

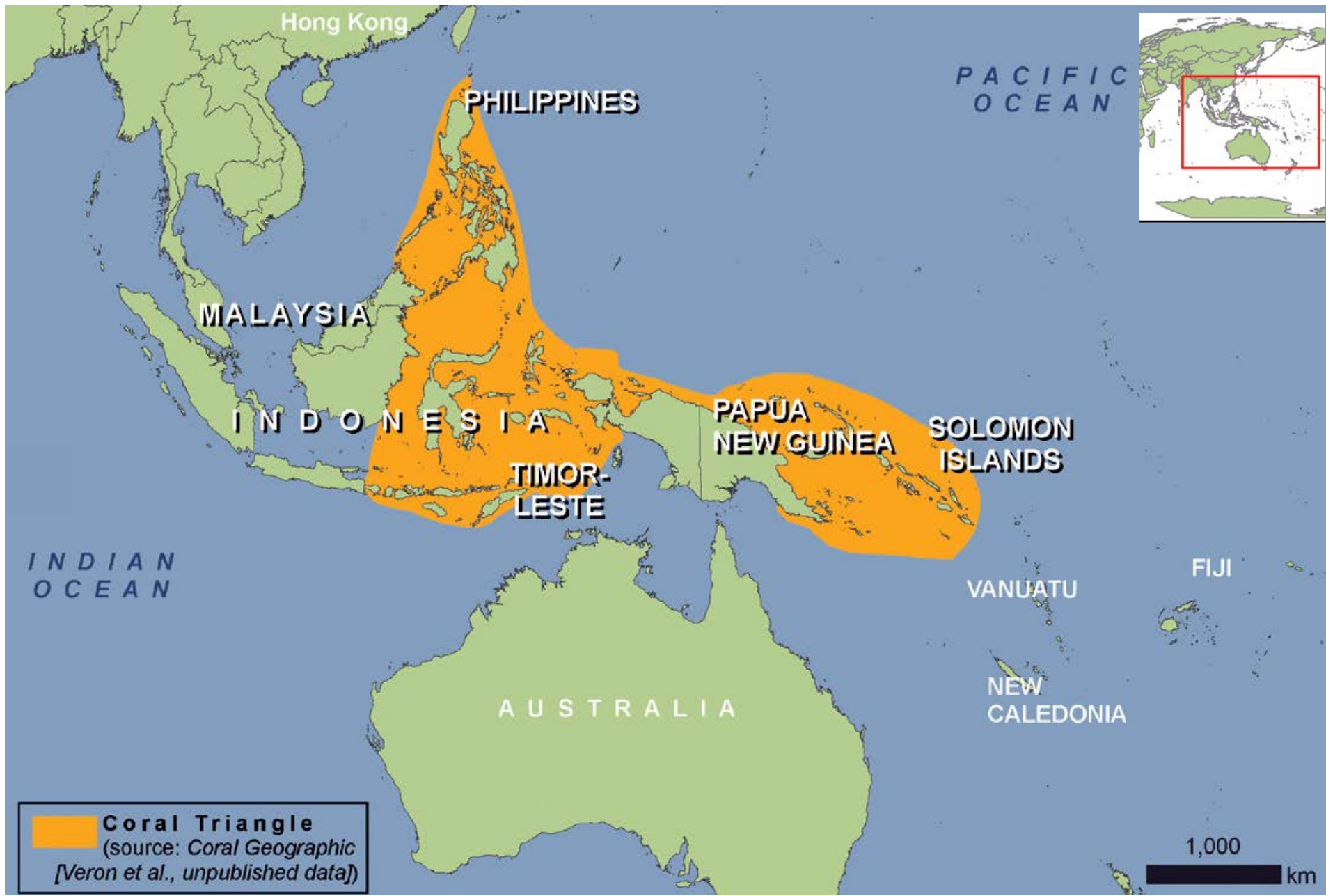


# A role for financed Marine Managed Areas and Tenure Systems in supporting fishery recovery and securing fish for food

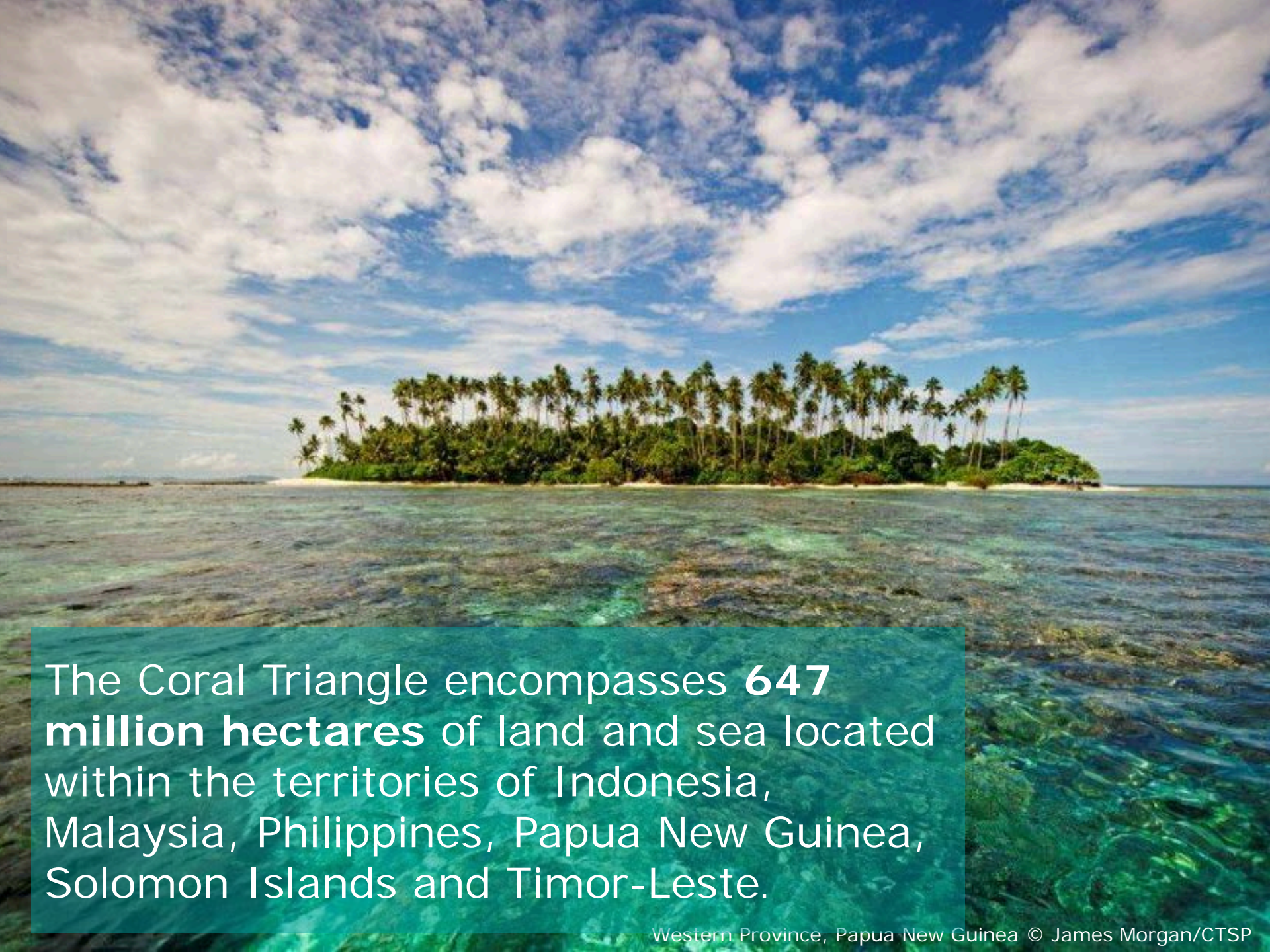
Geoffrey Muldoon, WWF Coral Triangle Program



# The Coral Triangle





A photograph of a tropical island in the Western Province of Papua New Guinea. The island is covered in dense green vegetation and tall palm trees. It is surrounded by clear, shallow water with visible coral reefs and sandy patches. The sky is blue with scattered white clouds.

The Coral Triangle encompasses **647 million hectares** of land and sea located within the territories of Indonesia, Malaysia, Philippines, Papua New Guinea, Solomon Islands and Timor-Leste.



More than **120 million people** living in coastal areas depend on the Coral Triangle's resources for food, income and their way of life.





