

The background of the slide is a photograph of a road at dusk or dawn. Two trucks are visible on the road, one in the foreground and one further ahead. The sky is a mix of dark blue and purple, suggesting the time is either early morning or late evening. The overall mood is somber and contemplative.

Can ALOS help Save Sumatra's peatlands and Reduce carbon emissions in the process?

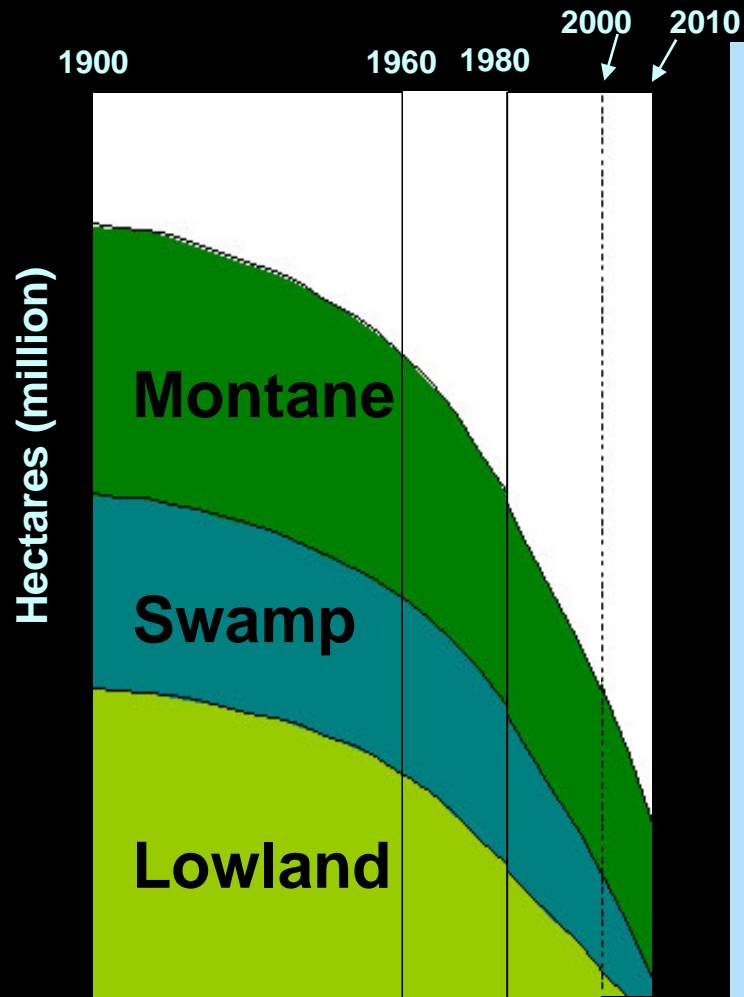
Yumiko Uryu

Consultant to WWF Japan / WWF Indonesia
Data & Analysis: Arif Budiman, WWF Indonesia
(Data sources acknowledged as used)

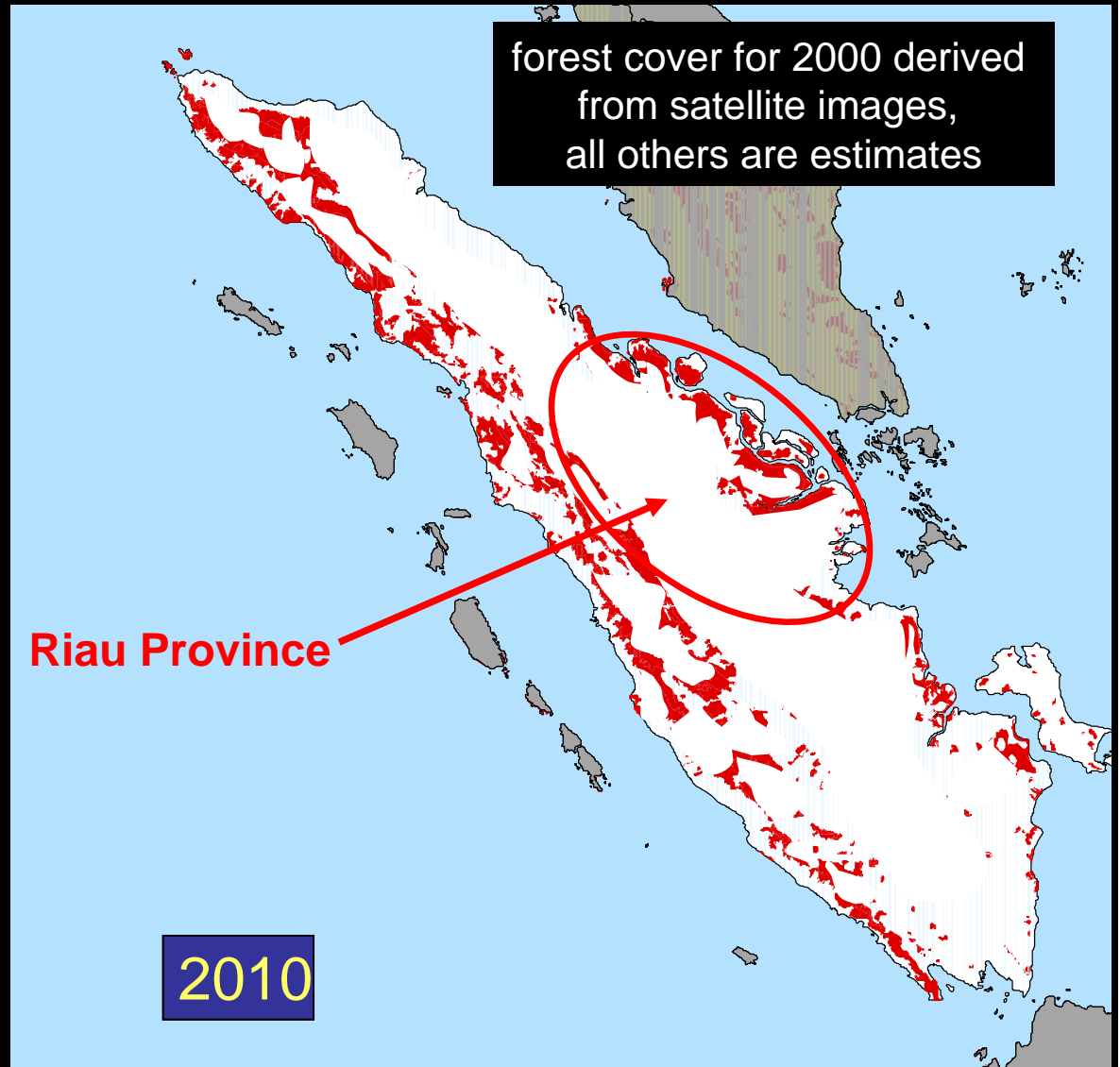
ALOS Kyoto & Carbon Initiative
7th Science Team Meeting
Tsukuba, Japan
18 January 2007

Sumatra's Forests:

2000



Worldbank, 2001



Riau's Forests

102°

1982

Total forest cover: 6,415,655 ha (78%)

