policy changes and support programs that benefit customers, companies, and investors.



GREEN DEPLOYMENT

Preliminary Indicative

Operating, deploying, or owning green assets

CRITICAL UNLOCKS

- I Set up scalable organization to out-execute peers on operations and commercial traction
- II This is an execution game – ramp up value, sales, and scale rapidly
- III Develop and execute a clear roadmap to profitable unit economics and outcompete peers

EUR	PRE-SEED	SEED	SERIES A	SERIES B	SERIES C	SERIES D+ ⁵	
This brick depicts the scaling formula of top quartile companies from a valuation perspective. Companies founded 2009 beyond, valuation rounds up to Series x 2020-202x. To avoid skewed data, outliers have been excluded.	Time to take off: strong operational founding team in place	Value proposition tested with customers through MVP	Build a scalable organization with Repeatable GTM Playbook in place	Continue scaling while moving to more and more healthy unit economics	Financing gets more elaborate to allow proper scaling, also internationally	Go big: Keep growing internationally with healthy unit economics	
FINANCING INDICATORS	Total raised ^{1,2} Median Valuation ¹ Post money	n/a n/a	10–20m 50–80m	15–30m 70–120m	35–60m 100–210m	50–100m 200–400m	110–180m+ ⁴ 600–1,010m+ ⁴
Capital stack Indicative %	100%	5–10% 90–95%	0–5% 95–100%	0–20% 10–30% 60–80%	0–20% 40–50% 40–50%	0–25% 50–65% 20–40%	
<ul style="list-style-type: none"> ■ Debt ■ Project financing ■ Non-dilutive grants ■ Equity 	Equity funding (angel investors, VC)	Structure for future SPV arrangements in place		Debt and project financing on top of equity, e.g. through SPVs (if owning assets)			
COMMERCIAL	Revenue ³ Indicative range	Pre-revenue	0–3m	5m+	10m+	50m+	150m+
GTM	Key local end-user segment(s) and target customer determined	Early revenue from first customers, e.g., through one-off contracts testing the service; Model of serving customers and GTM strategy/roadmap built; Strong brand name established	Increased revenue from new and returning customers Product/service segment expansion where synergies exist	Demonstrate revenue traction including recurring revenue streams, through binding contracts	Larger revenue traction; International/geographic expansion in progress	At scale revenue traction with market leading position; Further geographical expansion, for several of the segment offerings (if very different, split into separate SPVs)	
PRODUCT AND OFFERING	Offering, app, impact	First view of cost competitiveness vs. alternatives, aspired sustainability value add articulated (e.g., CO2 abatement)	Value proposition proven with customers	First pilot project with validated value proposition in progress. Process to measure Sustainability value add established	Offerings are broadened and differentiated to adjacencies (e.g., maintenance, parts)	Project finance to monetize the installed base (e.g., SPV) and improved customer lifetime value (LTV)	
Cost performance	Value proposition with moat identified	Cost competitiveness further detailed e.g., LTV/CAC ratios	LTV/CAC 3:1, path to profitability clearly outlined	Clear roadmap to profitable unit economics, competitive differentiation, and customer acquisition cost (CAC) improvement delivered		Break-even unit economics achieved and improved operational cost efficiency	
TECHNOLOGY	Technology need identified	Feasibility of MVP technology established	Commercial phase: High technology readiness in place for core product (TRL 9)				
VALUE CHAIN	Main supplier needs identified	Key supplier and commerce negotiation identified and prioritized, e.g., with distributors	Partnerships with key suppliers for, e.g., access to large hardware volumes secured	Products co-developed with strategic partners to enhance value proposition	In-house production evaluated for further cost-out and accelerated speed of deployment/servicing or an elaborate portfolio of suppliers set up for max independence		
ECOSYSTEM	Regulatory landscape identified	Product fit with applicable regulatory landscape validated	Policy dialogues with key governmental bodies, etc. in progress	Policy/government dialogues increased as needed to support rapid scaling across various geographies (e.g., to reduce process lead times & approval delay barriers)			
EXECUTION	Operations	Deployment model, including potential partners established	Access to deployment labor secured (outsourced/in-house); Commercial organization established	I A scalable organization to out-execute peers on operations are demonstrated LTV/CAC ratio 3:1	Step change in deployment efficiency achieved (e.g., number of installations per day)	Recipe for scaling demonstrated, e.g., rapid decline in delivery cost, unit cost parity	Path to lowest total system cost followed (e.g., fastest deployment)
Talent	Founder(s) with strong commercial and technical expertise to develop first MVP	CFO, CTO, and experienced industry talent appointed	Access to dedicated and focused deployment/project organization secured	Experienced general managers to handle geographical expansion in place			



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2. Round sizes include both dilutive and non-dilutive capital (debt and grants), non-dilutive capital in-between rounds have been added to closest round. Grant data not always publicly available which has been adjusted for in the analysis; 3. Indicative, reported revenues based on a limited sample size, off-takes % only stated where available to be seen as directional guidance only 4. Range based on Series D medians, funding rounds post-Series D (i.e., E, F, ...) can be significantly higher in some cases; 5. Milestones are based on Series D and onwards, i.e., including funding rounds post-Series D

Source: Data bases; Expert interviews; Company interviews; Press search; Team analysis

CRITICAL UNLOCKS

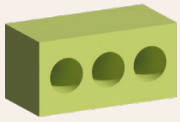
- I Set up scalable organization to out-execute peers on operations and commercial traction
- II This is an execution game – ramp up value, sales, and scale rapidly
- III Develop and execute a clear roadmap to profitable unit economics and outcompete peers

