

Mine site restoration, environmental legacies and land repurposing

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Methane



RESOURCE MANAGEMENT WEEK 2021

ENABLING SUSTAINABILITY PRINCIPLES IN RESOURCE MANAGEMENT



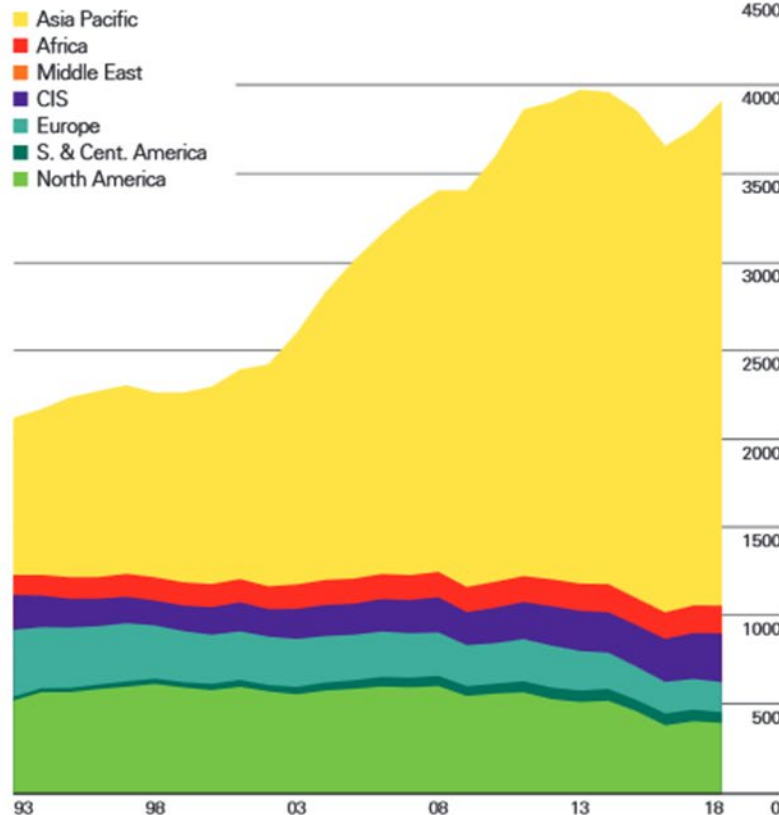
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Coal production and consumption by region 1993-2018

