WP6 Update October 2010:

Negotiation support systems

Meine van Noordwijk,
Suyanto, Sonya Dewi ,
Gamma Galudra,

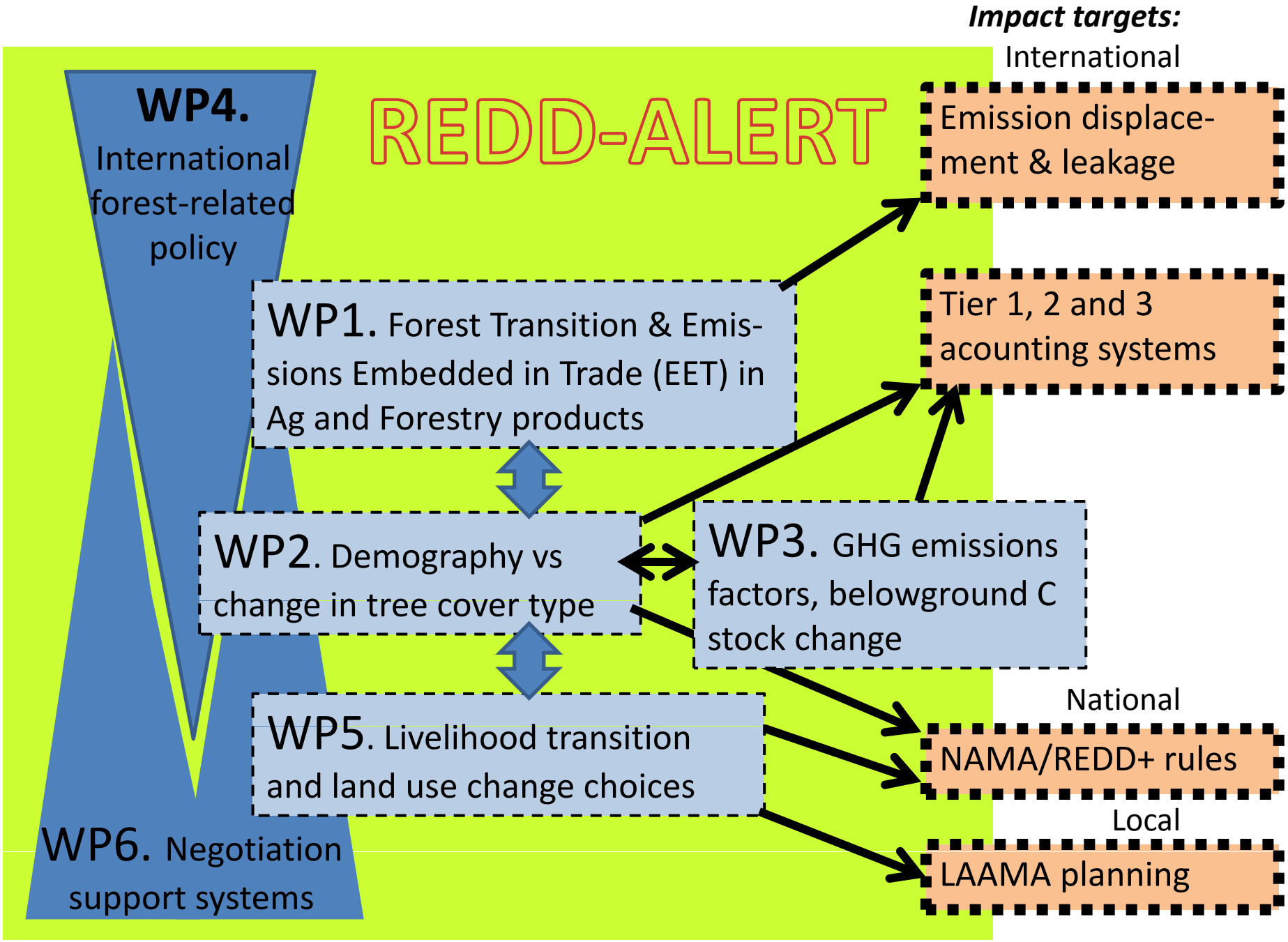
Co-funding/Building blocks
Globally: OpCost (FCPF)

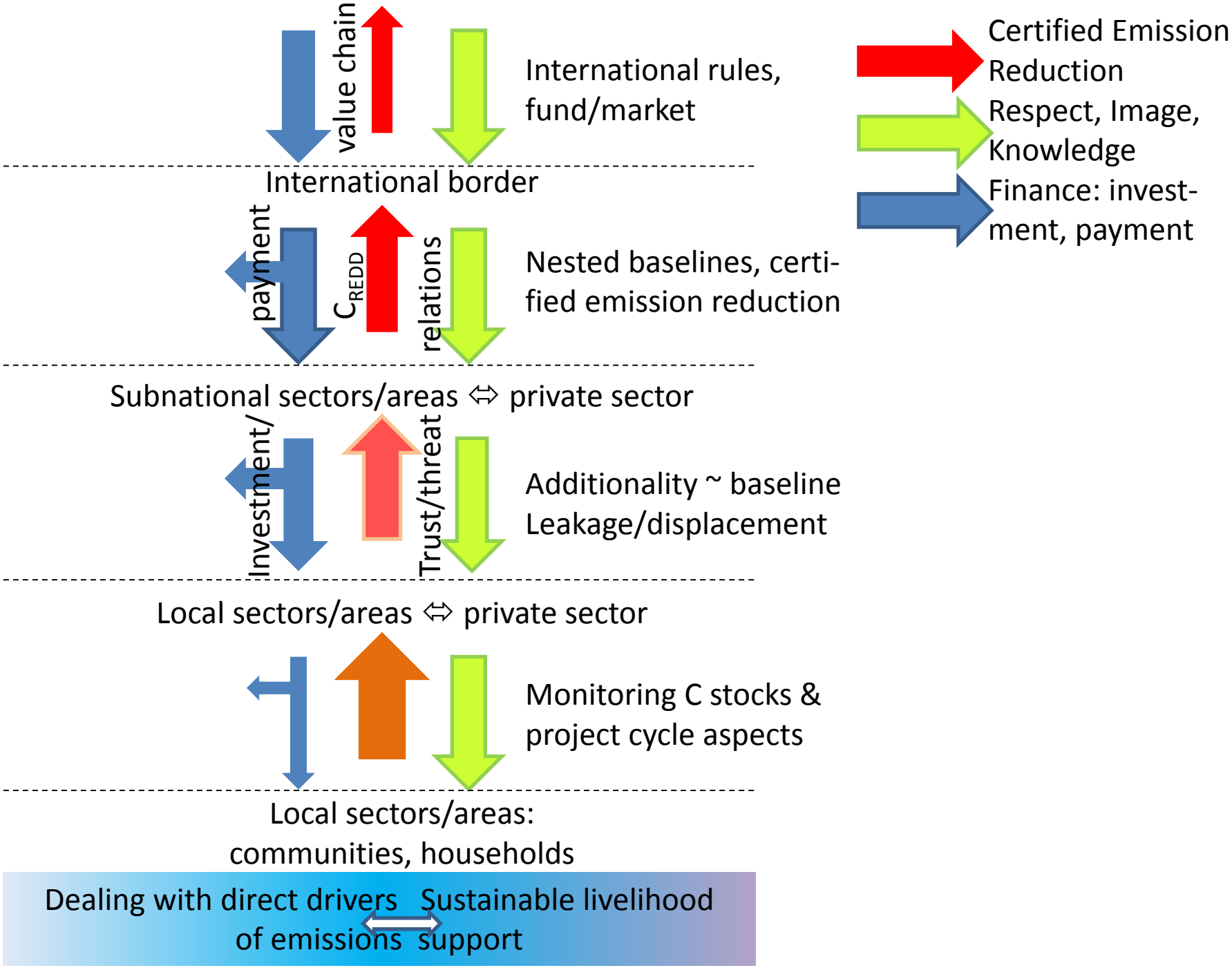
Indonesia: CLUA+Allreddi+
Realu+various site-level studies

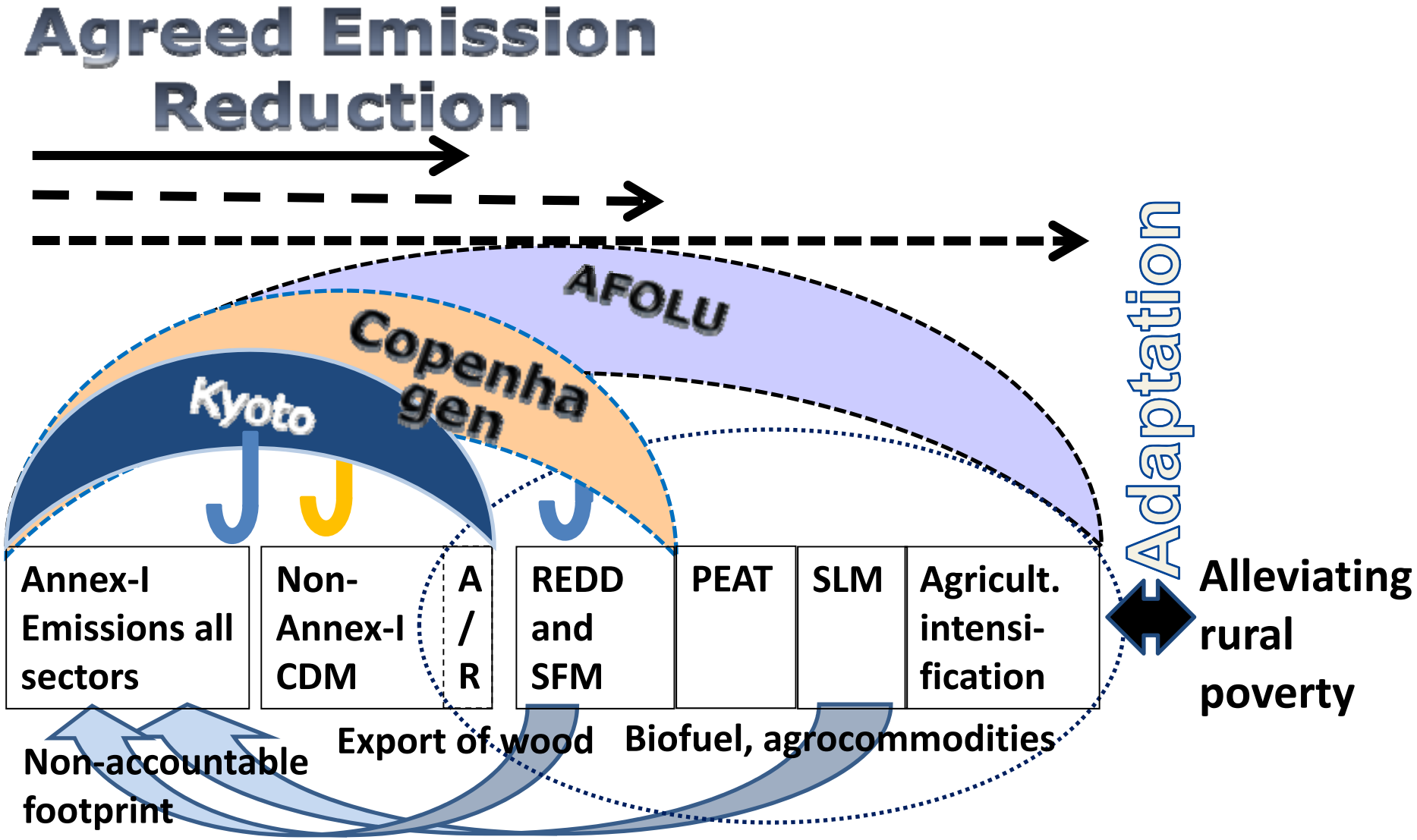
Vietnam: Realu

Cameroon: Realu

Peru: Realu


REDD-ALERT
WP4. International forest-related policy
WP1. Forest Transition & Emissions Embedded in Trade (EET) in Ag and Forestry products
WP2. Demography vs change in tree cover type
WP3. GHG emissions factors, belowground C stock change
WP5. Livelihood transition and land use change choices
WP6. Negotiation support systems
Impact targets:
International
Emission displacement & leakage
Tier 1, 2 and 3 acounting systems
National
NAMA/REDD+ rules
Local
LAAMA planning


value chain
International rules, fund/market
International border
payment
C_{REDD}
relations
Nested baselines, certified emission reduction
Subnational sectors/areas ⇔ private sector
Investment/
Trust/threat
Additionality ~ baseline
Leakage/displacement
Local sectors/areas ⇔ private sector
Monitoring C stocks & project cycle aspects
Local sectors/areas:
communities, households
Dealing with direct drivers of emissions
Sustainable livelihood support
Certified Emission Reduction
Respect, Image, Knowledge
Finance: investment, payment