EUR		2016 PRE-SEED / SEED	2017 SERIES A	2021 SERIES B	2022 SERIES C	2024 SERIES D+
This brick depicts the scaling journey for Zolar since their founding in 2016.		Team in place with product portfolio coming together	Value proposition flies with customers Revenue start to become significant	Focus on scaling organization, building up brand and ensure a clear roadmap to healthy unit economics	Continue scale e.g., through partners, and expand into new segments (EMS)	Expand financing methods, and drive efficiencies
FINANCING (INDICATORS)	Total raised ¹	<1m	<5m	20-25m	140m	100m+ ²
	Capital stack %	100%	100%	80-100%	20-40%	0-20%
<ul style="list-style-type: none"> ■ Debt ■ Project financing ■ Non-dilutive grants ■ Equity 		<p>Raised equity from family office</p> <p>Equity VCs (Statkraft + Heartcore + Partech)</p>		<p>Equity VCs (existing and new investors)</p> <p>Debt and project financing on top of equity, e.g., through SPVs (if owning assets)</p>		<p>Equity from VCs (existing & new investors), plus revolving debt from financing partner</p>
COMMERCIAL	Revenue	Pre-revenue	<10m	10-20m	75-100m	150-200m
	GTM	Mainly digital marketing channels, D2C (online sales via zolar's proprietary online configurator)	Mainly referrals and digital marketing channels, increased capabilities of zolar online configurator + tele-sales	Built up of zolar brand, added external lead providers Differentiated asset light partnership model for installation	Continued acceleration, plus building own-branded channels	Differentiated channels of customer acquisition
PRODUCT AND OFFERING	Offering and applications	Added batteries	Added EV chargers	Added rent as alternative payment option	Added Energy Management System (EMS)	Adding financing option as alternative payment option (Q1/24)
	Cost performance	Lean operations set up from the start assuring scalability of the platform via 3rd party installers	Around 20% gross margin, clear roadmap to growing margins defined	Clear roadmap to profitable unit economics, competitive differentiation, and customer acquisition cost (CAC) improvement delivered	>30% gross margin, 50% reduction in installment time leading to lower working capital	
TECHNOLOGY		Development of consumer facing inhouse tech platform (zolar online configurator)	Development of partner facing inhouse tech platform (zolar project center)	Expand into installation partner product platform & workflow management	Expand into energy management and consumer app & partner app	Improved consumer app & partner in-app functionality (e.g. EMS, pricing, CRM)
VALUE CHAIN		zolar sells, plans, sources & bills directly to customer, installations predominantly through 3rd party installers	Partnerships with key wholesale hardware suppliers and lead providers, scale	Added direct sourcing from hardware OEMs	Developed warehousing and logistics capabilities to benefit from scale	Continuously evaluating supplier base and partnering on product innovation and driving further value-chain efficiencies
ECOSYSTEM		Regulatory landscape identified	Product fit with applicable regulatory landscape validated	Policy dialogues with key governmental bodies, etc. in progress	Policy/government dialogues increased as needed to support rapid scaling (e.g., to reduce process lead times & approval delay barriers)	
EXECUTION	Production and organisation	Tech and product teams established	Sales, commercial and operational teams	A scalable organization to out-execute peers on operations are demonstrated – access to dedicated and focused deployment/project organization secured	lean organization of 350 people set up	lean organization of 400 people set up
	Talent	Strong CEO and founder Alex Melzer and former COO Gregor Loukidis both with +10 years solar experience.	Hired experienced COO (Ben Rausser), growing team with strong operational talent	Hired experienced CFO (Anurag Bansal), CCO (Sarah MMüller), and CTO (Torben Schwellnus)	Hired highly experienced external CEO to drive next stage of growth (Jamie Heywood)	



¹ Round sizes include both dilutive and non-dilutive capital (debt and grants), non-dilutive capital in-between rounds have been added to closest round. Grant data not always publicly available which has been adjusted for in the analysis. ² €100m Project Financing + undisclosed Equity

Source: Company interviews, Team analysis



ASSET-AS-A-SERVICE

This brick is for companies ...

Providing green assets-as-a-service, such as micromobility or Electrical Vehicle-as-a-Service.



What you should consider if you are

- **A founder:** Demonstrate product-market fit (PMF) including clear customer value addition. Ramp up rapidly and secure customers/offtake agreements early on. Ensure path to profitable unit economics – either through scale or design to cost minimization and with potential for vertical integration
- **An investor:** Prioritize investments based on proven product-market fit (PMF), sales margins, and plug-and-play for rapid expansion to cover high up-front costs and ensure returns on investment. Support founders across funding stages by, e.g., helping them set a structured plan for asset deployment or understanding how to execute on it in the most effective way. High-value assets indicates a larger balance sheet, which in turn requires a thorough financial due diligence process.
- **A policymaker:** Facilitate early regulatory support to ensure transparency regarding the risks and opportunities that affect all parties involved.

ASSET-AS-A-SERVICE

Preliminary Indicative

Providing green assets-as-a-service

CRITICAL UNLOCKS

- I Demonstrate product-market fit (PMF) including clear customer value addition
- II Ensure path to profitable unit economics – either through scale or design to cost minimization
- III Ramp up rapidly and secure customers/offtake agreements early on

