INVASIVE ALIEN SPECIES BIOSECURITY

Prepared by Suput@

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What Matters

- Term of Biosecurity "What is Biosecurity?"
- Why do we need Biosecurity?
- The Fact
- Enhanced Biosecurity Threat
- Biological Threats
- Agriculture
- Community way of life
- Natural Resources
- Market Access
- Biosecurity System
- Pre-border
- Border
- Post-border
- Biosecurity
- Australia
- Indonesia ?

Box 1	CBD definitions

ALIEN SPECIES: a species, subspecies or lower taxon, introduced outside its natural past or present distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce

INVASIVE ALIEN SPECIES: an alien species whose introduction and/or spread threaten biological diversity

(CBD, 2002)

What is Biosecurity?

Biosecurity is the policies and measures taken to protect from biological harm. It encompasses the prevention and mitigation from diseases, pests, and bioterrorism, of the following area:

Protection of our resources from biological threats

Environment

Public health

Economy

Why do we need Biosecurity?

Protect health status of agriculture and the environment

Preserve biodiversity

Maintain and develop strong export focus for agriculture

The Fact

Naturally free from a large number of pests

World events have highlighted increase in biosecurity risks

INVASIVE ALIEN SPECIES

Invasive alien species are species introduced deliberately or unintentionally outside their natural habitats where they have the ability to establish themselves, invade, out-compete natives and take over the new environments

(CBD News, 2001)

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INVASIVE ALIEN SPECIES

In many areas, ecosystems are weakened by pollution, climate change and fragmentation. Alien species invasions are a growing pressure on the natural world, which are extremely difficult to reverse.

Jacqueline McGlade
(European Environment Agency Executive Director)

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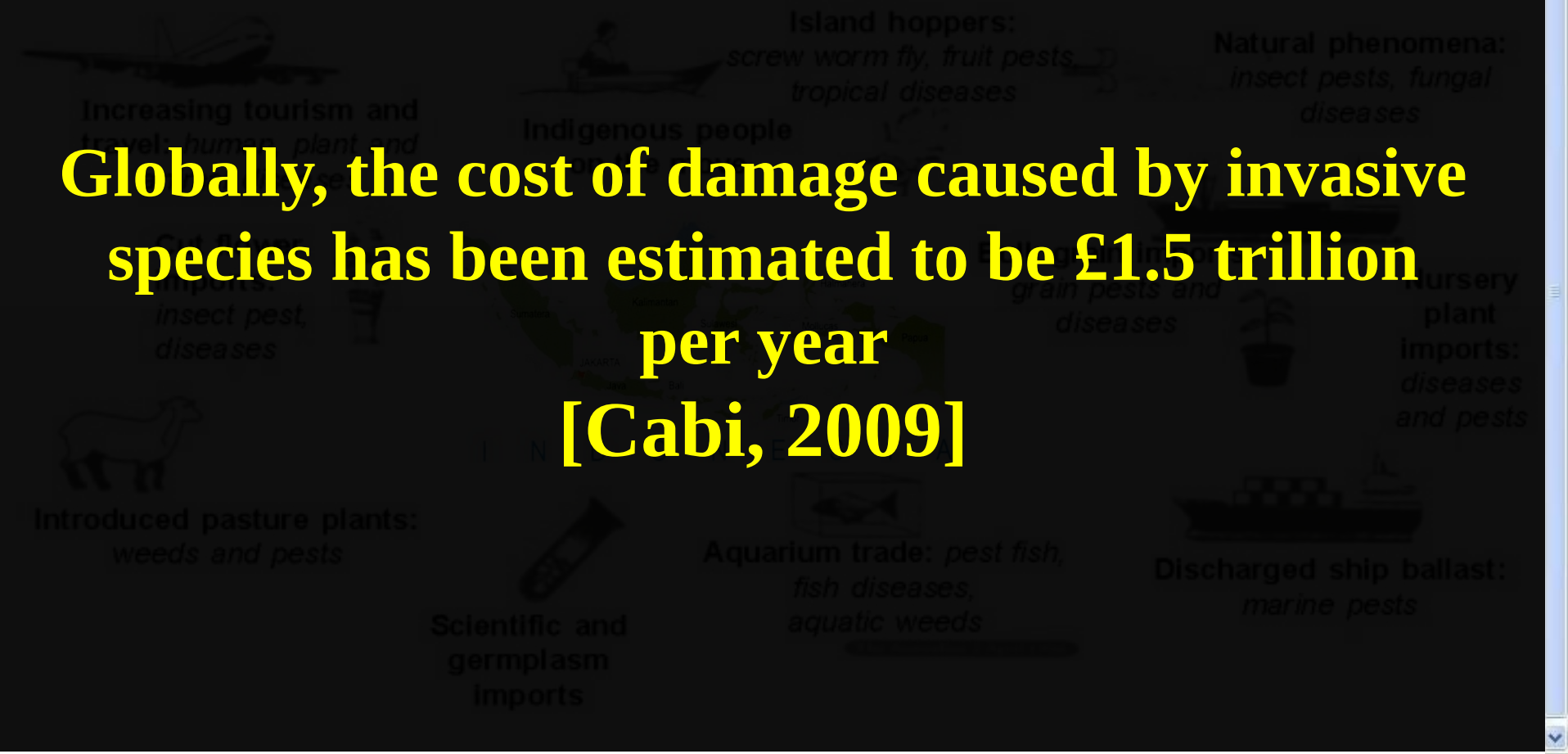
There are more than 10 000 alien species present in Europe, and the rate of new introductions has accelerated and is still increasing. At least 15 % of these alien species are known to have a negative ecological or economic impact.