Agreed Emission Reduction
AFOLU
Copenha gen
Kyoto
J
J
J
Adaptation
Annex-I Emissions all sectors
Non-Annex-I CDM
A / R
REDD and SFM
PEAT
SLM
Agricult. intensi-fication
Alleviating rural poverty
Non-accountable footprint
Export of wood
Biofuel, agrocommodities

REDD+

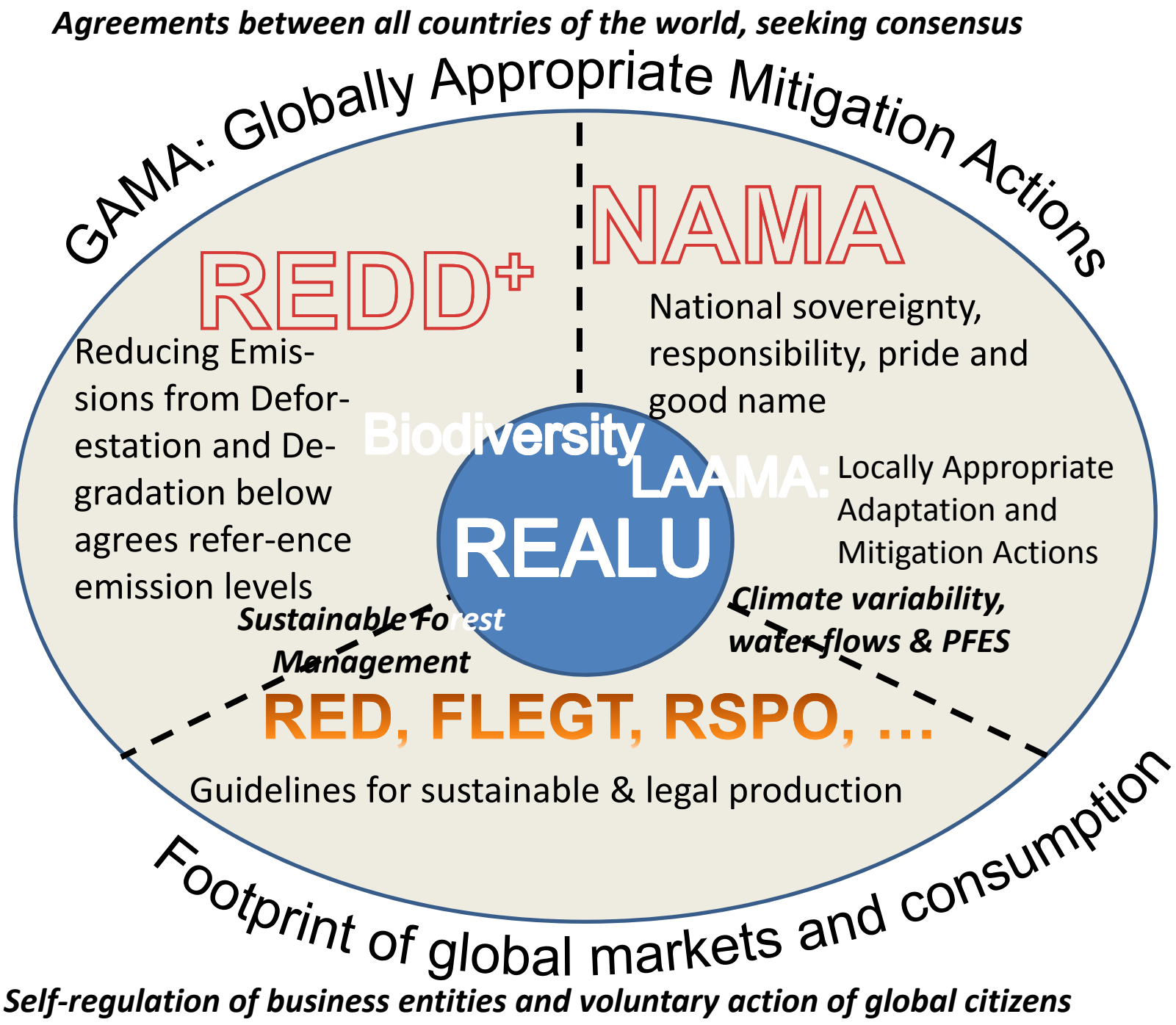
NAMA

Emission reduction

Efficiency Fairness

Sustainable Agriculture

World Market


Agreements between all countries of the world, seeking consensus
GAMA: Globally Appropriate Mitigation Actions
REDD+
Reducing Emis-sions from Defor-estation and De-gradation below agrees refer-ence emission levels
NAMA
National sovereignty, responsibility, pride and good name
Biodiversity
LAAMA:
Locally Appropriate Adaptation and Mitigation Actions
REALU
Sustainable Forest Management
Climate variability, water flows & PFES
RED, FLEGT, RSPO, …
Guidelines for sustainable & legal production
Footprint of global markets and consumption
Self-regulation of business entities and voluntary action of global citizens

ASB Partnership for the Tropical Forest Margins

Policybriefs 16

Reducing emissions from deforestation, inside and outside the 'forest'

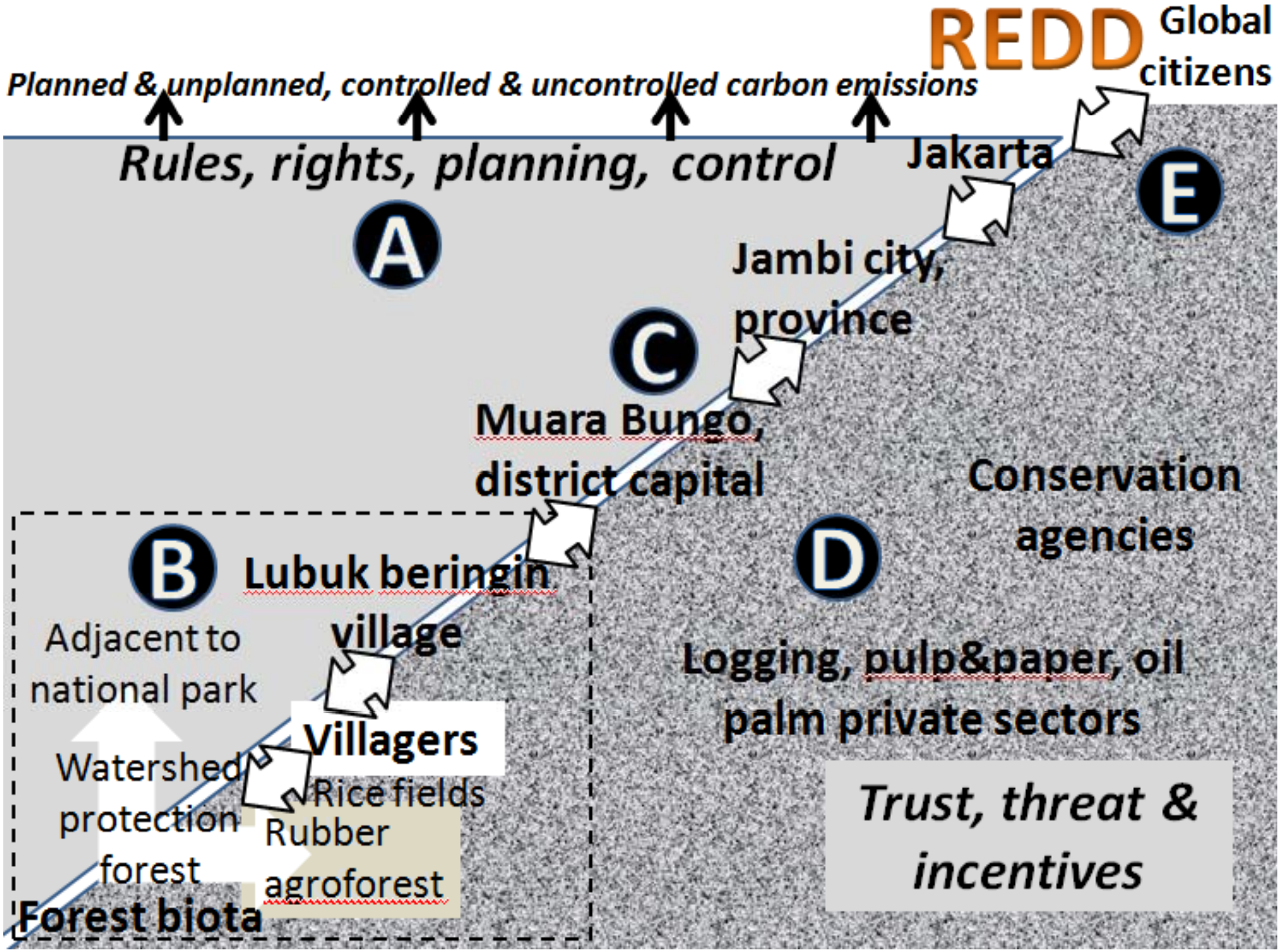
New data from Indonesia suggests that one-third of greenhouse gas emissions from deforestation originate from areas not officially defined as 'forest'.

