AI AND SUSTAINABILITY

10 UNDER 10

STATE OF AI IN 2020

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WHY READ THIS REPORT

In this report we give insights and analyse current industrial trends of Artificial Intelligence companies and investors which target sustainability issues. We choose the 5 most innovative service providers, spanning different sectors and with a funding amount under $10M and 5 investors which are the most likely to invest in these companies, with a funding availability under $10M. In this way, we aim to build a framework in which new companies invested in employing intelligent technologies to drive sustainable change could thrive in the present 2020.

KEY TAKEAWAYS

Most companies with sustainable goals that we analyse do not build their own AI software. This is because they either do not have the expertise to do so, or simply due to time constraints. They hence employ already existing services like the ones offered by AWS. These services cost them money and therefore raise the price of their product overall. On this note, we think that an Open Source AI Marketplace designed for people with little experience in programming like the one which will be offered by **Smarter.ai** would help these companies to 1) follow their sustainable ethics, 2) run AI models easily and 3) employ software services at a lower cost.

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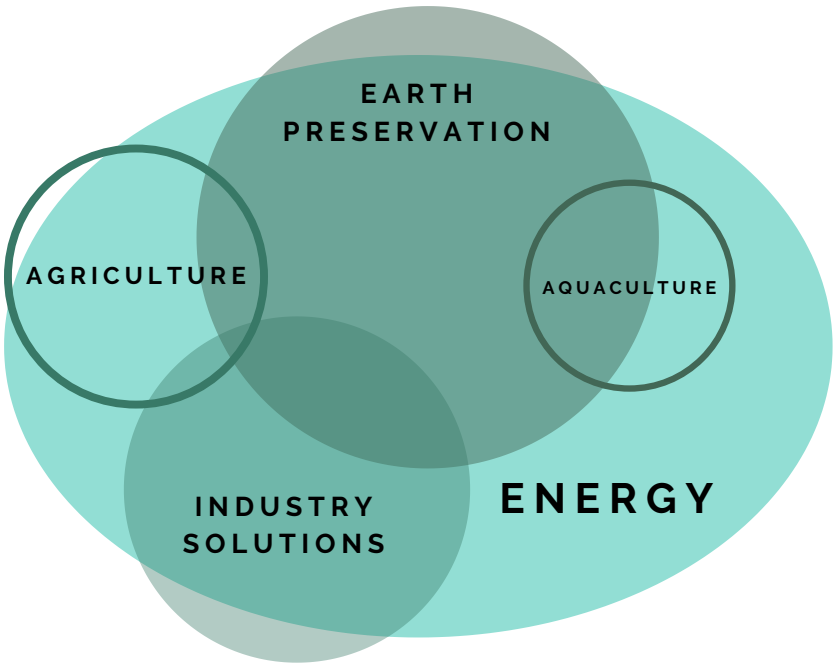
THE STATE OF SUSTAINABLE AI IN 2020

That Artificial Intelligence will have a major impact on society is no longer in question. From self-driving cars to advances in scientific research, from financial models to sustainable agricultural solutions, the power of a “trained” computer machine which can perform thorough analysis on vast sets of data is undebatable. Nevertheless, as time goes on and technologies become more sophisticated, the hottest debate focuses on the impacts this technological evolution will have on our planet, and how companies and investors should focus on applying AI to create and support greener businesses.

It is rare to find AI companies who are truly committed to the sustainable challenge. Production processes need to be revolutionised from the root for the change to be real. The companies we analyse are also the ones who, while developing new sustainable solutions, make their products easier to use and therefore accessible to a wider public. In this way, they promote the popular idea of a "democratic AI", which enables everyone to use technologies at a lower cost.

