IBM

NUKISSIORFIIT

Business challenge

Greenland utility Nukissiorfiit is challenged with providing accurate financial data and forecasts. Previously, 70 people worked to generate just one forecast a year. Nukissiorfiit needed to become more agile.

Transformation

Nukissiorfiit is dedicated to supplying water and energy to Greenland without using fossil fuels. Accurate tracking and forecasting is vital to accelerate capital projects. IBM Business Partner CogniTech Analytics Solutions helped Nukissiorfiit adopt AI forecasting, IBM® Planning Analytics and IBM Cognos® Analytics, and it can now generate forecasts in hours instead of months.

Claus
Andersen-Aagaard
CFO and Acting CEO
Nukissiorfiit

Results

Streamlines planning and forecasting processes
from 70 people contributing to an annual plan to nine planning monthly

Improves business visibility, forecast reliability and agility
providing the latest, most accurate information to all stakeholders

Decreases time spent on forecasting
from 1,000 hours annually across many roles to well below 200

Nukissiorfiit

Intelligent analytics help Greenland's resource use go greener and leaner

Nukissiorfiit is a utility company owned by Greenland's self-government. It is responsible for producing and supplying electricity, water and heat to the country's consumers. In 17 cities and 53 settlements. Nukissiorfiit's energy supply is 72% based on renewable energy sources. Its goal is to use renewable energy sources wherever possible and to ensure that everyone has access to clean drinking water. The company has 405 employees, of which 90 are located at its head office in Nuuk.

"Throughout the project, CogniTech was focused on the project and delivered. They established something that I believe is unique, not only in a Greenlandic context, but perhaps in a global context."

– Claus Andersen-Aagaard, CFO and Acting CEO, Nukissiorfiit

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A need for more flexible and accurate planning

Nukissiorfiit is a government-owned company whose main mission is to supply Greenland with clean water, electricity and heat without using fossil fuels. That's a tall order, but the company is already using renewables for 72% of its utility production—and is on track to achieve 100% by 2030. In addition, Nukissiorfiit's enviable pricing structure for power and water is a third of what it is in comparable areas in Canada—and this is without government subsidies.

When you do a deeper dive, you realize what a tremendous accomplishment this really is, considering that Greenland is the size of France, Spain, Germany and Italy combined but with a population of only 56,000. In addition, 85% of the country is covered by ice, leaving only 15% habitable, and it typically has very cold weather.

Nukissiorfiit has only two interconnected places in Greenland that share one electricity grid. The remaining 68 locations have stand-alone grids, and the same is true for water production and heating. What that means is that for every place that is populated, the utility must have a stand-alone installation with multiple levels of redundancy and backup capability. Nukissiorfiit must also have people stationed around the country who can be onsite in short notice

because the consequences of running out of water or power can be very serious.

To meet its 100% fossil-free goal, become more responsive to its customers' needs and continue to build new hydropower plants, the company must have an accurate financial picture and projections. Investment in new facilities and in the maintenance of existing facilities

requires advance planning. Previously, the company could only make budget projections once a year, and those projections could be wildly inaccurate by the time the project needed to proceed.

"The system we were working in was very rigid. We couldn't plan with the flexibility we wanted," says Claus Andersen-Aagaard, Chief Financial Officer (CFO) and Acting Chief

Executive Officer (CEO) at Nukissiorfiit. "We needed certainty as to how our financial situation was developing and much more flexible, continuous planning to match the working environment we are in."

He elaborates: "Our organization had 70 people that each October spent a lot of effort in producing a budget. When it came to May, we sometimes tried to produce a revised budget for

the rest of the year because of significant changes in assumptions. This involved a significant number of hours and a lot of effort. In reality our business developed much faster than our budget could absorb when done once or twice a year."

The forecasts are total profit and loss (P&L) statements, as well as cash flow statements and the financial impact of project execution. To create these forecasts, Nukissiorfiit combined sub-forecasting models on detailed turnover, location-specific variable costs, capacity and maintenance costs as well as personnel cost sub-models, and integrated them all into one big model, which could be fully exploded into all dimensions and account classifications. Furthermore, the company used external information such as long-term weather data as input to forecast the sale of heat, water and electricity.

The forecasts Nukissiorfiit produces are used throughout the company— from managers and planning experts responsible for developing budgets to the skilled personnel on the front lines, such as engineers and heating specialists.

Ole Moeller Madsen, Chief Sales Officer and Partner at CogniTech, which helped provide the solution, comments on why it was vital for Nukissiorfiit to find a more advanced planning solution: "They had a lot of lag. Not having a precise

forecast and budget, they didn't know where they were headed, and what they had to act on."