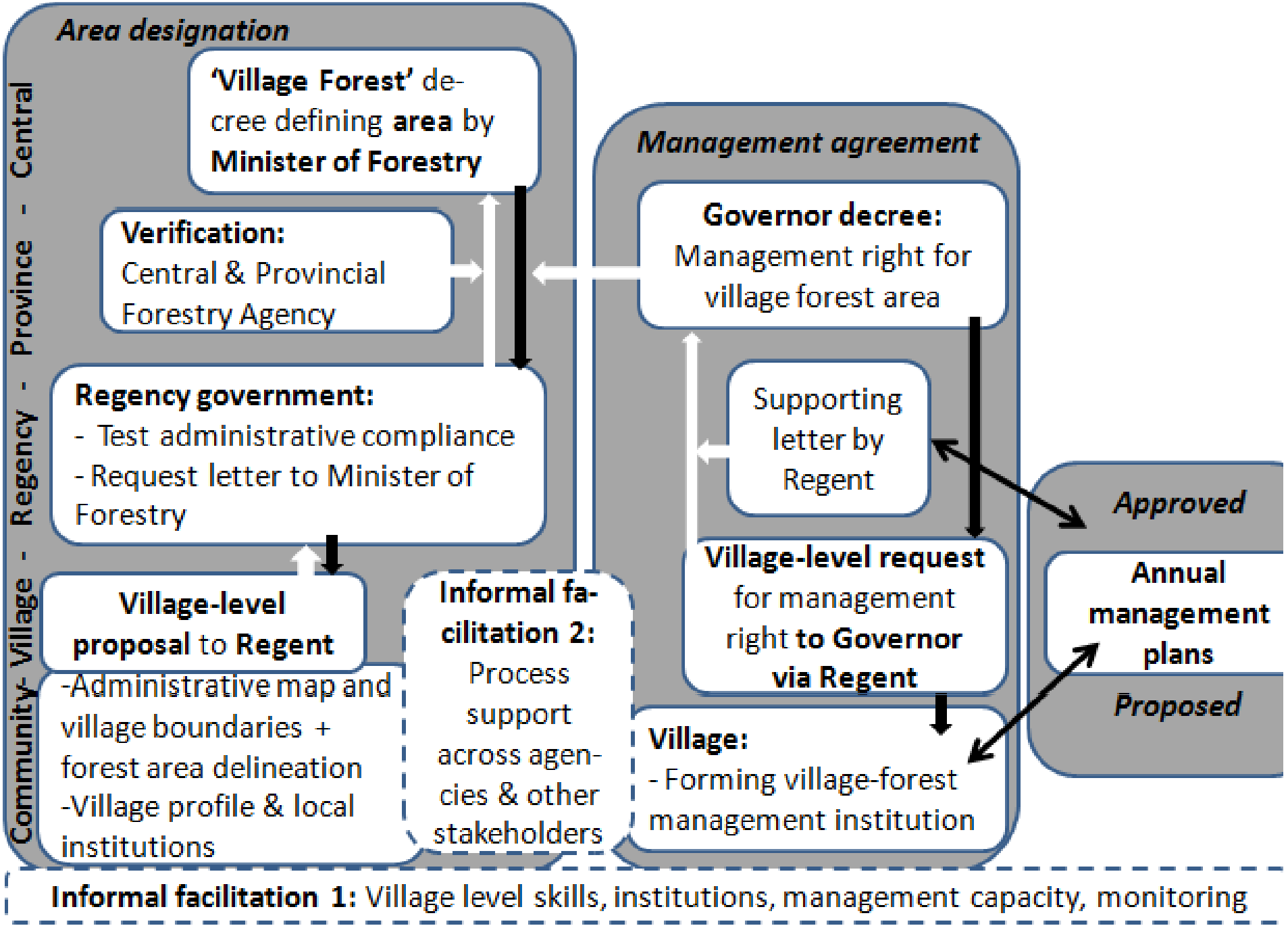
Accounting for carbon in the whole landscape and Reducing Emissions from All Land Uses (REALU) can be more effective in reducing emissions.

Main findings

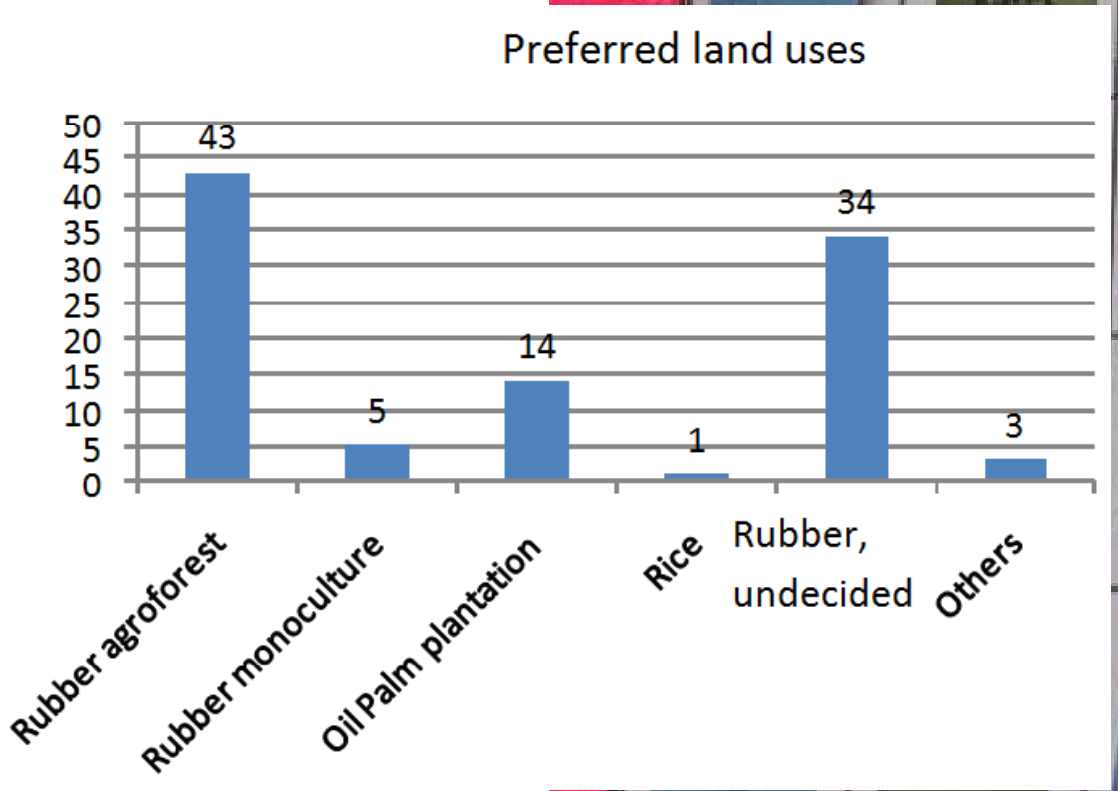
Implications


SELAMAT DATANG
MENTERI KEHUTANAN REPUBLIK INDONESIA
BAPAK H. MS. KABAN
Hutan Desa
APPROXIMATELY 5000 people come to the Lubuk Beringin village
Partial answer to the issues of local use rights and tenure security?
MENTERI KEHUTANAN R.I.
TANGGAL 29 MARET 2009


REDD
Global citizens
Planned & unplanned, controlled & uncontrolled carbon emissions
Rules, rights, planning, control
A
Jakarta
E
Jambi city, province
C
Muara Bungo, district capital
Conservation agencies
D
B
Lubuk beringin village
Adjacent to national park
Villagers
Watershed protection forest
Rice fields
Rubber agroforest
Forest biota
Logging, pulp&paper, oil palm private sectors
Trust, threat & incentives


Area designation
'Village Forest' decree defining area by Minister of Forestry
Verification: Central & Provincial Forestry Agency
Regency government:
- Test administrative compliance
- Request letter to Minister of Forestry
Village-level proposal to Regent
-Administrative map and village boundaries + forest area delineation
-Village profile & local institutions
Informal facilitation 2: Process support across agencies & other stakeholders
Community - Village - Regency - Province - Central
Management agreement
Governor decree: Management right for village forest area
Supporting letter by Regent
Village-level request for management right to Governor via Regent
Village:
- Forming village-forest management institution
Approved
Annual management plans
Proposed
Informal facilitation 1: Village level skills, institutions, management capacity, monitoring

Simulation games with villages: (Grace Villampor, PhD student)

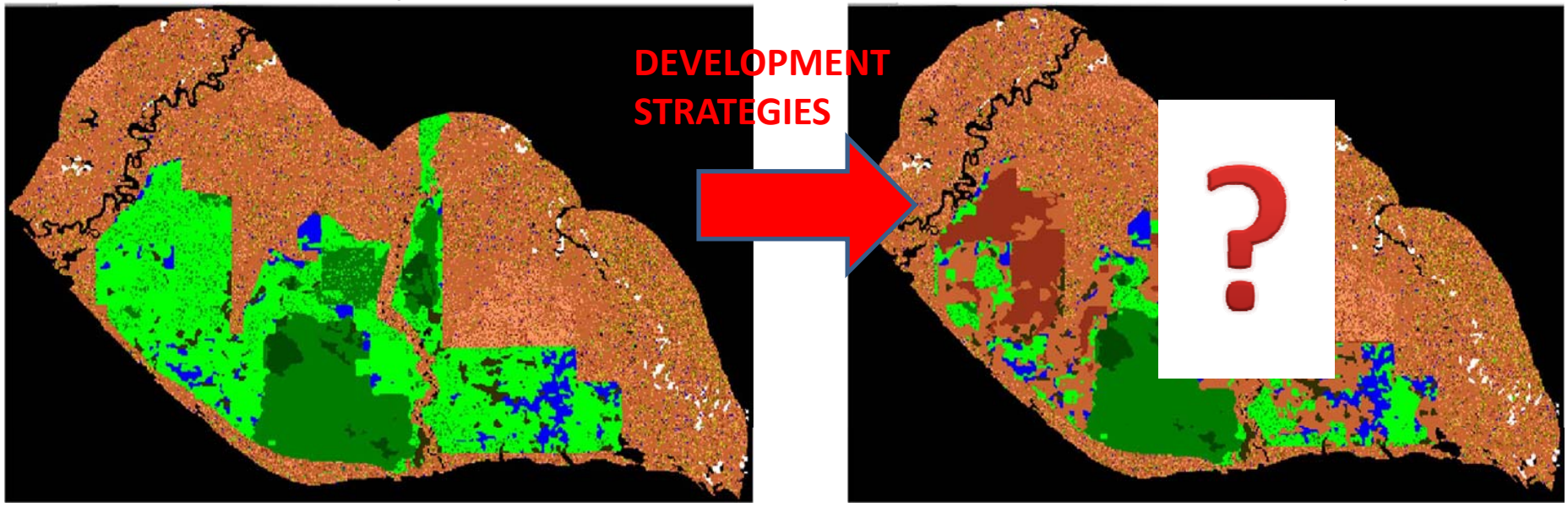


Oil palm preference controversial

FALLOW Model as a tool to assess the ecological and economical impact of application of a development strategy in a rural area

Initial landcover map in landscape A

Future landcover map in landscape A



- What consequence on C stock (ecological impact)?
- What consequence on income (economical impact)?

Input maps:
- Initial landcover
- Soil map, etc

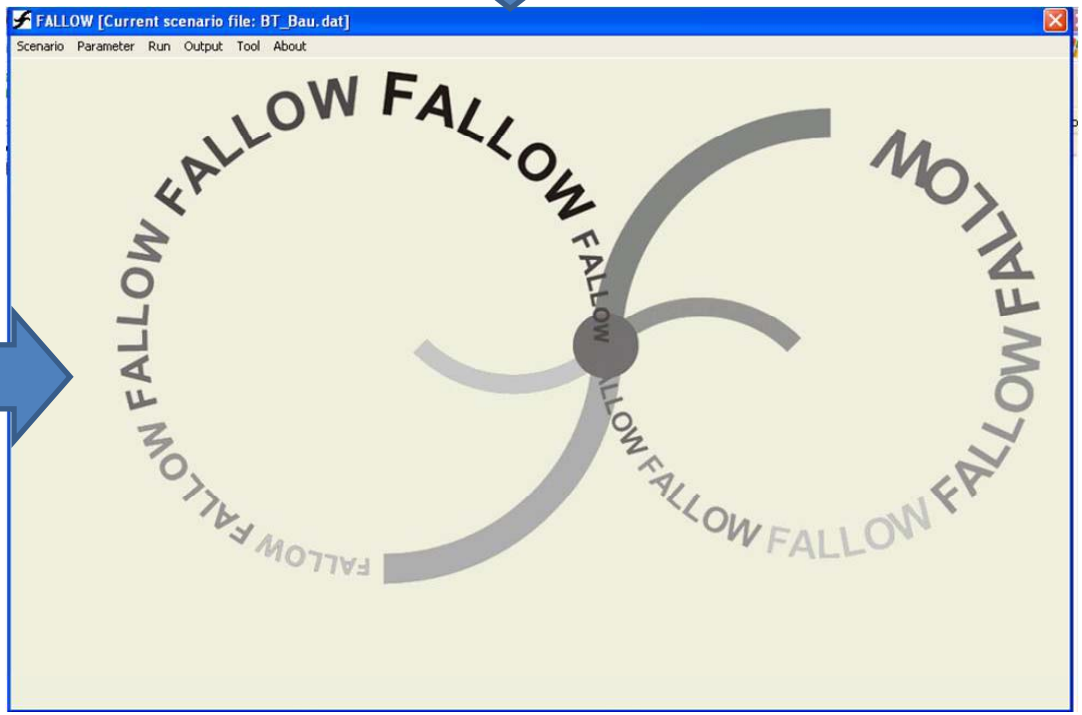
SAU team (Andree cs)

