

Managing Fishing Capacity: Silver Bullets or A Delicate Balancing Act??

Annie Jarrett
Pro-Fish Pty Ltd
Australia



Overview

- Overcapacity: Causes & Effects

- Case Studies:

Managing Fishing Capacity in Australia's Northern Prawn Fishery

The Madagascan Shrimp Fishery - Implementing Individual Transferable Fishing Rights in a Developing Country Fishery

- Conclusions from Case Studies

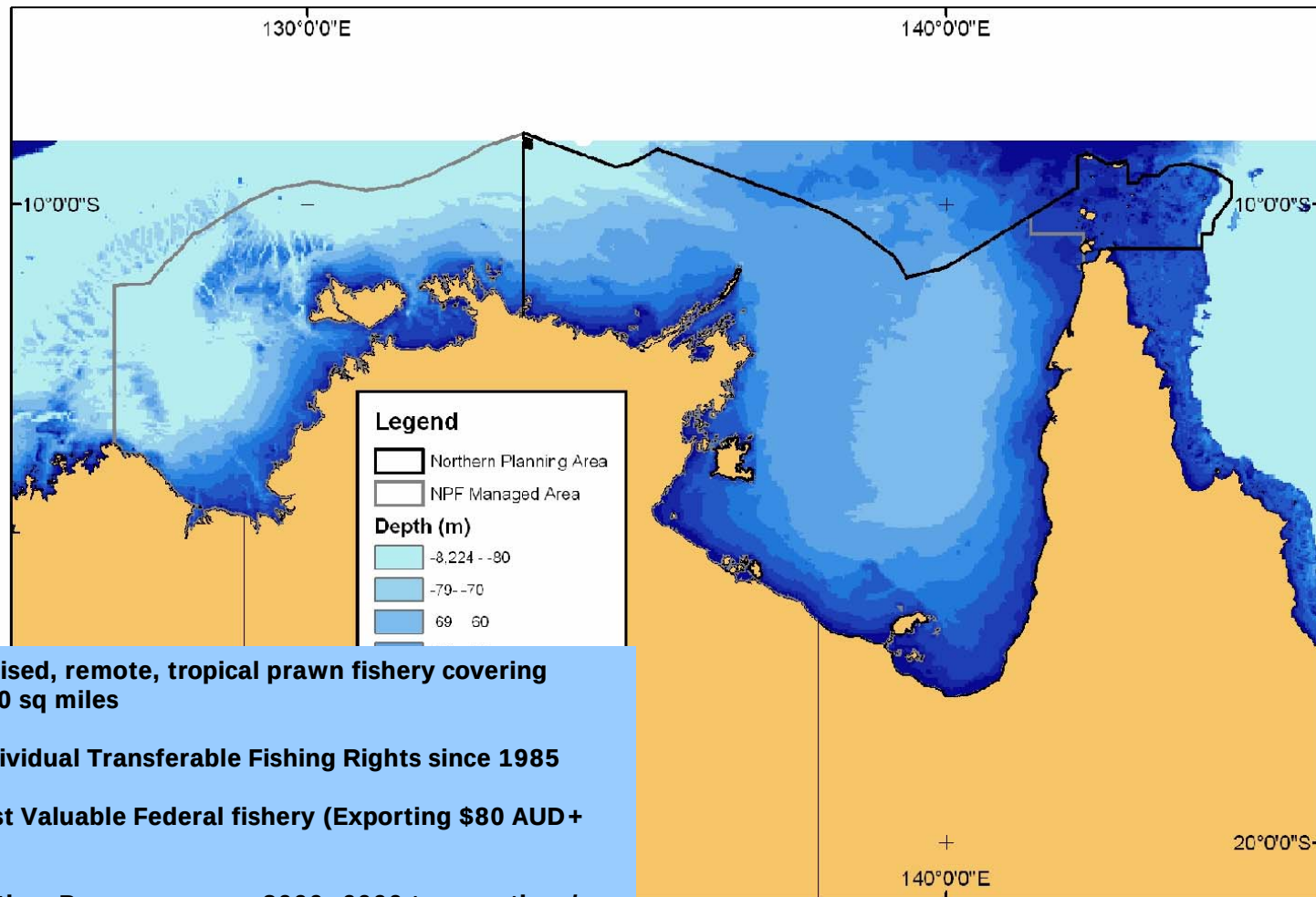
- Tools to Address/ Avoid Overcapacity

- Finding the Balance

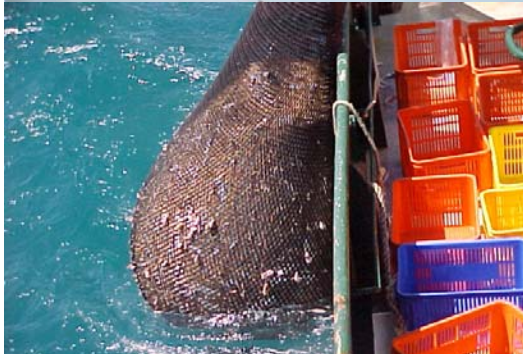
Causes & Effects

- Weak Institutional Arrangements
- Lack of Fishing Rights/ Race to Fish
- Market Impacts where rights exist (fishing costs, exchange rates; increased aquaculture production; price fluctuations)
- Declining Fish Stocks
- Poverty
- Loss of economic rent
- Overfishing/ overfished fisheries
- Depletion of major food sources in developing countries
- Threats to marine ecosystems
- Loss of fisher &/ or investor confidence
- Market failure

Adjusting Fishing Capacity in Australia's Northern Prawn Fishery



- Fully industrialised, remote, tropical prawn fishery covering approx 400,000 sq miles
- Long Term Individual Transferable Fishing Rights since 1985
- Australia's Most Valuable Federal fishery (Exporting \$80 AUD + m/yr)
- Annual production: Banana prawns 3000 -6000 tonnes; tiger / endeavour prawns 2500 - 4000 tonnes



- **Primary Management Tool - individual transferable effort units (gear units)**
- **Biological, economic & ecological objectives enshrined in formal Management Plan**
- **Clearly defined Fishery target (MEY) and limit reference (MSY) points, and decision rules**
- **Long term fishery catch/ effort & economic data sets**
- **Stock assessment models (including bio-economic model) for key target species; fishery independent surveys; a 'risk assessment' approach to other species, including bycatch species**
- **Eco-system based management approach comprising Bycatch management (Bycatch Action Plan, Compulsory TEDs/ BRDs; US Accreditation); implementation of MPA's**
- **Strong co-management system in place (govt, industry, science, NGOs, other stakeholders)**

Historical Snapshot

- Commercial fishery commenced in late 1960's/ early 1970's – key target species: tiger, banana, endeavour and king prawns
- Open access fishery until limited entry introduced in 1977