## Our continued investment in the Coral Triangle to ensure?

- More effectively conserved & managed marine systems to ensure livelihoods and marine biodiversity
- More sustainably managed seascapes integrating biodiversity conservation with improved/sustainable fisheries management
- Innovative solutions for rebuilding/ protecting fish stocks with RBM & habitat conservation that benefit coastal communities





The Live Reef Food Fish  
from the Coral Triangle  
generates > **US\$800M** in  
retail trade annually





# Lessons learnt from Live Grouper trade







## Collaborative management (RBM and CB and PPP)

Pilot RBM strategies to grant access rights to individuals or collective groups to fish in a particular place at a particular time managing access while promoting sustainable stocks.

## Restructure supply chains

Engage seafood and tourism sector in design, management, and financing of MPAs and sustainable fishing initiatives in exchange for access.

## MPA design

Advising governments and creating MPAs not just for marine biodiversity but also to maximize fisheries production.



# Recovering a Tropical Reef Fishery

## Marine Conservation Agreement in Koon, East Seram



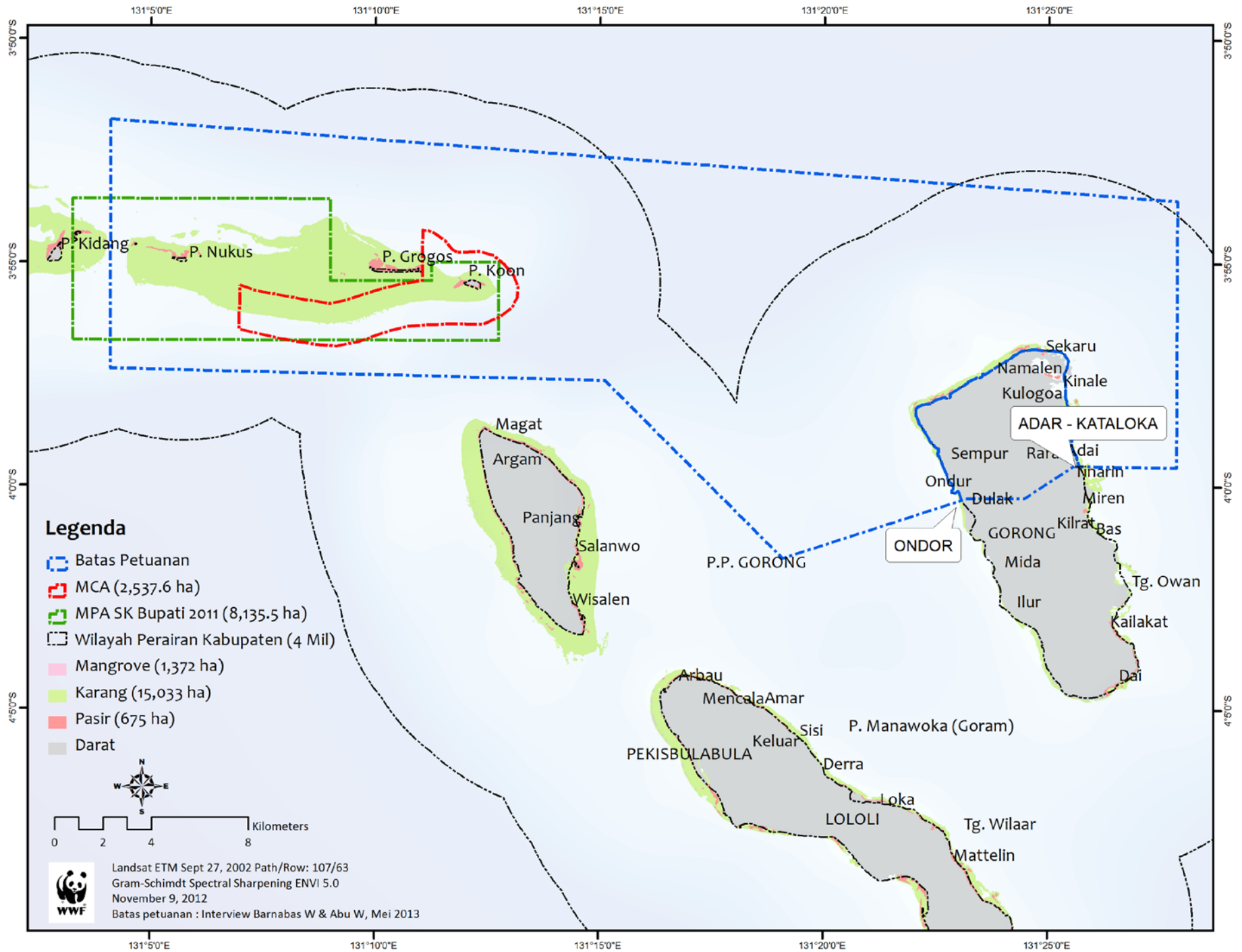
-  Marine Conservation Agreement
-  Proposed Marine Protected Area
-  Area influenced by Koon MCA
-  Seram Bagian Timur



