

Urban Tech



2150

Urban Sustainability Technology Fund

2150 is a venture capital firm investing in technology companies that seek to sustainably reimagine and reshape the urban environment and enable a sustainable and scalable future of mass urbanisation. 2150's investment thesis focuses on major unsolved problems across what it calls the 'Urban Stack', which comprises every element of the built environment, from the way our cities are designed, constructed and powered, to the way people live, work, move, and are cared for. See more at 2150.vc

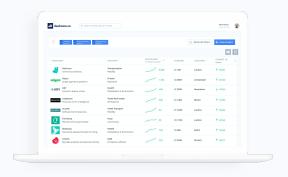




Global startup & venture capital intelligence platform.

Dealroom.co is the foremost data provider on startup, early-stage and growth company ecosystems in Europe and around the globe.

Founded in Amsterdam in 2013, we now work with many of the world's most prominent investors, entrepreneurs and government organizations to provide transparency, analysis and insights on venture capital activity.



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Key trends, and why Urban Tech matters.



Cities are booming, and so is sustainable urban tech

Urban tech startups have raised \$28B in 2022 year to date, already more than in 2020, but projected to fall short of last year by 23%.

Despite a considerable drop in corporate participation, heavy industry giants, such as Cemex and Honeywell, continue to be active urban tech investors.

Why it matters:

The battle for climate change will be won or lost in how we manage emissions from cities.

More investment in urban tech is required to hit net-zero targets.



Urban Tech unicorns are now coming up across many segments beyond clean energy and mobility

There are 109 sustainable urban tech unicorns, mainly in clean energy or mobility, but in the last two years other categories have been ramping up. 2022 saw 2 urban tech unicorns emerge within ESG & carbon tracking, as well as the first new unicorn in building efficiency since 2015.

Why it matters:

Unicorns are needed now to drive the scale required across all urban tech sectors.

Buildings for instance take up 37% of global CO2 emissions.¹



High emission sectors are highly underfunded startup segments

Energy efficiency (heating, cooling and building management) and sustainable construction (modular construction, concrete, steel and other materials startups) are all underfunded. After a record 2021 year, growth has taken a pause, more is needed.

Why it matters:

Energy usage in buildings accounts for 27% of global CO2 emissions.¹ Investments here can drive greater impact.

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1 Introduction

Climate risk is accelerating and cities will play a key role in ensuring we can hit sustainability targets.

From the buildings we inhabit, to the cars we drive, every urban element can be meaningfully addressed to advance the climate transition.

Urban technologies can support us rethinking and renovating our ways of building and living in cities

Cities are drivers of climate change and are acutely exposed to its risks.

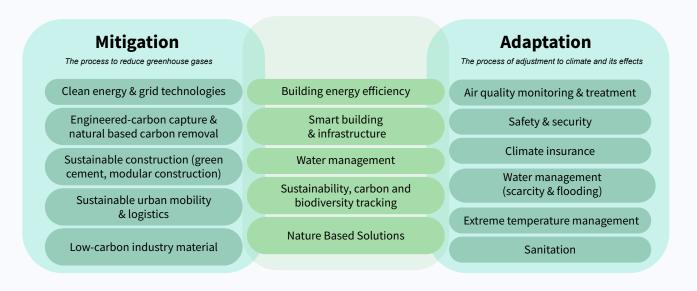
Mitigation Adaptation 70% 33% **50%** of global greenhouse gas Of major cities may exhaust of future urban population will **emissions** derive from cities.¹ their current water resources be exposed to extreme **heat risk** by 2050.³ by 2050.²

Urban sustainability requires both climate change mitigation and adaptation.

Even under net-zero scenarios, cities still face significant challenges from climate change. They need to **adapt** to these changes simultaneous with **mitigating** greenhouse gas emissions.

Adaptation reduces urban exposure to climate change risks. However, every 0.1 degree of additional warming will require a larger and more complex adaptation response, increasing an already big **investment gap**.¹

Thus, funding and planning needs to recognise these risks and further prioritise adaptation.



