Análisis de Incentivos para Reducir la Deforestación en Indonesia: Aplicación del Modelo OSIRIS

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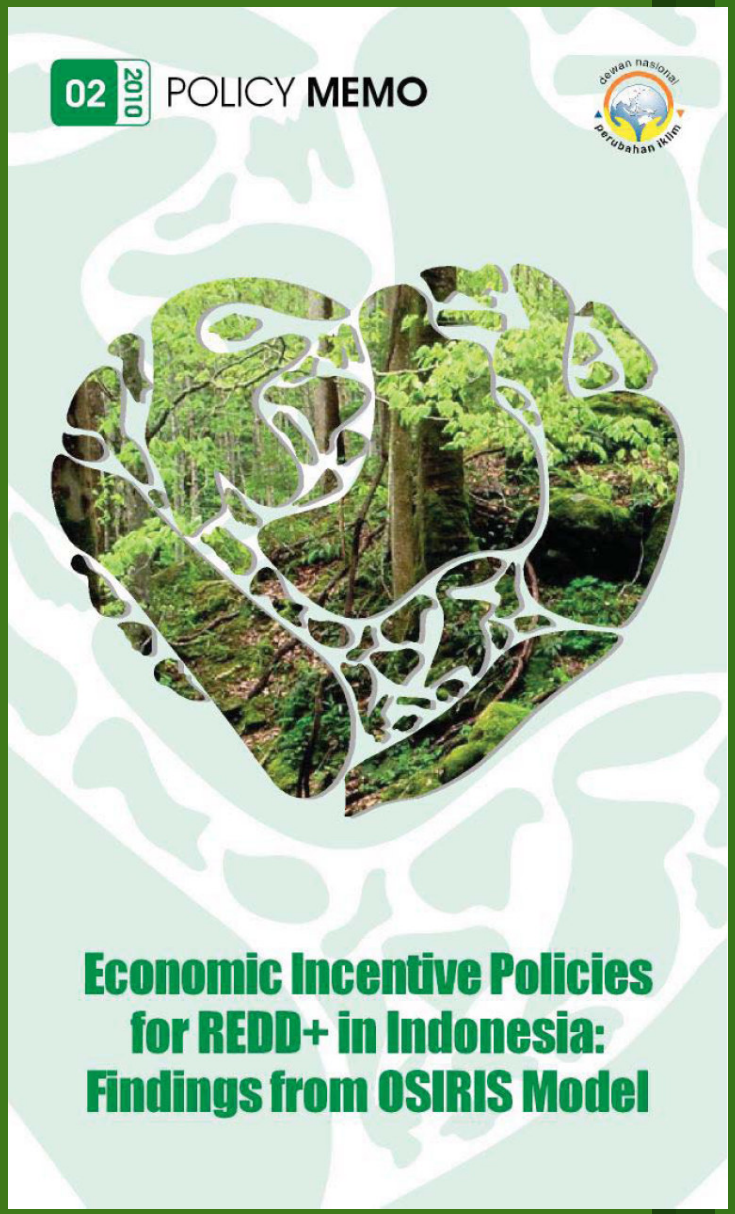
Based on work by: Jonah Busch, Ruben Lubowski, Fabiano Godoy, Farhan Helmy, Muhammad Farid, Doddy Sukadri, Kemen Austin, Jenny Hewson, Daniel Juhn, Marc Steininger, Fred Boltz

Seminario sobre "Midiendo la Deforestación Evitada: Un enfoque de Políticas Publicas"
SEMARNAT, INE, CONAFOR, Tinker Foundation
Ciudad de México, 9 de Marzo 2011

http:www/conservation.org/osiris



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EDF ENVIRONMENTAL DEFENSE FUND Finding the ways that work
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Norad

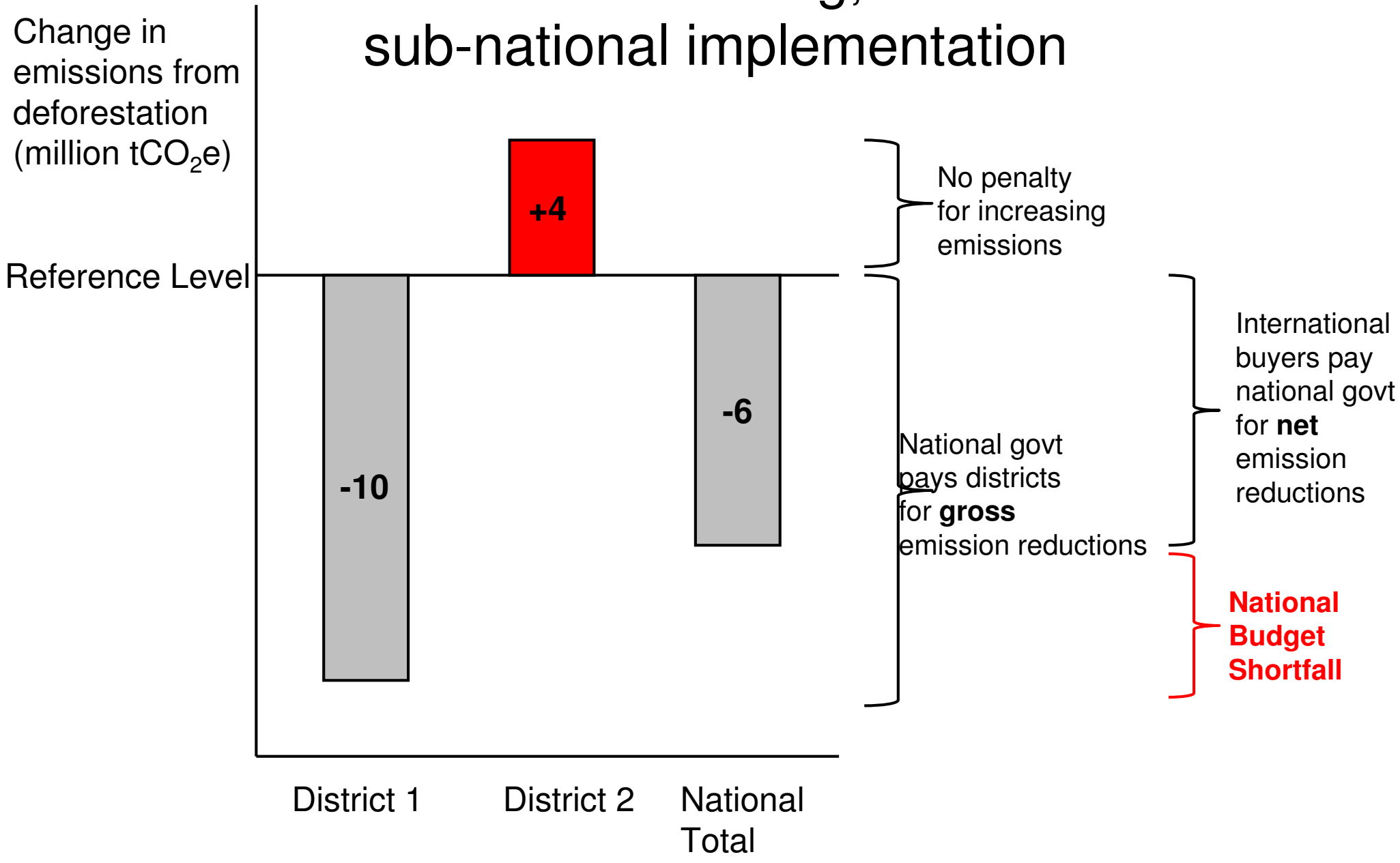
The OSIRIS-Indonesia spreadsheet and map tool has been developed by Conservation International, the Environmental Defense Fund, and World Resources Institute, in collaboration with Indonesia DNPI and Ministry of Forestry, to estimate and map the impacts of alternative REDD policies and incentives on:

-deforestation (ha/yr)
-emission reductions (tCO_2e/yr)
-national and district revenue ($/yr)

-Free
-Transparent
-Open-source
-Based on peer-reviewed scientific data and methods
-Publicly available:

