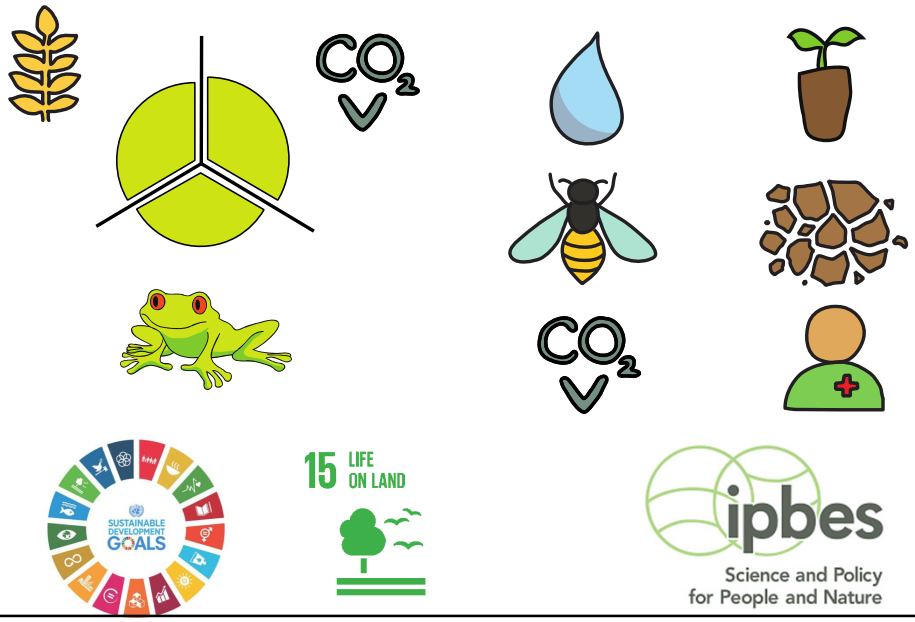
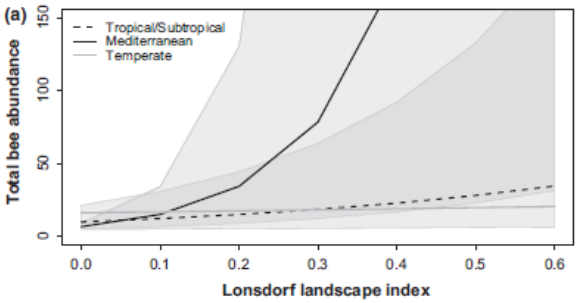
@ProfALowe www.andylowe.org linkedin.com/in/profandylowe/ andrew.lowe@adelaide.edu.au

ENGINEER FOR ECOSYSTEM SERVICES



Bee abundance on crops increases with increased natural habitat



- Native bees and honeybees
- 605 field sites
- 39 studies
- 23 crop species
- 15 countries

Kennedy et al. (2013)

Native habitat increases bee abundance and diversity
Native habitat is also linked to improved pollination

Pollinator reserves: Does it work?

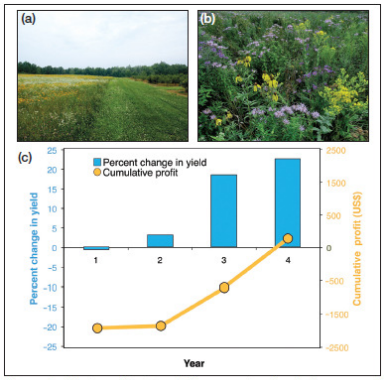


Figure 6. Plantings of native wildflower species selected for support of pollinators enhance blueberry yield and profit in Michigan. (a) Planting in midsummer with blueberry on the right. (b) Close-up of a mature planting with a mix of flower forms, species, and colors, with blueberry in the background. (c) Percent change in blueberry yield (blue bars) between fields adjacent to wildflower plantings and fields without plantings. The gold line (cumulative profit) shows that the initial cost of establishment in the first year was paid for by the fourth year when higher yield resulted in a profit (Blaauw and Isaacs 2014).

plantings along blue-berries
Blaauw & Isaacs 2014

http://www.xerces.org/guidelines-farming-for-bees/

Integrated crop pollination project
http://icpbees.org/

Secure crop pollination through revegetation




Australian Government
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AgriFutures™ Securing Pollination

This project is supported by funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit program.

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Greening Australia

O'CONNOR nrm

Trees For Life

Native Vegetation Council

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Adelaide and Mount Lofty Ranges Natural Resources Management Board

Regional Landcare Facilitator

Ag Excellence Alliance

Natural Resources Northern and Yorke
Government of South Australia

Environment Institute

Waite Research Institute AGRICULTURE FOOD WINE

Apple & Pear Growers Association of South Australia Inc.

LUCERNE AUSTRALIA

australian almonds
ALMOND BOARD OF AUSTRALIA

Founded 1945
Better Beekeeping Friendly Co-operation
Exchange of knowledge

TERN
AusPlots

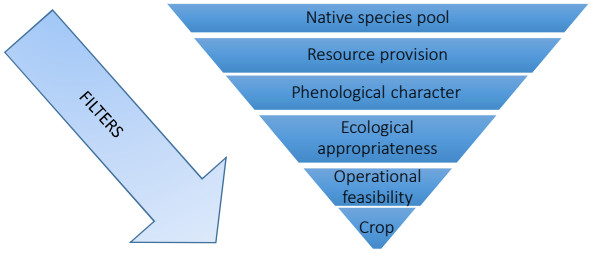
	Bee dynamics
WHAT	• Pollinators ID • Bee phenology • Crop/habitat interactions
WHO	• Scott Groom • Katja Hogendoorn • Dona Kireta
PARTNERS	• Lucerne Australia • Apple & Pear Growers SA • Almond board • Beekeepers