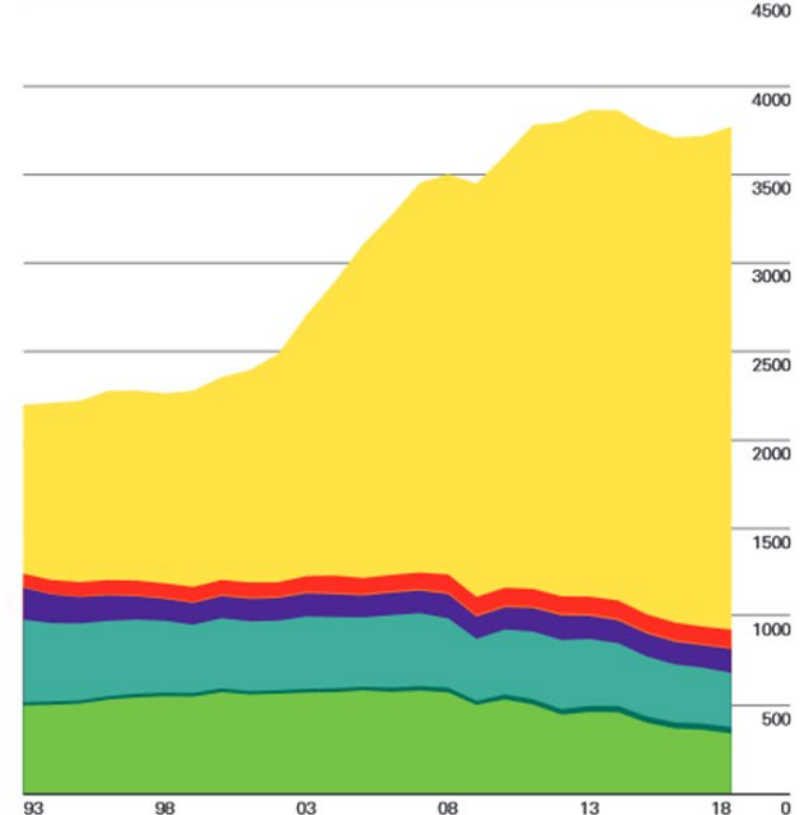


- Coal mining in OECD countries is generally declining
- Coal mining and use are growing in the Asia Pacific
- Mines that close must undergo environmental restoration, and mined-land repurposing should be undertaken but some environmental problems persist for decades.

Coal: Production by region
Million tonnes oil equivalent



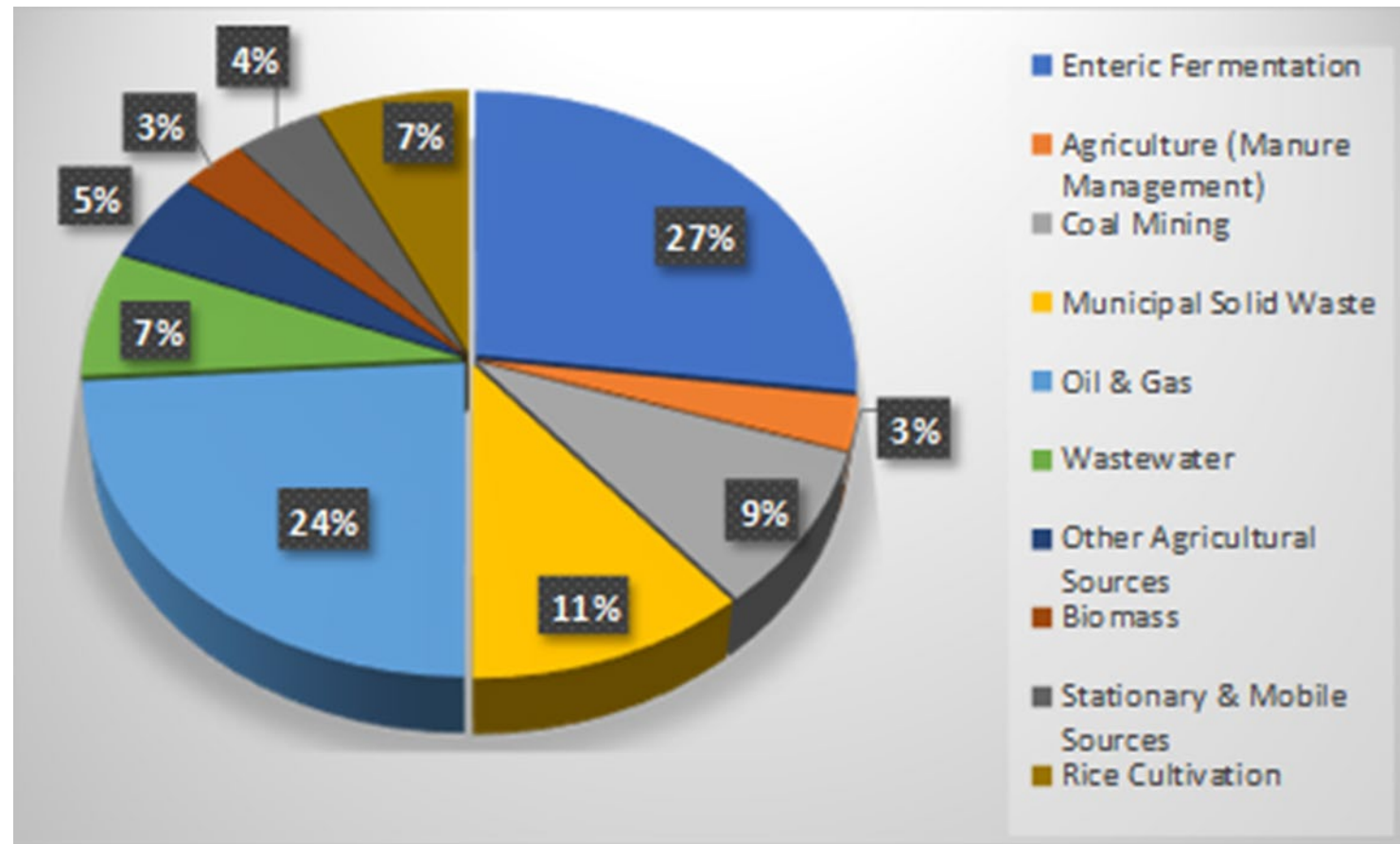
Coal: Consumption by region
Million tonnes oil equivalent



