
# Crouching Tiger Hidden Carbon

## BERBAK PEATLAND FOREST CONSERVATION

***A REDD+ demonstration project to conserve a Sumatran tiger landscape***

**"Seminar International REDD+- the forest grab of all times?"**
**10th March 2014**
**IPB International Convention Center, Botani Square , Bogor**

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## *- Presentation Outline -*

1. A rationale background to building the case for a Berbak REDD+ Project

2. REDD+ Project Feasibility & Eligibility in Berbak Peat Swamp Lanscape

3. Progress and result to date Berbak REDD+ Readiness Project
   - ❖ A enabling environment and designing a landscape-scale REDD+ Project
   - ❖ Building partnership for sustainable, inclusive and low emission development

4. Recommendation and Lesson-learnt

Minister of Forestry

ZSL LIVING CONSERVATION

# - A Rationale Background

**26%**

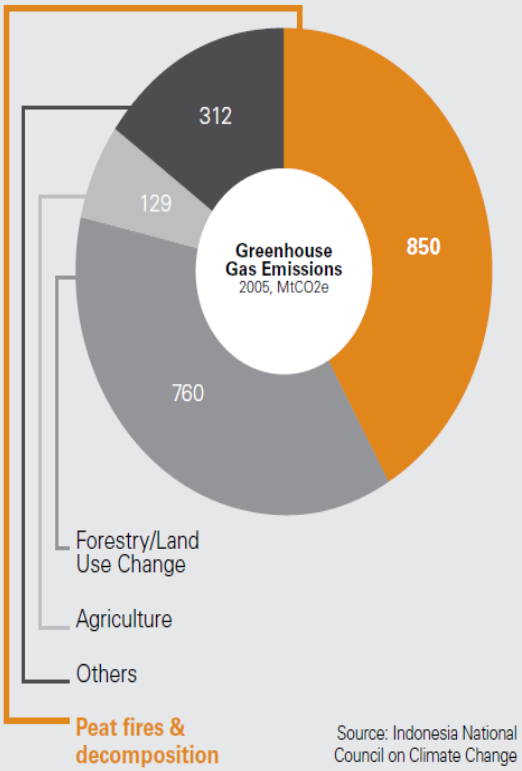
INDONESIA'S 2020 GHG REDUCTION TARGET (41% WITH EXTERNAL HELP)

**41%**

OF INDONESIA'S 2005 GHG EMISSIONS WERE FROM PEATLAND LOSS

## INDONESIAN GREENHOUSE GAS EMISSIONS (GHG) FROM PEATLANDS

Nationally, emissions from peatlands amounted to roughly 41% of Indonesia's total GHG emissions in 2005. This makes conserving peat swamp forest one of Indonesia's largest mitigation opportunities.




Source: Indonesia National Council on Climate Change

Tropical peatlands . are a key global carbon sink – absorbing and storing vast amounts of carbon from the atmosphere.

This sink function is threatened by deforestation, peat drainage, and climate change.

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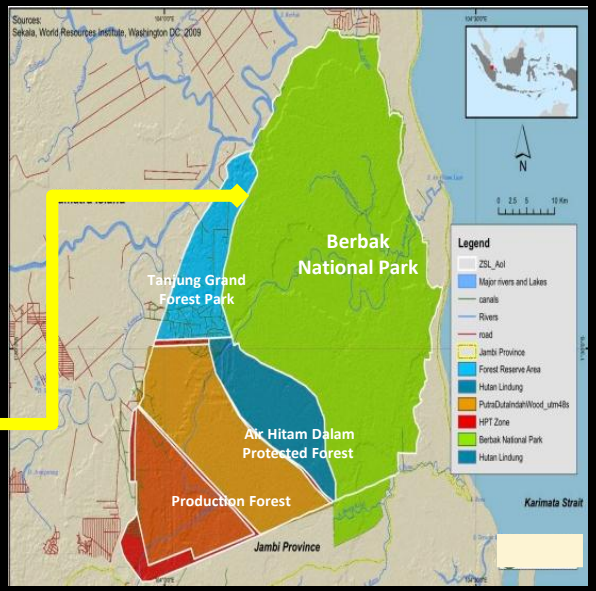
## *- A Rationale Background* – Project Overview

### Location




Berbak peat swamp forest landscape located in Muaro Jambi and Tanjung Jabung Timur Sub-districts , Jambi Province , Indonesia. The core area comprises of Berbak National Park with a deep-peat swamp forest Its remaining intact peat-swamp forest in the Sumatra South Eastern coastal region within the Sunda Land Key Biodiversity Area. A total Berbak Carbon Initiative (BCI) REDD+ Area of Interest (AoI) 238,000 hectares. AoI consisting different 4 forest functions Berbak National Park (142,750 ha), Air Hitam Dalam Protected Peat Swamp Forest (18,700 ha), Production Forest (62,000 ha), Tanjung Grand Forest Park. (17,893 ha).

### Project Developer :

ZSL LIVING CONSERVATION

Zoological Society of London

### Project Design Document Standart :

Voluntary Carbon Standards (VCS), Climate Community and Biodiversity (CCB)

### Key Project Partner and Funding Assistance :

Ministry of Forestry , Government of Jambi Province , Gita Buana Foundation, Deltares, IUPHHK-HA PT. Putraduta Indahwood, IUPHHK-HA PT. Pesona Belantara Persada, Jambi REDD+ Provincial Commission , Indonesia REDD+ Task Force, Clinton Foundation, Tropical Forest Conservation Action (TFCA-Sumatra)-USA, DEFRA UK, Panthera Fund, Darwin Initiative-UK, 21 Century Tiger, US Fish and Wildlife Service and Segre Fund.