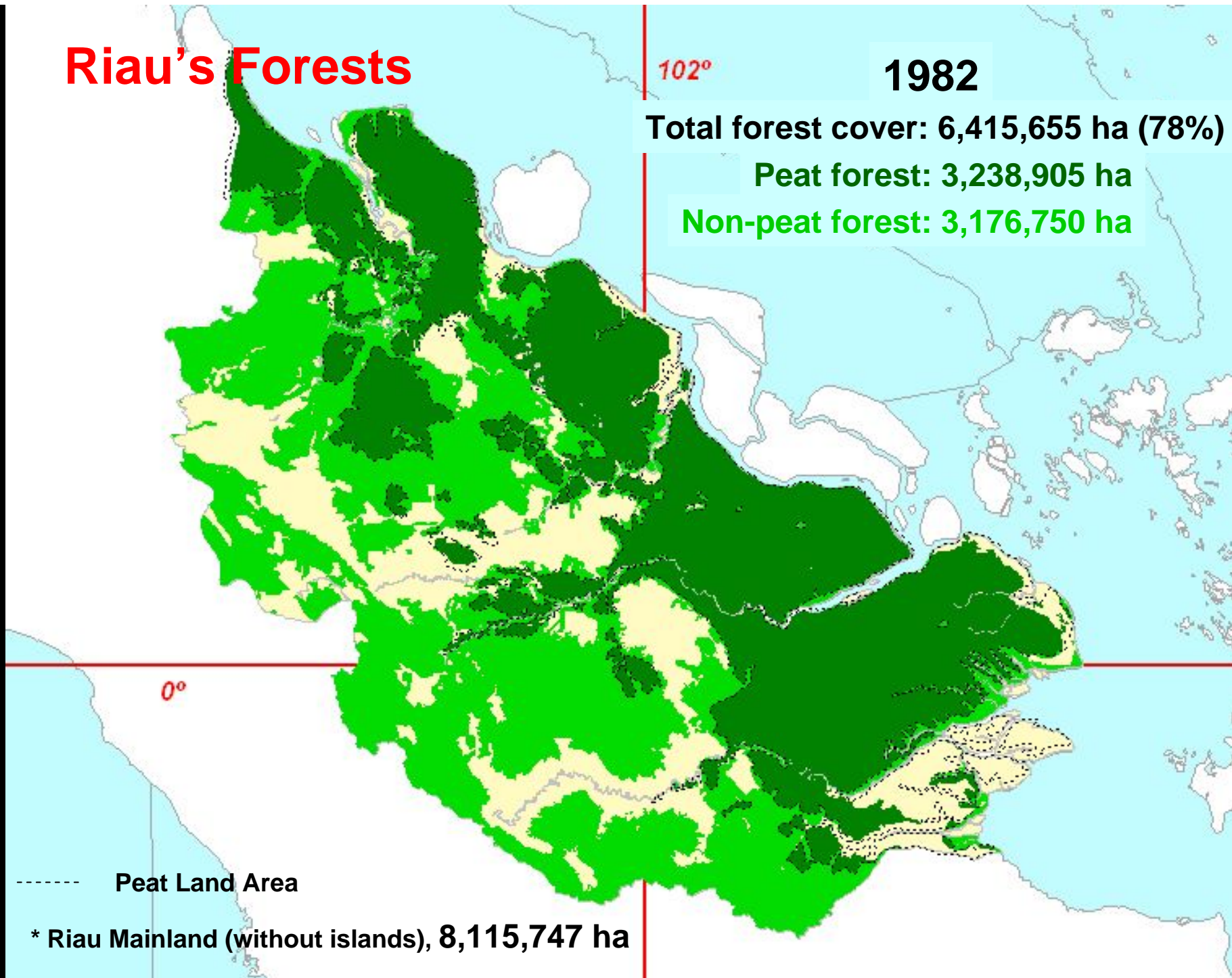
Peat forest: 3,238,905 ha

Non-peat forest: 3,176,750 ha

0°

----- Peat Land Area

* Riau Mainland (without islands), 8,115,747 ha

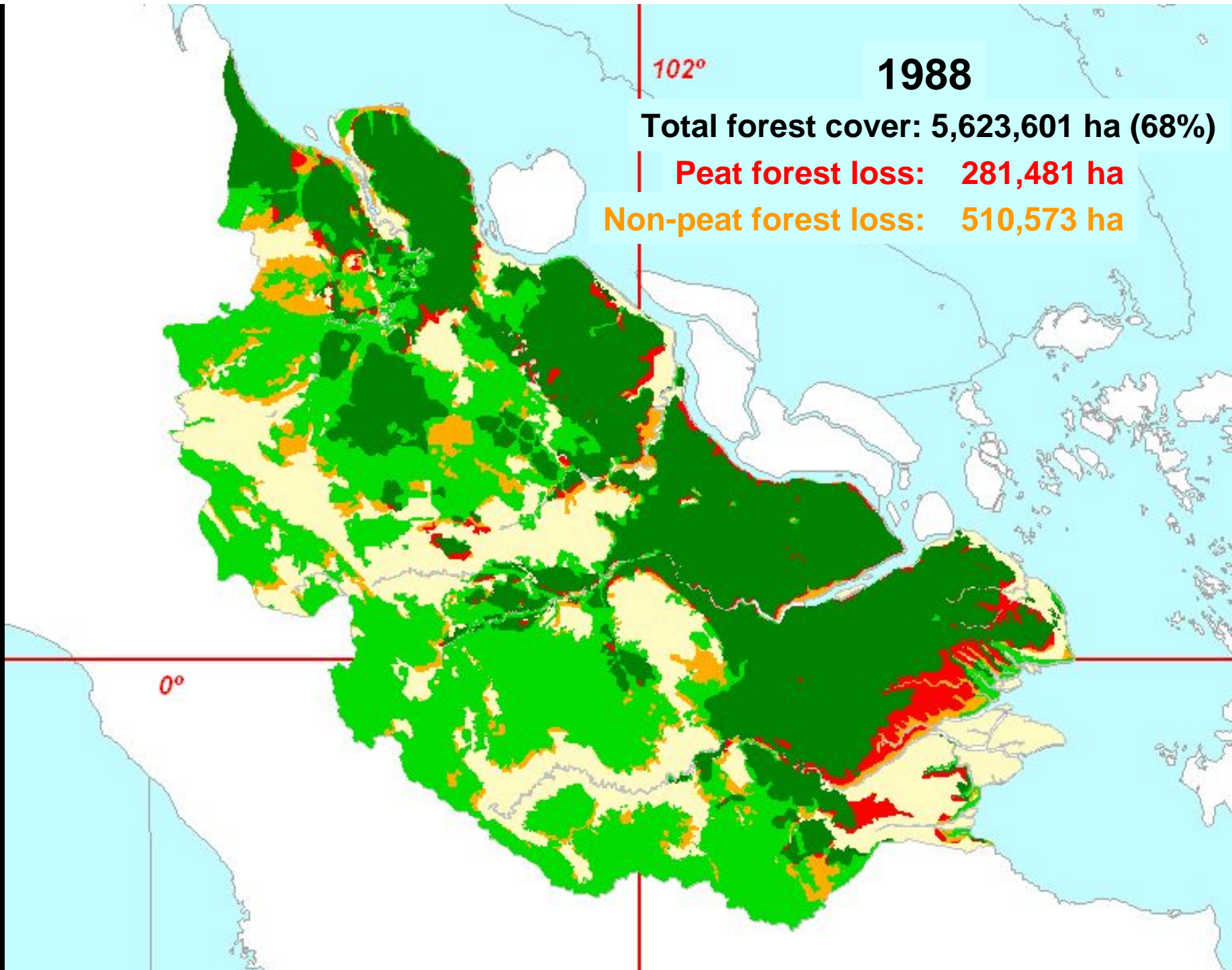


1988

Total forest cover: 5,623,601 ha (68%)

Peat forest loss: 281,481 ha

Non-peat forest loss: 510,573 ha

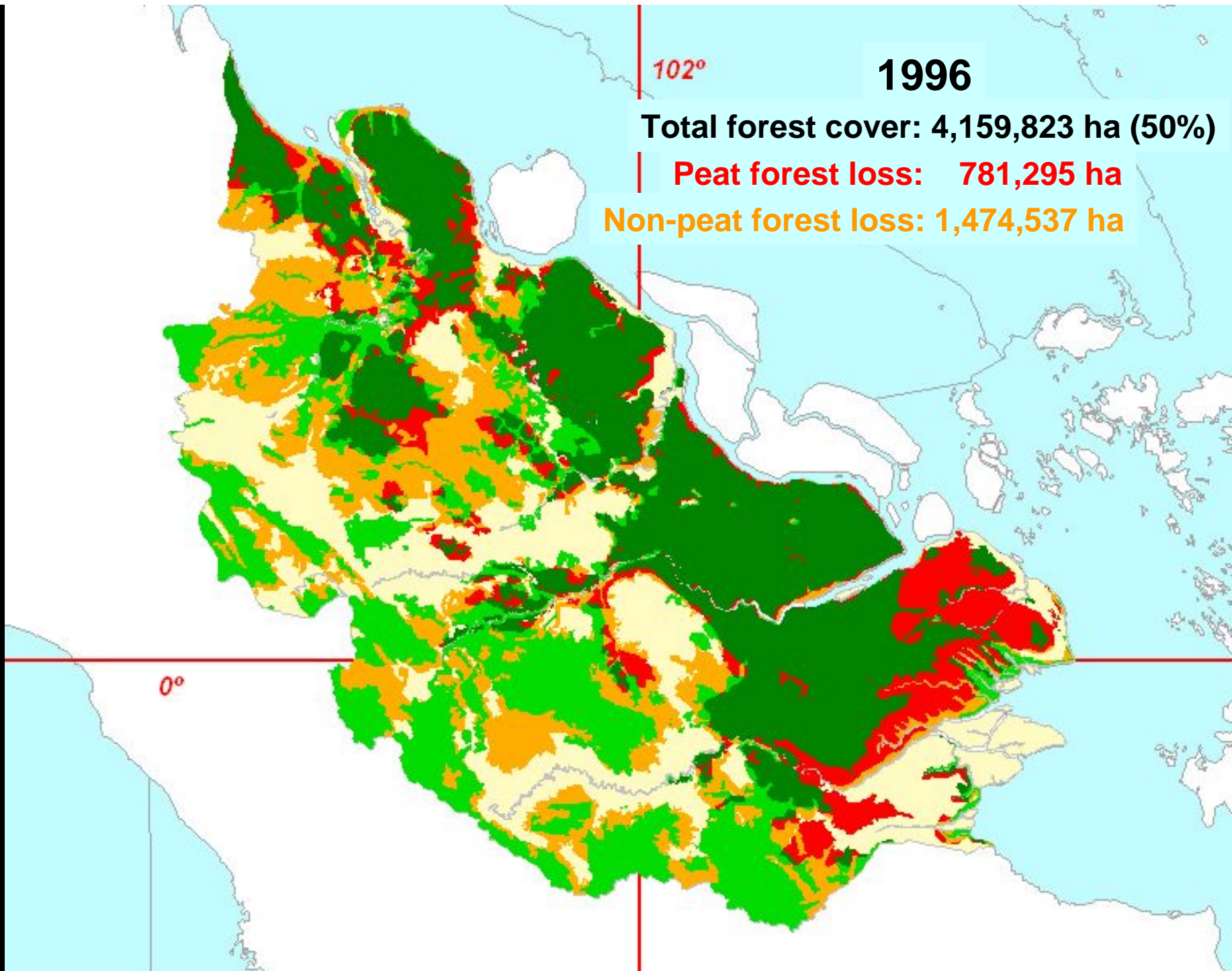


1996

Total forest cover: 4,159,823 ha (50%)