	EUR	PRE-SEED	SEED	SERIES A	SERIES B	SERIES C	SERIES D+ ⁵
	This brick depicts the scaling formula of top quartile companies from a valuation perspective. Companies founded 2009 beyond, valuation rounds up to Series x 2020-202x. To avoid skewed data, outliers have been excluded.	Get started: strong operational founding team in place	Potential customers show excitement about value proposition of the MVP	Rolling out: Move towards PMF with improving unit economics with repeatable GTM Playbook in place	Maturing: Tech readiness is proven at scale	Proper growth: Get the organization ready to expand, also internationally	Go big: Keep growing internationally with healthy unit economics
FINANCING (INDICATORS)	Total raised^{1,2} Median Valuation¹ Post money Capital stack Indicative % ■ Debt ■ Project financing ■ Non-dilutive grants ■ Equity		4-10m 20-40m 0-10% 90-100%	12-20m 30-50m 0-10% 90-100%	30-45m 70-150m 0-15% 80-100%	40-70m 170-400m 10-50% 0-20% 40-80%	140-230m+ ⁴ 580-960m+ ⁴ 20-50% 10-20% 30-70%
		Equity funding (angel investors, VC) →			Equity funding (e.g., VC) and potentially debt (e.g., asset-backed debt facility for SPV)	Equity and debt funding (e.g., asset-backed debt facility for SPV); Own cash funding (if profitable)	
COMMERCIAL	Revenue³ Indicative range Off-take³ Indicative % of annual capacity for FOAK plant GTM	Pre-revenue Pre-offtake Large emerging market opportunity identified; Brand building to gain customer traction initiated	Pre-revenue Pre-offtake Business model fit for future geo expansion established; First deployment prepared; Key customer segments identified	5m+ 0-20% Early revenue shown, and offtakes Fast scaling accomplished – sales and service execution established	20m+ 0-50% Revenue growth shown as customer demand builds and capacity scales Geographical expansion opportunity identified (or in current large market); Customers/offtake agreements secured	40m+ 50%+ Geographical expansion in progress; Profitable growth ability demonstrated; Customer retention and ARPU increased	70m+ 50%+ Profitability/cash flow neutrality achieved
PRODUCT AND OFFERING	Offering, app, impact Cost performance	Value proposition identified, with a plan to reach competitive advantage, aspired sustainability value add articulated (e.g., CO ₂ abatement) Main cost drivers and high-level view of unit economics provided	MVP with a clear customer value add and offering in place (e.g., as-a-Service), sustainability value add detailed Cost drivers further refined, and unit economics detailed	PMF demonstrated (high usage, low churn) and scalability (multiple geos & segments). Process to measure Sustainability value add proven (e.g., via LCA) Path to profitable unit economics ensured – either through scale or design to cost minimization.	Offerings/business models, and product suite expanded to include diversification in different segments Operations, scale, and unit economics optimized to achieve operational profitability	CAPEX and costs optimized; Partnerships scaled as needed	Profitability/cash flow neutrality achieved
TECHNOLOGY		Technology need to solve real customer problem identified	Low technology risk demonstrated; Technical moat (depending on tech novelty) established High technological readiness (TRL 7-9) – applicable for companies with well-established technology (e.g., micro mobility)	Development plan designed to cater for geographical/segmental technological needs; KPIs for continuous improvements in place	Analytics used for operations and product improvements	A scalable and efficient technology demonstrated (including management of product usage); Standard components utilized where applicable to simplify supply chain	High technological readiness (TRL 7-9) – applicable for companies with novel technology (e.g., autonomous drones/fleets)
VALUE CHAIN		Clear view on requirements established (own or with partners)	Supply (including required innovation) and distribution needs identified; RFQs for sourcing submitted	Core supply chain locked-in; Partners onboarded	Partners and integrations secured as needed to scale →		
ECOSYSTEM		Important stakeholders and player in the ecosystem identified	Pathway to regulatory support and policy needs established	Work/discussions integrated to de-risk regulations in business as usual	Regulatory changes in various regions are closely monitored; Collaborations with local authorities have been established to provide feedback on new legislation		
EXECUTION	Operations Talent	Founder(s) with strong commercial and technological expertise to develop first MVP	CTO, COO and CCO appointed	Strong operational organization established	Strong development and operations talent onboarded to optimize offering and operations		Strong regional expansion talent recruited (e.g., country managers)



1. Valuation and round-size are based on top-quartile performing companies in terms of valuation, future value trajectory and sustainable impact. Ranges in the row represent +/- ~25% of the median from this top quartile, hence some data points of top-performing companies excluded as these are >25% from the median. 2. Round sizes include both dilutive and non-dilutive capital (debt and grants), non-dilutive capital in-between rounds have been added to closest round. Grant data not always publicly available which has been adjusted for in the analysis; 3. 6. Indicative, reported revenues based on a limited sample size, to be seen as directional guidance only, off-takes % only stated where available; 4. Range based on Series D medians, funding rounds post-Series D (i.e., E, F, ...) can be significantly higher in some cases; 5. Milestones are based on Series D and onwards, i.e., including funding rounds post-Series D



PRODUCT DISRUPTION

This brick is for companies ...

Creating and assembling green products such as e-aircraft, equipment, and gadget transport vehicles.



VOLOCOPTER



INNOVAFEED



Ynsect

What you should consider if you are

- **A founder:** Show market existence early on and prove technological readiness (e.g., through prototyping/demo). Establish IP moats through, e.g., patents and process design. Form partnerships and secure a high-quality, reliable supply chain with potential for vertical integration.
- **An investor:** Distribute investments based on large proven market opportunity, roadmap to profitability with good cash management, and proven technological viability for long-term value. Support founders in early stages by, e.g., connecting them with reliable partners for test case rollout and manufacturing or guiding them in identifying the most sensible path to achieve technology readiness.
- **A policymaker:** Collaborate closely with companies to comprehend emerging industry requirements and assist with rapid scaling and infrastructure needs.



