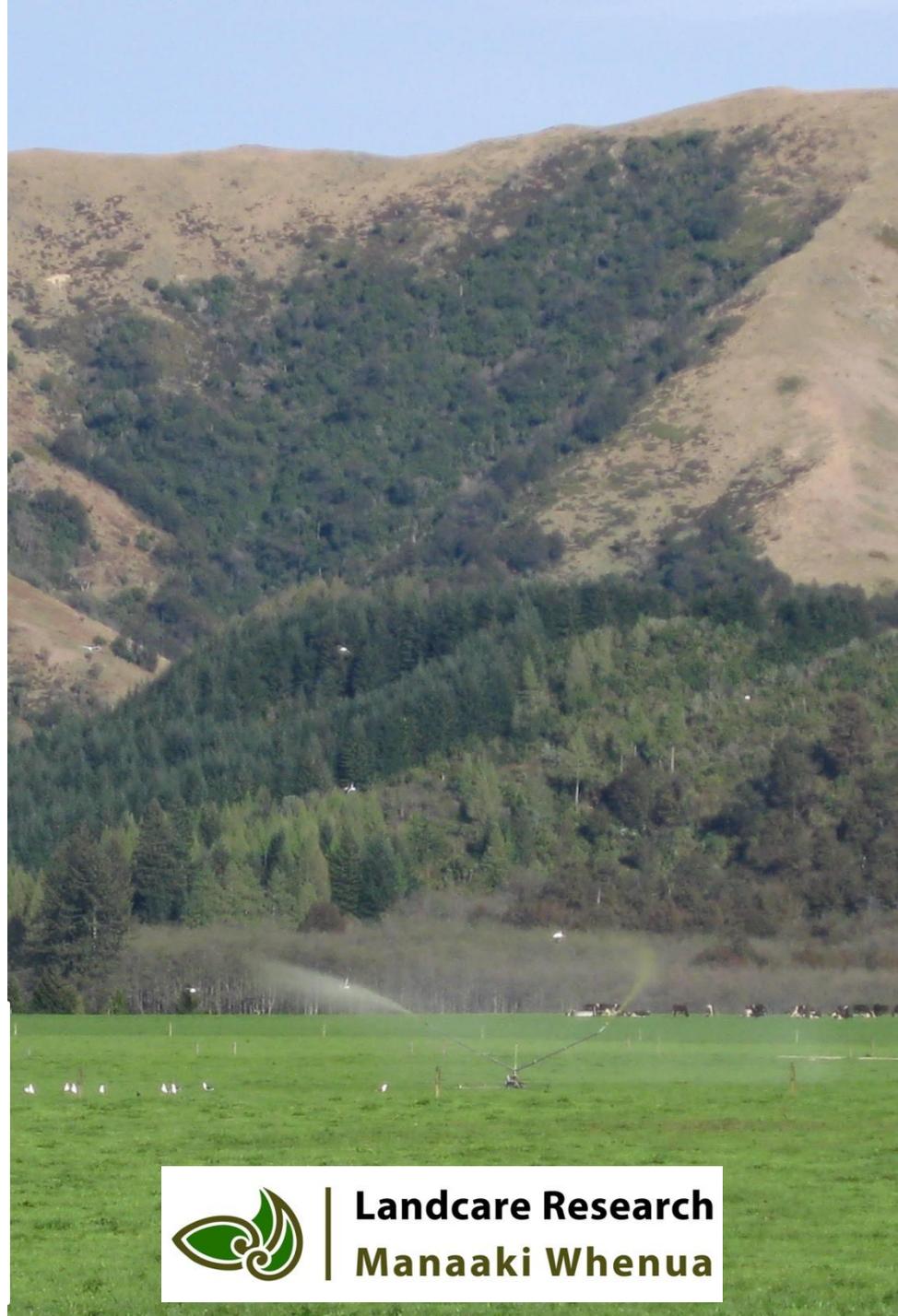


Economic Instruments for Managing Water Quality

Suzie Greenhalgh
Landcare Research



*Waikato Healthy Rivers
Process
Jan 28, 2016*

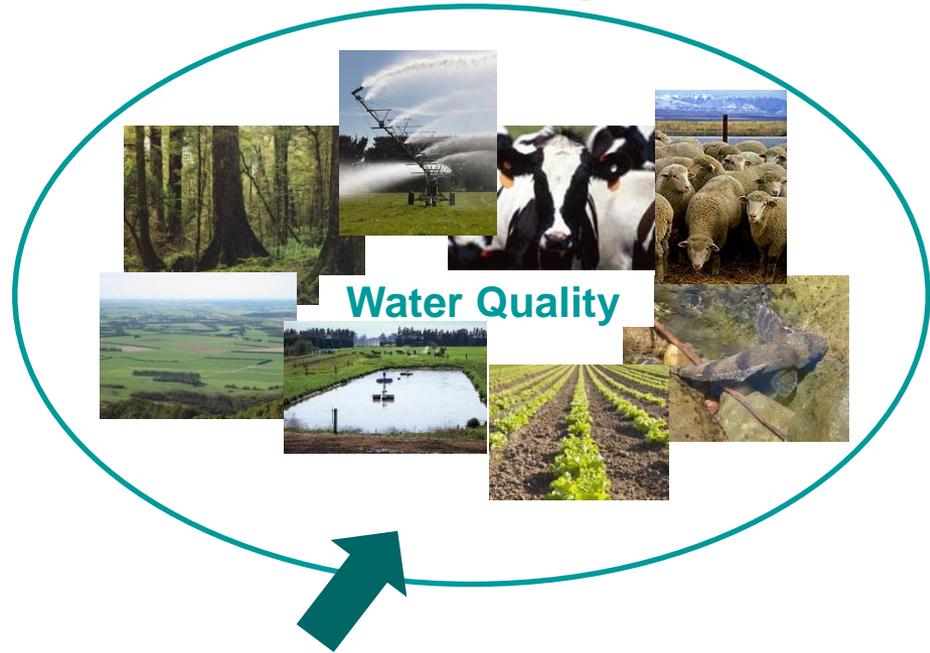


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Drivers of Water Quality Degradation

Indirect Drivers of Change

- Demographic
- Economic (e.g. globalisation, trade, markets, policy)
- Socio-political
- Science & technology
- Cultural & religious (e.g. beliefs, consumption choices)



