ICFA
भारतीय कृषि एवं खाद्य परिषद्
INDIAN COUNCIL OF FOOD AND AGRICULTURE

NASSCOM®

NATIONAL ROUNDTABLE CONFERENCE

ON

POLICY PUSH FOR AGTECH ECOSYSTEM

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Summary

The agriculture sector is now witnessing a new wave of budding entrepreneurs and emerging startups in the country that are leading the way to disrupt the agriculture industry in the country. The influx of AgTech as not only a concept but initiatives by different administrations and institutions bout new possibilities for the farming industry, making it a viable sector for future generations to explore. But, the technological advances in ICT are struggling for right deployment and adoption in Indian Agriculture & Food Sector. The much vaunted tech startup sector in India doesn't have at least half of its people in its crosshairs. They are yet to find necessary support from government and non-governmental stakeholders in the ecosystem.

Indian Council of Food and Agriculture is an apex chamber aimed at growing farmer's income through trade facilitation and policy research with strong national and global presence through industry working groups, professional councils, institutional partnerships and JBCs with various countries. It is also serving as the platform for farmers' services, agribusiness development and global partnerships. ICFA has been working aggressively towards bringing in the much needed platform for agri startups helping them connect with the market opportunities.

NASSCOM is the apex body of IT companies in India which has been fostering entrepreneurship and is strengthening early stage support for tech startups. NASSCOM has been fostering entrepreneurship, building entrepreneurial capabilities and is strengthening early stage support for tech startups via its various programs. Over 5 years, with over 4000 startups graduating from their initiatives, more than 3000 events and programs, over 400 startup-corporate connects, 300 start-ups in global ecosystems, and over 100 new product concepts, they have made India one of the top 3 startup ecosystems in the world.

In a move to promote pro-startup environment and increased adoption of technology in Indian agriculture for ensuring success and sustainability of upcoming startups and attracting youth towards entrepreneurship in Ag & Food sector, ICFA & NASSCOM have collaborated to work together and promote the AgTech sector as a whole. Taking this collaboration forward, ICFA & NASSCOM organized National Round Table Conference on 15th March 2019 at IIC , Delhi on the topic – "Policy Push for AgTech EcoSystem".

The objective of the RTC was to bring together all important stakeholders of Agriculture, Technology and finance sectors of India to deliberate on this crucial topic, mobilizing opportunities for interaction amongst the Entrepreneurs, State & Central Government Stakeholders, investors and technologists with the aim of chipping away odds and formulating favourable policies for AgTech sector to bloom. The RTC highlighted the Gaps & Opportunities in Agriculture Ecosystem, legal road blocks faced by AgriTech Companies and the steps needed to promote digital agriculture. It also highlighted the current and future initiatives by Central and State Government to build an environment that will foster innovation and collaboration.

Key Takeaways from the Government side of the table

The government stakeholders underscored the importance of technology in agriculture sector to provide solutions in both pre-harvest and post-harvest processes. IT in Agriculture can meaningfully in a cost effective manner connect the service providers with those in need of service and bring down cost thus improving efficiency. The government is also facing challenges in maintaining a clean database of farmers and points the importance of working with FPOs vis a vis working directly with farmers. The database can be then leveraged to decide many strategies, many schemes, and policies which can be efficiently implemented. MEITY has laid down several projects focusing on AgriTech namely Soil Health Card, M-Kisan, and E-nam. MEITY highlighted the schemes introduced to support start-ups (TIDE) and also stressed on their extension. Focusing on Venture funds for Startups NABARD has its subsidiary NABVentures involved in lending funds to startups working in agriculture and rural sector.

The state Governments highlighted their progress in Startup Vertical where Andhra Pradesh Govt. about their grand challenge SOCH through which they have been identifying potential startups and providing them funds and connecting with relevant stakeholders. Maharashtra Govt stressed on the on policies they are working providing funds to startups in advance. Karnataka Govt. going against conventional logic is providing VC funds to promote startups. Efforts are being made to offer digital services directly to farmers, but farmer data needs to be cleaned and made usable. Bangalore Bio Innovation Center is working on sensitization program at the curriculum level where agri-prenuership can be seen as a career option for students. They are also offering their labs to startups. Centers of Excellence set up by Meity and NASSCOM will serve as co-innovation centers.

Key Recommendations from the Technology side of the table

- The database of farmers should be provided to the tech companies for free or with minimal fees involved so they can work on the new innovations and solutions, data market models can be explored where people can access, buy, leverage it and to ultimately reduce our service delivery cost to farmers. Land records should be digitized and financial inclusion policies should use technology solutions. Data sharing policy should include bulk sharing of transaction / observation data rather than MIS reports. This becomes key requirement for AI based solutions. Such data can be shared through an API and there can be a registration process for accessing such bulk data.
- Agri data digitization – technology companies will prepare list of datasets that need to be prepared, alongwith their use cases and benefits to the governments. There is a need from Government to support in terms of incubation, acceleration, and catalytic funding. NASSCOM will work with Kerala and Andhra Pradesh governments to set up agritech facilitation/experience centers.
- There is a need to open new Incubation centers in every state/ districts so they can play Entrepreneurship role in local ecosystem and also act as bridge for startups to get to farmers of that area as it is difficult for startups to relocate or work from those kind of geographies, so incubation centres can act as bridge between startups and farming communities.
- State governments should work on setting up catalytic or micro funds (ranging 15 cr. to 100 cr.) to spur innovation. There is a dire need to make Licenses centralized, every state should not ask for local office/warehouses.
- Part of collected GST should be refunded to startups if they are not able to set off. Digital payment collected charges should be compensated.

Welcome and Opening Statements

Mr. Alok Sinha, IAS (Retd), Vice Chairman, ICFA

Mr. Sinha welcomed the guests with a brief introduction of ICFA and mentioned about his association with ICFA since the inception of this idea of creating a platform for all the stakeholders to get together so that they can discuss and deliberate upon each other's views in a summarized manner.