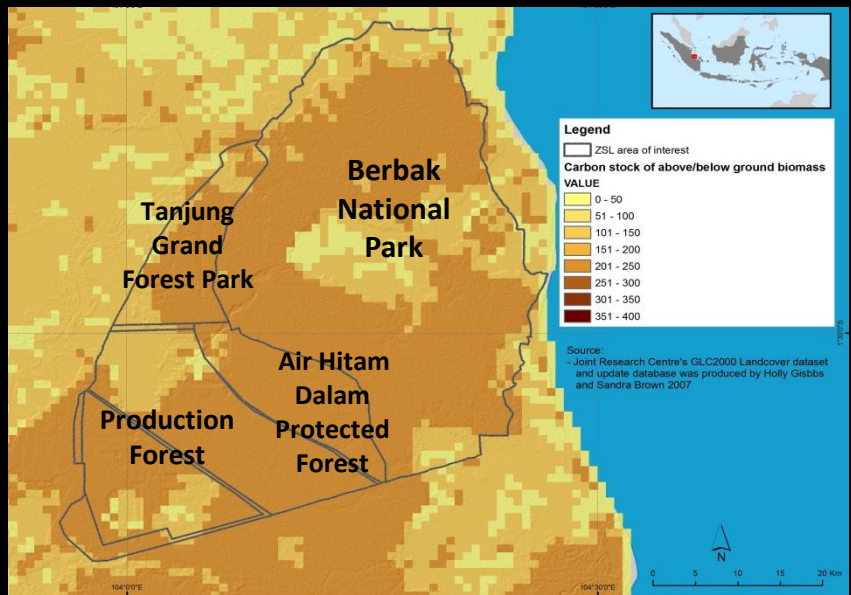
## *- A Rationale Background –* Climate, Biodiversity and Community Benefits



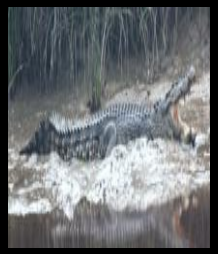

- Berbak peat land store 45 million tonnes carbon stock in with 26 million tonnes in the Berbak National Park alone. GHG potential from the BCI project area are approximately estimated to be ~164 millions cumulative CO2e with 34,4 millions in the Berbak National Park alone over the entire 30-year period and 149.4 millions **$MtCO_2e$** from emissions caused by the peat drainage and subsequent oxidation of peat land. Its make Berbak make a significant impact to climate change mitigation.

- A highly potential for degraded peat land forest rehabilitation and peat land hydrology restoration activities to restoring peat land biodiversity and hydrology and enhancement carbon stock.

| Carbon Stocks | | | |
|---|---|---|---|
| Location | Area (ha) | Range (tC/ha) | Carbon Stock (~tC) |
| Berbak National Park | 140,198 | 0 – 225 | ~25,988,500 |
| Protection Forest (HL) | 18,705 | 4 – 225 | ~4,129,680 |
| Forest Reserve (Tahura) | 17,599 | 5 - 225 | ~3,377,990 |
| Total Production Forest Zone | 62,214 | 4 – 225 | ~11,977,620 |
| *PT. PIW* | 33,562 | 4 – 225 | ~6,419,260 |
| *PT. PBP* | 20,951 | 4 – 225 | ~3,951,400 |
| **Total** | **238,716** | | **~45,473,790** |



## *- A Rationale Background –* Climate, Biodiversity and Community Benefits

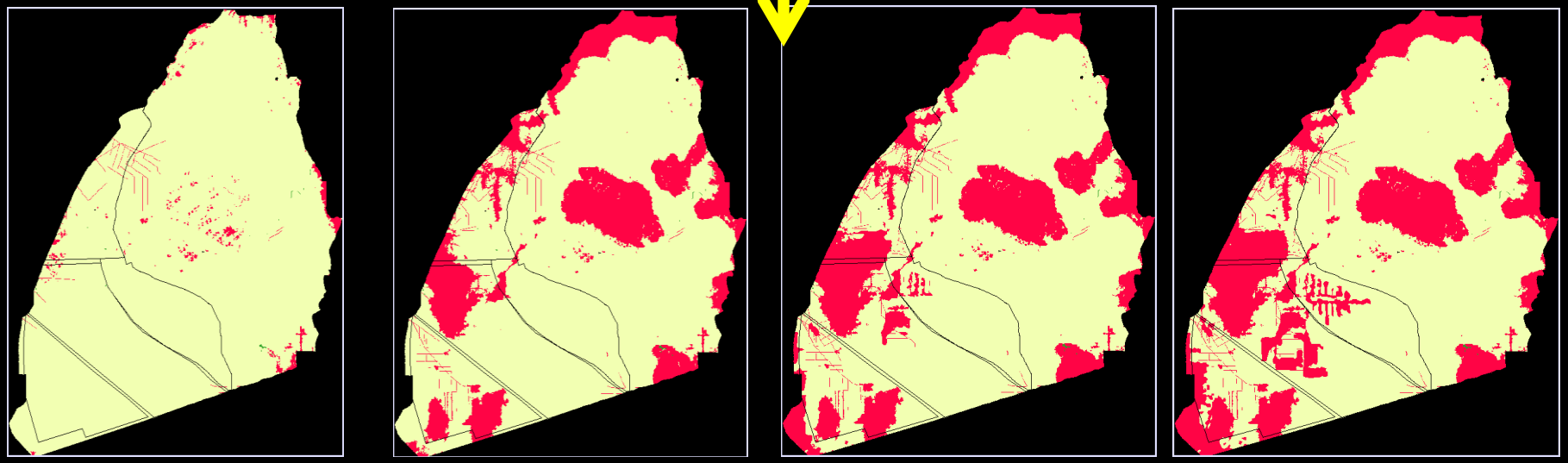
- Berbak peat land landscape is a RAMSAR Convention wetland sites and a global importance for water bird biodiversity conservation. Its rich biodiversity area, including habitat for several a globally endangered species, including the Sumatran tiger and 23 IUCN RED LIST.

- Berbak is one of Tiger Conservation Landscape in Sumatra Island based on Minister of Forestry Regulation

- Almost 60,000 peoples living around Berbak depend on the peat land forest for food, timber, water and medicines. Berbak peat land landscape provides essential ecosystem services to sustainable livelihood and climate resilience for poor local communities, through sustainable renewable energy generation, community based non-timber forest production , peat land conservation and another climate smart agriculture activities.

## - *A Rationale Background* – Key Threats Deforestation and Forest Degradation

The Berbak peat swamp forests are threatened by deforestation and forest degradation, caused by encroaching farms, illegal logging, drainage canals and peat fires. The BCI area's for 19-years average deforestation rate was around -1.96 %. Predicted that 40,863 ha of forest area will be lost between 2008 and 2037 in Berbak and cause climatic impact with increasing GHG emissions.



