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Pilot Assessment of Research Impact: Case Study Exemplars

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Definitions

ENGAGEMENT AND IMPACT

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"**Research impact** is the demonstrable contribution that research makes to the economy, society, culture, national security, public policy or services, health, the environment, or quality of life, **beyond contributions to academia**" (ARC 2015)

Impact is about making a demonstrable difference in a non-academic context

2017 EI Pilot: Overview

- **Engagement pilot** (quantitative indicators plus narrative statement) – across 4 disciplines
- **Impact pilot** (case studies plus quantitative data) – across 6 disciplines plus an Indigenous and Interdisciplinary case study
- **Timeline**: Submissions May 2017; Assessment May-June 2017; Reporting Mid-late 2017

Impact Case Study Exemplars

1. Reforming environmental regulation and licensing of coal mines: Enhancing river ecosystems and protected waterways (Environmental Sciences)
2. Smart Management of Disinfection in Water Supply Systems (Engineering)
3. Improved quality of early childhood education in Chile and Australia: The creation of an exemplary model of collaborative pedagogical practice through robust pedagogical and community leadership (Education)
4. Development of the Digital Knowledge Ecosystem: Empowering farmers and creating a well–coordinated Agribusiness industry to achieve sustainable agriculture production in Sri Lanka (Interdisciplinary)

Sydney Basin Coal Mine Research

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Reforming environmental regulation and licensing of coal mines: Enhancing river ecosystems and protected waterways (Dr Wright)

- Impact of coal mine waste water discharges to the geochemistry and aquatic ecology of rivers and streams (chemical and biological water pollution caused by wastes produced from coal mining)
- Five mines – 2013 to 2015
- Located in environmentally sensitive locations - water catchments, national parks, wilderness areas and the Greater Blue Mountains World Heritage Area

Canyon mine (near Bell, shut 1997)

Impact

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- Triggered - major advances in environmental regulation of coal mines
- Scientific evidence on pollutants – Dr Wright as expert evidence for a landmark NSW Land & Environment court case – amended license
- Improved water quality (substantial reduction in pollutants) and aquatic life
- Invited regularly by NSW EPA for consultation and advice
- Community acceptance of coal mining
- Employment and investment opportunities for local economies

Clarence coal mine (near Bell, operational)

Smart Management of Disinfection in Water Supply Systems (Professor Sathasivan)

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- Water supply systems use chlorine instead of chloramine to disinfect water
- Chloramine – more stable & minimises formation of carcinogenic by-products
- But – nitrification accelerates chloramine decay and promotes bacterial growth which is difficult to predict, control or eradicate
- Developed the BRC Tool to help with decision making

Sydney WATER

Impact

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- BRC Tool: Has provided real-time prediction and decision making capabilities:
  - Improved water quality (640,000 customers – 9 reservoirs)
  - Reduced intensity and frequency of water quality monitoring
- Potential to be implemented at 191 water reservoirs in Sydney and water utilities nationally and globally
- Economic: Has reduced the annual operational costs of Sydney Water by one third – once implemented in all reservoirs will save $800,000/annum
- Social: Delivered safe drinking water to consumers in Sydney
- Transferability: Nationally and internationally

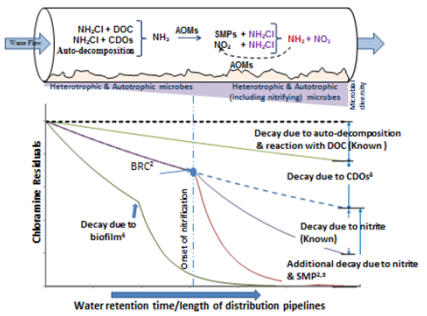


Fig.1: Typical means and contribution of different agents on chloramine decay

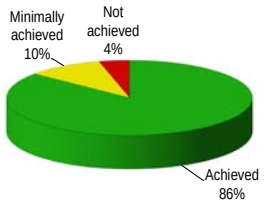
Improved quality of early childhood education in Chile and Australia: the creation of an exemplary model of collaborative pedagogical practice through robust pedagogical and community leadership (Assoc. Professor Woodrow)