Peat forest loss: 781,295 ha

Non-peat forest loss: 1,474,537 ha

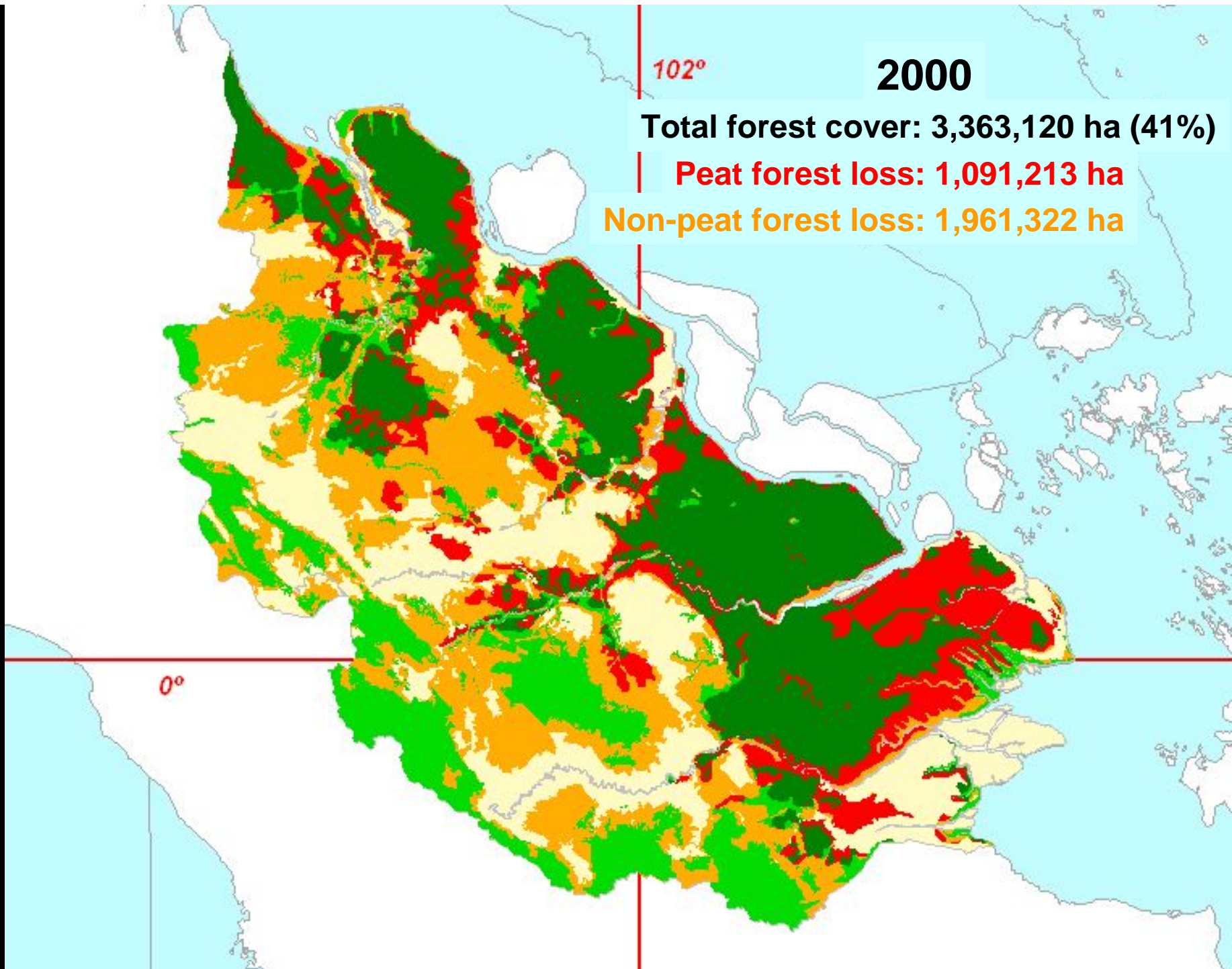


2000

Total forest cover: 3,363,120 ha (41%)

Peat forest loss: 1,091,213 ha

Non-peat forest loss: 1,961,322 ha

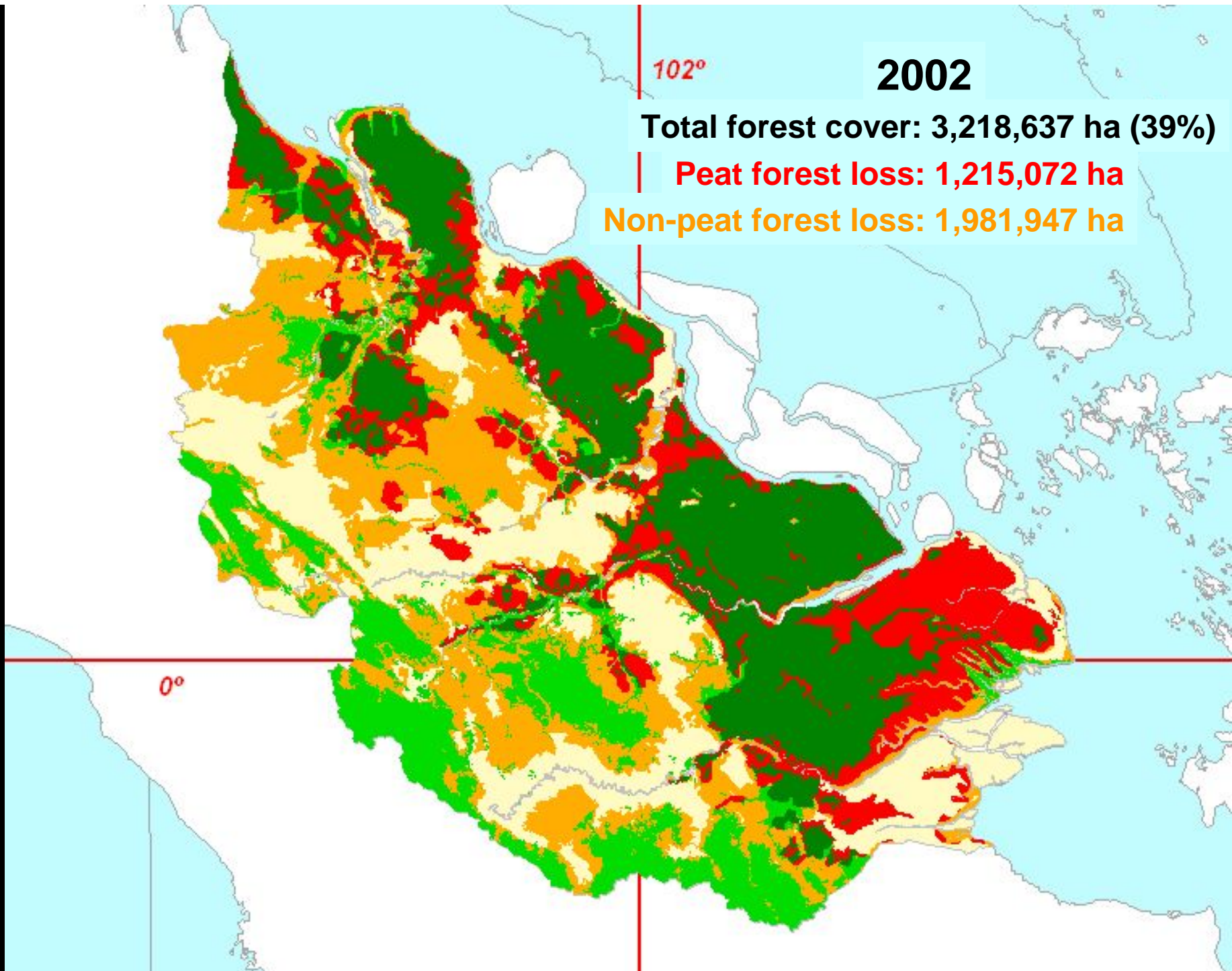


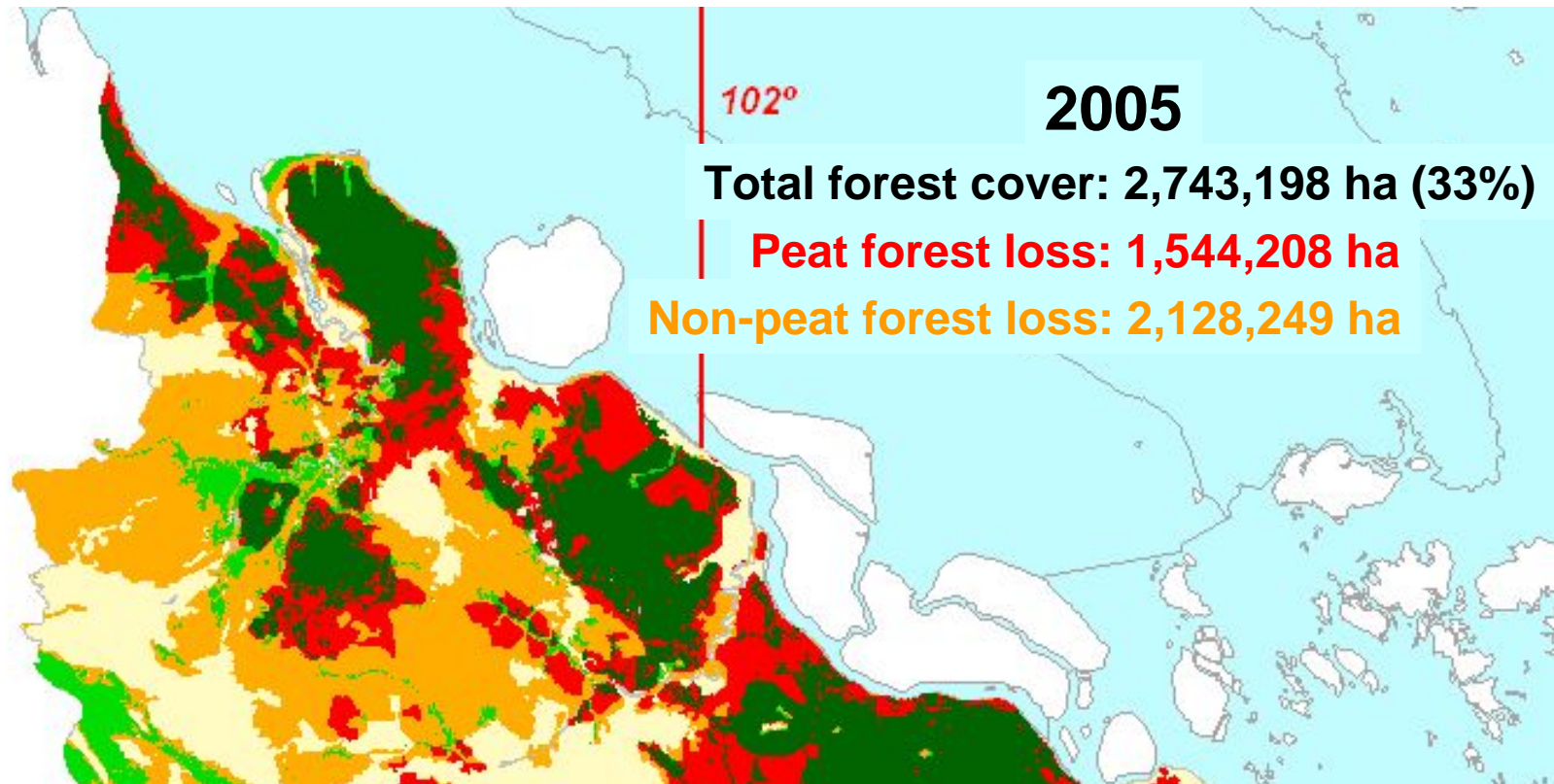
2002

Total forest cover: 3,218,637 ha (39%)

Peat forest loss: 1,215,072 ha

Non-peat forest loss: 1,981,947 ha





Riau land area : 8,926,814 ha

Forest cover 1988 : 6,048,740 ha (68%)

Forest cover 2005 : 2,964,026 ha (33%)

→ 3,084,714 ha (51%) forest cover loss in 18 years.

By 2000 most of the more easy to access & more valuable dry lowland forests in Riau had been destroyed.

Then serious conversion of peatland forests began.



The peat forests are drained...



... until heavy equipment can go in.




Vast areas are cleared, ...



... the wood is piled along the canals,...



... and floated to the mills.

An aerial photograph showing a large industrial complex, likely a pulp mill, with several large buildings and smokestacks emitting smoke. The surrounding landscape is dominated by a vast area of cleared land, organized into a grid of rectangular plots, which appear to be logging operations or land cleared for timber harvesting. The sky is overcast with heavy clouds.