Invasive alien species cost Europe around € 12 billion per year, according to one estimate. Species such as the Spanish slug, now found in most European countries, can devastate crops.

http://www.eea.europa.eu/highlights/invasive-alien-species-a-growing

Enhanced Biosecurity Threat



Globally, the cost of damage caused by invasive species has been estimated to be £1.5 trillion per year

[Cabi, 2009]

Biological threats

Pests: Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products [FAO, 1990; revised FAO, 1995; IPPC, 1997]

Common Impact

- Agriculture
- Community way of life
- Natural Resources
- Market access

Biological threats

Pests: Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products [FAO, 1990; revised FAO, 1995; IPPC, 1997]

Common Impact

- Agriculture
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- Natural Resources
- Market access

Size: 7-15 cm

Colour: grey-brown to red-brown (polymorphism)

Development: hermaphrodites

"single slug ≥ 400 eggs ← they can create quite a population by themselves"

http://www.mirror.co.uk/news/uk-news/beware-super-slug-experts-fear-2367895

http://thougtforce.hubpages.com/hub/The-Spanish-slug-in-Sweden-we-call-them-the-killer-slug

***Dermolepida albohirtum* Voucher Image (c) assumed Australian Museum. Photographer: Graeme Cocks**

Biological threats

Impact on

- Agriculture

Liriomyza huidobrensis

Biological threats

Liriomyza huidobrensis

Impact on

- **Agriculture**

Country of origin → Central and South America [Cabi, 2007]

Host range → 14 families [Spencer, 1973; Parella & Bethke, 1984; Spencer & Steyskal, 1986; Tjitrosoepomo, 1994]

Introduce to Indonesia in 1994 via Singapore → Chrysant [Suputa et al. 1999]
Pathway → Leaf

Economic loses → Java (approximately IDR 100.000.000,00 /ha / 6 months)
Indonesia (more than IDR 10.000.000.000,00 / year)
[Suputa et al., 1999; Deptan, 1999]

Biological threats

Impact on

- Agriculture

Heteropsylla cubana

Biological threats

Heteropsylla cubana

Impact on

- **Agriculture**

Country of origin → Tropical America but was introduced to Asia by the Spanish in the 1600s [Cabi, 2007]

Host range → *Leucaena diversifolia, Leucaena leucocephala, Samanea saman, Albizia sp. , Mimosa diplotricha* [Oka, 1986, Cabi, 2007]

Introduce to Indonesia in 1981 via Wind → Giant Sensitive Plant [Oka, 1986]
Pathway → Leaf