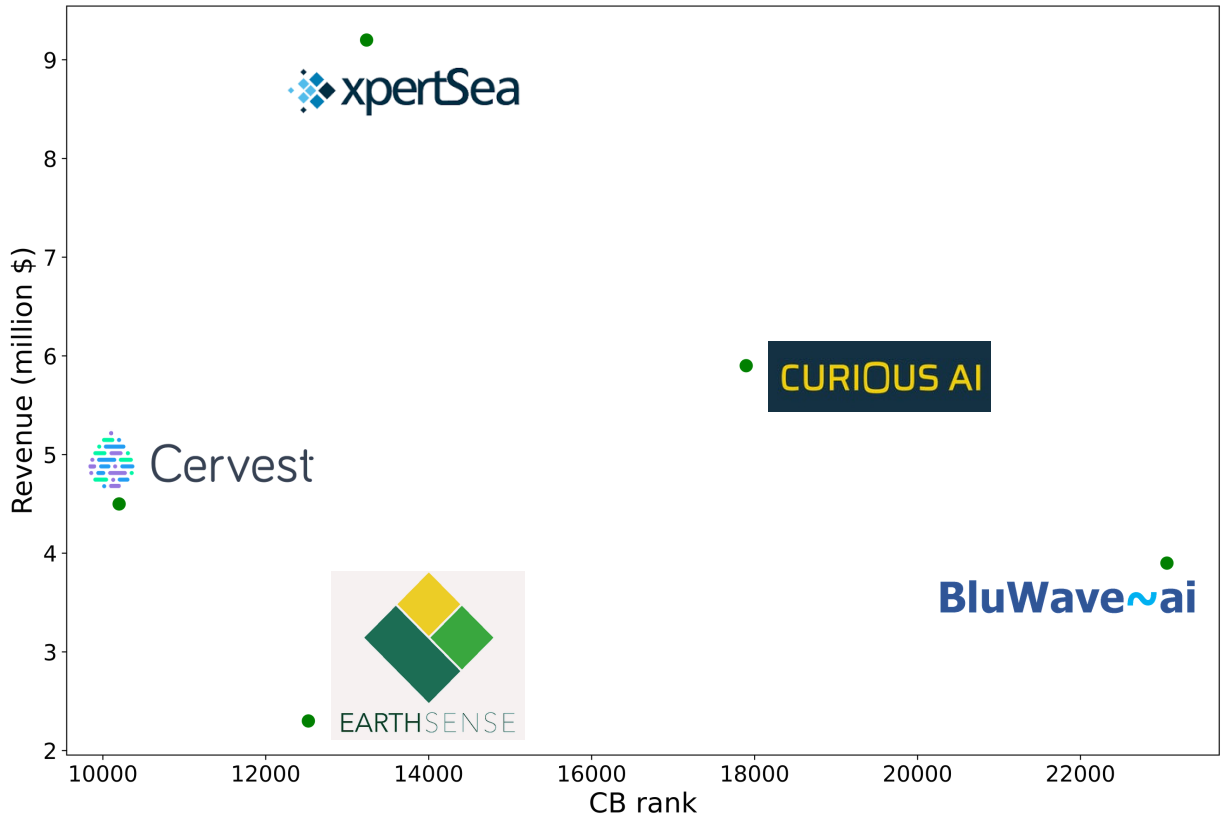
It is also hard to find reliable investors who have not been affected by the economic crisis generated by the current pandemic. Moreover, the fast developing AI research in the US attracts US investors, the ones who are the most likely to invest in big IoT companies. For this reason we consider EU based investors, with the aim of giving guidance to European companies and see them thrive in the sustainable AI research and development.