BCI Land Cover 1990 | BCI Land Cover 2000 | BCI Land Cover 2005 | BCI Land Cover 2009

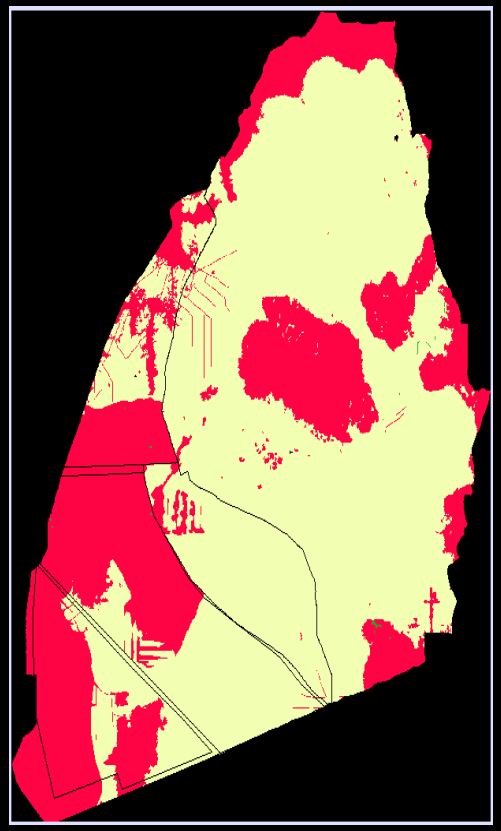
**Land Cover Change maps showing *actual* forest / non-forest areas within the Berbak Carbon Initiative Area of Interest.**

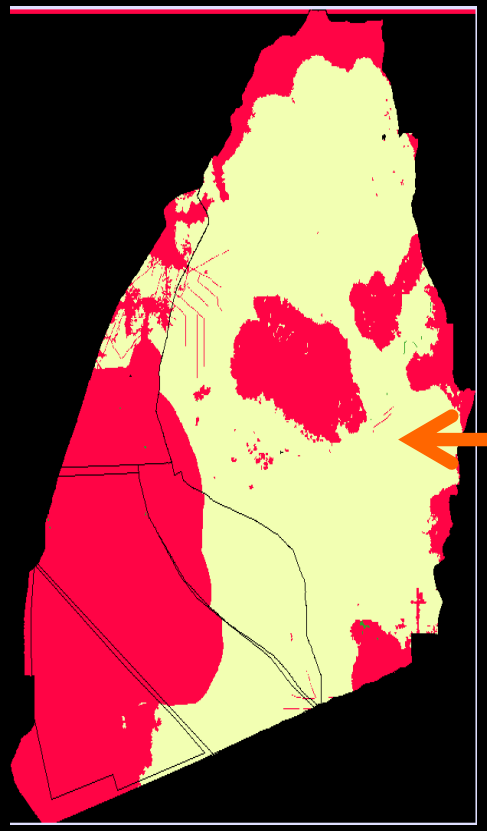
## *- A Rationale Background –* Key Threats Deforestation and Forest Degradation

**Historical Deforestation in each BCI Forest Management Unit (FMU)**

| Year | Location | Forest Cover (ha) | Forest Area Lost (ha) | % Def. Over Period (-ha/forested area) | Avg. Annual Loss (ha) | Avg. Annual Def. Over Period (-ha/forested area/year) | FMU 18-Year Average |
|---|---|---|---|---|---|---|---|
| 1990 | National Park | 136,273.65 | - | - | - | - | -1.14% |
| 2000 | National Park | 106,750.91 | -29,522.74 | -21.66% | 29,522.74 | -2.17% | |
| 2005 | National Park | 106,712.08 | -38.82 | -0.04% | 38.82 | -0.01% | |
| 2009 | National Park | 106,712.08 | 0.00 | 0.00% | 0.00 | 0.00% | |
| 1990 | Protection Forest | 18,693.25 | - | - | - | - | -0.75% |
| 2000 | Protection Forest | 18,195.11 | -498.14 | -2.66% | 498.14 | -0.27% | |
| 2005 | Protection Forest | 17,647.45 | -547.65 | -3.01% | 547.65 | -0.60% | |
| 2009 | Protection Forest | 16,149.09 | -1,498.35 | -8.49% | 1,498.35 | -2.12% | |
| 1990 | Grand Forest Park | 17,032.31 | - | - | - | - | -3.03% |
| 2000 | Grand Forest Park | 12,403.61 | -4,628.70 | -27.18% | 4,628.70 | -2.72% | |
| 2005 | Grand Forest Park | 9,728.09 | -2,675.51 | -21.57% | 2,675.51 | -4.31% | |
| 2009 | Grand Forest Park | 8,863.20 | -864.88 | -8.89% | 864.88 | -2.22% | |
| 1990 | Total Production Forest | 61,937.38 | - | - | - | - | -2.43% |
| 2000 | Total Production Forest | 48,075.96 | -13,861.41 | -22.38% | -1,386.14 | -2.24% | |
| 2005 | Total Production Forest | 43,151.00 | -4,924.96 | -10.24% | -984.99 | -2.05% | |
| 2009 | Total Production Forest | 37,344.38 | -5,806.62 | -13.46% | -1,451.66 | -3.36% | |
| 1990 | PT. Putraduta Indah Wood | 33,393.14 | - | - | - | - | -2.27% |
| 2000 | PT. Putraduta Indah Wood | 26,089.66 | -7,303.48 | -21.87% | 7,303.48 | -2.19% | |
| 2005 | PT. Putraduta Indah Wood | 24,303.20 | -1,786.45 | -6.85% | 1,786.45 | -1.37% | |
| 2009 | PT. Putraduta Indah Wood | 20,796.47 | -3,506.73 | -14.43% | 3,506.73 | -3.61% | |
| 1990 | PT. Pesona Belantara Persada | 20,938.28 | - | - | - | - | -2.12% |
| 2000 | PT. Pesona Belantara Persada | 15,273.24 | -5,665.03 | -27.06% | 5,665.03 | -2.71% | |
| 2005 | PT. Pesona Belantara Persada | 14,752.19 | -521.05 | -3.41% | 521.05 | -0.68% | |
| 2009 | PT. Pesona Belantara Persada | 13,297.04 | -1,455.14 | -9.86% | 1,455.14 | -2.47% | |