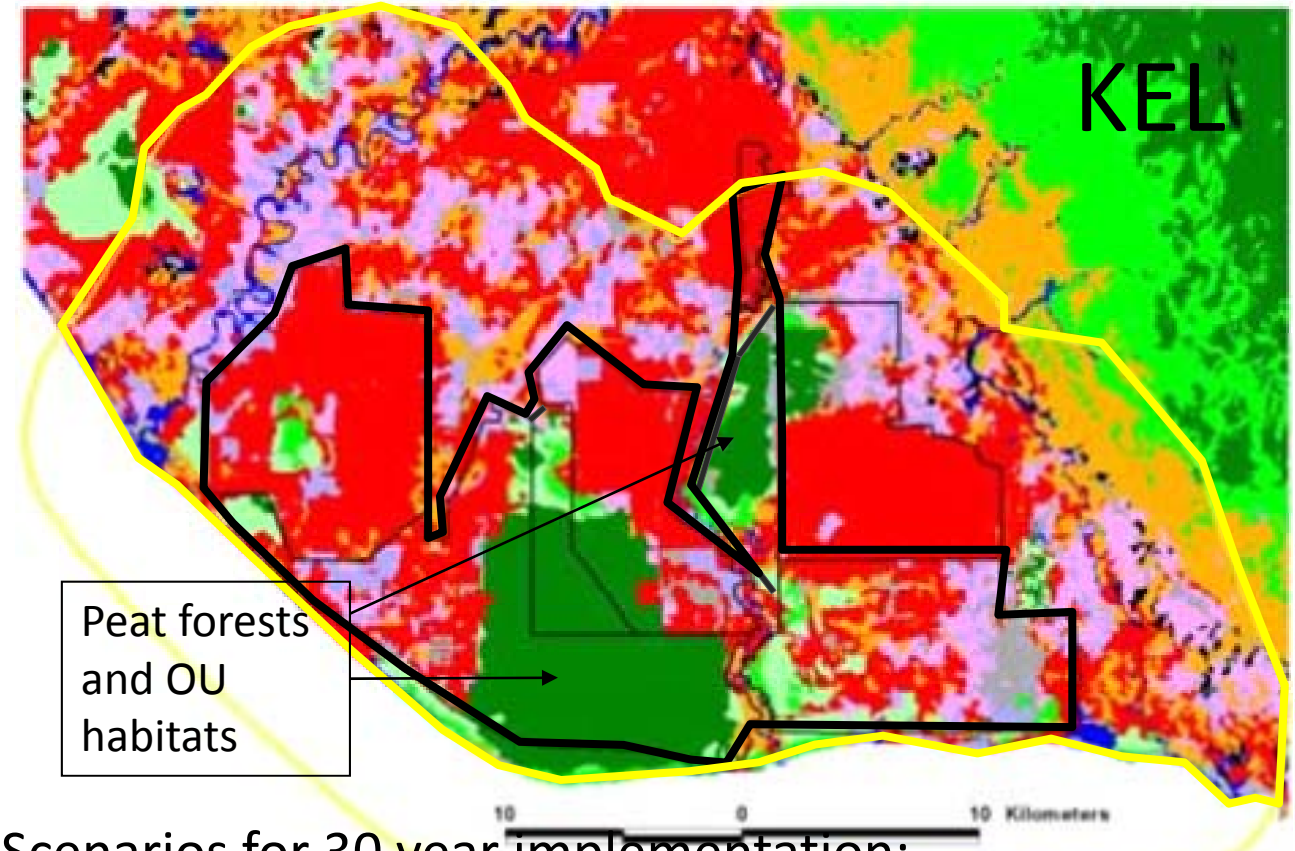
Biophysics:
- AGB
- Yield etc

Carbon team (Ibu Yayuk cs)

Social economic:
- Return to land/labor
- Demographic etc

Sosec team (Elok cs)



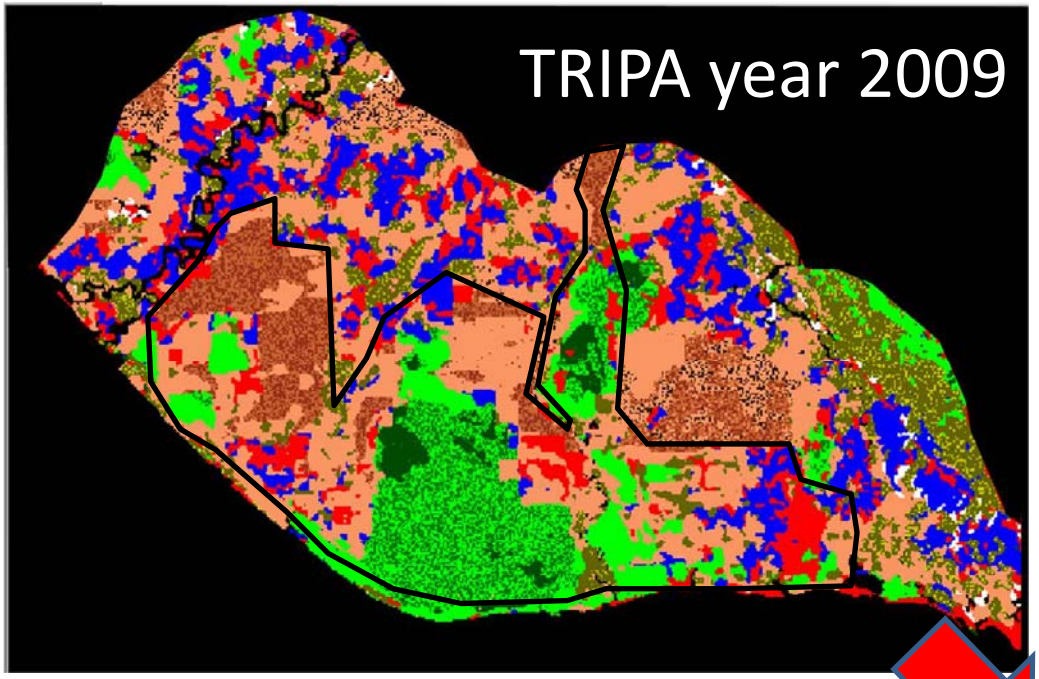


TRIPA (year 2009, total simulated area 104000 ha, HGUs 40000 ha, remaining forests inside HGUs ±10000 ha)

Legend
- Agroforest
- Cleared land
- Cloud/shadow
- Crops
- Disturbed forest
- Disturbed swamp forest
- Shrubs and grass
- Oil palm
- Settlement
- Undisturbed forest
- Undisturbed swamp forest
- Water body
- Tripa study area boundary
- Plantation concession rights (HGU)

Scenarios for 30 year implementation:

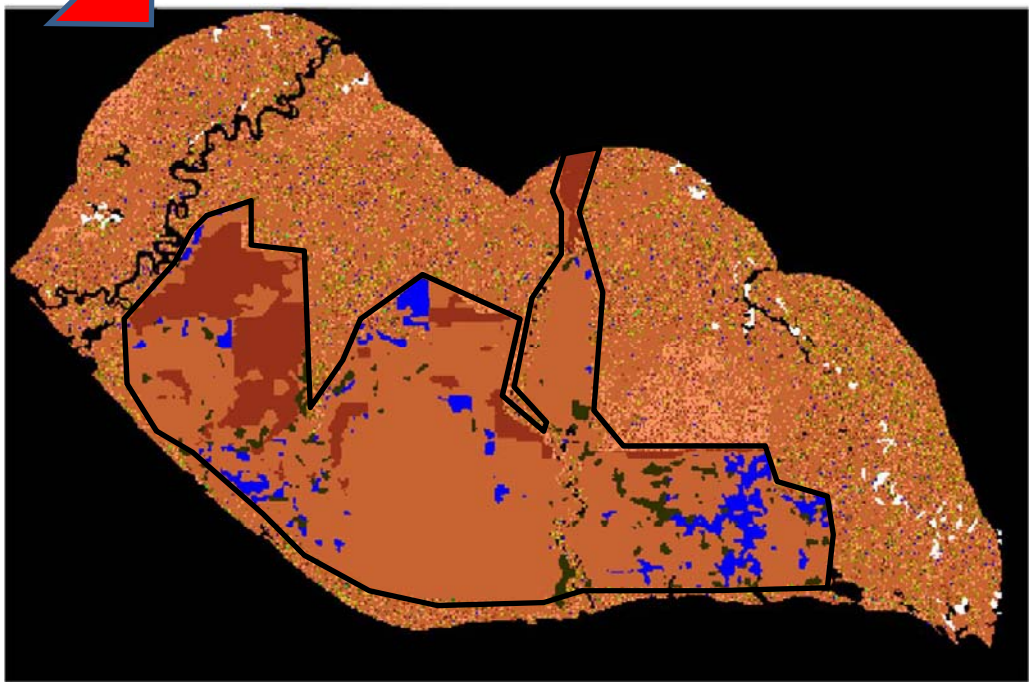
- BAU=all forests inside HGUs converted to OP
- Patch=conserve remaining forest inside HGUs
- Instantaneous=all oil palm plots inside HGUs are 'instantaneously' abandoned and restored to forest
- Gradual =post production oil palm (25 years in age) restored to forest
- Corridor= gradual + conservation in 2 corridors

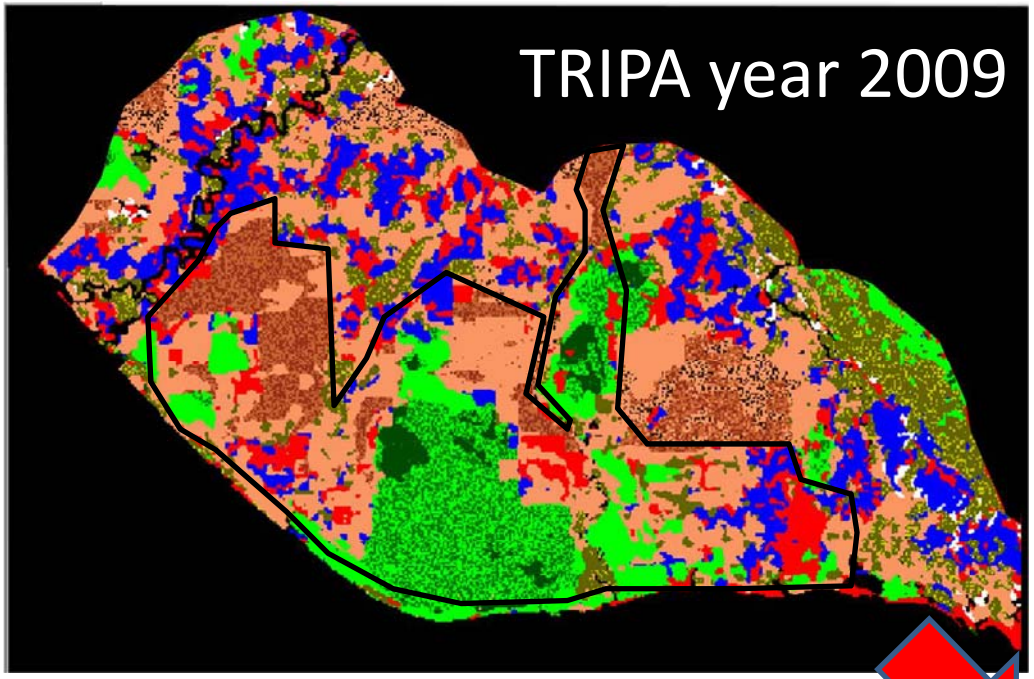


BAU=all forests inside HGUs converted to OP

Net above and belowground C emission for 30 years over the landscape= **9.2** Mton CO_2e. Mostly due to conversion of peat forests inside HGU into oil palm and regeneration of old OPs

