Executive Summary - The PaaS Strategy

USE THE CIRCULAR ECONOMY AS A DRIVER TO REACH MORE PATIENTS BY 2050 WHILE STRIVING FOR ZERO ENVIRONMENTAL IMPACT

Questions & Considerations

1. **Awareness**
   - How can Novo Nordisk increase diabetes awareness and encourage more individuals to get tested?

2. **Patient Support**
   - How can Novo Nordisk support their patients once they are diagnosed and have purchased their device?

3. **Circular Economy**
   - How can Novo Nordisk decrease their environmental impact in their value chain?

Pharma as a Service

**AWARENESS CAMPAIGNS**
- Intervene early in the customer journey through Awareness Campaigns launched in collaboration with The American Diabetes Association across high-risk communities in the USA.

**LIFESTYLE APPLICATION | NovoAPP**
- Launch a lifestyle application for all patients using a Novo Nordisk device, tackling all 5 Core Patient Needs and offering a holistic approach to living with the disease.

**GIVE DEVICES AS SECOND LIFE**
- Transform the take-make-waste model into a circular economy by giving devices a second life via a more frequent use of the Autoclave and acquisition of Terragon’s MAGS technology in the value chain.

Impact

- Capture additional 481K new customers
- Sale Increase 4,722 M DKK (6.4% CAGR 2025)
- Market Share Increase by 3%
- Saving 4K tons of plastic yearly
Key Internal Dimensions & Drivers

Novo Nordisk current standing with the task at hand

UN Sustainable Development Goals (SDG)
Out of the 17 sustainable development goals, we have identified 5 that are fair game for Novo Nordisk.

Patient Changing Needs & Demands
- Democratization of information - crucial that Novo Nordisk start participating in the conversation patients are having with Dr. Google
- Embracing the 5 Core Patient Needs

Be a Driver of Change
“We don’t wait for change, we drive change”
- Lars Fruergaard Jørgensen, CEO of Novo Nordisk

Implementation
Setting Novo Nordisk in the right direction in order to eliminate waste as much as possible by 2050.
United States as Ideal Initial Market

The United States has yet to combat the stigma associated with diabetes and the disease shows little sign of slowing down.

The American cities with the highest at-risk population of developing diabetes:

Miami, New Orleans, Charlotte, Detroit, Houston, Dallas, Philadelphia, Atlanta, NYC, Boston, San Diego, Los Angeles, San Francisco, Chicago, Las Vegas, Seattle, Washington DC & Minneapolis

Given the American markets’ large size and steady long-term growth rate, we are confident that continuously investing in patient well-being as well as piloting circular economy initiatives in this region will enable Novo Nordisk to increase their outreach while diminishing environmental impact, setting the stage to scale projects globally.

By 2030, the diabetes rate in the USA is projected to rise by 38%. This will reach 15.3% of the population.

30M Americans
Suffer from Diabetes making it the 7th leading cause of death

$300BN
Total cost on American healthcare

Free Market Approach
Enables Novo Nordisk more freedom and leeway in regards to marketing techniques

2020
13.00%

2025
14.40%

2030
15.30%

By 2030, the diabetes rate in the USA is projected to rise by 38%. This will reach 15.3% of the population.

38%
Competing on Customer Journey & Product Experience

Focusing on areas of the supply chain where Novo Nordisk can take leadership in reducing environmental impact

Innovative R&D
Intentionally eco-conscious product design and maintain high speed to patent

Plan & Source
Plan and source through 40,000 suppliers as market demand varies

Produce API
Using 6 key facilities produces insulin in aseptic conditions

Assembly
Final assembly in accordance to local laws and regulations

Pack & Dispatch
Delivery through eco-conscious alternatives while maintaining fresh product

Distribute to customers through local affiliates, reaching patients

Waste
At every step of the supply chain, waste is produced and dealt with in different ways.

While Novo has achieved great environmental sustainability upstream in its supply chain, they need to make their customer journey more sustainable through the circular economy

Novo Nordisk’s Level of Control

| Novo Nordisk’s Level of Control | High Control | Medium Control | Low Control |

While Novo has achieved great environmental sustainability upstream in its supply chain, they need to make their customer journey more sustainable through the circular economy.
Complete Overview of the Customer Journey

The PaaS Strategy increases the number of touch points with the patient

1 LIFE DOESN’T STOP AT DIABETES CAMPAIGN
She notices a striking advertisement on diabetes on her bus ride back home from work, highlighting how you may not know you’re diabetic... It encourages her to visit her doctor.

2 INTRODUCTION TO NovoPEN & NovoAPP
Sydney's receives her NovoPEN, a funny looking tool she will have to inject in her side once a day. Her pharmacist informs her about the complementary NovoAPP - a lifestyle app for a lifestyle disease.

3 REFILL PRESCRIPTION
After one month, Sydney orders her refill cartridges and needles via her NovoAPP and brings her used cartridges and needles back to her pharmacy in their blue and yellow bags respectively. She learnt via the NovoAPP that her medicines’ producer, Novo Nordisk, will recycle them. That is something she feels good about.

