THE IMPLEMENTATION OF RIGHTS BASED FISHERIES MANAGEMENT

A system that can deliver ecological, economic and social objectives in managing fisheries; New Zealand’s experience

Mark Edwards
August 2017
NEW ZEALAND

POPULATION: 4.6 MILLION (74% EUROPEAN DESCENT; 15% MAORI)

EEZ & TERRITORIAL SEA

- 4.4 MILLION KM² (WORLD’S 5TH LARGEST)
  - 15 TIMES LAND MASS
  - 72% BELOW 1000 M
- COASTLINE: 15,000 KM
- CLIMATE: SUB-TROPICAL TO SUB-ANTARCTIC
- 16,000+ MARINE SPECIES
- 1,300 FISH SPECIES
- PRODUCTIVITY: GENERALLY MEDIUM
NEW ZEALAND FISHERIES: KEY FEATURES

- TOTAL CATCH: 441,000 TONNES (WILD HARVEST)
- TOTAL QUOTA VALUE: $NZ 4 BILLION
  - TOP 20 SPECIES CONTRIBUTE 91% OF VALUE
- FISH EXPORTS:
  - OVER 90% OF TOTAL PRODUCTION
  - 2016 VALUE: NZ$ 1.8 BILLION
- 1,172 FISHING VESSELS
- 1,345 QUOTA OWNERS
- 261 FISH PROCESSORS & TRADERS
- 10,800 DIRECTLY EMPLOYED
- RECREATIONAL FISHERIES:
  - ESTIMATED PARTICIPATION: 15% OF POPULATION
  - ESTIMATED ANNUAL TAKE: 25,000 TONNES
- MAORI INVOLVEMENT IN FISHING:
  - NON-COMMERCIAL CUSTOMARY FISHERIES MANAGEMENT DEVOLVED TO HAPU
  - CUSTOMARY TAKE PROVIDED FOR: 4,800 T
  - IWI OWN APPROX 40% OF COMMERCIAL QUOTA
CORE ELEMENTS OF A TRANSFERABLE QUOTA REGIME

- Administration of transferable quota
- Sustainability
- Socio-Economic settings
- Resource rentals and cost recovery
- Allocation of rights
- Administrative systems
- Compliance
ALLOCATION

- ELIGIBILITY
- CRITERIA PERIOD
- APPEALS
- PERPETUITY
- PAYMENT FOR ALLOCATION
- TRANSITIONAL GAINS
- PROPORTIONAL QUOTA
- INTEGRATING RIGHTS
ALLOCATION

ELIGIBILITY

- ALLOCATE TO PERMIT OR LICENCE HOLDER

CRITERIA PERIOD

- DETERMINE RETROSPECTIVE CRITERIA YEARS

- MORATORIUM BEFORE ALLOCATION

- MINIMISE MORATORIUM PERIOD
PROBLEMS WITH QUOTA APPEAL PROCESS

- “COMMITMENT AND DEPENDENCE” CRITERIA
- STATUTORY AUTHORITY EXPENSIVE TO RESOURCE
- LARGE NUMBER OF APPEALS TOOK YEARS TO HEAR
- FISHERIES ADMINISTRATORS TIED-UP AS EXPERT WITNESSES
- SUBSTANTIAL INFLATION OF SOME CATCH LIMITS
- NEGATED EXPENDITURE ON BUYING-OUT CATCH HISTORY
SOLUTIONS FOR QUOTA APPEAL PROCESS

- APPEAL CRITERIA SIMPLE
- APPEAL OUTCOMES PRO-RATED WITHIN TACC
PERPETUAL QUOTA TERM

- POSITIVE HUSBANDRY
- IMPROVED INVESTMENT INCENTIVES
- BETTER COLLATERAL

PAYMENT FOR ALLOCATION?

- POTENTIAL DISLOCATION/SOCIO-ECONOMIC IMPACT

TRANSITIONAL GAINS CHARGE?

- EFFICIENCY COSTS
WHY PROPORTIONAL QUOTA?