Source:

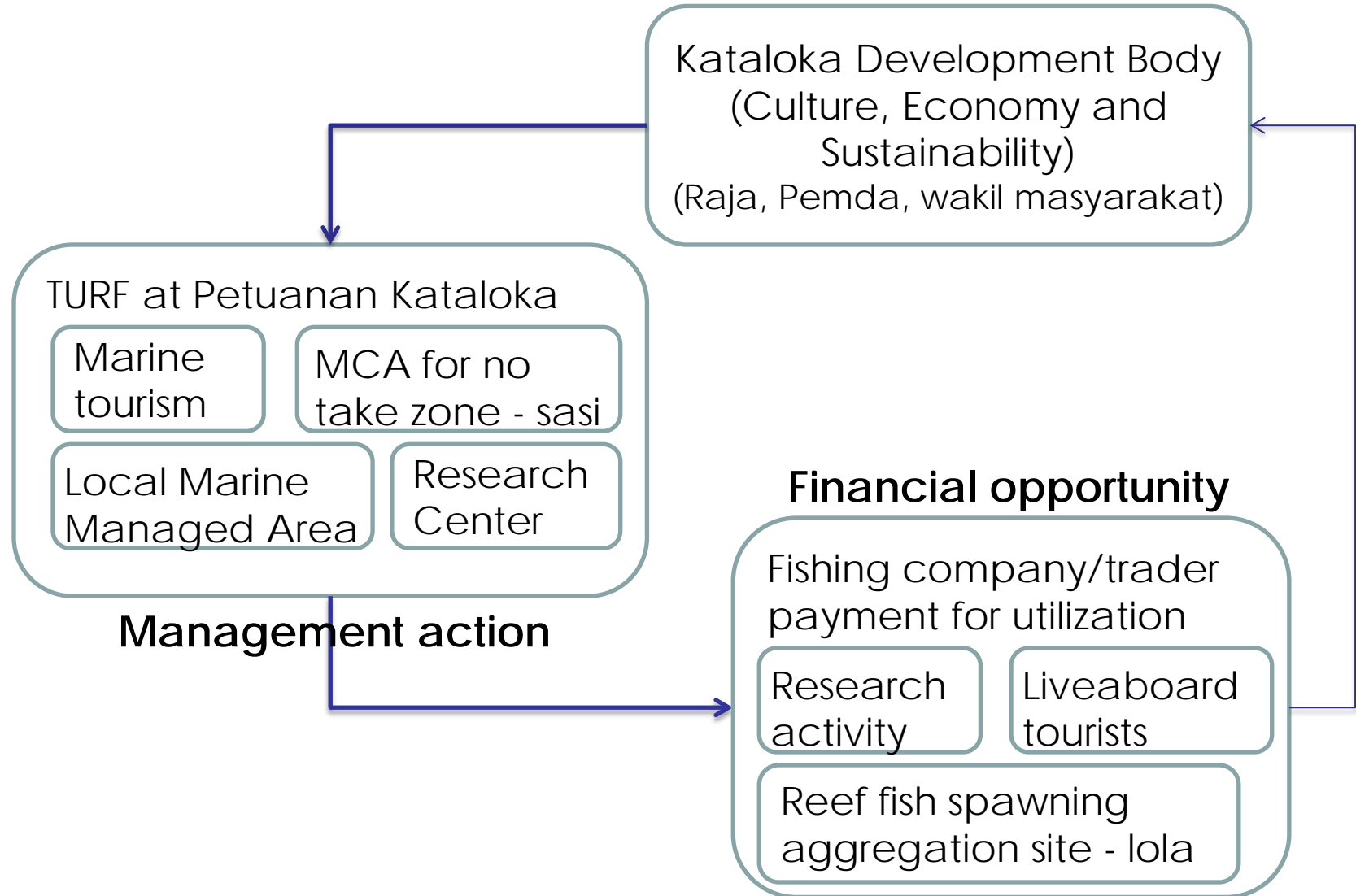
1. Head of East Seram District Decree No 523/189/KEP/2011
2. Mous et al., 2011, Concise report on a survey of the reefs around Koon island, Maluku, Indonesia, towards conservation of a reef fish spawning aggregation
3. Landsat7 ETM+, acquisition date on 27 September 2002. Courtesy of the U.S. Geological Survey
4. Indonesian Basemap year 2008





