

GACSA Annual Forum 2023 – Expanding Global Adoption of

Climate-Smart Agriculture

Co-Chairs' Summary Report

04-05 May 2023 – Hybrid: Rome, Italy and Zoom

Day 1 (04 May 2023)

1. Opening Session

Opening Remarks

Co-Chairs of the Alliance for Climate Smart Agriculture, **Dr Hans Hoogeveen** and **Imelda Bacudo**, opened the GACSA Annual Forum 2023. We are confronted with a 'perfect storm' of crises with devastating consequences for many, especially in developing countries. With 860 million people in hunger, which number will grow to 1 billion people next year if we don't act, the world is clearly off track. On top of this, we have 345 million people on the edge of starvation and more than 3 billion people don't have access to healthy diets. We have a severe food crisis, and we face an uncertain future. To the contrast, we are losing every year 1/3 of our produced food, with a worth of 1 trillion US dollar.

Despite efforts from the global community to reduce global warming, climate change is striking farmers – especially smallholder farmers – with brutal drought, heat, and flooding. We have to feed 10 billion people in 2050. Estimates show that the world will need 50 percent more by 2050 to feed the increasing global population. This means an increase in agricultural production in a sustainable way. Climate smart agriculture is what we need.

The Co-Chairs highlighted that Alliance is the key to combating the global food crisis and bringing developments in sustainable agriculture and stressing the importance of putting farmers and the private sector back at the center of the discussion. They emphasized the role of Annual Forum as key for the sharing of information and best practices among the Members, launching and exchanging new CSA activities and proposals to achieve GACSA goals and revitalize GACSA engagement. Finally, the two Co-Chairs anticipated the Forum topics: youth, women and finance, and new technologies.

Adoption of the Agenda

The Annual Forum adopted The agenda for Day 1 and Day 2 can be found in *Annex 1*.

Keynote Opening: Highlighting the role of Climate Smart Agriculture (CSA) and the importance on global level.

Agnes Kalibata, President of the Alliance for a Green Revolution in Africa and UN (United Nations) Secretary General's Special Envoy to the 2021 Food Systems Summit and President of Sustainably Growing Africa's Food Systems (AGRA), highlighted how drought and floods are the major global threats posed by climate change. Nevertheless, she also mentioned how agriculture is seen not only as part of the problem, but it is also part of the solution. Local communities often lack the capacity to respond to external threats such as environmental hazards posed by climate change, food and health insecurity, internal and external conflicts. In those contexts, therefore, vulnerable communities need to be supported by the numerous

actors within society. Dr. Kalibata stressed the importance of sharing best practices among **stakeholders** and creating an enabling environment, which include policies, institutional arrangements, stakeholder involvement, infrastructure and access to knowledge and support from a wide range of other organizations that will be critical for the effective success to address climate change and its threats. She remarked how collaboration among actors, as well as access to finance and adaptation among local communities, is going to be critical to led both communities and the businesses who support their well-being (as they supply employments, services and products supporting local economies) to be more resilient to the challenges posed by climate change.

Martien van Nieuwkoop, Global Director, Agriculture and Food Global Practice of the World Bank, set the scene into the current global context. He recounted that global food insecurity reached an all-time high in 2022 and it is projected to continue worsening in 2023. While the COVID-19 pandemic and the war in Ukraine have rapidly accelerated food insecurity trends, the rate has been increasing since 2015. Numerous drivers of the global crisis are currently worsening all aspects of food and nutrition security across the globe (in both developing and developed economies), hampering food access, availability, utilization, and stability. Five risks particularly include the rapid domestic food price inflation, the global fertilizer crisis (which reached the lowest levels of affordability since 2008), food ability which are becoming increasingly constrained (particularly due to the decline in grain production as a result of the war in Ukraine, and the continuing rise of temperature and precipitation, which show periodic dramatic effects with El Niño. The impacts of the crisis manifest differently in every country; country-level action is necessary and there is no one-size-fits-all solution. The current global situation is a reflection that a modern food system is not fit for purpose, and food systems transformation is fundamental to move away from volatile, unsustainable and inequitable growth to a green, resilient and inclusive development. Climate smart agriculture plays a fundamental role in achieving such a transformation, accelerating agriculture innovation, optimizing productivity and resilience and reducing carbon footprints simultaneously. Furthermore, he reported that an additional 300-400 billion USD is required in annual investment in agriculture, with a major need to realign incentives, scale-up current investments, de-risk private sector investments, strengthen institutions, create a food system lens on budgets, and ensure effective inter-ministry coordination.

Michael Keller, Chair of the Agri-Food Networks (IAFN), highlighted the importance of inclusiveness in CSA. He stressed the importance of bringing innovation and best practices to farmers and ensuring space to share their practices with researchers, policymakers and themselves. He also pointed out that public funding in agriculture research is reducing while private sector innovation is heavily increasing (two-fold since 2000). He stressed the need to work with the private sector to increase innovation where it is most needed, in vulnerable countries. The inclusion of agriculture at COP (Conference of the Parties of the United Nations Framework Convention on Climate Change, UNFCCC) discussions proves that agriculture is now seen as a solution to climate adaptation and resilience, rather than solely a problem, and must continue to ramp up the engagement and recognition of CSA moving forward.

Divine Ntiokam, Founder and Managing Director of the Climate Smart Agriculture Youth Network (GCSAYN), brought a youth perspective reiterating how GCSAYN have set up 'Centers of Excellence' in primary and secondary schools in twenty-three countries across five continents. In addition, GCSAYN also

created an e-learning platform, giving children access to various courses recognizing their crucial role in agriculture. Promoting Youth learning and engagement in agriculture appears to be fundamental in a world of unprecedented crisis as conflicts, wars, pandemic, rapid increase in food prices and shortages of food supplies. Youth are the future of humankind and their active contribution to agriculture and the related sector is key, not only to achieve sustainable development but for the broader future of our foods.