What is Urban Tech?

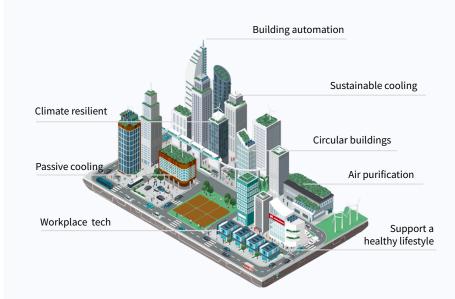
Urban tech is a technology that **improves broad urban environments to make them more sustainable, resilient and efficient.** Although governments and regulation may be involved, urban tech primarily targets the private sector, selling to businesses and consumers directly.

Why Urban Tech?

Urbanization is accelerating, and fast. By 2050 it is expected that 68% of the global population will live in cities, up from 55% today. We are not prepared for the additional strain on our infrastructure, natural resources, and housing.

Cities consume 3/4 of the world's final energy² and produce ~70% of GHG emissions.³ Urban Tech solutions can play a major role in reducing emissions on an accelerated timeline, which is key to managing current growth.

Building effective cities requires inclusive, healthy, resilient and sustainable solutions. Urban tech startups are building solutions that are reducing emissions and preserving resources TODAY.



Urban Stack: Investing across the Urban Stack represents a huge investment opportunity and the biggest lever for creating a sustainable future. (More on why here)

Experience

Allowing citizens to work, live, stay healthy and secure within the urban living environment.



Workplace tech / Future of Work



Air quality/ Air pollution



Healthy buildings



Safety and security

Operate

Solutions to optimize urban assets, from sensor-equipped cities, buildings and facility management, to urban logistics.



Building automation, heating & cooling



Urban mobility and logistics



Facility management



Sustainability tracking and ESG management

Build

How we build including planning & construction of buildings, infrastructure, and production system.



Concrete, steel and new sustainable materials



New construction methods and modular construction



Carbon Capture & Storage



Construction software and automation

Enable

Enabling infrastructure technologies and platforms that allow urban areas to to scale sustainability and resiliently.



Waste management



Intelligent and digital Infrastructure



Carbon & biodiversity tracking



Clean energy & grid technologies

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Policies worldwide are being set to accelerate the transition to more sustainable cities with focus on sustainable building, green mobility and clean energy generation.

EU

European Green Deal (2021)

The EDG is the core EU strategy to fight climate change and achieve climate neutrality. To implement the EDG strategy the European Commission adopted "Fit for 55", a set of policy proposals.

The aim is to reduce greenhouse gas emissions (GHG) by at least 55% by 2030. The deal allocates at least \$600 billion to the initiative.¹

US

Inflation Reduction Act (2022)

Aims to reduce greenhouse gas emissions by about 1 gigaton in 2030, or a billion metric tons. The law will raise \$738 billion and authorize \$391 billion in spending on energy and climate change.²

Credits granted for EV adoption, heat pumps, home solar, public transportation, e-bikes, etc.

UK

Net Zero Strategy (2021)

Aims to reduce economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels and to achieve net zero greenhouse gas emissions by 2050.³

This strategy sets out specific policies and goals in the fields of fuel supply, industrial emissions, heat and buildings, transports and waste management.

This is the 2nd Urban Tech report by 2150 x Dealroom

One year ago, 2150 and Dealroom launched the first edition of the Urban Tech report. We highlighted that the battle for climate change will be won or lost depending on how well we innovate within our cities and urban environments.