BAU 30 YEARS AFTER

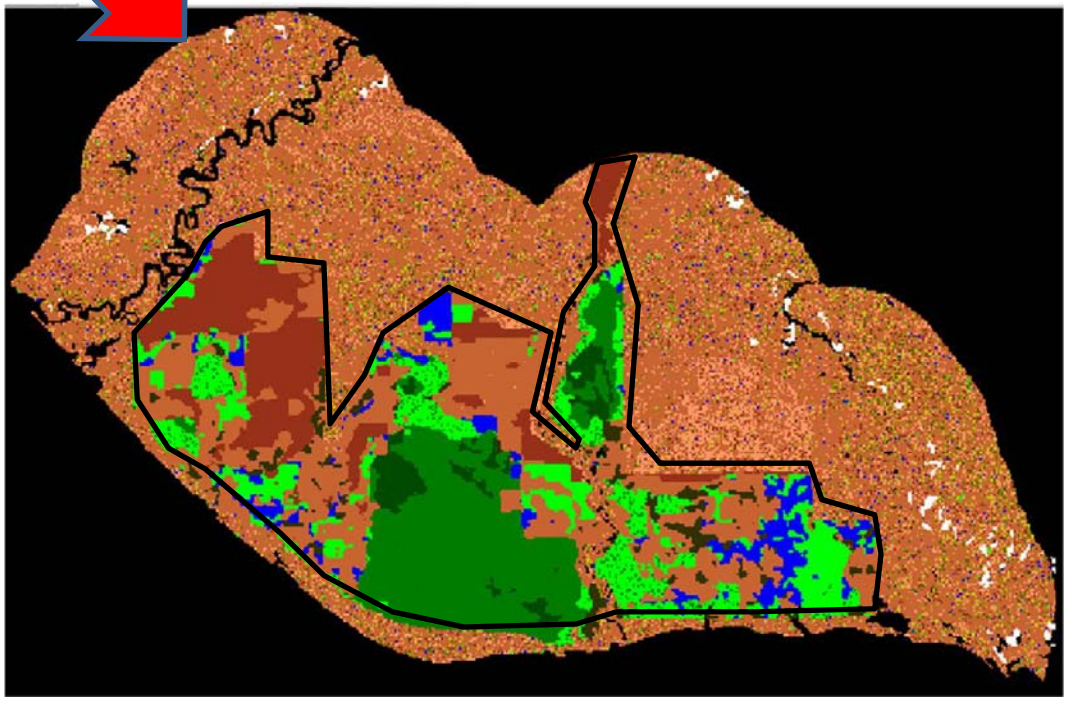


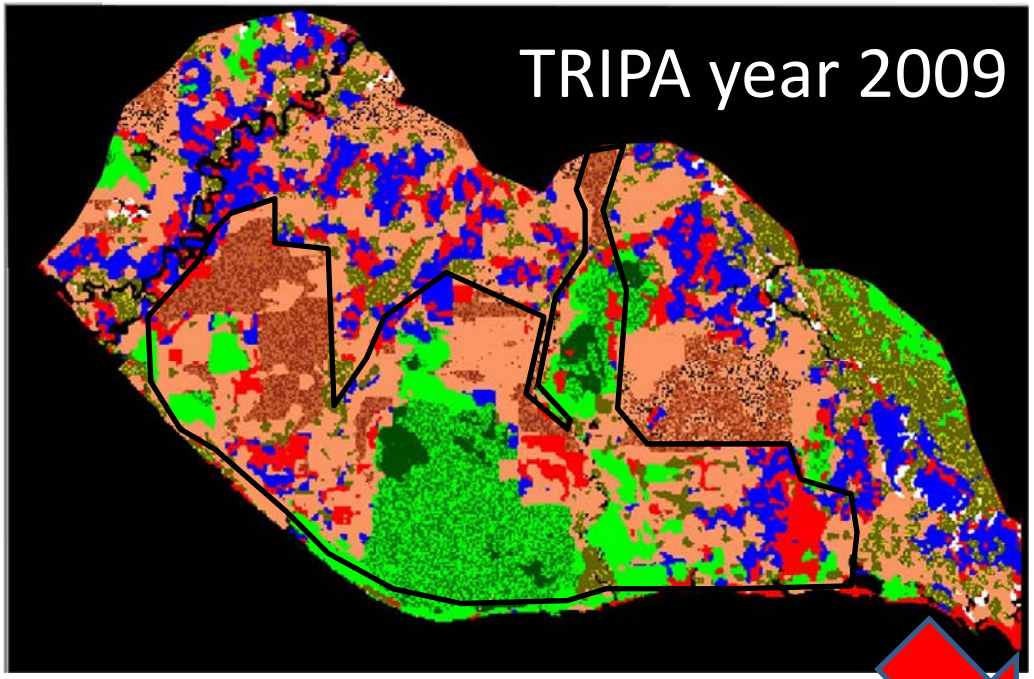


PATCH 30 YEARS AFTER

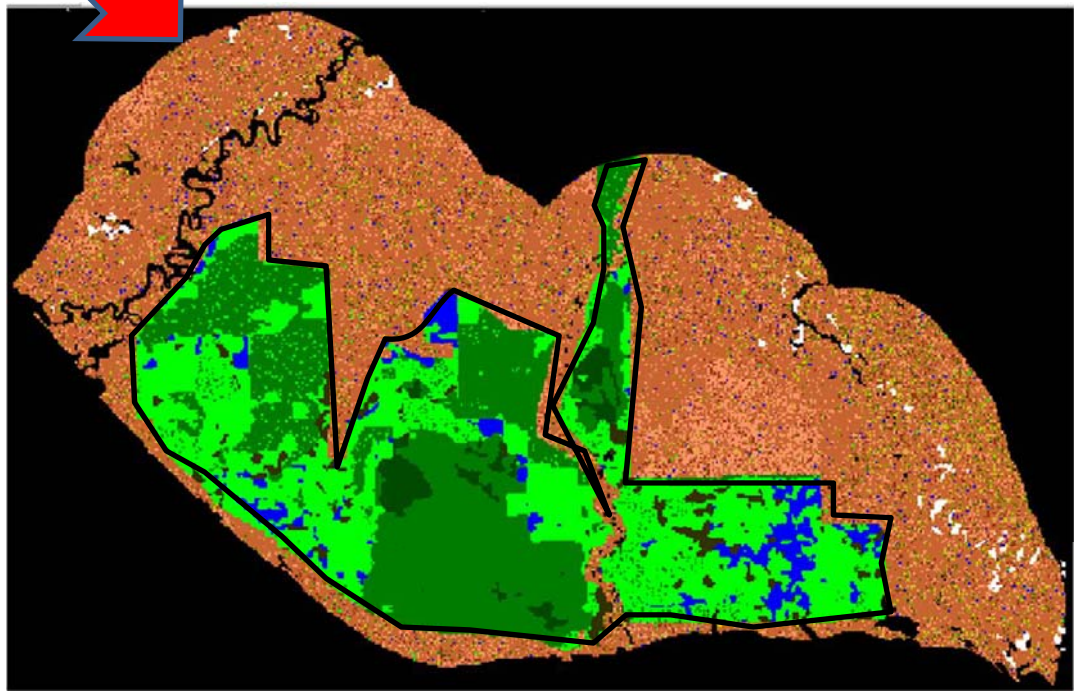
Patch=conserve remaining forest inside HGUs

Net above and belowground C emission for 30 years over the landscape= **-0.97** Mton CO_2e (i.e. sequestration). Mostly due to increase in C stock in the remaining forests over 30 years



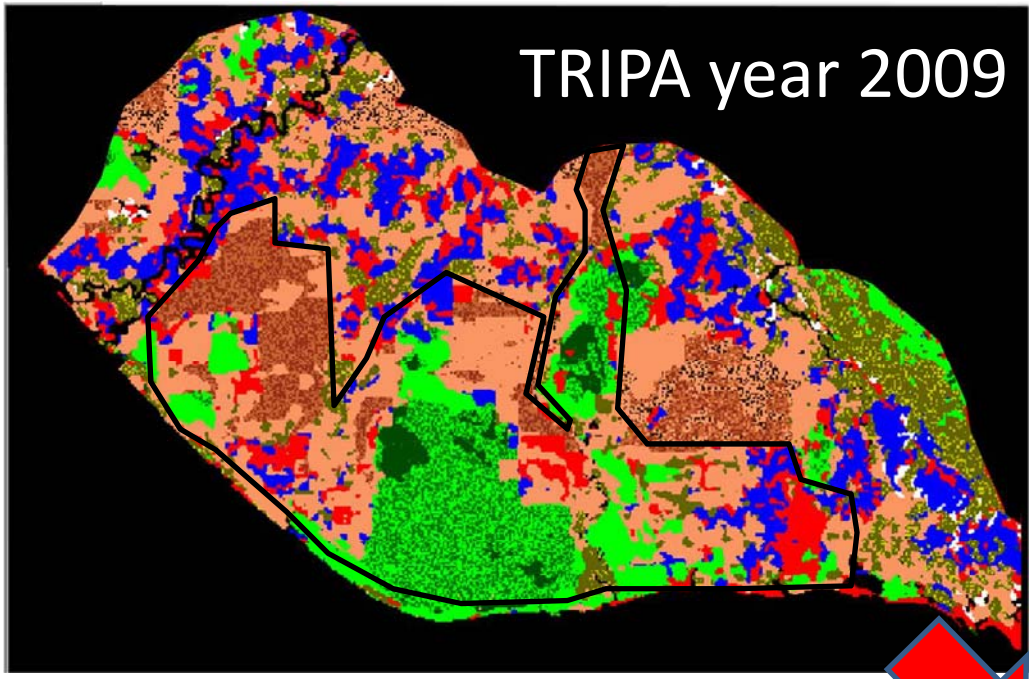


INSTANTENOUS 30 YEARS AFTER



Instantaneous=all oil palm plots inside HGUs restored to forest

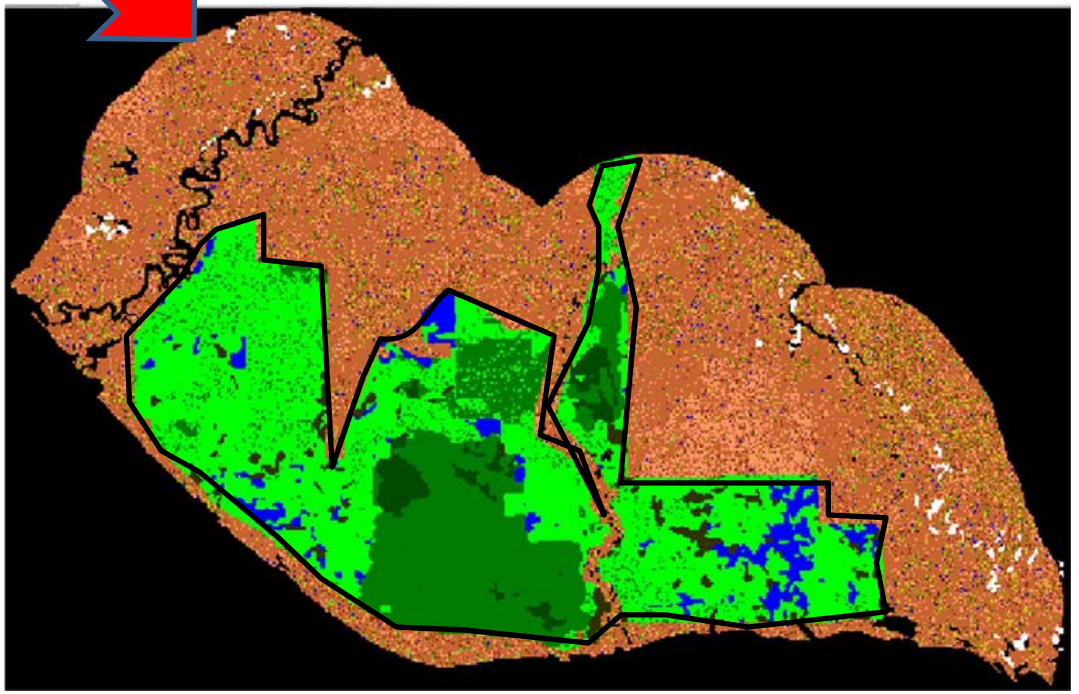
Net above and belowground C emission for 30 years over the landscape= **-4.97** Mton CO_2e (i.e. sequestration). Mostly due to forest restoration and conservation inside HGUs