**Riau's two pulp mills
need timber from ca. 160,000 ha every year.**

The Loss from the Forest Clearings is Huge

1. Degradation of environmental services (watershed protection, erosion control, stopping saline intrusion, etc.).
2. Loss of social, economical and cultural values for local communities.

3. Loss of biodiversity



Due to habitat loss and fragmentation, Sumatran tigers and elephants are becoming more vulnerable to being poached and becoming in contacts and conflicts with people and captured, injured or killed in retaliation.

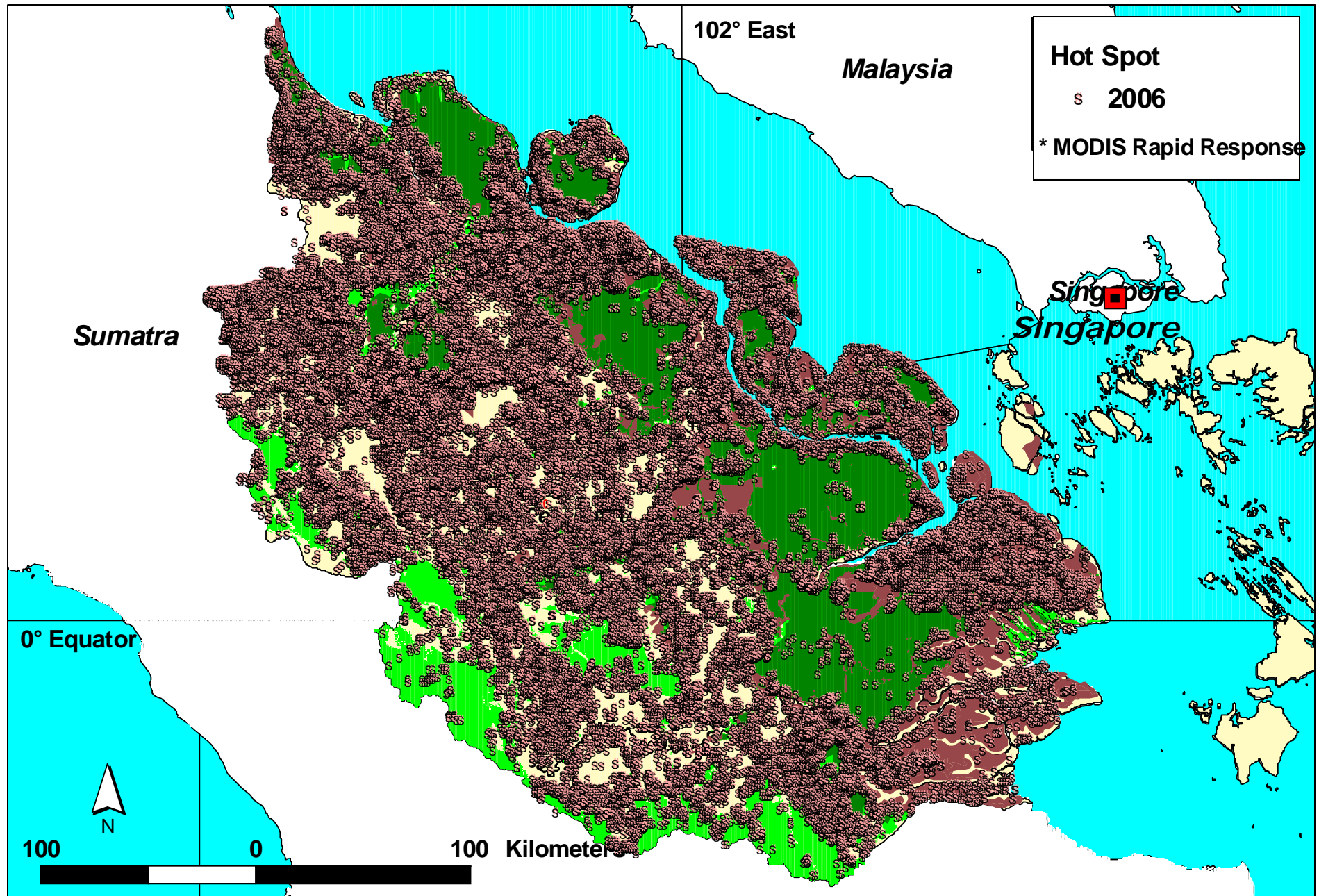
**Wild elephants in Riau: declined from over 1000 in 1985 to ca. 200 today.
Wild tigers in Sumatra: fewer than 400 left today.**



4. Health and economic costs related to fires and haze from cleared areas



Riau has burned almost everywhere





Riau's haze (August 2006)...



... becomes Singapore's haze (October 2006)

5. Dramatic increase of CO² emissions

- Indonesia and Riau Province had 88.5 and 3.0 million hectares of **natural forests** on both peatlands and non-peatlands in 2005, respectively.
 - Indonesia and Riau has 22.5 and 4.0 million hectares of **peatlands**, respectively. In Riau, 47% of that (1.9 million hectares) was still covered by natural forests in 2005.
 - **These are both important carbon sinks on earth and should be protected to maintain them as such.**
 - **However, current annual rate of deforestation Indonesia alone is estimated to cause carbon emissions equal to around 40% of the emission reductions target by implementing the Kyoto Protocol in its first commitment period.**
 - **In addition, current annual rate of drainage, degradation and burning of peatlands makes Indonesia the world's third largest emitter of carbons behind only the USA and China.**
- Riau Province is one of the key provinces in this context.**

Can the ALOS K&C Initiative help?

Riau's last forests are disappearing fast.
Irreplaceable values are lost.
Both legal and illegal conversion is driving the
deforestation.

Our Challenge:

We want to stop legal conversion of forests with high conservation values. To do that we need to know the values of the forest and be able to argue that protecting the forest is preferable to converting it to oil palm or pulp wood.

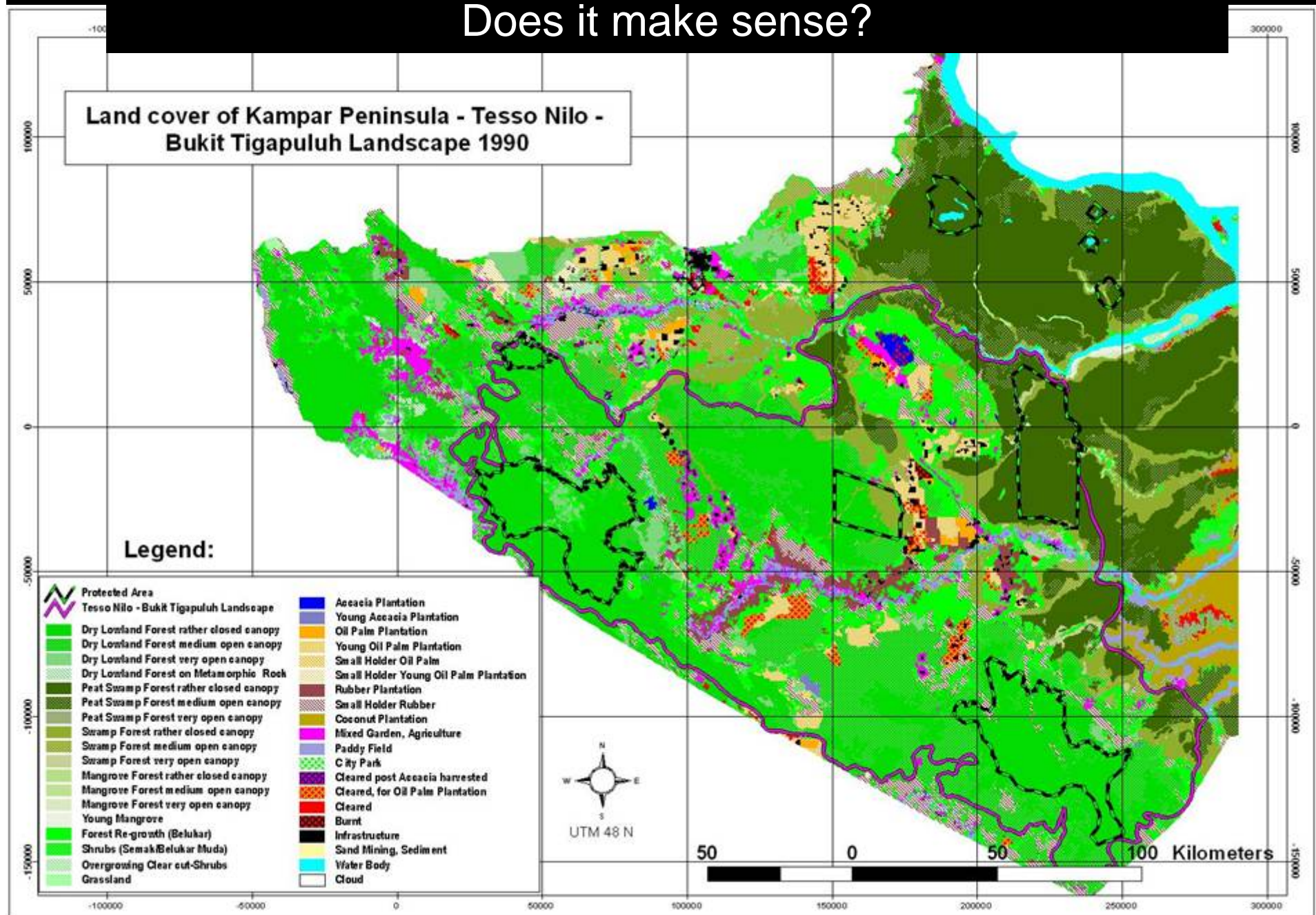
- **This is where remote sensing may help:**

- **How intact is a given forest block?**
- **What are the biodiversity levels inside the forest?**
- **How important is a forest for the region's watershed protection?**
- **How much carbon is stored?**
- **How much carbon emissions are caused by deforestation?**
- **How much carbon emissions could be prevented if a block of natural forest is maintained on intact peat rather than replaced by oil palm or acacia plantations?**