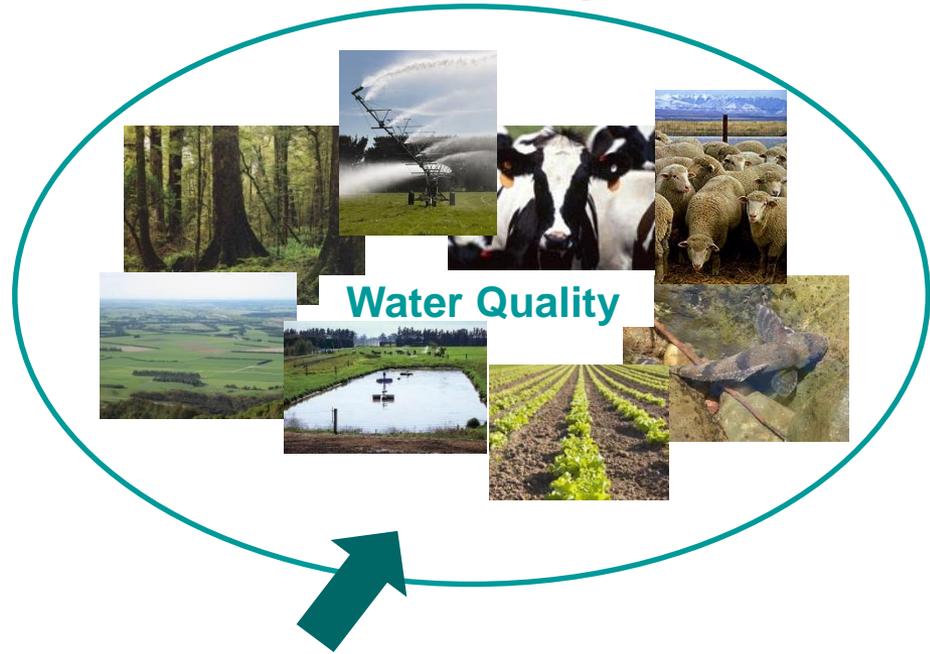
Direct Drivers of Change

- Land use/cover change
- Species introduction/removal
- Technology adaptation & use
- External inputs (e.g. fertiliser use, pest control, irrigation)
- Harvest & resource consumption
- Climate change
- Natural, physical & biological drivers

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These can all
be linked to
economics
Instruments
for WQ

Economic Instruments

They substitute or supplement stand alone regulatory approaches by providing incentives to change behaviour through price

Price-based

Directly influences price

Market-based

Indirectly influences price through markets

Economic Instruments

Price-based

Taxes, fees, levies

(e.g. environmental, land use, input & pigovian tax, levies)

Subsidies

(e.g. PES, incentive & cost share payments)

Tax credits & rebates

Low interest loans

Alternative livelihoods

Market-based

Environmental markets

(e.g. regulatory & voluntary)

Auctions & tenders

Eco-labelling

Land cover/use change:

Using economic instruments to reduce impact on water quality

Example: commodity prices driving land use change

Price-based



Taxes

- e.g. Fertiliser taxes (Sweden)
- e.g. Manure levy (Netherlands)



Pay to mitigate an externality (Subsidy)

- e.g. US Farm Bill conservation payments (US)
- e.g. Regional Council Environment Funds



Tax credit for restoring land

- e.g. Indiana Classified Forest Programme (US)
- e.g. Conservation Easements (US)



Low interest loans

- e.g. National Fund for Rural Areas (Netherlands)
- e.g. Clean Water State Revolving Fund (US)



Photo credit: Peter Scott

Taxes, Fees & Levies

- Generally blunt instruments
 - Use targeted taxes to provide stronger incentives
- Tax rate difficult to set
 - May not achieve environmental goal
 - Admin cost may be higher than revenue
 - Can recycle revenue
- Impacts all sources – hard to evade

Subsidies

- Not compulsory
 - May not achieve environmental goal if insufficient uptake or funds
 - Subsidy rate needs to incentivise uptake
 - Non-financial reason for lack of uptake
- Require external funding source
- Politically attractive
 - Voluntary & financial incentive
 - Private funds complement public funds (cost-share)

Tax Credits & Rebates

- Not compulsory
 - May not achieve environmental goal if insufficient uptake
 - Depends on size of rebate/credit
 - Any upfront costs may be a deterrent
- Admin is straightforward
- Politically attractive
 - Voluntary & financial incentive

Low Interest Loans

- Not compulsory
 - May not achieve environmental goal if insufficient uptake
 - Depends on level of adoption, interest rate
- Requires external funding source
- Politically attractive
 - Voluntary, some financial incentive for farmer
 - Reduced cost burden for govt (loan repaid)

Land cover/use change:

Using economic instruments to reduce impact on water quality

Example: where commodity prices driving change

Market-based



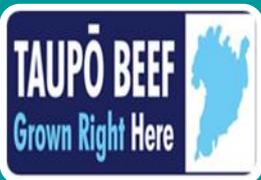
Environmental markets

- e.g. Taupo Nitrogen Market
- e.g. carbon markets (NZETS, REDD)



Auctions/tenders to improve water quality

- e.g. Conestoga Watershed P auctions (US)
- e.g. East Coast Forestry Programme (NZ)