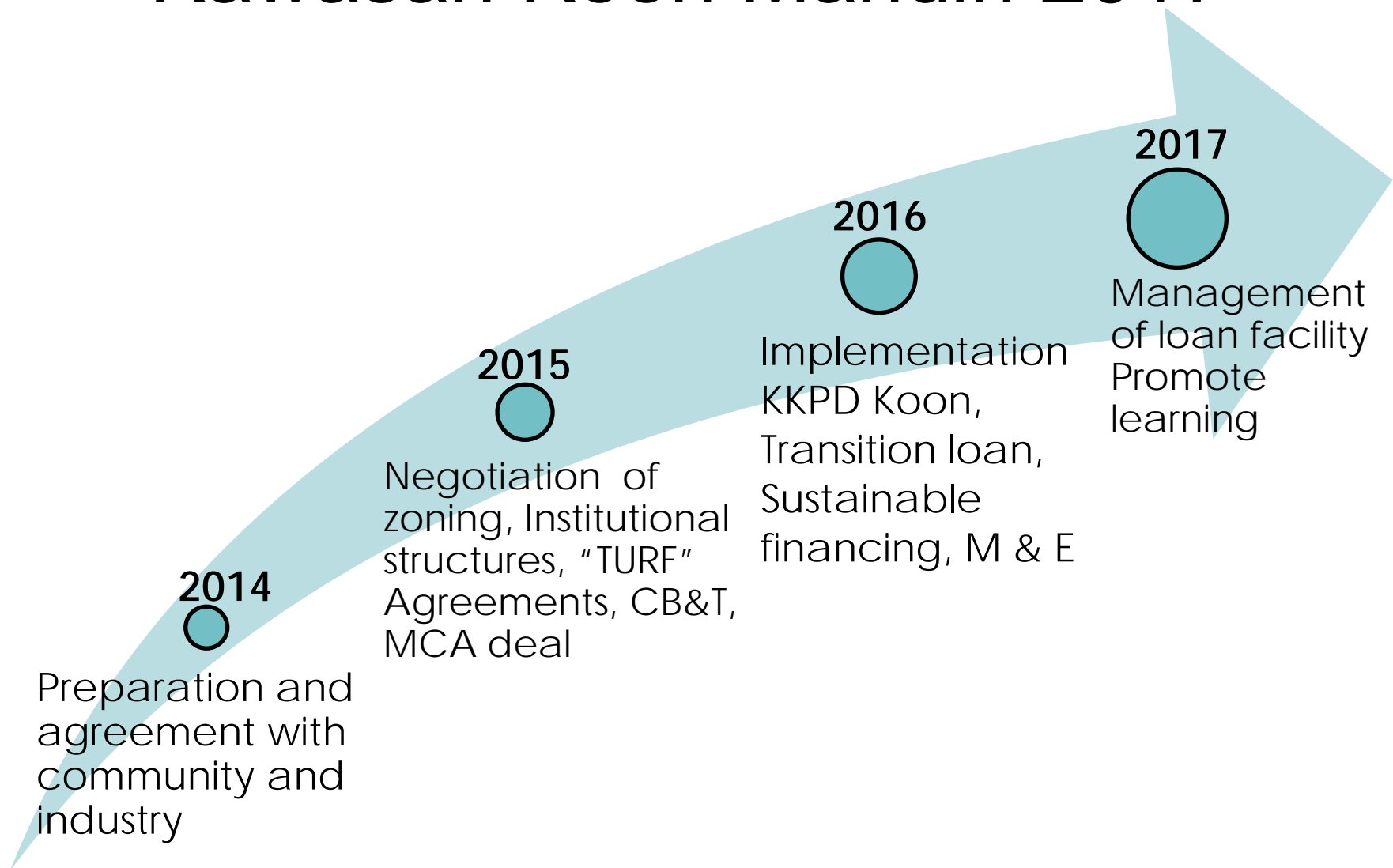


# Pengelolaan Perairan Kawasan Koon (Koon Aquatic Management Area)





# Roadmap Pengelolaan Perairan Kawasan Koon Mandiri 2017





# Risks and Enabling Conditions

- **Biomass and Production Risk: Inaccuracies in Biomass (20%) and stock recovery (10%) estimates** <sup>1</sup>.
- **Regulatory Risk:** Infractions leading to overfishing, unauthorized access. Worst case scenario would be stock collapses and loan cannot be repaid.
- **Market and price Risk:** “No” product premium, changes in market demand that perversely impact on fisher behaviour
- **Natural events Risk:** Climate change influencing species composition and reproduction rates (negative or positive)
- **Financial Risk:** Rising fuel prices could increase operating expenses, reduce fleet capacity and/or shift effort
- **Additional Income Opportunities:** Loss of alternative revenue sources (e.g. tourism, aquaculture) <sup>2</sup>

<sup>1</sup> Modeling underway to assess management unit and recovery trajectories

<sup>2</sup> Needs to be factored into financial projections as part of debt reduction

# Summary

- Reef fish used as illustrative example for establishing Rights Based Management approach (TURFs)
- Strong recovery potential due to high intrinsic population growth and high resilience to fishing mortality
- 15 year debt offering to fund the turnaround of fisheries management unit that stabilizes overfished populations – stock levels increase by 40-45% of current levels
- Per capita annual income (after operating and debt costs) of up to between 30% - 90% of current levels
- Potential for additional income from alternate sources at community scale (i.e. tourism) to service debt / bond costs
- Loan would be managed by TURF community fishery cooperative of which WWF will be member