Target horticultural crops





Selecting native plants for pollination services in focal agriculture



AMLR (Apple and Pear direct seed)

Genus	Species	Flowering
Bursaria	*spinosa ssp spinosa*	*sum*
Melaleuca	*decussata*	*spr,sum*
Melaleuca	*brevifolia*	*spr,sum*
Leptospermum	*continentale*	*spr,sum*
Leptospermum	*mysrinoides*	*spr*
Callistemon	*rugulosus*	*sum*
Dodonaea	*viscosa ssp angustissma*	*spr,sum aut*

Site selection, stratification and targeted revegetation plant-out

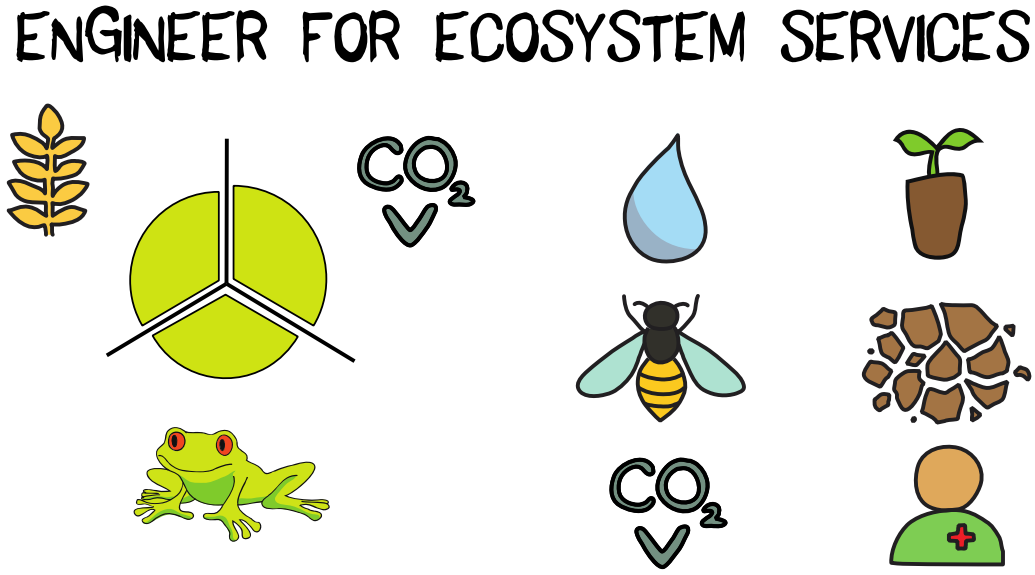
Project progress and outputs

Planting progress

- Apple, pear and canola plantings going in now
  - assistance from Trees for Life, DEWNR, Northern & Yorke NRM, Adelaide Hills and Mt Lofty Ranges NRM, SA Beekeepers, growers and grower organisations and PIRSA
- targeted revegetation in lucerne growing areas is planned for 2019
- analyse pollination dynamics hives/no hives, reveg/no reveg and crop productivity

Outputs

- List of native plants (trees, shrubs and herbs) by region/crop that will promote pollination services (quantified) around crops for European honey and native bees,
  - Considering other species (sub-crop, non-natives)
  - Considering hive recovery/honey promotion habitat plantings
- Demonstration plantings and scientific validation of method
- Online/print information and planning tools
- Economic evaluation of cost/benefit and perceived value