He then gave an overview of Indian Agriculture quoting, "the need of the hour is to maximize the outputs and minimize the inputs" and gave the example of Amul. Their model has been in place for about 40-50 years and it still holds good. Amul continued to modernize itself, and kept on innovating technologically so that their turnover kept increasing and they were big boon to farming community. We should use the Amul model as an inspiration and introduce it to the other parts of the agriculture sector.

Mr. Sinha then introduced the RTC topic highlighting about the association of ICFA and NASSCOM. The organizations have entered in an MOU with aim to work together in promoting AgTech sector. Both organizations are working on idea of minimizing inputs and maximizing the outputs, by taking the advantage of various rapidly growing IT innovations thus benefiting the agriculture sector.

Ms. Sangeeta Gupta, Senior Vice President, NASSCOM

Ms. Gupta welcomed all the guests present introducing representatives of States, Central Ministry officials, Startups, Technology Industry heads.

She then detailed about ICFA & NASSCOM entering in MoU stressing on the objective of MoU - to provide a platform for all the Agritech stakeholders to come together share their perspectives and work together for uplifting the sector. She underscored the current innovations that are happening and stated that "Seeing as there is a lot of innovation taking place in the agriculture sector, I think one of our major agenda is to create a cross exchange of information and make this as an ongoing platform where people can share their perspectives and take it forward."

She then introduced NASSCOM highlighting that the organization represents technology industry. We are the industry associates for the technology industry of India. The good part is that the technology industry is no more just about software services like it earlier used to be for the global market. In the present day, there is a lot of technology innovation, product creation, that is happening in India. NASSCOM's focus is to see how to connect the dots between different initiatives across India, bridge the gap between our members and the startup world and the technology companies and their initiatives.

Session Proceedings

Dr. Subash Chandra Pandey, Special Secretary and Financial Advisor, DIPP

Dr. Pandey voiced that "In today's date, there are two social sectors, namely, the agriculture and health sectors that are highly decentralized and hold the greatest potential for scope in terms of connecting the service providers with those in need of the services. He then stressed that IT is the only way in which we can meaningfully in a cost effective manner connect them, bring down cost, and improve efficiency. The new economy that is emerging, there is a greater emphasis on assets so extracting more of existing assets and improving efficiency and cost competitiveness is the key because we know that a large part of farm distress that is occurring is result of inefficiency in production and overproduction. This means there is inadequate depreciation of demand and supply and information asymmetry that exist and that can be

connected and plugged to IT industry. In this scenario, the agri-startups have great potential for growth, without a doubt.

He then highlighted government policy perspective, mentioning the operations of DIPP on 2 levels. The first level involves supporting the startup culture of innovation in general, and that is where DIPP created a Startup India Hub with a clear mandate that without actually trying to get too close to deal-making, they will provide a platform a for all stakeholders to connect, be it incubators, investors, or startups, to increase profits. The second level involves policy and institutional support to promote the culture of innovation which is through a series of grand challenges that are being organized. The ministries are being encouraged to articulate their problems and throw grand challenges and invite the startups to participate, and then to also connect them with investors. Lastly he closed his speech by throwing light on the idea Ministry is working but is at conceptual stage and that they don't have a concrete plan for it that is there is a preliminary as to what can government do to pick up particular startup ideas in terms of scaling up or replication in rest of areas.

Sh. Devesh Chaturvedi, Additional Secretary, Ministry of Agriculture-

Mr. Chaturvedi underscored sensitizing the gathering about how agriculture as a sector is different from the other industries and services, how the policies flow and what can we do and how the startups are important for this sector.

He then stated that the vision of the Ministry to double farmers' incomes in the next 4-5 years. He then pointed out that for the last 5-6 decades, they were concentrating more on the production and productivity aspect but now they are not just focusing on reducing the cost, but also increasing the price of marketability, and this is where the digitization of markets, innovations, and agri-startups enter the picture as they play a major role in the sector.

He then added 3 important points ensuring that if this vision is to be realized, firstly there is a need to understand how agriculture is different from other industries:

- Consumption for the entire year is produced in one month. This is a typical situation where one can control the inventory of all products (trucks, pens) but not agricultural produce. It all depends on biological yield and this is the reason glut situations arrive. In India there are marginable holdings, and so the bargaining power of the farmer is very less. For perishables, it is even lesser, but even for non-perishables, it is less because even though they can be stored by the farmers, the small marginal farmers need to get the right price so that they can repay their loans and sustain the lives of families.
- Getting the right price for their commodities is another challenge for the farmers. Unlike other sectors wherein the producers can fix the price for their products, the farmers can't decide the price for of their produce. Their prices are either purely driven by market forces, or by MSP, wherein the government fixes a price of the produce to be purchased directly from the farmers. However, this leads to the farmers earning incomes lower than what they work for.
- While an industry leader can decide to discontinue producing when he feels his prices are not getting realized in the market, farmers do not have the liberty to do so, not in India, where 50% of the population of the country is dependent on agriculture.

He concluded highlighting the challenges that are faced by the agriculture sector in our country, coupled with overproduction in some areas. In order to address these problems and make policies, we have to have a system wherein we maintain a robust database of farmers' data: their bank details, aadhar and mobile details, etc., which can be then leveraged to decide many strategies, many schemes, and policies which can be efficiently implemented.

The Private sector needs to come up with innovative solutions to communicate with the

farmers about various issues of quality, traceability they're facing. They must ensure that the quality of the products match the expectations and requirements of the market.

This is where the startups come in to the picture in the form of logistics, food processing companies, ensuring development of cold chains and storage facilities where government is also trying to provide incentives to startups making process easier.

