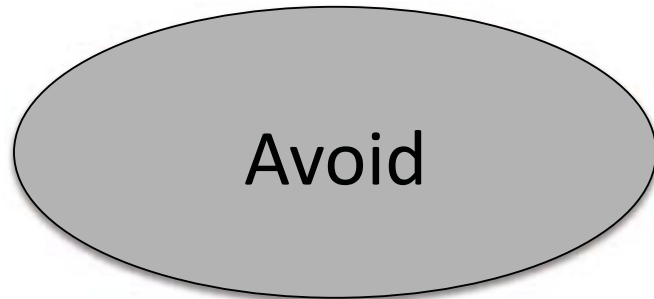


Principles, practices and stakeholder expectations for reducing impacts of oil palm on the environment

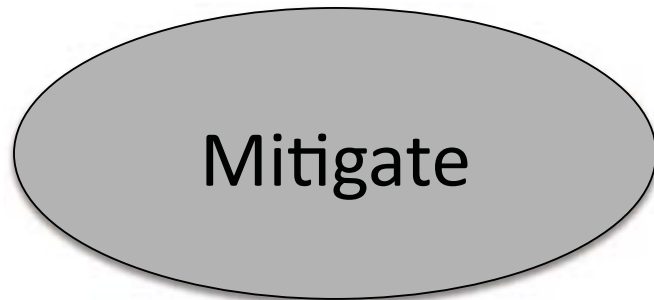
Gary D. Paoli & Philip L. Wells



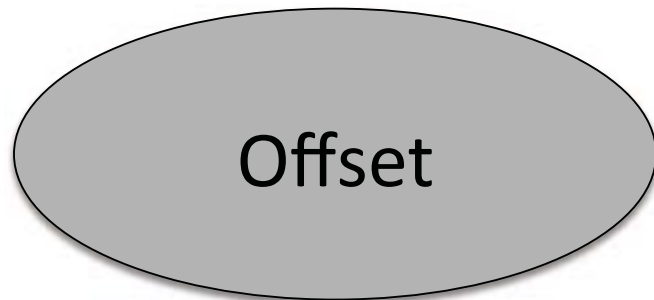
Reducing Impacts of Oil Palm



How do we identify and protect 'High Risk' areas that should not be developed for OP?



How do we minimize impacts where OP will be developed?



How (should?) we offset impacts that cannot be mitigated where OP is developed?

Indonesia



- Leading OP producer in the world
- Potential to expand rapidly
- Key to meet surging global demand
- GOI & investor support for expansion

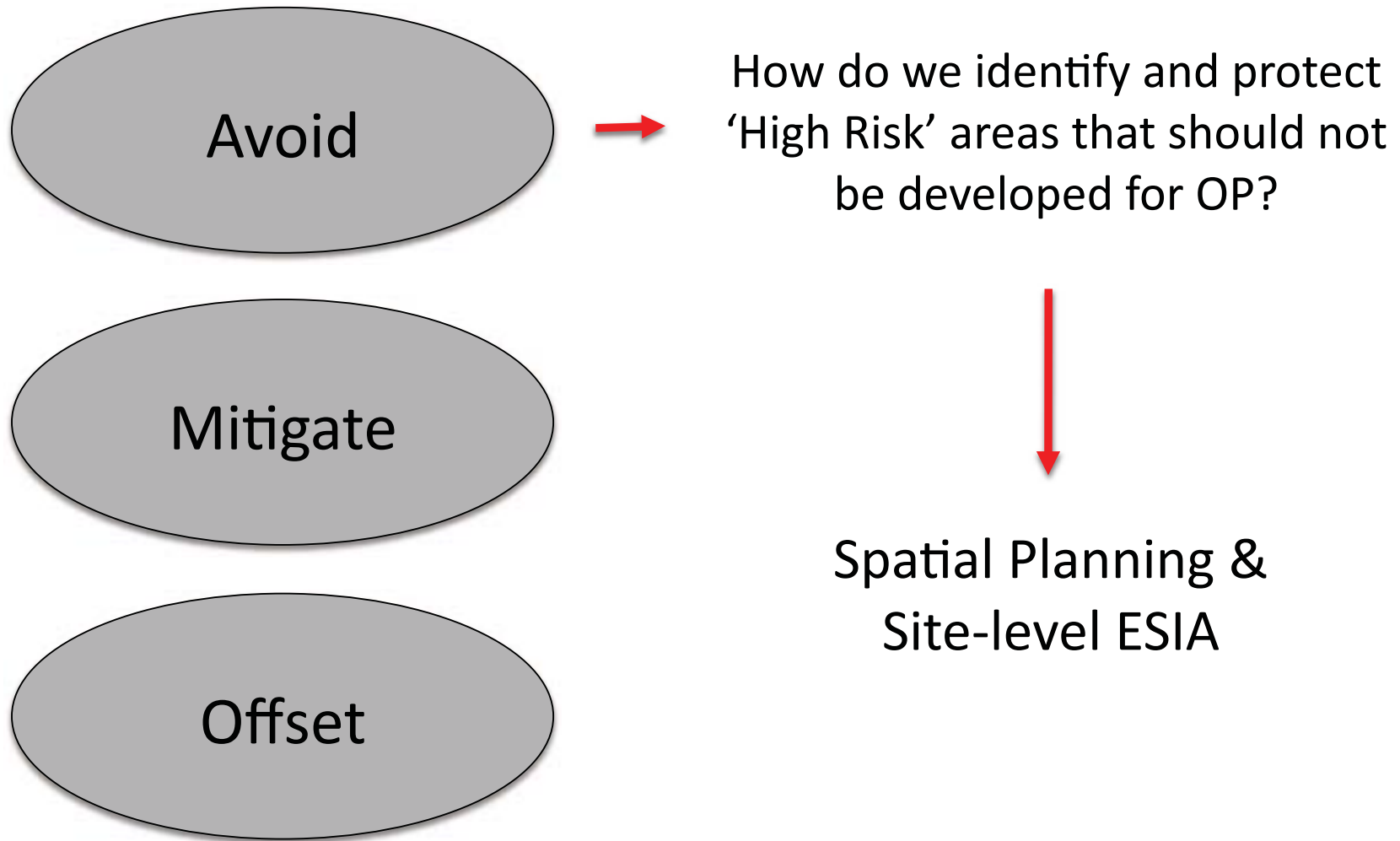
Main Thematic Threads

Vision  Objectives & Targets

Information  Data & Knowledge

Decision Tools  Analysis & Decision Factors

Reducing Environmental Impacts of OP



Spatial Planning

Vision



Promote economic development & protect key environmental resources

Information

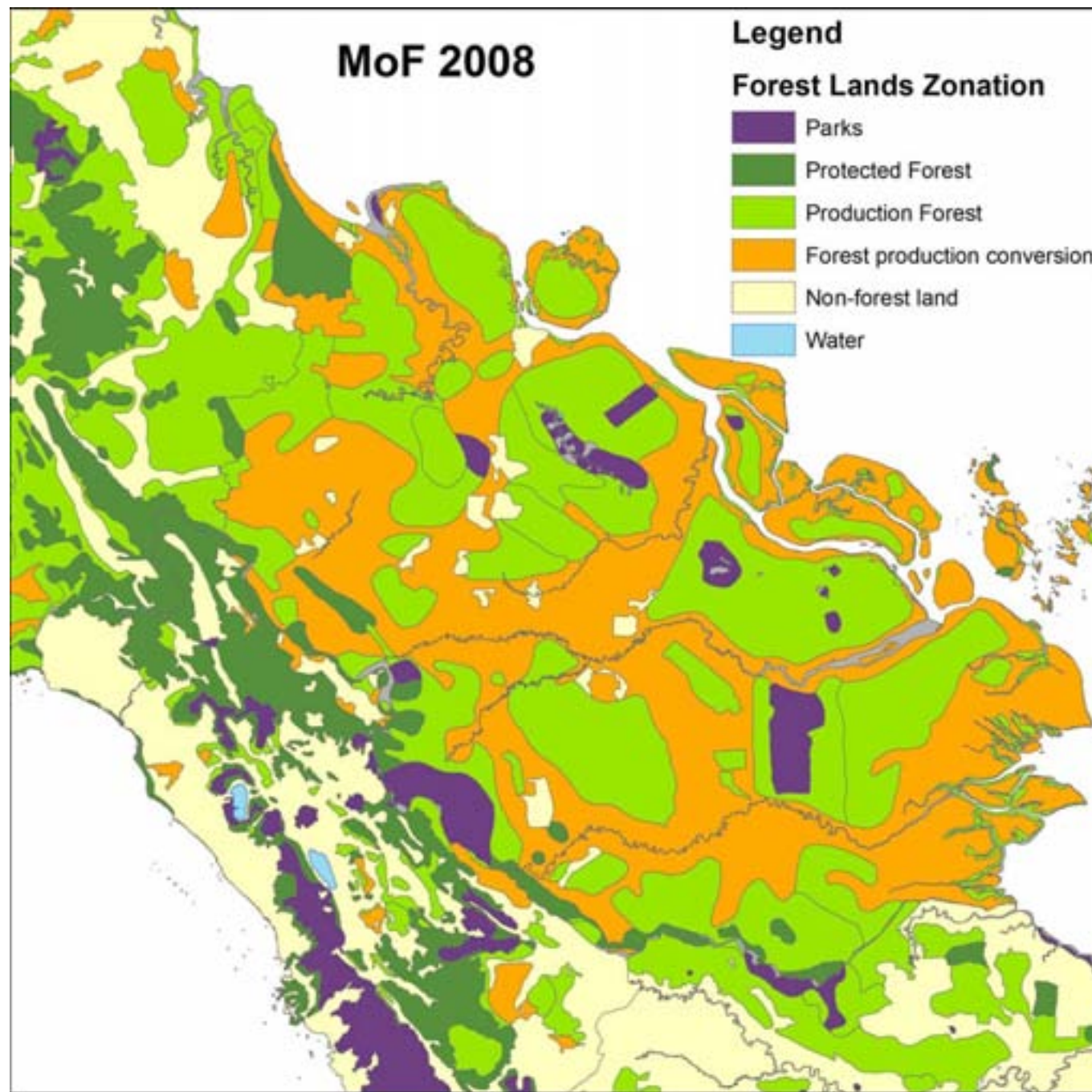


Topography, elevation, drainage, substrate, rainfall
(*but not land cover*)