Harnessing landscape ecosystem services

Carbon

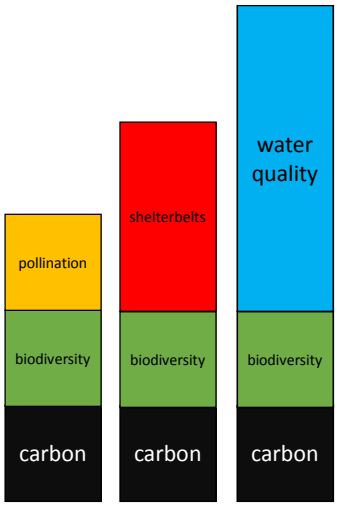
Biodiversity

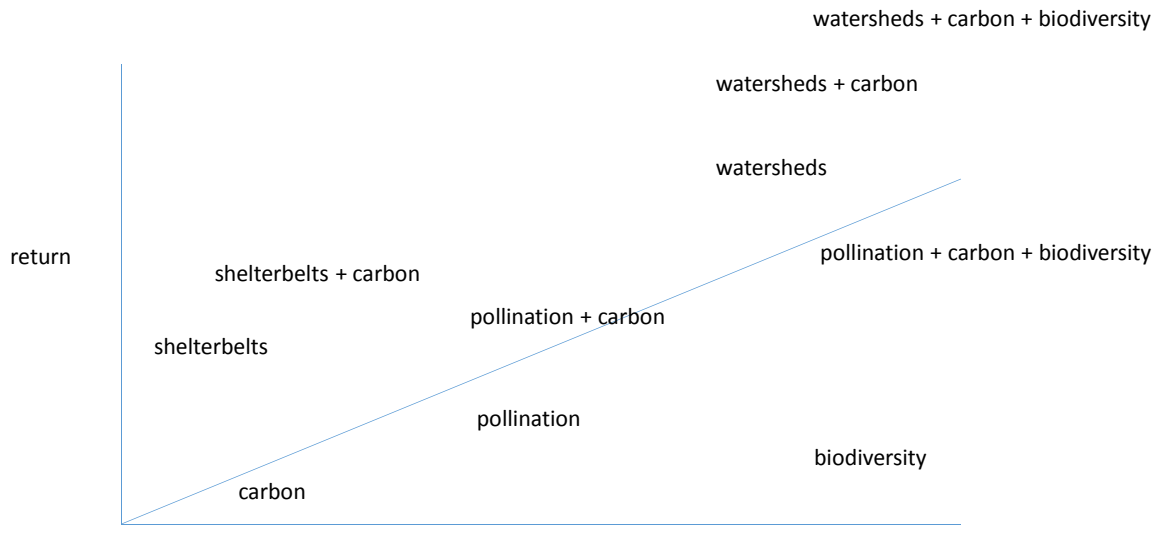
Shelter belts

Water quality

Pollination

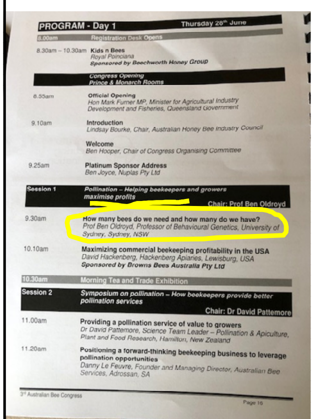
Soil quality **Pest and weed control** **Human health**





Other talks during conference

Yesterday (Thursday) – missed it?



PROGRAM - Day 1 Thursday 28th June

8.00am Registration Desk Opens

8.30am – 10.30am **Kids n Bees**
Royal Poinciana
Sponsored by Beechworth Honey Group

Congress Opening
Prince & Monarch Rooms

8.55am **Official Opening**
Hon Mark Furner MP, Minister for Agricultural Industry Development and Fisheries, Queensland Government

9.10am **Introduction**
Lindsay Bourke, Chair, Australian Honey Bee Industry Council

Welcome
Ben Hooper, Chair of Congress Organising Committee

9.25am **Platinum Sponsor Address**
Ben Joyce, Nuplas Pty Ltd

Session 1 ***Pollination – Helping beekeepers and growers maximise profits*** **Chair: Prof Ben Oldroyd**

9.30am **How many bees do we need and how many do we have?**
Prof Ben Oldroyd, Professor of Behavioural Genetics, University of Sydney, Sydney, NSW

10.10am **Maximizing commercial beekeeping profitability in the USA**
David Hackenberg, Hackenberg Apiaries, Lewisburg, USA
Sponsored by Browns Bees Australia Pty Ltd

10.30am Morning Tea and Trade Exhibition

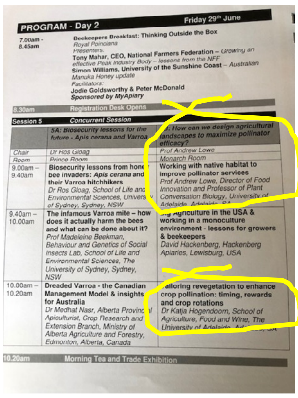
Session 2 ***Symposium on pollination – How beekeepers provide better pollination services*** **Chair: Dr David Pattemore**

11.00am **Providing a pollination service of value to growers**
Dr David Pattemore, Science Team Leader – Pollination & Apiculture, Plant and Food Research, Hamilton, New Zealand

11.20am **Positioning a forward-thinking beekeeping business to leverage pollination opportunities**
Danny Le Feuvre, Founder and Managing Director, Australian Bee Services, Adrossan, SA

3rd Australian Bee Congress Page 16

Today (Friday) – this morning



PROGRAM - Day 2 Friday 29th June

7.00am - 8.45am **Beekeepers Breakfast: Thinking Outside the Box**
Royal Poinciana
Presenters:
Tony Mahar, CEO, National Farmers Federation – *Growing an effective Peak Industry Body – lessons from the NFF*
Simon Williams, University of the Sunshine Coast – *Australian Manuka Honey update*
Facilitators:
Jodie Goldsworthy & Peter McDonald
Sponsored by MyApiary

8.30am Registration Desk Opens

Session 5 ***Concurrent Session***

	5A: Biosecurity lessons for the future - Apis cerana and Varroa	*5B: How can we design agricultural landscapes to maximize pollinator efficacy?*
Chair	*Dr Ros Gloag*	*Prof Andrew Lowe*
Room	*Prince Room*	*Monarch Room*
9.00am – 9.40am	**Biosecurity lessons from honey bee invaders: *Apis cerana* and their Varroa hitchhikers** *Dr Ros Gloag, School of Life and Environmental Sciences, University of Sydney, Sydney, NSW*	**Working with native habitat to improve pollinator services** *Prof Andrew Lowe, Director of Food Innovation and Professor of Plant Conversation Biology, University of Adelaide, Adelaide, SA*
9.40am – 10.00am	**The infamous Varroa mite – how does it actually harm the bees and what can be done about it?** *Prof Madeleine Beekman, Behaviour and Genetics of Social Insects Lab, School of Life and Environmental Sciences, The University of Sydney, Sydney, NSW*	**Big Agriculture in the USA & working in a monoculture environment - lessons for growers & beekeepers** *David Hackenberg, Hackenberg Apiaries, Lewisburg, USA*
10.00am – 10.20am	**Dreaded Varroa - the Canadian Management Model & insights for Australia** *Dr Medhat Nasr, Alberta Provincial Apiculturist, Crop Research and Extension Branch, Ministry of Alberta Agriculture and Forestry, Edmonton, Alberta, Canada*	**Tailoring revegetation to enhance crop pollination: timing, rewards and crop rotations** *Dr Katja Hogendoorn, School of Agriculture, Food and Wine, The University of Adelaide, Adelaide, SA*