2. Innovation and Technology

The Innovation and Technology session focused on how innovation and technology can be accessible, affordable and implemented. The session was moderated by GACSA Co-Chairs who presented the CSA Innovation practices and their use by the GACSA members from the six constituencies (namely governments, international and regional organizations, research bodies, civil society organizations, farmers and farmers' organizations, producers' organizations and business).

Dr Kirit Nanubhai Shelat, Executive Chairman National Council for Climate Change Sustainable Development and Public Leadership (NCCSD) provided an overview of India's history into sustainable agriculture. He explained that India has introduced technology-driven agriculture, animal husbandry and fisheries, by providing doorstep delivery and guidance of usage of technologies. They have also scaled down technology for appropriate usage by smallholders and provided subsidies to make the technology and innovations introduced affordable. Dr Shelat explained that an Agriculture Science Center (KVC) has been set up in each district of India and comprises scientists from various disciplines, with a mandate to guide farmers and carries out spot visits on farms.

Nisha Shah, CEO (Chief Executive Officer) of National Council for Climate Change Sustainable Development and Public Leadership (NCCSD) described the work bring carried out in more than 1,000 villages across India. She noted that many farmers are illiterate, creating a barrier to knowledge and usage of modern technology. However, children are increasingly tech-literate, and there is need to build an intergenerational synergy.

Cristina Chirico, Head of International Office of the Confederazione Italiana Agricoltori (CIA), highlighted the extreme importance of applying a farmer-to-farmer approach in technology and innovation, rather than solely linking farmers through researchers and universities. She underscored that all innovation must be supported by training and dissemination to farmers and that knowledge sharing is key. Access to innovation and technology must be economically sustainable for farmers, considering farmers' ability to implement and maintain implemented technology in the short and long term. Furthermore, technology and innovation must be an adequate fit to the farmers' reality; it should be able to be integrated into daily practices. She also reminded that technology and innovation should represent the real needs of farmers, and dialogue with farmers in the fields is necessary to have a clear picture of the current reality on the ground.

Walid Nasr, CEO of ZR3i, provided an overview of carbon farming in Egypt and the services of ZR3i especially in crop monitoring, crop management and crop insurance. He explained how funding new technologies a major challenge could be; however there has been lots of interest from small farmers in Egypt and across the Middle East and North Africa (MENA) region to implement such new technologies. He added that start-ups are a great way to connect farmers to new technology and to local markets, but risk mitigation tools are imperative. He also indicated that adaptation is key by asking the floor the following question: how do we adapt existing technologies into new markets and new fields?

Gladys Morales, Senior Innovation Adviser at the International Fund for Agriculture Development (IFAD), reported that IFAD has been investing an average of 23.2 billion USD in grants, reaching 518 billion people globally. She presented two case studies of IFAD's work in Egypt and Vietnam using climate smart agriculture innovations to increase productivity and build resilience before climate and economic shocks arrive. IFAD is currently focusing on solutions to three main problems: access to data and innovation, access to finance, and property rights. She provided a harrowing report that small scale farmers only earn, on average, 6% of profit for every 1 USD of food that they produce (i.e., 6c). She emphasized that more financing is crucial to moving forward, and particularly needed in communities and local start-ups; needs to be tapping into solutions that already exist on the ground, rather than through the same few channels as usual. To do so, business cases must make sense to the farmers, and solutions need to be made with the farmers, by the farmers, and for the farmers.

Harry Hunter, CEO NextGen Tek Consulting, pointed out technology adoption challenges for farmers, including a lack of access, high costs of implementation, lack of knowledge and skills, and resistance to change. He explained that trust must be built between open-source decentralized platforms to ensure that farmers are in control of their data and that there is transparency in data pipelines. In addition, decentralized platforms allow for greater access to affordable and innovative technology and a reduced dependency on big tech monopolies, allowing farmers and those in tech to work together to solve global issues in agriculture.

Remarks by co-chair Dr Hans Hoogeveen

Dr Hans Hoogeveen emphasized how the session has been about innovation and technology, continuing accessibility, scalability, affordability, knowledge sharing and training in the area. It is important to listen to the farmers and the farmers' needs, so to work on capacity building by the implementation of programs at the national level. However, capacity building has to be pursued not only by national programs but also by farmer-led and farmers programs. Farmers need to be always mentioned and centered. Capacity building programs need to be decentralized and localized, but they need also to be adapted to local circumstances. In this framework, access to finance as well as making full use of the digital tools nowadays available, it's the first glance for innovation technology in agriculture.

3. Youth is the Future

During this session, moderated by Kazuki Kitaoka, Global Coordinator World Food Forum (WFF), it was highlighted the crucial role of youth in promoting sustainable and resilient agrifood systems and climate smart agriculture by advocating for climate action, promoting innovation and technology, creating entrepreneurship and business opportunities as well as building collaborations and partnerships. He also presented the World Food Forum, a new youth-led global movement, inviting all participants to join the new year's flagship event on October 16-20, 2023, at the FAO Headquarters. A pre-recorded video was presented to announce this year's flagship event theme: "Agrifood systems transformation accelerates climate action."