Eco-labelling

- e.g. Taupo Beef
- e.g. carboNZero



Photo credit: Peter Scott

Environmental Markets

- Not compulsory & provides flexibility
 - Should achieve environmental goal
 - Reduces cost of meeting regs
 - Stimulates innovation & allows growth
- New operating model
 - Admin agency: new infrastructure, capacity issue
 - Farmer: finding buyer/seller
- Risks
 - Leakage (if not all sectors capped), hotspots
- Politically attractive
 - Voluntary, some financial incentive for farmer
 - Reduced cost burden for govt

Tenders & Auctions

- Not compulsory & improves cost-effectiveness
 - Greater no. participants due to flexibility for participants – attract different participants
- New operating model
 - Admin agency: new infrastructure, capacity issue
- Requires external funding source
- Risks
 - Perception that maybe unfair as wealthy land owners can put in more competitive bids.
 - Potential collusion if small number of participants
- Politically attractive
 - Voluntary, some financial incentive for farmer

Eco-labelling

- Not compulsory & new markets
 - May not achieve environmental goal
 - Requirements not stringent enough, insufficient uptake
 - May provide market advantages
 - Greater market share, higher prices, market access, product recognition
 - Stimulates development of best-practice
 - Attract additional participants compared to subsidy
- New operating model
 - Admin agency: certification requirements
- Risks
 - Standards may be expensive & arduous (e.g. 3rd party certification)

	Voluntary or mandatory	Applied to single or multiple contaminants / issues	Performance or behaviour practice based change	Induces	Provides Flexibility	Certainty of environ. outcome	Promotes Innovation	Cost burden	New institutional capacity or infrastruct.	Enforce. cost
Economic instruments										
Taxes										
Polluter pays tax	Mandatory	Single ES	Performance	Yes	Yes	Uncertain	Yes	Affected party	Yes	High
Input tax	Mandatory	Single & multi	Practice	Yes	No	Uncertain	No	Affected party	No	Low
Land use tax	Mandatory	All	Depends	Yes	Depends	Uncertain	Depends	Affected party	Yes	Depends
Environmental tax/fee	Mandatory	Single & multi	Depends	Maybe	Depends	Uncertain	No	Affected party	Depends	Depends
Levies	Mandatory	Single & multi	Depends	Maybe	Depends	Uncertain	No	Affected party	No	Low
Subsidies										
Direct payments	Voluntary	All	Depends	Yes	Depends	Uncertain	No	Agency	Depends	Depends
Incentive payments	Voluntary	All	Depends	Yes	Depends	Uncertain	Yes	Agency	Depends	Low
Cost-share payments	Voluntary	All	Depends	Yes	Depends	Uncertain	Depends	Both	Depends	Low
Tax credits	Voluntary	All	Depends	Yes	Depends	Uncertain	No	Agency	No	Low
Low-interest loans	Voluntary	All	Depends	Yes	Depends	Uncertain	No	Both	No	Low

	Voluntary or mandatory	Applied to single or multiple contaminants / issues	Performance or practice based	Induces behaviour change	Provides Flexibility	Certainty of environ. outcome	Promotes Innovation	Cost burden	New institutional capacity or infrastruct.	Enforce. cost
Economic instruments										
Market-based instruments										
Ecolabelling	Voluntary	All	Depends	Yes	Depends	Uncertain	No	Affected party	Yes	Low
Markets	Voluntary	All	Performance	Yes	Yes	Certain	Yes	Affected party	Yes	High
Auctions and tenders	Voluntary	All	Performance	Yes	Yes	Uncertain	Depends	Both	Yes	Low

Beware the Perverse Incentives

- Economic instruments & policy can also send perverse incentives
 - Often unintended
 - Often results from poor design or implementation
- Likely will need primary & secondary instruments
 - Secondary instruments often address distribution of impacts