## *- A Rationale Background –* Key Threats : Deforestation and Forest Degradation



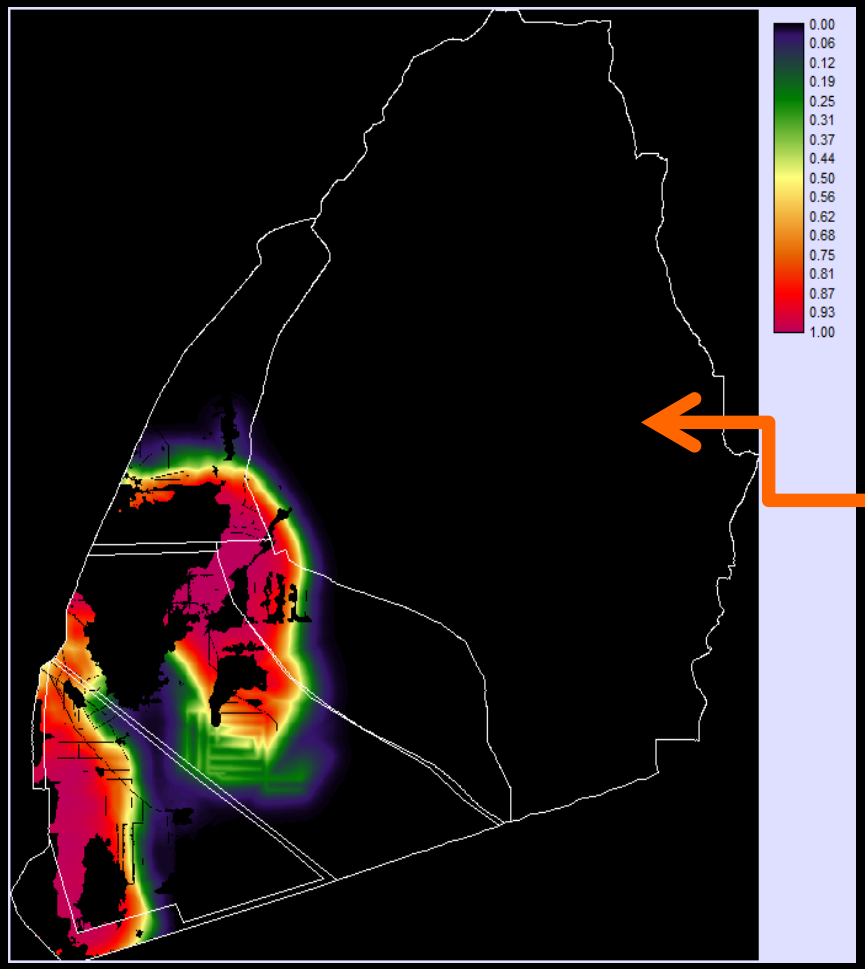


BCI Actual – 2009

BCI Prediction – 2018

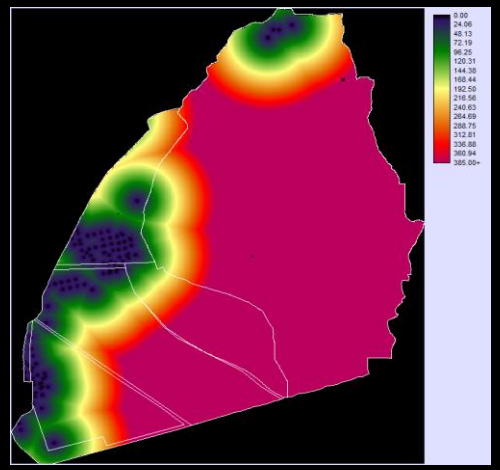
BCI Prediction – 2037

# - *A Rationale Background* – Key Threats : Deforestation and Forest Degradation

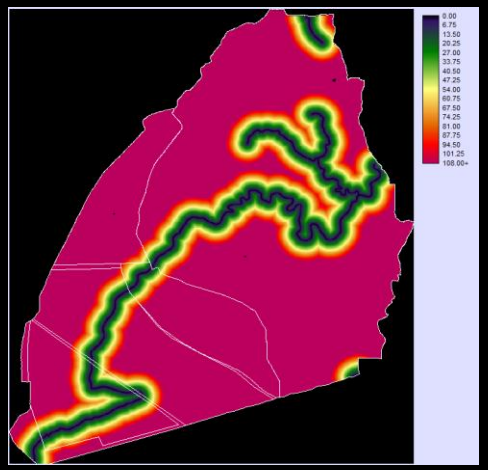



**BCI map of overall Driver Map (transition potential).**

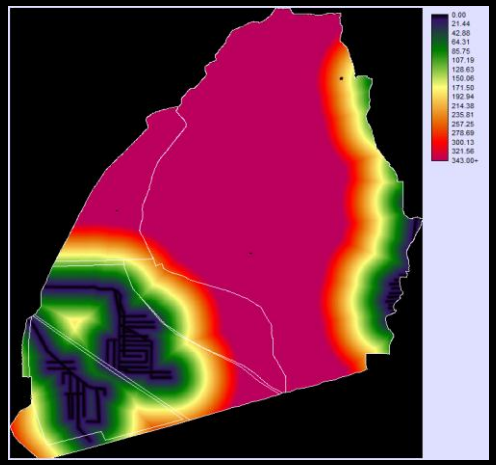
Higher potential infers a greater risk of a forest to non-forest transition. Areas in Black refer to either non-forest areas, or forest areas with no risk. Legend indicates units of probability