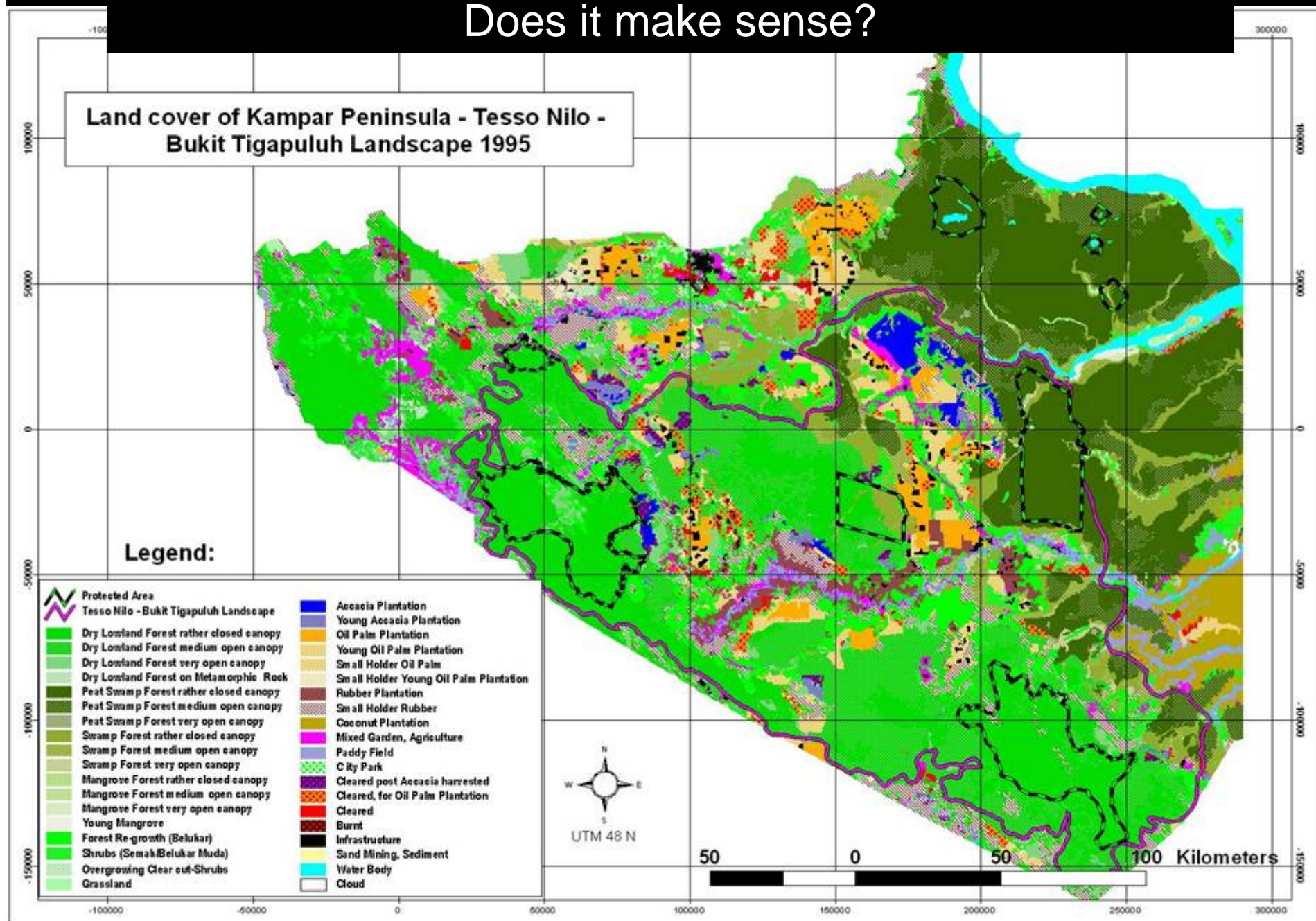
- **These are our problems:**

- **Too few images are available due to haze and clouds so some forest clearings remain undetected and unchallenged for too long.**
- **We do not know how to estimate biodiversity levels through remote sensing.**
- **We do not know how to estimate hydrological values of forests through remote sensing.**
- **We do not know how to estimate carbon storage/emission through remote sensing.**

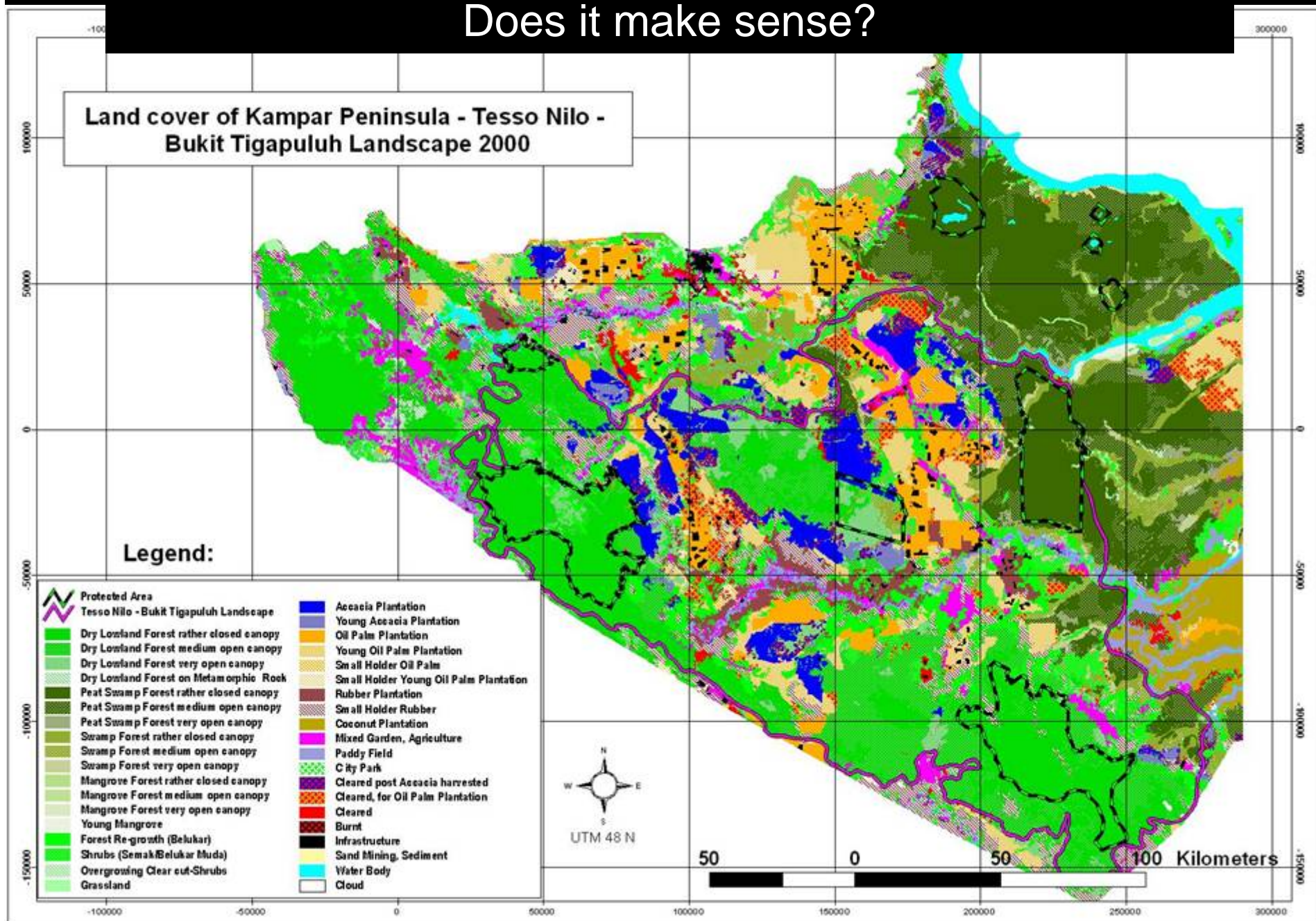
Replacement of Natural Forest by Industrial Plantations. Does it make sense?



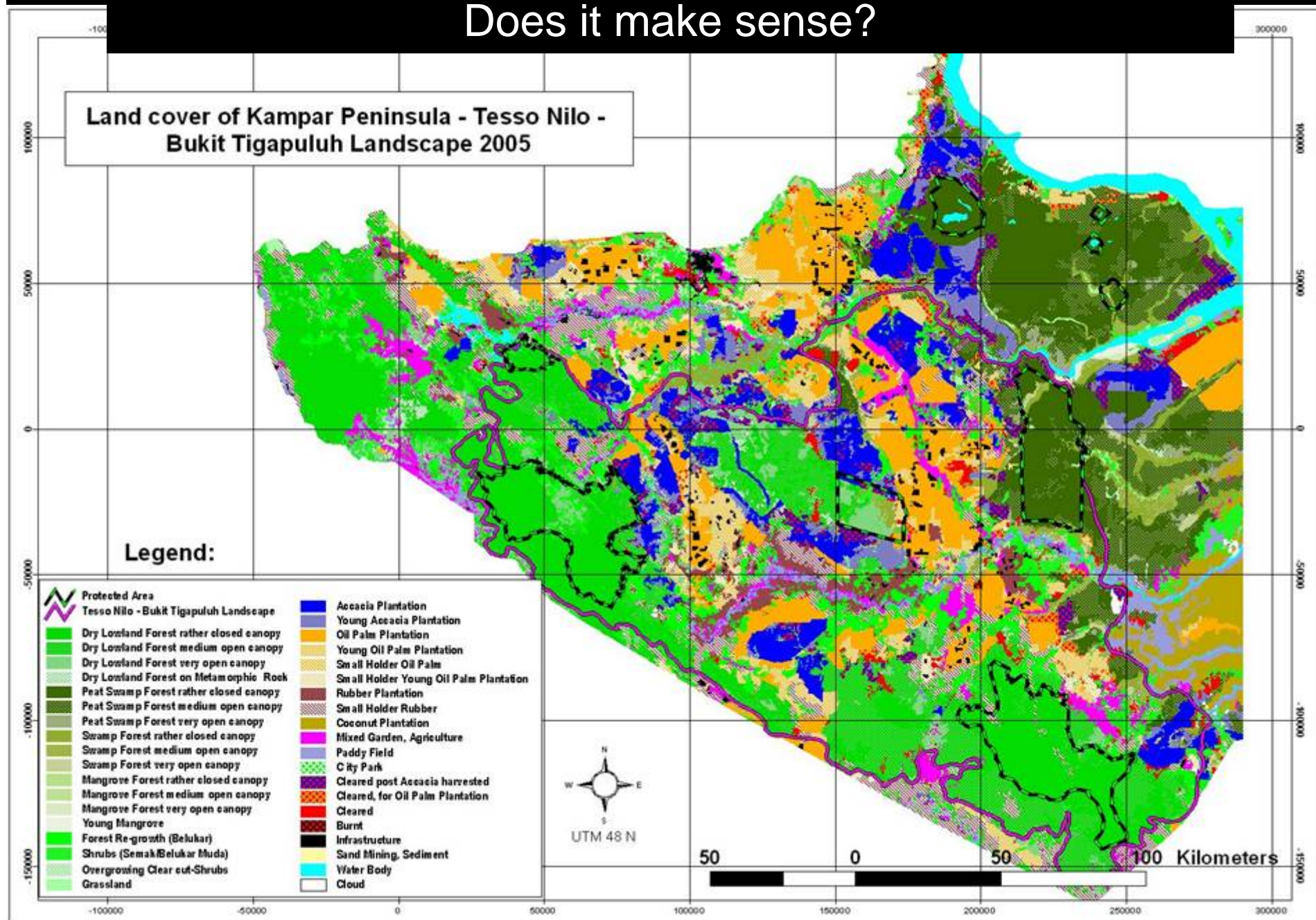
Replacement of Natural Forest by Industrial Plantations. Does it make sense?