Coal associated methane is a serious problem that is growing



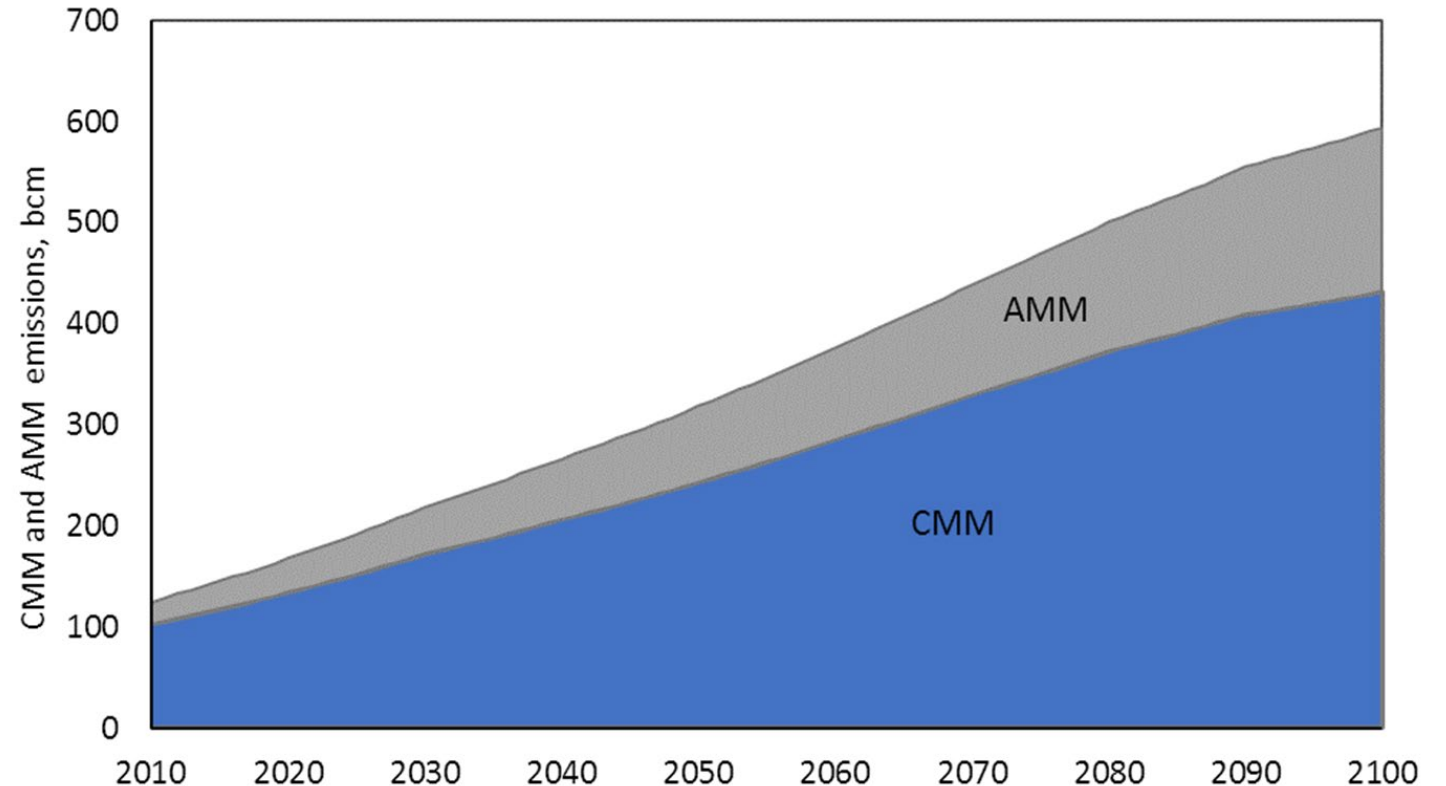
- Coal mining is responsible for approximately nine percent of global methane emissions—and it is growing
- Uneven methane emissions reporting from the coal sector across the UNECE must be addressed.
- More reliable information is crucial to developing programs and determining funding requirements