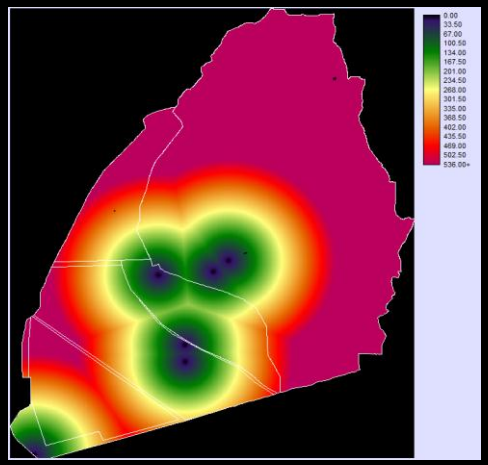
**Distance from Fires**



**Distance from Rivers**



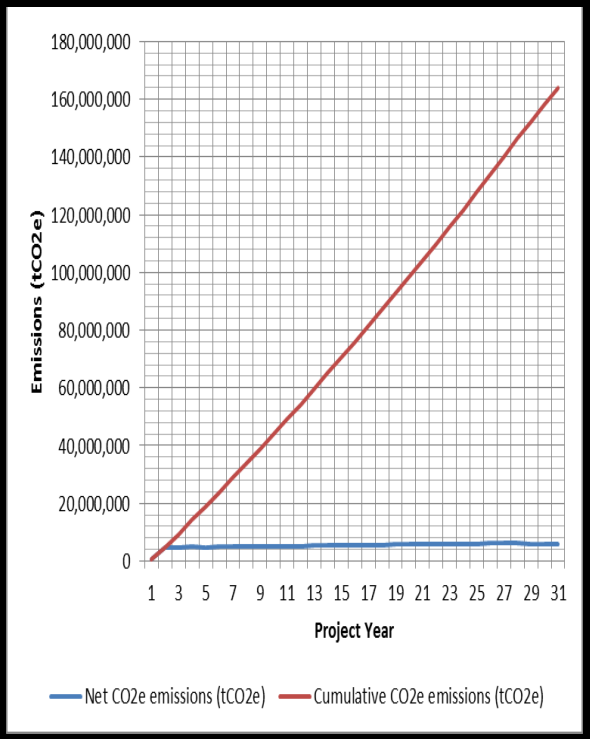
**Distance from Roads**



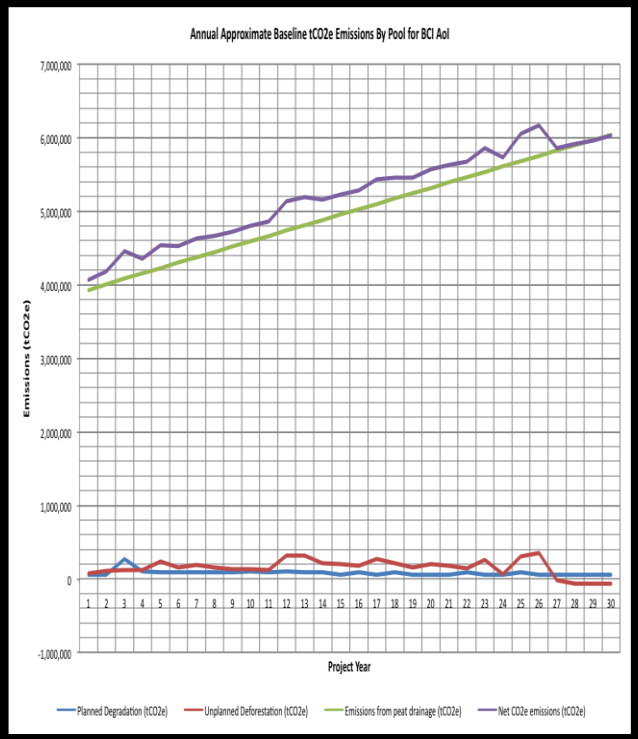
**Distance from Villages**

**BCI Area of Interest LCM MLP Driver Maps.**
Vulnerability increases from high to low, moving from dark blue to pink

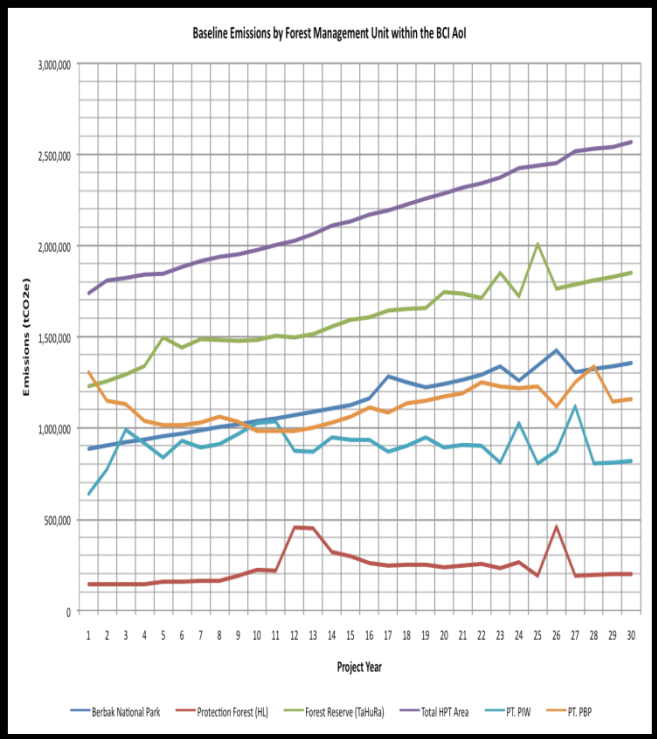
# - *A Rationale Background* – Key Threats : Deforestation and Forest Degradation




