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SMPEI Project Towards The Permanent Improvement of Peatland Ecosystem

Peatland ecosystems have become an important issue in recent years, when the world realized its function as a controller of global climate change relevant to the SDGs. Carbon stocks in Indonesia's tropical peatlands have reached 46 Gigatons. If the peatland area is damaged, it will certainly contribute to climate change.

The Indonesian policy of peat ecosystem protection and management, as regulated in PP 71 of 2014 and it's amandement in PP 57 of 2016 and other policies, is an important reference to ensure the sustainability of national development and contribute globally to climate change mitigation.

Living Prosperously on Peatlands

The presence of the Sustainable Management Peatland in Indonesia project in 14 intervention villages has been able to initiate various breakthrough programs in the protection and management of peat ecosystems. Increasing awareness and changing people's mindsets towards ecosystems that are believed to be capable of supporting life

85,5
Total Area of Revegetation (ha)

30
Revegetation area (ha)
Indragiri Hilir

29,5
Revegetation area (ha)
Indragiri Hulu

26
Revegetation area (ha)
Pelalawan

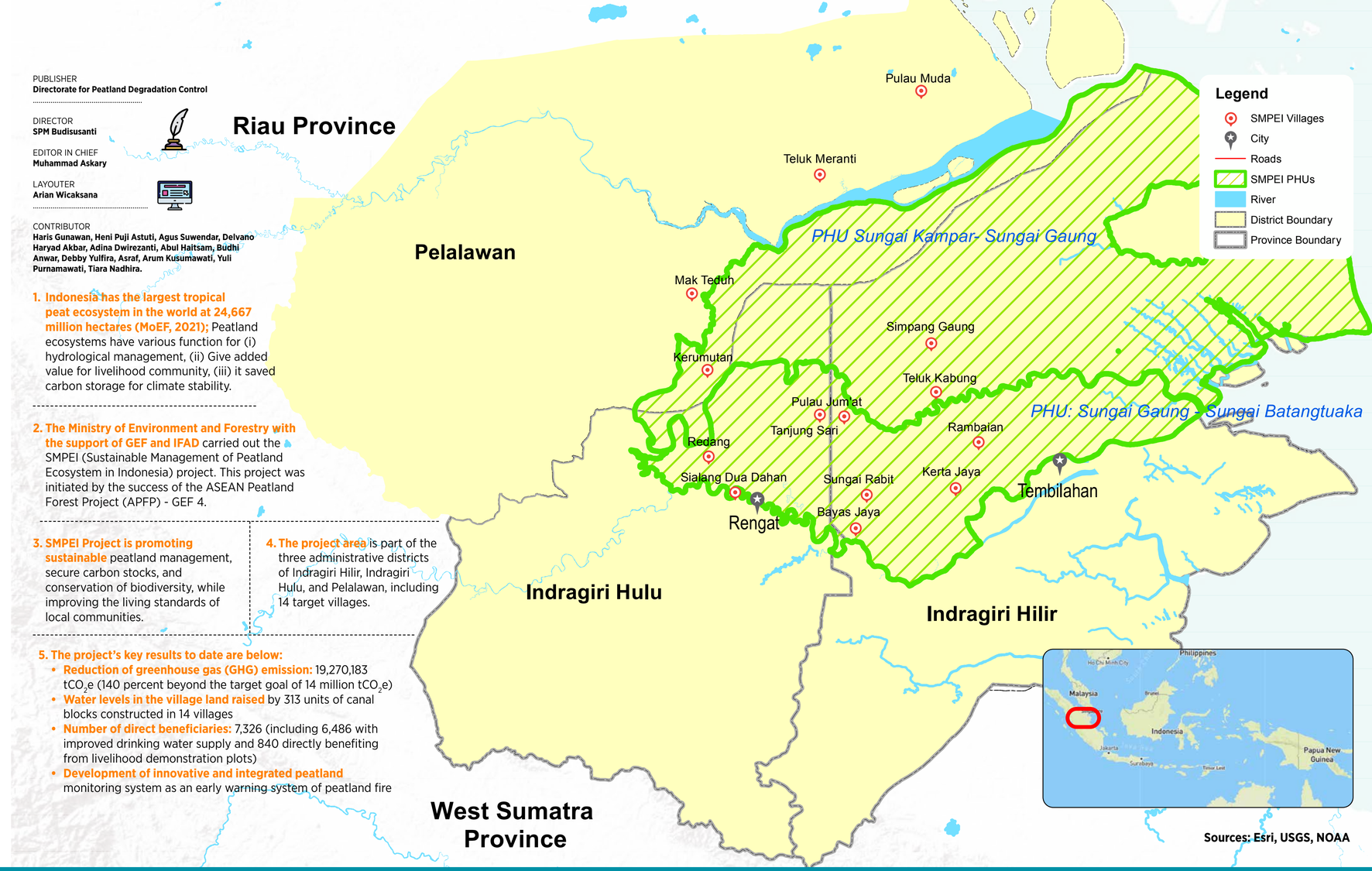
1. **Indonesia has the largest tropical peat ecosystem in the world at 24,667 million hectares (MoEF, 2021);** Peatland ecosystems have various function for (i) hydrological management, (ii) Give added value for livelihood community, (iii) it saved carbon storage for climate stability.