Decision Tools

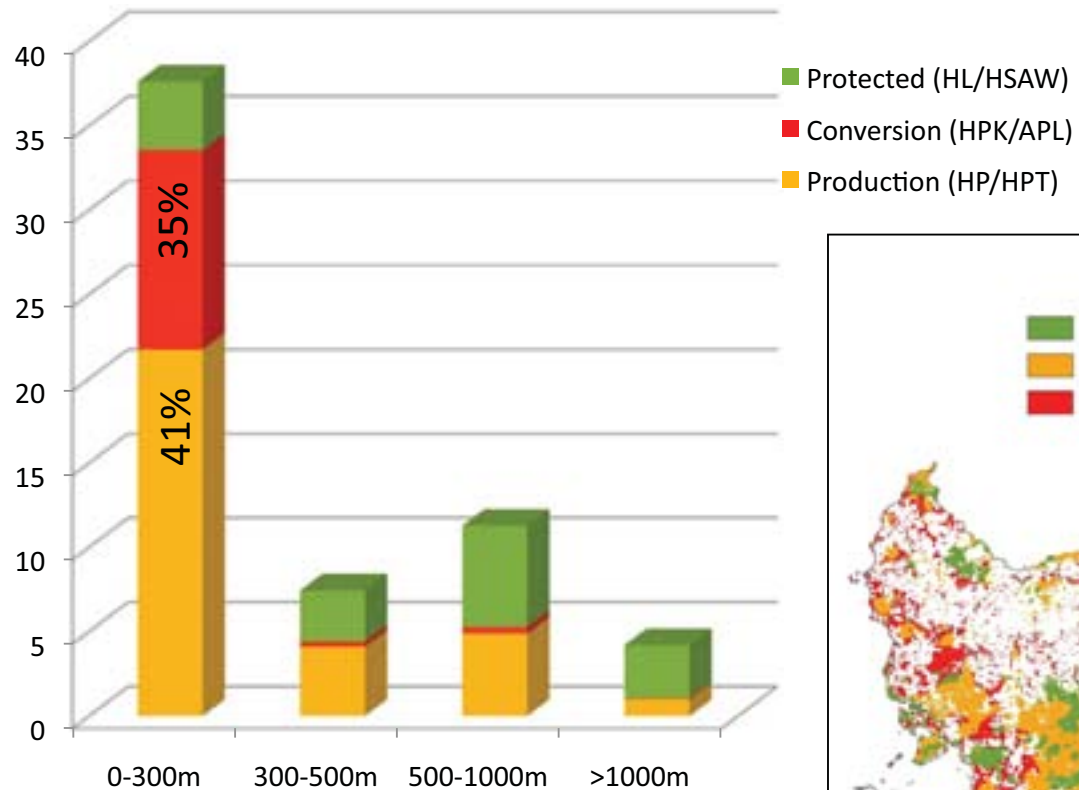


Numerical criteria plus gestalt (e.g. low lying areas near rivers = good for agriculture, known deep peat areas avoided where possible)

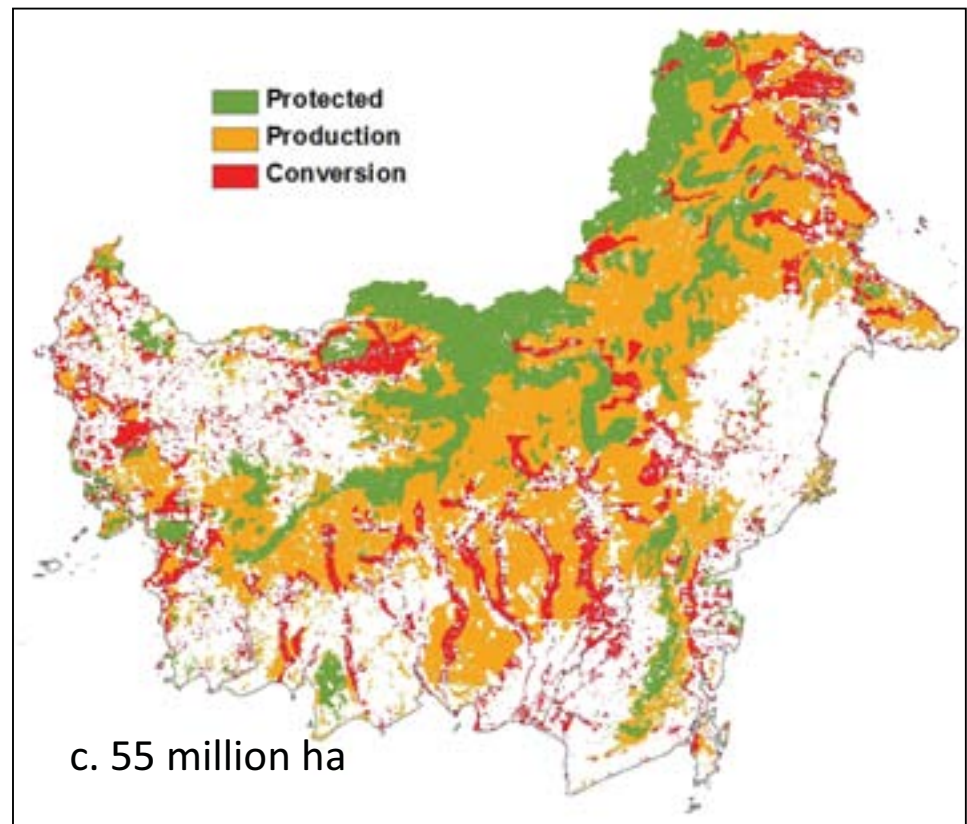


Spatial
Plan

Forest Areas at Risk for Conversion



Source: SPOT Veg 2008 – SARvision



Social & Environmental Impact Assessment

Vision



Promote sustainable development by screening (reject) or modifying operations with unacceptable risk to people & environment

Information



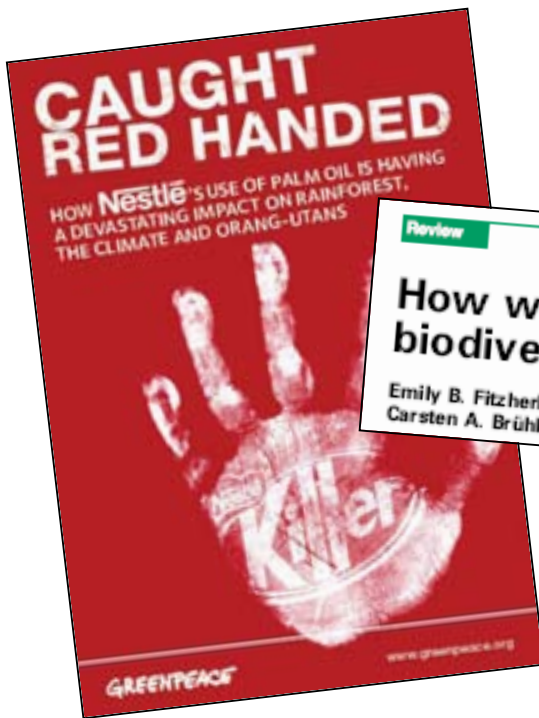
Variety of field & spatial data types

Decision Tools



Legal requirements, discussion & gestalt

*Has spatial planning plus EIA
helped to avoid environmental
impacts from OP?*



Review

How will oil palm expansion affect biodiversity?

Emily B. Fitzherbert^{1,2}, Matthew J. Struebig³, Alexandra Morel⁴, Finn Danielsen⁵, Carsten A. Brühl⁶, Paul F. Donald⁷ and Ben Phalan⁸

Cell
PRESS



POLICY PERSPECTIVE

Is oil palm agriculture really destroying tropical biodiversity?

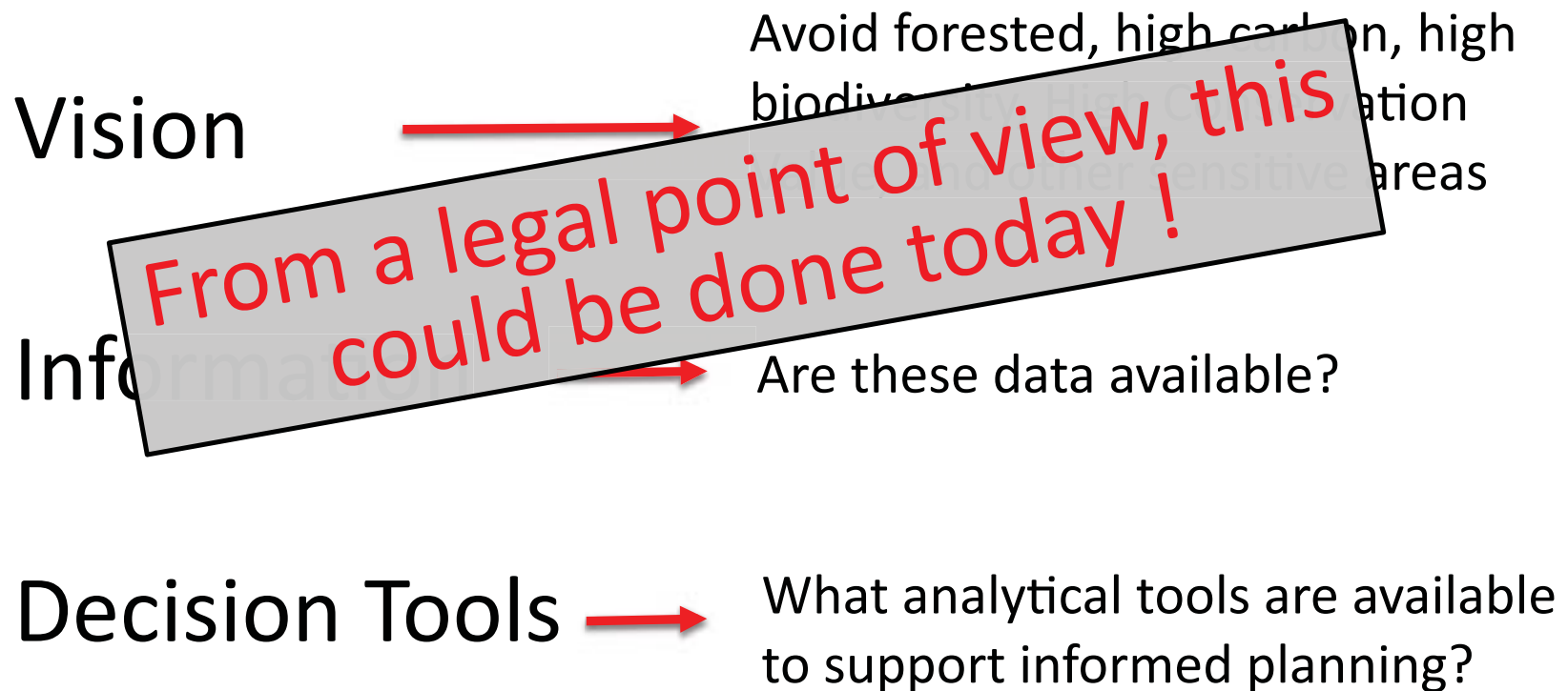
Lian Pin Koh¹ & David S. Wilcove^{1,2}

¹ Department of Ecology and Evolutionary Biology, Princeton University, 105A Guyot Hall, Princeton, New Jersey 08544, USA
² Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, NJ 08544, USA

What explains failures to date?