**BCI Area Baseline Emission 2008 - 2037**

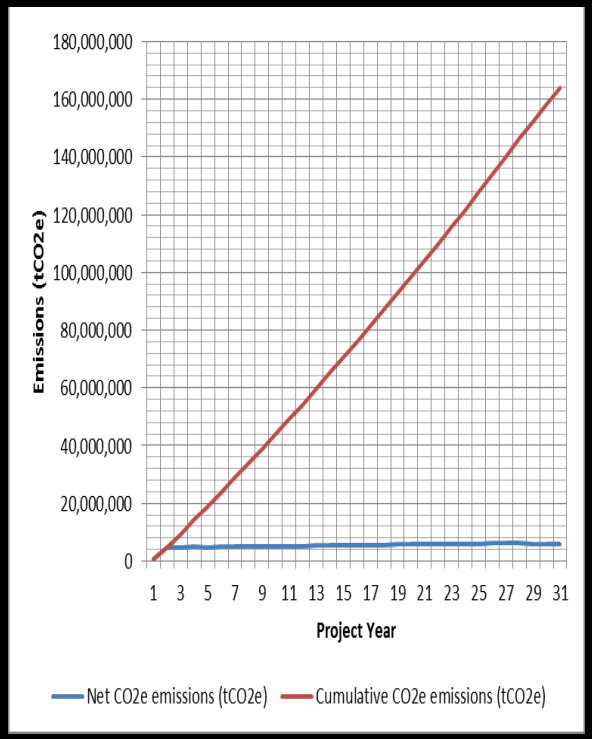



**Graph of baseline emissions by modeled emissions source for the BCI AoI**




**Graph of baseline emissions by forest unit management**

# - A Rationale Background : Goal

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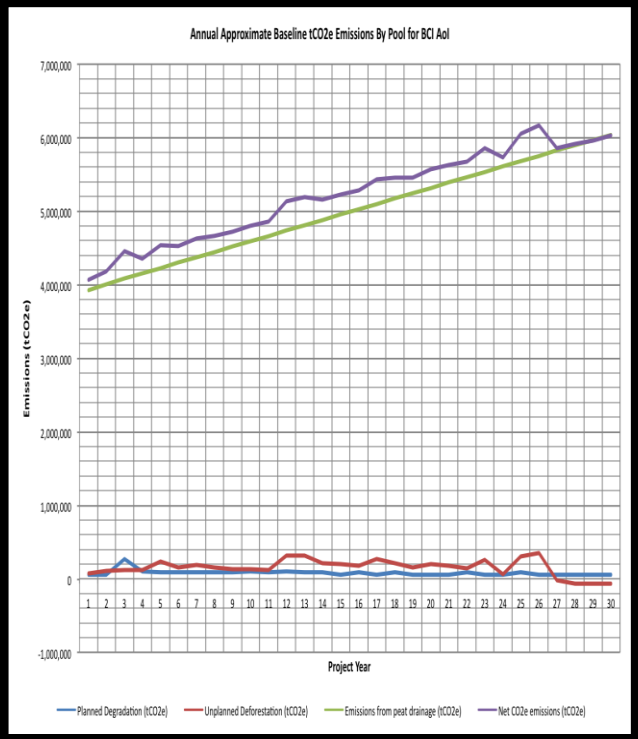
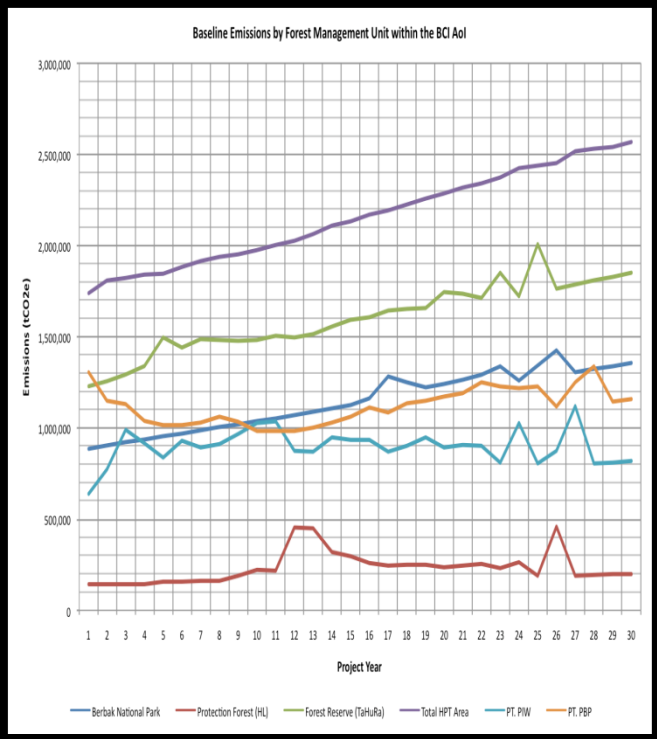



**Graph of baseline emissions by modeled emissions source for the BCI AoI**




**Graph of baseline emissions by forest unit management**

# - REDD+ Project Feasibility & Eligibility in Berbak Peat Swamp Lanscapes

Potential climate change mitigation project types recommended for consideration in the BCI AoI follow Voluntary Carbon Standard (VCS) nomenclature and fall into two categories :

**1. Agriculture, Forest and other Land Use (AFOLU)**

- Improved Forest Management (IFM) : Conversion from conventional logging to reduced impact logging (RIL) –
- Reducing Emissions from Deforestation and Degradation (REDD)
- Avoiding planned deforestation (APD)

**2. Peat Rewetting and Conservation (PRC)**

- Avoiding peat oxidation through re-wetting and conservation (PRC)

**Possible Climate Change Mitigation Project Scenarios in Berbak Peat Swamp Landscape**

| Location | IFM – Reduced Impact Logging (RIL) | REDD - Avoided Unplanned Mosaic Def. and Deg. (AUMDD) | REDD – Avoided Planned Deforestation (APD) | Peat Rewetting and Conservation (PRC) |
|---|---|---|---|---|
| Berbak National Park | - | Limited | - | Significant |
| Protection Forest (HL) | - | Possible | - | Possible |
| Grand Forest Park | - | Possible | Possible | Significant |
| PT PIW | Possible | Possible | - | Significant |
| PT PBP | Possible | Possible | - | Significant |

*Matrix describes potentially feasible project types for each Forest Management Area*

## BCI 's goal

Berbak Carbon Initiative (BCI) goal is to conserve threatened ecosystem by reducing deforestation and forest degradation through creating sustainable financing for long term Berbak peat swamp conservation and protect the Sumatran tiger as a flagship species using financial incentives and multiple benefits for biodiversity and community , created from emerging carbon markets, most likely 'avoided-deforestation' or Reducing Emissions from Deforestation and Degradation (REDD +) schemes.

Success of this demonstration at the sub-national scale can further develop tropical peat swamp forests potential to become a major revenue generator, highlighting the synergy between UNFCC and Convention of Biodiversity (CBD) objectives by making substantial contributions to biodiversity conservation, The BCI's will contribution to all CBD objectives in particularly on the Aichi targets derived from the CBD Strategic Action Plan.

## - *Progress and Result* –A enabling environment and designing a landscape-scale REDD+ Project

The importance of the area for Indonesia's REDD+ demonstration work is now confirmed by Ministry of Forestry Decree No. SK.549/2013, approving REDD+ DA implementation in Berbak National Park with a total cover area 142,750 hectares. BCI also supporting provincial carbon emission reduction targets highlighted and undertake activities listed in the priority project pipeline in the Jambi Province REDD+ Strategy and Action Plan 2012-2032 (SRAP) which is recognized by Jambi Governor's Decree No. 352/2013. The BCI is also in line with the National REDD+ Strategy (2012) recognized by the Chairman of the Indonesia REDD+ Task Force.