PRODUCT DISRUPTION

Preliminary Indicative

Creating and assembling green products

CRITICAL UNLOCKS

- I Show market existence early on and prove technological readiness (e.g., through prototyping)
- II Establish IP moats through, e.g., patents and process design
- III Establish partnerships, secure high-quality and reliable supply chain

EUR	PRE-SEED	SEED	SERIES A	SERIES B	SERIES C	SERIES D+ ⁵	
This brick depicts the scaling formula of top quartile companies from a valuation perspective. Companies founded 2009 beyond, valuation rounds up to Series x 2020-202x. To avoid skewed data, outliers have been excluded.	Get started: team in place that identified an exciting market	Setting up: Create an IP moat and explore ways of production	Establish partnerships, secure high-quality and reliable supply chain	Prove technological readiness and secure off-takes	Explore international markets and additional financing options for production	Scale revenue and win markets internationally	
FINANCING (INDICATORS)	Total raised^{1,2} Median Valuation¹ Post money	7-10m 30-50m	15-25m 80-130m	25-40m 100-200m	50-85m 190-490m	180-295m+⁴ 610-1,010m+⁴	
	Capital stack Indicative %	10-30% 70-90%	0-20% 80-100%	0-5% 75-95%	0-10% 70-80%	10-30% 10-20% 60-70%	
	<ul style="list-style-type: none"> ■ Debt ■ Project financing ■ Non-dilutive grants ■ Equity 	Equity funding (angel investors, VC); If applicable, raise grants →			Pathways to alternative financing in addition to equity identified, incl. project financing	Debt funding and EU guarantee loans explored; Project financing (depending on extent of ongoing R&D); Equity still main source of funding	
COMMERCIAL	Revenue³ Indicative range Off-take³ Indicative range	Pre-revenue	Pre-revenue	Pre-revenue	10m+ 0-20+%	30m+ 20+%	50m+ 40+%
	GTM	I Proven market existence and customer demand identified	Customers and supplier indication (e.g., LOIs) demonstrated; First customer relationships in place	First revenue through first- customer contracts. Order book/offtakes locked-in; GTM strategy/roadmap established for scaling and geographical expansion	Revenue increased through offtakes/binding contracts. Order book executed on	Revenue at scale	
PRODUCT AND OFFERING	Offering, app, impact	Value proposition for customers defined, including <i>sustainability value addition</i>	Product premium in sustainable substitution anchored with limited functional trade-off. Sustainability value add detailed	Proven product and competitiveness, clear moat/advantage vs. peers (including price, quality, and cost). Process to measure Sustainability value add established	Flexible/innovative offerings model utilized (e.g., as-a-Service).	"Right-to-win" established, high product functionality reached with ability to outcompete incumbents and large-scale competitors	
	Cost performance	Cost calculations made of the technology vs. conventional solutions and incumbents	Theoretical minimum cost calculations and roadmap to profitability conducted - to win vs. conventional solutions and incumbents	Cost-out in progress (e.g., renegotiation with suppliers)	Profitability/cash flow neutrality achieved		
TECHNOLOGY	First prototype built	II IP moats of the technology established through, e.g., patents and process design	Proven technological readiness and MVP through prototyping/demo (TRL 7)	Commercial phase: First series launched with clear take on R&D path	Commercial phase: R&D to support refined value proposition evolved		
VALUE CHAIN	Supply and R&D partnership conversations in progress	Suppliers and partnerships evaluated; First key suppliers locked-in	III Establish partnerships, secure high-quality and reliable supply chain	Supplier/manufacturing partners utilized for at-scale sales	Supplier partnerships for feedstock sourcing advantage (1-2y of volume) secured		
ECOSYSTEM	Pathway to regulatory support and policy needs identified	Policy dialogue to get regulatory approvals/support in progress	Infrastructure plan established for enablement	Infrastructure development; Government and state approvals for licensing needs ensured	First at-scale plant in progress, including first deliveries; Additional sites planned	Learnings institutionalized and blueprint replicated to build additional sites at superior cost/time	
EXECUTION	Production	Idea for production and assembly model	In-house or outsourcing decision for production and assembly (considering, e.g., production risk, cost, time-to-market, quality trade-offs) - mixed approach can be utilized - initially in-housing production and moving to outsourcing or v.v.	<ul style="list-style-type: none"> In-house: Agreement reached and pilot facility, FEED/RFQs and land for first at-scale plant are in progress Outsource: RFQs submitted 	<ul style="list-style-type: none"> Pilot facility finalized and running; FID on first at-scale plant in place Production outsourced 	<ul style="list-style-type: none"> Scale production and assembly first at-scale plant Strategy for scaling outsourcing to match demand/pipeline in place 	
	Talent	Founder(s) with strong technological/scientific expertise to develop first MVP	CTO, COO and CCO appointed	CCO and CPO appointed	Ambitious commercial pipeline and innovation plans established, irrespectively of selected path (in-house or outsourcing)	Business and R&D directors recruited with industry expertise/connections	



1. Valuation and round-size are based on top-quartile performing companies in terms of valuation, future value trajectory and sustainable impact. Ranges in the row represent +/- ~25% of the median from this top quartile, hence some data points of top-performing companies excluded as these are >25% from the median 2. Round sizes include both dilutive and non-dilutive capital (debt and grants), non-dilutive capital in-between rounds have been added to closest round. Grant data not always publicly available which has been adjusted for in the analysis; 3. Indicative, reported revenues based on a limited sample size, off-takes % only stated where available to be seen as directional guidance only; 4. Range based on Series D medians, funding rounds post-Series D (i.e., E, F, ...) can be significantly higher in some cases; 5. Milestones are based on Series D and onwards, i.e., including funding rounds post-Series D



NEW TECHNOLOGY

This brick is for companies ...

Developing innovative technologies that revolutionize industries, such as carbon capture and new materials (e.g., food, cosmetics, agriculture or healthcare).



What you should consider if you are

- **A founder:** Establish IP moats through, e.g., patents and process design. Execute a clear roadmap to cost competitiveness vs. conventional technology and incumbents. Prove high technology readiness and demand for new technology early on and showcasing economical superiority of technology.
- **An investor:** Consider proven GTM strategy with commercial traction through offtakes and technical roadmap to cost competitiveness when investing. Support founders in early stages by, e.g., helping them find relevant grants to apply for or by guiding them in identifying the most sensible path to achieve technology readiness.
- **A policymaker:** Early public funding is critical for enablement – key for European countries to learn from the US.