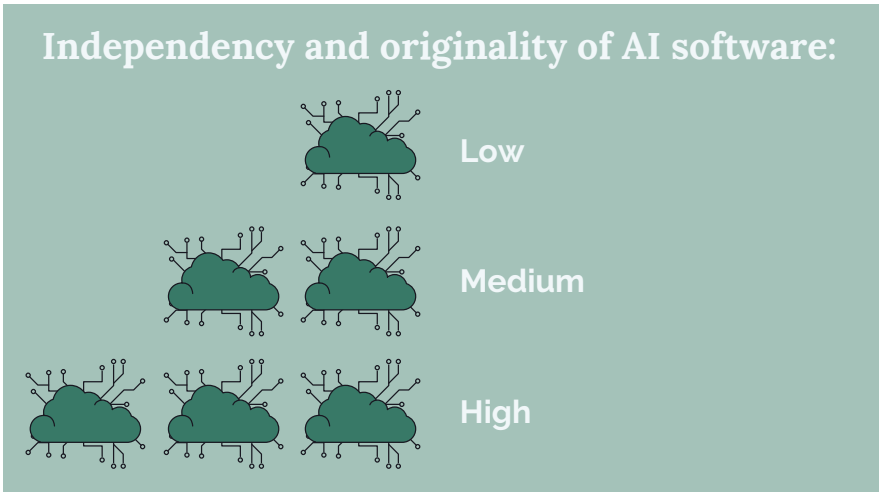
AI SOLUTIONS TO SUSTAINABILITY PROBLEMS

We consider companies who generate a revenue lower than $10M in order to place them in a framework in which **Smarter.ai** could operate. Since **Smarter.ai** would provide a service to world-wide comanies and individuals, the five companies we pick are scattered around North America and Europe. Canada seems to be a country particularly invested in the development of sustainable solutions. All the companies were born around the same period, making the comparison between them more consistent.

COMPANY	SECTOR	LOCATION	REVENUE	YEAR FUNDED
XpertSea	Aquaculture	Canada	$ 9.2 M	2016
CuriousAI	Industry solutions	Finland	$ 5.9 M	2015
Cervest	Earth preservation	UK	$ 4.5 M	2016
BlueWave-ai	Energy	Canada	$ 3.9 M	2017
EarthSense	Agriculture	US	$ 2.3 M	2016



COMPANIES QUICK CARDS:

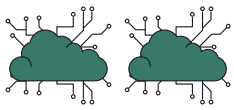


XpertSea:

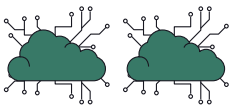
Problem: aquaculture generates environmental waste (1) (e.g. in Asian countries 1 ton of fish can generate an average of 0.8 kg of nitrogen and 0.1 kg of phosphorus, equivalent to the waste generated daily by 73 people) and is currently inefficient (2).
Relevance: the improvement of aquaculture by employing intelligent technologies to reduce waste and optimize efficiency is necessary to make it a modern source of food for our planet.
Solution: Xpertsea uses data to bring transparency to the aquaculture supply chain and to get powerful business insights. In the last year alone, the platform has processed over 2.3B animal data points and optimized 6,000 crops. XpertSea provides a Growth Platform which uses AI to capture, ingest, store, and process field data to give actionable insights. The XperCount uses cameras and machine learning applied to computer vision to count, size, weigh and image animals, track water quality and predict a better harvest.
Business strategy: XpertSea uses Chartio, a cloud-based business intelligence software, and it is well promoted on digital platforms such as YouTube and Facebook (6865 followers).
Technical details: the Data Platform is developed in Python, 100% cloud-based. AWS services are used to build the skeleton for the pipelines. APIs are hosted on API Gateway and use Lambda's serverless infrastructure to provide infinite and easy scaling. Machine Learning algorithms are implemented, from simple linear classifiers to recursive convolutional neural networks. AWS frameworks like OpenCV, Scikit Learn, Tensorflow and Keras are used. Docker is employed to abstract the environment from the execution. Online services are deployed automatically by CloudFormation scripts which create all the AWS resources needed. Git repositories run on Bitbucket cloud and the continuous integration and deployment server is Semaphore, a cloud service.
Customers: 500+ customers over 50 countries.
Customer Experience: the service gives farmers automatic and updated reports based on data-driven advice and prescriptions. Their SaaS includes Android applications through Google Polymer. Free app found on AppStore.
URL: https://www.xpertsea.com/

CuriousAI: 