- Appeared to have strong institutional arrangements (managed by govt, scientific research support)
- Liberal 'limited entry' criteria results in indiscriminate issue of licenses (302) by Govt in early 80's results in significant overcapacity
- First individual transferable fishing rights (boat units) allocated in 1985
- Adjustment to target overcapacity/ improve fishery profitability first recommended by Economists in 1986 - rejected by industry!

NPF Cont...

- Overcapacity, combined with effort creep, leads to significant overfishing of tiger prawn stocks from mid to late 1980's and late 1990's
- Fishery very susceptible to external factors eg fluctuations in fishing costs/ market prices, exchange rates, aquaculture production
- Significant and on-going adjustment required to rebuild stocks and improve fishery profitability
- Adjustment programs (buy backs, compulsory acquisition of fishing rights) reduce fishery capacity from 302 licenses (1985) to 52 licenses (2007) but pace of adjustment impeded by industry disunity/ political intervention
- ITFRs provided effective mechanisms for adjustment, but not sole solution to addressing/ avoiding overcapacity problems

The Madagascan Shrimp Fishery –Implementing Individual Transferable Fishing Rights in a Developing World Fishery



Industrial/ Artisanal Sector:

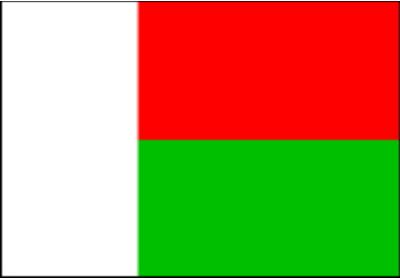
Major export sector for Madagascar, yielding 10,000 tons per year and providing \$75 million USD in foreign earnings; major employment source; major food source; 75 industrial/ 36 artisanal vessels restricted to four specific fishing zones

Traditional sector:

Important food source yielding 1000 tonnes per year, 8000 traditional pirogues; not currently integrated into formal management arrangements



Fishery Overview



- Established in late 1960's
- 1960's to 1990's – discretionary (irregular) licensing policy; lack of transparency in license allocation
- Lack of license security – discretionary annual renewal
- Uncontrolled fishing capacity & effort/ Unstable /economically unsuccessful fishery
- Lack of industry representative body/ serious conflict between operators
- 'Open Access' until limited entry introduced in 1998
- Traditional sector not managed, increasing fishing effort/capacity negatively impacting on catches in industrial/artisanal fisheries

MSF Cont....