- Based on suitability criteria not sustainability
- Limitations of data (types & quality)
- EIA authority is decentralized (local) & decision making prone to abuse

Normative Approach to Planning



Forest Cover



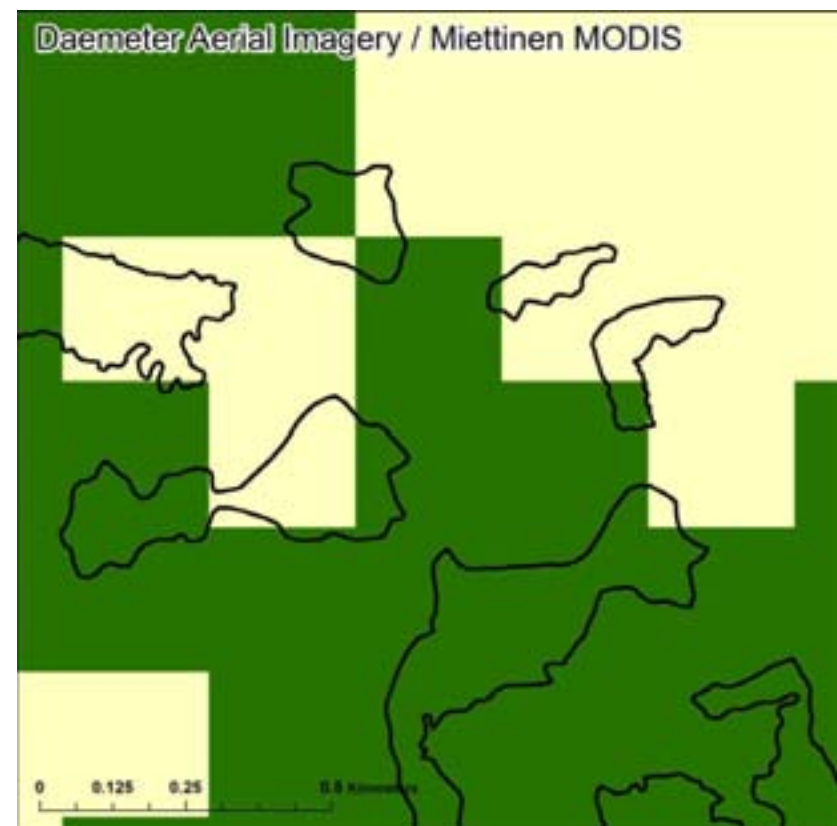
Miettinen et al. 2010 - Enhanced MODIS (ALOS + Landsat)

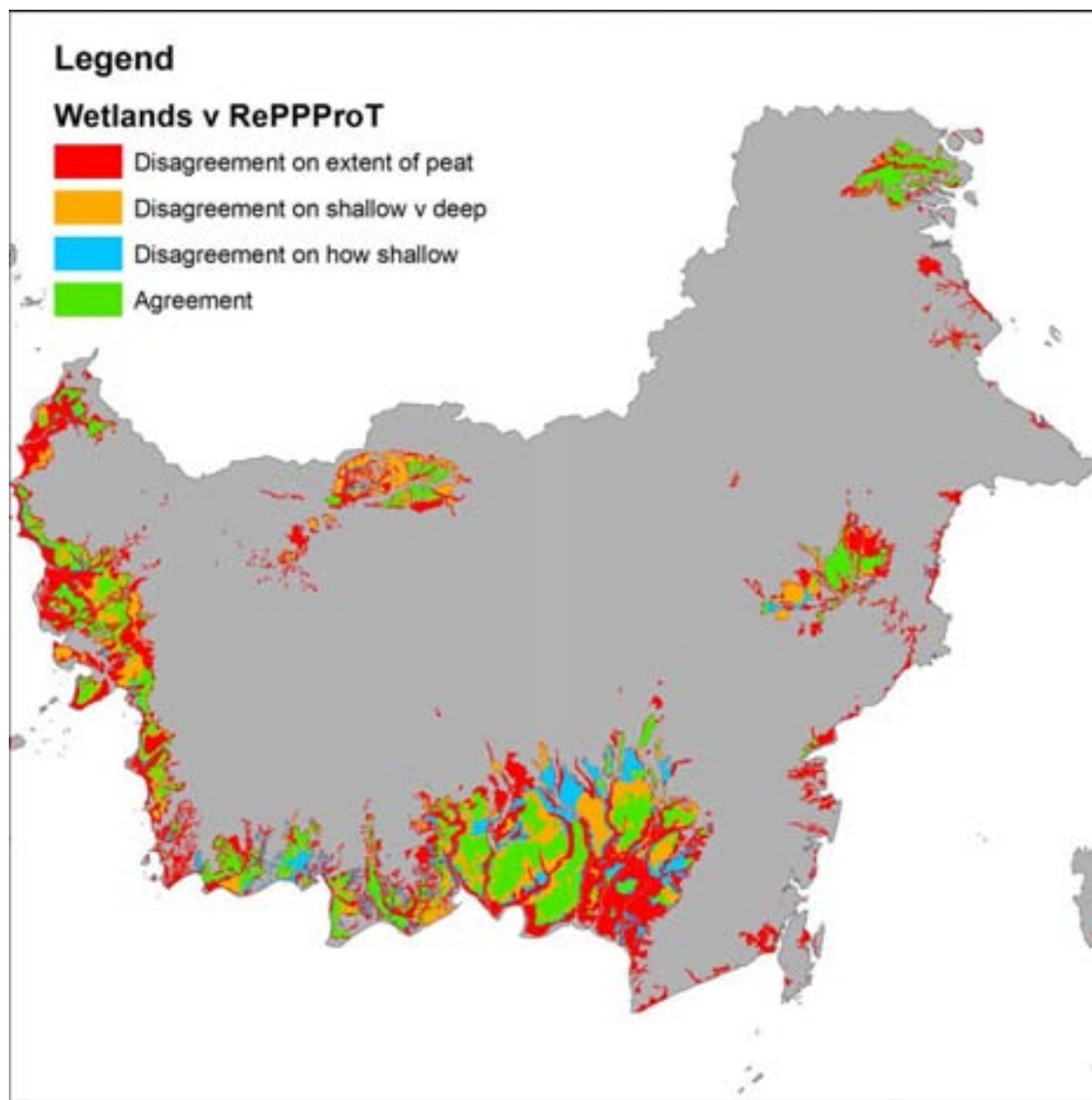
Forest Cover

Aerial photography (<1 m res)