- MOTIVATION TO DEVELOP FISHERIES
- AVOID RISKS FOR TAX PAYERS
- BETTER STEWARDSHIP INCENTIVES
INTEGRATING RIGHTS

- INDIGENOUS RIGHTS
- RECREATIONAL RIGHTS
- AQUACULTURE
INDIGENOUS RIGHTS

- Legal action stopped implementation
- Settlement

10% existing quota
20% new introductions
50% share in Sealords $150M

- Maori now own or control ~40% quota
- Customary sector
  Priority in allocative decisions
  Spatial tools
RECREATIONAL RIGHTS

- Constrained by input controls
- Allocative and spatial access issues
- Contentious and erode commercial confidence

RECREATIONAL REFORM

- Improved specification of recreational right
- Sector organisation
- Potential “trade”
INTEGRATING RIGHTS

AQUACULTURE

- CONFLICT OVER ALLOCATION OF SPACE
- FRAMEWORK TO ALLOW EXPANSION THROUGH COMMERCIAL AGREEMENTS
Socio-Economic Settings

- Restrict Transfer or Trade
- Aggregation Limits
- Foreign Ownership
- Minimum Holdings
- New Entrants
## SOCIO-ECONOMIC SETTINGS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (tonnes)</td>
<td>338,000</td>
<td>580,000</td>
<td>562,000</td>
</tr>
<tr>
<td>Production ($ million FOB)</td>
<td>640</td>
<td>1270</td>
<td>1798</td>
</tr>
<tr>
<td>Employment</td>
<td>7900</td>
<td>10,200</td>
<td>10,734</td>
</tr>
<tr>
<td>Vessels</td>
<td>2375</td>
<td>1766</td>
<td>1172</td>
</tr>
<tr>
<td>ITQ trade price</td>
<td></td>
<td>+46-250%</td>
<td></td>
</tr>
<tr>
<td>Competitiveness</td>
<td></td>
<td>+12%</td>
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</table>
RESTRICT TRANSFER OR TRADE

- BARRIERS TO TRANSFER OUTSIDE—REGIONS OR COMMUNITIES
  CLASSES OF FISHERS OR VESSELS
- AGGREGATION LIMITS
- OWNERS OPERATOR ONLY

SOCIO-ECONOMIC SETTINGS
### Key Differences in Economic and Social Objectives

<table>
<thead>
<tr>
<th>NEW ZEALAND</th>
<th>UNITED STATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• ITQS Valid in Perpetuity</td>
<td>• Catch shares may not officially be valid in perpetuity, but may be in practice</td>
</tr>
<tr>
<td>- Potential Right of Compensation</td>
<td>• Generally attempt to severely limit consolidation (e.g. &lt; 1%)</td>
</tr>
<tr>
<td>• Consolidation generally no more than 35% of summed fish stock TACCS for any given species</td>
<td>• Maintain viable fishing communities</td>
</tr>
<tr>
<td>• Eliminate overcapacity</td>
<td>• No explicit policy to eliminate subsidies</td>
</tr>
<tr>
<td>• Eliminate subsidies</td>
<td>• Very restricted use of foreign charter vessels</td>
</tr>
<tr>
<td>• Use of foreign charter vessels</td>
<td>• Fish must be processed on US soil or US boats</td>
</tr>
<tr>
<td>• No restrictions on where fish are processed</td>
<td></td>
</tr>
</tbody>
</table>
AGGREGATION LIMITS

Initially
- 10% Lobster and Abalone (QMA)
- 35% Deepwater Species (EEZ)
- 20% Other Species (QMA)

Currently
- 10% Lobster (QMA)
- 20% Abalone (QMA)
- 45% Deepwater and Midwater (EEZ)
- 35% Other Species (EEZ)
### EFFECT OF ITQS ON NUMBER OF QUOTA HOLDERS