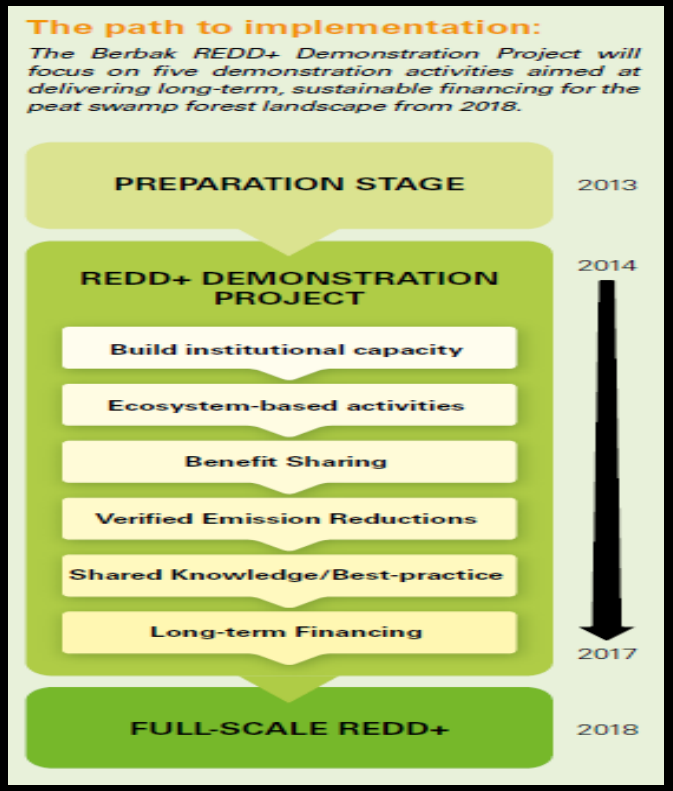
The BCI 's also contribute to target achievement of Indonesia's GHG emission reduction goals of 26 % by 2020 or with international aid 41% by 2020. In line with President Regulation No. 61 / 2011 regarding National GHG Reduction National Action Plan and Jambi Province GHG Reduction Action Plan

## - *Progress and Result* – A enabling environment and designing a landscape-scale REDD+

The planned REDD+ Demonstration Project — to run 2014–2017 — will involve five main activities, aimed towards securing long-term financing to scale-up REDD+ across the whole Berbak's landscape from 2018 :

**1. Build institutional capacity:**
Establish transparent, independent, and credible REDD+ Measurement, Reporting and Verification at provincial level, and a trust fund to receive future REDD+ funds.

**2. Design and test ecosystem-based activities:**
•• Create a fire early-warning system;
•• Re-wet peat by blocking drainage canals;
•• Replant and rehabilitate degraded forests;
•• Create community-based enterprises;
•• Create community-driven renewable energy
•• Promote certified and legal timber operations.



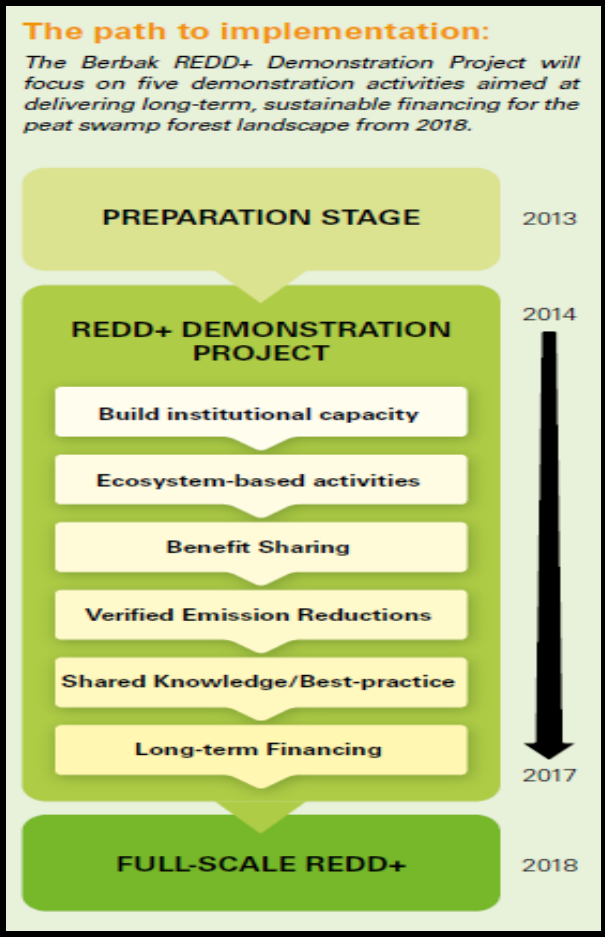
## - *Progress and Result* – A enabling environment and designing a landscape-scale REDD+

**3. Benefit-sharing mechanisms:**
Work with stakeholders to design and test incentives for conservation action and climate-compatible development.

**4. Generate verified emissions reductions:**
Develop a system to monitor the project's success, in line with the Verified Carbon Standards (VCS), Climate, Community & Biodiversity Standards (CCB) and Indonesian social and environmental safeguards. The site's importance for the Sumatran tiger – and other IUCN Red List species – means that the project will aim to meet the CCB Gold standard.

**5. Share knowledge and best practice:**
Build local capacity to run the REDD+ project over the long-term and share lessons with national and international REDD+ stakeholders.

**6. Creating long-term and sustain financing for full scale REDD+ implementation**



- *Progress and Result* –**Building partnership for sustainable, inclusive and low emission development**

## Community engagement

With funding assistance from the Clinton Climate Initiative, and Tropical Forest Conservation Action, ZSL and our local NGO partners, Gita Buana Foundation, Ko-Roar Berbak Consortium and KKI-WARSI Association are raising awareness of climate change and testing REDD+ incentive by developing sustainable local livelihoods among the 32 villages surrounding Berbak. This is the first step in a process of FPIC (Free Prior Inform Concent). which will strengthen the communities' ability to choose whether and how to engage in REDD+ to create community co-benefits.