Aerial vs MODIS

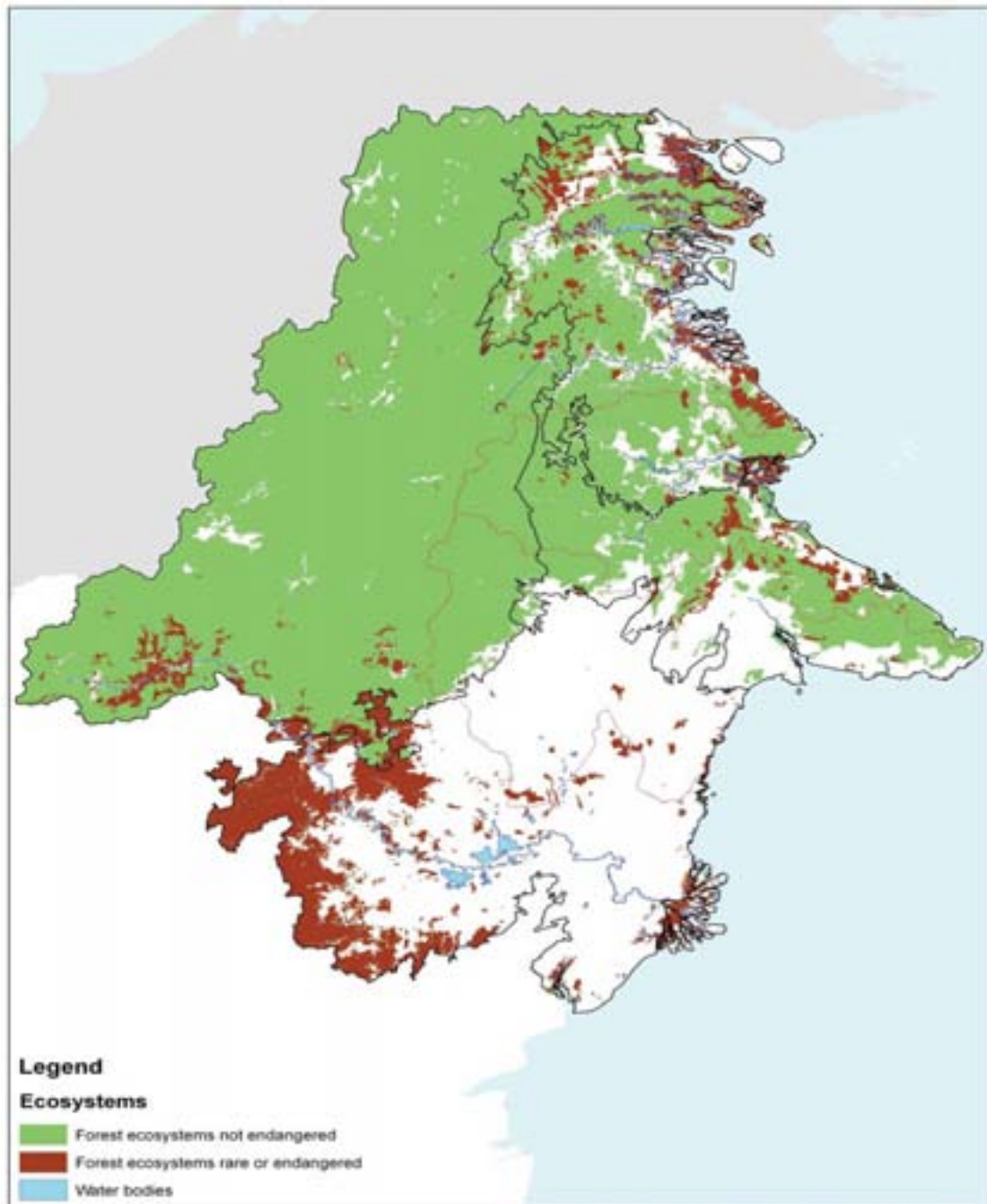




Peat
lands

High Conservation Value Areas

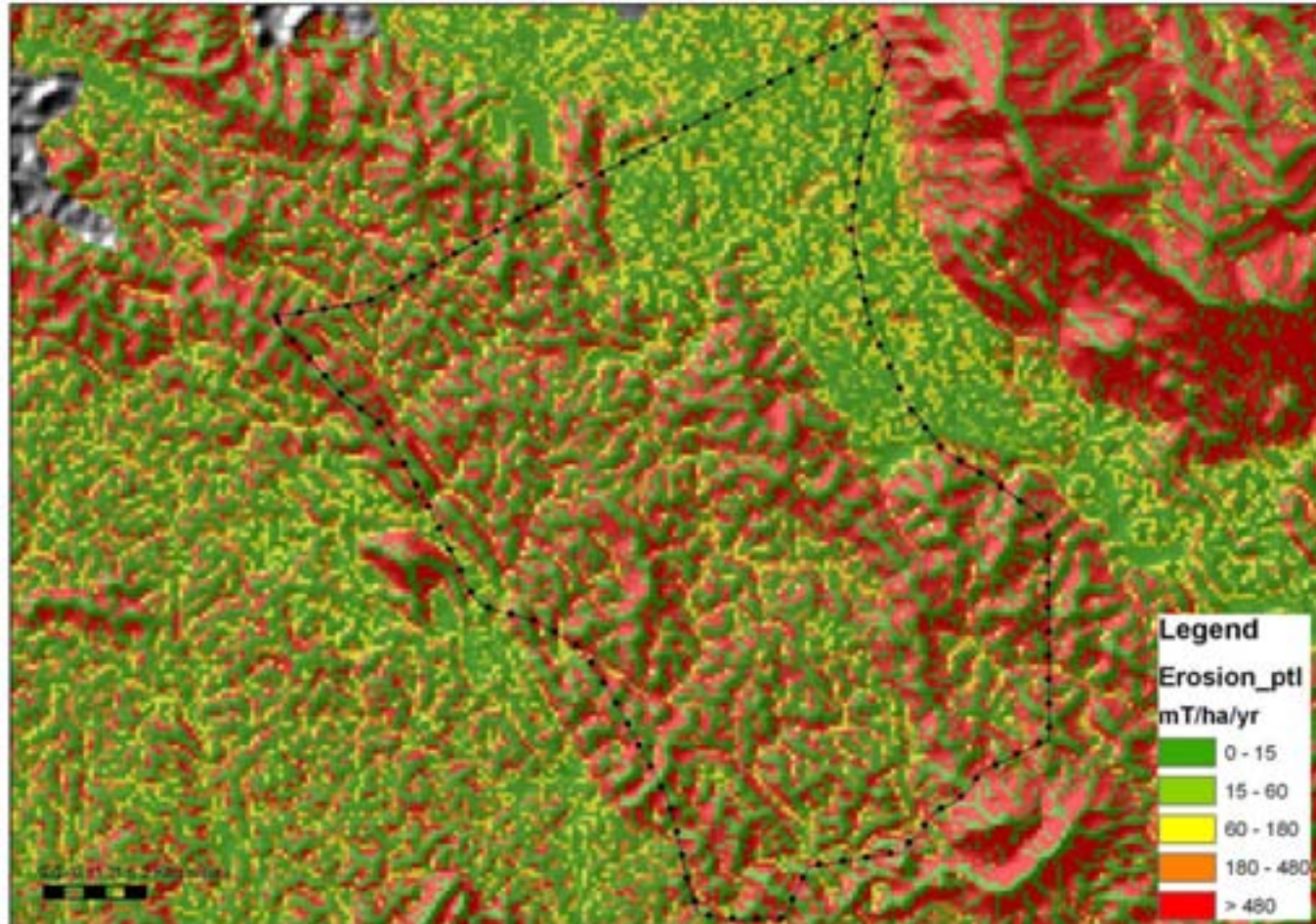
HCV 3



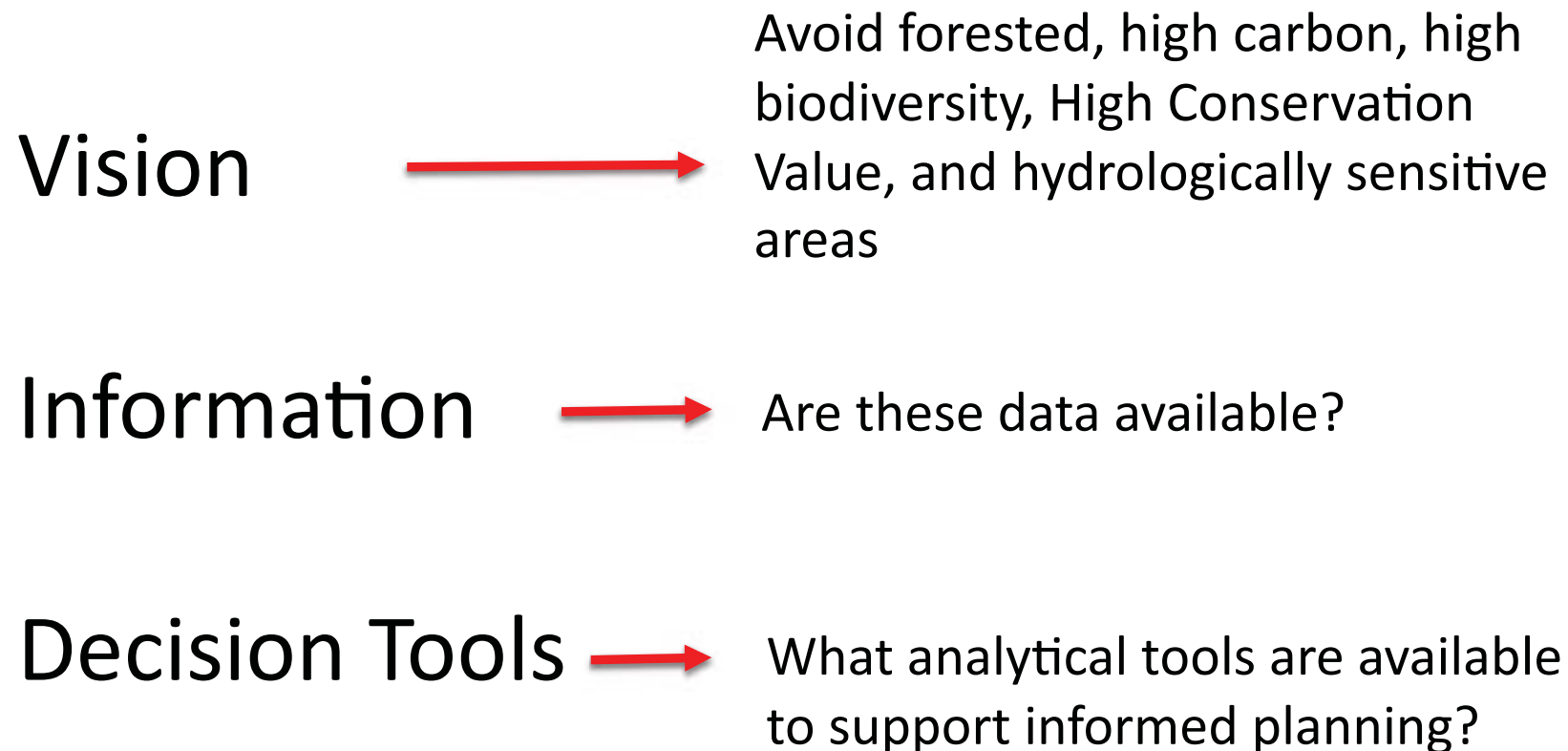
aemeter
CONSULTING

The
Nature
Conservancy
Saving the Last Great Places

Erosion Prone Areas



Normative Approach to Planning



Decision Support Tools

Koh et al. 2010

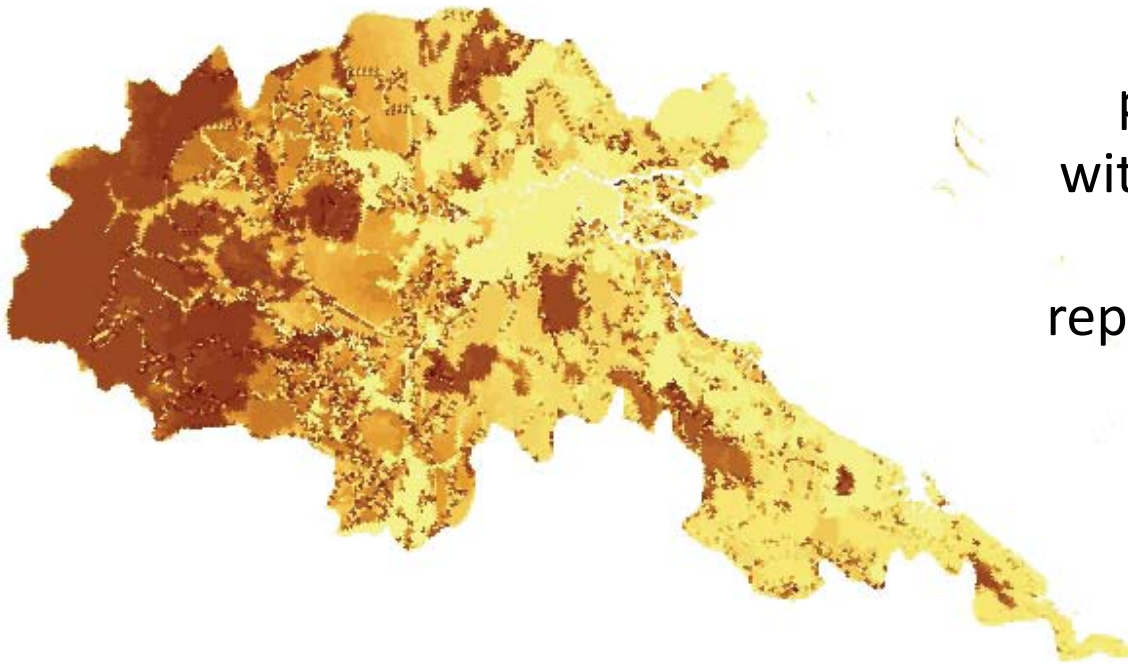
- Spatially explicit trade-off analysis model

University of Queensland

- Marxan with Zones

Marxan with Zones

University of Queensland



Create X jobs and
plant Y ha of oil palm
without exceeding Z mt
of GHG emissions or
replacing any HCV areas

Oscar Venter, Univ. of Queensland

Avoiding Impacts from OP

Opportunities

- Sustainability ethos emerging
- Rapidly growing pool of data & analytical tools
- Scope to improve ESIA for site-level screening
- Due diligence by progressive companies to screen high risk
- GOI commitment to make available 'low carbon' deforested lands

Challenges

- Forging a consensus Vision
- Balancing data coverage, resolution and cost
- Regulatory reform (peat)
- Absolute vs Relative loss
- Creating incentives to promote behaviors
- Making available 'low carbon' deforested lands