2. **The Ministry of Environment and Forestry with the support of GEF and IFAD** carried out the SMPEI (Sustainable Management of Peatland Ecosystem in Indonesia) project. This project was initiated by the success of the ASEAN Peatland Forest Project (APFP) - GEF 4.

3. **SMPEI Project is promoting sustainable** peatland management, secure carbon stocks, and conservation of biodiversity, while improving the living standards of local communities.

4. **The project area** is part of the three administrative districts of Indragiri Hilir, Indragiri Hulu, and Pelalawan, including 14 target villages.

5. **The project's key results to date are below:**
   - **Reduction of greenhouse gas (GHG) emission:** 19,270,183 tCO_2e (140 percent beyond the target goal of 14 million tCO_2e)
   - **Water levels in the village land raised** by 313 units of canal blocks constructed in 14 villages
   - **Number of direct beneficiaries:** 7,326 (including 6,486 with improved drinking water supply and 840 directly benefiting from livelihood demonstration plots)
   - **Development of innovative and integrated peatland** monitoring system as an early warning system of peatland fire



INDRAGIRI HILIR REGENCY

KERTAJAYA VILLAGE
Bananas (*Musa paradisiaca*) grow optimally in the agricultural demonstration plots built in 2020. Bananas were harvested successfully during the first period, yielding 1 ton of bananas. On the same agricultural demonstration plot, the TK-PPEG group is still developing bananas for the second and further rotation.

RAMBAIAN VILLAGE
Collaboration between the Village authority and the TK-PPEG Group is essential in order to establish Rambaian Village as a village model for education on the protection and management of sustainable peat ecosystems.

SIMPANG GAUNG VILLAGE
Since the implementation of the SMPEI project, the possibility of fires has significantly decreased. Peatlands has been rewetted and can be planted with 3 generation of crops

BAYAS JAYA VILLAGE
TK-PPEG and the community are working together to achieve the same goal of rewetting the area through the building of canal blocking.

TELUK KABUNG VILLAGE
Purple sweet potato (*Ipomoea batatas*) is another developed commodity with high economic value for the community

SUNGAI RABIT VILLAGE
Development of fish farming with the Patin fish (*Pangasianodon hypophthalmus*) as part of making the Sungai Rabit as "Fish Village"

PELALAWAN REGENCY

TELUK MERANTI VILLAGE
The community's interest in farming was initially low due to the belief that peatlands could not be managed. This viewpoint has begun to change since the younger generation of farmers successfully managed the agricultural plot. They always transport the harvested crops through the canal towards nearest traditional market.