MEET SYDNEY
Sydney is a 27-year-old female from Miami. She doesn't consider her health to be a priority, given that she has to work two-jobs to support her family.

DIAGNOSIS
Sydney leaves the doctors office feeling confused, scared, overwhelmed and ashamed. She was just diagnosed with Type 2 Diabetes. Prescription in hand, she goes to her local pharmacy to pick up her new medication with many questions buzzy in her mind.

Needles & Cartridges are sent back to the 3rd party distributor. Once arrived, they will both go through their individual circular economy journey.
1.1. Capturing Lost Margin from the *Rule of Halves*

Certain social classes in the United-States are disproportionally at risk of falling within the *Rule of Halves*

**STRATEGIC GOAL**

- Bringing people to question their lifestyles in light of diabetes information
- Patient-centric approach from Novo Nordisk in ensuring proper treatment for all
- Democratize information for at-risk populations in the U.S., allowing Novo to compete with Dr. Google

**HIGH RISK AMERICAN POPULATION**

Among U.S. adults with less than a high school education, 12.6% had diabetes.

Consistently more prevalent with males.

Within U.S. minorities, making up 38% of total population by 2060, 22% of *Hispanics* and 20% in *non-Hispanic blacks* were affected by Type 2 diabetes.

Nearly 1 in 5 adolescents, and 1 in 4 young adults are living with prediabetes.

**American Diabetes Association**

Localizing treatment through the financial support of Novo Nordisk.

**Workshops**

Educational & awareness workshops organized in collaboration with support groups, tailored to at-risk populations.

Ensure healthy lives and promote well-being for all ages at all ages, with a focus on maternal and child health.
1.2. A Patient-Centric Marketing Campaign

Life Doesn’t Stop At Diabetes, Neither Should You

Of the 30.3M Americans with diabetes, 7.2M remain undiagnosed which represents 24% of affected individuals.

Case study
Prostate Cancer in Canada

- Bringing a disease typically regarded negatively (weakened masculinity) into the public eye
- Incentivized men to really think about their health and seek treatment

Little do they know, one of them has diabetes. Go see your doctor.

Getting the right medication feels good. Go see your doctor.
2.1. A Lifestyle APP, for a Lifestyle Disease

Equipping patients with an integrated toolbox, helping them tackle their new normal with confidence

**HOLISTIC TREATMENT**
A Comment Box enables patients to communicate directly with Novo Nordisk, providing live customer experience feedback

**SOCIAL SUPPORT**
Address patient queries & health concerns via a 24/7 chat box, powered by machine learning

**BALANCING LIFE & DISEASE**
 Equip patients with tools to fight stigma, gain self-confidence and openly discuss mental health through educational blog posts

**SELF-CARE CAPABILITIES**
Simple nutritional & fitness plans educating patients on healthy lifestyle tips that will help shape their new normal

**REDUCE COMPLEXITY**
How-To videos and step-by-step tutorials demystifying patients new Novo device

Offer patients a digital toolbox filled with integrative solutions answering all 5 CORE PATIENT NEEDS, no matter their socioeconomic background.

**DOWNLOAD APP & QR CODE**
A QR code on promotional pamphlets will encourage patients to download the NovoAPP after purchase of their device at their local pharmacy.

**FACILITATE PRESCRIPTION REFILLS**
Enable seamless patient refill experience with an in-app order functionality, connected to patient's pharmacy of choice.

Recipe of the day
Let's make zero environmental impact, together

HI, SYDNEY!
What would you like to accomplish today?

Recipe of the day
Let's make zero environmental impact, together
2.2. APP Gamification & Incentives

Further incentivizes APP users to cumulate Greener points through fun facts, measuring the tangible and positive impact a patient is having on the environment.

ENVIRONMENTAL AWARENESS THROUGH GAMIFICATION

The NovoAPP will incentivize patients to return their disposable device’s pieces, through push notifications and gamification, to their pharmacy in order to reduce their environmental impact.

Once returned, the patients notify the APP and are awarded Greener points to their profile.

Patients can compare their Greener score with other community members.

Everyday Benchmarks
Help patients measure the positive impact they are having on the environment in ways that they can truly measure, not vague statistics.