Dr. M.S. Rao, MD and CEO, Digital India Corporation, Ministry of IT-

Dr. Rao commenced his speech stating "While there are several challenges in this sector, there are also many opportunities. The startup ecosystem is facing certain constraints and the purpose of these deliberations is to address them. He then highlighted the role of Digital India Corporation and the Ministry of IT in this vertical.

Dr. Rao underscored the focus of Digital India which is essentially on citizen centric digital services. The ministry of agriculture has implemented some really useful applications, out of which a few have been supported by MEITY (Ministry of Electronics and Information Technology), namely, Soil Health Card, M-Kisan, and E-nam. These three applications are, in a way, successes, though they still have a long way to go.

He added, "On the start up front, the first scheme that was initiated by MEITY was TIDE-Technology Incubation and Development of Entrepreneurs. This scheme aims to assist institutions of higher learning to strengthen their Technology Incubation Centers and enable young entrepreneurs to initiate technology startup companies for commercial exploitation of technologies developed by them." In addition to this, 27 TIDE centers have been set up along with 27 premier institutes of higher learning and research. 7 priority areas were identified including agriculture. Through these centers, about 200 + startups have been incubated.95 graduated, 74 students were registered. But out of 200+ only 3 of them were agritech startups. The reasons for this are pretty obvious. These startups tend to focus more on urban centric solutions which give them quicker returns, and are easier to scale up. These are the challenges going forward in the agritech sector, but what is MEITY doing about it?

He further detailed about the TIDE scheme mentioning the success of TIDE scheme, a TIDE 2 scheme has also been initiated. The target is to have 51 centers and promote 2000+ startups. The ministry mindset is that some of these centers should be agriculture domain specific. Even though, in the previous scheme, priority areas were identified, it was left to the institutions to promote the startups but they didn't really stick to those 7 areas. But there was also no such mandate that the centers should be domain specific. However, the 2nd scheme is promoting centers of excellence and it is done in partnership with industry, NASSCOM being the Tech partner of MEITY and also academia. As of today, it is a relatively new scheme wherein 18 COEs are under various stages of implementation out of which 4 COEs are operational. The operational ones are in the IoT sector and ESBM sector. Out of the 18 COEs, 2 have been identified in the agriculture domain.

He then threw light on the third programe which MEITY is going to launch which is the National program on AI. This program is essentially on hub and spoke model. Hub will be Delhi spoke will be CoE on the AI, IoT domain. They have identified 9 priority areas top one being agriculture. He added that in consultation with MoA we will try to locate domain specific CoEs and particularly catering to all the regions of country so that there is a focused approached towards addressing the issues AI enabled solutions in agriculture.

He then highlighted about the app developed by Digital India Corporation under MEITY called mAgri. It was basically Mobile advisory scheme for farmer similar to M Kisan only it little more personalized. It was initially implemented in Andhra, Telangana and Meghalaya. Meghalaya wanted to take it forward and to add other services into this application and DIC have

developed a facility for them to tie up transport of their produce from field to market and it is purely a mobile based call service. He stated the reason to mention this example was that when addressing farmers' issues, we must think of simple solutions, because the penetration of smart phones is still about 25% so we have to be looking at solutions which are feature phone based. The digital literacy level of farmers is very low so we have focus on solutions that is available in their local languages and is affordable. These are the basic requirements to be able to meet the needs of farmers and therefore agri startups would have to focus on these areas.

Lastly he spoke about the support provided by government to startups in which one is domain specific incubation support and when govt does these incubation supports whether its TIDE or CoE, National programs on AI, the idea is to tie up startups with VCs, investors. He closed his speech stressing on the point that it is not enough to promote agri startups by giving them domain specific incubation support or financing etc what is important is the way green revolution was aggressively pushed by Govt the next revolution has to come through technological interventions particularly digital technological interventions so there has to be an aggressive push for the solutions also in which the government also needs to take the lead role in this. When startups will get support of the government this will help promote such solutions on a large scale.

Mr. Himanshu Goyal, India Sales and Alliances Leader, IBM Weather Company-

Mr. Goyal commenced his speech sharing his experience of running a Startup. They worked in digitalizing the books about agtech, and agriculture and all other similar data for agricultural institutes. Their aim was to build on this knowledge and recreate that. So the first book based on agriculture dated back to the 17th century, is today available for being issued to people to read. And that was sort of just the inset of digitalization.

All the good work that is done by our scientists who brought in the Green Revolution, who're probably in their 60s-70s, all their data is lying in paper. With one collaborative effort with the help of ICAR, if it can be done, some of us can really come handy to help you digitize that.

This data will really be the fodder for Tech companies to create models to figure out hyper local intervention for farmers and markets. He then added that this is really fundamental, and today, a lot of this data is very quickly curable. It is not going to take more than a year or two to digitalize data. He stressed that this should be our first mission, because when one has data, intelligence, then one builds AI, and then everything else.

He stressed on the second point that IMD has this data and investments of data availability but none of the private players have access to this data. He gave example of US, where all the data of precipitation is available to them and they are doing great innovations as they have the data available with them of farmers. He closed his speech requesting to get private players access of the data so one can use it for differential work. He highlighted the maximum calls at Kisan centres enquire about weather and this data is available somewhere but not getting to people.

Mr. Amardeep Sibia, CoFounder, Satsure-

Mr. Sibia commenced his speech noting about the work being done in the form of equity models for investment being put in place. However, the pace of investment is very slow. There exists a great funding gap, in that, the startups have a hard time getting rich funds. In this regard, there are certain constraints that can only be resolved with the help of policy intervention.

One of these constraints is that it is difficult for startups to get a bank guarantee for getting advance while they're planning to scale out. There needs to be a policy in place to address this issue. Another constraint is that the startups do not get exempted from paying GST and once it has been

paid, they lose most of their working capital. This is another situation where policies can intervene to help the startups.