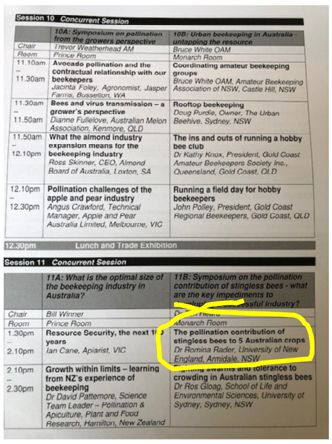
10.20am Morning Tea and Trade Exhibition

Session 6 ***Concurrent Session***

	6A: Symposium on biosecurity & exotic pest threats for Australia	*6B: Symposium on pollination for profit - how this program is positioning Australia's bees for growth in agriculture*
Chair	*Peter McDonald*	*Prof Saul Cunningham*
Room	*Prince Room*	*Monarch Room*
10.50am – 11.30am	**Biosecurity and honey bees in a globalized world – where are we headed?** *Mike Allsopp, Agricultural Research Council, Stellenbosch, South Africa*	**What part will crop pollination play in future agriculture?** *Prof Saul A. Cunningham, Director, Fenner School of Environment and Society, College of Science, The Australian National University, Canberra, ACT*
11.30am – 11.50am	**Incursions into Australia to date, sentinel hive protections and gaps** *Trevor Weatherhead AM, Executive Director, Australian Honey Bee Industry Council, Raceview, QLD*	**The identity and effectiveness of Australian crop pollinators – status and trends** *Dr Romina Rader, University of New England, Armidale, NSW*
11.50am – 12.10pm	**Life on the front line of the SQR team - The role of Australia's beekeeper volunteers in keeping threats at bay** *Peter McDonald, McDonald Honey, VIC*	**Marketing revegetation for crop pollinators** *Dr Katja Hogendoorn, School of Agriculture, Food and Wine, The University of Adelaide, Adelaide, SA*
12.10pm – 12.30pm	**Asian bee mites, parasitic flies, hunting wasps and other exotic nasties** *Prof Ben Oldroyd, Professor of Behavioural Genetics, University of Sydney, Sydney, NSW*	**How many bees in the bush? Estimating social bee densities in crops** *Dr Tanya Latty, School of Life and Environment Sciences, Sydney Institute of Agriculture, University of Sydney, Sydney, NSW*
12.30pm – 12.50pm	**What do we have ready to protect our honey bees?** *Dr John Roberts, Research Scientist, Honeybee Pathogens, CSIRO Health and Biosecurity, Canberra, ACT*	**Plant pollination networks - DNA barcoding applications** *Prof Andrew Lowe, Director of Food Innovation and Professor of Plant Conversation Biology, University of Adelaide, Adelaide, SA*

12.50pm Lunch and Trade Exhibition

Tomorrow (Saturday) – afternoon



Session 10 ***Concurrent Session***

	10A: Symposium on pollination from the growers perspective	*10B: Urban beekeeping in Australia - untapping the resource*
Chair	*Trevor Weatherhead AM*	*Bruce White OAM*
Room	*Prince Room*	*Monarch Room*
11.10am – 11.30am	**Avocado pollination and the contractual relationship with our beekeepers** *Jacinta Foley, Agronomist, Jasper Farms, Busselton, WA*	**Coordinating amateur beekeeping groups** *Bruce White OAM, Amateur Beekeeping Association of NSW, Castle Hill, NSW*
11.30am – 11.50am	**Bees and virus transmission – a grower's perspective** *Dianne Fullelove, Australian Melon Association, Kenmore, QLD*	**Rooftop beekeeping** *Doug Purdie, Owner, The Urban Beehive, Sydney, NSW*
11.50am – 12.10pm	**What the almond industry expansion means for the beekeeping industry** *Ross Skinner, CEO, Almond Board of Australia, Loxton, SA*	**The ins and outs of running a hobby bee club** *Dr Kathy Knox, President, Gold Coast Amateur Beekeepers Society Inc., Queensland, Gold Coast, QLD*
12.10pm – 12.30pm	**Pollination challenges of the apple and pear industry** *Angus Crawford, Technical Manager, Apple and Pear Australia Limited, Melbourne, VIC*	**Running a field day for hobby beekeepers** *John Polley, President, Gold Coast Regional Beekeepers, Gold Coast, QLD*

12.30pm Lunch and Trade Exhibition

Session 11 ***Concurrent Session***

	11A: What is the optimal size of the beekeeping industry in Australia?	*11B: Symposium on the pollination contribution of stingless bees - what are the key impediments to developing a successful industry?*
Chair	*Bill Winner*	[illegible]
Room	*Prince Room*	*Monarch Room*
1.30pm – 2.10pm	**Resource Security, the next 100 years** *Ian Cane, Apiarist, VIC*	**The pollination contribution of stingless bees to 5 Australian crops** *Dr Romina Rader, University of New England, Armidale, NSW*
2.10pm – 2.30pm	**Growth within limits – learning from NZ's experience of beekeeping** *Dr David Pattemore, Science Team Leader – Pollination & Apiculture, Plant and Food Research, Hamilton, New Zealand*	**[illegible] swarms and tolerance to crowding in Australian stingless bees** *Dr Ros Gloag, School of Life and Environmental Sciences, University of Sydney, Sydney, NSW*

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LUCERNE AUSTRALIA
australian almonds ALMOND BOARD OF AUSTRALIA
Founded 1945 Better Beekeeping Friendly Co-operation Exchange of knowledge
TERN AusPlots