## Private sector engagement

Globally, deforestation and forest degradation are increasingly being driven by private enterprise. The Berbak landscape is no exception, with planned expansion of timber and oil palm production.
ZSL and partners Putraduta Indah Wood Co. and Persona Rimba Belantara Co., will build capacity among local timber operators and communities, producing legal and sustainable timber commodities through certified sustainable forest management and certified timber legality verification . The REDD+ project will help enterprises shift to certified sustainable production and create new forest friendly businesses.

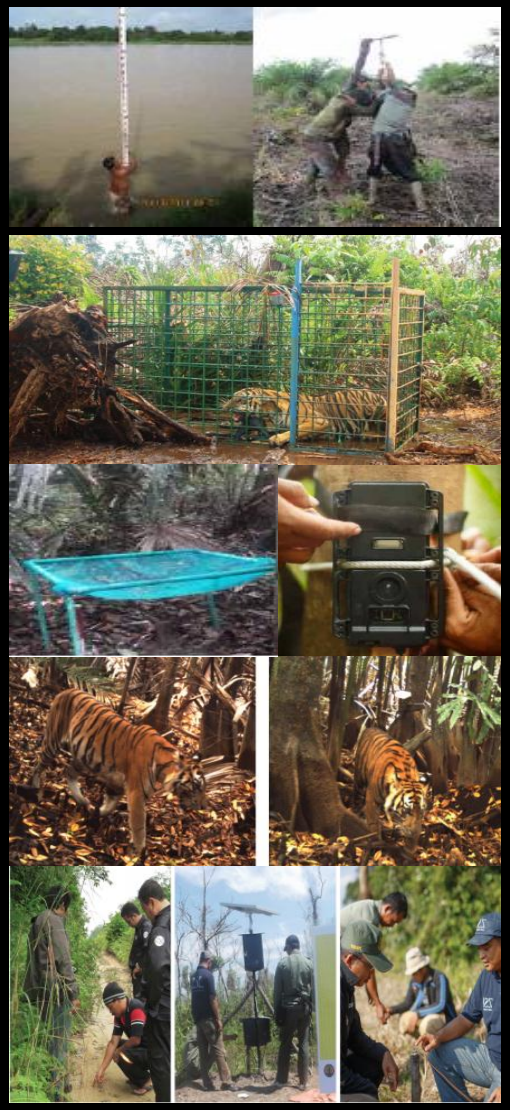
## Government engagement

ZSL and BNP office are working in collaboration with two District governments, the Jambi provincial government and the national REDD+ Task Force to ensure that the project is 'nested' within sub-national and national REDD+ legal frameworks and spatial plans. Jambi has been selected as a Pilot Province for the Norway-Indonesia REDD+ Climate Partnership REDD+ Agreement. Indonesia's Minister of National Planning though the Green Prosperity - Millennium Challenge Compact Program has selected Muaro Jambi District and neighboring Berbak National Park as a part of future starter project sites

## - *Progress and Result* –Building partnership for sustainable, inclusive and low emission development

Initial surveys of Berbak National Park (BNP) in 2008 found a substantial tiger population as well as a range of other endangered species. Since then, Berbak has become one of ZSL's key conservation sites, with a field team stationed at a purpose-built forest station supporting the Berbak National Park authority to carry out conservation activities and REDD+ readiness activity, including :

- Berbak REDD+ Feasiblity Study
- Installation of 154 camera traps for Sumatran tiger occupancy and distribution monitoring
- Facilitate to empower Forest Ranger on Forest Patrolling System through Spatial Monitoring and Reporting Tool (SMART) Training
- Established and functioned 2 two) unit Berbak Wildlife Conflict and Crime Response Team (WCCRT) which patrols the borders of the national park to reduce human-wildlife conflict
- Established Community ranger support units to support the WCCRT's patrol efforts
- Started Free, Prior, Informed and Concent (FPIC) in 32 viilages to strengthening the communities' ability to choose whether and how to engage in REDD+ to create community multiple-benefits.



## - *Progress and Result* –Building partnership for sustainable, inclusive and low emission development

- 3-sites peat swamp subsidence and hydrological monitoring,
- 3500 trees phenology monitoring and 6 hectares forest litter trap monitoring
- A pilot project of more than 2 kilometers of solar, tiger-friendly electric fence to resolve tiger-human conflicts
- Infrastructure development ( research station, permanent sampling plot)









## - *Recommendation and Lesson Learnt*

1. **Conserving tropical peat swamp forests in Berbak Landscape is a vital part of Indonesia's and provincial GHG emission reduction action plan.**

2. **The Berbak REDD+ Demonstration Project will use climate finance to catalyse green growth.**

3. **Conserving Berbak Landscape will help Indonesia meets, its conservation, development and climate goals.**

4. **Preparation activities , and the full implementation of REDD requires a safeguards framework ( safeguards ) and MRV system that considers the value of biodiversity and ecosystem services is high and unique peatland .**

5. **Need Incentive driven REDD + Premium Tiger market ( Tiger Wildlife Premium REDD + Incentive Model ) . Linking REDD + scheme to premium scheme wildlife provide more financial support to tackle the crisis and the extinction of Sumatran tigers poverty around tiger habitats that determine the future of the habitat and the presence of tiger population .**

6. **Berbak Carbon Initiative has completed the preparatory phase of REDD + interventions and start testing positive incentives to communities through economic activities and institutional communities strengthening**

## - *Recommendation and Lesson Learnt*

7. The key to success will be harnessing local knowledge,new science and performance-based climate finance to catalyse a green economy delivering multiple benefits in Berbak and beyond.

8. Effective REDD + initiatives in Berbak Landscape , need to be adapted to the interests and priorities based on the local as well as forest management practices and local natural resources .

9. REDD+ Initiatives should be parallel with advancing the agenda of regional economic development and the local community , so that REDD + requires work outside the forestry sector and beyond the jurisdiction of the forest management unit.

10. The success of REDD is highly dependent on the commitment of landowners to maintain the level of emission reductions from the previous land use practices . For the development and enforcement of agreements with landowners and forest management unit is indispensable

11. REDD+ Initiatives to engage the various levels of government agencies and influence decision-making based on solid scientific data .

12. There are a vast opportunities of REDD + initiatives beneficial to the local community through a early investment program in productive activities on entrepreneurship , food security improvement and access to land tenure , empowering individuals and local institutions in sustainable land use decision making .

# THANK YOU