- GAPCM established as industry representative body in 1996
- Decree 2000-415 (2000) limits entry to 75 industrial trawlers, 36 artisanal trawlers; provides 20 year license; imposes compulsory VMS, provision of catch/effort and economic data, horsepower restrictions
- GAPCM initiates increased seasonal closure to protect juvenile stocks, improve shrimp size/value; reductions in mesh size; reductions in headrope restrictions for industrial vessels
- Fishery very susceptible to external factors eg increased fishing costs; gas oil prices; market fluctuations, exchange rates, aquaculture production
- GAPCM initiates external, independent review of fishery in response to declining shrimp production/ declining economic returns

MENTOR COMMITTEE REVIEW

(Goodlad, J; Jarrett, A; Wilson J) - January 2003

MC concluded fishery reasonably managed but that there was a clear need to:

- better balance effort and sustainability in the MSF
- improve economic returns to fishers & the Nation
- implement a flexible, responsive management mechanism to facilitate adjustment/ restructuring and improve future biological and economic sustainability of shrimp resources
- formally adopt the precautionary approach to managing the MSF



Scoping Paper on potential management options provided to GAPCM - September 2003

Options Paper provided to GAPCM - April 2004



Workshop on Transferable Fishing Rights Options - July 2005

Management Options Review Process

- **INDIVIDUAL TRANSFERABLE FISHING RIGHTS – Types, The Needs & the Benefits**
- **AGREEMENT ON BASIC ASSUMPTIONS & CRITERIA FOR ASSESSING THE VARIOUS OPTIONS**
- **OPTIONS CONSIDERED:**
 - Boat Days/Time Units
 - Effort Units (a combination of boat days, horsepower & hull size)
 - Gear units (based on headrope/footrope length)
 - ITQs

ASSUMPTIONS

Under All Options:

- **INDIVIDUAL FISHING RIGHTS MUST BE FULLY TRADABLE**
- **RETENTION OF LIMITED ENTRY**
- **RETENTION OF CURRENT FISHING 'ZONES' SYSTEM**
- **CLOSURES FOR BIOLOGICAL/ ECOLOGICAL PURPOSES**
- **CONTINUED USE OF TED/BRDS; BYCATCH PROGRAMS**
- **NEED FOR ONGOING RESEARCH, DATA COLLECTION & COMPLIANCE PROGRAMS – MAY VARY WITH EACH SYSTEM**
- **NEED TO ADDRESS COMPLEXITIES OF INDUSTRIAL, ARTISANAL & TRADITIONAL SECTORS IN ALLOCATION**

CRITERIA

- **Equitable:** need to identify existing shares & determine translation formula; the 'share' of rights held under one system must not be diminished in moving to a new system
- **Flexible & Adjustable:** operators need flexibility to adapt to changing circumstances & to maximise returns; fishery needs to be adjusted to respond to biological or economic changes
- **Responsive:** capable of adjusting the fishery on either biological or economic grounds in a timely manner
- **Transferable:** allows operators maximum flexibility to trade up or down to suit their own operational/market demands
- **Economically efficient:** retaining as few inputs as possible to maximise opportunity for economically efficient exploitation
- **Simple & Cost Effective to manage:** easily understood by industry; simple administration & enforcement; legally defensible
- **Should be applicable to both industrial & artisanal sectors to allow trading between sectors; adjustment to both sectors**