<table>
<thead>
<tr>
<th>Fishery</th>
<th>% change in no. of quota owners</th>
<th>Time (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inshore</td>
<td>-24</td>
<td>10</td>
</tr>
<tr>
<td>Mid-depths</td>
<td>-26</td>
<td>10</td>
</tr>
<tr>
<td>Deep water</td>
<td>-13</td>
<td>10</td>
</tr>
</tbody>
</table>

### 10 LARGEST COMPANIES HELD
- 67% OF QUOTA IN 1987
- 82% OF QUOTA IN 1999
- 43% OF QUOTA IN 2017
FOREIGN OWNERSHIP
- MAXIMUM OF 24.9% (OWNERSHIP OR CONTROL)
- MINISTERIAL DISCRETION TO 40%

NEW ENTRANTS
- IMPEDED BY HIGH QUOTA COST
- NOT A PRIORITY OBJECTIVE
CATCH LIMITS
ADJUSTMENT ASSISTANCE
DEFINITION OF MANAGEMENT AREAS
SPECIES TO INCLUDE IN REGIME
OTHER SUSTAINABILITY OBJECTIVES
REPORTING REQUIREMENTS
SETTING CATCH LIMITS

- Reductions at introduction 15,800 tonnes
- Government paid compensation NZ $46.4M

CATCH LIMIT SETTING PROCESS

- Open and transparent
- Environmental principles in legislation
- Contestable research
CONTRACTS ESTABLISHED TO UNDERTAKE STOCK ASSESSMENTS

ASSESSMENTS UNDERTAKEN FOR STOCKS/FISHERIES AND REVIEWED IN WORKING GROUPS

PLENARY TO REVIEW ALL ASSESSMENTS

PRIORITY STOCKS FOR REVIEW IDENTIFIED AND INITIAL PROPOSALS DEVELOPED

CONSULTATION UNDERTAKEN AND SUBMISSIONS SOUGHT

FINAL ADVICE TO MINISTER
NZ QUOTA MANAGEMENT AREAS
INITIAL CRITERIA FOR INCLUSION
- ECONOMIC VALUE
- LARGE VOLUME
- SINGLE SPECIES TARGET FISHERIES
- LOW VALUE BYCATCH ?
- HIGHLY VARIABLE SPECIES ?

SECTION 17 OF FISHERIES ACT

<table>
<thead>
<tr>
<th>Year</th>
<th>Species</th>
<th>Stocks</th>
<th>% of total catch (volume)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>26</td>
<td>153</td>
<td>83</td>
</tr>
<tr>
<td>2000</td>
<td>44</td>
<td>280</td>
<td>92</td>
</tr>
<tr>
<td>2017</td>
<td>98</td>
<td>642</td>
<td>99</td>
</tr>
</tbody>
</table>
SUSTAINABILITY

1996 ACT

👉 MAINTAINS THE STOCK AT OR ABOVE A LEVEL THAT CAN PRODUCE MSY, HAVING REGARD TO THE INTERDEPENDENCE OF STOCKS

👉 (IF BELOW) RESTORE TO OR ABOVE A LEVEL THAT CAN PRODUCE MSY WITHIN A PERIOD APPROPRIATE TO THE STOCK, HAVING REGARD TO THE BIOLOGICAL CHARACTERISTICS OF THE STOCK AND ANY ENVIRONMENTAL CONDITIONS AFFECTING THE STOCK

👉 (IF MSY CANNOT BE RELIABLY ESTIMATED) USE THE BEST AVAILABLE INFORMATION SET A TAC NOT INCONSISTENT WITH MSY

👉 CAN SET A DIFFERENT TAC IF NZ’S ALLOCATION DETERMINED IN AN INTERNATIONAL AGREEMENT, THE STOCK IS MANAGED ON AN ENHANCED BASIS, IT IS AN HMS SPECIES
### STOCK ASSESSMENT APPROACHES

<table>
<thead>
<tr>
<th>Species</th>
<th>Value $m</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>Hoki</td>
<td>145</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Rock lobster</td>
<td>132</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Snapper</td>
<td>60</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Paua</td>
<td>58</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ling</td>
<td>51</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Arrow squid</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Blue cod</td>
<td>36</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Southern blue whiting</td>
<td>26</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Tarakihi</td>
<td>23</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Orange roughy</td>
<td>22</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Flatfish</td>
<td>20</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Oreo</td>
<td>15</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

