

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

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DairyNZ 

What's happening in New Zealand?

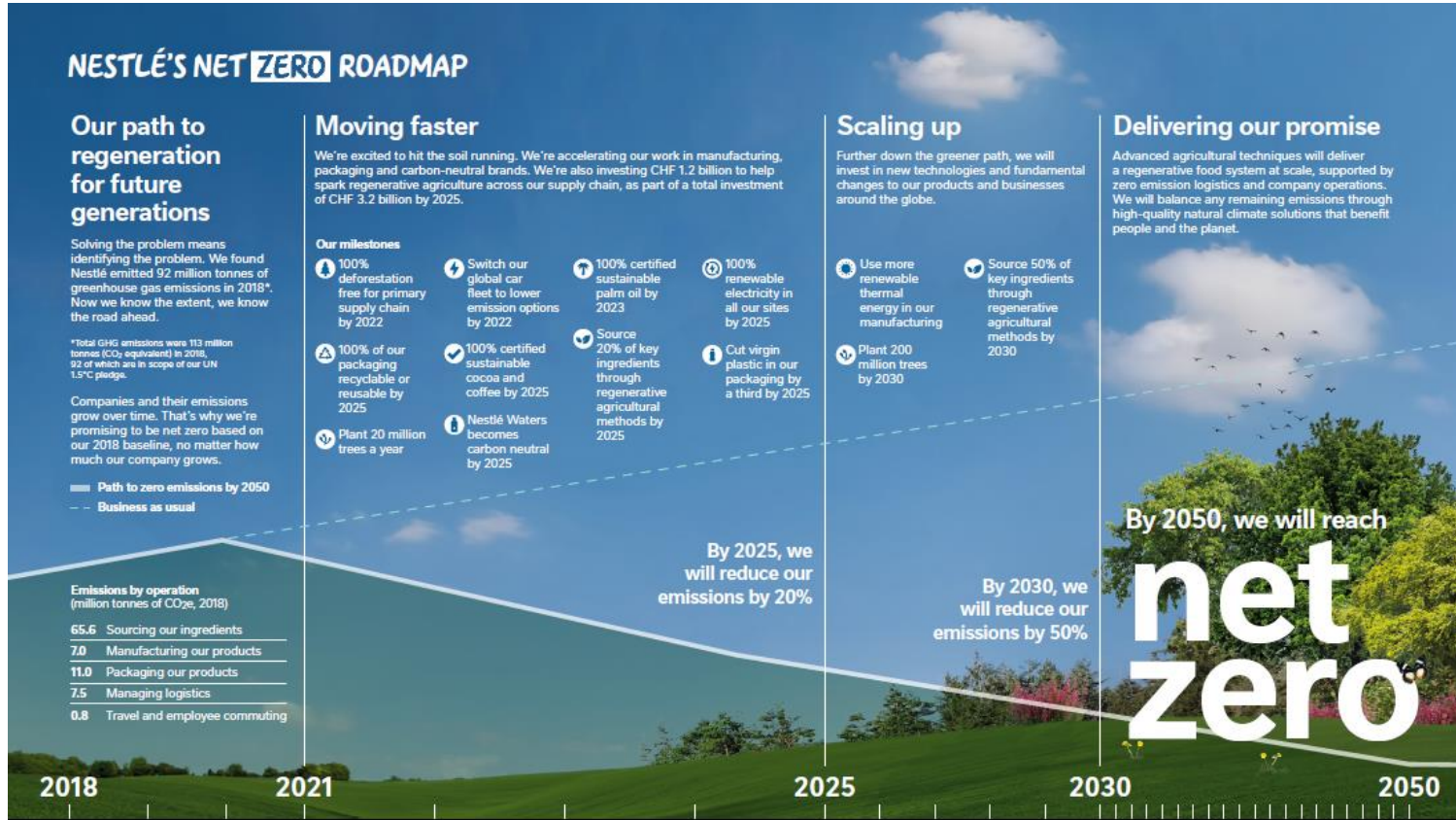
Water quality regulation increasing

- 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



Farmers want to farm in better ways



The Climate Change Ambassadors are an important part of helping dairy

A screenshot of the Northland Dairy Development Trust (NDDT) website. The top left features the NDDT logo and navigation links: Home, News, Past Work, Current Trials, NARL, About, and Contact. A Facebook icon is on the right. The main content area has a background image of cows at a trough. Text on the left reads "PARTNERSHIP. INTEGRITY. COMMITMENT" and "Leading Research in Northland's Pastoral Sector." On the right, a white box contains the following text:

FUTURE FARMING STRATEGIES TRIAL NOW BEGUN

4 YEARS 2021 – 2025

ALTERNATIVE PASTURES FARMLET

LOW EMISSIONS FARMLET

COMPARED WITH CURRENT PKE SYSTEM 3 FARM

PROFIT AND RESILIENCE MEASURED

A screenshot of the Quorum sense website. The top right features the Quorum sense logo and navigation links: THE PODCAST, RESOURCES, THE BLOG, IN THE MEDIA, NOTICEBOARD, EVENTS, NEWSLETTER, and ABOUT US. The main content area has a background image of two men in a field examining plants. The text "NZ's Regenerative Farming Network" is overlaid in large white font.

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?

C sequestration - existing

- Plant trees
- Protect and enhance existing natural forest/bush/scrub

C sequestration – pipeline

- Soil C
 - Biochar – charcoal from wood ??
 - Grazing Management and Diverse Pastures ??

Conclusions

Pasture based dairying has advantages

- Our competitors aren't standing still
- Change is needed

We have options now

- Key to profit gains and GHG intensity
- First step to reduce total emissions

Technology is needed

- Break the feed eaten-methane link
- Re-organize the N cycle