Reducing Impacts of Oil Palm

Avoid

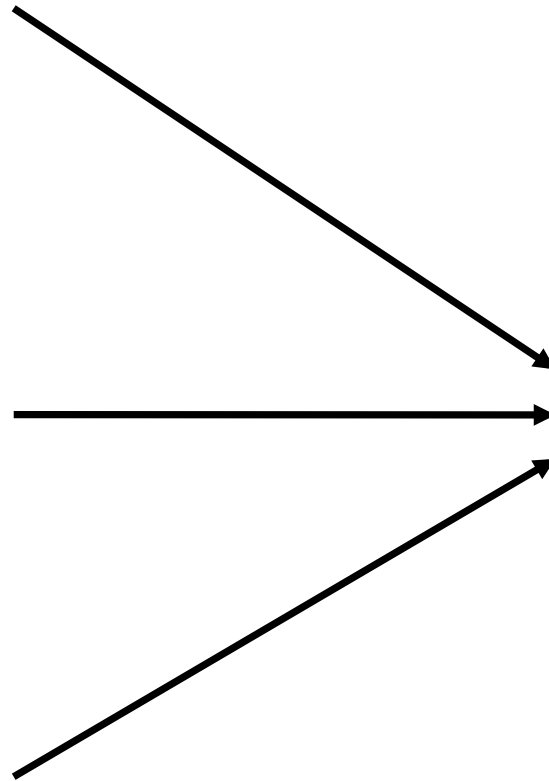
Mitigate

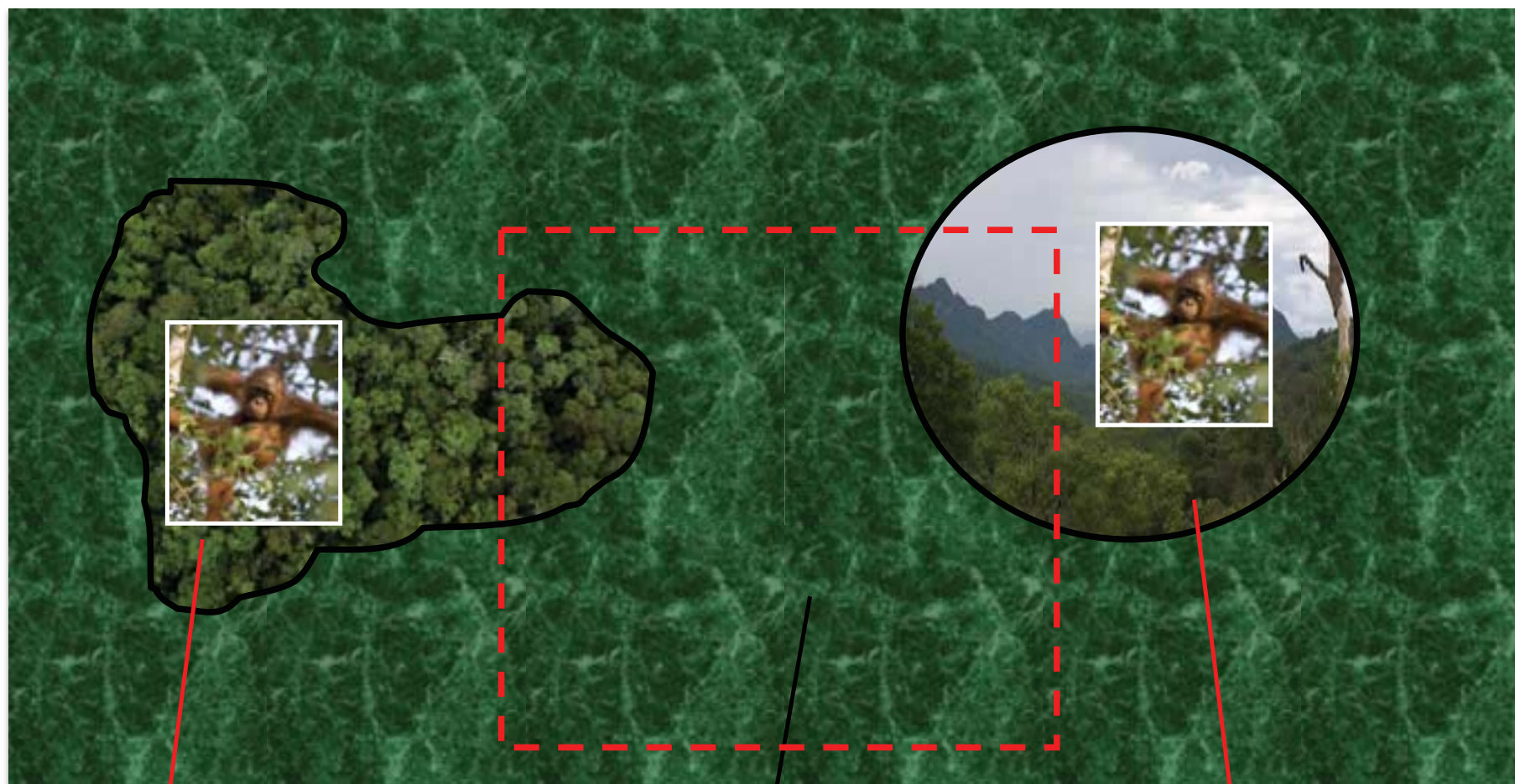
Offset



How do we minimize
impacts where OP will
be developed?