1. Commercial CPUE
2. Observer data
3. Trawl surveys
4. Acoustic surveys
5. Age or length based model
6. Relative abundance index
7. Biomass estimate
FISHERIES PLANS

1999 FISHERIES ACT AMENDMENT - SECTION 11A

PROVISIONS

- FISHERIES MANAGEMENT OBJECTIVES
- STRATEGIES TO ACHIEVE THE OBJECTIVES
- RULES TO MANAGE THE INTERACTION BETWEEN SECTORS
- PERFORMANCE MEASURES
- DECISION RULES
ROCK LOBSTER EXAMPLE

STOCK ASSESSMENT
• LENGTH BASED MODEL
• MANAGEMENT PROCEDURES
• MANAGEMENT PROCEDURE EVALUATION
• CERTAINTY AND CONSISTENCY
• TRANSPARENCY AND RESPONSIVENESS
• LESS ARGUMENT
• ACHIEVE TARGETS AND AVOID LIMITS
ROCK LOBSTER RESULTS
## SUSTAINABILITY PERFORMANCE

<table>
<thead>
<tr>
<th>Stock status</th>
<th>By volume</th>
<th>By number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above management target</td>
<td>93.6%</td>
<td>70.9%</td>
</tr>
<tr>
<td>Above soft limit</td>
<td>97%</td>
<td>83.1%</td>
</tr>
<tr>
<td>Above hard limit</td>
<td>99.5%</td>
<td>94.1%</td>
</tr>
</tbody>
</table>
SUSTAINABILITY PERFORMANCE

STOCK AND FISHERY STATUS INFORMATION BY VOLUME OF LANDINGS: 2008-16

- SOFT LIMIT
- HARD LIMIT
- OVERFISHING
- MANAGEMENT TARGET

Graphs showing landings by volume and percentage of total landings from 2009 to 2016, categorized by soft limit, hard limit, overfishing, and management target.
MECHANISMS ARE NEEDED TO—

- REDUCE IMPACTS ON FRAGILE ECOSYSTEMS
- MINIMISE INCIDENTAL MORTALITY OF RARE AND ENDANGERED SPECIES
- ENSURE SUSTAINABILITY OF STOCKS OUTSIDE QUOTA SYSTEM
- PROTECT JUVENILE STOCKS, AND SPAWNING AND NURSERY AREAS
ENVIRONMENTAL IMPACTS OF FISHING

FISHERIES ACT PURPOSE

 TO PROVIDE FOR THE UTILISATION OF FISHERIES RESOURCES
 WHILE ENSURING SUSTAINABILITY
 DEFINITION OF SUSTAINABILITY
 MAINTAINING THE POTENTIAL OF FISHERIES RESOURCES TO
 MEET THE FORESEEABLE NEEDS OF FUTURE GENERATIONS
 AVOIDING, REMEDYING OR MITIGATING ANY ADVERSE
 EFFECTS OF FISHING ON THE AQUATIC ENVIRONMENT
 ENVIRONMENTAL PRINCIPLES
 INFORMATION PRINCIPLES
 PRECAUTIONARY APPROACH
ENVIRONMENTAL IMPACTS OF FISHING

INITIATIVES

- Sustainability Measures Process
- Strategy for Managing the Environmental Effects of Fishing
- Marine Protected Areas Policy and Guidelines
- Environmental Standards
  - Seabirds
  - Benthic Impacts
- Population Management Plans
- NPOAS
  - Seabirds
  - Sharks
28% of underwater topographical features
52% of seamounts (underwater mountains > 1000 m in height)
88% of active hydrothermal vents
Off-bottom trawl fishing is permitted to within 100 metres with strict controls
ADMINISTRATION