MAK TEDUH VILLAGE
Kelulut (Trigona sp.) honey bee cultivation is introduced as an environmentally friendly beekeeping method. This stingless bee produce honey bee and propolis, which have a high economic value and is extremely beneficial to health.

KERUMUTAN VILLAGE
TK-PPEG Peduli Api Lubuk Bungkuk group uses canal for the development of floating net cage cultivation

PULAU MUDA VILLAGE
Mr. Iwan, one of the farmer groups and local hero who never gets tired of providing understanding to the younger generation about sustainable peatland cultivation

INDRAGIRI HULU REGENCY

REDANG VILLAGE
Integrated community revitalization programs has set up a new milestone through combination of improved water regulation, agricultural demonstration plot, and early warning monitoring systems (Fire Danger Rating Sign Boards). This is a learning model for reducing fire risk and improving community livelihoods.

TANJUNG SARI VILLAGE
Mr. Utuh Basir, a pioneering partner in the use of peatland in his village by cultivating pineapple since 1983. Pineapple became the primary support for the family economy and his children's education until their graduation.

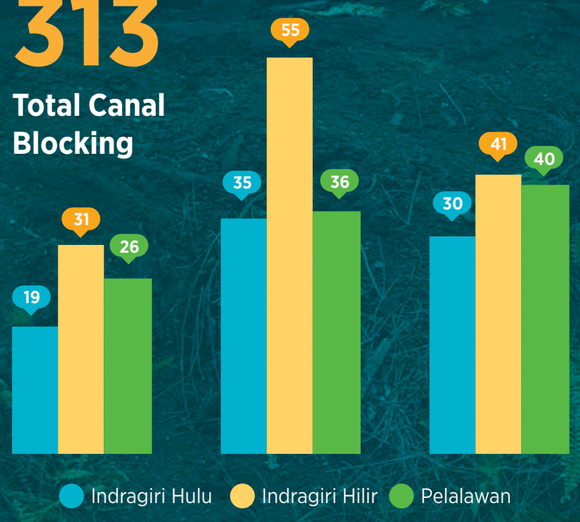
SIALANG DUA DAHAN VILLAGE
Sialang Dua Dahan Village is well-known for its potential as a sweet corn production area. To increase land productivity, the SMPEI project develops corn with pinang (*Areca catechu*)

PULAU JUMAT VILLAGE
Cassava (*Manihot Utilissima*) grows well on peatlands and does not require intensive care, as evidenced by a single cassava harvest yielding up to 50 kg.

