

Workstream 5: Vision Mātauranga (VM) (Update 2020-23)

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Four Pillars

- Build VM capability into the Research team, increasing the number of VM partners they develop relationships with and building the trust to develop further projects. KPI is "Developing VM capacity development across the key researchers of the programme: Number of core team members involved in VM-related activities (2 by 2024 and 4 by 2027)"
- **Co-development of projects or products** which will bring direct impact and benefits for our Māori partners. KPIs are:
 - Number of Māori partners we have engaged projects with (2 by 2024 and 4 by 2027)
 - Number of case studies/technology demonstrations involving Māori communities (1 by 2024 and 2 by 2027)
- Build the capability of Māori individuals or groups (iwi, hapū, businesses, etc) to support the increase of number of Māori researchers or businesses in this field. KPI is Percentage of students in the programme being Māori (at least 8%)
- Dissemination and **outreach to empower more Māori students into STEM** related fields, and especially working in the electricity industry.



Vision Mātauranga

- Research investment framework
 - "Unlocking the Innovation Potential of Māori Knowledge, Resources, & People"
 - Indigenous Innovation: Economy
 - Taiao : Environmental Sustainability
 - Hauora & Oranga : Health and Wellbeing
- Mātauranga Māori (MM): Māori Knowledge

• Rauika Māngai, "A Guide to Vision Mātauranga: Lessons from Māori Voices in the New Zealand Science Sector," Wellington, NZ: Rauika Māngai. 2020



[•] Ministry of Research, Science, and Technology, "Vision Mātauranga: Unlocking the Innovation Potential of Māori Resources, Knowledge, and People," Wellington, NZ: Ministry of Business, Innovation, and Employment, 2007

Mātauranga Māori (MM) & Science

- Data \rightarrow Information \rightarrow Knowledge \rightarrow Wisdom
- Science removes bias between data and information (by scientific methods)
- MM synthesises to knowledge and wisdom
- MM emphasises relationships between observations
- O. R. Mercier, "Indigenous Knowledge and Science. A New Representation of the Interface Between Indigenous and Eurocentric ways of Knowing," He Pukenga Körero, vol. 8, no. 2, pp. 20-28, 2007
- O. R. mercier, "Mātauranga and Science," New Zealand Science Review, vol. 74, no. 4, pp. 83-90, 2018
- O. R. Mercier, "Mātauranga Māori and the data-information-knowledge-wisdom hierarchy: a conversation on interfacing knowledge systems," MAI Journal, vol. 1, no. 2, pp. 103-116, 2012

Future Architecture

Inaugural Project: Mātauranga Māori & Engineering

- Efficient & moral design requires a set of values & ethics
- MM affect what happens before and after engineering
- MM emphasises sustainability and care
- MM requires time
- How to quantify Māori ideas?
 - By involving Māori in the projects

The Mauri Model

- Mauri is lifeforce
- Mauri model attempts to quantify MM
- Emphasises sustainability
 - 2 good; 1 positive change; 0 neutral; -1 negative change; -2 bad
- Environment → Hapū / culture → Community → Whanau/economic



Venn diagram representation of the Mauri Model [1]

- T. K. K. B. Morgan, "An Indigenous Perspective on Water Recycling", Desalination, vol. 187, pp. 127-136. 2005
- D. Hikuroa, A. Slade, D. Gravely, "Implementing Māori Indigenous Knowledge (Mātauranga) in a Scientific Paradigm: Restoring the Mauri to Te Kete Poutama", MAI Review, 2013

F. MacConnell, R. Duggal, R. Rayudu and N. -K. C. Nair, "Mātauranga Māori in Power Engineering - Achieving sustainability and zero carbon futures with countries' indigenous knowledge in design," TENCON 2021 - 2021 IEEE Region 10 Conference (TENCON), Auckland, New Zealand, 2021, pp. 964-968, doi: 10.1109/TENCON54134.2021.9707384.



Industry Opinions

- Meridian
- Transpower
- Very good processes in place but regular re-evaluations to meet the current standards
 - Conscious of ecosystems and iwi; "Still got a long way to go"
- Māori must be involved
- Industry and the Government looking to recruit more Māori
- Developing a quantifiable model is important



VM Projects in the 2 years

- Māori Renewable Energy Fund applications:
 - Halcombe Iwi
 - Ngati Toa Te Ahuru Mowai
 - Both were almost complete and generating electricity
 - Fund applications, technical support, analytical support
 - Currently doing analytical support (VPP and Wellbeing analysis)







Supporting Projects

- Halcombe Iwi power factory model – 2 students
- MBIE MREF, MOTU Wellbein analysis One student
- Halcombe Iwi towards VPP One student





Creating Potential in STEMM

KIA – 'future tense' MĀ – 'clean' HIKO – 'electricity'

Canterbury Summer project Josh Dalley and Caitlin Baker-Wanhalla







rokona te raki Maori Butures Collective



Electricity Engineers' Association



ENERGY

Outreach

UC engineering tours – January 2024

Showcasing engineering as a career pathway







Summary of WS5: VM

- Build VM capability into the Research team, increasing the number of VM partners they develop relationships with and building the trust to develop further projects.
- Co-development of projects or products which will bring direct impact and benefits for our Māori partners. ✓
- Build the capability of Māori individuals or groups (iwi, hapū, businesses, etc) to support the increase of number of Māori researchers or businesses in this field.
 - KPI is Percentage of students in the programme being Māori (at least 8%)
- Dissemination and outreach to empower more Māori students into STEM related fields, and especially working in the electricity industry. ✓



Thank you

Questions?

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Future Architecture of the Network **-TE-WIIATUNGA IIIKO-**