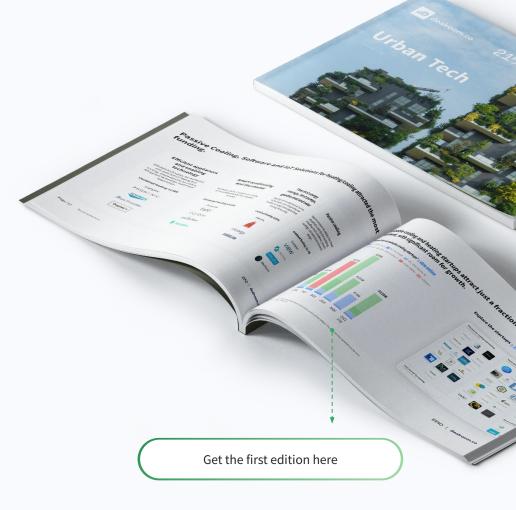
Last year, we highlighted how Urban Tech funding has been booming in the past years.

The main segments driving this boom in Urban Tech have been within clean energy or mobility, while high emission sectors, such as heating, cooling, concrete, steel and alternative materials, have been heavily underfunded.

However, six sustainable infrastructure & materials companies became unicorns last year alone, growing at a rapid pace and segments like concrete and cement had their best year.

This year we will investigate how we are standing on these topics and how things have been evolving.

We will also look into adaptation vs mitigation strategies for cities and cover emerging trends in biodiversity tracking, energy efficiency in buildings, decarbonizing the construction industry/modular construction and flood management.

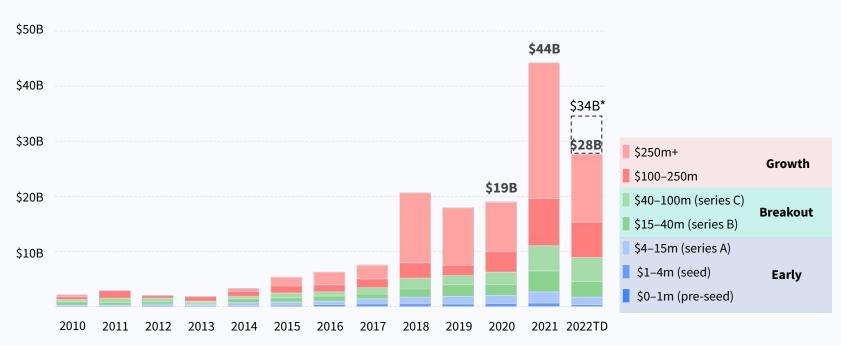


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2 Investment Trends & Gigacorns

Urban Tech startup funding has already surpassed 2020 levels this year, with \$28B raised so far in 2022, but the total is projected to be 23% lower than in 2021.





Most active sustainable urban tech venture funds.

Pre-seed and seed



Urbio, Therma, BlocPower, Singularity, Cycle



FreeWire Technologies, Shoreline, Abatable



Zoomo, Imbalance grid, Urbio

<O> POWERHOUSE

Audette, Axiom Cloud, AmpUp

<norrsken>

ClimateView, Whywaste, Northvolt

PALE BLUE DOT

Climate X, Monta, HIVED



011h, Mighty Buildings, Juno

Early stage



Form Energy, Electra, LuxWall, Ecocem



Form Energy, Terabase, Sense

DEMETER

Plan A, See You Sun, Deepki

LOWERCARBON

Solugen, Cloud to Street, Cervest



Veev, Sealed, ICON, SmartRent

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Disperse, Ampd Energy, Nodes & Links

BUILDING VENTURES

BuiltRobotics, Measurabl, Blue Frontier, Mosaic

a/o proptech

ClimateX, Span, PassiveLogic, 011h

Late stage



Form Energy, Sense, Zolar

khosla ventures

Mainspring, Katerra, Ori

C>PRICORN INVESTMENTGROUP

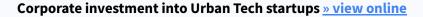
Redwood Materials, Twelve, Joby Aviation

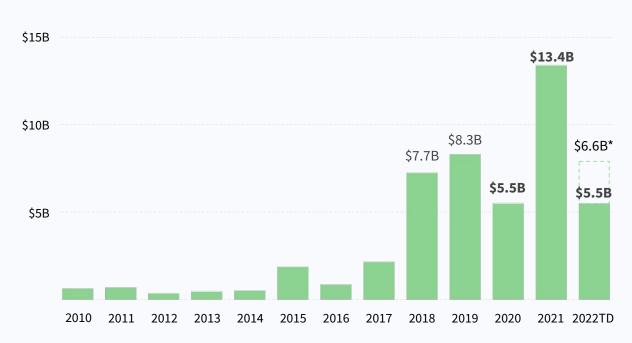
TEMASEKSolugen, Svante, SES

COATUE Form Energy, Patch

Boston Metal, Joby Aviation, Rivian

Corporate investment in Urban Tech has pulled back almost 50% in 2022, going back to 2019 levels.