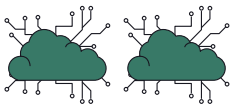
Problem: industry processes are complex. Think about an industrial facility which consumes energy through chemical processes, produces chemical waste, aims at re-using as many resources as possible and has many other needs.
Relevance: A better understanding of industry solutions and of their complexity would improve the industry's and operators' productivity and it would make the production chain more sustainable.
Solution: CuriousAI offers the opportunity to forward thinking manufacturers to create more efficient, flexible and greener businesses, better able to serve changing markets and client demands and building on earlier data initiatives in PiD and Model Predictive Control. By pairing Reinforcement Learning with Deep Neural Networks, CuriousAI has a system that can build a model of complex processes and then learn to control and optimise them through learning, as well as optimizing industrial machinery. In this way material, energy and labour efficiency is increased.
Business strategy: CuriousAI is funded by a wide range of investors like Berggren, Napcon, Balderon Capital, Business Finland, Lifeline Ventures and others, of which Jaan Tallinn and Data Collective DCVC are the most recent investors. They have a YT channel.
Technical details: the company doesn't use existing platforms or technology, but it brews its own. They are known for their extensive work on semi-supervised machine learning (3), on perception systems (i.e. machine attention, segmentation, perceptual grouping (4)) and on autonomy (i.e. model-based reinforcement learning and model-predictive control).
Customers: customers include big industrial facilities such as Pulp & Paper mill.
URL: https://thecuriousaicompany.com/

Cervest: 

Problem: traditional forecasting methods (from envisioning how a forest landscape evolves to understanding how much a factory pollutes) are generalised, unstandardised – and expensive.
Relevance: dynamic modeling and scaling with Earth Science AI would provide real time asset level analysis, simplifying millions of complex data.
Solution: Cervest builds climate security tools that are shared, democratised, and common to all. They transform that data into forecasts, interactive tools, visualisations, maps and real-time insights that can be quickly acted on by users to make decisions on any assets they're tracking. The platform gives predictions and suggestions based on asset-level risk against up to 40 years of historic data.
Business strategy: Cervest is a privately held company backed by mission-aligned investors including Future Positive Capital, Astanor Ventures, and US climate investors Lowercarbon Capital and Lionheart Ventures. They have a Twitter account with 549 followers.
Technical details: the data comes from a wide range of authoritative scientific sources (ECMWF, ESA Sentinel, NASA Modis, Cervest Forecasts, etc).
Customers: individuals, businesses and organisations globally
URL: https://cervest.earth/about/

BlueWave-ai: 

Problem: almost 2 billion people do not have access to reliable energy sources worldwide. On top of that, world is facing a growing climate crisis with GHG emissions being a significant contributor to global warming.
Relevance: Since the electrical output from renewable energy sources like wind and solar fluctuates and is inherently difficult for utilities to manage, AI-driven solutions which screen these fluctuations would massively improve the accessibility of renewable energies.
Solution: BlueWave-ai's energy grid optimization platform balances the cost, availability, and carbon footprint of different energy sources – both renewable and non-renewable – with energy demand in real-time. The goal of BluWave-ai is to drive the transition from a centralized, carbon-based energy model to the point where clean energy can be produced by almost anyone, anywhere, aided by advanced real-time computing. BlueWave-ai is improving the use of wind and solar energy by 10-20% and reducing the energy costs up to 20%. Microgrids provide a flexible scalable architecture for integrating renewable and energy storage assets closer to the end user. AI can be used to enhance microgrid functionality in terms of Energy Forecasting, Intelligent Optimal Dispatch, Adaptive Control and Predictive Maintenance.
Business strategy: Sustainable Development Technology Canada (SDTC) had the largest funding contribution with $2.43M, while the other $1.2 M came from international private investors. OCE completed the round with $300K through its Market Readiness fund (equity financing) and an additional non-dilutive grant. They have a YT channel, a Twitter account with 151 followers and a Facebook account with 109 followers.
Technical details: BlueWave uses an AI-enabled SaaS software. BlueWave-ai EDGE aggregates and preprocesses data from grid devices and sensors, and generates AI predictions and recommendations. BlueWave-ai CENTRE provides the user interface and a dashboard for configuration and monitoring. It also uses the data from BlueWave-ai EDGE to improve the AI models and pushes them back in a continuous, learning cycle.
Customers: customers include electricity utilities, enterprises, electric fleet operators, large campuses, government operations, net zero communities and remote/off-grid clients.
Customer experience: All customers are able to test drive the solution through a low-risk, multi-phased onboarding deployment. For a municipality in a state like California typical energy savings are in the range of $US 2M/year.
URL: https://www.bluwave-ai.com/