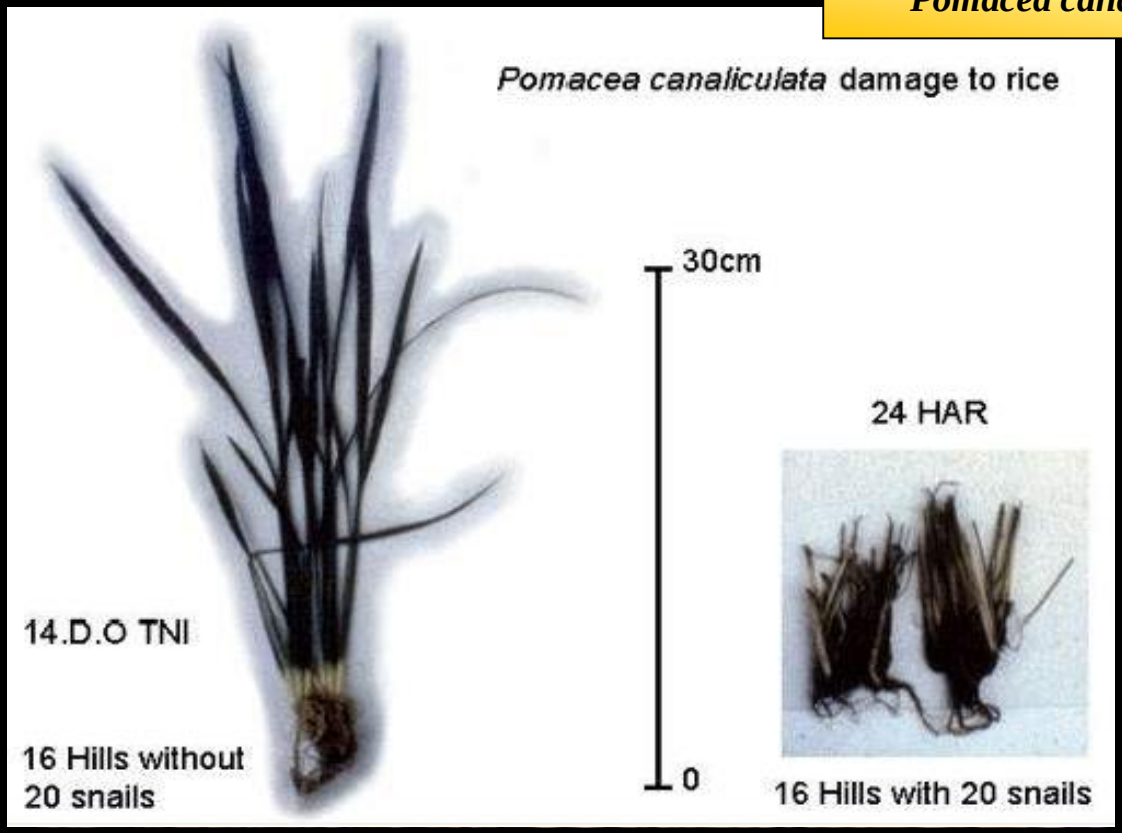
Economic loses → Indonesia (more than IDR 4.000.000.000.000,00 / year) [Mangoendihardjo et al., 1987; Oka, 1986, Deptan, 1999]

Biological threats

Impact on

- **Agriculture**

Pomacea canaliculata



Biological threats

Impact on

Pomacea canaliculata

•Agriculture

Country of origin → Argentina [Pain, 1946]

Host range → *Azolla pinnata* (waterfern), *Colocasia esculenta* (taro), *Oryza sativa* (rice)
[Basilio & Litsinger, 1988; Okuma et al. 1994]

Introduce to Indonesia in 1990 via Thailand → A home aquarium animal
[Mochida et al., 1991]

Pathway → Rice Stem ← eggs

Economic loses → In Taiwan, the estimated loss in paddy fields increased from 46,000 ha and US$8.3 million in 1983 to 90,000 ha and US$30.9 million in 1986 [Mochida, 1991]

Indonesia (more than IDR 18.000.000.000,00 / year) [Suharto, 2002]

Biological threats

Impact on

- **Agriculture**

Globodera rostochiensis

Biological threats

Impact on

Globodera rostochiensis

• Agriculture

Country of origin → Andes mountains in South America [Krall and Krall, 1978]