GAPCM Considerations – ITQs/ Boat Days/ Effort Units

- **ITQs PROVIDE MORE ECONOMIC BENEFITS THAN INPUT CONTROL SYSTEMS/ FLEXIBILITY TO MAXIMISE CATCH FOR LEAST COST; ECONOMIC EFFICIENCY; FACILITATE TRADE BETWEEN SECTORS; PROVIDES LIMITS ON CATCH; PROVIDE GUARANTEED RESULTS AS ADJUSTMENTS ARE MADE TO TACS (& INDIVIDUAL QUOTA HOLDINGS) – NOT EFFORT LEVELS**
- **NOT POSSIBLE TO SET MEANINGFUL TAC'S IN MSF DUE TO HIGH VARIABILITY IN RECRUITMENT; MULTI-SPECIES NATURE OF FISHERY NOT SUITED TO QUOTA MANAGEMENT; HIGH GRADING/DISCARDING LIKEY TO RESULT IN LOSS OF REVENUE TO THE NATION; COST OF POLICING AND ADMINISTERING ITQS IN MADAGSCAR WOULD MAKE SYSTEM UNPROFITABLE FOR BOTH OPERATORS AND THE NATION**
- **CONCLUSION: ITQS ARE NOT AN APPROPRIATE SYSTEM FOR THE MSF**

GAPCM Conclusions Cont....

- **BOAT DAY AND EFFORT UNITS SYSTEMS PROVIDE FLEXIBLE RESPONSIVE MANAGEMENT TOOLS - A NUMBER OF BENEFITS OVER THE LICENSE-ONLY SYSTEM; EFFORT UNITS NOT AS FLEXIBLE AS THE BOAT DAY SYSTEM; BOTH SYSTEMS ALLOW OPERATORS TO MAXIMISE THEIR FISHING OPERATIONS; FACILITATES TRADE BETWEEN THE INDUSTRIAL & ARTESANAL SECTORS; FLEXIBLE ADJUSTMENT TOOLS**
- **EFFORT UNITS SYSTEM WOULD REQUIRE EXTENSIVE SCIENTIFIC STUDIES TO DETERMINE RELATIONSHIP BETWEEN VESSEL SIZE + FISHING POWER IN MADAGASCAR – EXPENSIVE AND TIME CONSUMING; EFFORT UNITS MORE COMPLEX TO ADMINISTER THAN BOAT DAYS – REQUIRES BOTH EFFORT UNITS & BOAT DAY REGISTERS**
- **VMS NOT CAPABLE OF TRACKING DAYS FISHED BY ALL VESSELS REQUIRED UNDER THESE SYSTEMS – SYSTEMS CANNOT BE EFFECTIVELY POLICED**
- **CONCLUSION: THESE SYSTEMS ARE TOO COMPLICATED FOR MADAGASCAR**

GAPCM CONCLUSIONS – Gear Units

- Headrope (controlling swept area) good measure of fishing effort - better than boat size or horsepower; headrope easily measured & enforced - particularly compared to hp; need for some at sea checks to ensure compliance with gear unit allocation
- Gear Units provide for technical innovation; no need for hp restrictions/vessel constraints as effort controlled by gear
- Operators can trade gear units to suit own operational/market demands
- Gear units system facilitates trading between industrial & artisanal sectors as headrope has the same fishing effort in both sectors
- Flexible tool for adjustment - gives operators option of buying, selling, leasing gear units, amalgamating licenses , or fishing with smaller gear
- Appropriate management tool for MSF