- **Roberta Ianna**, Senior Advisor Italian Ministry for the Environment and Energy Security Youth4Climate, and **Emanuela Vignola**, Senior Advisor Italian Ministry for the Environment and Energy Security and co-leader of Youth4Climate, introduced the Youth4Climate global initiative,

which is co-led by Italy and the United Nations Development Programme (UNDP) and co-shaped with youth and strategic partners like Connect4Climate of the World Bank. Youth4Climate was born out of their first global event hosted in Milan in 2021, entitled “Youth4Climate: Driving Ambition” in preparation for the COP26. The event was so successful that it was turned into a permanent initiative in partnership with the United Nations. The initiative aims to build on the lessons learned and recommendations brought out from previous events, to bolster youth climate action, provide support to young people to build new and innovative solutions and to increase youth participation at an international level, through dialogue with governments. Youth4Climate has three main outputs

- The flagship event: that will take place during the 16-20th of October in Rome, during the same period as the World Food Forum's flagship event to allow participants to benefit by being present during both initiative's events.
- The Knowledge Bank; a web platform which serves as a virtual space for young people to exchange ideas, receive information on climate change and sustainable development related issues, and access capacity building materials.
- The Call for Solutions: a challenge to inspire young people between ages 18-29 to focus their skills and creativity to foster climate solutions. 150 shortlisted candidates will be invited to the flagship event where they will present their project proposals to a selection committee, The winning projects will receive implementation funding for an amount up to 20,000 USD.

Divine Ntiokam, Founder of Climate Smart Agriculture Youth Network (GCSAYN), explained the work carried out by GCSAYN, by engaging children from primary and high schools on climate smart agriculture practices such as the effects of climate change in agriculture as well as planting trees in their schools. He also highlighted the importance of the GCSAYN's e-learning virtual academy adopted in many schools. This platform is an integrated set of interactive online services that provide trainers and learners and others involved in education with information, tools and resources to support and enhance education delivery and management. He underlined the various goals of this platform: provide teachers a place to exchange learning materials in an organized and interactive way and building opportunities for the GCSAYN community. Moreover, he emphasized the new project: the student exchange programmes which allow students not only to share knowledge but also to build their own capacity.

Jesca Muzamhindo, Zimbabwe CSA Alliance Coordinator, provided specific CSA examples from Zimbabwe, a country dependent on agriculture and vulnerable to the effects of climate change, that is launching various programmes to spearhead CSA. The government of Zimbabwe, she said, has created different activities for young people such as:

- a manual on CSA best practices, including the role of gender equality and youth in 2018;
- a regional college for CSA under a public-private partnership in 2021;
- ‘Climate Education 5.0’ promoting CSA along value chains, and agriculture that is now a mandatory course in schools from kindergarten to university.

She placed emphasis on how rural, marginalized, and indigenous youth have specific needs and difficulties, which cannot be left out of the discussion. She further noted that rural youth are often left behind in the dissemination of information, training programmes, resources and technologies, especially those available on the internet and social media, which their urban counterparts have access to.

During the discussion, opened to all participants, the idea of inspiring youth into farming from an early age and after studies was brought forward. In addition, participants highlighted the importance of communication, particularly when it comes to climate and agriculture, while presenting success stories and demonstrating progress and commitment across the globe.

A pre-recording video was shared with participants of Victory Ashaka, a young poet from Nigeria, reciting a poem written for the 2022 World Food Forum flagship event (Watch the video here)

After the pre-recording video colleagues from WFF organized a 'popcorn brainstorming session' in which several questions were raised: "How can youth be more involved in GACSA and climate smart agriculture in general?" and "What can your specific organization do to involve youth?". "How can youth be more involved in GACSA and climate smart agriculture in general?" and "What can your specific organization do to involve youth?".

Interventions from the audience

GACSA Members provided input and stressed the role of youth in innovation, low-cost solutions to climate change as well as decision making processes. In addition, it highlighted the important role of young farmers, especially in CSA in terms of knowledge sharing and needs. Particular attention was also given to the agricultural extension services, which should be aligned with the dissemination of new technologies.

4. Action Group Session

This session focused on the cross-cutting themes of GACSA's Strategic Plan and the importance of farmers on country level as well as knowledge sharing regarding CSA and recent activities and solutions of the three Action Groups (Knowledge, Enabling Environment and Investment). The session started with an introductory presentation of the three Action Groups by the moderators: **Mr. Ernest Shea**, President of Solutions from the Land and co-chair of the Knowledge Action Group; **Ms. Allison Chatrchyan**, Senior Research Associate at Cornell University and co-chair of the Knowledge Action Group; and **Ms. Maria Rosa Mosquera**, Professor Crop production and Project Engineering Universidade de Santiago de Compostela and co-chair of the Enabling Environment Group.

- The Knowledge Action Group (KAG) works to increase and promote knowledge, research, and development into technologies, practices, and policy approaches for CSA.
- The Enabling Environment Action Group (EEAG) works to identify the technical, policy and investment conditions needed to scale up CSA approaches, and to promote the harmonization of community-based national agriculture, climate change and food system policies.
- The Investment Action Group (IAG) works to improve the effectiveness of public and private investments that support climate-smart agriculture.

Five case studies were presented on the successful examples of CSA across the three Action Groups:

1. **Allison Chatrchyan** presented on climate smart farming and soil health programmes in New York, USA. The Cornell Climate Smart Farming Program currently is working toward resilient and sustainable agricultural, ecological, and social systems in the face of a rapidly changing climate, and in 2015 launched the Cornell Climate Smart Farming (CSF) Program and CSF Extension Team. The CFS (Committee on World Food Security) developed a [website](https://climatesmartfarming.org) (climatesmartfarming.org) that supports farmers by providing a direct link to applied research

from Cornell University, various CFS decision tools and resources, and access to the CFS Extension Team, comprising Extension specialists in New York who help farmers manage risks posed by climate impacts and assist them in modifying their practices to reduce emissions. The CFS Decision Tools allow farmers to enter their farm's address, various field data and a planting date, and the tool will provide them with information on their status in the season and what the seasonal outlook looks like. Additionally, New York State is undertaking a research effort to develop a 'Climate Change and Agriculture Impacts Assessment' report to document the current and potential future impacts of climate change on the state, which is scheduled to be completed in 2023. The New York Soil Health and Resiliency Program was then presented, which conducts field research including comprehensive assessments of soil health; farmers can send soil samples to the Cornell Soil Health Laboratory (which has processed more than 32,000 samples over the last five years) and in turn receive an assessment of their soil health.