Rolling out more robust forecasting

With Nukissiorfiit's mission to be 100% fossil-fuel independent and its need to add more hydropower plant infrastructure to achieve its goal, accurate and more robust financial forecasting became a critical need for the utility.

Nukissiorfiit had worked with CogniTech's consultants since 2015 as part of another organization. The company trusted the consultants' advice that to meet its aggressive goals, Nukissiorfiit could benefit from an AI-infused planning and analytics solution.

In 2018, CogniTech invited a delegation of five people from the utility to a week-long IBM Analytics conference in Stockholm. The Nukissiorfiit delegation was the largest contingent attending from a single company. The intent was to get inspired for new digital solutions, be more data-driven and talk about new versions of Cognos Analytics and Planning Analytics and AI solutions. While discussing another project, Andersen-Aagaard became interested in learning more about the planning project.

"We needed to move beyond traditional budgeting and start working dynamically with our

forecasting, using monthly rolling forecasts with a longer horizon of 18 months rolling, to continuously incorporate the newest information," says Andersen-Aagaard. "And we knew that the new process should not lead to a disproportionate burden where 70 people spend time on it every month." We could see that with the more than 300 sub-budgets we were handling, we couldn't expand this process and continue to use the traditional way. So we needed

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"The whole reason behind this project is to be more efficient and more precise with their budgeting and forecasting process."

— Ole Moeller Madsen, Chief Sales Officer and Partner, IBM Business Partner CogniTech Analytics Solutions

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to think differently, and that's where the AI-driven rolling forecasts come into play."

Kai Erik Ettrup, Partner at CogniTech, explains: "We pitched the idea of using AI and machine learning to improve the process, and Nukissiorfiit bought into the idea." The utility emphasized that the new tool would have to have a good user interface with an efficient input and verification process. "The inspirational sessions we had in Stockholm gave us the

confidence to move ahead with the platform and the collaboration with CogniTech," says Andersen-Aagaard.

CogniTech met with Nukissiorfiit in workshops to discuss how the company could migrate from its old planning and forecasting solution to a rolling forecast with machine learning and predictive forecasting built in.

CogniTech then helped the utility migrate to the Cognos Analytics solution, the AI-driven business intelligence platform that supports the analytics cycle, from discovery to operationalization, and provides a governed approach to manage, explore and visualize data. Its AI assistant allows the user to interact in exactly the places that need attention and dismiss the 80% of overviews and financial data that don't need attention.

CogniTech's Moeller Madsen explains that one of Nukissiorfiit's main goals in migrating to the rolling forecasts solution from IBM was to enable the utility to make better business decisions.

Andersen-Aagaard, agreeing, adds: "You have a small window in Greenland where you can make outdoor repairs or initiate a new infrastructure project or develop a new power plant. It's very important that you have 100% visibility and the right insights to make a decision on whether we have the cash flow to do it. For example, if our people in the south of the country have a delayed

project portfolio, are the expenses then coming in later, or is it delayed sufficiently that we can push ahead with other projects in the north? This can be quite a daunting planning task to manage when you have 100 - 200 larger infrastructure projects concurrently running."

Nukissiorfiit relies on the Cognos Analytics solution to gather input from company employees and transform it into a set of reports that top management uses to make planning decisions about its continuous work with infrastructure projects. The company would otherwise have to be much more cautious in approving all the new infrastructure grids, new power plants and substations, new water plants and new renewable energy solutions.

"We had a lot of considerations concerning how the solution could be architected to provide maximum credibility," Andersen-Aagaard says. "Our financial books consist of a lot of areas, including turnover, variable costs, capacity costs such as salary, depreciation, interest costs, and financial costs. All of these areas have unique properties. We were faced with the classical dilemma in budgeting that it's difficult for people to incorporate all factors. A machine can handle this much better if historical data is extrapolated into the future." The company has already set up more than 100 different reports that take different aspects of its financial information and provide it to the managers for them to act on.

"With the help of CogniTech, we were able to eliminate a tremendous amount of administrative work for our technical employees, who hardly took much joy in the task," Andersen-Aagaard says. "In addition, they could confirm results from the AI as opposed to entering the numbers from all locations and classification manually. Not only were they thrilled to be released from this task, but the end result is much better, too."