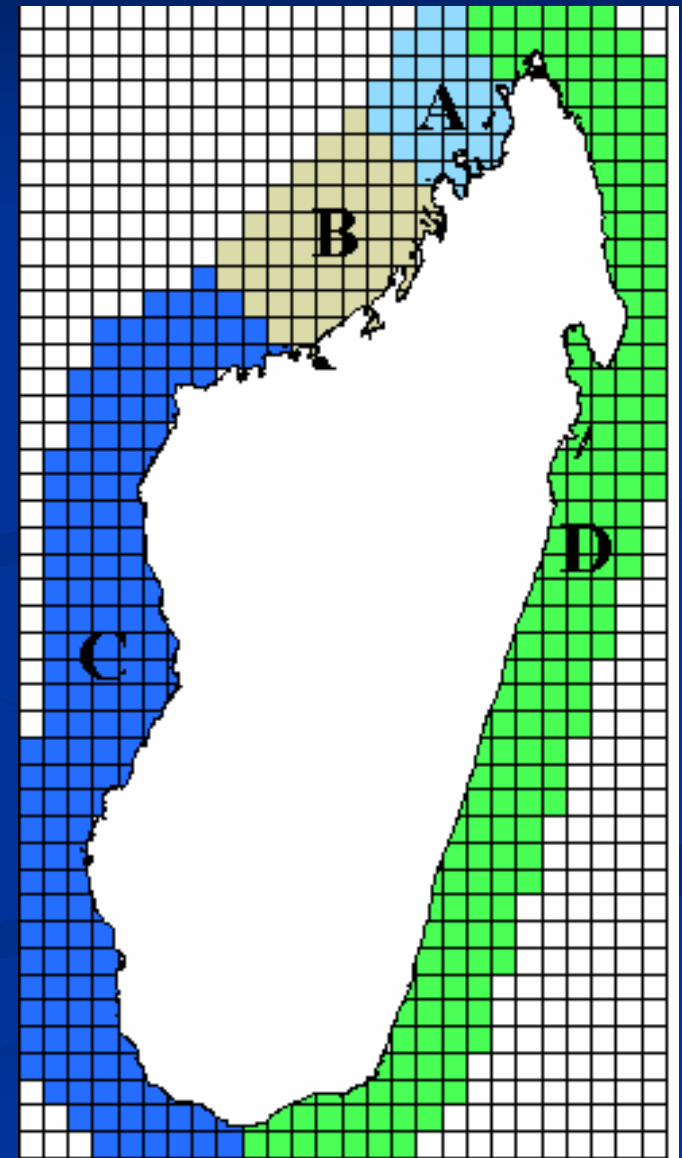
Review Outcomes - 2006

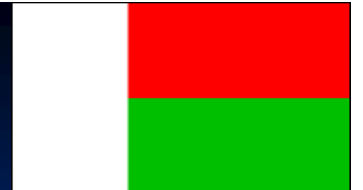
- Agreement by GAPCM & Administration to adopt gear unit system for both industrial & artisanal sectors
- Total headrope (total number of gear units) allocated to industrial/artisanal sectors; individual gear unit allocations based on combination of fixed allocation component and catch history
- Future reductions in fishing effort/ capacity to be implemented through gear units
- Recognition of need to implement management controls on traditional (small scale) fishery; rights based (individual/ community) systems to be considered for SSF in future
- Amendments to Decree to implement new management approaches agreed upon – in process of implementation

MSF Current Perspective

(Industrial/ Artisanal Sectors)

- **Secure Fishing Rights:** Limited entry/ 20 year fishing rights; individual transferable rights (gear units) system being implemented in 2008 to provide mechanism for future fleet reductions/ improved biological & economic sustainability
- **Effort/ Environmental Controls:** Restricted fishing zones; horse power limitations currently in place; headrope restrictions; spatial, temporal and night closures; TEDs/ BRDs; pursuing MSC certification
- **Data Collection:** Well-established economic and scientific data collection, and surveillance & enforcement programs in place– will need to improve under new system
- **Co- Management:** Excellent example of a pro-active industry association (GAPCM) working with Govt to achieve management outcomes under generally weak Institutional arrangements





Comparing Approaches: NPF/ MSF

Differences:

- Developed versus developing world context (affluence versus poverty); institutional arrangements; resource sharing requirements; social/ economic drivers - eg employment, food source/ economic return to Nation; limits on/ use of bycatch resources

Commonalities:

- Management based on secure fishing access rights, autonomous adjustment mechanisms to address overcapacity
- Shared vision for wealth generation and biological sustainability as primary fishery targets
- Significant investment by industry and others in co-management approaches
- Considerable potential for increased stock size; improvements in fishery profitability if appropriate management approaches are in place