- Letter of comfort from Government, to provide 'risk insurance' and management planning and MCS support





# Recovering a Tropical Reef Fishery

<b>Fishery Participation</b>	<b>Grouper</b>	<b>Snapper</b>
Average Daily Catch (kg)	4.45	3.85
Total Effort (Days)	28,430	42,400
Total Catch (kg/year)	134,350	175,900
Gross Industry Revenue (USD)	2, 040,000	2,670,050

Opportunities exist to:

- Cultivate existing markets – “value-add” current prices via improved quality and markets efficiencies to attract a price premium (10-15%)
- Develop new markets for
  - Others species maximising economic value of district fisheries
  - High-end Live-aboard dive tourism



# Key Assumptions/References

- Carrying Capacity per km<sup>2</sup> is based upon MSY estimates per km<sup>2</sup> (Mous et al. 2000) using equation:  $4H_{msy} / r = K$  where  $K$  = Carrying capacity and  $r$  = intrinsic rate of growth.
- Current Spawning Biomass is determined based on revised estimates of kilograms of grouper per hectare scaled up to km<sup>2</sup> (Great Barrier Reef Outlook Report (2009))
- Future prices determined by current market prices for:
  - Grouper – 150,000 IDR or USD15.75
  - Snapper – 90,000 IDR or USD9.50
- Price increases based on market trend data (Hong Kong Agriculture, Fisheries and Conservation Department)
- Cost of reducing fleet capacity is equal to lost revenues from retiring effort. Subsidy paid at 100% in Year 1 and 2, 50% in Year 3 and 25% in Year 4 and 5

# Roadmap Pengelolaan Perairan Kawasan Koon Mandiri 2017

## Penyiapan - 2014

- Pembentukan lembaga pengelola kawasan
- Kesepakatan dengan perusahaan liveaboard dan universitas
- Inisiasi pembentukan research center
- Kesepakatan MCA
- Kesepakatan MCA

## Pelaksanaan - 2015

- Pelatihan kemandirian masyarakat
- Kesepakatan dengan perusahaan perikanan
- Lembaga pengelola beroperasi
- Pembentukan research center
- Kesepakatan MCA