Replacement of Natural Forest by Industrial Plantations. Does it make sense?



Replacement of Natural Forest by Industrial Plantations. Does it make sense?



Our Challenge:

We want to stop illegal conversion. To do that we need to know who converts what as soon as it happens.

•This is what we do so far:

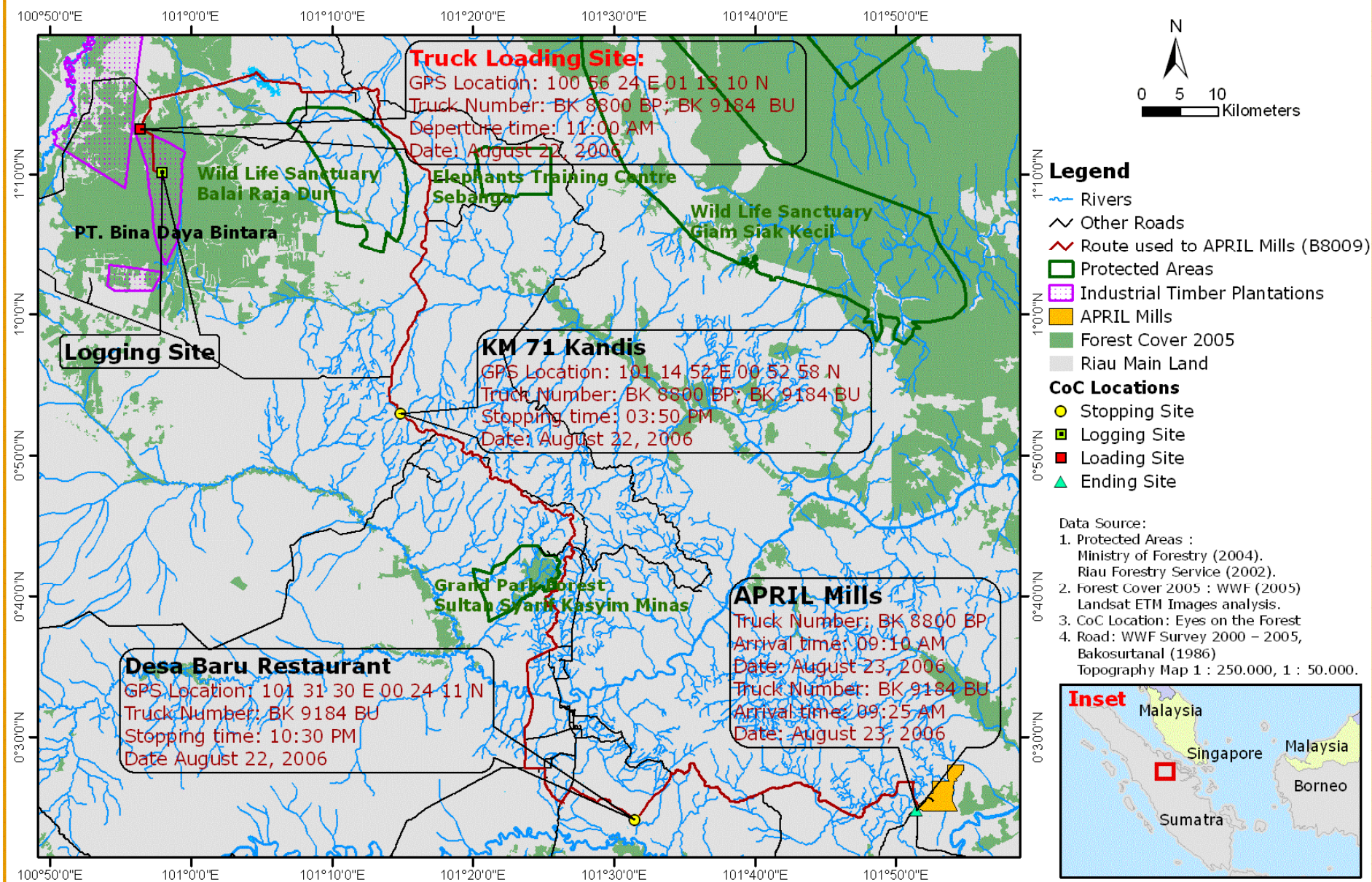
- Get Landsat images**
- Identify clearcuts**
- Compare clearcuts with previous images**
- Visit the site in the field**
- Determine who is doing what**
- Determine the legality and impact on the ecosystem**
- Engage the forest clearing party**
- Publish a report**

•These are our problems:

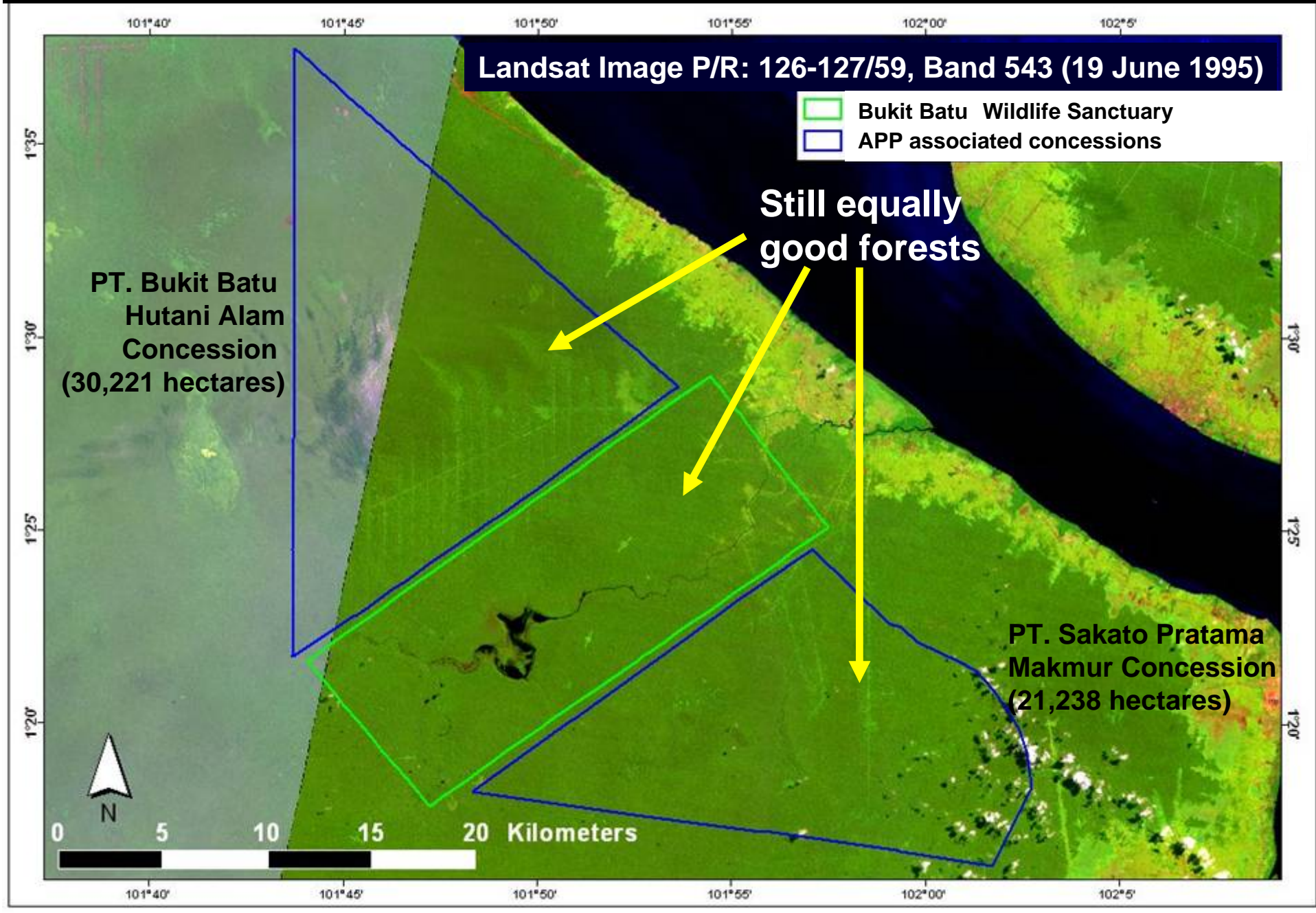
- Too few images are available due to haze and clouds so some forest clearings remain undetected for too long**
- Obtaining images frequently becomes financially prohibitive**
- Lack of capacity to process and interpret images**