NEW TECHNOLOGY

Preliminary Indicative

Developing disruptive green technology

CRITICAL UNLOCKS

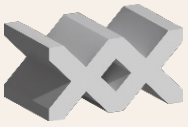
- I Establish IP moats through, e.g., patents and process design
- II Execute on clear roadmap to cost competitiveness vs. conventional technology and incumbents
- III Prove high technology readiness and demand for new technology early on

EUR	PRE-SEED	SEED	SERIES A	SERIES B	SERIES C	SERIES D+ ⁵
This brick depicts the scaling formula of top quartile companies from a valuation perspective. Companies founded 2009 beyond, valuation rounds up to Series x 2020-202x. To avoid skewed data, outliers have been excluded.	Kick things off: Strong technical team in place and clear vision defined	Doing it better: Roadmap for IP moat defined	Doing it cheaper: Clear roadmap to achieve cost competitiveness through developed technology	Secure off-takes and prove tech readiness	Tap into first revenues with a strong orderbook	Commercial roll-out: Get your product out there
FINANCING (INDICATORS)	Total raised ^{1,2} Median Valuation ¹ Post money	8-15m 40-60m	15-20m 60-100m	30-55m 100-160m	50-90m 190-300m	90-155m+ ⁴ 480-790m+ ⁴
	Capital stack Indicative %	25-50% 50-75%	15-25% 75-85%	5-10% 90-95%	10-20% 0-10% 70-90%	10-20% 10-20% 60-80%
	<ul style="list-style-type: none"> Debt Project financing Non-dilutive grants Equity 	Equity funding (angel investors, VC); Structured approach applied to secure grants and public funding		Equity funding from VCs and strategic investments in place, e.g., from high-profile customers or incumbents	Non-dilutive options, i.e., debt and project financing for de-risked assets	
COMMERCIAL	Revenue ³ Indicative range Off-take ³ Indicative % of annual capacity for Y1 output	Pre-revenue Pre-offtake	Pre-revenue Pre-offtake	Pre-revenue Pre-offtake	Pre-revenue 0-50%	10m+ 50-80% 70m+ 80%+
	GTM	Show evidence of early signs of commercial interest (e.g., customer ask)	Pre-pipeline to prove demand for new technology in progress	LOIs in place and scaled up.	Initial off-takes	First revenue through first customer contracts achieved and off-takes Order book in progress, with substantial share of planned capacity covered by binding offtake agreements
PRODUCT AND OFFERING	Offering, app, impact Cost performance	Value proposition for customers proven, incl. sustainability value add	Customer use cases defined with regards to value proposition and offering	Key relationships with customers /partners established	Product/offering tested with customers and clear target verticals aligned. Process to measure Sustainability value add established	Roadmap to large-scale commercialization followed Cost breakeven/profits achieved by accessing incentives and support schemes Cost-out ability (e.g., DtV, clean sheet) and competitive price point demonstrated
TECHNOLOGY		Basic principles of the technology outlined	Lab phase: Basic principles demonstrated, and proof of concept achieved (TRL 1-3)	Pilot phase: Technology and product MVP validated and achieved technology demonstration in relevant environment (TRL 4-6)	Demo phase: Prototype and certify technology demonstrated (TRL 7-8); Pilot tested	III Demo/Commercial phase: High technological readiness proven, moving towards technology ready for commercialization (TRL 8-9)
VALUE CHAIN		Potential suppliers identified	Supplier conversations in progress	Supply for first wave of pilot deliveries secured	Supplier partners for at-scale production locked-in	
ECOSYSTEM		Pathway to regulatory support and policy needs identified	Engaged with identified Infrastructure needs	Infrastructure plan established for enablement	Infrastructure development with identified partners	Policy dialogue for scaling enablement in progress
EXECUTION	Production	In-house or outsourcing (or mixed) decision for production and assembly (considering, e.g., production risk, cost, time-to-market, quality trade-offs)	<ul style="list-style-type: none"> In-house: Set site location for pilot and production plan Outsource: Desired output targeted; Production sources diversified for risk mitigation/cost-outs; Long-term production volumes locked-in 	In-house: Set site location for pilot and production plan	Pilot plant finalized	Pilot plant production scaled up; FOAK plant FID and guarantees in place FOAK and ramp up production finalized; Delivery at scale and blueprint replication achieved
	Talent	Founder(s) with strong technological/scientific skills to develop first MVP	CTO appointed to take novel technology from lab to FOAK	CFO and supply chain manager appointed	CCO appointed to build commercial traction	



1. Valuation and round-size are based on top-quartile performing companies in terms of valuation, future value trajectory and sustainable impact. Ranges in the row represent +/- 25% of the median from this top quartile, hence some data points of top-performing companies excluded as these are >25% from the median. 2. Round sizes include both dilutive and non-dilutive capital (debt and grants), non-dilutive capital in-between rounds have been added to closest round. Grant data not always publicly available which has been adjusted for in the analysis. 3. Indicative, reported revenues based on a limited sample size, off-takes % only stated where available, to be seen as directional guidance only, Off-takes % only stated where available. 4. Range based on Series D medians, funding rounds post-Series D (i.e., E, F, ...) can be significantly higher in some cases. 5. Milestones are based on Series D and onwards, i.e., including funding rounds post-Series D

Source: Data bases; Expert interviews; Company interviews; Press search; Team analysis



MOONSHOT

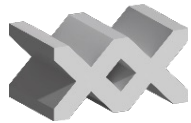
This brick is for companies ...

Launching highly game-changing science fundamental to the way entire sectors work, such as fusion and quantum computing.