Mitigating Impacts

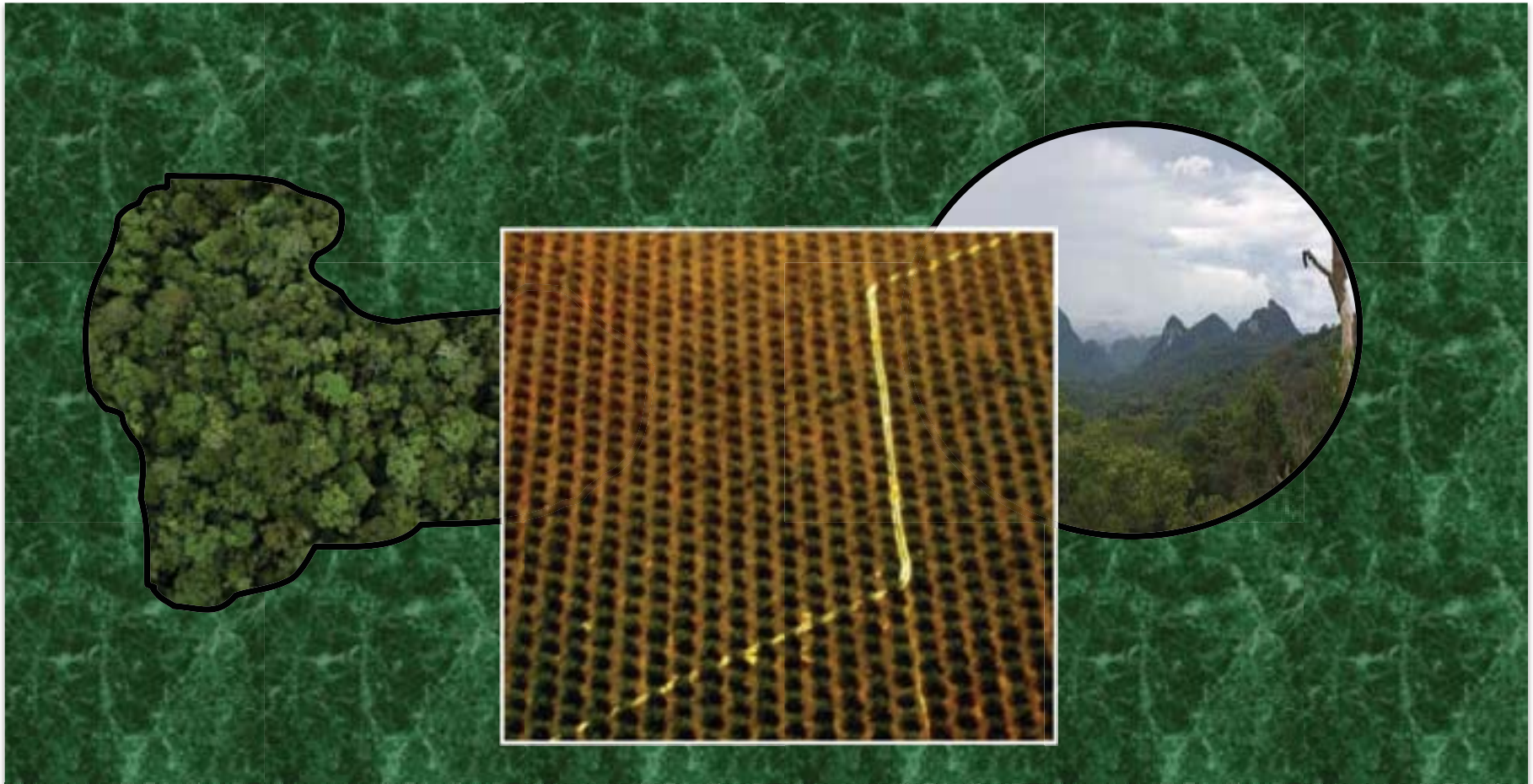




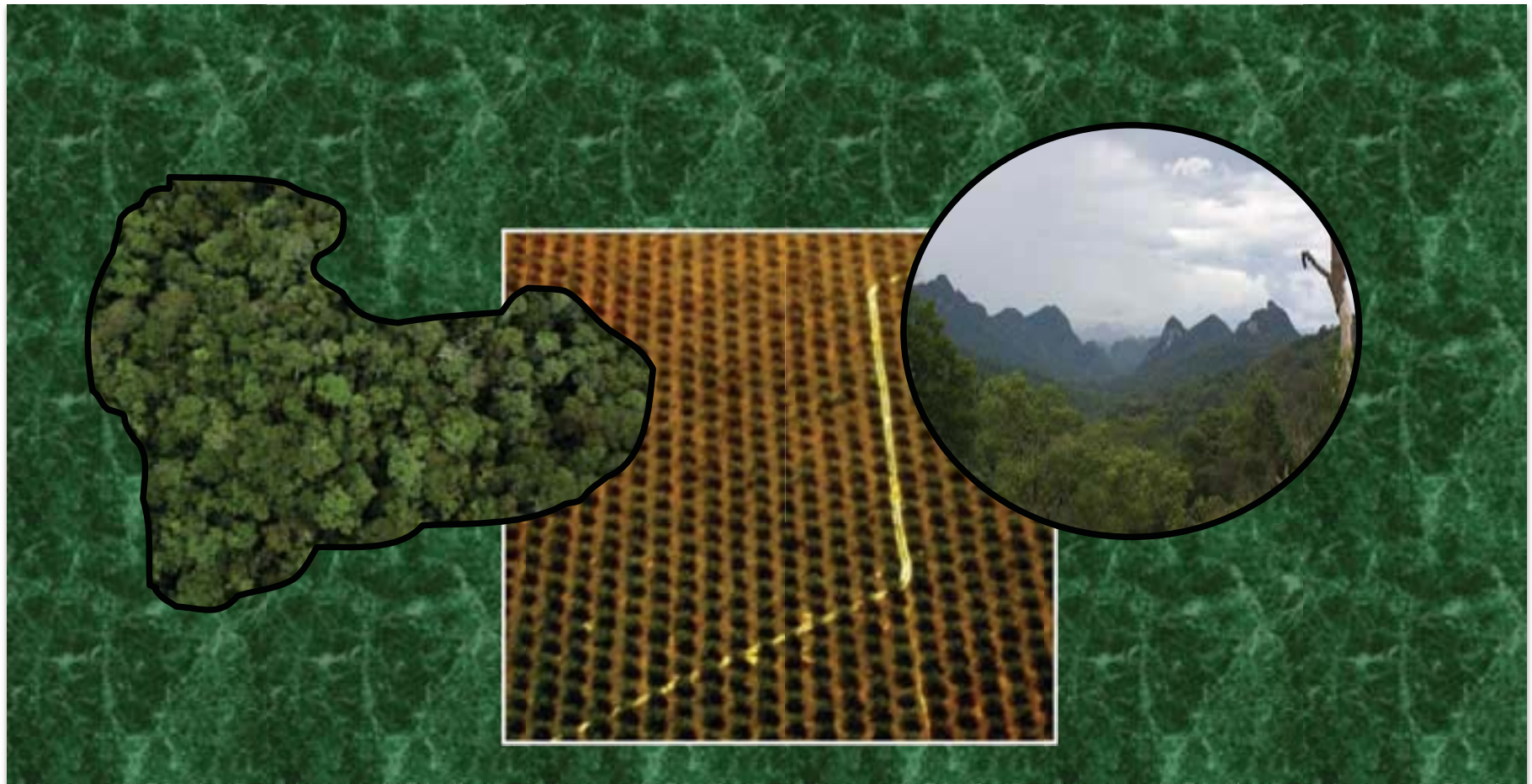
Logged over
forest

Matrix of swidden
farms & forest
patches

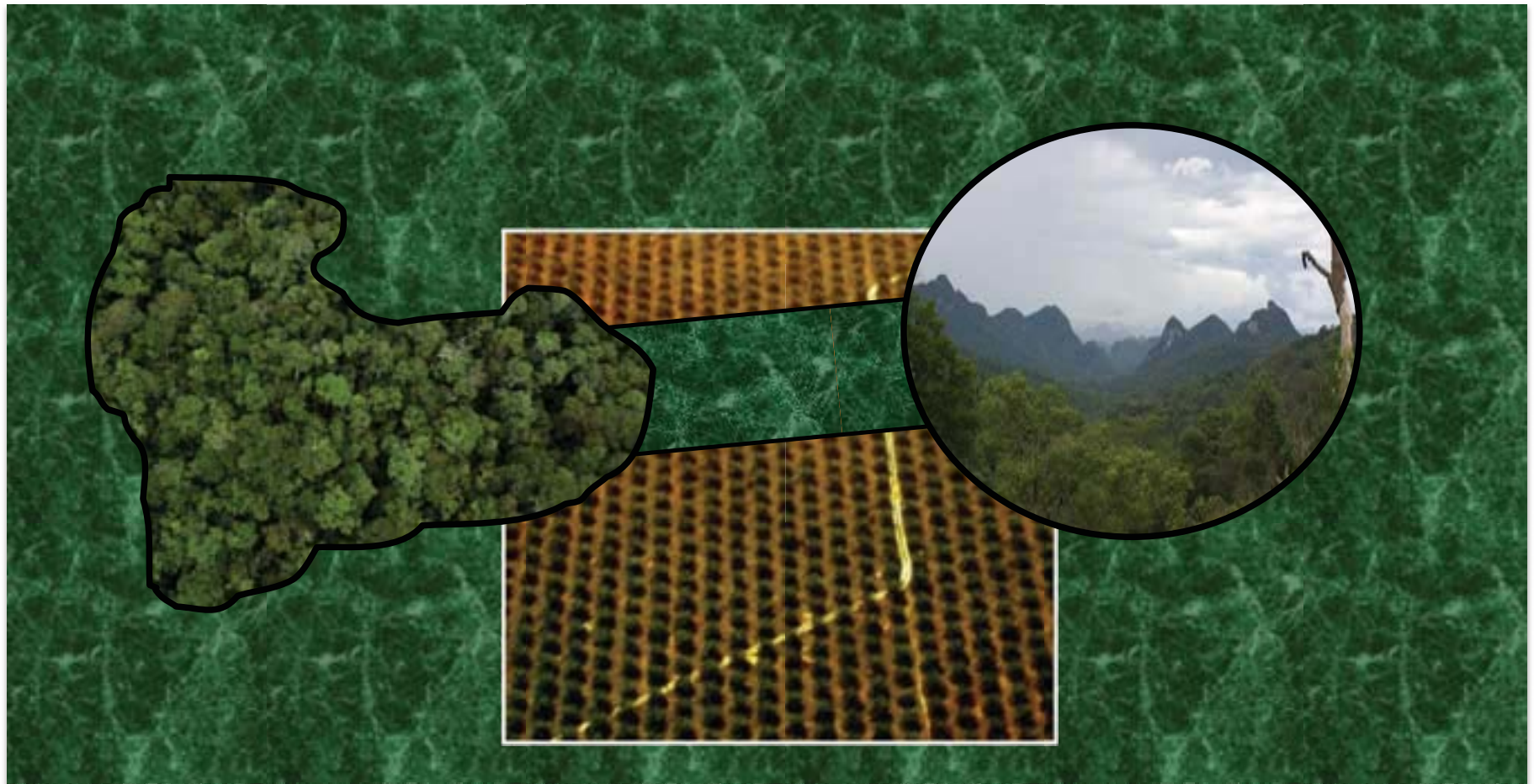
Local Community
Forest Reserve



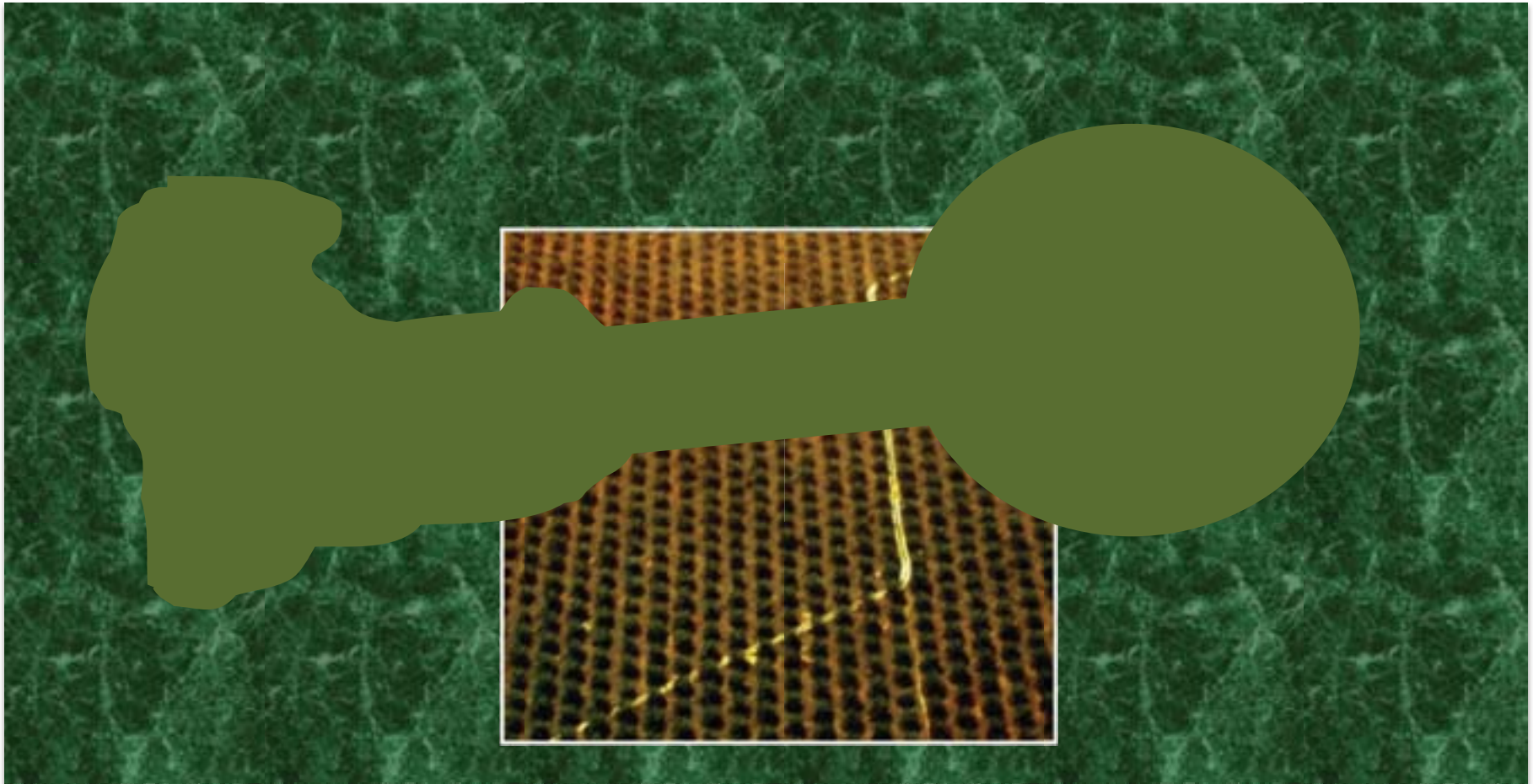
Business as Usual



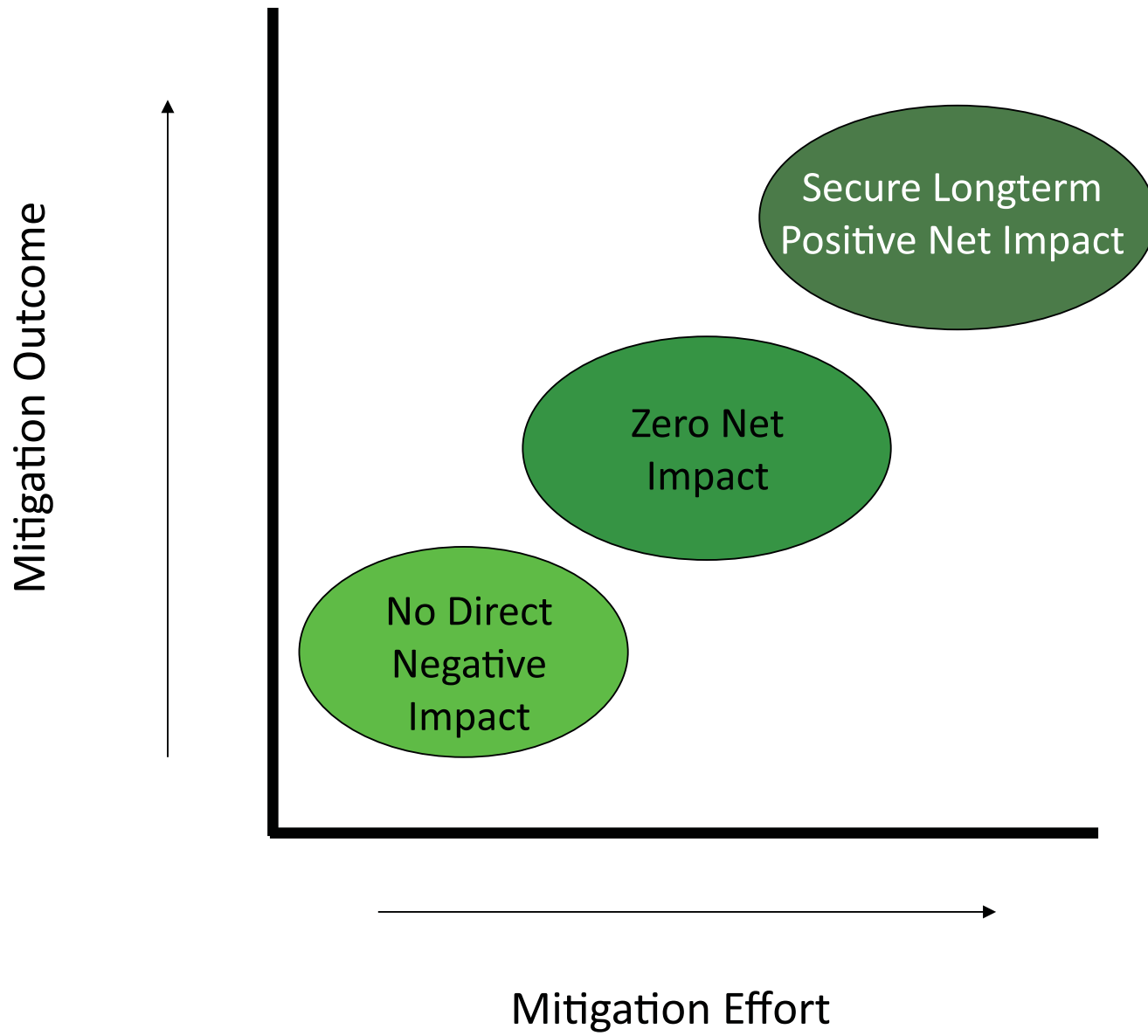
No Direct Negative Impact



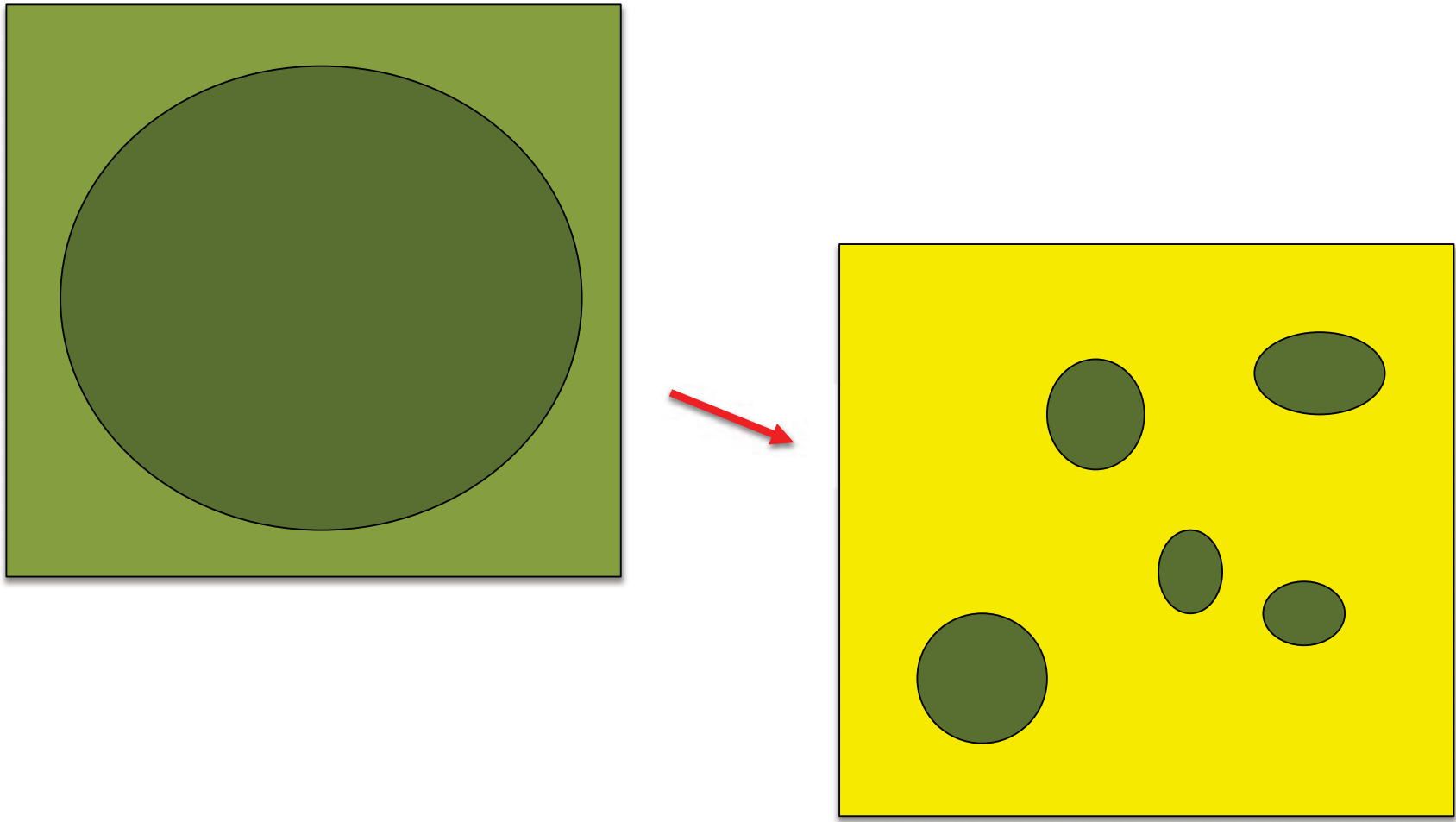
Zero Net Impact



*Secure Long Term Positive
Net Impact*



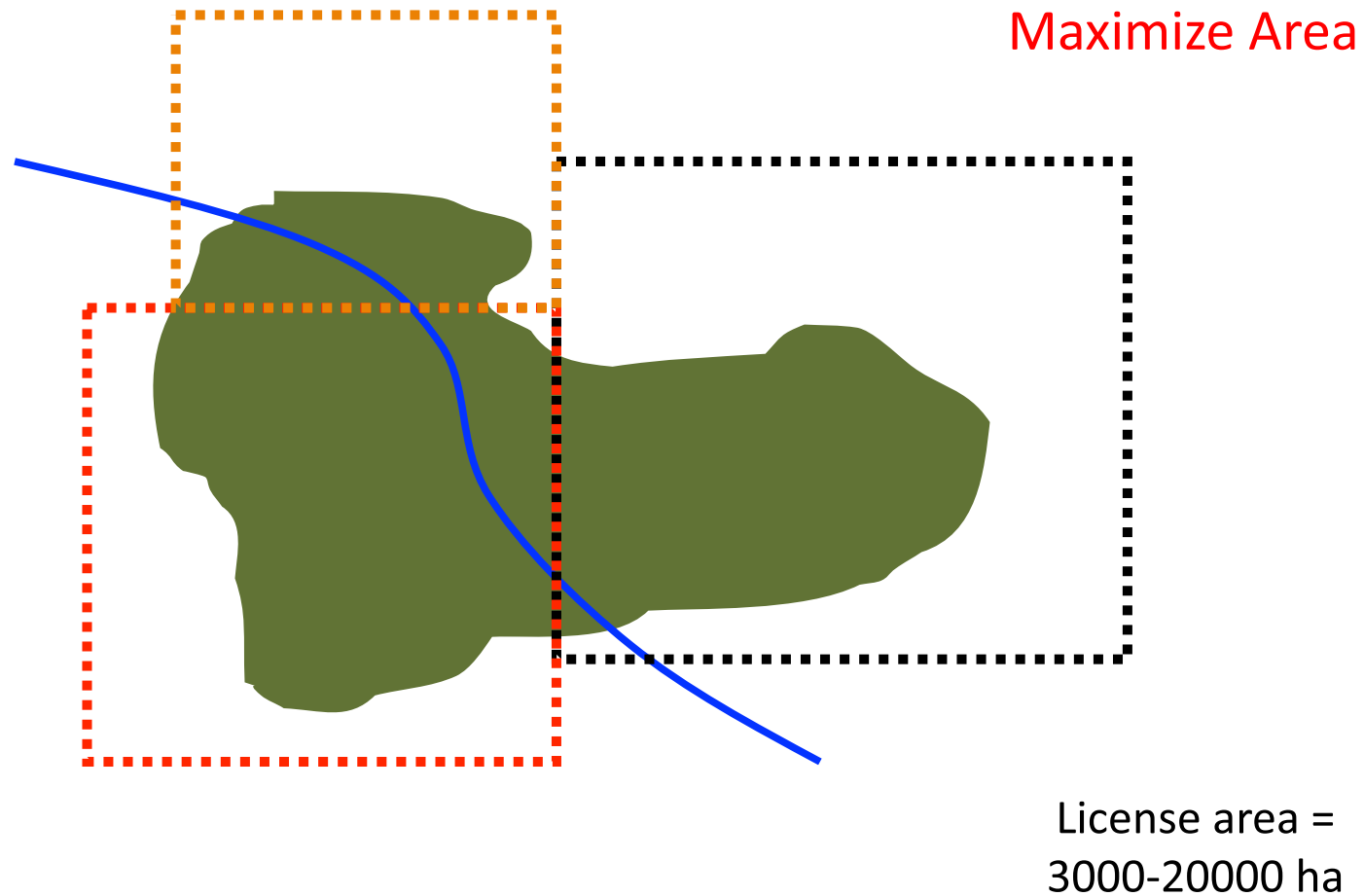
Population fragmentation



Mitigating Impacts