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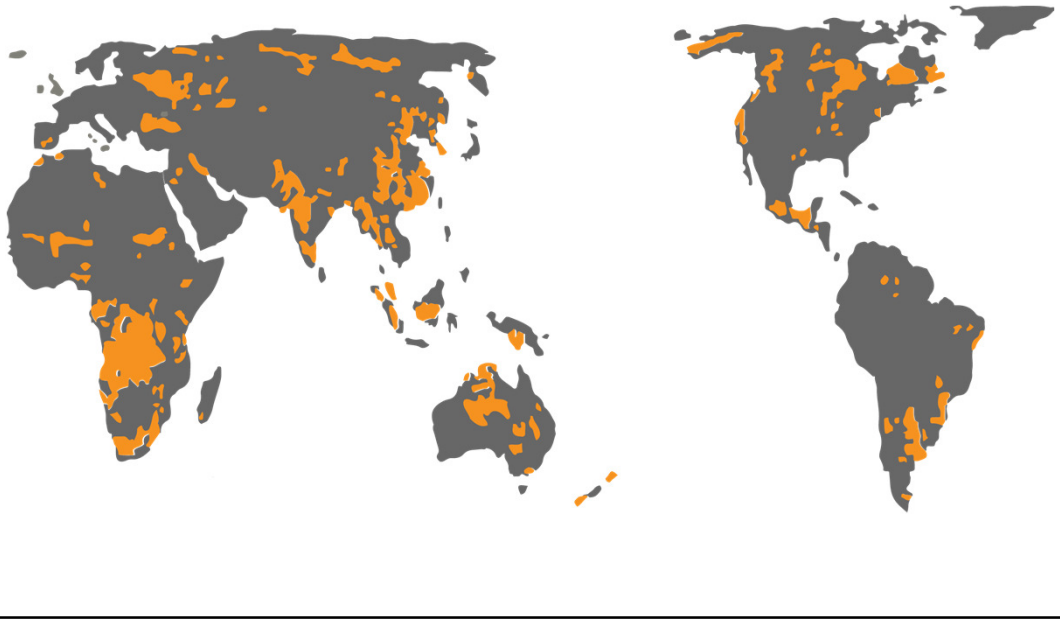
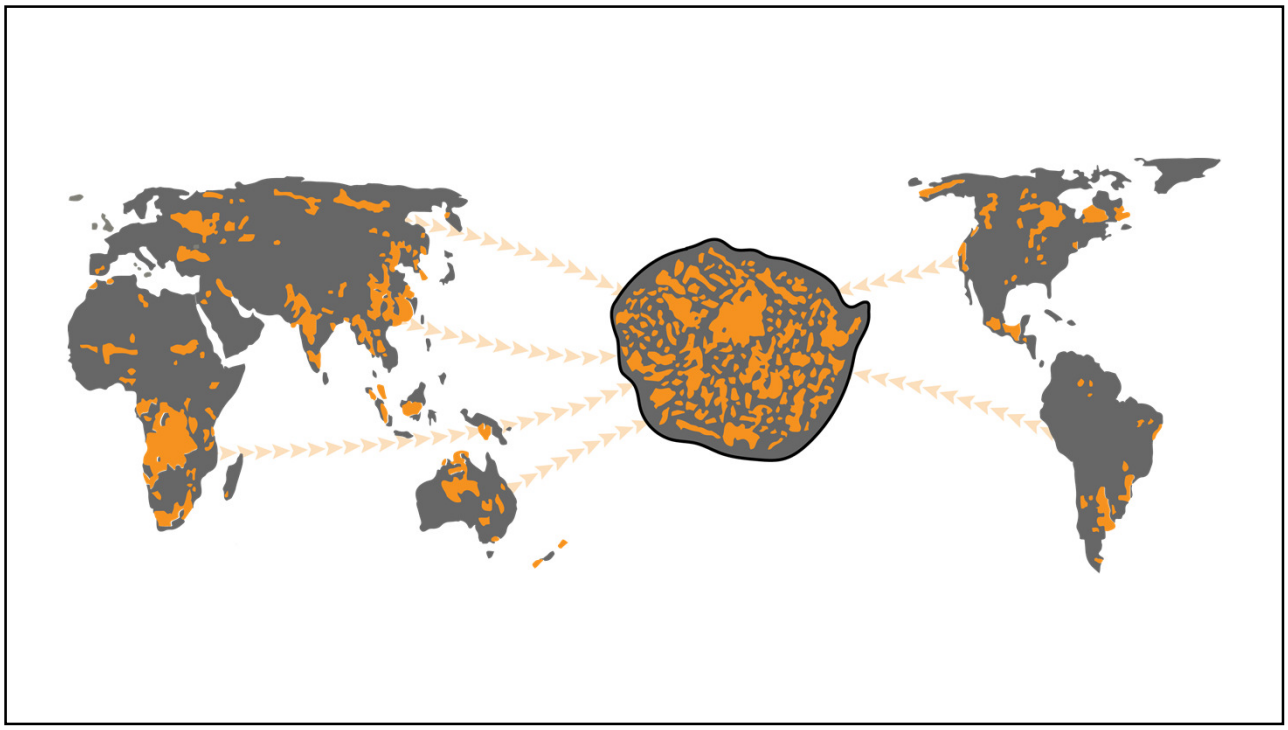
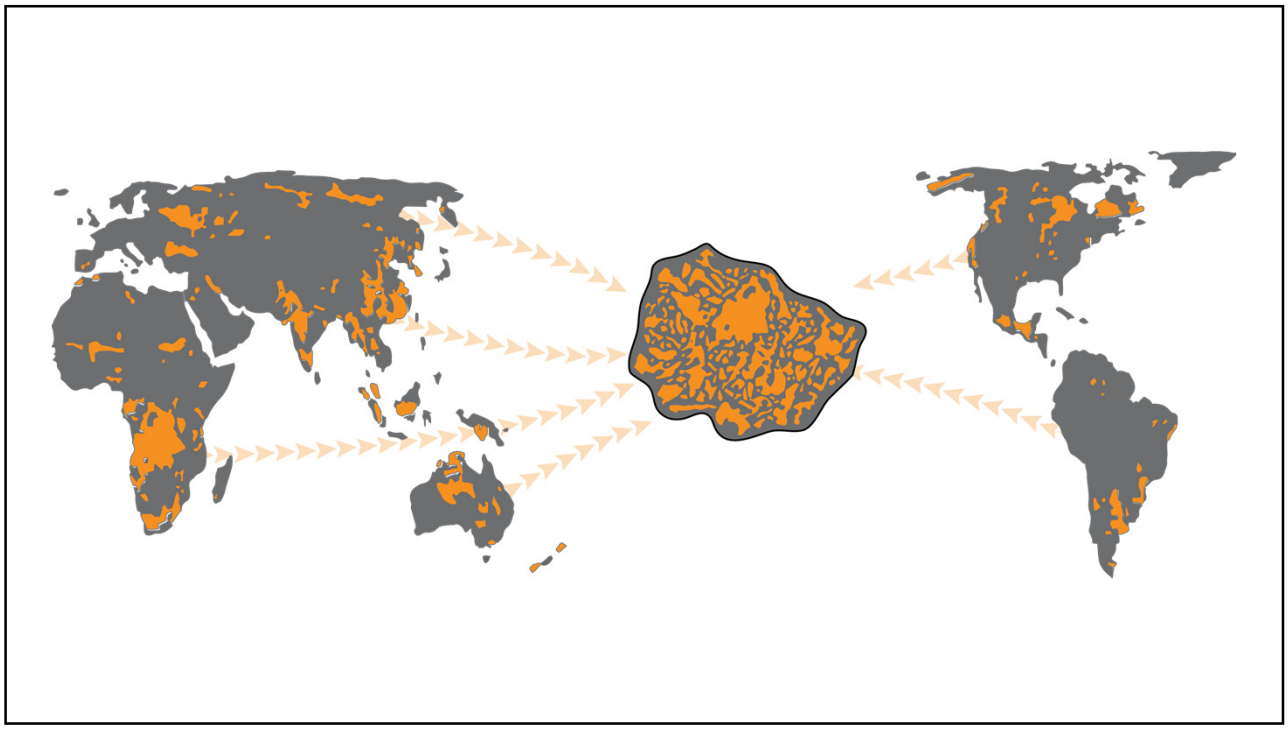