But heavy industry giants remain active Urban Tech investors.

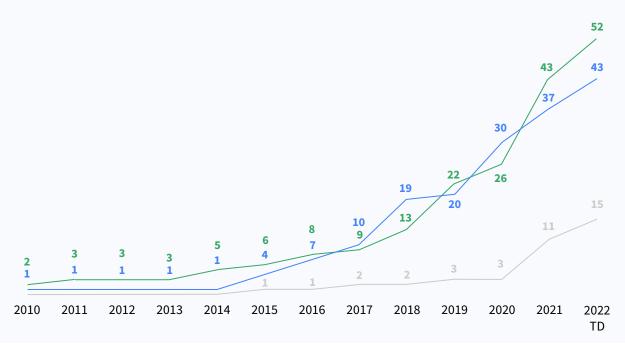
Corporate	Target	Funding date	Transaction
SK Conglomerate	Terra Power A Nuclear Institute Company Nuclear fission	Aug 2022	\$750M Late VC
KOBELCO Honeywell HITACHI Atlantia Conglomerate, Infrastructure	VOLOCOPTER Urban air mobility	Mar & Nov 2022	\$352M Series E
Kingspan. SCHAEFFLER MARCEGAGLIA Home insulation, automotive & industrial, steel	H2 green steel Sustainable steel	Aug & Oct 2022	€260M Series B
Gramco Marubeni () TC Energy Cement, material handling, infrastructure, oil & gas,	corbon clean Carbon capture	May 2022	\$150M Series C
Life Is On Schneider Energy and industrial	sense Home energy monitoring	Apr & Sep 2022	\$128M Series C
Honeywell AMITSUBISH COSAN RIOTINTO Conglomerate, mining, oil & gas	FLECTRIC HYDROGEN Green hydrogen	Jun 2022	\$99M Series B
Air conditioning, motorcycle	WASSNA off-grid energy	Jun 2022	\$8.2M Series C

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94 of the 109 Urban Tech unicorns are operating in either clean energy or urban mobility, but other categories have been ramping up since 2020.

Number of Urban Tech unicorn per segment (cumulative)





2022 saw 2 Urban Tech unicorns emerge within ESG & carbon tracking, as well as the first new unicorn in building efficiency since 2015.

Number of Urban Tech unicorn per segment, excluding clean energy and urban mobility



Year \$1B+ valuation reached

Hunting for Gigacorns

Gigacorn (noun)

A company that has achieved lowering or sequestering CO2eq emissions by 1Gt/year while being commercially viable. (more on Gigacorns here)

109

We have gone from 494 unicorns in 2016 to 2,556 now, but only 109 are in the Urban Tech sector. We need to catalyze Gigacorns, just 59 can get our global emissions to net zero.

6.8 x

We have not yet seen a Gigacorn, but over the last six years sustainable **urban tech unicorn growth has been 6.8x**, compared to the overall number of unicorns at 5.2x.

59_{Gt}

Globally, we emit **59Gt annually.**For perspective 1Gt is more than the entire emissions from the EU transportation sector annually, or almost 30% of all EU emissions.²

How close are we to a gigacorn? Still pretty far!

The sheer scale required means that, on the avoided emissions side, Tesla can almost achieve it in 2030 according to the company projection. On the carbon removal side, Climeworks expects to achieve gigaton capacity only in 2050.