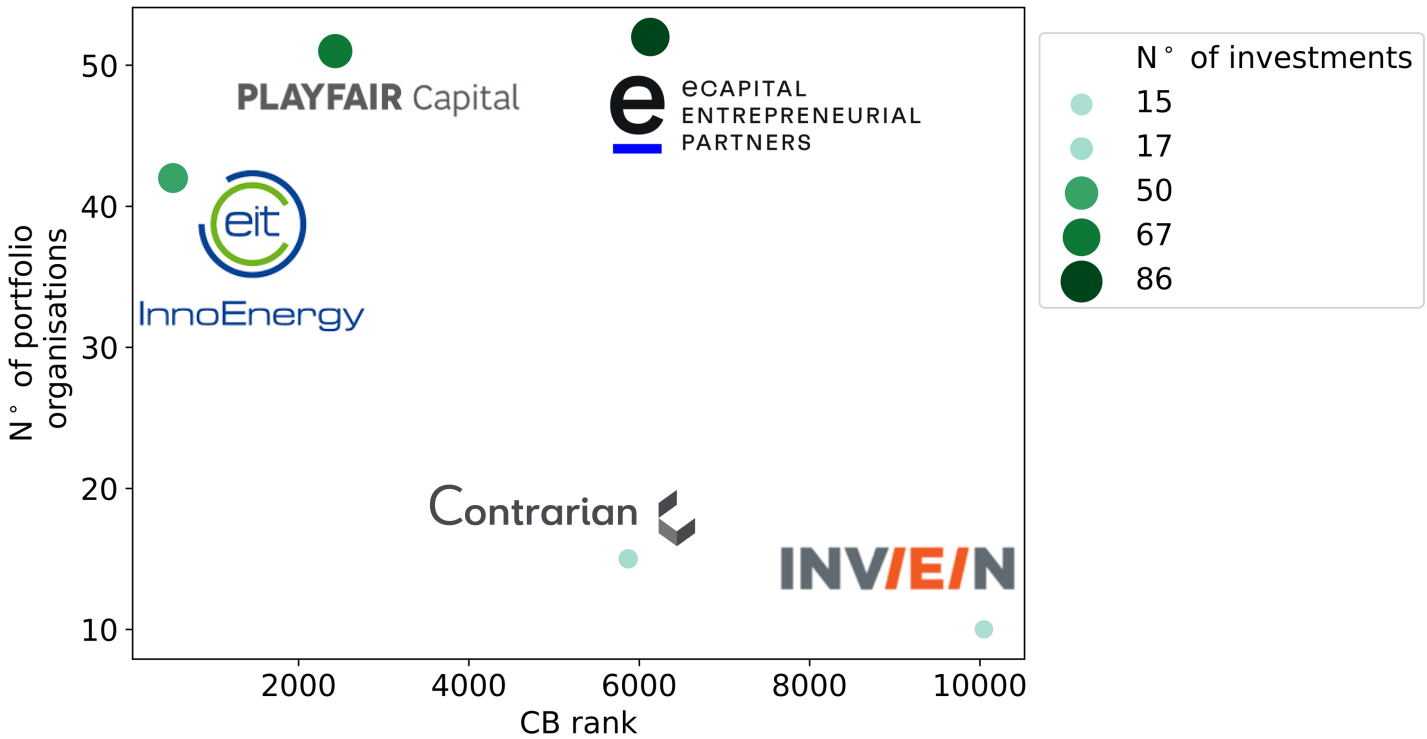
EarthSense: 