2. **Dr. Shamie Zingore**, Director of Research and Development at the African Plant Nutrition Institute, presented the '4R Nutrient Stewardship Programme in Africa'. Dr. Zingore expressed the urgent need to increase crop productivity and reverse land degradation in Africa. The project, which will carry out its first phase from 2019-2024 and second phase from 2024-2029, seeks to improve agricultural productivity and farm income, incorporate gender and environmental resilience strategies, improve the livelihoods of 80,000 smallholder farmers. The project uses digital training programmes, field-based learning centers, and extension services to provide farmers better access to plant nutrient management information.
3. **Artak Khachatryan**, Development Program Manager FUNFRUIT LTD, presented successful examples cover crop and soil health initiatives in Armenia. Artak explained that 30% of the Armenian population is involved in the agricultural sector, leaving the country extra vulnerable to climate change and the extreme weather events occurring in recent years. Artak continued that due to the extreme heat in the summer months, small scale farmers in Armenia are facing increasing drought and lack of adequate water, compounding other difficult economic and social challenges. There is a need for applied research, outreach & demonstration projects to increase adoption of CSA practices. In spring 2021, after applying to the Hubert Humphrey Alumni and receiving a scholarship to put the knowledge learned at Cornell University into practice, Artak collaborated with a group of farmers to conduct an improvement demonstration plot on a 0.5-hectare plot of land in Ararat, Armenia, which had been overused and overgrazed. The farmers used cover crops and carried out rotational grazing of animals. Due to this, the land thrived, and the grass continued to grow healthily, even during periods of drought. The success of this plot led them to expand to 1.2-hectares in size in 2023, and the farmers were willing to invest their own money for this expansion after witnessing the success in 2021. They continued again using multispecies cover crops and using the land for rotational grazing of their animals, using specific plant varieties that were suited to increase animal body weight, which the farmers benefitted from for their breeding practices. The improvement demonstration plot served as a good practice example to show donors of the ways their funding could be put to use. Artak noted that the multispecies sward consisted of 20% perennial ryegrass, 15% Italian ryegrass, 20% fescue and 35% lolium multiflorum. Artak stressed the importance of innovations and knowledge being communicated through understandable and familiar language to farmers. Artak noted 'Dirt to

soil' as a prime example of such a resource. It is a book written by a farmer for farmers explaining very complex and scientific things in an interesting and simple way.

4. **Terry Cosby**, Director of Department of Agriculture, Natural Resources and Conservation Service, U.S. Department of Agriculture (USDA), offered a view of recent initiatives by USDA government on CSA investments for farmers in the United States of America. Mr. Cosby detailed that over 70% of the land in the USA is privately owned. The USDA now has a 3,000 field-office network that helps farmers, ranchers and private forest landowners nationwide plan and carry out voluntary conservation activities on their operations, working with private landowners. He explained that the landowners are able to bring various issues they face forward to receive advice or alternatives by experts. He also highlighted the \$20 billion in climate smart agriculture funding that had been authorized under the Inflation Reduction Act and how much of the financial assistance is being distributed through the Farm Bill programs. The investments focuses on improving equity, combating climate change, boosting urban agriculture, increasing partnership building, and creating new opportunities and markets for agriculture and forestry. He stressed that rural America could play a key role in achieving net zero greenhouse gas emissions (GHG) by 2050. He mentioned President Biden's plan to reduce greenhouse gas emissions by 50%, agriculture and forestry, Inflation Reduction Action (IRA), and the establishment of several programs under this, precisely 141 projects, enhancing the great support of the government with these large investments. Finally, he also underlined the importance of partnership qualification, equity and outcomes.

5. **Dr. Rosa Mosquera**, professor at the University of Santiago De Compostela and co-Chair of the GACSA Enabling Environment working group, presented a series of collaborations which show how the development of technology, research, and the knowledge of the farmers enable the environment for CSA practices. The work has been carried out in a multi-actor approach. Farmers, policymakers, retailers and researchers focused on agroforestry and agroecology, as two of the main useful tools to increase all carbon sequestration and reduce the use of bio sites and greenhouse gases emissions. Dr. Mosqueda mentioned the Circular Economy Alliance, a new European initiative in Tanzania, Ghana and Chile in support of policymakers to foster agroforestry. Related to CSA, in Nairobi different initiatives have been carried out in collaboration with the co-GACSA Member Cornell University.

After the presentations, participants were divided into breakout rooms (in presence and virtually) to discuss on the following guiding questions:

1. What do you need to scale up the adoption of CSA systems and practices like the ones we just heard about?
2. How can GACSA help facilitate/support these efforts in your country/organization?

The results from each breakout room were presented by the moderators (mentioned above) back in the plenary to support and carry forward the vision for GACSA. These results included the following points:

- Strengthening the communication to farmers on how implementing CSA economically to their local communities;

- Increasing the involvement of farmers in developing and adopting CSA practices, including the indigenous knowledge;
- Including private sector in CSA activities and financing the risk investment in smaller and local enterprises;
- Strengthening partnerships with Regional Alliances
- Leasing between GACSA members and funding entities
- Sharing more case studies from the Action Group activities.
- Increasing the GACSA Regional Alliance meetings twice a year via Zoom
- Proposing a call to action for FAO, countries and private sector to scale up investment in CSA

Day 2 (05 May 2023)

Wrap-Up of Day 1

The GACSA Co-Chairs wrapped-up DAY 1 of the GACSA Annual Forum 2023 underlining key messages and aspirational outcomes. The Co-Chairs highlighted the following messages

- Putting more emphasis on the role of farmers as custodians of our food systems as well as agents of change for transforming our food systems in a sustainable way;
- The GACSA role of empowering youth and women in rural and marginalized areas;
- The importance of knowledge and knowledge sharing amongst farmers;
- Engaging as a multi-actor approach which is farmer centric;
- Need for more investments in sustainable agriculture and agri-food systems;
- Need for innovation and technology to be more accessible, affordable and sustainable for farmers on the ground

5. GACSA Project Proposals

A. Capacity Building (GACSA E-learning and GACSA app)

The GACSA Co-Chairs presented the activity ideas which are based on the results of the GACSA survey conducted in 2019 and 2020, and the three proposals include: GACSA Capacity Building, (comprised the GACSA App and GACSA E-learning Course), the GACSA Compass Funding Platform, and the GACSA Shark Tank Approach.