Lastly, he highlighted third point stating example of one B-school accelerator where a match making competition was happening, When the incubation centers are coming in, if the match making happens from very start with the level of credibility coming from premier institutes who claim that they stand behind these startups, along with a strong backing from the government, that will really speed up innovations in this sectors.

Mr. Sachin Nandanwa, Founder, BigHaat-

Mr. Nanadanwa highlighted about agriculture inputs. The point is that regulation is there, and one is okay to follow it, but that should be centralized. Every state government, even the district persons, they read the regulations in their own view. For eg, at times they say you can't deliver to the doorstep, you can't put advertisements. So, this is one kind of challenge startups are facing.

Further, he added that India Post is a big institution. With their services one can deliver to places like Baramulla stating his example. In this scenario, India Post can play a huge role in acquiring input but the government will have to push more innovation in aggressive ways. If you don't have cash on delivery, they will even deliver to you by 6 am in the morning. But if you opt for cash on delivery, they will take up to 15 days. There are also certain issues and constraints regarding returns and customization as these inputs are not easily available in the local markets. Therefore, this is an area where digital innovations are required. He closed his speech stressing on the difficulty in arranging funds for startups stating his example when he required 10 crores fund and has to take on 24% interest. This directs to one question- how will one pass the benefit to farmer if startups itself is arranging funds on 24% interest?

Mr. Alok Sinha asked: How do startups get in touch with the farmers? How do they select and discover the farmers? What criteria do they follow?

Mr. Alekh Sanghera, CoFounder & CEO, FarMart

Mr. Sanghera commenced his speech underscoring Mr. Sinha's question. When one talk about farmers, the smallholders, we predominantly categorize the entire 125 million people into one category and that depends on what kind of crops they grow, the kind of geographies are they, even micro geographies because the districts and regions differ a lot.

Some of the criteria, when we talk about financing the farmers, in my view, typically a small holder farmer involve the land holdings of the farmers. Farmers who own lands of around 2-3 acres, earn roughly about Rs.50,000-2,00,000, annually, specifically from agriculture. They're not just focused on agriculture as a source of income. Therefore, if we want to deal about financing the farmers, we need to understand their entire cash flow, whether it's from agriculture or non-agriculture activities. Some farmers also own livestock which allows them to sell milk to cater for their cash flow. All of these points are data driven. It helps you understand their profiles, the dynamics, of the country and it tells you the true story. It helps in analyzing and getting to solutions that are actually subjective.

Mr. Bhaskar Pant, DGM, NABARD

Mr. Pant placed the issue of startups connecting with farmers where almost 86% of land holdings are comprised by small and marginal farmers. GOI, NABARD has been working in aggregation of farmers. We talk about revolution in milk industry and it happened only when farmers, milk producers, groups formed society and came together and the aggregation led to larger collection of milk and market. So this was very product specific. In agriculture it is better we focus on FPOs, societies because we will be able to connect with larger no. of farmers and startups will get a platform to talk where they can

talk to office bearers of FPOs and take them together whatever contribution they wish to make. If they go to each farmers it will be a critical task as the farmers literacy level plays the role her and startups will have to bear the cost. He closed his speech highlighting that NABARD is working on this and NABARD has promoter in FPOs and now time has come for sustainability and stability and introduction of technology and innovations.

Mr. AP Singh, Advisor (Agri), NitiAyog-

Mr. Singh noted that the space for startups has emerged due to the changing dynamics in the agriculture sector. In the last decade we have seen that there has emerged a need to bring stability in the pricing of the farmers' produce and this task becomes very tough when there is instability in the pricing system. We all are witness to the drastic changes in the prices of various commodities such as sugar, pulses, etc. The basic focus of the government is to help the farmers. They are winning the battle on the production side, but losing on the table. While they were earning good 10 years ago, today he's losing out on most of it. This becomes a tough task for the government to reach the level of prices that were being realized 10 years ago.

There are many challenges emerging on 2 fronts in this sector. The production is increasing, the consumption behavior is changing, and the investment from the private sector is minimal as it is only coming in from the government. This gap between the changing dynamics of agriculture has lead to the need for the startups to intervene. Our extension system is weak when it comes to farmer services, it is full of inefficiency. The agriculture become complex as it is a state subject and central government has limited space to operate at field level. We, at NitiAyog, are well aware of the situation and are pushing the regime of startups. Startups will be a facilitator to farmer and to government both. Ultimately anybody making money is making it at cost of farmers. The two way is either increase per unit area productivity or reduce cost of production. We have recently seen input delivery from seed companies. Govt. seed production system is slowly being eliminated as private players are coming in. Another reason why it's become a difficult task for the government is that the young farmers are not as committed and dedicated as their elders were. They want results, want to sell the produce, but they don't have the patience to stand in the scorching heat and work for it.

Mr. Alok Sinha intervened: if the startups are to be there to supplement government they are not going be in charitable organizations and they have to cover their costs and they also have to make the profits. The profit may not be very high but one can't expect them not to look at profits. Secondly, how to extend innovative model technologies into farming?

Mr. AP Singh answered: the startups go to farmers focusing needs of buyers but if we focus more on need of farmers, the startups will survive and farmers also. Such farmers need our support, in providing them proper training and education to fit their needs and to help increase their efficiency. We must strengthen the policy framework and offer services to the farmers which they can be benefited from. The institutional system needs to come out what are the constraints and how the constraints are to be addressed.

Dr. M.S Rao added: As there are several challenges in the sector, but these challenges open the door to several opportunities. Most of these solutions will have to be local. Therefore, it is very crucial that the state governments are very actively involved in interacting with the startups and identifying problem areas.

Some states have been very proactive, compared to the other states, and if they find the solutions after experimenting on the fields and interacting with the farmers, and they find that they are actually viable in the sense that they do actually benefit the farmers, be it in terms of cost cutting or helping them get better incomes, then certainly, the startups can also make some money out of it. That's because the startups obviously aren't there

for charitable purposes, but for business. He stressed that role of the government as a facilitator of this whole system needs to be as aggressive as it was when they promoted the Green Revolution. If that happens, then this agri-startup movement can go forward.