1. Maximize habitat area & quality
2. Maximize connectivity
3. Enhance the oil palm matrix

Cross-boundary Management



Retaining Forest Strips as...



Corridors



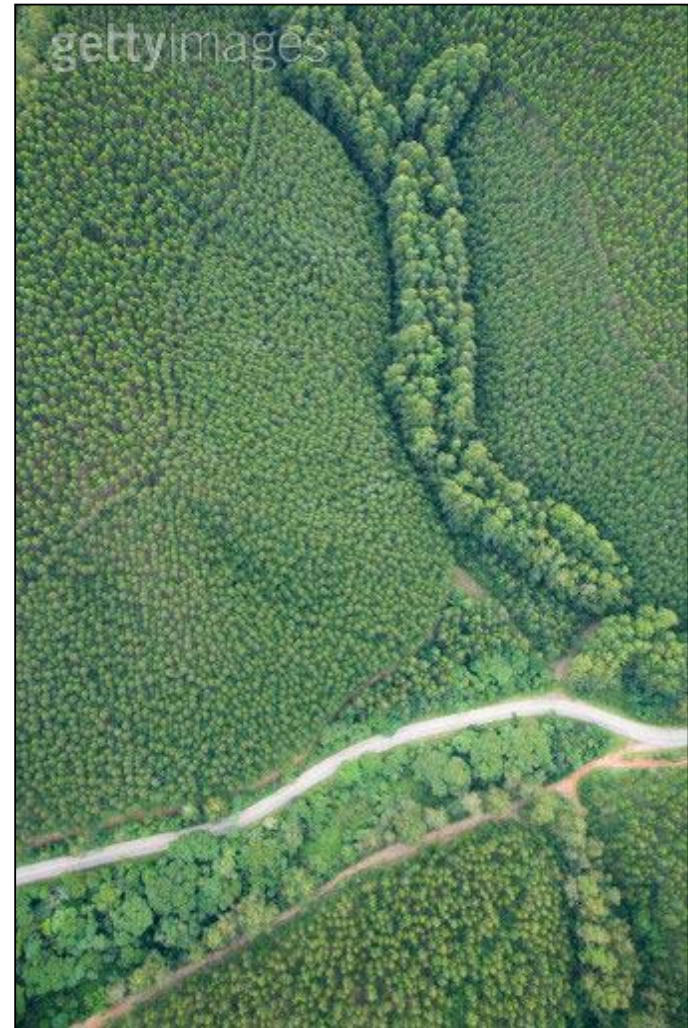
Habitat

Maintaining Forest Strips on Peatlands



Asia Pacific Resources International Limited - APRIL

Mosaic Plantation Model



Enhance the Oil Palm Matrix



Retain 2-4 remnant trees per ha

‘Shaggy Plantation’ Model



Mitigating Impacts from OP

Opportunities

- Active area of scientific research
- Unplanned experimentation
- Cross boundary collaboration
- REDD+ finance