Avoided emissions.1

2021: 8.4M metric tons of CO2e

Electric vehicles: 6.8M Solar + storage: 1.6M

2030: 745M metric tons of CO2e

Electric vehicles: 145M Solar + storage: 600M



Sequestered carbon.²

2021

4k tons of CO2

2030

Megaton capacity

2050

Gigaton capacity

3 Enable

Enabling infrastructure technologies and platforms that allow urban areas to scale sustainably and resiliently.

To enable sustainability at scale, we need to prioritise biodiversity.



Achieving the goals of the Paris Agreement is not possible without biodiversity protection.

40% of our global economy (\$44T) depends on biological resources.¹

Global wildlife populations have plummeted by 69% on average since 1970 ²



In recent years, biodiversity has ramped up as a key topic in the ESG space.

The UN Biodiversity COP 15 is the biggest UN biodiversity conference in a decade, with the aim to agree on a series of actions within the

> "Post-2020 Global Biodiversity Framework."

Governments are announcing **new** biodiversity commitments, including Germany, Canada, Costa Rica, Bhutan, Ecuador, Albania and Indigenous leaders.³



Cities have also started targeting biodiversity loss in connection to climate change.

Singapore has applied nature-based solutions to achieve climate, ecological and social resilience with innovative modern technology

Today the city is home to 4% of the world's bird species.4

¹⁾ https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf; 2) https://livingplanet.panda.org/en-GB/,

²⁾ https://shareaction.org/reports/point-of-no-returns-part-iv-biodiversity, 4) https://www.unep.org/events/conference/un-biodiversity-conference-cop-15, 3) https://www.nature.org/en-us/newsroom/new-biodiversity-commitments-world-leaders-declare-un-biodiversity-summit-priority/

⁴⁾ https://www.weforum.org/agenda/2021/06/cities-ecosystems-biodiversity-climate-change/

Despite being a key pillar for a sustainable transition, the methods for investing in biodiversity are far from established.



There is **no standard methodology for assessing and reporting biodiversity**, compared to the GHG Protocol. In 2020, none of the world's 75 largest asset managers had a dedicated **policy on biodiversity**.



Confusion around methodology and data **negatively impact the capacity of the sector to attract investments**. While carbon tracking & offsets and ESG tracking startups have raised <u>almost \$2B since 2019</u>, biodiversity remains one of the **least-targeted by investors**, who cite a lack of data as the primary reason.¹

An emerging segment is **Environmental DNA (eDNA)** which allows biodiversity surveying through DNA fragments to drive decisions. Check online



SimplexDNA®

BASECAMP RESEARCH

4 | Build

How we build including planning, materials, construction and processes.

Construction is a huge \$6T market set for rapid growth.

Construction and real estate is currently a massive industry.¹

And a massive contributors to global emissions.¹

Rapid urbanization will further increase demand

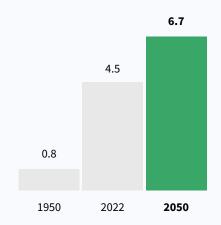
Global urban population in billions.²

\$6T

Total annual spend on buildings construction and renovation

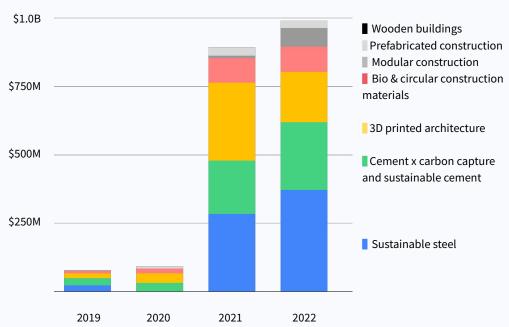
10%

of global CO2 emissions come from the building construction processes and materials.



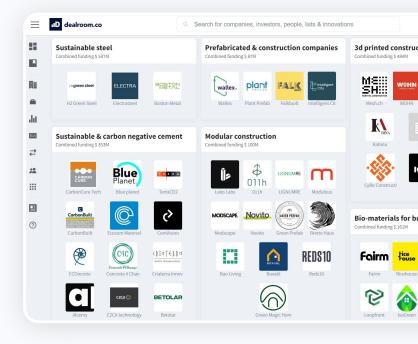
Funding for sustainable building construction is already reaching new heights in 2022, with nearly \$1B raised. Sustainable steel, cement, and 3D printed have raised the most in 2021/22.