Host range → *Lycopersicon esculentum* (tomato), *Solanum melongena* (aubergine),
and *Solanum tuberosum* (potato) [Golden & Ellington, 1972]

Introduce to Indonesia in 2003 via Australia → Potato Seeds [Indarti et al., 2004; Cabi 2007]

Pathway → Tuber

Economic loses → Indonesia (more than IDR 57.000.000.000,00 / year)
[Deptan, 2006]

Biological threats

Pests: Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products [FAO, 1990; revised FAO, 1995; IPPC, 1997]

Common Impact

- **Agriculture**
- **Community way of life**
- **Natural Resources**
- **Market access**

Biological threats

Pests: Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products [FAO, 1990; revised FAO, 1995; IPPC, 1997]

Common Impact

- Agriculture
- Community way of life
- Natural Resources
- Market access

Biological threats

Impact on

- **Community way of life**

Solenopsis invicta

Biological threats

Solenopsis invicta

Impact on

- **Community way of life**

  Country of origin → New World [Taber, 2000]

  Host range → *Abelmoschus esculentus* (okra), *Arachis hypogaea* (groundnut), *Citrullus lanatus* (watermelon), *Fragaria ananassa* (strawberry), *Glycine max* (soyabean), *Ipomoea batatas* (sweet potato), *Sorghum bicolor* (sorghum), and *Zea mays* (maize) [Golden & Ellington, 1972]

  Introduce to Indonesia → currently is not exist [Cabi 2007]

Biological threats

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Common Impact

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Common Impact

- Agriculture
- Community way of life
- Natural Resources
- Market access

The last supper: Is this plump cane toad the last thing that croc ever ate?
Credit: University of Sydney

Biological threats

Impact on

- **Natural Resources**

Eichhornia crassipes

Biological threats

Eichhornia crassipes

Impact on

- **Natural Resources**

Country of origin → Brazil [Barrett & Forno, 1982]

Weed in: *Oryza sativa* (rice) [Cabi, 2007]

Introduce to Indonesia in 1894 via Dutch → As an ornamental plant [Gopal, 1987]

Pathway → Human

Negative impact on: biodiversity; environment; crop production; fisheries / aquaculture; human health; rare / protected species; native fauna; native flora; transport / travel; tourism

Economic loses → Indonesia (No Record)