Mr. Hemendra Mathur, Founder, Bharat Innovations-

Mr. Mathur underscored the great momentum seen in the agritech startup arena in last few years. A lot of entrepreneurs with non-agri backgrounds are entering this sector, a lot of investors are showing interest and there are a lot of industrialists coming in too, including mainstream venture capital investors. This directs that there's huge opportunity to build public ecosystem which is weak, in terms of startup-corporate partnerships. A lot of corporates are interested in working with startups, but they don't have the right platform to connect with them and serve them, which points to the fact that there is a missing link.

There are many areas which the government can help in:

The government can offer support in terms of incubation, acceleration, and catalytic funding. We have so many agriculture universities, but we don't have incubation centers there. We talk about AI agriculture, but we're not sure how many universities are actually teaching AI as part of their course curriculum. Along with AI, Data Science needs to be taught as a course that can potentially lead to many employment and entrepreneurship opportunities for graduates.

As far as acceleration programmes are concerned, there is a need for at least 10-20 accelerators to maintain the startup momentum that we're seeing today. He added, when it comes to catalytic funding, there are so many startups struggle for months and years to get a 1stcheque, and in that process, they lose momentum, and they lose time and they don't get time to pilot. The government needs to come up with catalytic approaches in terms of funding these startups.

The state governments play a huge role in this scenario. What is needed is the state facilitation center. He stressed on the point that most of the startups don't know where to go, and even if they do, they don't know which department to go to. That's where the momentum and the enthusiasm get lost. There is a need to have one single window clearance system, in each state, an Agritech Startup Facilitation Centre which can channelize these dialogues and partnerships. There is need to build a platform for digital revolution where we can digitize land records, can link land records with farmers for cultivating on those farms. As far as startups are concerned, they have solution in digitizing land records satellite imagery drones can play a big role. The challenge is linking those farm lands to farmers that are where you need ground capabilities startups don't have. This is where state govt. plays a role. The patwaris block everything, so this is where govt. come into the picture. If we build this platform it will enable many things, clearly direct benefit transfer. The biggest challenge is access to farmers and access to data. He closed his speech highlighting about Fintech in India, in terms of making financial inclusion widespread, access to insurance, govt schemes etc, it can make things transparent. When one talks about platform, it should be open source, the privacy concerns surely can be addressed.

Mr. Amardeep added: The state govt are the major enabler in agriculture. If I am doing BOC in a corporate world there is a team setup for counter party. Same structure, if they are setup on govt side, they make that engagement smoother and faster. Startups when deal with government handholding, human resource investment that also becomes challenge for small startups. He closed his point mentioning that one understands the challenges faced by government but these structures will help them to act fast. He added, what we do well is technology what we don't do well is project management and closed his argument on question - what can we do to enable this?

Ms. Deepti Dutt, Strategic Initiatives Head, Amazon Internet Services-

Ms. Dutt anchors the Govstart initiative for AWS. She initiated the discussion mentioning about the startups who are trying to work with the government. Primarily, the support required to enable Govstart from 3 different perspectives, listing her observations over the years. First, the current objective of this sector is to double the farmers' incomes and when we look at the priority areas identified by the government to tackle this, there are not many startups that are focused on areas like fish farming or poultry. Under fish farming, the focus is on shrimp farming, because they get higher returns. So maybe as priority areas, these can also be brought under agritech, and that in turn can give direction to the startups as some good areas to focus on.

Second, she highlighted about the technological perspective. When talking about technology, things like machine learning, mechanization, and artificial intelligence are the kind of areas that startups specialize in and can figure out on their own. However, what is lacking is the availability of open data, on a platform which is easily usable. This data should be in respect to land holdings, farmers, weather data, etc. By making this data available to startups will help spur innovations and solutions in this sector.

Third, she detailed about the investment and procurement area. Not a lot of efforts are being made by investors, venture capitalists and the state government is critical in this area. There are a lot of startups making the jump from concepts, to proof of concepts, to pilots. But what is lacking is large scale procurement. The thing is that these investors and venture capitalists will only put their money where they see good returns, and Govstart usually don't get a lot of investment from venture capitalists because they're not sure whether the state government will go ahead and do a large scale implementation of these solutions. She closed her discussion stressing on point that we need to focus on large scale procurement of startup solutions, move from pilots to large scale deployment, from policy perspective we need to focus on this to make things easier.

Mr. Shubhadeep Sanyal, Principal, Omnivore Funds-

Mr. Sanyal underscored the major challenges startups face i.e. being treated as a larger corporate. If a certain proportion of your annual spending by the government can be dedicated towards working with these startups as benders that in itself solves a lot of problems for the startups. So, that is one clear need.

Second, he highlighted about the classical challenges of VC funds. VCs raise funds, deploy capital, harvest returns, raise capital again. It's a long cycle, but what VCs have observed is that there is a need of micro funds (ranging 15 cr. to 100 cr.) in today's date and to be managed by smart teams of fund managers. What potentially the governments, specially the state governments (as they need solutions pertaining to their geographies and there farmers) can do is to spur the launch of these micro funds. Let the fund managers raise the remaining money through someone else. Don't disrupt the financial discipline of the fund managers. This will spur 20 times the innovations and add the potential chances of that startup to succeed. He closed his argument stressing on micro VC funds as a concept is something that is required, which are localized and state-specific.

Mr. Bhaskar Pant answered: NABARD had setup subsidiary called NABventures. It the funds of fund NABARD IS doing and lending it to startups working in agriculture and rural sector. As far as incubation center is concerned, NABARD has setup 2 incubation centers – Haryana Agriculture University and Tamil Nadu with investment of 12 crores each. While from Tamil Nadu there are good stories to hear regarding technology extension to farmers, one can replicate this model with many universities in different states.