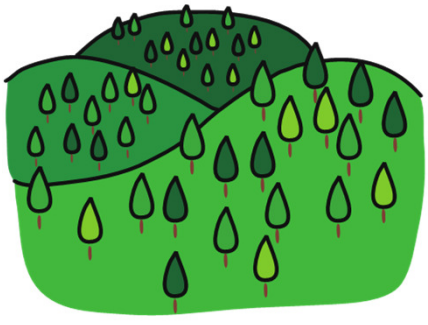


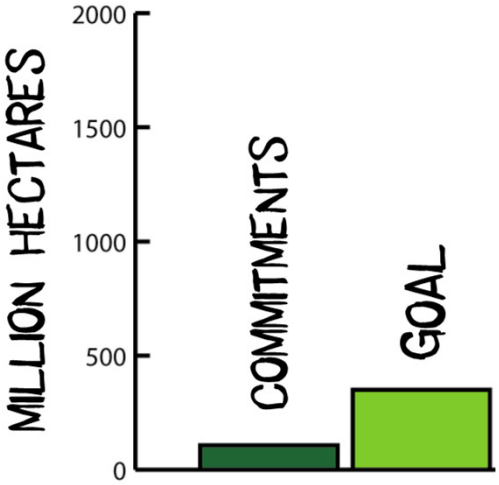


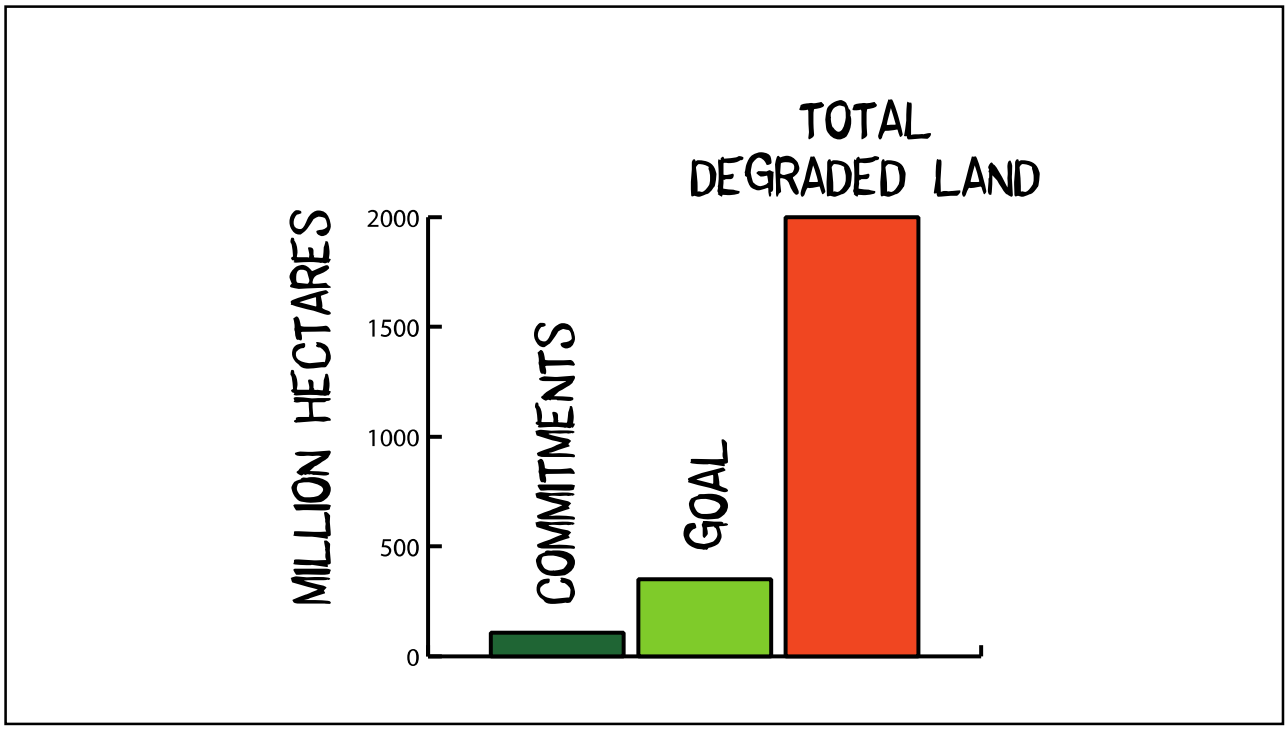
"FEDERATED STATES OF DEGRADIA"

LARGER THAN RUSSIA!