Investment into sustainable building construction startups



Explore 80+ sustainable building construction startups

» view online



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Building with wood in a highly modular and adaptive way has gigatonne potential in CO2 reduction and maintains the charm of innovative architecture making our cities vibrant, diverse and long-term carbon sinks."

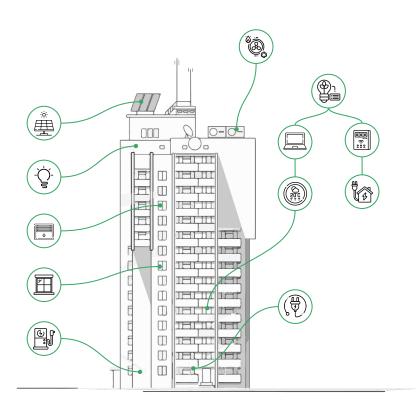
Dr. Remo Gerber
CEO
LEKO
L A B S
Carbon Negative Construction



5 Operate

Sensors and platforms to monitor, control and optimize buildings, cities, and streets.

Optimizing buildings' energy usage is key to develop sustainable cities.



Building energy usage account for 27% of global CO2 emissions.¹

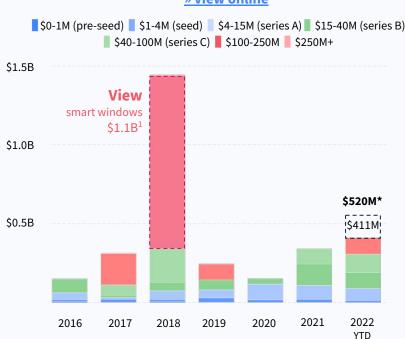
To tackle this, it is pivotal to have stringent energy standards for new buildings, from construction design to materials used and appliances chosen.

However, most residential buildings were built before thermal standards were introduced. In the EU, half of the buildings are pre-1970, when the first thermal regulations came into place.²

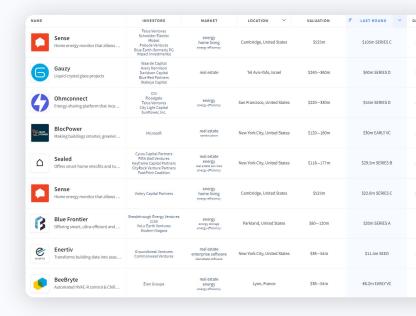
Energy retrofit and solutions based on SaaS and IoT to improve heating, cooling and light management play a huge role in reducing emissions while maintaining comfort and providing insights to consumers and businesses to reduce their consumption.

Investment in energy efficiency startups has reached \$411M so far in 2022, the most active year but for View's megaround in 2018.





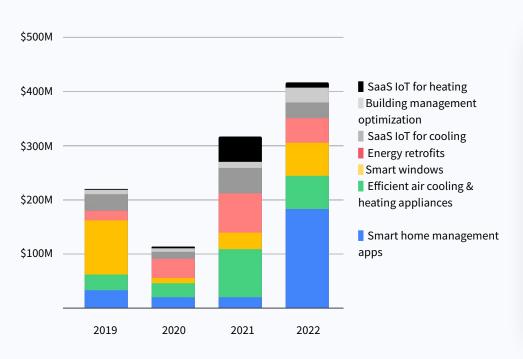
Notable rounds in building energy efficiency startups 2022.



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Smart home management apps have attracted the most funding in 2022 within building energy efficiency, followed by cooling, heating, and smart windows.