- Developed a model of pedagogical practice – to support educational success of children in vulnerable communities – in Chile and Australia
- Focus on literacy learning, family engagement and culturally responsive pedagogies
- Created a framework for early childhood literacy teaching

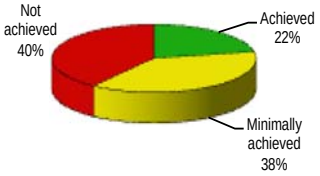
Impact

- **Public policy:** Directly informed policy – children's rights, parent engagement and teacher education standards for ECE in Chile – incorporated into Chile's national policy framework in 2012
- **Expansion and replication of the program:**
  - 3 sites in 2008 to 20 sites in the Antofagasta region plus one large school, its feeder preschools and one cluster of 13 ECE centres in metro region of Santiago (5,000 children and 500 EC educators)
  - 18 preschools in vulnerable communities in western Sydney (500 children and 30 educators) – also shaping the design of an EC intervention in 23 ECE centres in western Sydney
- **Enhanced performance:** Participating centres significantly outperformed in national assessment of children in Year 1 – language and mathematics

Mathematics Outcomes Year 1 Class A



Mathematics Outcomes Year 1 Class B



Impact

- Changed pedagogical approaches
  - o to teaching early literacy
  - o with dramatic shift in how educators engage with families – in their children's learning
- National quality assessments (Chile): Significant overall improvements for all participating centres
- National Quality assessments (Australia): All the 18 WS preschools in the FIH program – were rated as *exceeding national quality standard in* all seven areas assessed (as assessed by ACECQA)
- Social benefit: enhanced engagement of families in their children's learning (Positive impact on family engagement; greater exercise of children's autonomy and rights, and a positive impact on the educator's professional identity

Creating a Co-ordinated Agribusiness Industry in Sri Lanka

Development of the Digital Knowledge Ecosystem: Empowering farmers and creating a well–coordinated Agribusiness industry to achieve sustainable agriculture production in Sri Lanka (Professor Ginige)

- Aimed to resolve - lack of coordination between farmers and agri-business industry partners, increase economic activity and reduce negative effects of farming on the environment

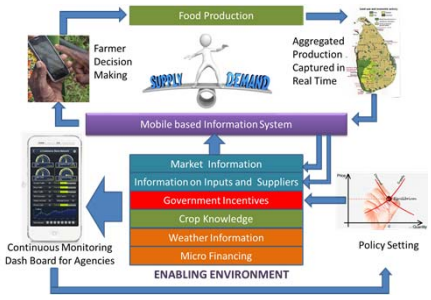

Leeks cultivators desperate as price drops to record low

- An international, multidisciplinary research team led by Professor Ginige developed and field tested the DKES - a mobile based information system for use by farmers and agriculture industry in Sri Lanka

Impact

- Created a co-ordinated agriculture market in a main vegetable producing region of Sri Lanka by addressing mismatch in demand and supply
- Instigated a National Rollover of the DKES in Sri Lanka
- International Reach and Transferability

  Discussions underway to use DKES in:
  - o Australia - for chronic disease management through patient empowerment.
  - o India, for use with:
    - Farmers – Commercial implementation in collaboration with 'Riverside Ventures' commencing in May 2018 – aims to reach 10 million farmers within 5 years; and
    - Dairy farmers - PROMT Group and WSU - exploring how DKES can be adopted to 90,000,000 dairy farmers in India
  - o South Africa, Kenya and Nigeria, for nutrition driven agriculture - funding from AAUN



Facilitating and Enabling Impact

Opportunities and Challenges

- Role of professional staff and effective use of available resources to help our researchers make a real difference to the world
- Being innovative in our approach to engagement and impact
- Emphasising the focus on engagement and knowledge exchange/transfer (translation to impact cannot happen without end-user/industry)
- Removing barriers to engagement and creating high quality research-industry partnerships

Questions