Where are we going with farming, research and the environment? A New Zealand perspective

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What's happening in New Zealand?

Water quality regulation increasing

- National Policy Statements
- Regional catchment targets
- National N fertiliser limit

GHG regulation increasing

- Zero Carbon Act & Climate Change Commission Budgets
 - Total Emissions GHG/ha or sector GHG total
 - But Emissions Intensity kg GHG/kg MS is business



Our customers are also setting targets

Scaling up

Use more renewable thermal

energy in our manufacturing

Further down the greener path, we will invest in new technologies and fundamental changes to our products and businesses around the globe.

Source 50% of

key ingredients through regenerative agricultural methods by

Delivering our promise

Advanced agricultural techniques will deliver

a regenerative food system at scale, supported by zero emission logistics and company operations. We will balance any remaining emissions through high-quality natural climate solutions that benefit people and the planet.

NESTLÉ'S NET ZERO ROADMAP

Moving faster

Our milestones

100% deforestation

A 100% of our

free for primary

supply chain by 2022

We're excited to hit the soil running. We're accelerating our work in manufacturing, packaging and carbon-neutral brands. We're also investing CHF 1.2 billion to help

spark regenerative agriculture across our supply chain, as part of a total investment of CHF 3.2 billion by 2025.

Switch our global car

by 2022

100% certified sustainable

fleet to lower

emission options

100% certified

sustainable palm oil by

Source 20% of key

Our path to regeneration for future generations

Solving the problem means identifying the problem. We found Nestlé emitted 92 million tonnes of greenhouse gas emissions in 2018*. Now we know the extent, we know the road ahead.

*Total GHG emissions were 113 million tonnes (CO₂ equivalent) in 2018, 92 of which are in scope of our UN 1.5°C pledge.

♥Plant 200 million trees by 2030 plastic in our packaging by a third by 2025 packaging recyclable or reusable by 2025 ingredients through cocoa and coffee by 2025 regenerative Companies and their emissions agricultural grow over time. That's why we're Nestlé Waters becomes methods by promising to be net zero based on No Plant 20 million our 2018 baseline, no matter how carbon neutral trees a year much our company grows. by 2025 Path to zero emissions by 2050 **Business as usual** By 2050, we will reach By 2025, we will reduce our By 2030, we Emissions by operation (million tonnes of CO₂e, 2018) emissions by 20% will reduce our 65.6 Sourcing our ingredients emissions by 50% 7.0 Manufacturing our products 11.0 Packaging our products 7.5 Managing logistics 0.8 Travel and employee commuting 2018 2021 2025 2030 2050

(i) 100%

renewable electricity in

all our sites

by 2025

Cut virgin

Dairynz

Farmers want to farm in better ways



The Climate Change Ambassadors are an important part of helping dairy



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FUTURE FARMING STRATEGIES TRIAL NOW BEGUN 4 YEARS 2021 – 2025 ALTERNATIVE PASTURES FARMLET LOW EMISSIONS FARMLET COMPARED WITH CURREN PKE SYSTEM 3 FARM PROFIT AND RESILIENCE MEASURED

NZ's Regenerative Farming Network



What are the regulated targets?

Water quality

- National targets still under debate
- Synthetic N limit 190 kg/ha
- Hinds 25% less N leached/ha by 2030

GHG

- Methane 'split gas' doesn't have to go to Net Zero
 - 10% reduction by 2030
 - 22-47% by 2050 science debate on warming
- Nitrous oxide long-lived gas
 - Net Zero by 2050



How are we going to get there?

Voluntary Action

- Integrated Farm Plans
- Processor Incentive Programmes
- StepChange Profit Up, Footprint Down
- Land use change to forestry driven by C price

GHG Pricing - Sector led in He waka eke noa

- Price for Methane, Nitrous oxide
 - Credit for reducing emissions
- Credit for C sequestration

Regulation



Two big science challenges

Break the link between N inputs and N loss

Re-organize the N cycle

Break the link between feed eaten and methane production

• Re-organize the rumen



How will science re-organize the N Cycle?

N management - existing

- Reduce N surplus fertiliser and feed
 - GHG gains
- Re-organize the N cycle urine patch
 - Off-pasture at critical times
 - Winter crops
 - Plantain

N management – pipeline

- Precision e.g. Spikey
- New inhibitors



How will science break the feed eaten-methane link?

Methane reduction - existing

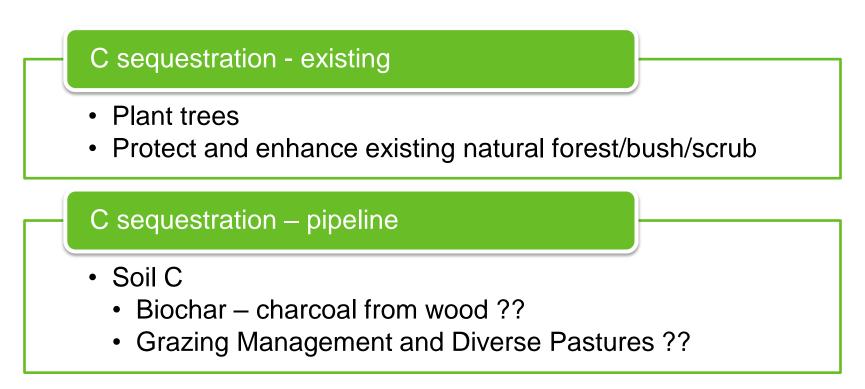
- Reduce feed eaten
- Methane Inhibitors
- Bovaer/3NOP
- Seaweed Aragopsis
- Bromoform

Methane reduction- pipeline

- Vaccine
 - High uncertainty, high potential
- Early-in-life rumen reset
- Calf rearing phase
- Methane Inhibitors agribusiness
- Genetics low emission
- GM pastures



How will science help store more C on our pastoral farms?





Conclusions