## Pra Mandiri - 2016

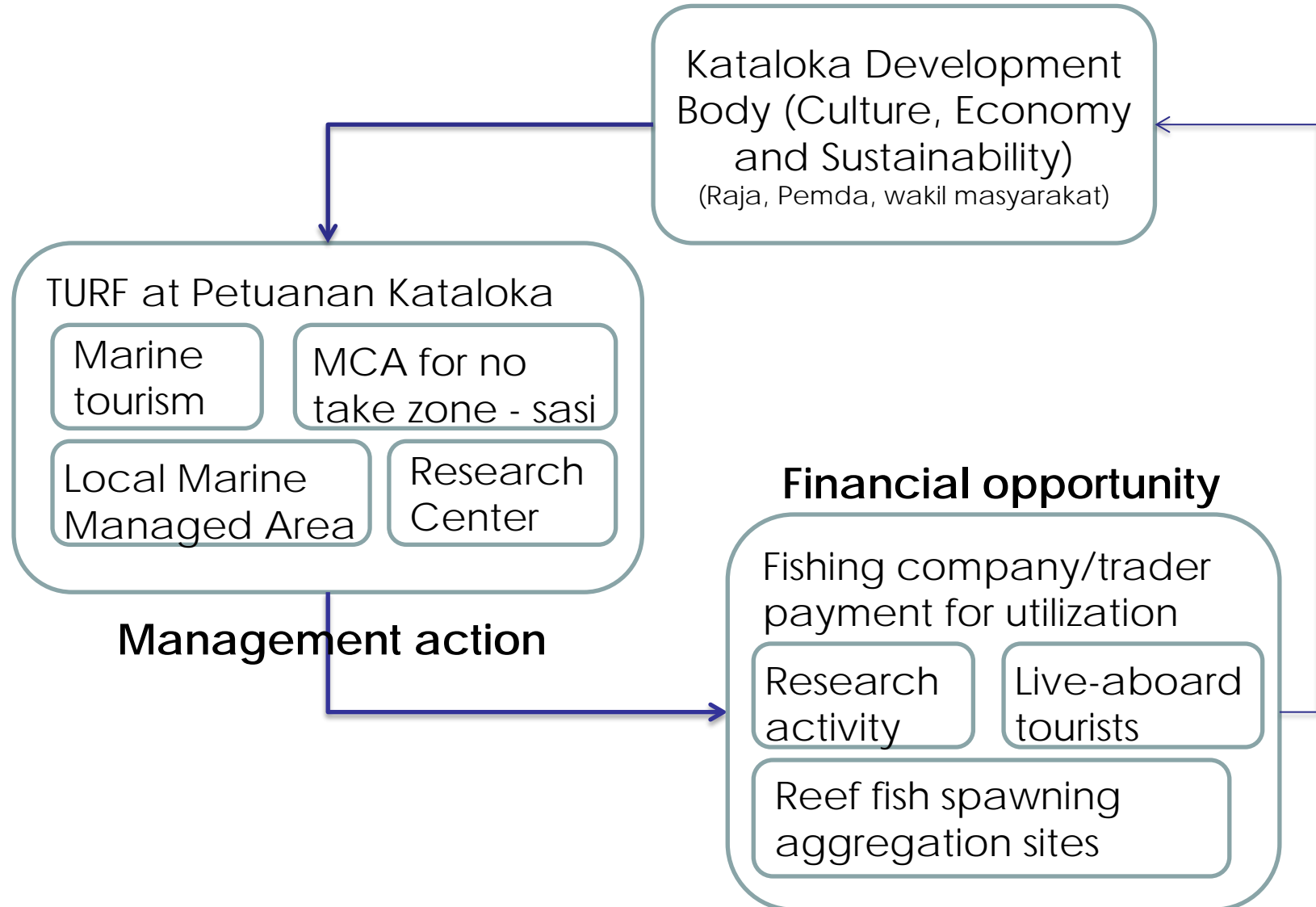
- Pemantauan dan evaluasi
- Penetapan KKPD Koon dan Neiden
- Sustainable financing berjalan

## Mandiri – 2017

- Mempromosikan pembelajaran



# Pengelolaan Perairan Kawasan Koon (Koon Aquatic Management Area)



## Business & Industry Transformation & Innovation

Tools & approaches to deliver  
and demonstrate EAFM:

- Fisheries & Aquaculture Improvement Projects
- Marine Managed Areas for Fisheries, Food Security
- Rights Based Management
- Best Practices
- Responsible Marine Tourism Standards