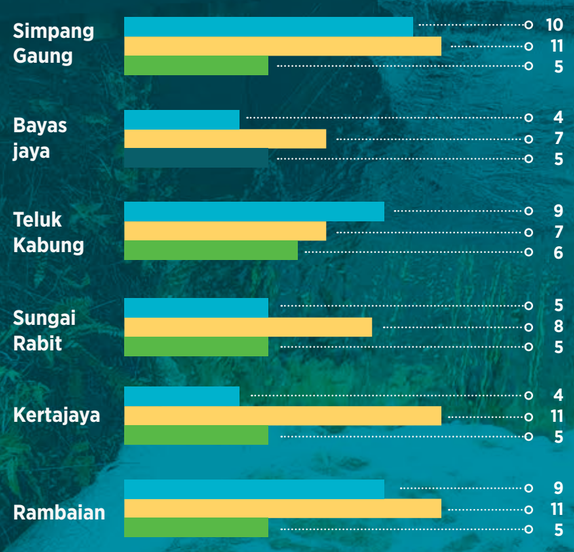
Canal Blocking

Total Canal Blocking in SMPEI Project

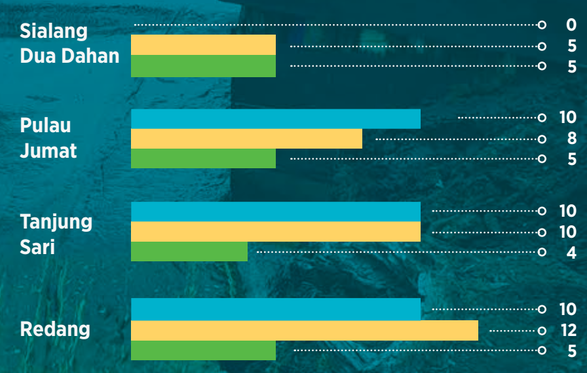
313
Total Canal Blocking



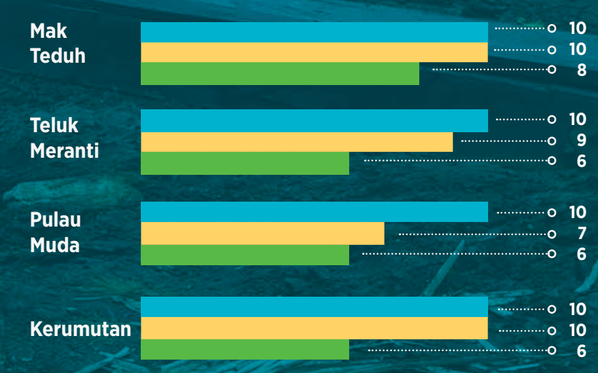
Total Canal Blocking in Indragiri Hilir Regency



Total Canal Blocking in Indragiri Hulu Regency



Total Canal Blocking in Pelalawan Regency

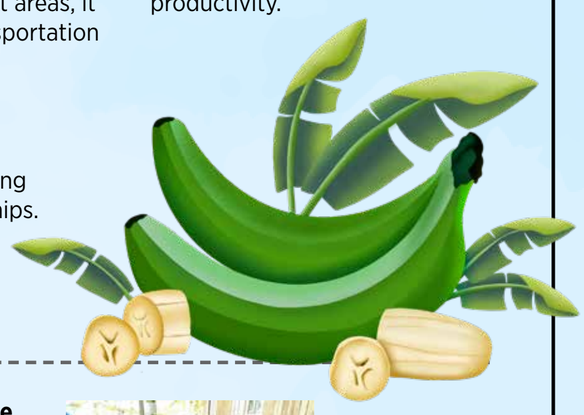


Kertajaya Village

The construction of a canal blocking with an "open and close" model makes people feel comfortable and gain more benefit. Aside from the ability to wet peat areas, it can also facilitate the water transportation for community crops.

Almost 70% of the community sees the canal construction has a positive impact on increasing productivity.

The community diversifies agricultural products by producing red ginger extract and banana chips.



Rambaian Village

Canal blocking is able to increase the productivity of coconut and banana plants on community land. "Hanyut Kelapa" is a community-owned local wisdom in using the flow of water to transport crops.

Keladi pikul is an endemic plant that has been successfully reintroduced as an agricultural commodity and has become a popular wedding dish.

The Y20 Indonesia delegation visited Rambaian Village to see firsthand the community's direct benefits (agricultural innovation and Trigona honey bee cultivation) from the peat ecosystem.

Teluk Kabung Village

Pinang (Areca catechu) is the people's most important agricultural commodity. People have long grown this type on peatlands because it can be exported. It is used as a textile dye in India.

Tarpaulin ponds are an example of inland aquaculture technology innovation. The community has adopted this technology to develop fish farming.

Sungai Rabit Village

The TK-PPEG group performs routine monitoring of water level in the canal. This activity is part of the monitoring and evaluation of canal blocking effectiveness in rewetting area

Jengkol (Archidendron pauciflorum) is a popular dish among the residents of this village. People are motivated to plant this type due to the high price.

Bayas Jaya Village

Gender participation in pineapple processed product to increase knowledge and skills in women's TK-PPEG groups

To prevent pest attacks in the agricultural demonstration plot area, the community has built a wire fence.

Burnt peatlands have very dry conditions. Farmers plough their land in order to be replanted.