Mr. Shubhadeep added: Two kind of roles which incubation centers can play firstly Entrepreneurship in local ecosystem but also act as bridge for startups to get to farmers of that area because it is difficult for startups to relocate or work from those kind of geographies, so we can act as bridge to come over and work with farming communities.

Mr. Alok Sinha asked: How do these startups get connected with farmers? Like entrepreneurs can go to Hisar and work but India is bigger than Hisar so we have to think for setting up more centres.

He stressed on point that every state government should be on board. Now we have come to a point in federal politics where, sometimes, some state governments do not want to openly accept whatever has been declared by the government of India. He closed his speech mentioning that not only does this all have to be institutionalized, but it also has to be depoliticized. It should not be seen as an effort coming from either BJP or Congress.

Prof. M. Moni, Chairman, ICFA Working Group on IT-

Prof Moni stressed on the steps needed to promote Digital Agriculture. He gave reference of his experience, started IT in agriculture way back in '87. In '95, he was inducted in the Ministry of Agriculture as a senior technical director. Their first National Conference on Informatics for Sustainable Agriculture in May'95, gave a good IT Blueprint in agriculture.

He added, IT in agriculture has to become a tool in order to establish a strategic introduction of ICT in agriculture production and value system, and we have to have human resources on a large scale. So that's how we make way for agri-informatics as a necessity.

He further added that they had set up a center for agri-informatics and research studies which provides M.Tech and B.Tech in agri-informatics. Now if we try to bring in agricultural innovation and agri-startups to play a large scale role at the grassroot level, agri-infomatics need to become a lifeline.

In order to make agristartups work around the area he suggested there are 3 chapters to be talked about digital technology in agriculture- first is on digitalized agriculture is on smart irrigated farming, smart rainfed farming, second one is agromet advisory services and digitalized agromet advisory services in agriculture risk management, third is we don't have comprehensive agriculture resources system. If agristartup have to come out with large scale decision support system using Artificial Intelligence and data science the country does not have it so we need to setup agriculture resource system at village level to facilitate smart village and smart agriculture. Fourth is, current report suggest that about 400 agriculture Commodity value chain, there are many points where digital technology can play a role from farm to fork. Then digitlized input access is not available and digitalized integrated land and water management system and last we don't have integrated farm health management system. He stressed on point that there is no comprehensive farmer information system. There is need to create National database of 13 crores farmers and we can work on that. Today there is only crop extension, there is also a need to have farm extension. There is no farmer public grievances management system. He concluded his speech raising question, Why can't one use Bharatnet exclusively for 13 crores farmers database in turn it can be used by all agriculture stakeholders to bring in digitalized agriculture?

Mr. Hitendra Gandhi, Assistant Manager, Maharashtra State Innovation Society-

Mr. Gandhi commenced his speech addressing the issues and questions rose commenting on what the Maharashtra government is trying to support the startup ecosystem. The primary things that startups need are funds and a place where they can execute their projects. Firstly, the Maharashtra government is creating a platform; a Maharashtra startup meet that goes on every 6 months. Invitations are sent out across the country and 24 startups are shortlisted. The

winners are not given grants, but an opportunity. The opportunity comes in the form of a work order in a government department. He highlighted that Satsure was one of the winners this year, so MSIS is going to link them to their respective government department where their projects can be executed. They also get a work order worth 15 lakhs. Now, 15 lakhs is a very small amount for a startup like Satsure, but it is a great deal for a startup that is still growing. This is one of the things that the government is doing.

Secondly, the government is trying to reduce the go to market time, with respect to government entities. MSIS act as a nodal body; where the startups approach and MSIS ensure that they solve all of their issues to the root cause level and give them an opportunity to work with the government. There are instances where the startups who are not the winners try to approach, and MSIS then link them with their respective departments. They reach out to the ministers of those particular departments and try to fix meetings for them, to help streamline the process at a faster pace.

He added that MSIS is trying to address the issue of advance payments. In today's date, every startup is struggling, and therefore, MSIS is trying to tackle this challenge by trying to formulate some policies so that they can give the startups a limited advance against a work order so that they can at least procure and deliver the product.

He then answered one of the very important questions raised in RTC, how to reach out to the farmers? The best possible way to do that is not through the government, but through NGOs, or non profit organizations. If one has an agriculture project to implement, firstly get it approved by the government and then go to an NGO or a Non Profit Organization which has a strong holding in that particular area, so that the implementation becomes very fast. He closed his argument stressing on point that even other states can and should replicate this for implementation and reaching out to the farmers.

Mr. Sachin Nandanwa added: Maharashtra is the toughest state, to crack for an input license, whereas Bangalore is the easiest, in this context. He added that the point to be raised here is that we are not denying to take the license. All we're trying to say that it needs to be centralized.

Second aspect linking to this one, is asking startups to take a license in each and every state, which adds to taking an address there and appointing one person also. He stressed on a big legal challenge startups face that even Govt. raises the question of office and warehouse, so one has to take 2 offices and procure mandatory to show them.

Mr. Shubhdeep Sanyal added: Whenever Maharashtra Govt. or any state does their grand challenges, do think about casting the net wide. Karnataka had a grand challenge last season. It was very successful but we also came across a lot of startups and potential entrepreneurs who never even knew that it existed. So maybe casting wider net using platforms like these all the stakeholders around the table should help advertise is better.

Mr. Amardeep added: Startups know from incubation to acceleration. States should also focus on acceleration point along with incubation.

Kunal Prasad, CoFounder and CEO, Cropin-

Mr. Prasad commenced his speech highlighting the different phases of startups. There are startups that are in the forming stage, some are in the acceleration stage, etc. What the farmers primarily need and what the government should also look at is that they need startups in larger programs.

