

Prof. Dr. Ir. Khusrizal, M.P.



TANAH VULKANIK DAN PERUBAHAN IKLIM

FUNGSI SEKUESTRASI KARBON

Prof. Dr. Ir. Khusrizal, M.P.

TANAH VULKANIK DAN PERUBAHAN IKLIM

"Fungsi Sekuestrasi Karbon"



Penerbit KBM Indonesia

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TANAH VULKANIK DAN PERUBAHAN IKLIM

“Fungsi Sekuestrasi Karbon”

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KATA PENGANTAR

Segala puji dan puja yang diiringi penuh rasa syukur penulis persembahkan kehadiran Allah Subhanahu Wata'ala atas limpahan rahmat dan karunia-Nya sehingga buku ini dapat diselesaikan penulisannya. Buku "Tanah Vulkanik dan Perubahan Iklim: Fungsi Sekuestrasi Karbon" ini merupakan buku yang materinya bersumber dari berbagai referensi, dan berbagai kajian termasuk kajian yang penulis lakukan sendiri.

Kehadiranb uku bermaksud untuk merespon isu pemanasan global yang terus berlangsung di muka bumi dan telah berdampak negatif terhadap ekosistem global. Pemanasan global yang disebabkan oleh berbagai aktivitas manusia terutama dalam menggunakan bahan bakar fosil, aktivitas industri, sistim pertanian intensif serta deforestasi yang semakin tidak terkendali merupakan tantangan sekaligus ancaman terhadap kehidupan di muka bumi ini. Laju populasi bumi dan aktivitasnya yang terus meningkat akan mendorong fenomena ini terus berlangsung dengan intensitas meningkat pula. Oleh sebab itu situasi tersebut semestinya mendapat berbagai upaya guna mencegah, mengurangi serta mengendalikan penyebab peningkatan suhu bumi.

Harapannya setiap individu dapat memahami perihal pemanasan global ini mulai dari penyebab, dampak hingga tindakan yang diperlukan dalam upaya mengurangi peningkatan suhu bumi yang terjadi. Dengan demikian buku ini tidak hanya ditujukan kepada para akademisi seperti staf pengajar dan mahasiswa, tetapi juga bagi para praktisi dan masyarakat umum yang paling sedikit dapat menjadi pertimbangan pemikiran manakala berinteraksi dengan lingkungan. Suatu keniscayaan

bahwa memahami aktivitas kehidupan yang berdampak negatif terhadap perubahan lingkungan dapat memicu perubahan iklim, dengan begitu setiap diharapkan akan berperilaku dan bertindak yang berkaitan dengan penyelamatan lingkungan, terutama yang dapat mengurangi peningkatan emisi gasa rumah kaca ke atmosfer.

Buku ini terdiri dari tujuh bab, yaitu Bab 1 Pendahuluan, Bab 2 Genesis, Sifat dan Potensi Tanah Vulkanik, Bab 3 Karbon Organik dan Sekuestrasi Karbon, Bab 4 Tanah Vulkanik Sebagai Penyimpan Karbon, Bab Dampak Perubahan Iklim Pada Tanah Vulkanik, Bab 6 Strategi Pengelolaan Sekuestrasi Karbon Bab 7 Penutup.

Ucapan terima kasih penulis sampaikan kepada semua pihak yang telah banyak membantu baik dalam gagasan, penyediaan literatur maupun dalam penulisan dan penerbitannya. Sangat disadari bahwa materi buku ini masih sangat sederhana, banyak kekurangannya, untuk itu penulis sangat mengharapkan kritik dan saran-saran yang tujuannya untuk penyempurnaannya, dan pada akhirnya penulis berharap buku ini dapat memberi manfaat bagi yang membutuhkannya.

Aceh Utara, Oktober 2025
Penulis

Prof. Dr. Ir. Khusrizal, M.P

PENGANTAR EDITOR

Perubahan iklim yang memicu pemanasan global akibat peningkatan gas rumah kaca (GRK) di atmosfer merupakan fenomena yang sangat mengkhawatirkan saat ini. Peristiwa ini telah membawa berbagai dampak negatif bagi ekosistem dan seluruh aspek kehidupan. Keberadaan GRK di atmosfer sesungguhnya juga di akibatkan oleh berbagai aktivitas manusia, baik dalam penggunaan bahan bakar fosil, aktivitas industri, deforestasi hingga penggunaan lahan-lahan pertanian yang sangat intensif.

Ancaman perubahan iklim yang mengakibatkan pemanasan global merupakan tanggung jawab semua pihak baik individu, korporasi, pemerintah, lembaga swadaya masyarakat hingga institusi pendidikan yang bersifat lintas negara. Upaya-upaya mitigasi perubahan iklim dengan berbagai cara harus dilakukan secara serius dan berkesinambungan, sehingga tujuan penurunan suhu bumi ke batas yang diinginkan akan dapat diwujudkan. Pengurangan GRK di atmosfer dapat dikurangi melalui pengelolaan lahan yang tepat yang dapat meminimalisir emisi karbon ke atmosfer. Begitu pula dengan berbagai cara penggunaan teknologi penangkapan karbon di atmosfer, yang bertujuan untuk mengurangi emisi karbon adalah cara yang dipandang tepat saat ini. Pada sisi lain memberi pemahaman dan edukasi kepada semua pihak, misalnya melalui media buku perihal faktor-faktor yang dapat memacu peningkatan suhu bumi dan dampaknya terhadap kehidupan, serta uapaya-upaya yang dapat menguranginya dapat dipandang sebagai sesuatu yang sangat berguna.

Dalam penilaian kami kehadiran buku “Tanah Vulkanik dan Perubahan Iklim: Fungsi Sekuestrasi Karbon” yang ditulis dengan baik ini dapat menjadi sumber informasi berharga dalam memahami tanah sebagai penyerap dan penyimpan karbon tanah, terutama pada tanah-tanah vulkanik yang memiliki karakteristik khas seperti mineral ordo kisaran pendek, dimana mineral-mineral tersebut mampu menyerap dan menyimpan karbon lebih tinggi dari mineral lainnya.

Aceh Utara, Oktober 2025

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PROFIL PENULIS

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Selain beberapa hasil publikasi penelitian pada jurnal nasional terakreditasi dan jurnal internasional bereputasi, penulis juga telah mempublikasi buku Lumpur Tsunami dan Tanah Pesisir Pantai: Sifat, Klasifikasi dan Pengelolaan; buku Lahan Budidaya Tembakau Deli-Tebu: Karakteristik dan Kesesuaian; buku revisi berjudul Lahan Budidaya Tembakau Deli-Tebu-Kelapa Sawit: Karakteristik dan Kesesuaian; dan buku Pengelolaan Bahan Organik Pada Lahan Kering: Menjaga Produktivitas Tanah, serta buku Stok Karbon Tanah Lahan Budidaya Jagung Sebaran Menurut Elevasi. Buku Tanah Vulkanik dan Perubahan Iklim: Fungsi Sekuestrasi Karbon ini dipandang bermanfaat bagi dosen, mahasiswa, praktisi, dan masyarakat yang memerlukan informasi tanah, khususnya tanah vulkanik memiliki kemampuan menyerap dan menyimpan karbon organik tanah.