Investment into building energy efficiency startups



Explore 100+ building energy efficiency startups » view online

1D dealroom.co Search for companies, investors, people, lists & innovations **Energy retrofit** SaaS and IoT for heating Efficient air cooling and heating Combined funding \$ 375M Combined funding \$ 352M △ nest Audette ≠ POWER ::: 田 SaaS and IoT for cooling ② ENCYCLE of the CIELO Degree'r 6 0 NCUBE Smart home energy management &

energy reduction apps

6 Experience

Allowing citizens to work, live, stay healthy and secure.

Flooding is one of the biggest threats to the security of cities and their development.

Rising flood risk

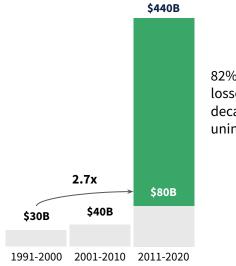
Overall, 23% of the world's population face significant flooding risk, especially in low-income countries. In 2021 only, more than **100 million** people were affected by flooding.

The growing **urban population** together with the **increased rainfall intensity** (due to climate change) are the main factors behind the increase in flooding risk.

When we talk about cities, the likelihood of pluvial flooding is **higher** due to the high proportion of paved surfaces. Also the **potential impact is greater** due to cities' high density of population and vital infrastructure.²

Global flooding losses³ in billion of dollars

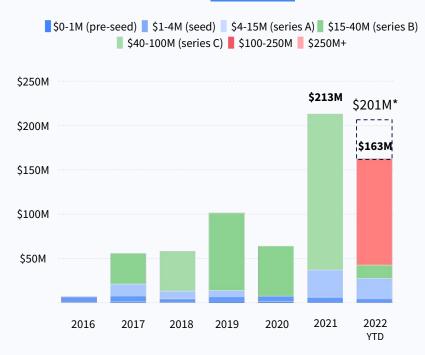
insured losses uninsured losses



82% of the flood losses in the last decade have been uninsured.

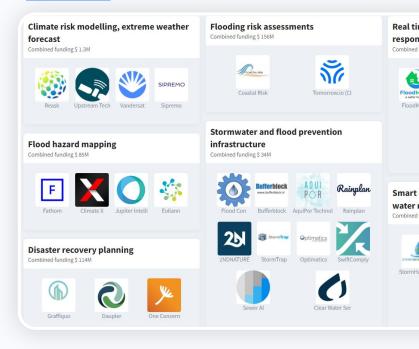
Investment in flood management startups has ramped up in the last two years.

Investment into flood prevention, monitoring and response startups » view online



Explore 50+ flood management startups

» view online



Extreme weather forecast, flood insurance and flood hazard mapping attracted the most funding, often building on satellite technology.

Prevention

Flood management infrastructure building

Stormwater and drainage infrastructure, rain absorbing materials.

Combined funding: \$57M

Examples:





A Q U I P \bigcirc R

Flood hazard mapping*

Use of satellite imaging and weather data to predict areas with high flood risk.

Combined funding: \$85M

Examples:







Real-time

Extreme weather forecast *

Use of satellite imaging and weather models to predict extreme rain events.

Combined funding: \$158M

Examples:







Flooding sensors & real time modelling

Real-time monitoring and modelling of flooding event for alerts and reduce losses.

Combined funding: \$28M

Examples:







Post-event

Flood insurance

Insurance coverage for flooding (e.g. parametric insurance) to cope and recover from losses.

Combined funding: \$146M

Examples:

FloodFlash

DESCARTES

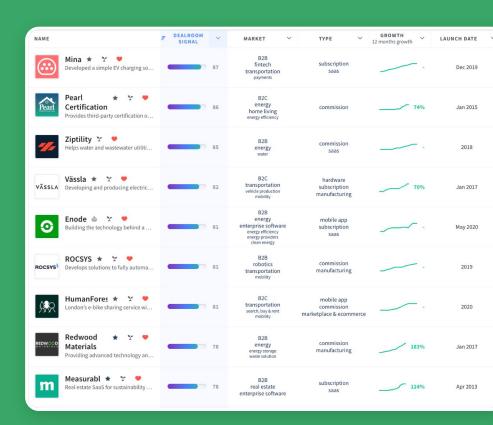
Ç}skyblu.ai

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Top 100 urban tech startups to watch based on Dealroom signal.