When one talk about larger programs, the government is spending thousands of crores in different schemes- we have a subsidy scheme, an irrigation scheme, farm mechanization scheme, etc. There are massive investments that are taking place in that area. But there still remains a huge gap, and if we bring in technology to fill that gap, the value that we can get is much, much higher. He quoted an example of integration of the value chain, "You have your Soil Health Card in the

Maharashtra district, you have close to 2,000 weather data stations, and you have other historical data as well. If we bring in all of these things together, the machine learning and the AI that we're talking about, the prices that the farmers get can be higher, and they can save more to sustain themselves." He closed his argument stressing on point that the government should bring in all of these things together and maintain and open source data for the benefits of both the startups and the farmers.

Mr. Muhammad Riyaz, Project Director, External Relations, Kerala

Mr. Riyaz commenced his speech highlighting his experiences. He mentioned about the e-commerce model, E-Krishi, one of the key challenges they faced in is the skill and awareness level of farmers. There is need to keep in mind whatever may be the technology we need to keep it according to end user. There skill level, awareness level we need to keep the thrust. Second challenge is the land holdings, to scale up the technology one can't do that in fragmented lands. Govt. of Kerala have a dedicated mission for agristartups- rural innovation center where agritech is one sector. He added that there are traditional incubation centers present, so Kerala govt has taken the initiative to convert research product into commercial viable entity for research institutions or with corporates. He ended his discussion mentioning about the supply chain issues.

Mr. Jitendra Kumar, Managing Director, Bangalore Bio Innovation Center, Government of Karnataka-

Mr. Kumar commenced his speech highlighting the initiatives by Karnataka government that could work as a role model for other states. Karnataka is the first state to formulate a startup policy, where agriculture is the main subject. He gave reference of Mr. Pandey's point regarding information asymmetry that exists in this sector, which has now become a stark reality. In order to tackle that, Karnataka throw grand challenges. Most startups participate in these challenges, they come up with solutions and write their proposals. These are mostly startups that are in their initial stages. This is one institutional mechanism that can be used to create ventures, because solutions can come from, both innovators and scientists.

The institutional mechanism that the government is trying to use to create startup pipelines in agriculture is to set up incubation centers. This mechanism is extremely well articulated in Karnataka state. The state is running is venture funds which are very successful and unique. Classical approach says that Venture funds should not be done by states but it is successful as it helps startups winning the grand challenges. He concluded his speech stressing that most of the problems encountered by the farmers are very well laid out and are well within the knowledge of all stakeholders. Attempts are being made to solve it through the startup entrepreneur ecosystem.

Dr. D Praveen. Assistant Director of Agriculture-IT, Govt. of Andhra Pradesh and Mr. Manish Ghosal, Assistant Director, AP Innovation Society-

Mr. Praveen highlighted the multiple initiatives of AP Government in agriculture sector.

Mr. Ghosal commenced his speech highlighting about the grand challenges, where APIS have a platform called SOCH- Sunrise Open Challenge Hackathon. It is one of the largest two-nation hackathons between India and Israel where problem statement were open in agri, cyber security and water supply because these are the problems with department. The AP Innovation Society aims at bringing together all its hackathons under SOCH, which has been conceptualized to invite startups and individuals to solve real-world use-cases from the industry and the government departments. For the winners of Hackathan we have 2 cash prizes - first cash prize is used to develop prototype, when it gets accepted by department 6 months are given

to establish that for which the 2nd cash prize is used. If it works after 6 months then department take it up and goes on larger scale implementation. So, this is one of the initiatives the AP government has taken.

He then underscored the acceleration programs. APIS have an acceleration program with Gastratope from Japan, called Fortissimo. It is a Farm-to-Fork based accelerator and it is clubbed with an investment. So, there is a certain amount which is guaranteed to the startups that are qualified to be a part of this acceleration program.

He ended his discussion highlighting the funding issue. There are certain policies which govt is taking up where the initial seed funds can be given as grant fund. APIS believe we have to create hub and spoke model where each spoke will be itself an ecosystem like a CoE or funding agency and should not work separately, need to club them and work together in various clusters.

Mr. Ravinkumar S, Strategy and Product Management, TCS-

Mr. Kumar initiated the discussion stressing on the challenges that have been discussed pertaining to startups. He then highlighted the willingness from the government and various research institutes to partner with TCS in terms of technical solutions and deploying the farmers. So from a TCS digital farming perspective, there are 2 dimensions. One- TCS work with the Farm-to-Fork customers; enterprise the ideas and deploy the solutions.

He added that TCS also focuses on working with the various research institutes of ICAR to see how we may help them protect the technology and the farmers who are associated with it. While there is willingness to work with partners like TCS to protect the technology, there is still a trust factor involved when it comes to opening up, in terms of exposing their models, as they have more knowledge about mission support systems, business models, which corporates and the startups need access to, because they're being tried and tested. It would only make sense to expose such valuable knowledge as an open data market place which anyone can pay for and consume. This could be a way for them to earn a revenue out of those models, so the trust factor in exposing those models needs to be addressed. That will open up a lot of opportunity for startups.

He then highlighted the working of TCS with FPOs and objective was how to make it self-sustainable. They developed model called PRIDE- Progressive Rural Integrated Digital Enterprise and started working on how technology will help these FPOs to become a self-sustainable model which is more data driven. He added that it is not direct licensing for TCS, they don't anything charge for FPOs, they look how data is generated within that ecosystem, will enable startups or other ecosystem partners to come on play a role. He concluded his speech stressing that we must work on making this data available and if not free at least available through a channel either though data market model where people can access, buy, leverage it and to ultimately reduce our service delivery cost to farmers.