Biological threats

Impact on

- **Natural Resources**

Koi carp. Grow to 75 cm

Rudd. Grow to 25 cm

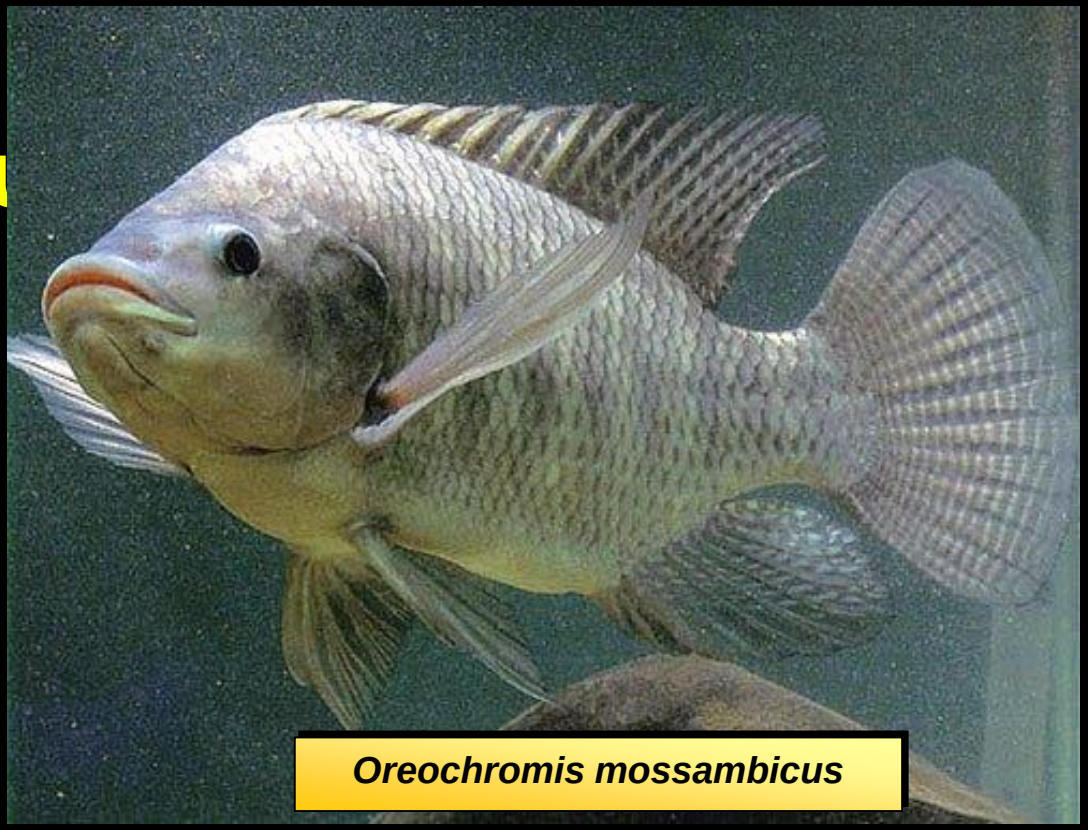
Catfish. Grow to 30 cm

Some species such as koi carp, rudd, and catfish can degrade water quality by increasing turbidity, siltation, nutrient loads and algal concentrations.

Biological threats

Impact on

- Natural Resou



Oreochromis mossambicus

Biological threats

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Common Impact

- Agriculture
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- Natural Resources
- Market access

Biological threats

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Common Impact

- Agriculture
- Community way of life
- Natural Resources
- Market access

Biological threats

Impact on

- **Market access**

Quarantine

Biological threats

Impact on

•Market access

2002

Paprika from Indonesia (West Java) was rejected to Taiwan

2004

Australia, Korea, Japan, Europe → Zero tolerant to fruit flies

2006

Indonesia: PERATURAN MENTAN NO. 37 restricted point of entry for fresh fruits and vegetables → from approximately 200 ports to 7 ports only