Challenges

- Government policy
- Cost vs benefits
- High expectations
- Conflict with local communities
- Pressures from indirect land use change

Reducing Impacts of Oil Palm



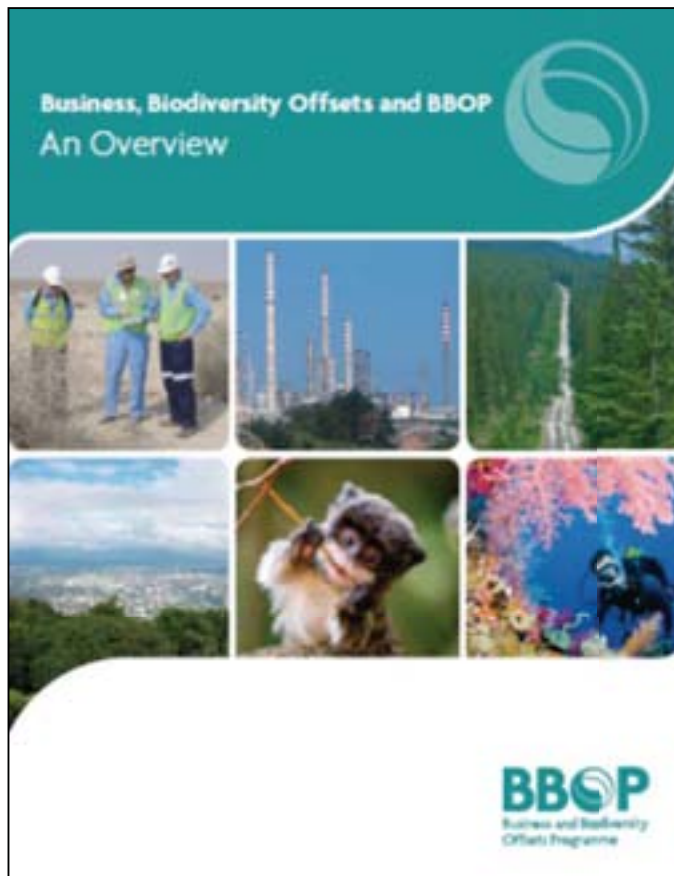
Avoid

Mitigate

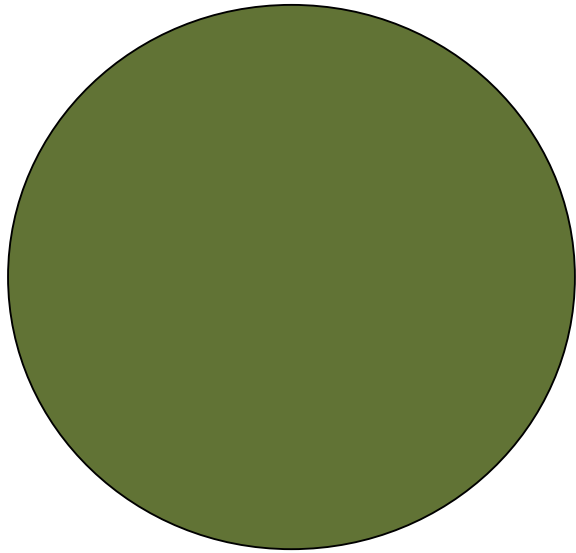
Offset

How (should?) we offset impacts
that cannot be mitigated where
OP is developed?

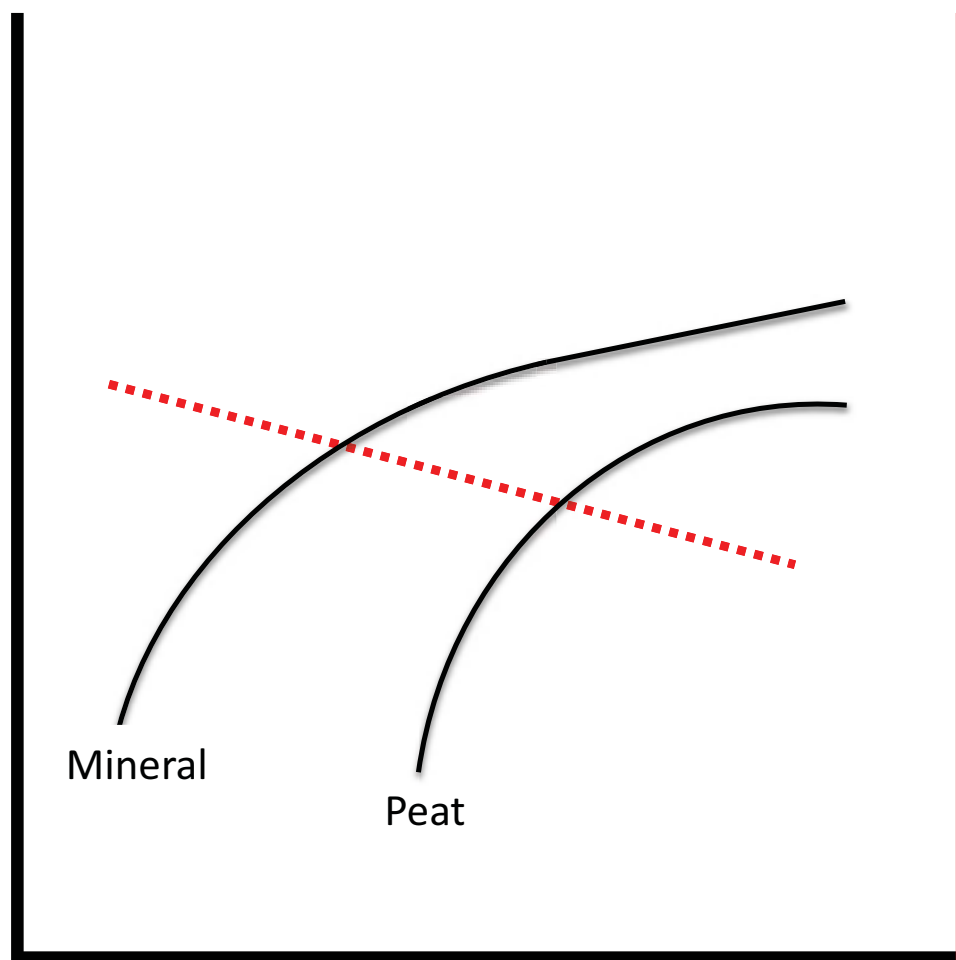
Offsetting Impacts of Oil Palm



SLOSS Revisited ?



Biodiversity Value



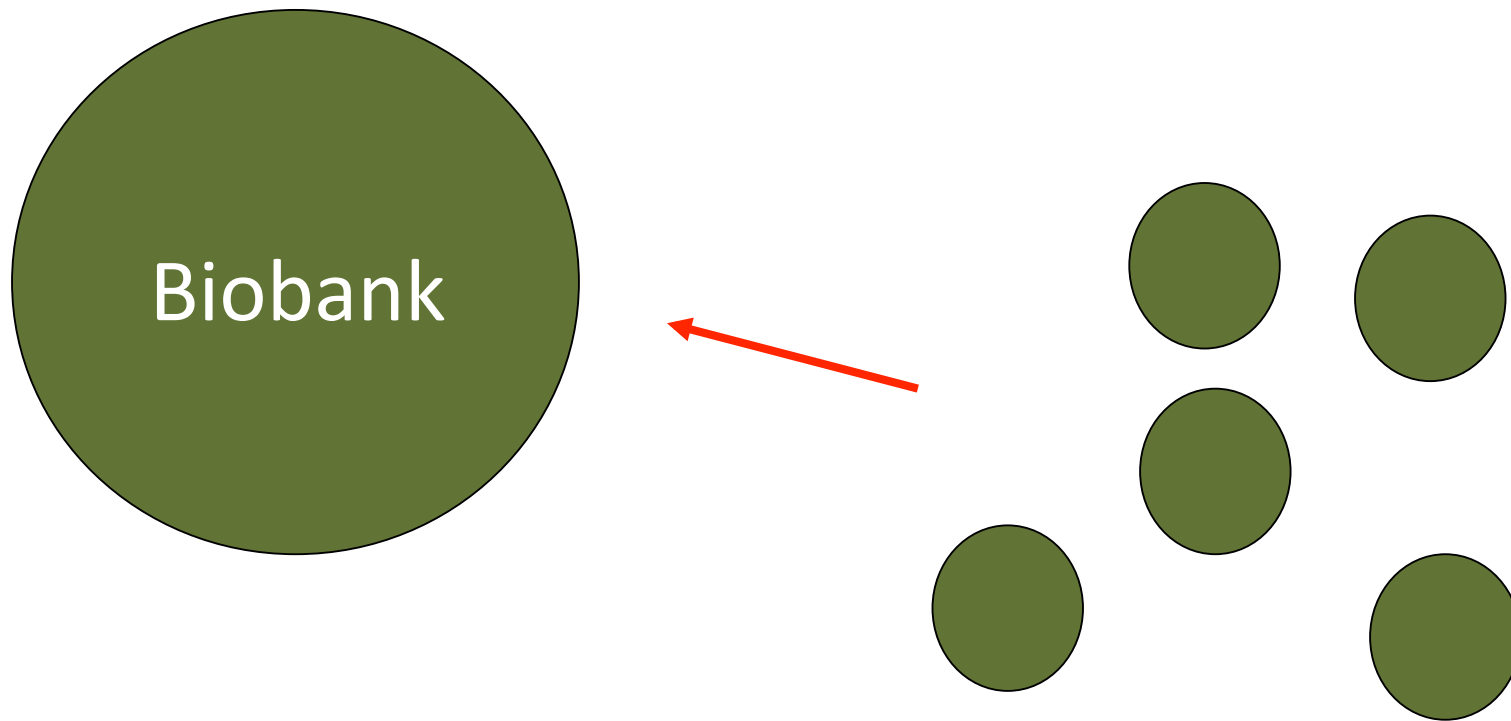
Mineral

Peat

Fragment Size

Cost of Management (\$/ha)

Are there circumstances where it's
better to convert & offset ?



License to Destroy vs Logical Best Alternative

Acknowledgements



Zoological Society of London
Wildlife Conservation Society
Proforest