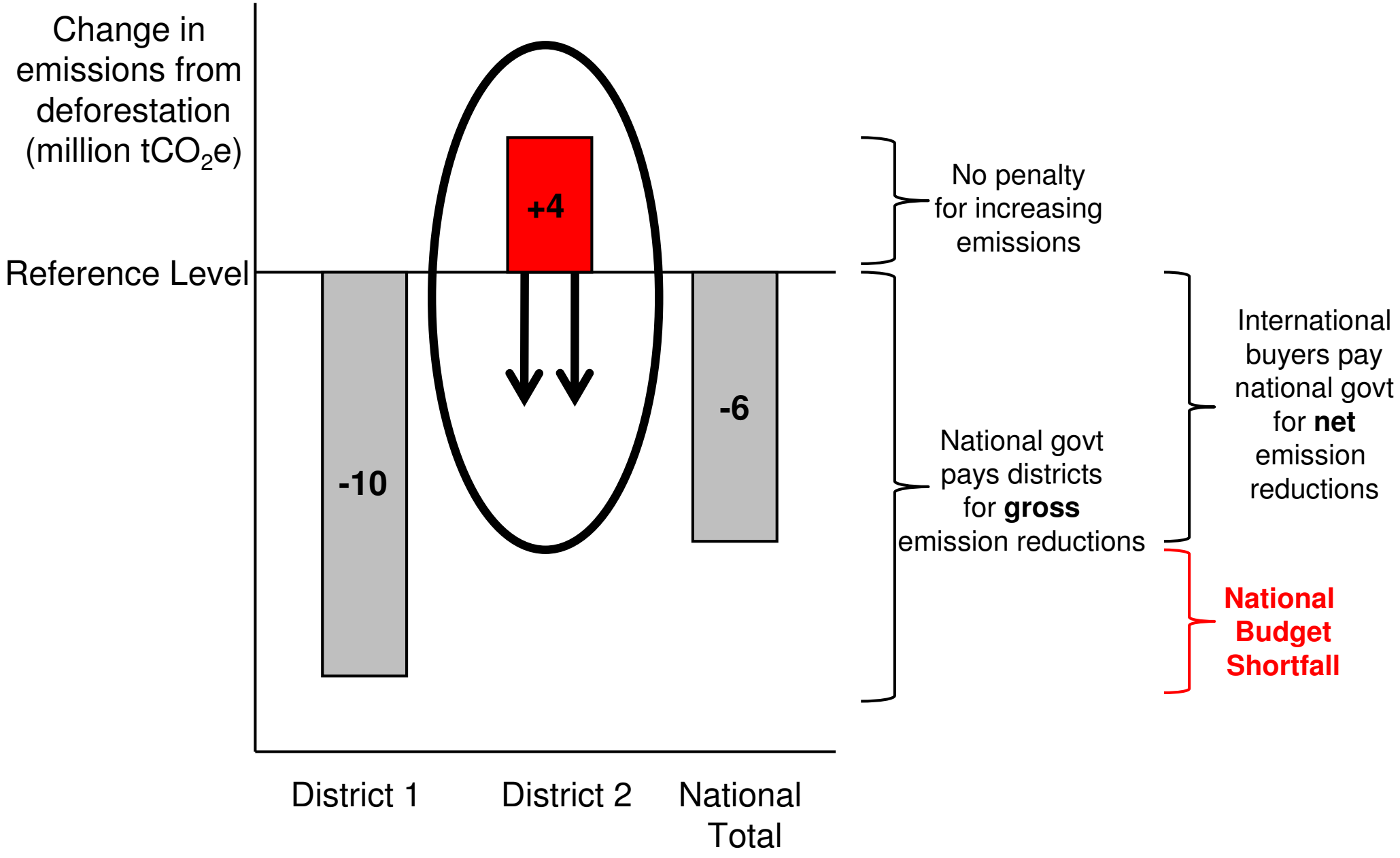
http://www.conservation.org/osi

The challenge of national accounting, sub-national implementation



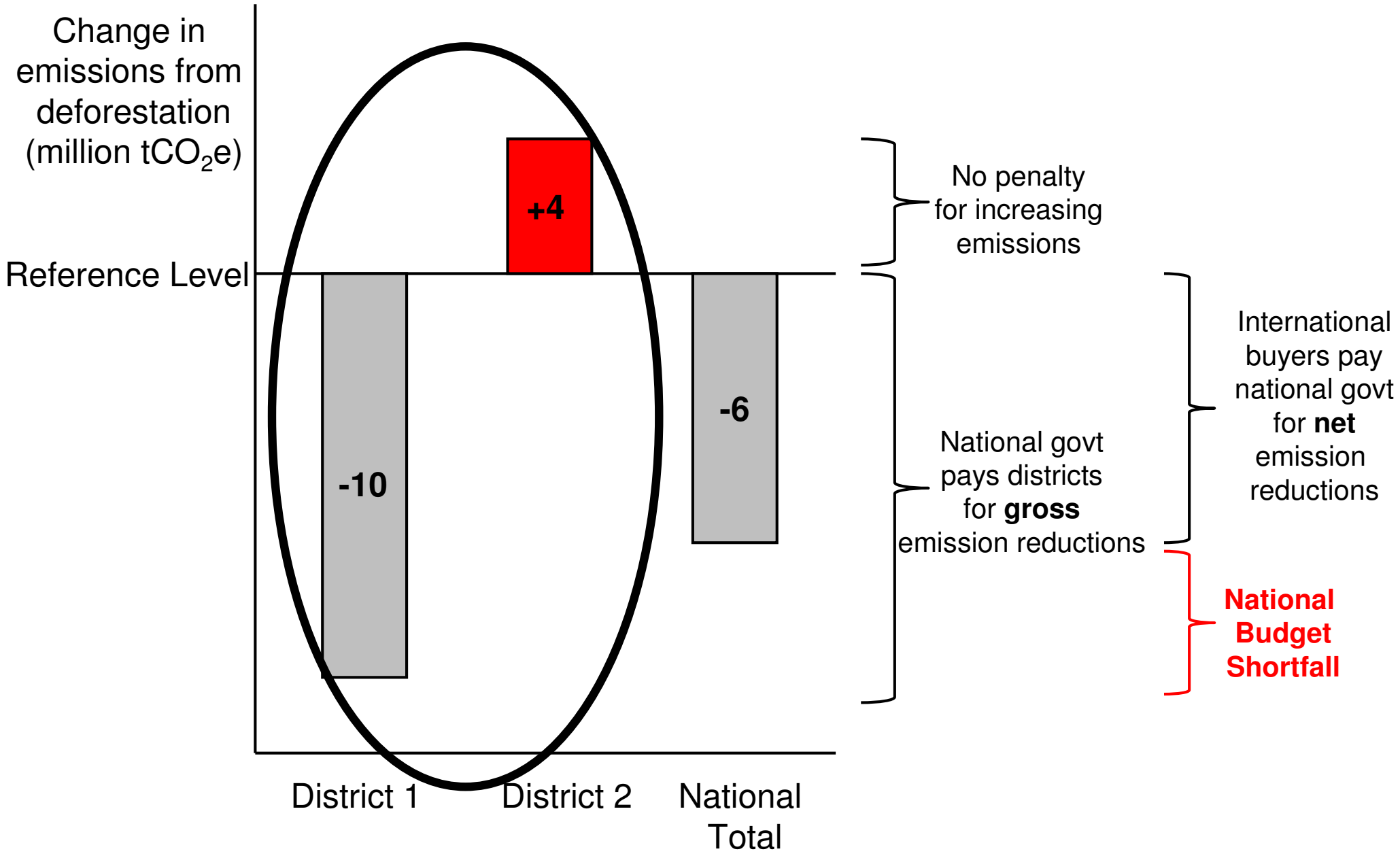
Policy Lever 1: Reference Levels

Incentivize broad participation



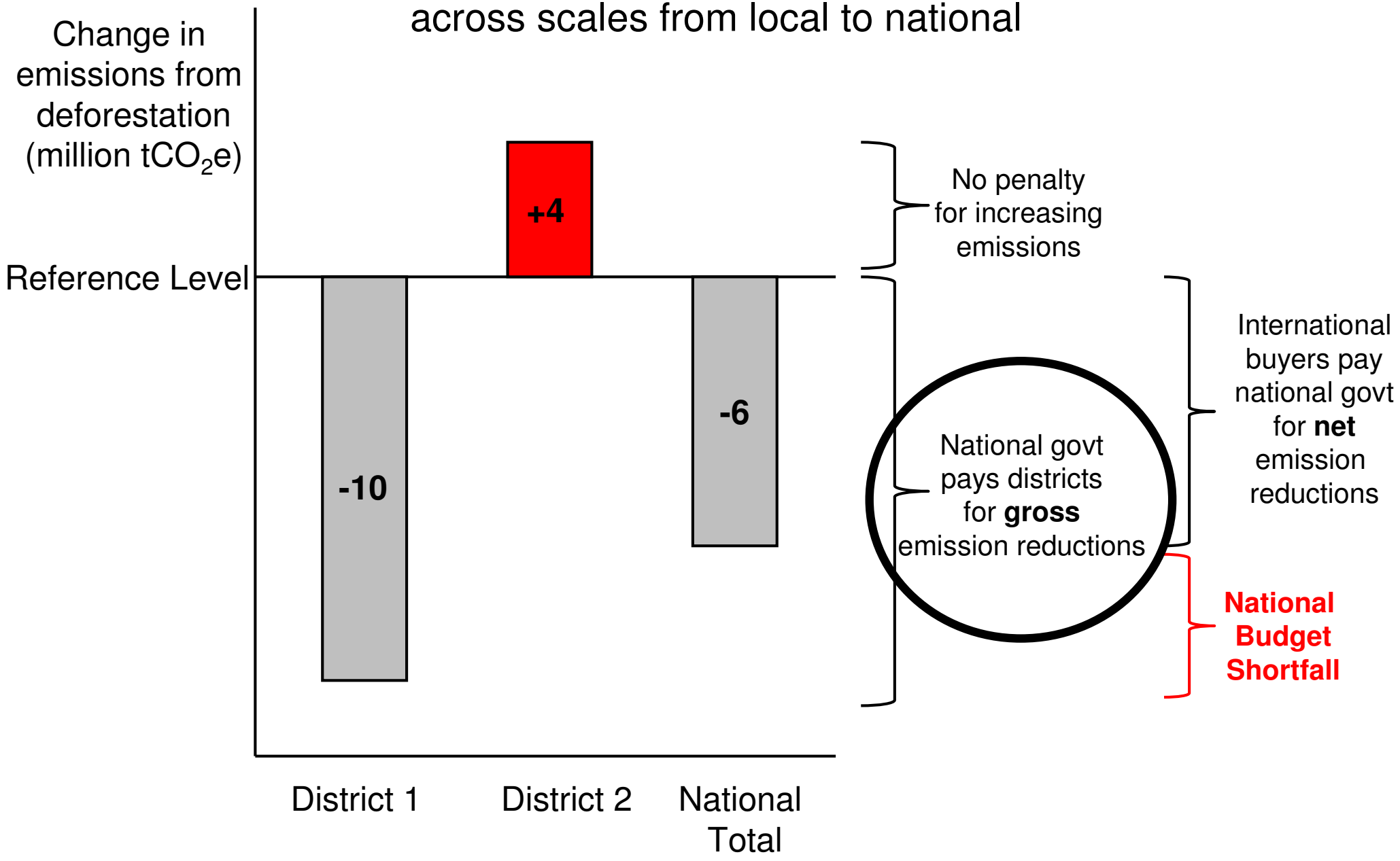
Policy Lever 2: Accounting scale

Reward aggregate performance



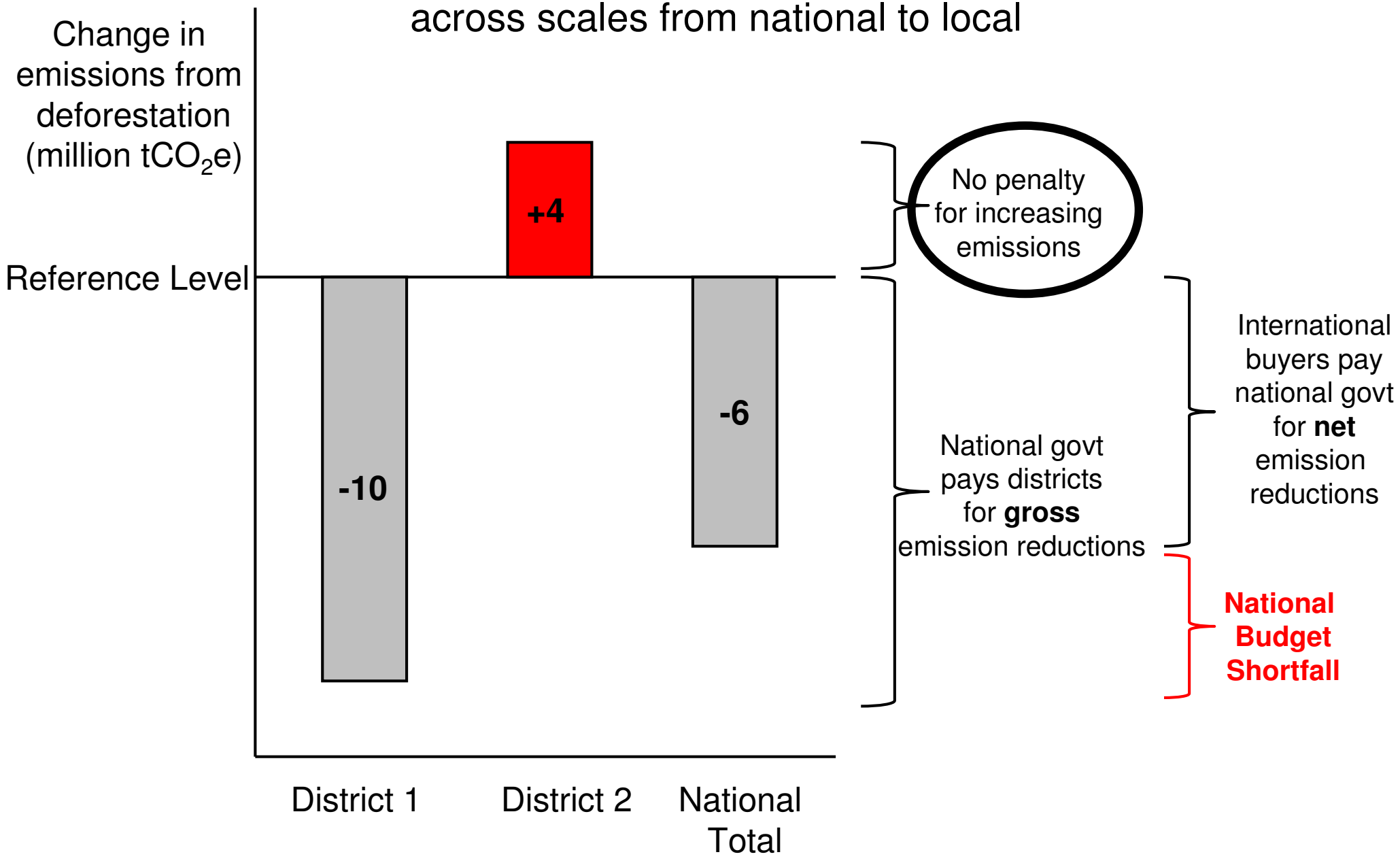
Policy Lever 3: Revenue sharing

Share the financial benefits resulting from local emission reductions across scales from local to national