- REPORTING
- PERMITS, REGISTRY, QUOTA TRADING
- STAFF AND RESOURCES
- ORGANISATIONAL DESIGN
- CATCH AGAINST QUOTA

REPORTED INFORMATION IS THE LYNCH-PIN OF THE QUOTA MANAGEMENT SYSTEM
QUOTA MANAGEMENT SYSTEM

**Ministerial decisions**

**Annual catch entitlement**

**Obligations**

**Penalties**

TAC

\[ \text{ITQ} \times \text{TACC} = \text{ACE} \]

\( (\%) \) \( (\text{tonnes}) \) \( (\text{tonnes}) \)

- **Reporting**
  - Skipper
  - Quota owner
  - Fish receiver

- **Catch balancing**
  - Fisher must cover all catch with ACE

- **Criminal**
  - Deemed values
  - Permit suspension

- **Civil**

Allows for customary interests and recreational interests
REPORTING
PERMITS, REGISTRY, QUOTA TRADING
STAFF AND RESOURCES
ORGANISATIONAL DESIGN
CATCH AGAINST QUOTA
ADMINISTRATION

CATCH AGAINST QUOTA
- MULTI-SPECIES FISHERIES
- ABUNDANCE, PRODUCTIVITY AND DISTRIBUTION
- QUOTA BUSTING AND MIS-REPORTING
QUOTA TRANSFERS AUGMENTED BY REGISTERED LEASES AND ARRANGEMENTS FOR FISHING ON BEHALF

CATCH OUTSIDE QUOTA CAN BE SURRENDERED TO GOVERNMENT

BYCATCH TRADE-OFF SCHEME

QUOTA TRADING IMPEDED BY LACK OF TRANSPARENCY

POTENTIAL EXPOSURE TO PROSECUTION

HIGH TRANSACTION COSTS
Revised Catch Against Quota Regime

- ACE REGIME
- MONTHLY RETROSPECTIVE BALANCING WITH CIVIL PENALTIES
- SUSPENSION OF PERMIT FOR NON-PAYMENT OF PENALTIES
- END OF YEAR CIVIL PENALTY FOR OUTSTANDING OVER-CATCH
- 10% CARRY FORWARD OF UN-CAUGHT ACE
- PUBLIC CATCH AND ACE REGISTER
- STRONG PENALTIES FOR MISREPORTING
- INDUSTRY FUNDED
ADMINISTRATION

- QUOTA BUSTING AND MIS-REPORTING
- MONITOR AND CROSS-REFERENCE
- PRODUCT FLOW

CATCH ➔ LANDING ➔ POINT OF SALE

RETAIL/EXPORT ➔ FISH DEALER
COMPLIANCE AND ENFORCEMENT

- MONITORING PRODUCT FLOW
- SHIFT IN FOCUS

Dockside infringements

Surveillance, audit, targeted investigations

- INTEGRITY OF SYSTEMS
- RETENTION OF INPUT CONTROLS
- GPR AND CAMERAS
COMPLIANCE AND ENFORCEMENT

- ACE TO COVER FISHING
- 7000-8000 REGULATIONS
- PENALTIES; SEVERE: UP TO $250,000 AND/OR UP TO 5 YEARS, PLUS FORFEITURE OF CATCH AND EQUIPMENT
- ALL CASES TREATED AS CRIMINAL
- RISK OF DETECTION; RELATIVELY LOW
RESOURCE RENTS AND COST RECOVERY

- BASIS FOR LEVYING
- COST RECOVERY
RESOURCE RENTS

RATIONALE FOR RESOURCE RENTALS
- USE OF COMMON RESOURCE
- PREMIUM FOR IMPROVED MANAGEMENT

INITIAL LEVELS — 2.2% TOTAL VALUE OF PRODUCTION
MAORI RIGHTS LED TO REMOVAL OF RESOURCE RENTALS
COST RECOVERY ISSUES

COST RECOVERY

- 3% OF LANDED VALUE
- LEVIED ON TRANSACTION CHARGES (6%) AND QUOTA HELD (94%)