What you should consider if you are

- **A founder:** Secure grants and public funding throughout the project, considering the long time to first revenue. Demonstrate technological readiness, conduct R&D, and establish intellectual property moats, such as patents. Engage key commercial partners and customers, like large governmental or industrial off-takers.
- **An investor:** Prioritize investments based on proven technology development and indication of commercial traction through, e.g., offtakes. Support founders in early stages by, e.g., helping them find relevant grants to apply for or by providing access to valuable connections and customers.
- **A policymaker:** Early public funding is critical for enablement (grants and guarantees). Stay close to the founders, understand the potential applications, and drive bold policies to support them.



MOONSHOT

Preliminary Indicative

Establishing highly novel, game-changing science

CRITICAL UNLOCKS

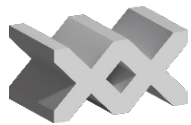
- 🟡 Ensure grants and public funding throughout the journey – given long time to first revenue
- 🟠 Prove technological readiness, drive R&D, and establish IP moats (e.g., patents)
- 🟢 Lock in key commercial partners and customers (e.g., large governmental)

EUR	PRE-SEED	SEED	SERIES A	SERIES B	SERIES C	SERIES D+ ⁵
This brick depicts the scaling formula of top quartile companies from a valuation perspective. Companies founded 2009 beyond, valuation rounds up to Series x 2020-202x. To avoid skewed data, outliers have been excluded.	Market identified for a nascent technology, maybe from academia	Leverage grants and public funding while evolving on vision and market opportunity	Work on tech readiness while securing customer interest	Pilot technology while cementing customer interest through LOIs	Demonstrate technology in close collaboration with future customers	Kick off proper commercial operations
FINANCING (INDICATORS)	Total raised ^{1,2} Median Valuation ¹ Post money	6–10m 10–40m	10–20m 40–60m	15–45m 80–200m	45–110m 250–500m	100–170m+ ⁴ 500–840m+ ⁴
	Capital stack Indicative %	0–10% 30–60% 40–60%	0–10% 20–40% 50–80%	0–10% 20–40% 50–80%	0–10% 20–40% 50–80%	0–10% 0–20% 10–30% 50–80%
	<ul style="list-style-type: none"> Debt Project financing Non-dilutive grants Equity 	Equity funding (angel investors, VC); Structured approach applied to secure grants and public funding		Pivoted towards more VC equity; Broad set of funding ensured, e.g., from high-profile customers such as government or industrial partners		Project financing if possible (often not applicable until later stages/ Series E+)
🟡 Grants and public funding ensured throughout financing journey						
COMMERCIAL	Revenue ³ Indicative range Off-take ³ Indicative % of annual capacity for Y1 output	Pre-revenue Pre-offtake	Pre-revenue Pre-offtake	Pre-revenue Pre-offtake	Pre-revenue Pre-offtake	Pre-revenue Pre-offtake
	GTM	The importance for customers and governments validated by applying research focus	Collaborations identified (e.g., initiate MOUs); Underlying physics of concept demonstrated	Pre-pipeline initiated to prove demand and explore interest from high-profile potential customers/partners	LOIs/MOUs for key partners in place (e.g., government)	Key commercial partners and customers locked-in (e.g., large governmental)
		Some instances of first revenue	Offtakes for additional use cases achieved			
PRODUCT AND OFFERING	Offering, app, impact Cost performance	Use cases for nascent technology explored to support potential value proposition	Large future market opportunity demonstrated	Use cases identified for specific industries and buyers with clear value proposition	Key relationships with customers/partners secured	Roadmap to large-scale commercialization finalized
		Low theoretical minimum cost proven	Roadmap to profitability and cost-out established			
TECHNOLOGY			Lab phase: Proof of concept achieved, primarily research-based (TRL 1–3)	Pilot phase: Technology and product MVP validated (TRL 4)	Demo phase: Achieved technology demonstration in relevant environment (TRL 5–6)	Prototype demonstrated and progressed towards commercialization (TRL 7+)
🟠 TRLs can vary between rounds and companies but critical to prove technological readiness and have IP moat established, e.g., patents approvals, proprietary design and software, number of parts/components						
VALUE CHAIN		Supply/material need identified		Supply plan established and key suppliers achieved for first wave of pilot		Supplier partners secured for ramp-up production
ECOSYSTEM		Strong academic and research ties implemented (e.g., PHD programs)	Pathway to regulatory support and potential government collaboration established	Regulatory support secured; Academic collaboration scaled up (e.g., with regards to facilities and access to lab)	Infrastructure needs identified and plan for enablement conducted	
EXECUTION	Production Talent	Spin-off organized from university – IP rights considered (University vs. spin-off company) and cap table	Production strategy operationalized, e.g., site location determined for pilot using existing facilities for concept validation Potential move from university/lab environment to own facilities evaluated / conducted	Production launched; Pilot plant feasibility proven	Pilot production site scaled-up	
		Founder(s) with strong scientific expertise and visionary leadership ability	Experienced technological talent appointed; Expert talent emphasized recruiting	Commercial talented appointed		



1. Valuation and round-size are based on top-quartile performing companies in terms of valuation, future value trajectory and sustainable impact. Ranges in the row represent +/- 25% of the median from this top quartile, hence some data points of top-performing companies excluded as these are >25% from the median. 2. Round sizes include both dilutive and non-dilutive capital (debt and grants), non-dilutive capital in-between rounds have been added to closest round. Grant data not always publicly available which has been adjusted for in the analysis. 3. Indicative, reported revenues based on a limited sample size, off-takes % only stated where available, to be seen as directional guidance only. Off-takes % only stated where available. 4. Range based on Series D medians, funding rounds post-Series D (i.e., E, F, ...) can be significantly higher in some cases; 5. Milestones are based on Series D and onwards, i.e., including funding rounds post-Series D

Source: Data bases; Expert interviews; Company interviews; Press search; Team analysis