Policy Lever 4: Cost sharing

Share the responsibility for costs resulting from emission increases across scales from national to local



OSIRIS-Indonesia methods

Data on forest cover, forest cover change, emission factors, terrain, access, protected status, potential agricultural revenue compiled for ~200,000 3km x 3km grid cells across all of Indonesia

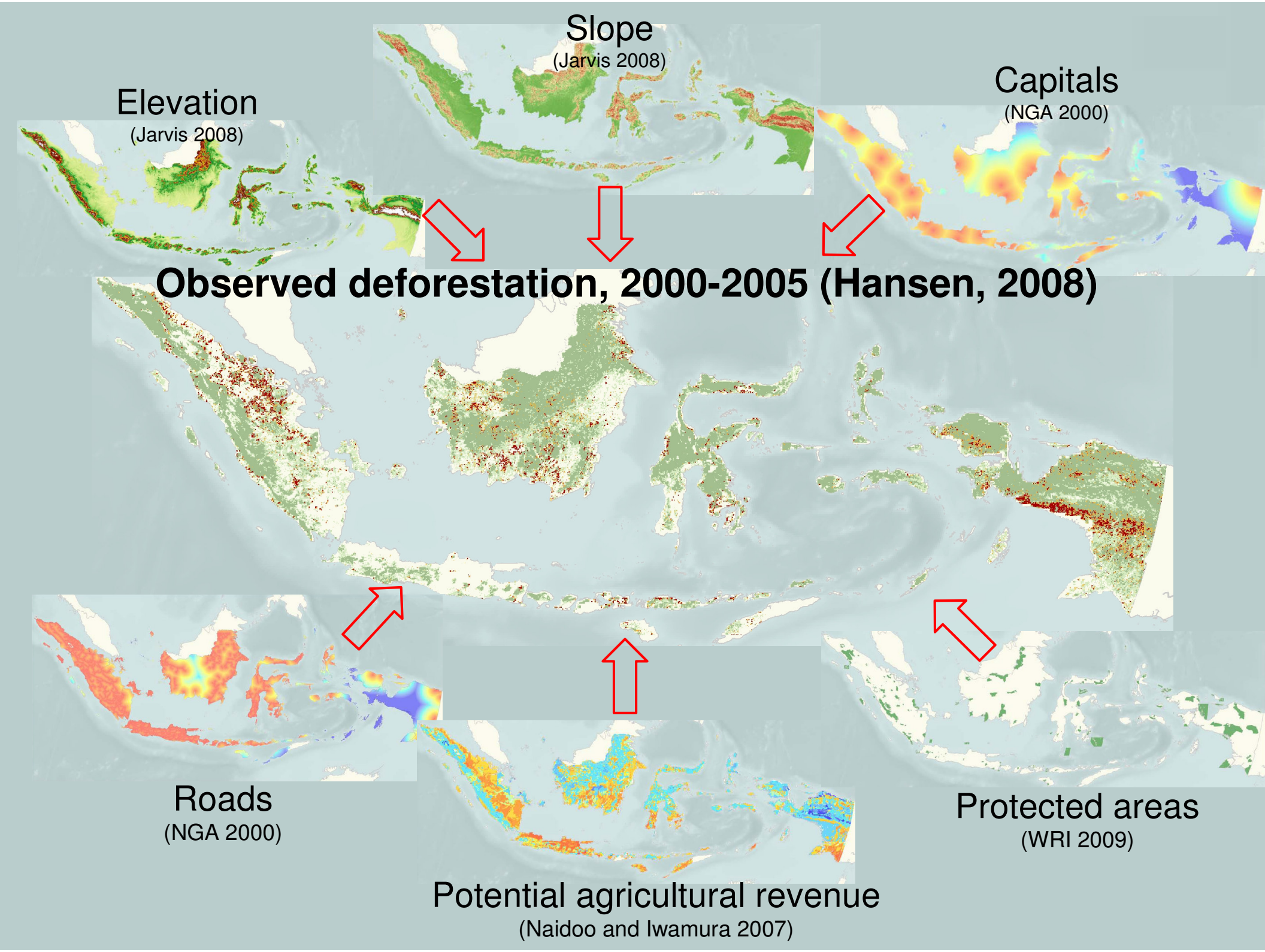
Statistical relationship between potential revenue and deforestation determined empirically using observed forest cover loss (2000-2005)