The GACSA Capacity Building was presented by the Project Manager **Famke Van der Meer**, former intern of GACSA. The GACSA Facilitation Unit is working on developing a peer-to-peer knowledge sharing, capacity building and networking platform for (young) farmers in the form of an application for mobile phones with the aim of scaling up CSA adoption through facilitating dialogues on the ground. Through this app (young) farmers, who are interested in CSA, will be able to connect and interact with each other to foster farmer-to-farmer learning. Furthermore, they will be able to receive tailored information regarding skills trainings, financial guidance and CSA specific information, relevant to their businesses, through the knowledge portal section in the application, addressing networking and capacity development needs. The

“Climate Smart Agriculture E-learning course” aims to train young farmers and young adults interested in agriculture on CSA approaches to address the capacity development needs identified by GACSA members in the 2019-2020 GACSA Survey. The course will be divided into specific modules, addressing CSA topics from an interdisciplinary perspective, through a set of online pre-recorded lectures, GACSA case studies and online examinations. Additionally, these online training courses will be complemented with lectures from guest speakers from GACSA’s member base and beyond, introducing an intergenerational exchange between students and practitioners in the classroom. Upon successful completion of the course, participants will be presented with a GACSA future leader certificate.

Stefano Marras, Director of Global Partnership UN Affair Bayer, acclaimed that Bayer has agronomic expertise on multiple crops, including cereals, rice, maize and more. Bayer has research and development expertise in breeding and biotech, digital tools, inoculants, crop production solutions including biologicals and expertise in building and implementing projects. Bayer contribution to GACSA Capacity Building projects could be based but would not be necessarily limited to the extensive relations (45 million) Bayer has with smallholder farmers worldwide. The contribution could also come from the several case studies of successful CSA practices and expertise in designing and implementing courses with Accademia Bayer has (such as agronomy studies to train farmers on good agricultural practices). He noted that online training can work with university students but is less doable when it comes to smallholders, so Bayer has experimented with 40 universities across Asia (especially in India) training agronomy and medicine on safe use of crop protection and good agricultural practices. This allowed the students to then go into the fields to train the farmers.

Maria Giulia de Castro, Advocacy, Policy and Partnerships Officer at the World Farmers Organization (WFO) presented the Gymnasium High-Level Capacity Building Program, which in collaboration with Bayer Crop Science will gather around twenty international young farmers (from WFO member countries), to participate in four online capacity building modules, where they will meet agriculture experts and discuss various topics and boost their soft skills. The young farmers are given the opportunity to participate in international processes and conferences on agriculture-related topics. and are provided with training by a coaching team to enhance their capacities. Regarding the GACSA E-learning Course, she recognized that the targets are quite broad, which can be good for reaching a wide audience, but they should consider the specificities of the different stakeholders. She also suggested tailoring the content based on the profiles of those who register for the course, as farmers and policy makers will not have the same needs. She specifically remarked to pay attention to the potential barriers for young farmers, such as infrastructure and cost, to guarantee the active participation of farmers in both designing and implementing initiatives and to ensure inclusiveness. In conclusion, she noted that financial and infrastructural barriers may be faced by young farmers, and the interface should be inclusive. In conclusion, farmers organizations should be engaged throughout the process of developing and disseminating the course as they can play an important role in facilitating and liaising with the young farmers.

Domenico Vito, Global Climate Smart Agriculture Youth Network (GCSAYN) Country Coordinator for Italy, presented the results of a survey conducted by GCSAYN to build an e-learning platform, AGRO-SMART, tailored to young farmers' needs in support for a better crop management adaptation to the effects of climate change. He explained how the preliminary survey collected 100 responses from 38 different countries and it was divided into sections to tailor the information and understand the main needs of the farmers. Many responders were smallholder farmers with less than 1 hectare of land, who predominantly

partake in self-sustained and communitarian style agriculture. The responders mainly produce cereal crops, and their production is concentrated in the summer season and between June and October. The assessment proved that women are mostly involved in the collection phase. He underlined that the role of women needs to be fostered in leadership. Almost 100% of responders reported having a telephone, mainly smartphones, and most of the responders had access to the internet. The responders reported preferring those latter means rather than laptops, so they can more easily retrieve information on climate change and CSA. However, the prevalent source of information is traditional and oral knowledge transmission.

Alexandre Shinebourne and **Julius Von Davier**, from Landwirtschaftlicher Betrieb von Davier Seggerde, discussed three trends that have been driving innovation: the Internet of Things (IoT), satellite internet (which continues to bolster global connectivity) and generative artificial intelligence (AI). They highlighted the ability of AI to promote sustainability in agriculture while boosting economic viability. They acknowledged that Information Technology is becoming more scalable and more affordable and is contributing to more efficient global connectivity. Regarding affordable irrigation systems, they flagged the importance of site-specific farming and the potential of creating algorithms to generate a smarter way to farm possible using IT (Information Technology) equipment (from irrigation management to site-specific farming to farming copilot and supporting farmers with advice through an app).