Quarantine

Biosecurity System

Pre-border

- Pest risk analysis
- Policy

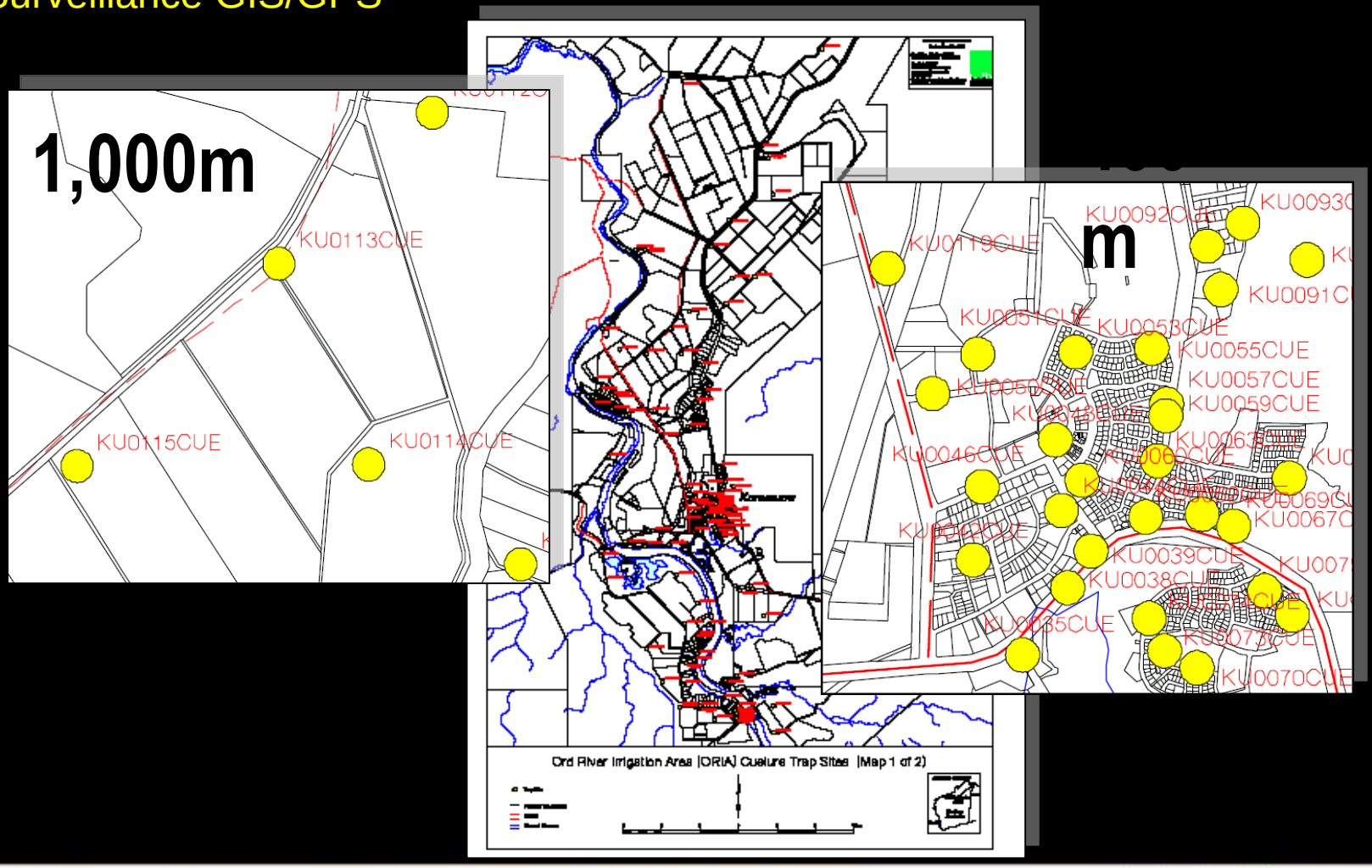
Border

- Border inspections
- Regulatory control

Post-border

- Industry biosecurity
- Pest surveillance
- Incident management

- Surveillance GIS/GPS



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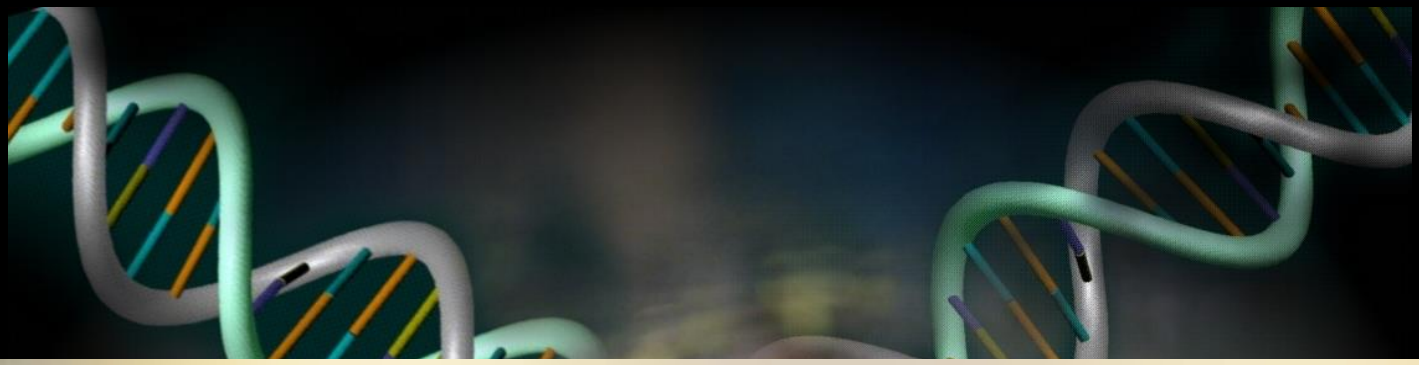

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NAVIGASI

Tentang Indonesia

INDONESIA TEKANKAN PENTINGNYA BIOSAFETY DAN BIOSECURITY

20-08-2008

Indonesia, dalam pertemuan ahli senjata biologi dunia, menekankan pentingnya penguatan keamanan dalam penanganan bahan-bahan biologi (biosafety and biosecurity) untuk mencegah dampak berbahaya dari kesalahan yang disengaja maupun akibat kecelakaan. Penekanan Indonesia untuk Konvensi Senjata Biologi (Biological Weapons Convention/BWC) itu disampaikan oleh Delegasi Indonesia dalam Pertemuan Ahli Konvensi Senjata Biologi yang digelar 18 hingga 22 Agustus ini di Jenewa.