National government sets REDD economic incentive policies (district reference levels; scale of accounting; benefit sharing; cost sharing)

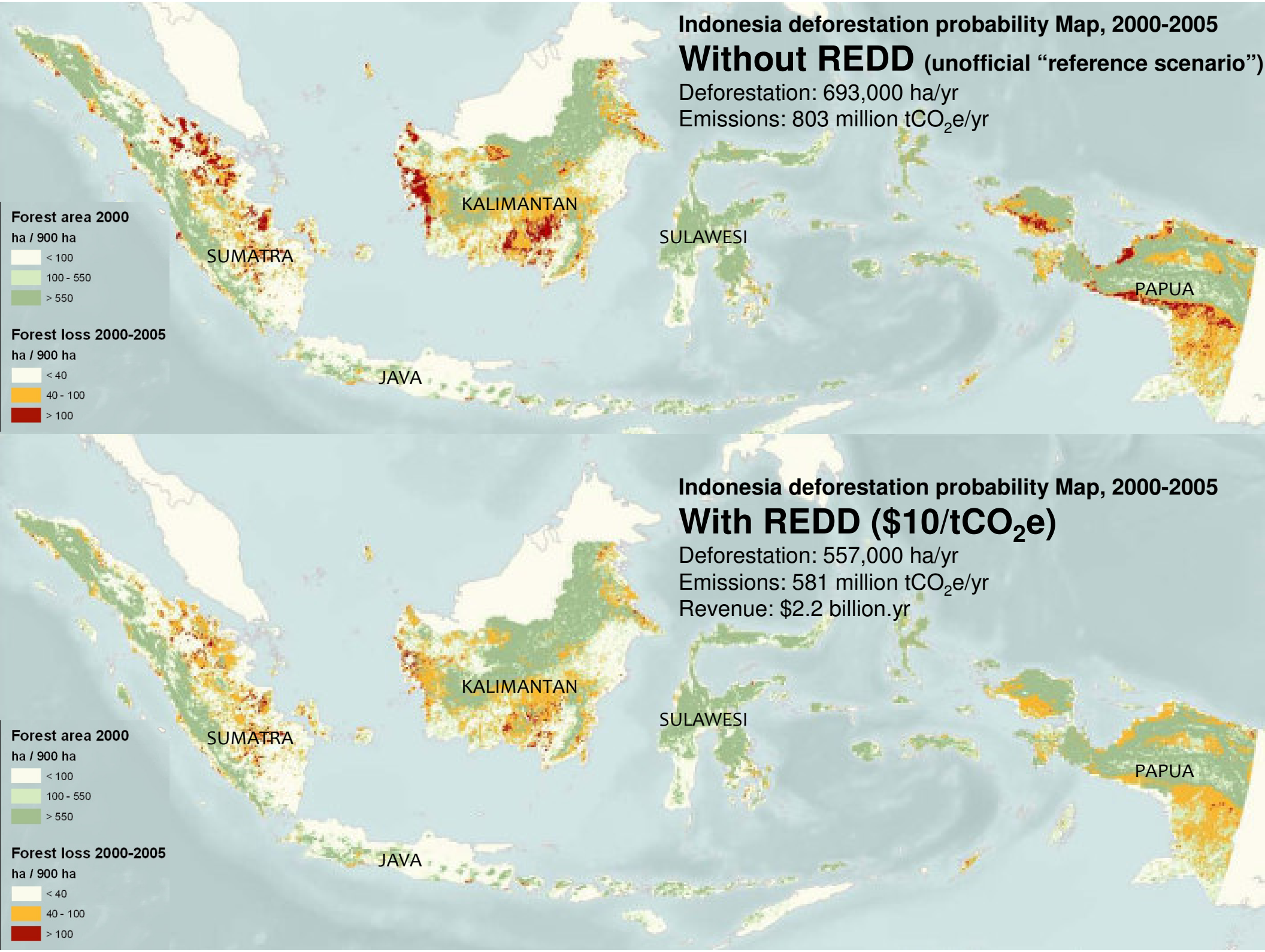
403 districts respond to incentive policies by choosing whether or not to participate in REDD, and choosing where and how much to deforest

Market feedbacks produce “leakage” of deforestation

Equilibrium generates estimates of spatial distribution of probability of deforestation, emissions, and national and district revenue under alternative national REDD policies


Slope
(Jarvis 2008)
Elevation
(Jarvis 2008)
Capitals
(NGA 2000)
Observed deforestation, 2000-2005 (Hansen, 2008)
Roads
(NGA 2000)
Protected areas
(WRI 2009)
Potential agricultural revenue
(Naidoo and Iwamura 2007)