B. Compass Funding Platform

Valentina Vitale, Project Manager, presented the GACSA Compass Funding Platform, which seeks to increase investment opportunities for farmers applying CSA practices to allow them to have direct access to funding. The project aims to create a platform to match farmers' organizations and investors (banking institutions, businesses, private and public sector) so that they will be able to exchange investment proposals. Moreover, the platform also has the purpose of increasing farmers' financial literacy and their capacity to apply for investment opportunities. The platform will target the objective with the following actions: - Linking farmers to investors through the development of a platform allowing farmers to propose their business ideas through an online platform and vice-versa; - Enhancing the knowledge of farmers on project writing and proposal, enabling their access to possible funding opportunities; - Creating networking events to attract funds and new investors for CSA approaches.

Oshani Perera, Co-founder of Shamba Centre for Food & Climate, remarked on the huge mismatch between what SMEs and small farmers are looking for and what capital markets have to offer. **This** is attributable to two reasons: First, climate-smart approaches, designs and technologies are still considered by funders and capital markets to be unproven and risky. This generates difficulty funding CSA activities. The second reason is the elevated cost for investors in performing the necessary due diligence required for small loans and small capital requests. She tried to find a solution talking with talking to several institutions. She noted that even the credit lines offered by these institutions don't systematically require climate-smart performance to be a mandatory requisite to qualify for preferential lending. In consideration of all this, one solution might be aggregations among agribusiness and value chain actors. An aggregation of this kind is very important because it makes financing more attractive. In fact, collective benefits both financial and non-financial (CO2 decrease, water use, improvement of environmental services and land status, and future revenues related to CO2 credits, environmental

systems/biodiversity credits) imply more guarantees for financiers. And this encourages investment in future revenues. The funding platform will reduce transaction cost because it will take care of the preliminary screening of Small and medium-sized enterprises (SMEs). As a matter of fact, the biggest cost for funding providers, be they public or private, concessional or commercial, is finding the right SME or having a pool of SMEs which make the funding possible. In conclusion she highlights one biggest problem: the deal flow. Indeed, we must find a way to reduce the amount of time that financial intermediaries spend to find SMEs that are financially attractive.

Margaret Munene, CEO Palmhouse Dairies & Founder Trustee Palmhouse Foundation, presented the important role that the dairies sector plays in achieving the Sustainable Development Goals (SDGs) by reducing hunger, improving nutrition, and economically supporting one billion people in the world. She Margaret pointed out that those reliant on the dairy story for their livelihoods are implementing and developing innovative ideas to reduce the greenhouse gas emissions of the sector to sustain its continuity and reduce vulnerability to the effects of a changing climate. She noted that 90% of dairy farmers in Kenya are smallholders, and 85% of the producers working with her processing company (Palmhouse Dairies) are women. One example of the women dairy farmers acting is through tree planting, many of which being fruit trees, which helps prevent soil erosion and improve rainfall patterns. Furthermore, the fruit trees allow the women to vary their source of income while mitigating climate change. She specified that Palmhouse Foundation, a Kenyan education trust, has partnered with a local rotary club in Nairobi (Rotary Club of Nairobi Muthaiga North) to support this national initiative. Furthermore, I&M Foundation (I&M Bank Kenya) is funding tree planting in Kenya for 500 small-scale farmers, including hosting a tree-growth competition to keep the farmers motivated. Furthermore, Palmhouse Foundation vouches for farmers to connect them to microcredit funders which can provide them with green energy sources. Many of the farmers receiving the green energy financing did not have access to electricity beforehand, so these farmers are using climate-smart approaches from the start. Margaret emphasized the importance of funding for smallholder dairy farmers, particularly through mechanisms that directly reach farmers in developing countries to help them access the resources needed to scale-up their current practices. Margaret concluded by noting that farmers are also the most vulnerable to climate change and the best at mitigating it, so we must fund and listen to them.

C. Launch of the Shark Tank Approach

The idea a Shark Tank Approach was presented by Project Manager, **Valentina Vitale**. She explained that young farmers often lack funding opportunities for starting their businesses, for a variety of reasons. She clarified that to incentivize the development of CSA innovations, GACSA is launching a GACSA Shark-Tank for young entrepreneurs to stimulate dialogues between potential “investors”, donors and participants and accelerate innovations in agriculture. The idea is to focus on the African continent given the urgency for African countries to ramp up climate-smart practices at scale. A GACSA Shark Tank Approach could be held online to promote global collaboration and participation.

John Cordaro, Former Special Representative for Food Security for Mars, observed how despite the broad array of global, national, and local public and private actions to address food systems, food insecurity continues to grow at greater and more alarming rates. On the other hand, multiple interacting social, environmental, economic and policy barriers impact efforts to increase food production and deliver nourishing and affordable food to consumers. As GASCAS’s Shark Tank Approach would only be disproportionate to the magnitude of the challenges, Mr. Cordaro suggested to better the matchmaking

model creating a broader platform in which a coalition of investors and donors would interact with young farmers and agri-entrepreneurs with the final objective to facilitate matching investment needs with investors' resources. Mr. Cordaro illustrate a sample of four steps to follow for an effective approach: interact with young entrepreneurs on an ongoing basis; utilize in-person and virtual engagements to find needs and investment opportunities; share knowledge and help explore opportunities amongst potential investors; and mentor young farmers and like-minded entrepreneurs. He reiterated the importance of providing communication channels between farmers and investors. It also mentioned the listening and the reaction to specific farmer's needs from investors. Furthermore, Mr. Cordaro put emphasis on the attention investors should have for last-mile initiatives. He encouraged special events to showcase and demonstrate business proposals and exchanges between farmers and investors which can provide foot-in-the-door opportunities. As action to support young farmers and allied agri-entrepreneurs with financial and institutional resources and investments, tools, and capabilities, Mr. Cordaro concluded listing as a short term-initiate the GASCA Shark Tank proposal as a test to assess lessons learned, the possibility to explore co-creating an Investment Coalition with likeminded entities and the needed and steady flow of useful and timely science and business information to keep young farmers actively engaged and informed.

