

# Infrastructure investment in the AI era

Key insights from neuroscientist  
Dr. Henning Beck on why human  
judgment still matters.



**UBS**

Artificial intelligence is changing how infrastructure investments are analyzed and evaluated. But what role can AI play in long-term investment decisions, and where does human judgment remain indispensable?

## Henning Beck

Dr. Henning Beck studied biochemistry at the University of Tübingen in Germany and early on specialized in neuroscience. After completing his doctorate in 2012 at the Graduate School of Cellular & Molecular Neuroscience in Tübingen, he earned an International Diploma in Project Management from the University of California, Berkeley, in 2013. He then worked with startups in the San Francisco Bay Area to support innovation processes using insights from neuroscience.



This question was at the heart of a conversation between Roland Hantke, Head of Unified Global Alternatives – Infrastructure, and neuroscientist and author Dr. Henning Beck. Hantke is responsible for private infrastructure investments across various sectors, ranging from energy and utilities to communications networks, transportation, and social infrastructure. Investment decisions in this area are particularly complex: projects often require capital commitments of ten to twenty years and need to anticipate technological, regulatory, and societal developments. Against this backdrop, a key question arises in investment practice: what role can artificial intelligence actually play in such long-term infrastructure decisions?

## AI as a powerful analytical tool

For Beck, the strength of modern AI systems lies primarily in the analysis of large data sets. Models can simulate scenarios, identify patterns, and structure extensive amounts of information.

This can offer considerable advantages, particularly in the investment process. Infrastructure investments often require extensive due diligence processes, including thousands of documents, technical reports, and complex financial models. In this context, AI can help evaluate data more quickly and prepare decision-relevant insights more clearly.

However, the strategic decision itself remains a human one. Investment decisions are not based purely on mathematical calculations, but on the assessment of uncertainties.

AI systems rely on historical data – and as soon as conditions change significantly, they reach their limits. Beck cites an example from the pandemic: AI models that had previously analyzed medical imaging data were initially unable to correctly recognize new COVID-19 symptoms, as these were not part of their training data.

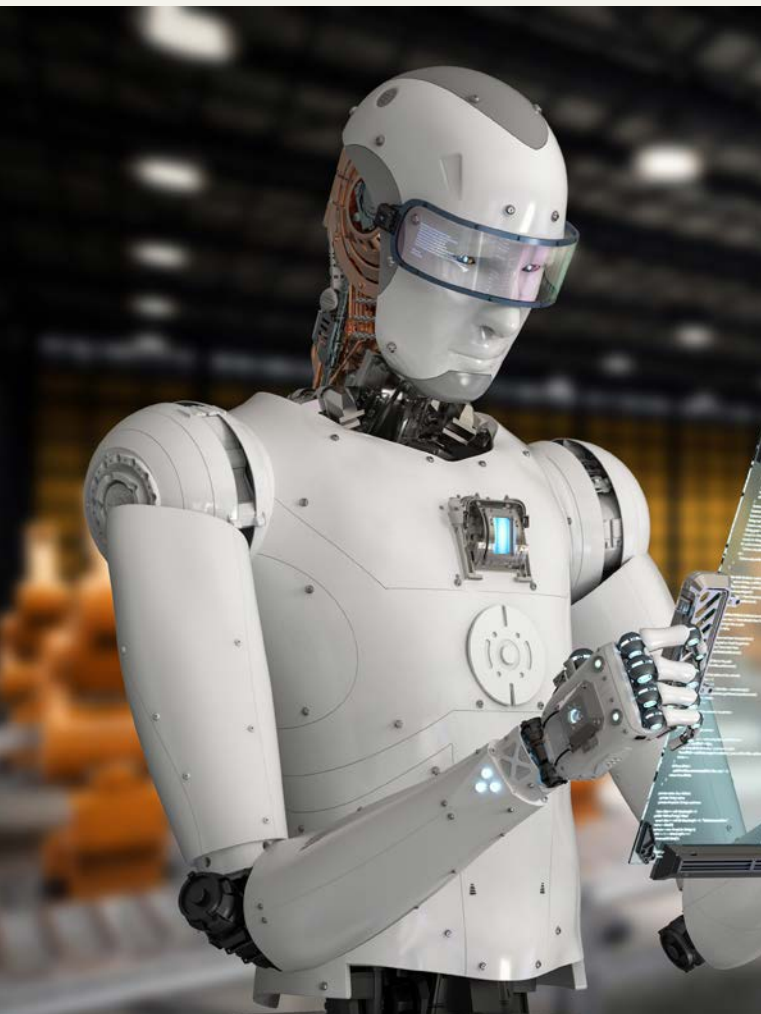
For investors, this means that AI can support decision-making processes, but it does not replace business judgment.

## When more information makes decisions harder

Another topic of the conversation was the role of information in the decision-making process. In psychology, this is referred to as the overchoice effect: when people are confronted with too many options or data points, the quality of their decisions often declines.

This phenomenon is also relevant in an investment context. Infrastructure projects generate enormous volumes of data, ranging from technical studies and regulatory analyses to market forecasts. Beyond a certain point, additional information ceases to be helpful. People lose perspective, and decision-making becomes more difficult.

This is where AI can make an important contribution – not by replacing decisions, but by structuring, condensing, and making information accessible. Particularly during the analysis phase, it can help investors arrive at the most relevant questions more quickly.



## Identifying trends before they become apparent

The limitations of data-driven models become particularly apparent when it comes to identifying new trends. Many investment strategies are based on recognizing developments at an early stage, often long before they become mainstream.