Mr. Nitin Puri, Head, Yes Bank-

Nitin Puri underscored 2 major points. First, Testing and validation of proof of concepts, technologies, etc, is a very big intervention where a lot of startups face a lot of problems, especially for farmer-facing technologies. So if you want to really have, say 5,000-10,000 farmers test out your product, your service, your application, that is something which is totally missing today in India. The government and the industry need to figure out the solutions.

Second, he pointed out the intersection of data technology and agriculture as a mainstream curriculum. Agtech as a mainstream course needs to be reinforced strongly by the government and industry.

He highlighted about the accelerator program of Yes Bank called Yes Scale AgriTech where major stakeholders like Mahindra are involved. Yes Bank make them share their case studies, pain

points and then float them in their application forms. This approach has got them some amazing startups onboard who have innovative ideas for those issues. He closed his discussion stressing that this can be replicated having govt and industry people onboard.

Dr. Dinesh Chauhan, CEO, IACG-

Dr. Chauhan introduced his organization IACG, a consulting group. He highlighted that as far as the government is concerned, one agrees there are huge funds with government so money can't be a constraint in taking this to the next level. Reducing cost and increasing productivity are crucial steps for startups and farmers to follow, keeping in mind the agenda of doubling the farmers' incomes. Another thing that the startups need to work towards is to increase the value realization for each and every stakeholder.

He advised startups to think about how they can add value, for both the farmers and the end users of the products. So the startups need to double the technological footing on that front. He concluded his discussion mentioning the education aspect that there is a lack of trained and skill manpower in the industry and it is difficult to find a reliable source. Universities must set up incubation centers and inculcate agriculture and Data Science courses in the curriculum.

Dr. Ritasree Sharma, Consultant Agri & Food, Bangalore Bio Innovation Center:

Dr. Sharma stressed on need of having sensitization program at the curriculum level where agri-prenuership can be seen as a career option for students. She then highlighted about the work areas of Bangalore bio-innovation center and how the Center is playing major role in helping the startups by offering their labs. The Centre has 3 domains- academic, incubation center & industrial part. The Centre also work in life science domains. They have various labs instituted for biotech startups to work. Also, if startups have science related issues or any agriculture related queries; the center provides labs and advisory for detailing about all the issues. They are also extending facilities like hydroponics, compost, testing soil, sludge for farmers and all the Startups.

Mr. Bramhanand Jha, Senior Consultant, National E-Governance Division

Mr. Jha underscored the importance of institutional setup as most of startups are facing issues in validating their solutions on the ground with real users (farmers). He highlighted about the scheme MEITY have called common services centers, each of these are led by village level entrepreneurs, which are helping startups to reach directly to farmers. He also stressed on the importance and reach of India post.

He further added on the importance of Policy reforms. In the scheme direct benefit transfer in fertilizers the benefit is going to industry not to the farmers, it is indirectly going to farmers. Robust database of farmers to be maintained. MEITY do have database, but not cleaned data which is to be maintained. He concluded his discussion commenting, when it comes to state subject, the good part is centralized planning and decentralized implementation. So Govt. has come up with a course where they provide facility to configure so that whatever states want to have they can choose and make it available to farmers.

Dr. Anurag Kumar, Principal Research Scientist, Digital India Corporation

Dr. Kumar commenced his speech highlighting their experience of implementing ICT initiatives in agriculture. It's a plug and play model where actually farmers can interact with institutes which provide advisory services. The problem with all ICT initiatives is that we don't have backend database of farmers. We are deriving a model where we can decentralize the call centers, when farmer calls in we have their entire data in front of us– history of farmers, their

land, farm profile.

The objective is to empower scientist also with data so that they can provide more personalized and informed advisory service to farmer. This is what DIC is implementing with all Krishi Vigyan Kendras in Telengana and AP. The problem is how to get those farmer database from field and we struggle in that. We are working with govt of Meghalaya where farmer can register on call, they can book a vehicle, vehicle goes upto their door, picks up the things farmer want to sell and take it to market. We are connecting farmers with this as farmers can be sellers or buyers, so we are bridging this gap of buyers and sellers. We have a system where we have setup 24 call centers in AP and Meghalaya where advisory services are provided to farmers in their local language. If a farmer is calling from Nallore it is directed to Nallore KVK and if the scientist is not available on the system the call is directed to his mobile.

Mr. Om Routray, Community Lead, NASSCOM:

Mr. Routray stressed on importance of having Agri experience facilitation center where farmers can have hands on experience how technology is working on the ground. We can a demo of mobile applications, drones etc. it can be a place for workshops. Tech biggies are reaching out to farmers which is itself is increasing cost so we can have these centers holding workshops on regular basis where farmer groups can join. It can be a place for states to showcase their innovations for international delegations coming in.

Concluding

Pravin Srivastava, Director General, ICFA-

Mr. Srivastava added that agriculture is a humungous subject. On one end you have farmers doing cropping of basic crops like rice and wheat, and at the other end of the spectrum are modernized farming techniques like floriculture and hydroponics.

In terms of technology, it has advanced to high strengths in terms of processing, in terms of marketing, in terms of preserving, and on the other end, there are still areas that are doing broadcast cultivation in their farms in times of distress. The government's policy, which has been reiterated by many speakers today, is to double the farmers' income by 2025, which I don't think is going to be an easy task. However, it is something that is doable, and in which the agritech startups can play a huge role.

He concluded his speech highlighting the challenges and solutions that have been identified in RTC, namely, lack of access to farmers' database, how to reach out to the farmers, convergence of efforts by different agencies, and bridging the gap between startups and state governments. There is a hope that we can serve as a kickstart mechanism with which to engage both the central and state governments and ensure that the efforts to build up startups in the agritech sector are taken forward.

He thanked all the participants for taking out the time to be present in RTC and sharing their views and perceptions for the growth of this sector.

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NASSCOM®

B-Wing, Naurang House, KG Marg, New Delhi-110001
Ph: 011 - 41501465, 41501475 | Fax: 011 - 23353406
www.icfa.org.in