Indonesia deforestation probability Map, 2000-2005
Without REDD (unofficial "reference scenario")
Deforestation: 693,000 ha/yr
Emissions: 803 million tCO2e/yr
KALIMANTAN
SULAWESI
SUMATRA
PAPUA
JAVA
Forest area 2000
ha / 900 ha
< 100
100 - 550
> 550
Forest loss 2000-2005
ha / 900 ha
< 40
40 - 100
> 100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ha / 900 ha
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> 550
Forest loss 2000-2005
ha / 900 ha
< 40
40 - 100
> 100
Indonesia deforestation probability Map, 2000-2005
With REDD ($10/tCO2e)
Deforestation: 557,000 ha/yr
Emissions: 581 million tCO2e/yr
Revenue: $2.2 billion.yr
KALIMANTAN
SULAWESI
SUMATRA
PAPUA
JAVA
Forest area 2000
ha / 900 ha
< 100
100 - 550
> 550
Forest loss 2000-2005
ha / 900 ha
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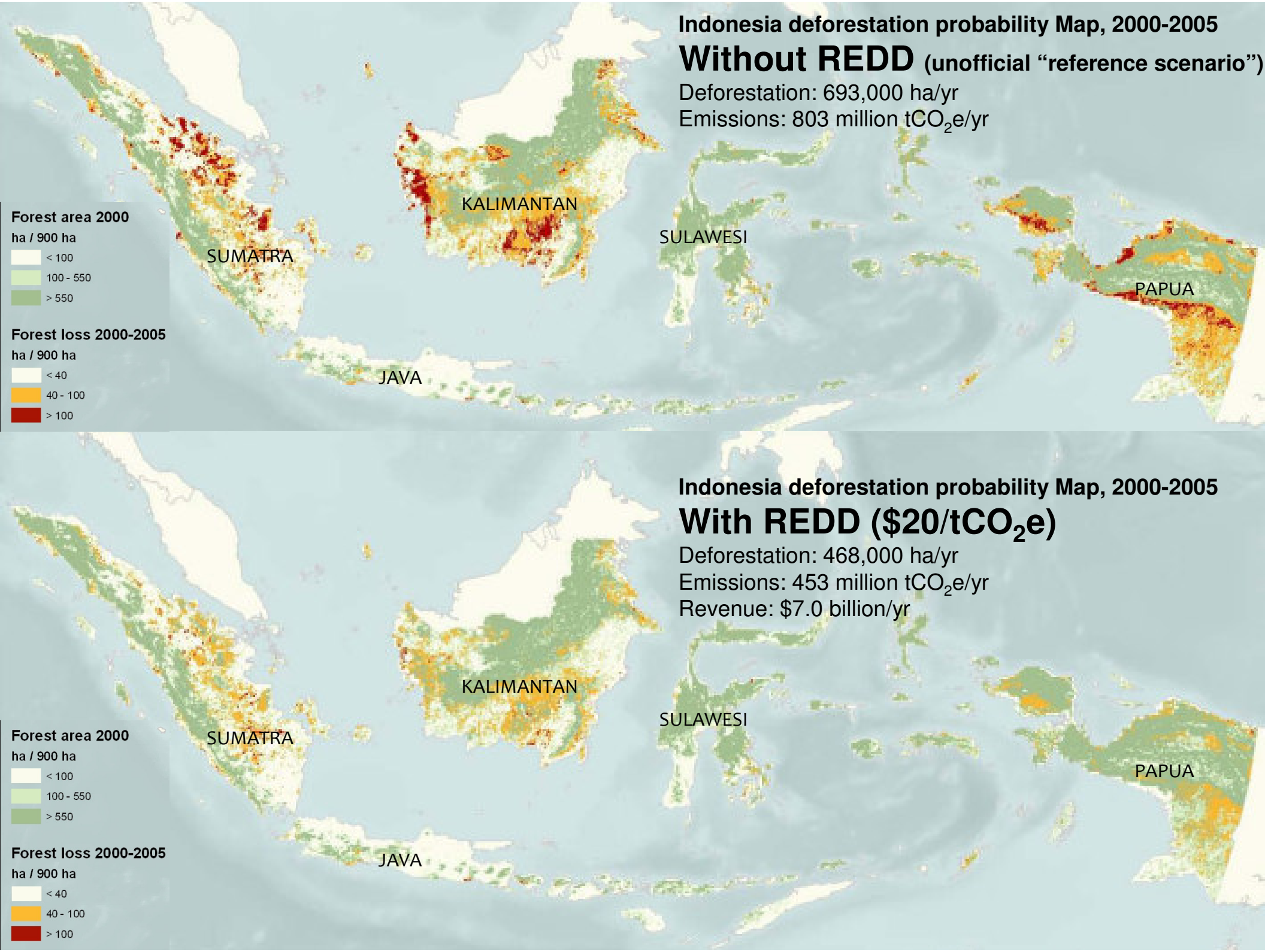
> 100


Indonesia deforestation probability Map, 2000-2005
Without REDD (unofficial "reference scenario")
Deforestation: 693,000 ha/yr
Emissions: 803 million tCO2e/yr
KALIMANTAN
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Forest area 2000
ha / 900 ha
< 100
100 - 550
> 550
Forest loss 2000-2005
ha / 900 ha
< 40
40 - 100
> 100
Indonesia deforestation probability Map, 2000-2005
With REDD ($20/tCO2e)
Deforestation: 468,000 ha/yr
Emissions: 453 million tCO2e/yr
Revenue: $7.0 billion/yr
KALIMANTAN
SULAWESI
SUMATRA
PAPUA
JAVA
Forest area 2000
ha / 900 ha
< 100
100 - 550
> 550
Forest loss 2000-2005
ha / 900 ha
< 40
40 - 100
> 100


Indonesia deforestation probability Map, 2000-2005
Without REDD (unofficial "reference scenario")
Deforestation: 693,000 ha/yr
Emissions: 803 million tCO2e/yr
KALIMANTAN
SULAWESI
SUMATRA
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Forest area 2000
ha / 900 ha
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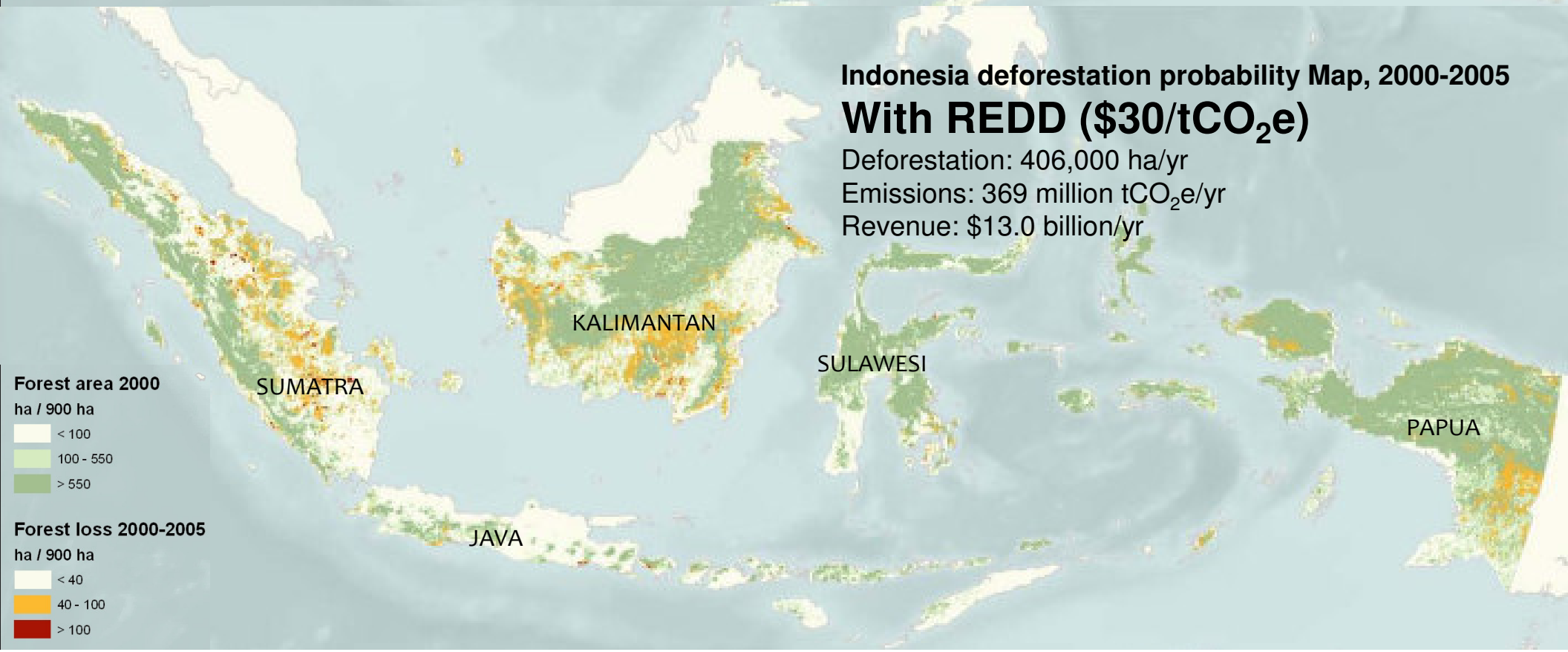
Indonesia deforestation probability Map, 2000-2005
With REDD ($30/tCO2e)
Deforestation: 406,000 ha/yr
Emissions: 369 million tCO2e/yr
Revenue: $13.0 billion/yr
KALIMANTAN
SULAWESI
SUMATRA
PAPUA
JAVA
Forest area 2000
ha / 900 ha
< 100
100 - 550
> 550
Forest loss 2000-2005
ha / 900 ha
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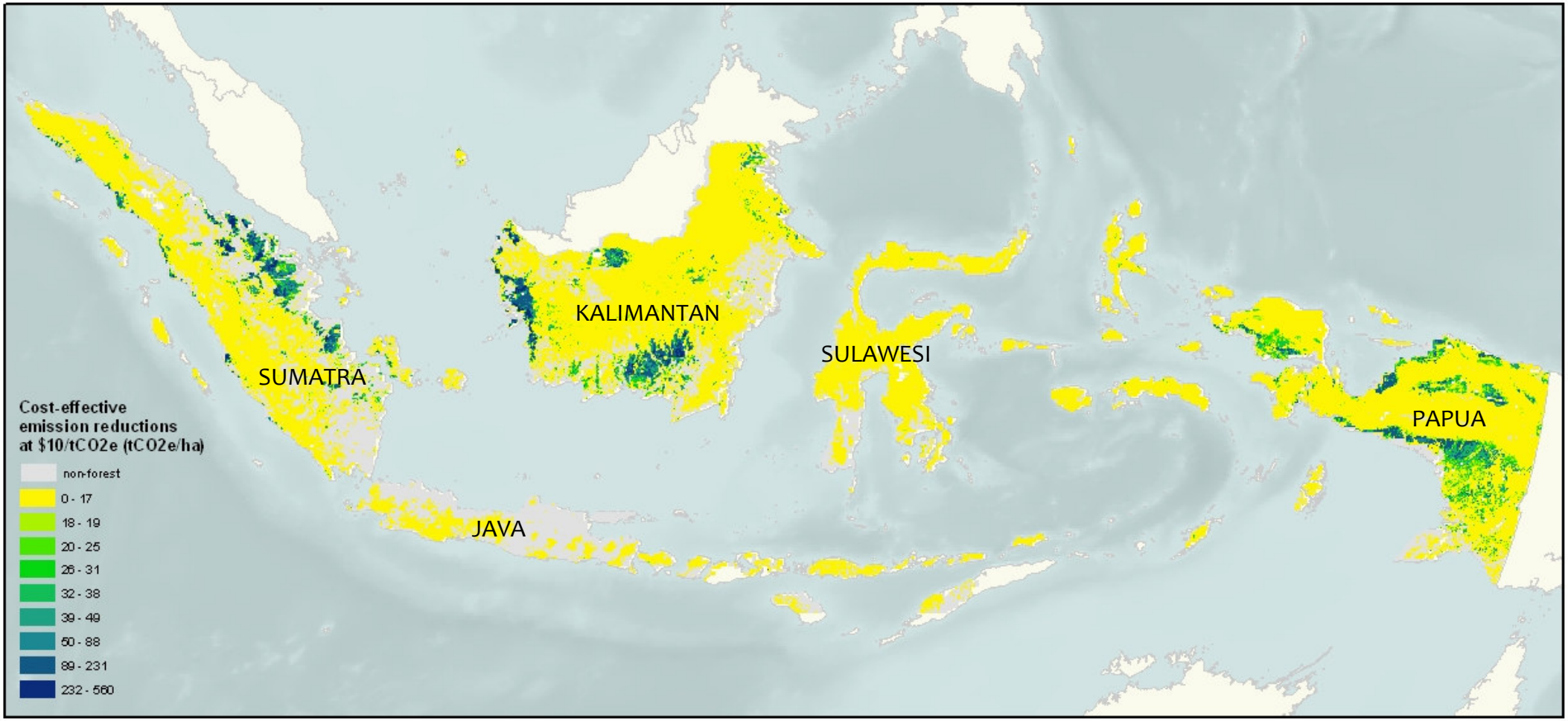
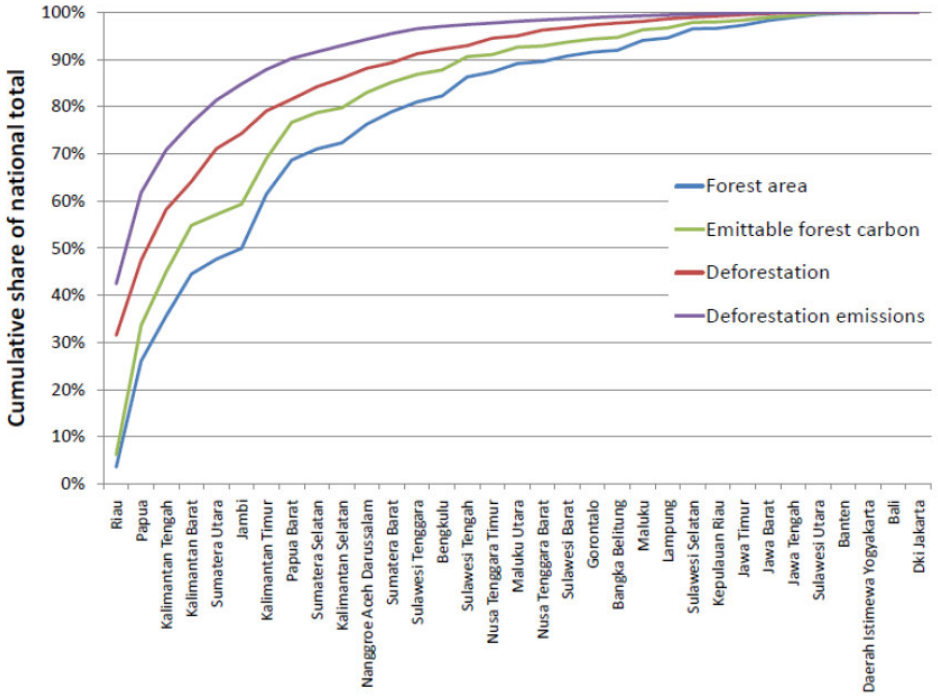
40 - 100
> 100