We've ranked the top 100 urban tech startups to watch based on **Dealroom Signal**: a powerful algorithm helping VCs, Corporates and Governments find the most promising up and coming startups.

» Top 100 Uban Tech Startups to Watch



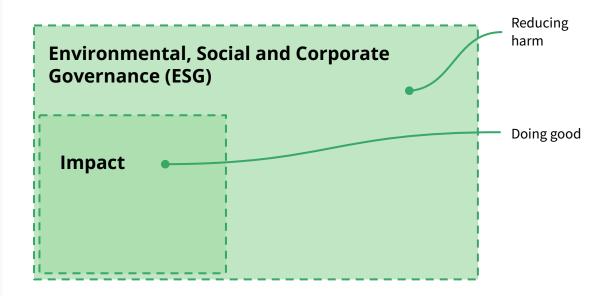
Impact is to have sustainability at the core

In this report, an impact startup is a company that addresses one or more UN Sustainable Development Goal (SDGs) at the core of its business and the potential to scale. Our litmus test: if you remove the impact, you also remove the business.

Impact sits within a broader framework of Environmental, Social and Corporate Governance (ESG) which seeks to reduce the harmful impact of business.

Our full taxonomy is available at this link.

In this report we examined over 4,600 global impact x urban tech startups.



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Projected Impact Method

2150 measures the sustainability impact of its investments and portfolio. This analysis considers the current and potential future impacts from a company's and/or its products' ability to have quantifiable benefits on the climate and environment. These calculations speak to the 2150 Impact Principles embedded in our Impact Score, as well as enable us to articulate and report the impact of our companies and portfolio.

We frame our impact calculations within a selection of Key Performance Indicators (KPI) and the Sustainable Development Goals to have a common framework for assessing benefits. These KPIs cover both common metrics such as climate mitigation, as well as more company specific outcomes such a resilience and pollution benefits. Working with companies and industry experts, we model the scale of impact to at least 2040 for each investment.

2150 key performance indicators

GHG emissions savings

Tonnes CO2 eq. / yr

Energy savings

GJ/yr

Renewable energy generated

MWh/yr

Water savings

 m^3/yr

Resource savings

Tonnes / yr

Increased human health

QALY

Reduced weather disruption

Days / yr

Reduced weather damage

%

PM air pollution reduction

Tonnes PM / yr

NOx air pollution reduction

Tonnes NOx / yr

SOx air pollution reduction

Tonnes SOx / yr

Individuals benefiting

Individuals

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Venture capital methodology and definitions.

Startups, scaleups, grownups and tech

Companies designed to grow fast. Generally, such companies are VC-investable businesses. Sometimes they can become very big (e.g. \$1B+ valuation).

When startups are successful, they develop into scaleups (>50 people), grownups (>500 people) and result in big companies, like Arrival or Northvolt.

Only companies founded since 1990 are included in this report.

Venture capital investment

Investment numbers refer to rounds such as Seed, Series A, B, C, late stage, and growth equity rounds.

Venture capital investment figures exclude debt or other non-equity funding, lending capital, grants and ICOs.

Buyouts, M&A, secondary rounds, and IPOs are treated as exits: excluded from funding data.

Investment rounds are sourced from public disclosures including press releases, news, filings and verified user-submitted information.

Accelerators and workplaces

Fixed-term, cohort-based programs that include seed investment, connections, sales, mentorship, educational components and culminate in a public pitch event or demo day to accelerate growth.

We consider an accelerator as an 'investor' since it takes equity from its startups whereas a 'workplace' does not take equity from its tenants.

In this report, co-working spaces, shared office space that also offer community support, are considered as part of workplaces.

Valuation

The combined valuation of the tech ecosystem is based on their market cap or latest transaction value.

Transaction value is realized from exit or implied unrealised valuation from the latest VC round, which is either announced or estimated by Dealroom based on benchmarks.

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