ISSUES

- INDUSTRY OBJECTION TO AVOIDABLE-COST PRINCIPLE
- MONOPOLY SERVICE PROVISION
- "DOUBLE TAXATION" OF ENFORCEMENT COSTS
- UNDER AND OVER-RECOVERY
BENEFITS OF COST RECOVERY

- Taxpayer not subsidising costs of services needed to manage commercial fishing
- Increased transparency and accountability for government operations
- Pressure for government to be cost effective
- Potential for industry to assume some roles
DEVELOPMENT OF THE REGIME

- INCREASED DEVOLUTION OF MANAGEMENT RESPONSIBILITY
- OUTSOURCING OF SERVICES
  - RESEARCH CONTESTIBILITY
  - ADMINISTRATION
POTENTIAL OUTCOMES OF ITQS

- Increased Efficiency and Economic Returns
- Encouragement for Investment
- Better Sustainability Controls
- Rights Work to Incentivise Resource Conservation
- Improved Voluntary Compliance
- Incentives for Collective Action
- Cost Effective Administration
- Significant Reduction in Requirement for Government Intervention
BENEFITS FOR INDUSTRY

- REDUCED COMPETITION
- REVENUE MAXIMISATION BY OPTIMISING LABOUR AND GEAR CONFIGURATIONS
- PROFITABLE AND INTERNATIONALLY COMPETITIVE
- PREDICTABILITY OF INCOME
- REDUCED ECONOMIC RISK
- RETIREMENT SECURITY THROUGH ASSET OWNERSHIP
LESSONS FROM NZ

- PROPORTIONAL QUOTA
- CONTROL THE APPEAL PROCESS
- INCORPORATE ALL EXTRACTIVE USERS
- DESIGN OF COST RECOVERY
- INPUTS AND ICE
- SEPARATION OF CATCH RIGHT FROM FISHING OPERATOR
- EFFICIENT, LIQUID QUOTA MARKET
- MANAGING MIXED SPECIES FISHERIES
- SLOW USE OF FISH PLANS
- SELF MANAGEMENT NOT EMPOWERED
- DOMESTIC LEGITIMACY OF REGIME
RISKS AND CHALLENGES

- Politicisation of Fisheries
- Spatial and Management Encroachment
- Integration with Other Marine Management Statutes
- Operational Management Not Anchored in Legislation
- Speed of Development of Fisheries Plans
- Climate Change and Anthropogenic Impacts in Nearshore
WILL ITQ PROGRAMS DELIVER BENEFITS?

- The total allowable catch can be estimated
- Balancing economic efficiency and social objectives
- Reasonable measure of stakeholder and public support
- Prospect of monitoring and compliance arrangements with integrity
- Good governance
STAGES IN DEVELOPMENT

PRE 1986 - SUPPORT FOR CHANGE

• 1986 – 26 SPECIES INTRODUCED
• 1990 – CHANGE FROM ABSOLUTE TO PROPORTIONAL QUOTA
• 1992 - PERMIT MORATORIUM
• 1994 - COST RECOVERY
• 1995 – SCIENCE OUTSOURCED
• 1996 - NEW FISHERIES ACT
• 1999 – NEW BALANCING REGIME
• 2004 – QMS PREFERENCE
## COSTS OF MANAGEMENT

<table>
<thead>
<tr>
<th>Country or Country Grouping</th>
<th>Costs of Managing Fisheries(^1) (USD$ million)</th>
<th>Costs of Managing Fisheries in relation to Value of Production (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>1662</td>
<td>32%</td>
</tr>
<tr>
<td>Canada</td>
<td>420</td>
<td>22%</td>
</tr>
<tr>
<td>Australia</td>
<td>43</td>
<td>12%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>63</td>
<td>5%</td>
</tr>
<tr>
<td>Norway</td>
<td>274</td>
<td>4%</td>
</tr>
<tr>
<td>Iceland</td>
<td>34</td>
<td>3%</td>
</tr>
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</table>

Main source: Review of Fisheries in OECD Countries: Policies and Summary Statistics 2015