3 BILLION POOR AND VULNERABLE PEOPLE!



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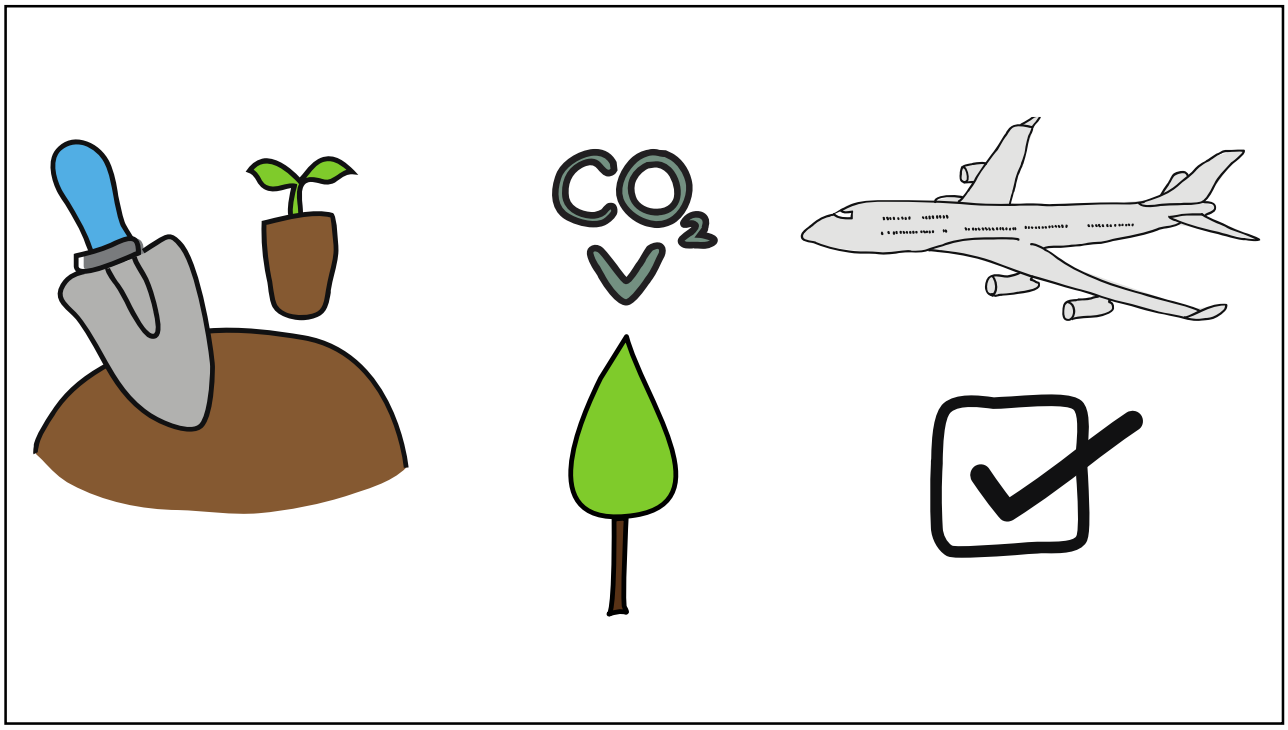
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