Gassy active mines become gassy closed mines



- Abandoned Mine Methane (AMM) and Coal Mine Methane (CMM) emissions will continue unless supportive policies are enacted, and funding sources are established.
- The EGRM has initiated work on coal associated gas resources classification



Kholod et al , 2019

Water issues at deep underground mines can be source of serious pollution and expensive to mitigate



- France and Germany have serious water problems that are the legacy from many decades of coal mining in the Ruhr and Lorraine- Saar coal regions:
- Germany is engaged in battling water incursion at Ruhr coal mines
- The last coal mine in the Ruhr area closed in 2018, but water that flows from mine workings threaten to contaminate surface water and aquifers overlying the deep mines of the region
 - The costs of combatting rising water through aggressive pumping are called eternity costs—the German government does not believe that it will ever stop pumping water.
 - The annual cost of pumping and treating water from the mines is up to € 1 billion per annum. This includes pumping mine-filling water from deep shafts to prevent contamination of groundwater while surface pumps remove rainwater which accumulates in the shallow workings uphill from subsided terrain rivers.
- France is struggling with surface flooding from coal mines in the Lorraine-Saar region.
 - Mining has left problems similar to the Ruhr in Lorraine-Saar region, but even with pumping a new lake district is forming as prime farmland is flooded

Mine closure planning and funding for future environmental needs must start when a mine opens



- Sustainable mine closures depend on coal, water, and methane resource management
- Mine restoration and mined land repurposing are crucial elements of resource management—but it happens after mining income has stopped.
- Mining development plans should include mine closure plans that are reviewed periodically
- Funding mechanisms for closing mines needs to be revisited:
 - Multilateral and commercial banks and managed investment funds are quickly backing away from funding coal mining projects—including projects to clean up legacy problems such as fugitive methane emissions
 - Surety bonding for mine closure and restoration are found to be woefully inadequate in many coal mining areas—there is are environmental disasters looming in areas that are already in crisis from lost of high paying mining jobs

Sustainable mine closure is being addressed in many ways



- Several groups, such as the Global Energy Monitor are tracking coal mining and its emissions and publishing reports that are likely to bring more attention (and facts) to use for addressing problems.
- The Global Sustainability Standards Board are supporting drafting a set of standards which encourage transparency related to extractive industry impacts. Their Global Reporting Initiative will cover the oil, gas and coal sectors
- Similarly, the IFRS is focusing on the financial reporting aspects of sustainability
- The World Bank is working on global mine closure standards and mined land repurposing tools. This work promotes good practices and risk-based principles for sustainable closure practices.

Thank you!

Contact us!

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