Ripple Effect
Novo Nordisk will be at the root of greater change by nurturing an eco-conscious mind-set within their patient community.
3.1. One third of our most recyclable products achieve current sustainability goal

**CURRENT PROCESS**

**REUSED**
The pen is currently the only part of the treatment which can be reused by the patients, they generally keep it for numerous years

**SINGLE-USE**
After their use, the cartridges, depending on where it is used, can be thrown in the recycling bin, however, it means that we would be relying on local authorities

**TAKE-MAKE-WASTE**
Needles, and single usage pens are considered as biowaste, there are strict legal constraints which forces needles to be taken care off by specialized companies, they end up in landfills

**FUTURE PROCESS**

**REUSED**
We will continue to invest in innovative and long-lasting pens while educating customers

**MULTI-USE**
At the heart of the waste problem, cartridges are going to be shipped back to the filling centers, sterilized, filled-again and sent again to the customers

**SOURCE OF ENERGY**
Needles will now be dealt with in-house with the latest technology improvements, they will be burnt and will provide energy to the local distribution centers

**Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**
3.2. Making a True Shift to Circular Economy

**Goal 12:** Ensure sustainable consumption and production patterns

**Goal 13:** Take urgent action to combat climate change and its impacts

**STEP ONE** Application notifies you of a needed refill.

**STEP TWO** Consumer obtains needed refills and 2 new safe-deposit bags.

**STEP THREE** Yellow and blue safety bags, filled with used products, are brought back to the pharmacy.

**STEP FOUR** Initial transport to third party is done through the same truck that delivered the most recent insulin shipment to the pharmacy.

**STEP FIVE**
- Sharps are transported to nearest third-party centers with MAGS.
- Thermal energy is used to power third-party plant.

**STEP SIX**
- Cartridges go through an autoclave to be sanitized and then refilled.
- Cartridges are shipped back to one of the 6 key production facilities in BR, FR, US, DK, CH.

**STEP SEVEN**
- Newly filled cartridges are packaged, sealed and shipped.
- Bio-char can be safely disposed of in landfill.

1 Plastic recommendation for reusable cartridges is Polypropylene (PP) or Polypropylene copolymer (PCO).
3.2. Making a True Shift to Circular Economy

**STEP EIGHT**
Thermal energy allows the production plant to be self-sufficient

**STEP NINE**
Filled cartridges arrive at pharmacy and are available for patients

**TERRAGON’S EXPERTISE**
Terragon Environmental Technologies Inc. is the unique, Montreal-based firm, that invented the Micro Auto Gasification System (MAGS). Without any preprocessing, the MAGS unit is able to break down waste, including medical waste (ex: sharps). The only byproduct of the process is non-toxic char; no CO₂ is emitted, and no water is contaminated.

**STRATEGIC ACQUISITION OF TERRAGON**

<table>
<thead>
<tr>
<th>CAD 11M</th>
<th>Annual Sales</th>
<th>Annual Sales X 3.58 = CAD 40M</th>
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<tbody>
<tr>
<td>Price: 200M DKK</td>
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Taking ownership of bio-medical product waste
Recognizing the waste produced throughout the lifecycle of their products

Ensuring scalability of the solution
By allowing Terragon to grow through an embedded market of third-party suppliers, Novo Nordisk allows them to achieve economies of scale and embed them throughout the whole supply chain

Ensuring sustainability as a competitive advantage
First large pharmaceuticals firm to complete the circular economy-based design, distribution and sale of a zero-waste insulin product
The Outreach Initiative Supports the Efforts Towards a Circular Business Model

The proposed project is both attractive from a top line and a bottom line perspective

By implementing the PaaS strategy Novo Nordisk will be able to create 111,065M DKK in value while boosting its per share price by 39 DKK and growing its EPS by 7.5% annually till 2025.
The PaaS Strategy Will be Implemented Throughout the Decade to be Ready For A Scale Up

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<thead>
<tr>
<th>PaaS</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
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<td>1. Awareness</td>
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<td>Start Workshops alongside the diabetic association</td>
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<td>Release QR Code on promotional pamphlets</td>
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<td>3. Circular Economy</td>
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<td>Acquisition of Terragon</td>
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<td>Purchase of the autoclaves</td>
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<td>Finalize and fully implement</td>
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<td>4. Future Considerations</td>
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<td>Scale up current initiatives</td>
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<td>Further penetrate African and South East Asian Market</td>
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NOVO NORDISK

Executive Insights Strategy Impact
Summary
Key Takeaways & Future Considerations

A strategic overview of the Pharma as a Service strategy

<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategy</th>
<th>Impact</th>
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<tbody>
<tr>
<td>Awareness Campaigns</td>
<td>Life Doesn’t Stop At Diabetes, Neither Should You</td>
<td>Promoting well-being for all</td>
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<tr>
<td>Increase individual awareness</td>
<td>NovoAPP: a lifestyle app for a lifestyle disease</td>
<td>Democratizing access to medical information</td>
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<tr>
<td>NovoAPP</td>
<td>Acquire Terragon &amp; capitalize on Autoclave in circular supply chain</td>
<td>Transforming the take-make-waste model into a circular economy</td>
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<td>Offer holistic patient support</td>
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<td>MAGS &amp; Autoclave</td>
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<td>Reduce environmental impact</td>
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**KPI’s**

- Share Price Increase: 9%
- Saved Plastic: 3,863 Tons/yr
- Energy Generated: 9.2M kW (839 Homes)

Our PaaS Strategy enables Novo Nordisk to use a circular economy as a driver to reach more patients by 2050 while striving for zero environmental impact, aligned with 5 SDGs.