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Building resilient harvests: Gates Foundation pushes for climate-smart food systems in APAC

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In an exclusive interview with AgroSpectrum, Dr. Ana Maria Loboguerrero, Director for Adaptive and Equitable Food Systems at the Gates Foundation, outlines the unique challenges and opportunities facing food systems in APAC. She emphasizes the need for holistic solutions that integrate climate adaptation, gender equity, and nutrition. Loboguerrero highlights the role of digital innovationsâ??from Indiaâ??s livestock traceability to AI-based weather forecastsâ??in boosting resilience. She also stresses the importance of regional cooperation and increased adaptation finance for smallholder farmers. Looking ahead, she remains optimistic about APACâ??s potential to lead the world in building inclusive, climate-smart food systems.

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What makes the APAC region unique when it comes to building adaptive and equitable food systems?
In APACâ??and specifically South Asiaâ??over 80 percent of households rely on smallholder or subsistence farming to make a living. Most of these farms are under two hectares, meaning simply improving productivity does not always translate into more income, keeping many farmers in poverty.

This challenge is further exacerbated by climate change. According to the 2024 Asia-Pacific Climate Report, South Asia will require between $102 billion and $431 billion annually for climate adaptationâ?? far more than the $34 billion of adaptation finance mobilized in the region in 2021-2022. Gender inequality adds another layer to the challenge. While women represent the majority of the agriculture labor forceâ??like in India where women represent 67 per cent of workers in agrifood

systemsâ?? they are often left out of decision-making and lack access to resources. This is why efforts in APAC demand holistic, integrated interventions across nutrition, climate resilience, and womenâ??s access to resources.Â

How are global and regional trade dynamics affecting local food system equity in APAC?
Today, South Asia primarily exports staple crops and processed products around the worldâ??including to the Middle East and North Americaâ??missing opportunities to build resilient local ecosystems through collaboration with neighboring countries. Meanwhile, variations in regulations and logistics between countries in South Asia limit progress, meaning intraregional trade remains underdeveloped and fragmented. Harmonizing trade can help to reduce food prices and buffer against climate shocks, while stimulating crop diversification and helping prepare unified response systems for the climate-driven spread of pests. Â

What promising technologies or digital tools are helping make APAC food systems more adaptive and inclusive?
Digital tools and technologies play a key role in helping smallholder farmers reduce food loss and waste, prepare for climate stressors, and connect to the supply chain. Across food systems, we are seeing the adoption of these technologies increase through rural outreach, training and financial services offerings.

For example, the Indian National Digital Livestock Mission now tags over 95 per cent of the countryâ??s ~303 million cows with unique IDsâ??including vaccination records, parentage, and milk yield metricsâ??unlocking traceability from farm to processor. By reducing losses and helping to maintain quality, this digital infrastructure improves smallholder incomes and allows them to make the most of premium export markets. Meanwhile, the Agriculture Innovation Mechanism for Scale (AIM for Scale), launched in 2024, is deploying AI-based weather forecasting across Asia. Early pilots in India show reduced farmer debt and savings increases of up to 10 percent.

How well are national policies in APAC addressing the dual goals of climate adaptation and food equity? Where are the gaps?
National policies across South Asia are helping drive the regionâ??s shift toward food self-sufficiency. In India, for example, the governmentâ??s National Mission on Sustainable Agriculture (NMSA) is promoting climate-resilient farming, water-use efficiency, and improved soil health. Over the years to come, it will be important to continue strengthening nutrition security across the region. By making nutritious diets more affordable and accessible for everyone, South Asia can further its commitments to food system transformation and healthy lives for all.

Meanwhile, across South Asia and beyond, climate-driven extremes continue to devastate yields, further straining food systems, exacerbated by growing populations and water shortages. National adaptation strategies are emerging, however financing is lacking: COP29 discussions noted that less than 1 per cent of public climate finance targets smallholder agriculture, despite these farmers producing up to 80 per cent of the regionâ??s food. Moreover, gender considerations are still largely siloed, rather than woven into core agricultural and climate policies.

How can APAC countries collaborate better across borders to build resilient regional food systems?
Climate resilience across South Asia depends on cross-border alignment in regulatory standards, joint disease and pest surveillance, synchronized early warning systems, and shared R&D investments in crop, livestock, and climate innovations. The 2024 Asia-Pacific UN meeting highlighted the need for such alignment, urging institutional support for agriculture, fisheries, and nature-based food systems to build resilience. Establishing regional centers to coordinate responses to these challenges is essential to make regional trade more efficient while reducing production and transaction risk and increasing profit.

What does a truly adaptive and equitable food system look like in APAC by 2035 or 2050?
Such a system would deliver both food and nutrition security, while being climate shock-resilientâ??able to respond to and bounce back from floods, heatwaves, or disease outbreaks without raising food prices or impacting farmer livelihoods. It would embed climate-smart technologies at scale and center on inclusivity, integrating marginalized groups, including women and smallholders, into governance and markets. By 2050, many APAC low- and middle-income countries would have transitioned towards high-income economies, leveraging inclusive, nutritious and resilient food systems as engines of growth.

What are three policy or investment priorities you believe must be urgently addressed to get there?
First, the region must dramatically increase adaptation finance directed to smallholder farmers. Second, policymakers should mandate systems-based planning, wherein nutrition, gender equity, and climate resilience are seen through a â??growth lensâ?• as core elements of food system transformation. Third, cooperation between countriesâ??across agricultural research, emergency response, and trade policyâ??must be institutionalized through stable regional frameworks to enable long-term investments in shared climate-resilience infrastructure.

What gives you hope or optimism about the future of food systems in APAC?
Digital tools and technologies are now underpinning agricultural modernizationâ??from livestock traceability to AI-enhanced weather servicesâ??demonstrating that these innovations can meaningfully improve the lives and livelihoods of smallholder farmers in South Asia. Diet diversification is also increasing: pulses, oilseeds, fruits, vegetables, and aquaculture sectors are now outstripping the growth rate of staple crops in South Asia. Itâ??s also exciting to see multilateral forumsâ??like the upcoming COP30 in BelÃ©m â??prioritize climate-resilient food systems at the center of SDG discussions. Despite formidable challenges, the convergence of technology, policy momentum, regional engagement, and innovation offers a credible path toward fair, and nutritious climate-smart food systems.

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