Charles Spillane, Director of the Ryan Institute National University of Ireland Galway, also provided a reflection of the launch of the Shark Tank Approach. He focused his reflection on the scale of the three pillars of CSA the food security gap (One in five people in Africa facing hunger), emissions gap (food production responsible for ¼ of world's greenhouse gas emission) and adaptation. (Smallholder farms that produce 1/3 of world's food highly vulnerable to climate change.) Placing the focus on small holders because they are among the most vulnerable to the impacts of climate change, and these impacts are accelerating essentially in terms of the vulnerability of these farmers as we try to address climate change. He posed the question, 'How do we leverage agro- entrepreneurship to scale up resilience and adaptation?' Regarding start-ups, Mr. Spillane underlined that it is also important to identify and recognize the limitations of the start-up community and how and why they do not reach the projected scales. He explained that to support the 600 million global smallholder farmers, we need innovative business models and last-mile-delivery models, but enabling environments and certain types of entrepreneurs are equally important to encompass other enabling mechanisms. He also highlighted another consideration, 'How do you measure increasing in resilience and an increase in resilient livelihoods? Finally, Mr. Spillane encouraged potential Shark Tank Approach applicants to reflect upon investing in their teams, considering their core leadership and that there must be a presence of agricultural, innovation and financial knowledge to be successful.

Josphat Mokaya, Agri Tanzania Hackathon winner from last edition, presented the Agri Hackathon, which brings young people together to create innovative solutions for tackling climate change and is based on three C's: create, connect, and collaborate. The projects submitted are evaluated by a panel on criteria including if the project is climate smart, feasible, innovative, scalable, and if there was efficient teamwork. He presented his winning team's idea of a multistorey garden technology with customized drip irrigation. The garden included six stories and promoted vertical farming and efficient water and land use. He explained that land available for farming in his region of Kenya is becoming increasingly scarce, so farmers need to learn how to increase their production while sustainably conserving resources like land and water. He noted that his team's winning project can be a case study for GACSA to learn from and possibly to scale-up. A videorecording was shared with participants of the Agri Tanzania Hackathon winning team discussing their experience.

Interventions from the audience:

Participants from the audience observed that providing credible information to around 600 million smallholders in the world is an enormous challenge; the credibility of what is being offered and considering the potential liabilities must be ensured. Participants registered the need for accessible knowledge; many e-learning courses, online meetings, etc., are inaccessible to farmers without internet access or they are simply unaware of the resources that are available online. Participants delineated that the capacity building tools on CSA are spread across many countries and in many languages, and questioned if there is one platform available in multiple languages which hosts all. Participants agreed that GACSA can play a role in capturing the wide range of e-learning materials available, including those mentioned during this session and beyond.

6. Regional Alliances Session

This session provided an opportunity for GACSA Members to showcase the activities of their institutions at the regional level and discuss how GACSA can strengthen its commitment. The session was moderated by **Fred Yoder**, co-chair of Solutions from the Land and Focal Point of the North America Climate Smart Agriculture Alliance (NACSAA). Fred Yoder underlined that climate change effects all sizes of farms. As a medium-sized farmer with 50 years of experience, he said to have never invested more in a growing crop than he has this one. The enormous capital investment required to grow the crop and the unpredictable outcome of the current drought are concerning. He expressed a special concern for small holder farmers, even if we are all affected by this issue. Fred Yoder presented an overview of the Regional Alliances within GACSA highlighting the following actions:

- Equipping producers with the tools and knowledge they need to make informed decisions and manage new risks;
- Mobilizing producers to advocate for the needed changes in land-use practices, research, education, and policy;
- Inspiring producers to become leaders in the broader discussion of climate change, including adaptation and mitigation.

Dr. Margaret Yoovatana, Chair of the ASEAN Climate Resilience Network (ASEAN-CRN), reported the following updates from the region:

- The Asian Climate Resilience Network (ASEAN-CRN) was conceptualized in 2013 and endorsed by the ASEAN Ministers on Agriculture and Forestry (AMAF) in 2014. Composed of 10 associations, 10 member states of SEA, it is a platform for regional exchanges and information sharing, strengthening political will, institutionalize and bind policy and action and capacity building. ASEAN-CRN has launched several initiatives to optimize climate change adaptation in agriculture.
- The agriculture readiness grant and the readiness grant for enhance climate finance and implementation of coronavirus joint work on agriculture (multicounty proposal from the Green Climate Fund). The latter was approved and launched at COP27.
- Knowledge event – ANGAN: Pathways to Net Zero for Agrifood and Land Systems December 2022 in Bangkok.
- During some workshop the way for a resilient and low emission Asian agricultural system was paved.

- Successfully got the Global Climate Fund (GCF) to accelerate investments for the transformation of the agrifood system and knowledge sharing.

Next steps for ASEAN-CRN will be:

- Strengthening data generation and use;
- Electing national champions or key officials;
- Identifying success stories from the region and link national guidelines;
- Building relationship with GACSA for these upcoming initiatives.

Ernest Shea, President of Solutions from the Land reported the following updates on the North America Climate Smart Agriculture Alliance (NACSAA):

- 70 farmer organizations are now part of NACSAA who focus on 50 enabling policy recommendations, the majority of which have been endorsed by the U.S. Congress, resulting in \$20 billion USD to CSA.
- Climate Convention- NACSAA has had 8 submissions produced over 3 years – ended up in the Sharm el-Sheikh agreement, which came about at COP 27
- NACSAA prepares a quarterly newsletter which shares examples of members’ innovations and occasionally holds webinars for knowledge sharing.