Simpang Gaung Village

Simpang Gaung is an SMPEI project village with the highest fire risk.

In monitoring agricultural demonstration plot, TK-PPEG always uses small boats (pompong)

TK-PPEG planted pineapples (*Ananas comosus*) and petai (*Parkia speciosa*) on demonstration plot that were burned in 2015.

canal blocking built on community land has proven to be capable of to improve water management and maintain water capability in this area

Redang Village

Real-time peat water table monitoring equipment (data logger) has been installed in the SMPEI project area.

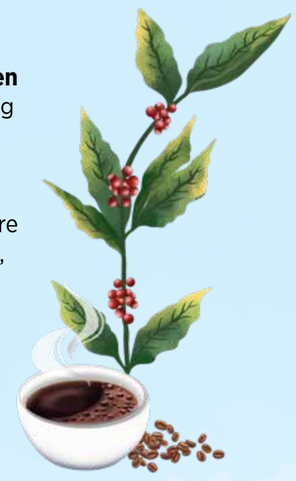
The TK-PPEG group used fumigation to reduce the presence of insects that interfered with Trigona bee colony breeding

In addition to the success in planting seasonal crops such as pineapple, the TK-PPEG group has also succeeded in planting long-term crops such as rambutan (*Nephelium lappaceum*), durian (*Durio zibethinus Rumph. ex Murray*), and matoa (*Pometia pinnata*).

Tanjung Sari Village

The coffee commodity (*Coffea liberica*) is growing well through an agroforestry system with rubber plants.

Tanjung Sari Village is one of the villages that has been affected by fires. Improving water management on peatlands permanently is the key to reducing the occurrence of fires, as severe fires occurred in 2015, 2018, and 2021.



Sialang Dua Dahan Village

Communities have developed horticultural crops such as kangkung (*Ipomoea aquatica*), spinach, and cucumbers using agroforestry system (bananas and pinang).

The installation of Clean Water Treatment from this village have been successfully marketed both within and outside of the village.

One of the challenges in fish cultivation is the availability of feed. TK-PPEG is capable of producing additional fish feed from fish waste, solid waste of tofu, and rice bran flour.

Pulau Jumat Village

Matoa (*Pometia pinnata*) is a popular fruit in the community. It tastes like a cross between rambutan and durian, according to them. The high price (30.000,00/kg) encourages people to plant this species.

The accessibility and distance of land from community settlements is a challenge for the community in utilizing peatlands.

Kerumutan Village

Jelutong (*Dyera sp.*) is used by TK-PPEG to revegetate burnt and flood-prone peatlands.

Before constructing the canal blocking, the community conducts field identification at the prospective location.

The TK-PPEG group routinely monitors fish growth by measuring their weight and length.

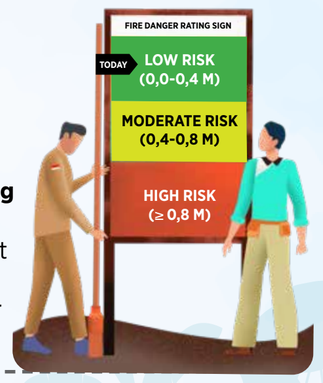
Teluk Meranti Village

Various processed pineapple products such as syrup and dodol have begun to be marketed by of TK-PPEG group. TK-PPEG take pineapples from the agricultural demonstration plot.

Mak Teduh Village

Sago (*Metroxylon sago*) has been successfully reintroduced in peatland area. This variety is also appropriate for peatland conditions in Mak Teduh Village.

Construction of Monitoring Wells and Fire Danger Rating Sign are carried out by the TK-PPEG group to monitor peat groundwater levels.



Pulau Muda Village

It takes time, effort, and caution to ensure that plant seeds survive before planting activities at the agricultural demonstration plot.

Canal blocking bulit on community land has been proven to be able to improve water management and maintain water ability in this area

Toward Sustainable Management of Peatland Ecosystem