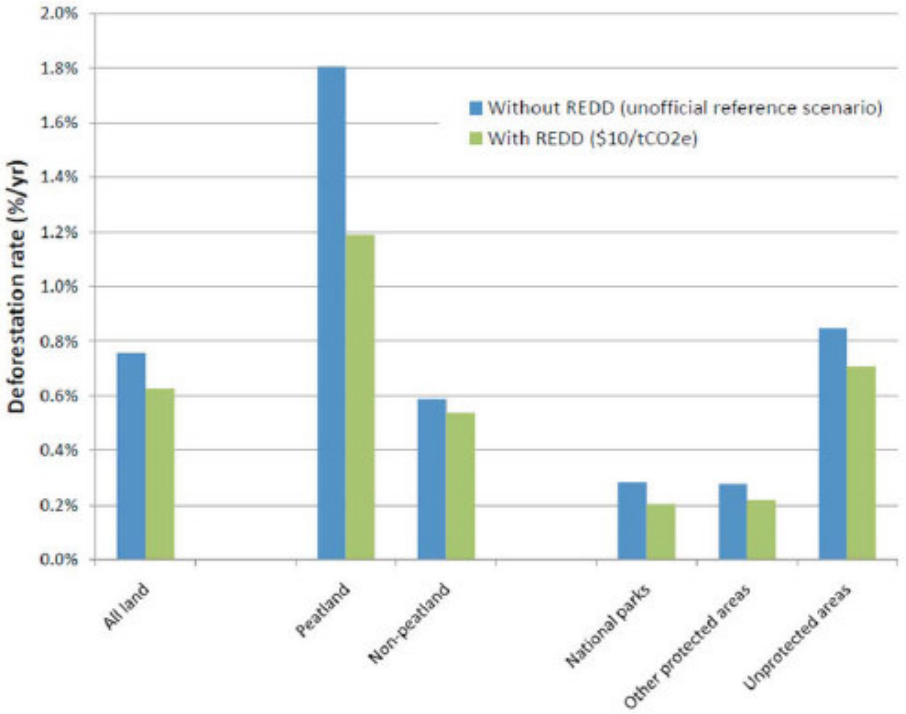
Locating cost-effective emission reductions at $10/tCO$_2$e (tCO$_2$e/ha)



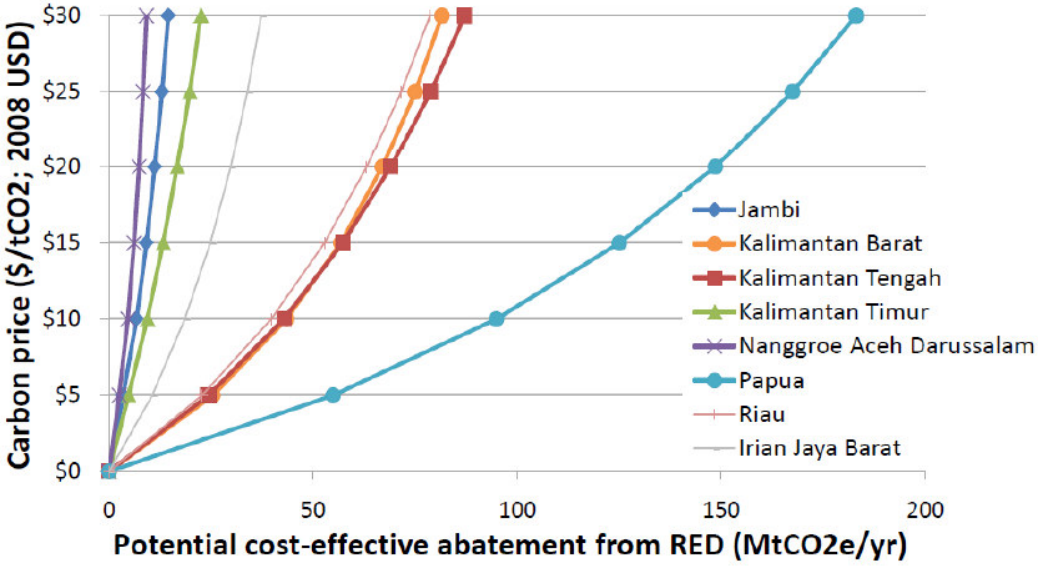
Where is the carbon, AND where can money change behavior?