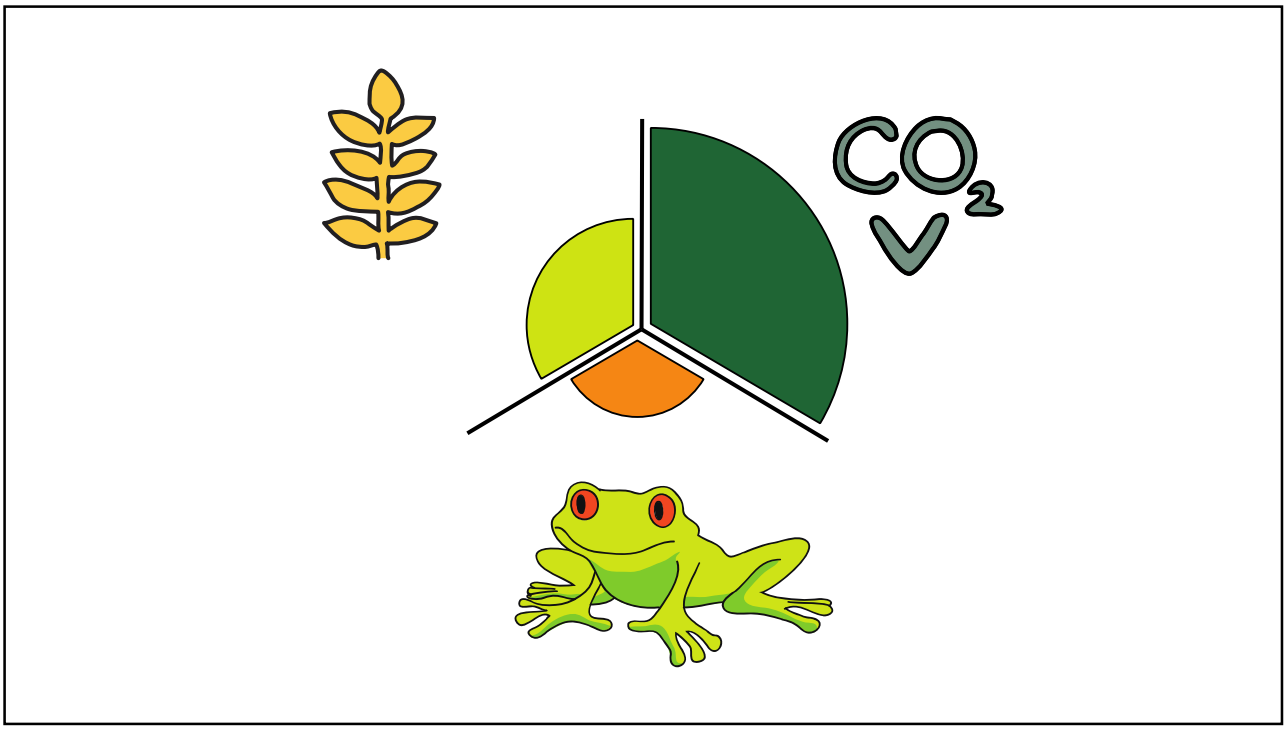
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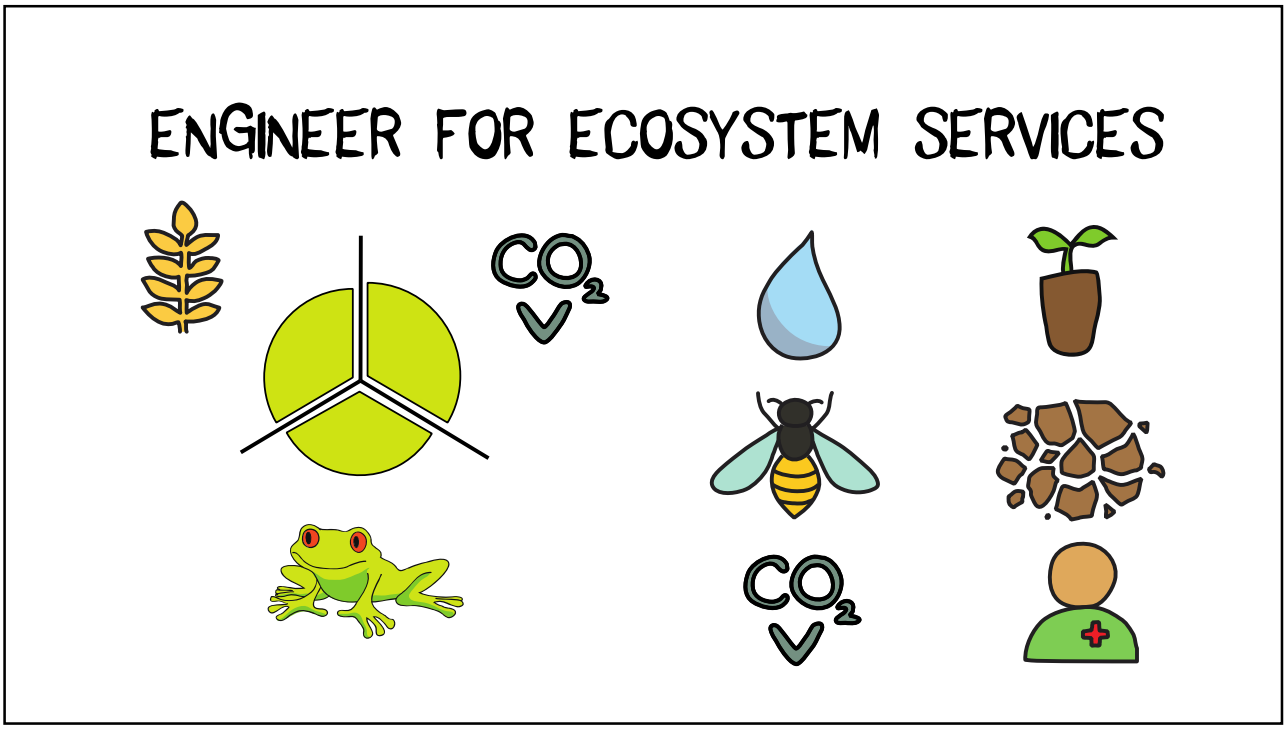
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