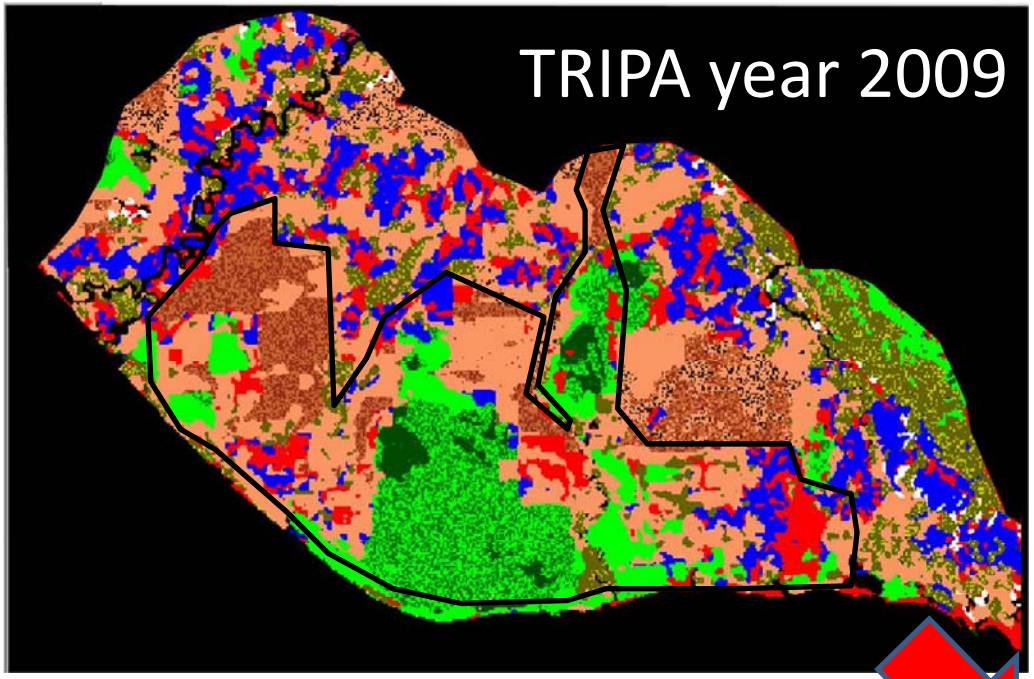


GRADUAL 30 YEARS AFTER

Gradual =post production oil palm plots restored to forests

Net above and belowground C emission for 30 years over the landscape= **-2.94** Mton CO_2e (i.e. sequestration). Mostly due to forest restoration and conservation inside HGUs

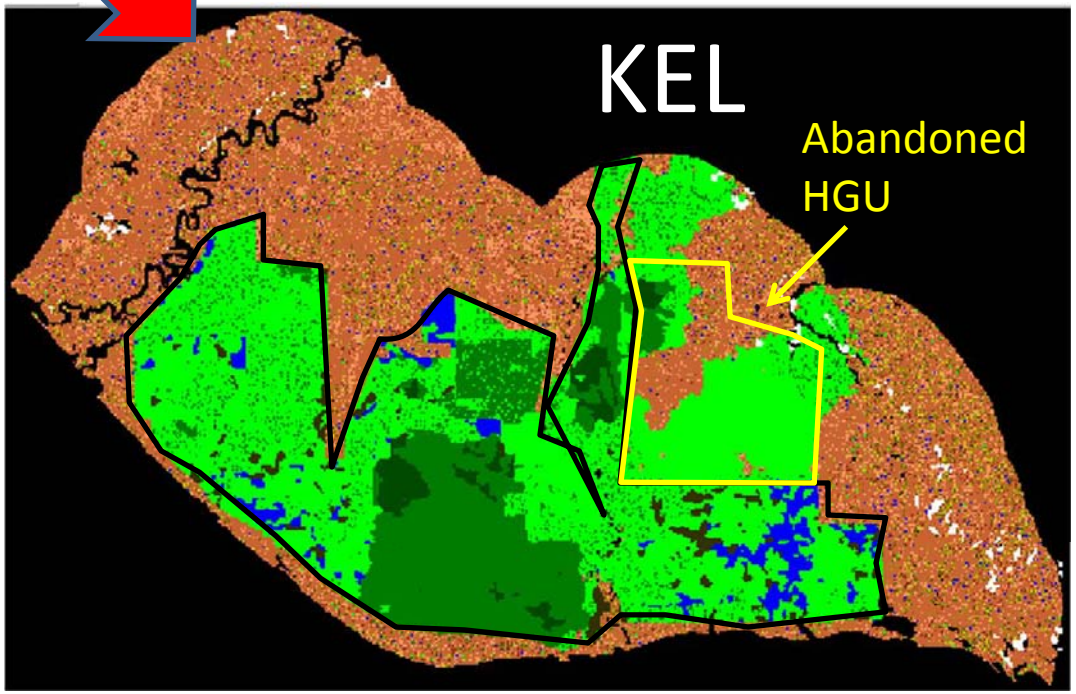




CORRIDOR 30 YEARS AFTER

Corridor= gradual + conservation in 2 corridors

Net above and belowground C emission for 30 years over the landscape= **-5.2** Mton CO_2e (i.e. sequestration). Mostly due to forest restoration and conservation inside HGUs and the corridors



Tradeoff between ecology and economy aspect

Income year 2009	3.5 MRp capita-1 year-1	380.43 USD capita-1 year-1
Population	21214 inhabitants	1% annual growth rate
1 USD	9200 Rp	Income=local people's income obtained from selling crop products plus off-farm job as labor in OP company minus non-labor costs

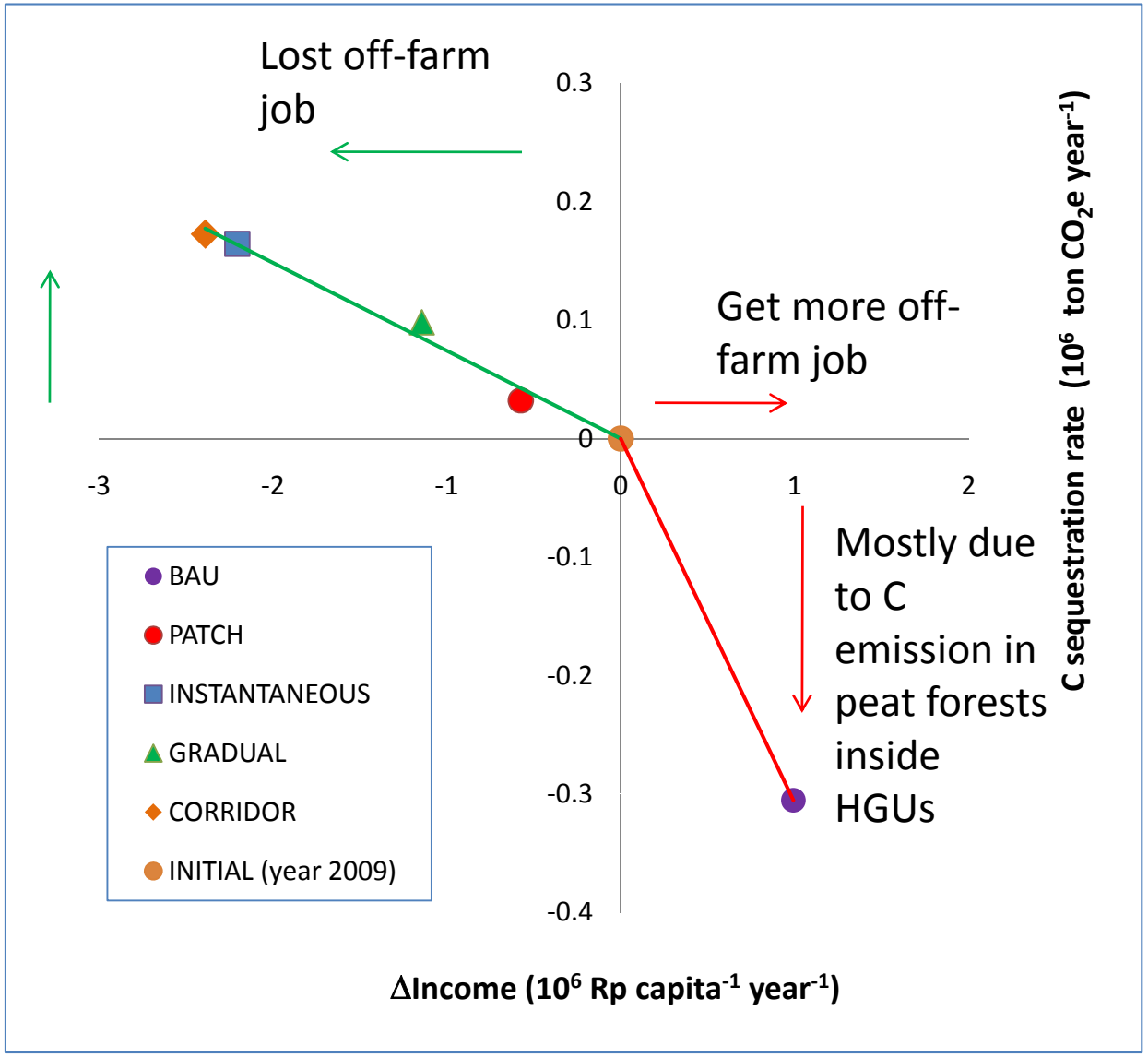
Scenarios	Net C emission (Mton CO_2e)	Income (MRp capita^{-1} year^{-1})	Income (USD capita^{-1} year^{-1})	ΔIncome (MRp capita^{-1} year^{-1})	ΔIncome (USD capita^{-1} year^{-1})
BAU	9.16	4.49	488.25	0.99	107.82
PATCH	-0.97	2.93	317.97	-0.57	-62.46
INSTANTANEOUS	-4.93	1.30	140.82	-2.20	-239.62
GRADUAL	-2.94	2.36	256.12	-1.14	-124.32
CORRIDOR	-5.18	1.11	120.83	-2.39	-259.61

Scenarios	C emission rate (Mton CO_2e year^{-1})	ΔIncome (MRp capita^{-1} year^{-1})	ΔIncome (USD capita^{-1} year^{-1})
BAU	0.31	0.99	107.82
PATCH	-0.03	-0.57	-62.46
INSTANTANEOUS	-0.16	-2.20	-239.62
GRADUAL	-0.10	-1.14	-124.32
CORRIDOR	-0.17	-2.39	-259.61

In the 'green' scenarios, incomes are lower compared to income year 2009 because local people no longer get off-farm job as laborer in OP company