Monitoring Clearcutting and Wood Sourcing Operations

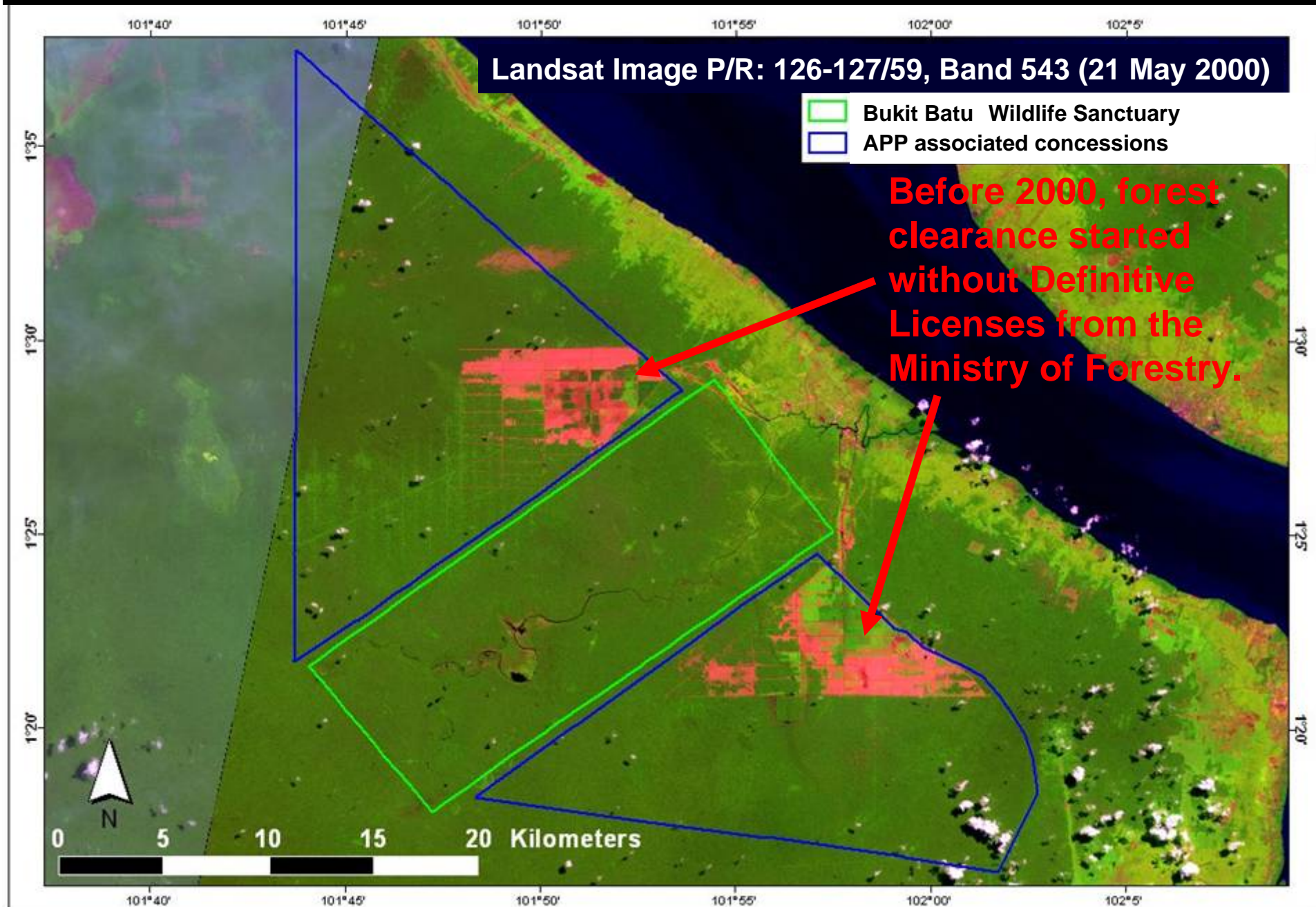
Map Route CoC B8009 August 2006 (Bina Daya Bintara)



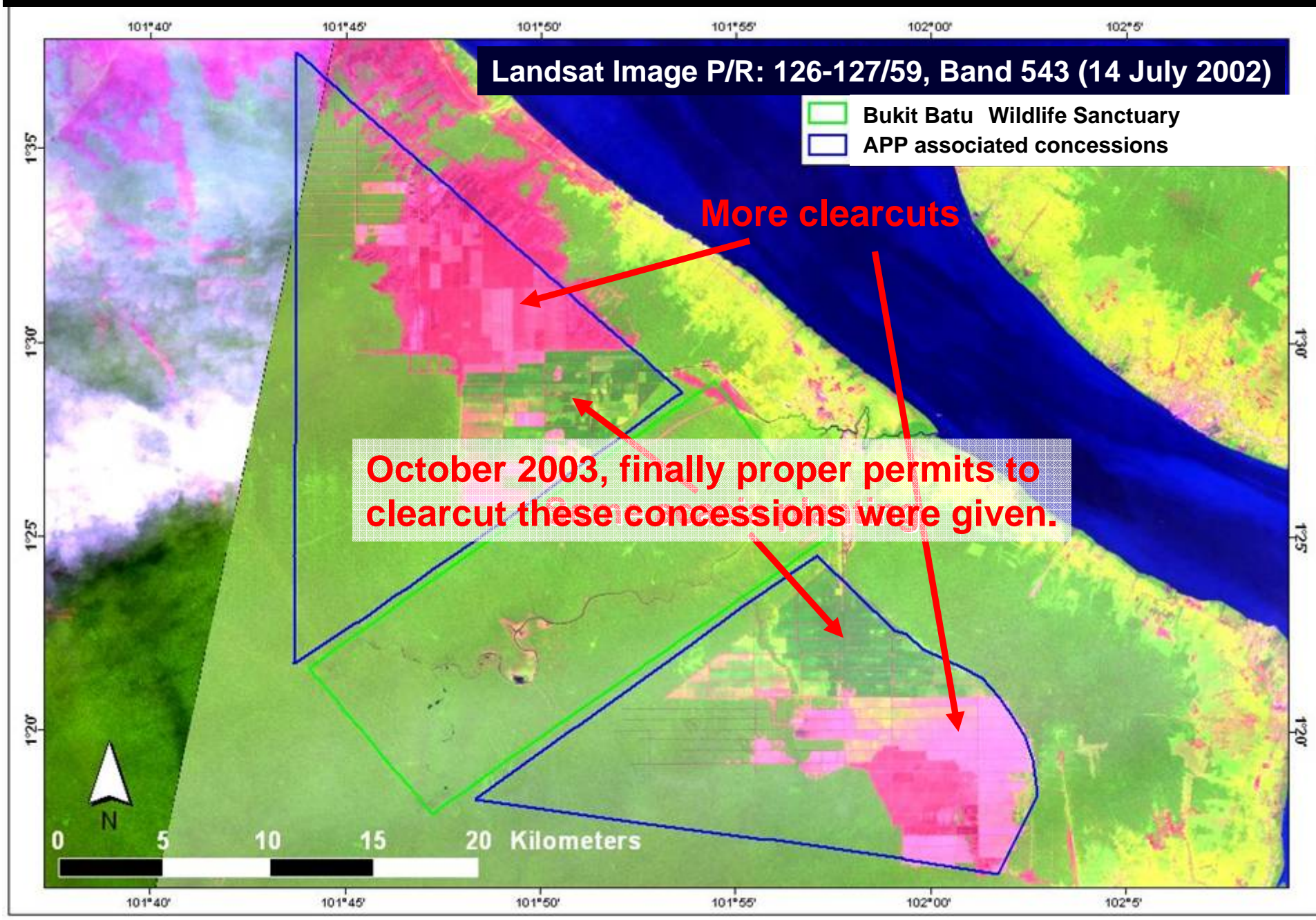
Monitoring Protected Forests and Compliance with Permits



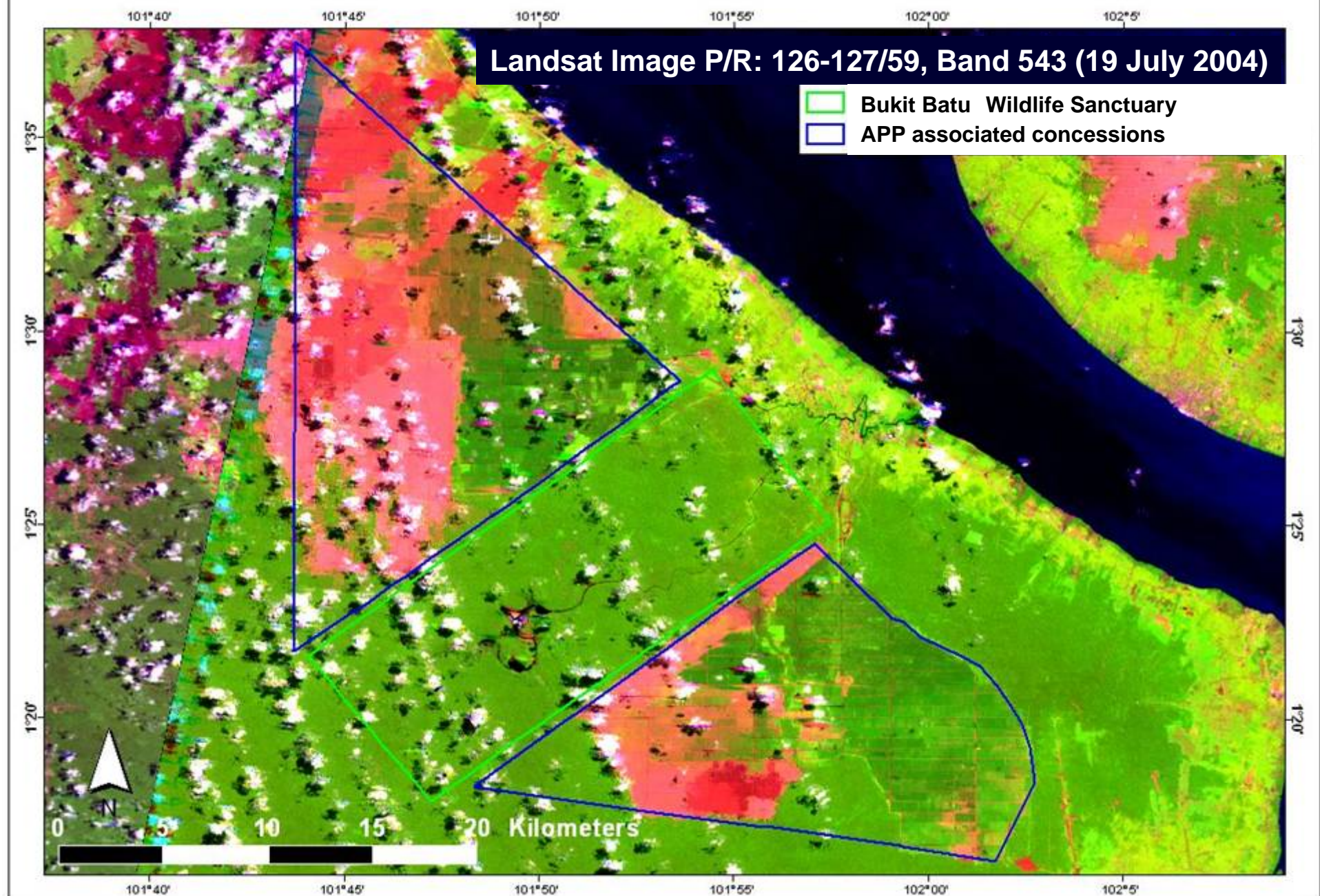
Monitoring Protected Forests and Compliance with Permits