MARVEL FUSION

Company creating carbon free energy through fusion power plant

Preliminary Indicative

EUR	2019 SEED	2022 SERIES A	2022+ SPRIN-D & PPP ¹	2024+ SERIES B+ (NOT HAPPENED YET)
This brick depicts the scaling journey for Marvel Fusion since their founding in 2019.	Seed investment to validate key aspects of fusion concept	Equity round led by Earlybird to drive feasibility studies and BASF collaboration	Broadening scope of feasibility studies to widen addressable market	Scaling up production through proprietary laser facility

FINANCING (INDICATORS)	Total raised	Not public		35m	Not public	
	Capital stack %	Not public				
<ul style="list-style-type: none"> Debt Project financing Non-dilutive grants Equity 	Blueyard seed investment for concept development and team-ramp-up. In 2020 additional EUR 20m non-dilutive round for laser upgrades for concept validation and access to laser facilities	Successfully raised 35 Mn EUR equity with Earlybird leading the investment. The strong commercial partnerships that MF had established, substantiate the potential of its technology and enabled the funding round.	Sprin-D is a grant received from sprind.org to create new disruptive technologies from Germany. Non-dilutive contributions for proprietary laser development and infrastructure for demonstration facility			

COMMERCIAL	Revenue	Pre-revenue		Pre-revenue	Pre-revenue	
	GTM	Established a commercial partnership with the laser company Thales				

PRODUCT AND OFFERING	Offering and applications	Validation of key aspects of the fusion concept, using upgraded laser systems in Germany and Romania through Thales. Initiatives allowed the company to demonstrate fundamental parts of the concept	Feasibility studies with energy-intensive industries to investigate the potential commercial applications of its technology	Feasibility studies with leading airlines, steel producers and chemistry companies	Proprietary laser facility intended to be in construction. The only laser facility designed as a commercial fusion approach
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TECHNOLOGY	Technological readiness of TRL 3-4			Intended technological readiness of TRL 5-6	
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VALUE CHAIN	Not public information				
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ECOSYSTEM	Partnership with Siemens Energy secured to start working on initial fusion power plant designs	Collaboration with BASF to develop nanostructured fuel targets with chemical compounds	Partnerships intended with leading universities to refine nanostructures for fusion applications		
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EXECUTION	Production and organization	Advancement of technology to bring it closer to commercialization			Ultimately, MF's objective is to construct a laser facility designed for a commercial fusion approach with a scalable laser system, reaching the size of a power-plant prototype by 2032.
	Talent	Moritz von der Linden, Georg Korn, Karl-Georg Schlesinger, Pasha Shabalin were conducting due diligence on multiple fusion companies for a VC, and founded their company due to advancements in the latest laser and nanofabrication technologies	Strengthened team with renowned scientists such as Prof. Siegfried Glenzer and engineers for building the demonstration facility		Additional senior experts in experimental physics and engineering intended to be hired



¹ Sprin-D is a grant received from sprind.org to create new disruptive technologies from Germany, PPP stands for Public Private Partnership
Source: Company interviews



COMPANION SOFTWARE

This brick is for companies ...

Offering software enabled through hardware, such as software for utilization optimization and BMS/grid management.

tado° MONTA TWICE ↻ tibber

What you should consider if you are

- **A founder:** Establish early MVP technology feasibility and technology advantage vs. peers. Prove scalable business to minimize costs as share of revenue. Target rapid growth, with fast ARR growth, low churn and growing ACV.
- **An investor:** Prioritize investments based on proven added customer value, speedy customer acquisition, and early growth focus through ambitious expansion. Support founders across funding stages by, e.g., assisting with market positioning to unlock adjacent markets, differentiation strategies to outcompete competition, or industry experience/networks to unlock rapid scaling.
- **A policymaker:** Geographical expansion is key – drive common policies in Europe to secure level playing field.



COMPANION SOFTWARE

Enabling hardware through software

Preliminary Indicative

CRITICAL UNLOCKS

- I Establish early MVP and technology advantage vs. peers
- II Prove scalable business to minimize costs as share of revenue
- III Target rapid growth, with high ARR and low churn