Tradeoff between ecology and economy aspect

Mostly due to forest conservation and restoration inside HGUs



Tradeoff between ecology and economy aspect

Scenarios	Tradeoff (MRp capita^{-1} year^{-1}/ Mton CO_2e sequestration rate year^{-1})	Tradeoff (USD capita^{-1} year^{-1}/ Mton CO_2e sequestration rate year^{-1})
BAU	-3.25	-353.30
PATCH	-17.85	-1940.74
INSTANTANEOUS	-13.41	-1457.69
GRADUAL	-11.65	-1266.76
CORRIDOR	-13.84	-1504.06
Average with BAU	-12.00	-1304.51
Average without BAU	-14.19	-1542.31

Scenarios	C sequestration rate (Mton CO_2e year^{-1})	Decrease in Income (MRp capita^{-1} year^{-1})	Decrease in Income (USD capita^{-1} year^{-1})	Total Decrease in Income (GRp year^{-1})	Total Decrease in Income (M USD year^{-1})
If do PATCH	0.03	-0.57	-62.46	-16.09	-1.75
If do INSTANTANEOUS	0.16	-2.20	-239.62	-61.73	-6.71
If do GRADUAL	0.10	-1.14	-124.32	-32.02	-3.48
If do CORRIDOR	0.17	-2.39	-259.61	-66.87	-7.27

Compensation to decrease in income obtained from carbon reward

Scenarios	C sequestration rate (Mton CO_2e year-1)	C save not do forest conversion as in BAU (Mton CO_2e year-1)	Total C sequestration rate (Mton CO_2e year-1)
If do PATCH	0.03	0.31	0.34
If do INSTANTANEOUS	0.16	0.31	0.47
If do GRADUAL	0.10	0.31	0.40
If do CORRIDOR	0.17	0.31	0.48

Including C save by avoiding forest conversion in BAU	**Target compensation**		**C reward (M USD year-1)**				
Scenarios	Total decrease in income (GRp year-1)	Total decrease in income (M USD year-1)	Price=0 USD ton^{-1} CO_2e	Price=5 USD ton^{-1} CO_2e	Price=10 USD ton^{-1} CO_2e	Price=15 USD ton^{-1} CO_2e	Price=20 USD ton^{-1} CO_2e
If do PATCH	-16.09	-1.75	0	1.69	3.37	5.06	6.75
If do INSTANTANEOUS	-61.73	-6.71	0	2.35	4.70	7.04	9.39
If do GRADUAL	-32.02	-3.48	0	2.02	4.03	6.05	8.07
If do CORRIDOR	-66.87	-7.27	0	2.39	4.78	7.17	9.56

Compensation to decrease in income obtained from carbon reward

Including C save by avoiding forest conversion in BAU | **Target compensation** | **C reward (M USD year-1)**

Scenarios	Total decrease in income (GRp year-1)	Total decrease in income (M USD year-1)	Price=0 USD ton^{-1} CO_2e	Price=5 USD ton^{-1} CO_2e	Price=10 USD ton^{-1} CO_2e	Price=15 USD ton^{-1} CO_2e	Price=20 USD ton^{-1} CO_2e
If do PATCH	-16.09	-1.75	0	1.69	3.37	5.06	6.75
If do INSTANTANEOUS	-61.73	-6.71	0	2.35	4.70	7.04	9.39
If do GRADUAL	-32.02	-3.48	0	2.02	4.03	6.05	8.07
If do CORRIDOR	-66.87	-7.27	0	2.39	4.78	7.17	9.56

Excluding C save by avoiding conversion in BAU | **Target compensation** | **C reward (M USD year-1)**

Scenarios	Total decrease in income (GRp year-1)	Total decrease in income (M USD year-1)	Price=15 USD ton-1 CO2e	Price=20 USD ton-1 CO2e	Price=30 USD ton-1 CO2e	Price=50 USD ton-1 CO2e	Price=60 USD ton-1 CO2e
If do PATCH	-16.09	-1.75	0.48	0.64	0.97	1.61	1.93
If do INSTANTANEOUS	-61.73	-6.71	2.47	3.29	4.93	8.22	9.86
If do GRADUAL	-32.02	-3.48	1.47	1.96	2.94	4.91	5.89
If do CORRIDOR	-66.87	-7.27	2.59	3.45	5.18	8.63	10.36

Compensation to decrease in income obtained from carbon reward

Including C save by avoiding conversion in BAU

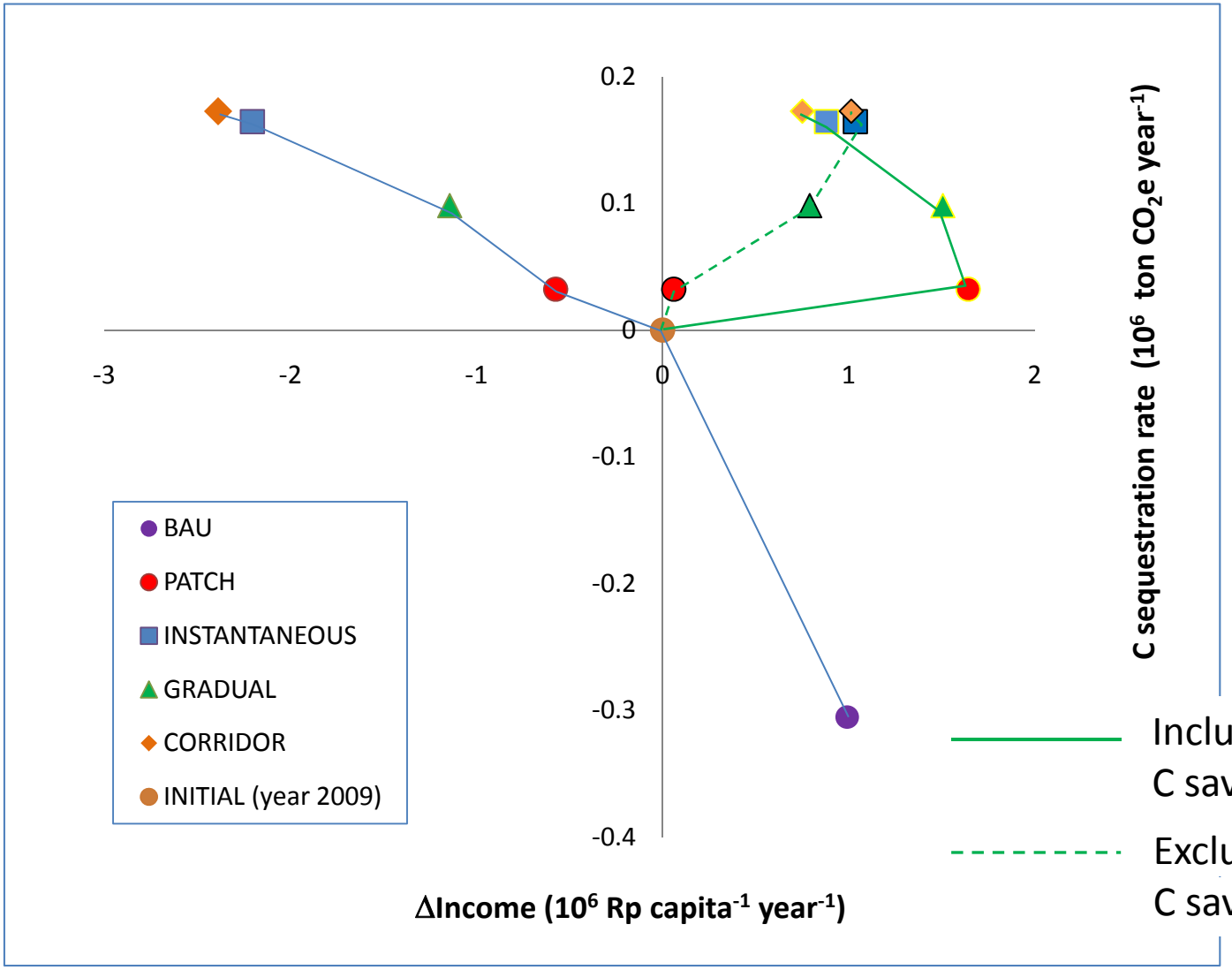
Income in year 2009= 3.5 MRp capita-1

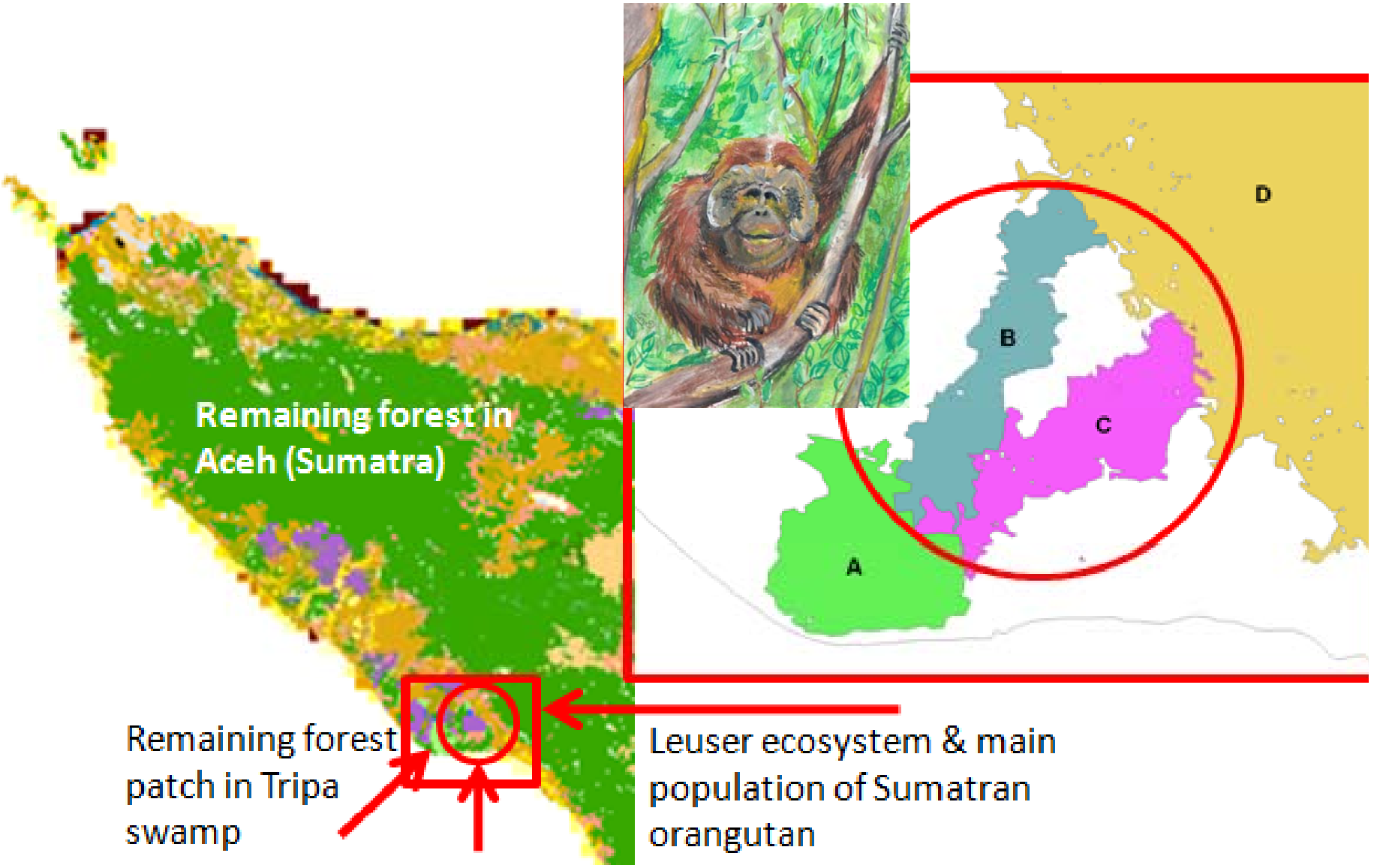
Scenarios	Income without C reward (MRp capita-1 year-1)	Income from C reward (MRp capita-1 year-1) with 15 USD ton-1 CO2e	Income from C reward (MRp capita-1 year-1) with 20 USD ton-1 CO2e	Income with C reward (MRp capita-1 year-1) with 15 USD ton-1 CO2e	Income with C reward (MRp capita-1 year-1) with 20 USD ton-1 CO2e
If do PATCH	2.93	1.66	2.22	4.59	5.14
If do INSTANTANEOUS	1.30	2.31	3.09	3.61	4.38
If do GRADUAL	2.36	1.99	2.65	4.34	5.01
If do CORRIDOR	1.11	2.35	3.14	3.47	4.25