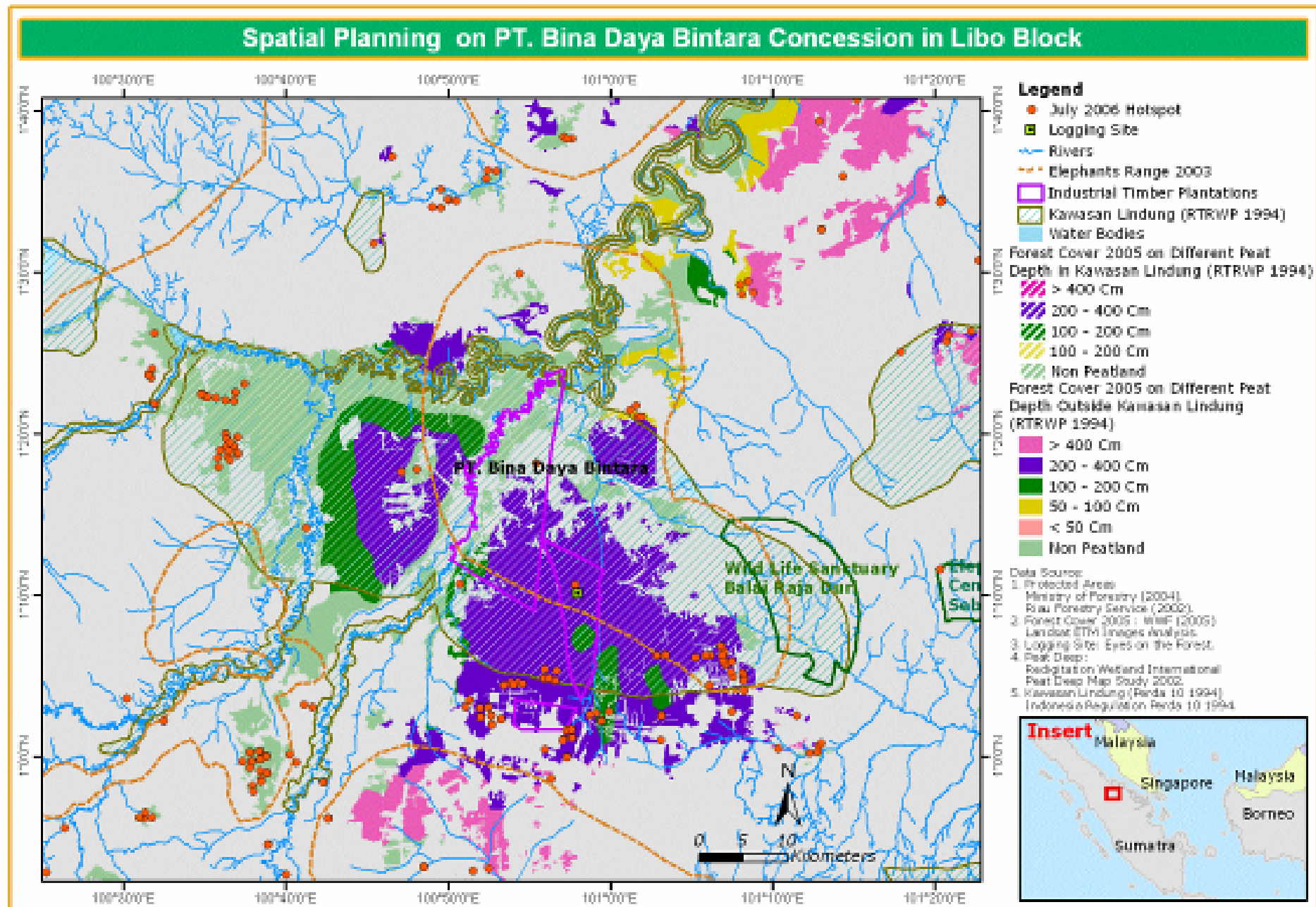
Monitoring Protected Forests and Compliance with Permits

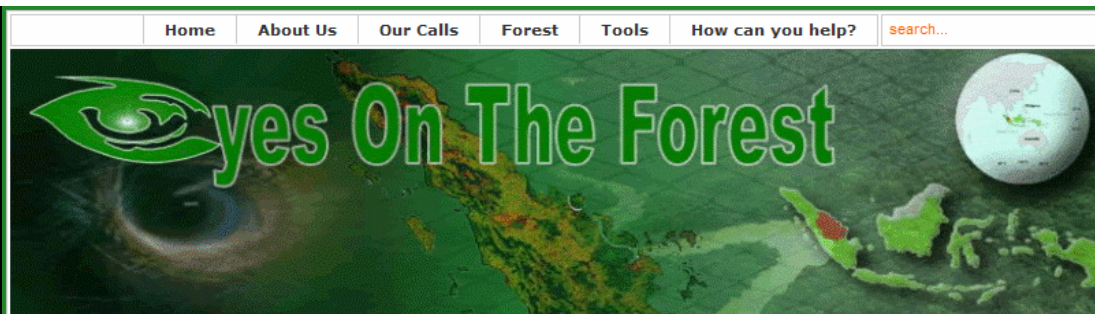


Monitoring Protected Forests and Compliance with Permits

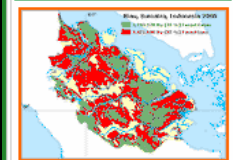


Monitoring Concessions and Compliance with Regulations





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NEWSFLASH EOF
 committing burning forest and land practices this month. The process for prosecuting the companies is underway.
 Government promises

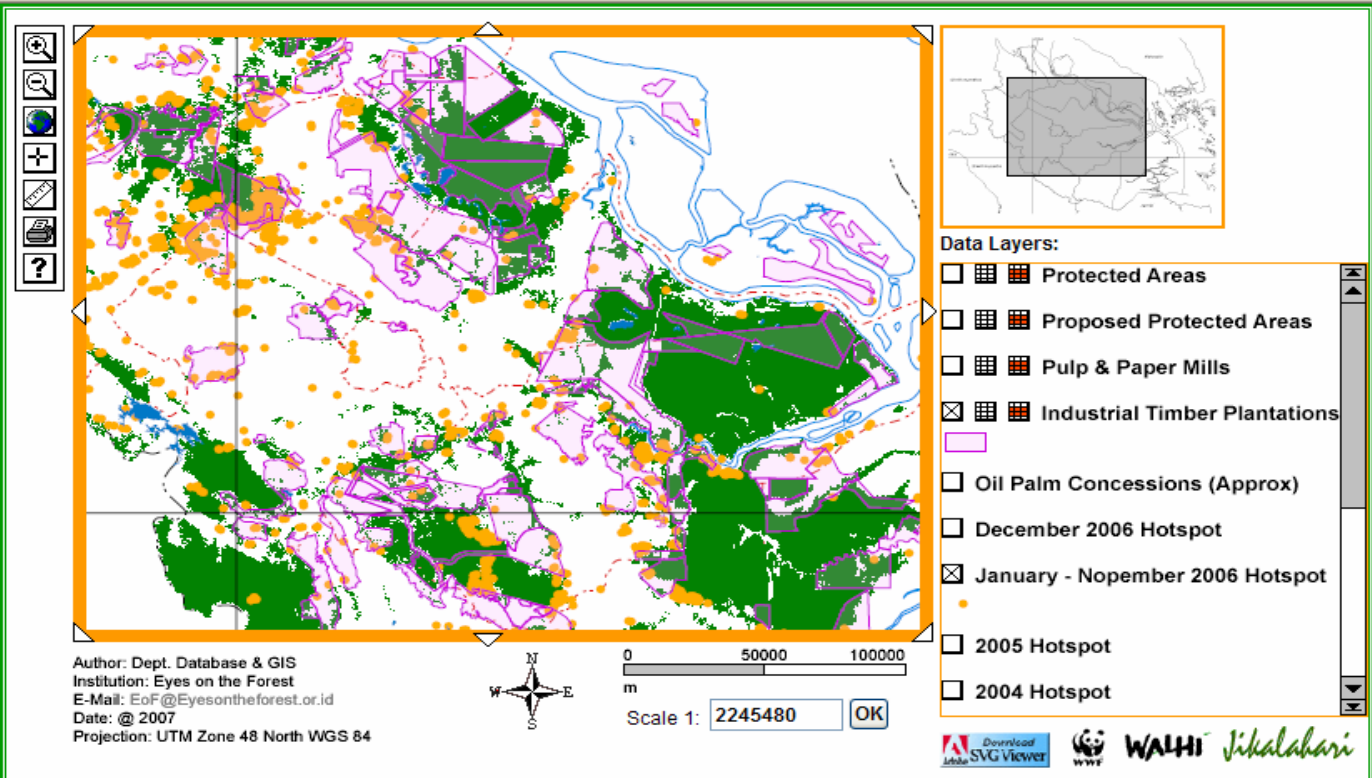
Home

■ Vision on Paper meeting kicks off in Riau
 Friday, 12 January 2007
 Pekanbaru (EoF News)--- In a bid to provide a 'common vision' on pulp and paper industry globally, non-governmental organizations in provinces which host such industry started a two-day meeting on Friday here in setting up vision and mission to anticipating the industry's growing problems. The meeting has theme *Common Vision for The Transformation of Indonesia Pulp and Paper Industry towards Socially and Environmentally Sustainable Industry*.
[Read more...](#)

■ Government warns over 5 HPH concessions
 Thursday, 11 January 2007
 PEKANBARU (EoF News)--- The government has warned over 5 HPH (Hydro Power) concessions as they are not in line with the national map.
[Read more...](#)

■ District officials blame forest encroachment practices
 Wednesday, 03 January 2007
 Pekanbaru (EoF News)--- District officials have blamed forest encroachment practices on the encroachers originating from the Toro village.
[Read more...](#)

■ Conversion in Buk...



Our Challenge

Can the ALOS K&C Initiative help?

We want to stop legal conversion. To do that we need to know whether a natural forest block is more valuable than an industrial plantation.

- How valuable is that forest: Biodiversity.
- How valuable is that forest: Watershed protection.
- How valuable is that forest: Fire prevention.
- How valuable is that forest: Carbon storage.

Our Challenge

Can the ALOS K&C Initiative help?

We want to stop illegal conversion. To do that we need to know who converts what when as soon as it happens.

- What size forest clearings can ALOS detect in Riau how frequently during hazy days in the dry season and cloudy days in the wet season?
- How soon will the information be available after images are taken?
- What will it take to analyze the ALOS images?
- How much will it cost?