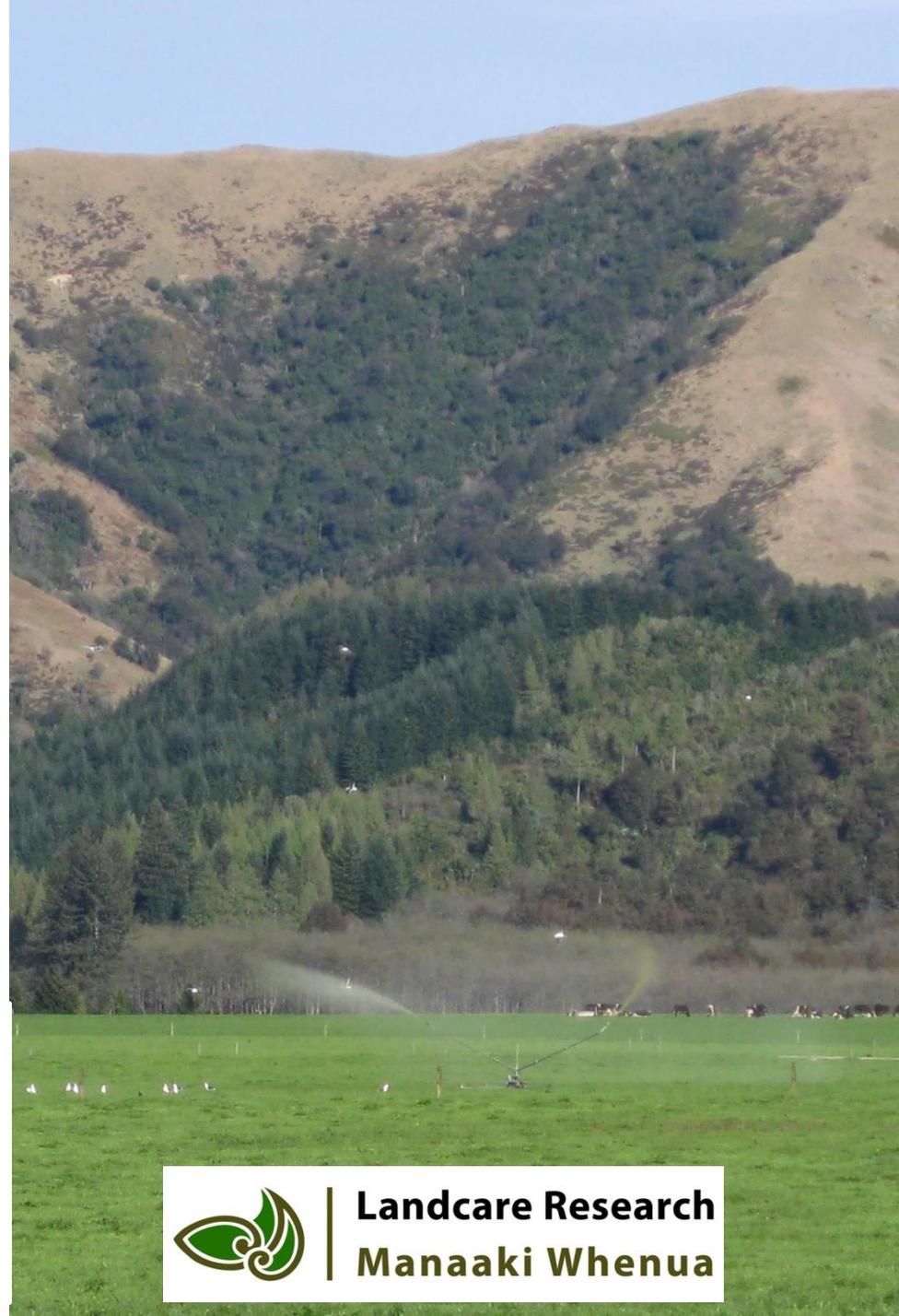


Things to think about

- While economic instruments can reverse water quality degradation....
- their effectiveness relies on the
 - design of the mechanism
 - capacity & willingness of agencies to implement appropriately
- Often need \$ & legislation/
rules to establish



Thank you



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