Excluding C save by avoiding conversion in BAU

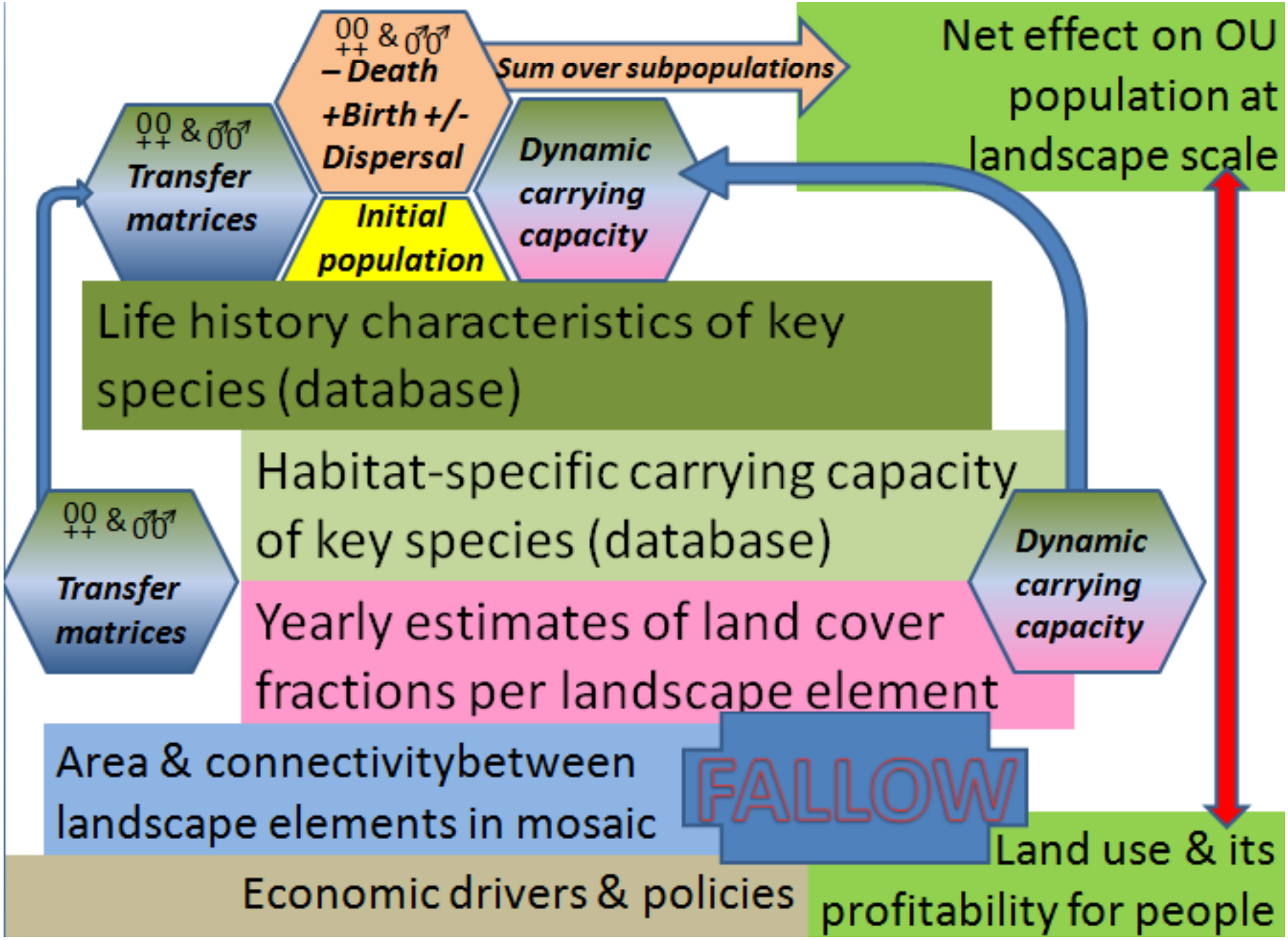
Scenarios	Income without C reward (MRp capita-1 year-1)	Income from C reward (MRp capita-1 year-1) with 50 USD ton-1 CO2e	Income from C reward (MRp capita-1 year-1) with 60 USD ton-1 CO2e	Income with C reward (MRp capita-1 year-1) with 50 USD ton-1 CO2e	Income with C reward (MRp capita-1 year-1) with 60 USD ton-1 CO2e
If do PATCH	2.93	0.53	0.63	3.45	3.56
If do INSTANTANEOUS	1.30	2.70	3.24	4.00	4.54
If do GRADUAL	2.36	1.61	1.93	3.97	4.29
If do CORRIDOR	1.11	2.84	3.40	3.95	4.51

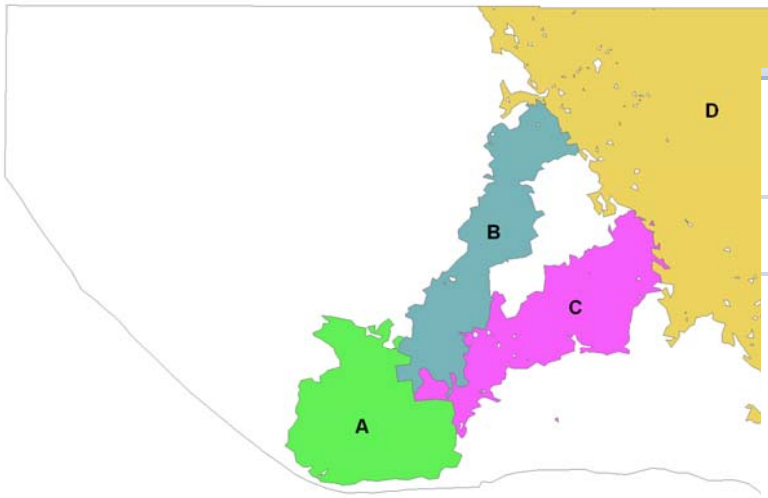
ACHIEVING 'GREEN DEVELOPMENT'
(Positive change both in economic and ecological aspect)





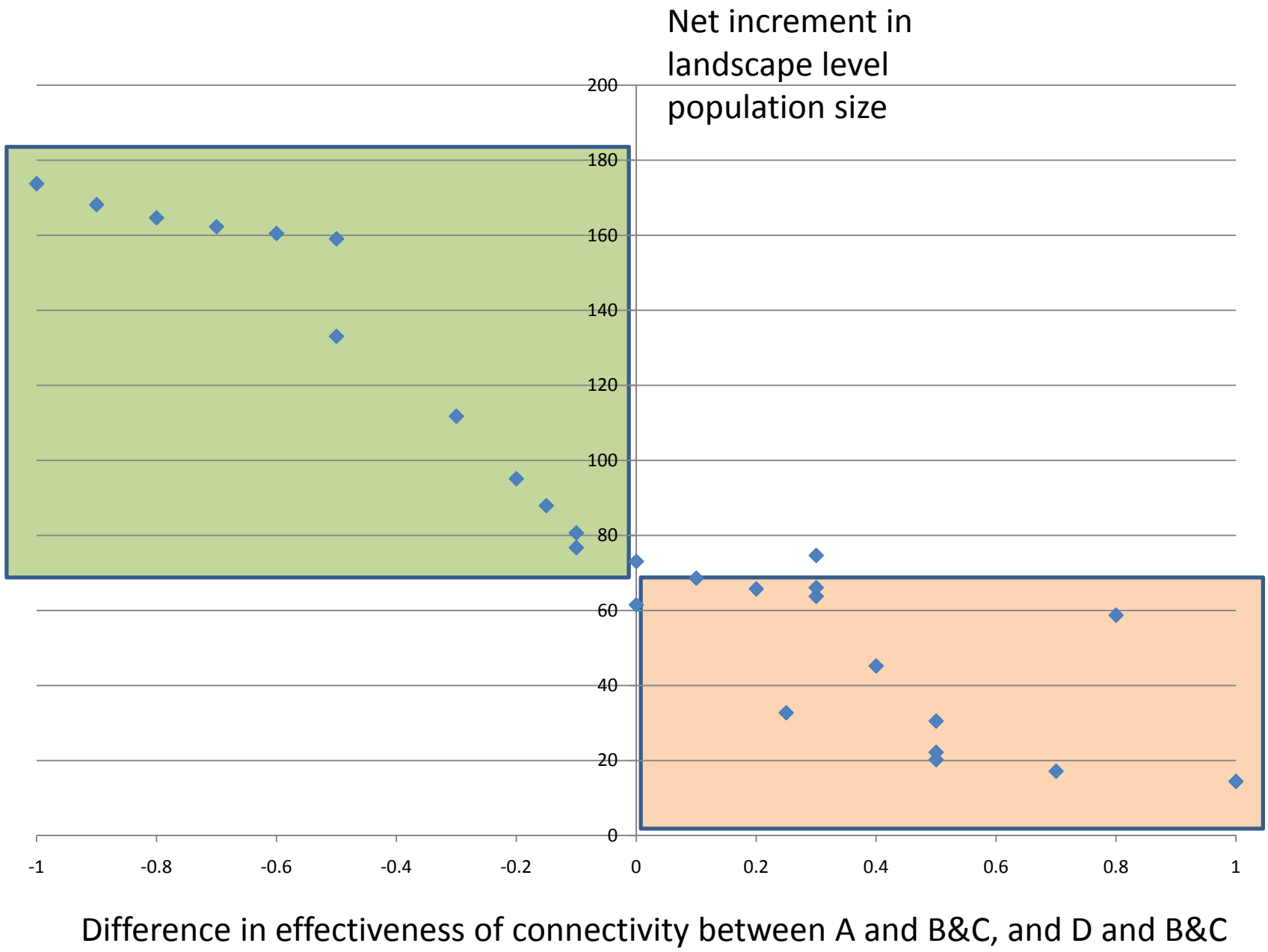
What would be cost & effectiveness of corridor restoration?


♀♀ & ♂♂
– Death
+Birth +/-
Dispersal
Sum over subpopulations
Net effect on OU population at landscape scale
♀♀ & ♂♂
Transfer matrices
Initial population
Dynamic carrying capacity
Life history characteristics of key species (database)
Habitat-specific carrying capacity of key species (database)
♀♀ & ♂♂
Transfer matrices
Dynamic carrying capacity
Yearly estimates of land cover fractions per landscape element
Area & connectivitybetween landscape elements in mosaic
FALLOW
Economic drivers & policies
Land use & its profitability for people



Key output

Subpopulation size				
Forest patch	Corridor 1	Corridor 2	KEL = Kawasan Ekosistem Leuser	
126	16	4	959	1105
At end of simulation				
105	63	47	1007	1222
-21	47	43	48	117
	69			
Female/male ratio				
0.82	0.82	0.82	0.82	
1.28	0.22	0.17	1.02	0.92126


Net increment in landscape level population size
200
180
160
140
120
100
80
60
40
20
0
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
Difference in effectiveness of connectivity between A and B&C, and D and B&C