Andersen-Aagaard appreciates the breadth and depth of the AI solution's approach. "One of the best things today is when an input provider is puzzled by the machine input and asks our controllers why the AI would forecast a certain figure contrary to the knowledge of the input provider," he adds. "When they examine it further—they find out, more often than not, that the AI is correct, because it takes all the factors and historical data into account. This makes me smile," he says, "because then I know definitively that what we've created provides improved quality to our company and that we've saved money and time in the process."

Andersen-Aagaard explains that the company wanted to develop a front-end and a back-end. "Our front-end is user input and confirmation, where users relate to fully and semi-fully exploded machine generated forecasts, while our back-end contains adjustable parameters that

can be manually tuned when we know that parameters will change," he says.

Ettrup explains the solution's use of external data: "We've been using a lot of weather data from the past three years. Then we use that to analyze what we call a normal weather period, to generate a normal year sale per customer, per area. We gave them a lot of back-end parameters so Nukissiorfiit could control numerous company-specific aspects, such as general vacancy, project completion rate, oil per kilowatt, and much, much more."

Intelligent monthly planning

By migrating to the rolling forecast solution provided by CogniTech, Nukissiorfiit has reduced the number of people needed to make budget projections and increased the accuracy of those projections through increased frequency and the use of AI. The solution has improved the utility's flexibility in adapting its planning to changing variables such as the weather and fostered greater confidence with Greenland's government in greenlighting new and ambitious projects.

"We were able to go from 70 different input providers—employees who are involved in the process of developing our budget—down to nine people. So that's quite a reduction," says Andersen-Aagaard.

"And it doesn't stop there," he adds. "It's actually also the amount of time that these people use it. So I would say that these nine people now spend less time than they did before. And also the 60-plus people who are not using tools anymore for providing input into the forecast, aren't spending any time at all on it."

Andersen-Aagaard is quick to note that while considerably fewer people work on the forecasts, every person in his company receives this information. "They get their insights both from a management point of view but also to some extent on the production data from the IBM Cognos Analytics platform," he says.

Overall, its new Planning Analytics and Cognos Analytics solution combined with intelligent machine learning forecasts has allowed Nukissiorfiit to adopt a more efficient way of operating. The company can now use the insights to set thresholds and be alerted if the forecasts are outside of the ranges; it can also override the alerts based on experience or additional information. The bottom line is the company is more agile and its financial planning is more accurate.

"Claus [Andersen-Aagaard] is very keen to have forecasts every month to be sure the P&L and cash flow is in control. And they will be more agile to adopt changes in consumption and changes in whether a certain project is delayed or not," says Moeller Madsen.

"Saving time has been a huge factor and benefit for us," says Andersen-Aagaard. "Going from 70 input providers to just nine has reduced the time that we are spending on this task. And, we've expanded how many times we actually do this exercise—each and every month now we get a new forecast based on the latest information. The old way, we'd probably be spending 5,000 - 10,000 hours to do this."

Andersen-Aagaard reports that another gain is much more precise forecasting. The company now has the flexibility it sought to change plans when new information is available and understand the consequences of doing so.

Andersen-Aagaard adds that the user experience has been tremendously improved. He reports that employees are more interested in the financial consequences of the decisions they're making and that the output quality of the reports that they're provided automatically has also improved drastically.

With the planning platform and machine learning in place, Nukissiorfiit is looking to the future with confidence. "I think it's worth saying that whenever we do a big project such as the big hydroelectric plant project, you have to have confidence in us as a company," says Andersen-Aagaard. "Greenland's government must make sure that the money they let us invest on behalf of the county is taken care of responsibly."

As far as the future goes, Andersen-Aagaard says the company is looking to integrate the platform with Internet of Things (IoT) sensors at its plants and built into the meters of every home in Greenland. "We're looking into if IoT can play a bigger role so we can get data on a more frequent basis. IoT is a cost effective platform where you can transfer a lot of data at much lower costs."

Nukissiorfiit is also looking into exporting Greenland's water to other countries, both through working with bottling companies and bulk carriers. Plus, other Arctic countries such as Canada are very interested in seeing how they can use Nukissiorfiit's successful utility pricing structure to reduce their own energy prices.

Solution components
- IBM® Cognos® Analytics
- IBM Planning Analytics

Take the next step
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About CogniTech Analytics Solutions
IBM Business Partner CogniTech is the only Danish IBM Gold Partner in Analytics. Founded in 2019 from a buyout of its previous iteration, the consulting organization focuses on IBM as its primary technology partner. CogniTech can create unified integrated solutions for its more than 100 customers, including everything from data integration to business intelligence to budgeting, forecasting and financial consolidation integrated with AI and machine learning. The company has more than 40 planning analytics customers.

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