Sekretaris Kedua PTRI Jenewa Yasmi Adriansyah kepada koresponden Antara London mengatakan, penyelenggaraan pertemuan ahli ini merupakan hasil dari kesepakatan pertemuan peninjauan ulang BWC 2006 dan diikuti berbagai ahli, peneliti, dan wakil industri dari berbagai negara.

Delegasi Indonesia yang diperkuat wakil dari Eijkman Institute, Dr. Herawati Sudoyo, dan Ketua Akademi Ilmu Pengetahuan Indonesia (AIPI) Prof Sangkot Marzuki, berharap keikutsertaan para ahli tersbut dapat memberikan masukan serta meningkatkan pemahaman terhadap BWC.

Menurut delegasi RI, dunia telah mengalami kemajuan teknologi dan penelitian yang luar biasa di bidang biologi sehingga membuka peluang sekaligus menimbulkan tantangan, tidak hanya bagi peneliti dan praktisi laboratorium tetapi juga bagi lingkungan dan masyarakat.

Indonesia menggarisbawahi pula pentingnya faktor manusia khususnya peneliti dan akademia dalam meningkatkan keamanan penanganan bahan-bahan biologi.

Yasmi Adriansyah mengatakan menurut delegasi Indonesia, sebagai aktor utama, peneliti selain dituntut untuk menghasilkan penelitian yang bermanfaat bagi masyarakat sekaligus juga memastikan hasil penelitiannya tidak bertentangan dengan ketentuan-ketentuan dalam BWC.

POTENSI

Sumber Daya Alam
Pariwisata
Sosial Budaya
Investasi

Berita Lainnya

Pemerintah Keluarkan Perppu Bagi Amandemen UU BI

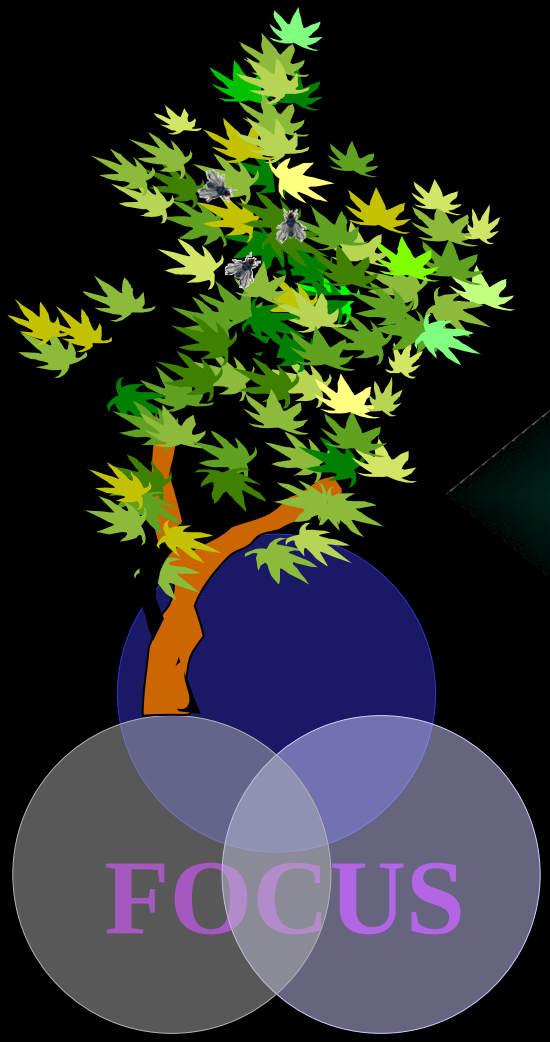
RI Mestinya Terapkan Rezim Kontrol Devisa Untuk Hindari Berkembangnya Krisis

Kedatangan Hassan Tiro Tak Terkait Politik

Indonesia, Gawang Demokrasi ASEAN

Kebun Raya Bogor Sepi Setelah 6 Pohon Besar Tumbang

Biosecurity is a shared responsibility



Terima kasih