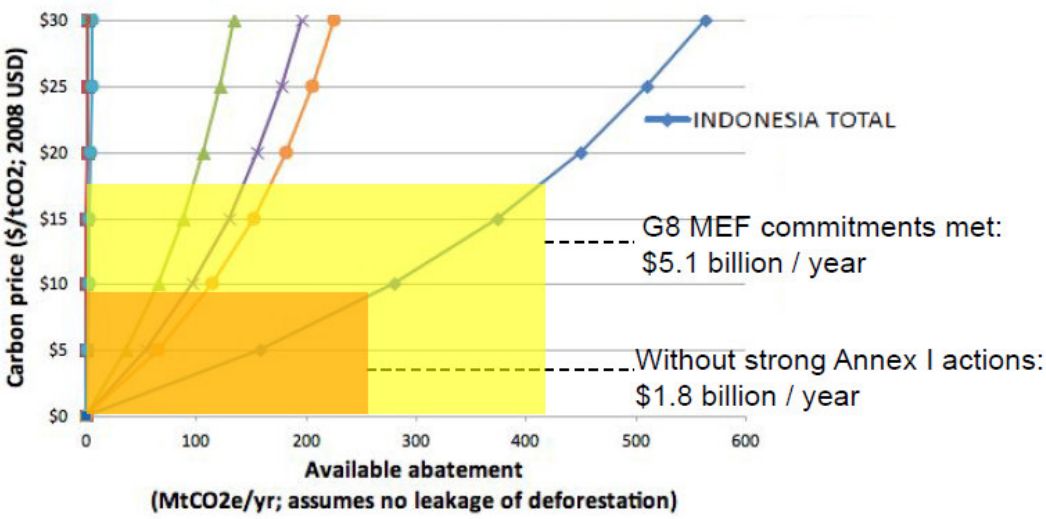
Biophysical potential by province



Economic potential by land type

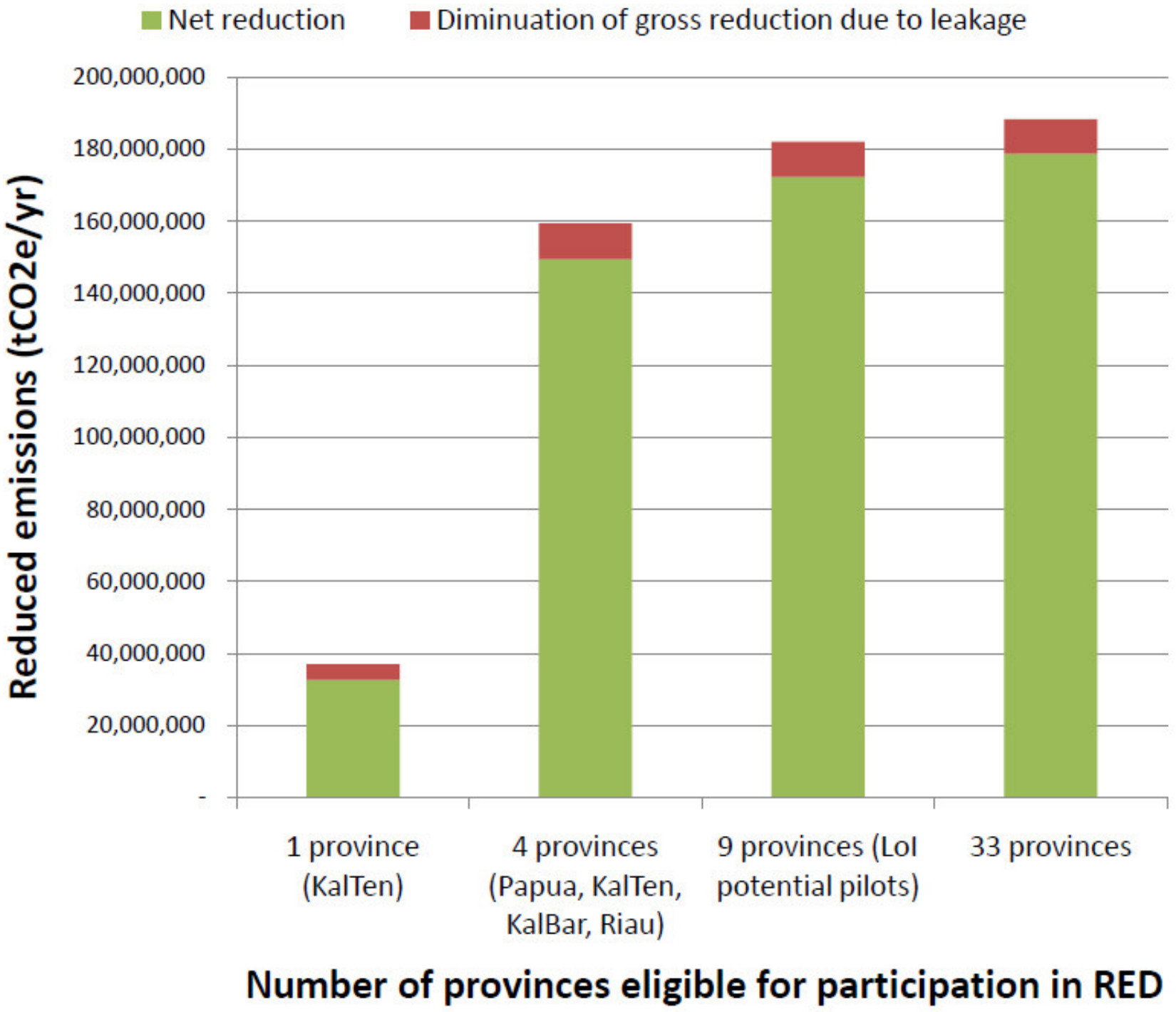


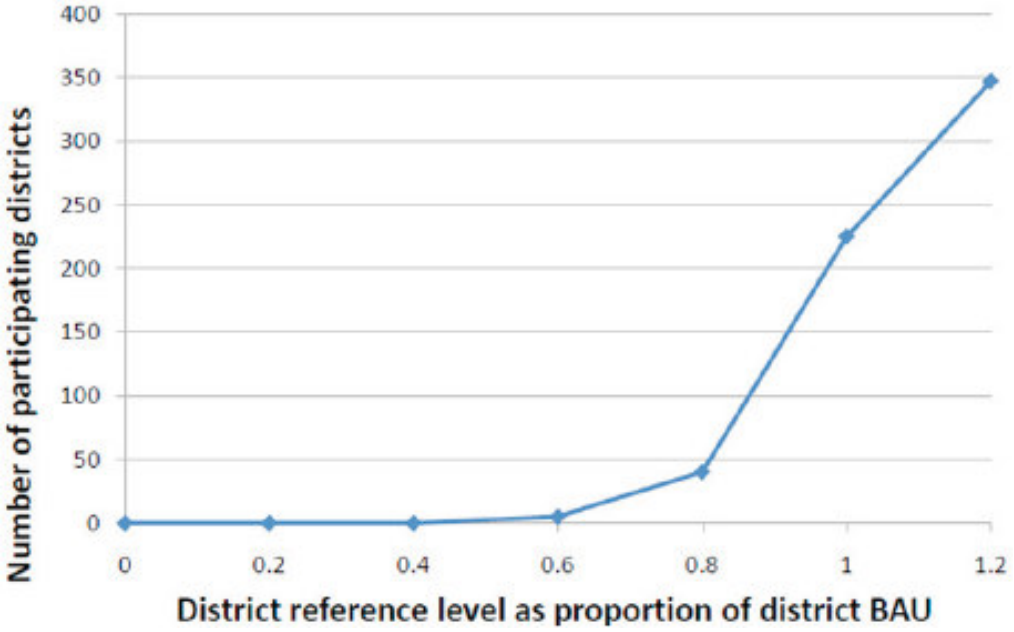
Cost-effective RED abatement



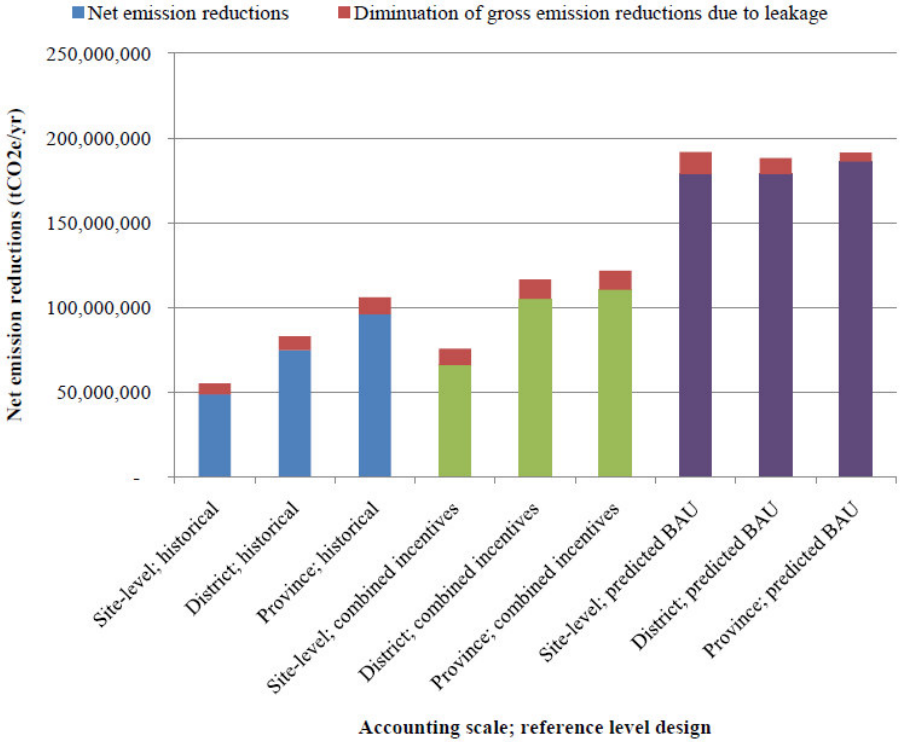
Revenue from cost-effective RED

Broader participation, more net reduction

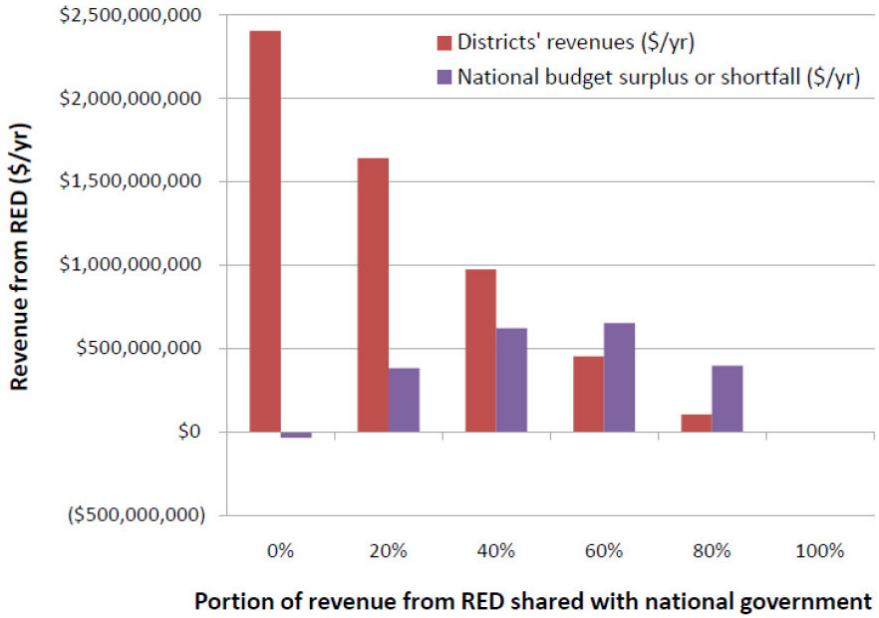




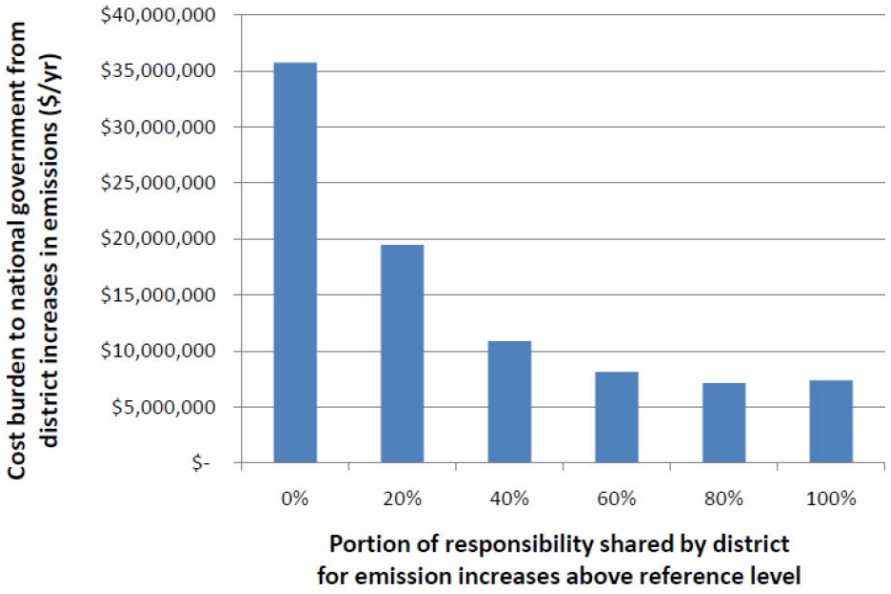
Reference levels



Accounting scale



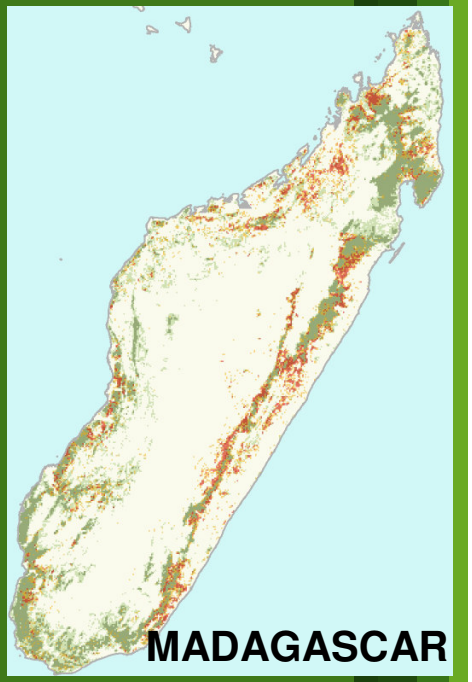
Revenue sharing

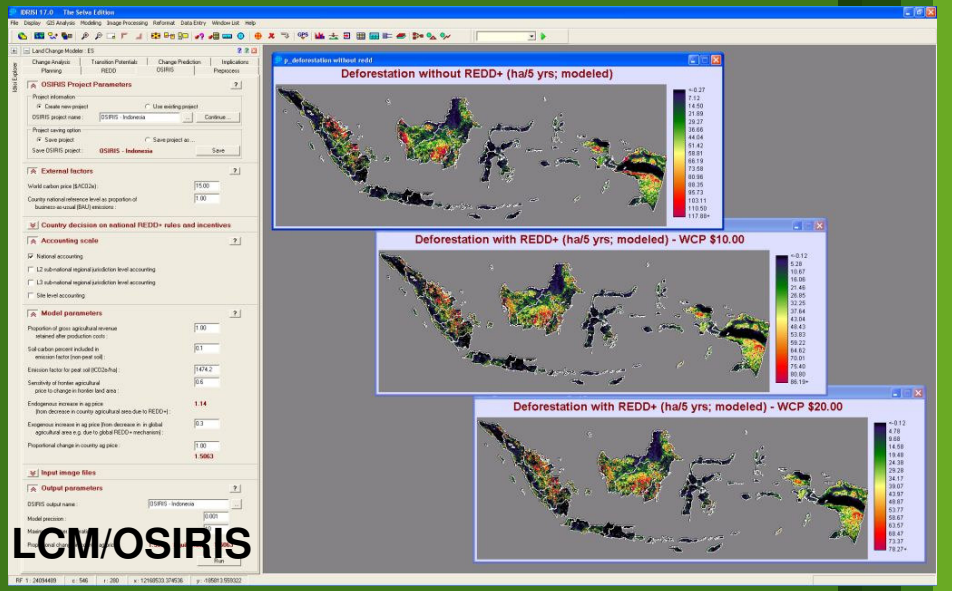


Responsibility sharing

Next steps…

- Scientific and policy publications
- Continued extensions: reforestation, degradation, agriculture, biodiversity…
- Incorporate new data as available
- Expand to other geographies.
- Integrate with Clark Labs' IDRISI Land Change Modeler (LCM) software to support regional and local land-use planning
- Open for discussion and collaboration!





The OSIRIS-Indonesia data and spreadsheet tool are freely available online: http://www.conservation.org/osiris

¡Muchas gracias!

Thanks to:
Indonesia National Council on Climate Change (DNPI)
Indonesia Ministry of Forestry
Norwegian Agency for Development Cooperation

Comments and feedback welcome:
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