Clyde Graham, Executive Vice President Fertilizer Canada, provided updates regarding climate smart agriculture practices and policies in Canada. He reported that Canada is a member of NACSAA but also collaborates closely with Africa. Particular attention should be given to yields and production to boost economies in African countries while flattening the curve of GHG emissions. In this regard, Canada have held over 12 sessions with academic and extensions leaders in Africa. He also evidenced that the issue in Africa related to fertilizer is that the Continent fulfills its promise to increase yields, and protein production, which is critically important not only to food security but also to the development of the economies of the African countries. The consequence will be a corresponding increase in nitrous oxide emissions. Critically important is to get best management practices and, some work, Fertilizer Canada is doing to limit the growth in those emissions and have a significant impact in flattening the curve. Clyde revealed that in Africa there is a push for more and more confinement agriculture, particularly in terms of poultry. And again, that is a challenge related to emissions. Clyde concluded by remarking on the existing significant challenges in Africa, due to the need for the Continent to catch up after a century of land dispossession and its agricultural productivity being beyond the rest of the world.

Interventions from the audience:

The results that emerged from the discussions were:

- Fostering CSA partnerships, alliances and networks across the continent;
- Sharing the latest information, research findings and new insights and innovations on CSA and modalities for its implementation;
- Facilitating more rapid implementation of CSA programmes by enabling access to information on financing opportunities;
- Supporting a more coherent approach to formulating national climate change and agriculture policy frameworks.

7. GACSA Governance Session

Dr. Hans Hoogeveen, GACSA Co-Chair, gave an overview of items to be discussed during the Governance Session with an announcement of the new formation of a Regional Alliance, in which Mr. **Artak Khachatryan**, will represent the Focal Point for the Caucasus and Commonwealth of Independent States (CIS) countries.

Composition of the Strategic Committee

The co-chairs referred to the decision of Annual Forum 2021 regarding a new Composition of the Strategic Committee (SC). Last February the SC gathered in preparation for the Annual Forum. However, the issue about the composition of the SC, raised as a decision on the 4th last Annual Forum, remained pending. Dr. Hans Hoogeveen recalled that it was decided to have a different SC composition. The SC has now around 50 members. The question is whether the SC would include not only the extra groups leaders, the co-Chairs, the Host, but also 2/3 special representatives of each constituency to be nominated. However, a final decision was never taken. Dr. Hans invited the audience to give inputs on the matters, otherwise advised to maintain the SC composition as it is, suggesting it to be the simplest solution. The Annual Forum adopted and agreed to the suggestion of Dr. Hans Hoogeveen to maintain the SC composition as it is.

Financial Matters

Federica Matteoli, GACSA Facilitation Unit, presented the 2022 GACSA Financial Report (the 2022 GACSA Financial Report is included in the Annex), including an overview of the remaining funds available for 2023. The co-chairs noted that GACSA has been reliant on public funding since its inception nearly a decade ago, with significant donors being the USA, Norway, Switzerland and Ireland. Ms. Matteoli recounted that Ireland provided USD 67,568 to GACSA in 2022, which was the only source of revenue in the year. The co-chairs emphasized the need to identify and secure funding from previous and new donors to sustain GACSA in the coming years.

GACSA Members welcomed the presentation on financial matters.

The co-chairs explained that GACSA is hosted by the Food and Agricultural Organization of the United Nations (FAO) it is therefore obliged to follow FAO rules and procedures. These give constraints to funding from non-governmental organizations. GACSA is, for example, not permitted to receive funding from the private sector, although members have raised this issue to FAO on numerous occasions. The co-chairs called on GACSA members to encourage additional donors, or to consider a co-hosting arrangement in order to broaden the Alliance's network.

Members outlined the initial steps discussed in depth in 2018 and 2019 to integrate a non-for-profit as a co-host of GACSA. However, progress was halted due to the COVID-19 pandemic. It was explained that migrating to a co-hosting arrangement would allow GACSA to maintain the benefits of being hosted by a UN agency, whilst availing funding from the private sector.

Members stressed that it is important that if a co-hosting arrangement is to be considered, the co-host must be an organization which gives added value to GACSA. It was also emphasized that cohosting must

be with a reputable network that has collaborated with FAO for many years and complies with FAO's due diligence.

Members stressed the importance of maintaining a timeline for finalizing the co-hosting TORs (Terms of References) and proposed them to be finalized by the end of 2023. GACSA Co-Chair, The Annual Forum asked the co-chairs to prepare the co-hosting Terms of References (TORs) along with the Facilitation Unit, which will outline what GACSA seeks for the co-host and how co-hosting arrangements will be materialized. It was agreed that the TORs will be finalized and discussed during the Strategic Committee at the end of 2023, and co-hosting proposals will be discussed in an agenda item during the GACSA Annual Forum 2024.

Members also suggested for GACSA to have a structured presence at climate negotiations, such as the Conference of the Parties of the UNFCCC (COPs) to give the Alliance an opportunity to partake in dialogues with country representatives and assist in identifying new donors. The co-chairs Hans confirmed that GACSA would be present at COP but would not participate in negotiations or submit any formal recommendations. Rather, it can be considered for GACSA to hold one or more side events at COP to play an advocacy role.

8. Concluding Session and Steps Forward

Imelda Bacudo, GACSA Co-Chair, looked back on a successful Annual Forum and expressed its gratitude to the dedicated members. Reflecting on the 2023 Annual Forum, Ms. Bacudo highlighted the importance of agriculture beyond production and the role of GACSA as an Alliance and its uniqueness. She urged and encouraged donors to help bolster the new GACSA proposals and develop from the bottom-up for farmers.

Dr. Hans Hoogeveen expressed his gratitude to the GACSA Facilitation Unit, the International Agri-Food Network (IAFN) for the social media coverage of the Annual Forum as well as the virtual and in-person attendees for their engagement. Federica Matteoli, GACSA Facilitation Unit, thanked Valentina Vitale, Gaia Filippone, Elena Aprea, Sierra Berardelli, Grainne Ahern, Nelsy Brito Moreno, Simona Cafolla, and all the logistic offices in FAO to allow the realization of the Annual Forum.

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