	EUR	PRE-SEED	SEED	SERIES A	SERIES B	SERIES C	SERIES D+ ⁵
	This brick depicts the scaling formula of top quartile companies from a valuation perspective. Companies founded 2009 beyond, valuation rounds up to Series x 2020-202x. To avoid skewed data, outliers have been excluded.	Customer interest explored via first lines of code	MVP established and first partnerships kicked off	Scalable, sticky product in place	Ready to scale: rapid growth with a maturing commercial organization	Product-market-fit proven internationally	Kick off proper commercial operations
FINANCING (INDICATORS)	Total raised ^{1,2} Median Valuation ¹ Post money		3-6m 15-30m	10-15m 30-50m	20-40m 90-200m	70-120m 200-400m	95-160m+⁴ 420-700m+⁴
	Capital stack Indicative %		0-20% 80-100%	0-10% 90-100%	0-5% 0-5% 90-100%	0-10% 90-100%	0-10% 90-100%
	<ul style="list-style-type: none"> ■ Debt ■ Project financing ■ Non-dilutive grants ■ Equity 	Equity funding (angel investors, VC); Non-dilutive options (e.g., grants)			Equity funding (e.g., VC, strategic investors)		Equity funding; Some debt financing possible, e.g., if owning hardware assets Revenue-based financing due to recurring revenue possible
COMMERCIAL	Revenue ³ Indicative range	Pre-revenue	Pre-revenue	1m+m	5m+	10m+	75m+
	GTM	Key local end-user segment(s) and target customer determined	GTM strategy/roadmap identified including path to clear ICP; Large TAM proven	First revenue achieved	III Rapid growth targeted with high ARR and low churn Geographical expansion targeted; Short sales cycles and scalable customer acquisition demonstrated, i.e., a flywheel effect	High revenue growth; Customer base increased; SW product portfolio and cross-sell licenses expanded	Revenue at scale; Adjacent markets unlocked; Size of customer contracts expanded
PRODUCT AND OFFERING	Offering, app, impact	Competitive value proposition identified incl. sustainability value add	Business model defined, such as SaaS	II Proven scalable business; Product stickiness demonstrated, i.e., low churn		Offerings customized with proven product-market fit (PMF)	Differentiation increased and proven value proposition through feature development
	Cost performance			LTV/CAC 3:1	Path to profitability clearly outlined	Execute on path to profitability	
TECHNOLOGY		First lines of code, mock-ups/first app tested with customers to validate potential	I Pilot phase: MVP established and indication of tech advantage	Demo phase: Prove technology moat; Demonstrate ability to scale sales/ops	Commercial phase: Implement agile feature optimization including pace/approach for customized development for geographies	Commercial phase: Technology advantage further developed (e.g., by GenAI) to stay ahead of competition; New feature adapted to cater for new markets and customer behaviors Quick iterations and development cycles established	
VALUE CHAIN		Partner conversations initiated for MVP integration	First partnerships secured, e.g., value-added resellers, system integrators. Show capacity for integration	Partner and platform integrations launched; Integration strategy expanded and scaled	Partnerships monetized	Partners and integrations increased as needed	
ECOSYSTEM		Fit with regulatory requirements ensured, e.g., data protection, critical infrastructure build-out					
EXECUTION	Organization			Sales and marketing function established, with focus on lead generation and customer service execution	Organization scaled (product, sales, customer success, etc.). Offices located based on access to experienced/senior talent	Efficient organization in place with large international presence	
	Talent	Founder(s) with strong technological expertise to develop first MVP and GTM plan	CTO, strong technology and commercial talent appointed	Structured sales and marketing operations...			



1. Valuation and round-size are based on top-quartile performing companies in terms of valuation, future value trajectory and sustainable impact. Ranges in the row represent +/- ~25% of the median from this top quartile, hence some data points of top-performing companies excluded as these are >25% from the median 2. Round sizes include both dilutive and non-dilutive capital (debt and grants), non-dilutive capital in-between rounds have been added to closest round. Grant data not always publicly available which has been adjusted for in the analysis; 3. Indicative, reported revenues, often as ARR, based on a limited sample size, to be seen as directional guidance only; 4. Range based on Series D medians, funding rounds post-Series D (i.e., E, F, ...) can be significantly higher in some cases; 5. Milestones are based on Series D and onwards, i.e., including funding rounds post-Series D

Source: Data bases; Expert interviews; Company interviews; Press search; Team analysis

CRITICAL UNLOCKS

- I Establish early MVP and technology advantage vs. peers
- II Prove scalable business to minimize costs as share of revenue
- III Target rapid growth, with high ARR and low churn

	2011	2012	2013	2015	2016	2018+
EUR						
Top quartile companies in terms of performance (e.g., valuation), excluding outliers						
FINANCING (INDICATORS)						
Total raised	<1m	4m	25m	40m	40m	55m
Capital stack %		100%	100%	50%	100%	100%
<ul style="list-style-type: none"> ■ Debt ■ Project financing ■ Non-dilutive grants ■ Equity 	Founder's investment & Non-refundable Government grants	Venture Capital Investors		Debt from EIB Eur 20m		Financial growth investors lead by Trill Impact
COMMERCIAL						
Revenue	Pre-revenue	Pre-revenue	8m	15m	30m	75m
GTM		High-level view of GTM strategy view on e.g., ICP and market opportunity developed – however ahead of time, hence focus on early adopters	GTM strategy/roadmap identified including path to clear ideal customer profiles (ICPs); Large TAM (Total Addressable Market) proven	tado° energy management software to reduce energy expenses by 22% on average.	>1m users secured which use tado° on a weekly basis. III Rapid growth targeted, with high ARR and low churn	On path to become market leader for total energy management of buildings (connecting customers to overall energy market, EV charging, etc.) – on the Cloud
PRODUCT AND OFFERING		Product and Proposition very well received an established among early adopter customer segment		II Proven scalable business; Product stickiness demonstrated	Offerings customized with proven product-market fit (PMF)	Differentiation increased through expansion of offering in home energy mgmt. using Smart Thermostat with dynamic energy tariffs (acq. aWATTar)
Cost performance				Good unit economics demonstrated. Path to profitability clearly described		Execute on path to profitability in core business with strong expansion of SaaS revenue
TECHNOLOGY	First lines of code, mock-ups/first app tested with customers to validate potential <i>Throughout:</i> Prioritized going into the market	I MVP established and indication of tech advantage approaching customers as early as possible;	Proven technology moat; Demonstrated ability to scale sales/ops	Continued developing the product over time based on customer feedback and experience enabled through fast time-to-market		
VALUE CHAIN		Focused on direct Sales		Secured strong partnerships to scale sales (e.g., with OEMs and Utilities)		
ECOSYSTEM	Tado° being the first mover to digitize heating and cooling management. However, the market was not ready yet	Saw competitors as essential (e.g., Nest) as critical to build the new product category/market			Positioned company as a European market leader in intelligent climate management.	Delivered o path to become a leading player in energy management for buildings
EXECUTION						
Production	Focused on product development and building a strong organization.		Sales and marketing function established, with focus on lead generation and customer service execution	Organization scaled (product, sales, customer success, etc.); Offices located based on access to experienced/senior talent		Efficient organization in place with large international presence
Talent	Founder <u>Toon Bouten</u> with strong engineering/management expertise to develop first MVP. Emphasized importance to have creative, driven people on board			Strong development and operations talent hired, scalable sales/customer success		



THE CLIMATE BRICK