For Beck, this capability is inherently human. New trends rarely emerge from publicly available data alone. They become apparent through discussions with companies, observation of societal change, or the strategic interpretation of market developments. This challenge is particularly evident in the infrastructure sector. New asset classes often emerge where technological developments meet changing societal needs, such as digital infrastructure, new forms of energy, or specialized logistics solutions.

For Beck, the decisive point is that such developments often initially arise outside established market analyses. To illustrate this, he refers to an example from a very different field: the development of coffee capsules. Three decades ago, few would have expected a global market to emerge around small aluminum capsules and dedicated coffee machines. It was only through recognizing a new consumer need at an early stage that a billion-dollar market emerged.

Trend identification works in a similar way in the infrastructure context. New technologies, regulatory changes, or societal needs can give rise to new asset classes, often initially flying under the radar of established market analyses.

Recognizing such opportunities requires experience, curiosity, and a willingness to test even counterintuitive hypotheses.



## Motivation and incentives in the investment process

Alongside technology and data, human incentives also play an important role in successful investment decisions. Beck points to three key factors that drive human behavior: the pursuit of freedom and autonomy, the desire for improvement, and social recognition.

Infrastructure assets, in particular, illustrate how strongly management incentives can influence performance. Another aspect that often plays a role in the infrastructure context is the diversity of ownership and holding structures. Infrastructure assets can evolve very differently under government ownership, within industrial groups, or under specialized investors.

For Beck, the reason lies primarily in differing objectives and incentive structures. While public operators often pursue public interest objectives – such as security of supply or the provision of social infrastructure – private investors tend to focus more on efficiency, value creation, and return on investment. These different perspectives ultimately shape management decisions and can have a significant impact on the economic development of an infrastructure investment. The very same asset can deliver markedly different economic outcomes depending on governance structures and incentive systems.

Financial incentives can support motivation, but they have limits. One challenge arises when rewards lie too far in the future. People tend to value future returns significantly less than immediate ones – an effect known in behavioral economics as hyperbolic discounting. Another risk is that purely financial incentive systems can crowd out intrinsic motivation. When performance is driven solely by monetary incentives, people often lose touch with the activity itself.

Particularly in the case of long-term infrastructure investments, where success often becomes apparent only over many years, a balanced interplay between financial and non-financial incentives is therefore crucial.

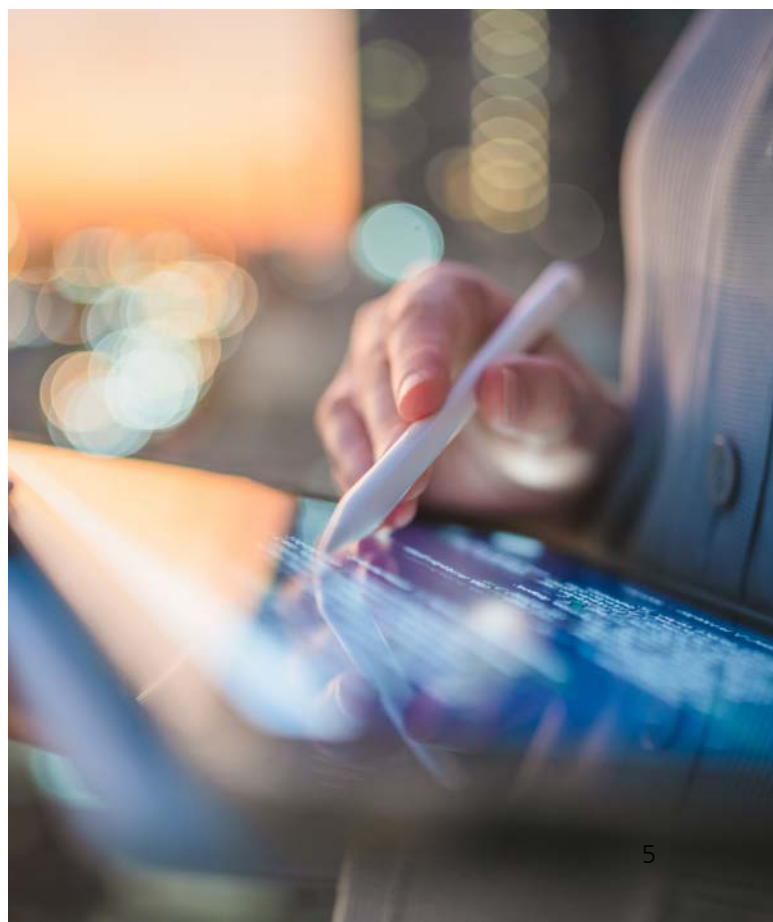
## Infrastructure between two temporal logics

A particularly noteworthy aspect arises from the combination of AI and infrastructure. Fast innovation cycles dominate the technology industry: products are developed, tested, and improved further within a short period of time. Infrastructure investments, on the other hand, follow significantly longer time frames. The construction of power plants, grids, or data centers often takes years or even decades.

This brings two different time horizons into direct conflict. Companies must decide whether long-term infrastructure investments make sense when technological developments may change faster than the investments can be amortized. This question is currently being discussed intensively, particularly in the context of data centers, energy supply, and digital infrastructure.

For investors, this creates a field of tension, but also an opportunity. Where long-term infrastructure decisions coincide with technological uncertainty, human judgment becomes increasingly important.

Or, as Beck puts it: investment decisions are always made under uncertainty, and it is precisely in this area that competitive advantage may arise.



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