Problem: According to the United Nations, the global population will reach 9.8 billion people by 2050 and 11.2 billion by 2100. In order to provide enough food for everybody, and to do so in a sustainable way, innovations have to take place in the world of agriculture.
Relevance: farmers are getting more tech-savvy. For instance, drone technology is being adapted all around the globe, giving farmers the ability to collect data and monitor their crops from the sky, and make educated decisions on what to do next. Drones, however, are limited to taking pictures of the canopy of plantations.
Solution: EarthSense's flagship robot, TerraSentia. Developed in partnership with the University of Illinois, this compact robot, measuring just 12 inches long, can autonomously navigate through the rows of plants, with the help of a combination of cameras, lasers and GPS. While moving, TerraSentia uses its cameras to collect information about the plants under the canopy, such as plant height, stand-count, stem width and leaf-area index. This data can then be used by plant breeders to find out which genotypes do better in a particular environment under different circumstances. Advancements in this field will be crucial to boost efficiency and productivity in the future by providing farmers with the appropriate seeds for their needs. Additionally, TerraSentia can be trained to do other things, for example to detect diseases in plants, many of which are first only visible under the canopy, so flying drones are unable to catch them in time. As the founders, Chinmay Soman and Dr Girish Chowdhary, envision it, in a few years time these little robots will be equipped to carry out more tasks, such as spraying fungicides only where it is needed or weeding.
Business strategy: the company is aiming to push the price of the robot under $1000 in the future, thus making it a great option for small-mid size farmers, democratising the power of robotics and AI. Since the founding of the company in 2016, they have received $2.3 million in funding, as a combination of ~$1.3 million in grants from the National Science Foundation and $1 million in seed funding at the start of 2019. They have also garnered some recognition from the media lately, most notably they have been featured in The New York Times earlier this year (5).
URL: https://www.earthsense.co/

SUSTAINABLE INVESTMENTS

We consider investors who have not particularly been affected by the global pandemic, who are the most likely to invest in green businesses and who mainly operate in Europe. Again, we consider collectives of individuals and funds with an asset equal to or lower than $10M; this is to suggest reliable investors to emerging EU-based AI companies like **Smarter.ai**.

INVESTOR	N. INVESTMENTS	N. LEAD INVESTMENTS	N. EXITS	N. PORTFOLIO ORGANISATIONS	CB RANK
eCAPITAL Entrepreneurial Partners	86	64	15	52	6131
Playfair Capital	67	5	4	51	2431
InnoEnergy	50	19	2	42	526
Contrarian Ventures	17	8	0	15	5871
Inven Capital	15	10	2	10	10048



INVESTORS QUICK CARDS:

eCapital Entrepreneurial Partners (1999):

Location: Münster, Germany
Description: eCAPITAL is a venture capital firm that provides early to growth stage funding to technology companies.
URL: https://ecapital.vc
Crunchbase: https://www.crunchbase.com/organization/ecapital-entrepreneurial-partners-ag

Founded in 1999 and with €220 million AUM currently, eCapital is the senior patrician among young bucks in our list of funds to watch. Headed up by senior partner Paul-Josef Patt, they have been slowly building their portfolio in IT/SaaS companies over the last two decades. Their most recent general fund has been in the order of €100M, with a further €30M just for their cyber security investments.They now seem to be heading in a more sustainable and green direction, especially in terms of software solutions to environmental problems. Their most recent investments have been CounterCraft, Prolupin and Invelio, all of around €5-6M each. CounterCraft provide cybe threat deception, Prolupin are developing milk substitutes and Invelio provide a smart grid platform. These all point to the idea that eCapital is one to target when it comes to sustainable AI solutions.

Playfair Capital (2013):

Location: London, UK
Description: Playfair Capital is an early-stage fund backing founders building technology that changes the way people live and work.
URL: https://playfaircapital.com
Crunchbase: https://www.crunchbase.com/organization/playfair-capital

Playfair Capital is one of the more leftfield funds in this list. Founder and managing partner Federico Pirzio-Biroli has targeted LEDCs across the world, particularly in Africa and SE Asia. They have raised 2 funds since their inception in 2013, with their most recent of €32M raised in 2019.Their recent focus has been on AI solutions that show real ingenuity, being one of the funds to continue investing even through the height of the COVID-19 pandemic, in companies such as Sprout.ai (AI claims automation/fraud detection), Continuum Industries (AI infrastructure development) and Koala (automated travel insurance). Their investments are around the €1-2M mark of late. Playfair Capital is definitely a more free-thinking fund, open to ideas that perhaps more ‘traditional’ funds may not be.