Conclusions

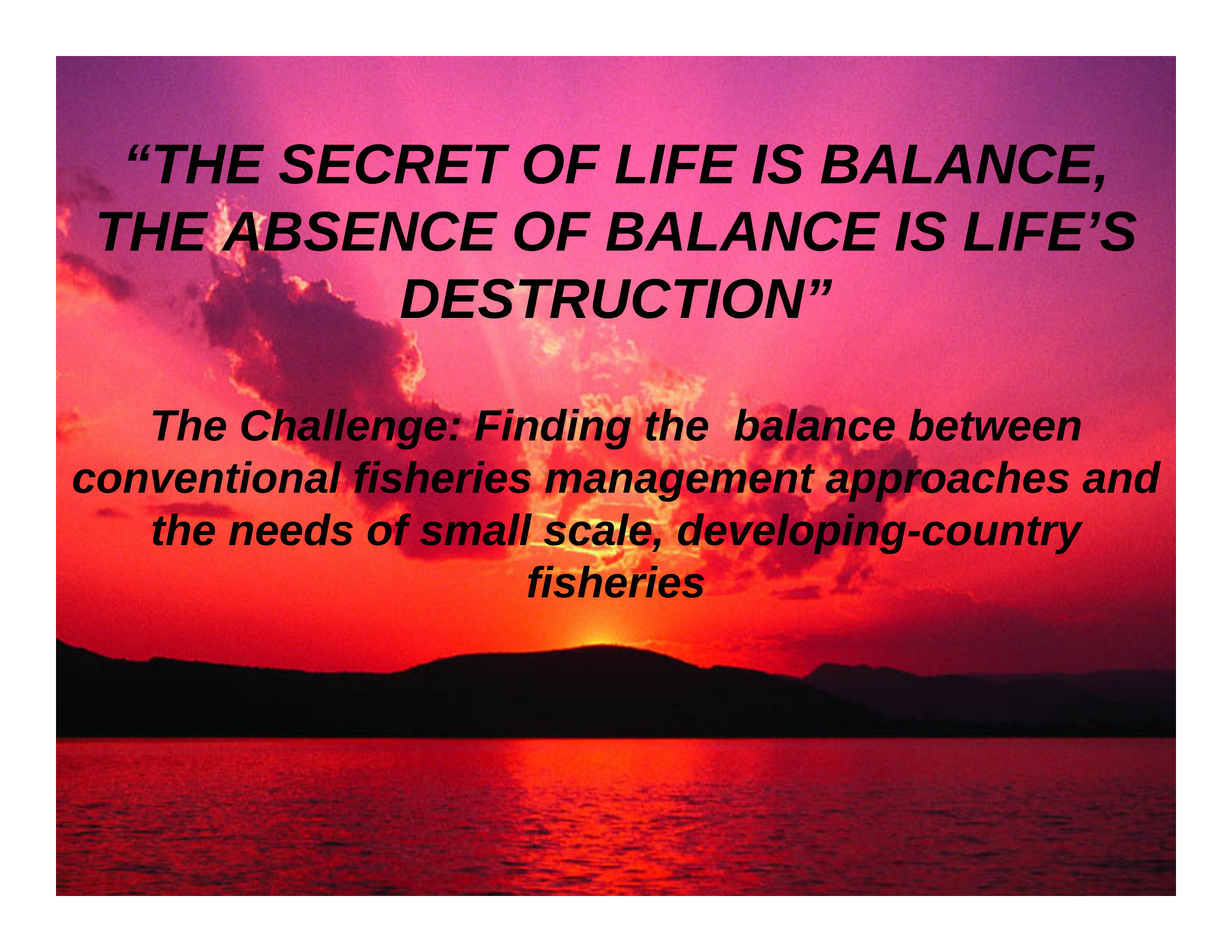
- Effective management of developing country fisheries is possible **DESPITE** generally weak (or even absent) fisheries data/information; lack of policies, laws, institutions, transparency, public involvement **AND**....
- Approaches used in industrialised fisheries can be adapted to the developing world **BUT**
- One size doesn't fit all - Institutional/ management arrangements **MUST** be appropriate to individual circumstances/ fisheries **AND**

Conclusions cont...

- There are no 'Silver Bullets' for addressing overcapacity
- Balancing between fishery objectives is a given
- Fishing Rights in isolation are not a solution - a range of tools is required
- Conventional approaches (including establishment of fishing rights) could/ should be adapted for small scale fisheries to avoid further stock depletion, increased poverty, and loss of economic rent in developing world countries

Tools for Addressing/ Avoiding Overcapacity

- Government funded adjustment (short term)
- Secure Fishing Rights (ITQ's; ITE's; Community-based rights)
- Institutional/ Management Arrangements Appropriate to Individual Fisheries/ Circumstances
- Well-Defined & Well-Balanced Fishery Objectives - biological, economic, social, ecological)
- Clearly Defined Harvest Strategies - including reference points AND decision rules
- Co-Management approaches involving key stakeholders; effective engagement with stakeholders; buy-on by stakeholders
- Shared Vision, Respect, Cooperation

The background of the slide is a photograph of a sunset. The sky is a mix of orange, red, and purple, with some dark clouds. The sun is low on the horizon, creating a bright glow. In the foreground, there is a dark silhouette of a mountain range. The water in the foreground is dark and reflects the colors of the sky.

***“THE SECRET OF LIFE IS BALANCE,
THE ABSENCE OF BALANCE IS LIFE’S
DESTRUCTION”***

***The Challenge: Finding the balance between
conventional fisheries management approaches and
the needs of small scale, developing-country
fisheries***