

How market systems programs can address climate change



The climate change imperative

Indonesia is the world's ninth largest greenhouse gas (GHG) emitter.¹ Yet, per capita energy CO₂ emissions are only 2 tonnes, half the global average. The result of emissions is a projected 1-degree centigrade change in temperature for Indonesia by 2050. The impact of climate change will increase rainfall variability and cause more extreme events, including drought and floods.

From this year alone, Indonesian smallholder maize farmers are feeling the impact of drier periods in West Nusa Tenggara (NTB) and areas of East Nusa Tenggara (NTT). In East and Central Java, recent mungbean crops failed due to unseasonal rain rotting the crops. Smallholder vegetable farmers in Papua and West Papua have reported increased pests due to unseasonal rain.



Impact of climate change on agriculture in Indonesia



Increased flooding, drought, sea level rise and heat stress will have negative impacts, especially on the staple crop, rice, which contributes about half of calories consumed nationally.



Increases in carbon dioxide may have the benefit of increasing plant growth but these are usually offset by increases in temperature and/or declines in rainfall.



Rising temperatures will interact with rainfall to increase vulnerability to pests and diseases.



Women's unequal participation in decision-making prevents women from fully contributing to climate-related planning, policymaking, and implementation. This could perpetuate and exacerbate inequalities as the impacts of climate change become more pronounced.



¹ <https://www.iea.org/reports/an-energy-sector-roadmap-to-net-zero-emissions-in-indonesia/executive-summary>



Emissions from agriculture



Indonesia is the world's ninth largest emitter of greenhouse gases.



Agriculture in Indonesia produces around 200 Million tonnes of CO₂-e per year.



This represents around 11% of total emissions for Indonesia.

? Can a market systems development approach help?

PRISMA (The Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture) aims to increase crop and livestock productivity using a market systems development (MSD) approach. PRISMA provides co-investment, market research and analysis and business support to encourage the private sector to deliver products and services that increase farmer productivity. The approach can deliver benefits at scale when the products and services are commercially viable and adopted by the broader market, delivering sustainable change and building market resilience.

MSD can support action on climate change by leveraging the incentives of the private sector to introduce climate smart products and services. When climate smart products and services are proven to be commercially sustainable and influence the whole market system, they can significantly reduce green house gas emissions and support climate adaptation of smallholder farmers.



How MSD programs can adopt a climate lens

If MSD programs have a strong systemic change focus, then it is possible to adopt a climate change lens. PRISMA did this by undertaking a climate-smart stocktake.

An independent climate agricultural scientist undertook the stocktake to assess PRISMA's interventions at a sector level and identify:

- GHG emissions risks
- What the program has been doing to date to mitigate those risks (either by design or by chance)
- Additional mitigation opportunities
- Adaptation opportunities
- Recommendations for priority areas to address going forward.

How PRISMA is supporting farmers to adapt and mitigate GHG emissions

PRISMA is working in 12 agricultural sectors across 6 provinces in Eastern Indonesia. The program's investments seek to change how the private sector does business in rural Indonesia so that smallholder farmers can increase their farm productivity. PRISMA does this by taking an integrated approach, working with businesses to ensure innovations are commercially sustainable, increase productivity and benefit the climate. The program's portfolio can be divided into 2 broad categories: livestock (beef and dairy) and crops (including staple and secondary crops).



Livestock (Beef and dairy)

- Increasing the use of concentrate feed which improves not only rumen fermentation efficacy but also addresses the lack of availability of natural forage
- Using feed additives, such as medicated molasses blocks, to improve animal health while reducing methane emissions
- Improving manure management so farmers can immediately use fresh manure to supplement fertiliser application on crop and pastures rather than stockpiling it
- Introducing new breeds of cattle, which are better adapted to the tropical climate
- Improving supply chains and market connectivity so smallholder farmers have opportunities to access and adopt agri-inputs and good farming practices that support mitigation measures





Crops, including staple and secondary crops

- Improving access and use of climate-resilient, high-yielding, and locally adaptable seeds
- Supporting the judicious use of fertiliser and using safer, more environmentally friendly products
- Promoting new products, such as slow-release coated urea products to enhance nitrogen efficiency
- Supporting companies to develop ICT applications on soil data for accurate agri-input need identification and application
- Supporting educational-based marketing for crop protection and fertiliser products, which includes information on good agricultural practices to protect against pests and disease risks from climate change
- Promoting integrated cropping methods with nitrogen-fixing legumes, such as mung beans
- Straw stubble management for crops such as maize and paddy, which reduces the need for high emission burning
- Promoting mechanised solutions for planting and harvesting which improves soil condition and helps in stubble management





Measuring impact

PRISMA has defined methods to measure greenhouse gas emission reduction from the relevant livestock and crop intervention areas. This will help quantify the contribution to the Government of Indonesia and Government of Australia climate goals.

About PRISMA

PRISMA (The Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture) is a development partnership between the Government of Australia (Department of Foreign Affairs and Trade, DFAT) and the Government of Indonesia (Bappenas). The program's strategic aim is to address food security and poverty by making rural markets more inclusive. PRISMA does this by taking a market systems development approach, partnering with businesses and government to remove market barriers and introduce product and production innovations.

PRISMA is supported by the Governments of Australia and Indonesia and implemented by Palladium, with Technical Assistance from Swisscontact, Zurich.

Find out more: www.aip-prisma.or.id // info@aip-prisma.or.id // LinkedIn: @PRISMA-Indonesia