InnoEnergy (2010):

Location: Eindhoven, Netherlands
Description: InnoEnergy is the innovation engine for sustainable energy across Europe.
URL: https://www.innoenergy.com
Crunchbase: https://www.crunchbase.com/organization/kic-innoenergy

InnoEnergy is a fund investing mainly in renewable energy tech among other sustainability solutions and is the only fund on this list to act as an EU-wide accelerator. They work across Europe, and their impressive portfolio boasts some big hitters, including NAWATechnologies (ultra-fast carbon nanotech batteries) with €25M of funding and Minesto (marine energy tech) with €46M of total funding.Their recent investments are smaller in magnitude (€1-3M) although they have around €220M at their disposal and include Infinite Lithium (mining exploration), Aerones (industrial heavy lifting drones) and Kumpan Electric (electric scooters). Although their focus in mid-2020 has been hardware solutions, in the last year or so they have still invested in AI including in companies such Bin-e and Eneida, both providing AI solutions to their respective problems. InnoEnergy is a fund to watch for companies looking to get themselves noticed by EU tech investment bodies.

Contrarian Ventures (2017):

Location: Vilnius, Lithuania
Description: Contrarian Ventures is an early-stage venture capital firm focusing on investments in emerging technologies.
URL: https://www.cventures.vc
Crunchbase: https://www.crunchbase.com/organization/contrarian-ventures

Hailing from a country not usually known for venture capital investment, relatively new Lithuanian fund Contrarian Ventures are fast making a name for themselves in the VC world, investing in early stage emerging technologies left, right and centre. Again, energy tech is an area of priority, with one of their founders, Rokas Peculaitis, also being the founder of the largest energy tech meeting in the Nordics (the imaginatively named Energy Tech Summit).They have invested twice in 2020, putting €950K into Inbalance Grid, a smart electric vehicle charging point company, and an undisclosed amount into H2Pro, a startup focused on sustainable hydrogen fuel usage. Although one of the smaller funds on this list, Contrarian Ventures is a must-look for anyone targeting zero carbon.

Inven Capital (2014):

Location: Prague, Czechia
Description: Inven Capital is a venture capital fund established to invest in the European new energy sector.
URL: https://www.invencapital.cz
Crunchbase: https://www.crunchbase.com/organization/inven-capital

CEZ Group is a 96-company energy conglomerate, the largest of its type in Central and Eastern Europe, and 70% owned by the Czech government. Inven Capital was founded by Petr Mikovec, a former CEZ executive, as their venture capital arm, with some serious economic punching power behind it. In addition, they have access to EU funding by an official partnership with the European Institute of Innovation and Technology (EIT). They have raised only one fund of €50M in 2017, but clearly, they have access to further money, as their parent company is the 26.8 billion-euro-valued CEZ Group.Inven Capital are fans of being lead investor on their deals. They have made some notably huge investments including lithium battery producer Sonnen with $156M of total funding from Inven (acquired by Royal Dutch Shell), and Tado (smart thermostats) into which they have dropped $70M so far. More recently their investments have been smaller, including $11M to Driivz, a charging management software platform, €10M to ZOLAR (private solar energy enabler) and €5.8M to Neuron Soundware, a company using AI sound detection to diagnose broken machines. Inven Capital is definitely one of the bigger hitters on this list, backed essentially by a government by way of an energy company and with strong links to EU innovation funding. For those with a strong product in the sustainable tech market Inven could be an invaluable partner.

CONCLUSIONS

Companies around the world should look at the ones analysed above to turn to greener solutions, or to improve their sustainable impact. The 5 companies here are driven by sustainable goals, but they sometimes employ AI services offered by multiple platforms which do not run on sustainable energies. This analysis highlights the imminent need of an Open Source, easy to use, accessible AI platform which would help small emerging businesses to thrive, would ensure their fast development within the race for a sustainable planet and, due to its lower costs, would enlarge the cohort of businesses using an AI Marketplace to develop sustainable solutions. This is where a company like **Smarter.ai** would find its costumers and its purpose.

2020 has brought along with it numerous surprises, the most notable being, of course, COVID-19. All investors represented above have maintained their investments throughout this pandemic, keeping up their commitment to sustainable development and innovation. They have portfolios of varying sizes and strengths, but their unwavering commitment to taking a risk and aiming for the ideal is what marks them out as the ones to watch in this rapidly evolving field. Being a member of their portfolios will bring assured benefit to any firm looking to sustainably changing the world.

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