

Lecture Series – 15

ISSUES IN AGRICULTURE

September 2015 – January 2016



IC Centre for Governance

Opinions expressed by our contributors are not necessarily those of the IC Centre for Governance.

This Lecture Series on Issues in Agriculture has been organized in collaboration with the India International Centre and is compiled by Mahesh Kapoor on behalf of the IC Centre for Governance, New Delhi.

Please address all correspondence to:

IC Centre for Governance

3, Palam Marg, 3rd Floor,

Vasant Vihar

New Delhi- 110057

Tel: +91-11-40809939

E mail: iccfg@yahoo.co.in

CONTENTS

First Session: September 11, 2015 **Page 1**
Policies for Sustainable Agriculture

Chairman

Shri Syed S. Mahdi, *Former Vice Chancellor, Jamia Millia Islamia*

Keynote Speakers

Shri Siraj Hussain, *Secretary (Agriculture & Cooperation), Ministry of Agriculture, GoI*
Shri R.B. Singh, *Former President, National Academy of Agricultural Sciences*

Second Session: October 8, 2015 **Page 26**
Promoting Income Security for Small and Marginal Farmers

Chairman

Shri B.K. Taimni, *Former Secretary, Government of India*

Keynote Speaker

Dr. R.G. Dani, *Vice Chancellor, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola*

Third Session: November 13, 2015 **Page 39**
Diversification in Indian Agriculture

Chairman

Shri J.L.N. Srivastava, *Managing Trustee, Indian Farmers' Fertilizer Cooperative (IFFCO)*

Keynote Speakers

Shri Ajay Vir Jakhar, *Chairman, Bharat Krishak Samaj*
Shri Parvesh Sharma, *Managing Director, Small Farmers' Agri- Business Consortium*

Fourth Session: December 11, 2015 **Page 71**
Skill Development in Farm and Non-Farm Sector

Chairman

Shri M.C. Verma, *Former Technical Advisor, UNDP*

Keynote Speaker

Dr. Rita Sharma, *Former Secretary, Ministry of Rural Development*

Fifth Session: January 15, 2016 **Page 94**
Issues in Fertilizer Policy

Chairman

Pratap Narayan, *Former Director General, The Fertiliser Association of India*

Keynote Speakers

Shri Anwarul Hoda,
Chair Professor for Agriculture, Indian Council for Research on International Economic Relations (ICRIER)

Shri Satish Chander

Director General, The Fertiliser Association of India

First Lecture

POLICIES FOR SUSTAINABLE AGRICULTURE

September 11, 2015

B.D. Gupta

Good Evening ladies and gentlemen. A hearty welcome to all of you on behalf of India International Centre and IC Centre for Governance. We are meeting this evening after a rather long recess of about 4 months on a new lecture series on governance issues in Agriculture. As we are all aware, agriculture is the most important component of our country's growth and development and it involves complex policy issues and each of its aspects have to be seen and examined from various angles, be it economic, social, political, community harmony, etc. As such, we are starting this series with the lecture on 'Policies for Sustainable Agriculture'. For this subject, we have amongst us Shri Siraj Hussain, Secretary Agriculture and Cooperation and Professor R.B. Singh as the keynote speakers. Shri Siraj Hussain is an IAS officer from 1979 batch of UP Cadre. He is an MSc Biochemistry, and MBA. Shri Hussain has had almost 20 years' experience in the State in UP in various departments like Consumer Affairs, Food, Public distribution, Finance and Agriculture & Cooperation, Power, Education, etc., He served as Vice Chancellor of Jamia Millia University from 2000 to 2005. Thereafter, at the Centre he held various positions in Consumer Affairs, Public Distribution, and Agriculture & Cooperation, where he is presently working as Secretary.

The second speaker on the dais is Professor R.B. Singh, a very well-known and very well-respected name in the field of Agriculture Science. After securing his PhD from USA in 1964, he served in various academic positions in the leading Universities of India from 1964 to 1979. From 1979 to 1984, he worked in various positions in FAO of UNO at Bangkok and Rome. Thereafter, he worked as Director of IRI in India from '95 to '99. From '99-2000, he was chairman of the Agriculture Scientist Recruitment Board. His signal contribution is well known in suggesting to the government appropriate policy strategy and programme interventions to enhance farmers' income and to alleviate hunger and poverty. For his contribution in the field of agriculture, Hon'ble President of India awarded him Padma Bhushan in 2003. Besides this honour, his other recognitions include Doctor of Science from 8 Universities, gold medals and Gyan Gaurav Samman and many others. Currently, he is Chancellor of Central Agriculture University, Imphal and President of National Academy of Agricultural Sciences.

Shri Syed Shahid Mahdi, former Chancellor Jamia Millia has kindly agreed to chair this session. Shri Mahdi is an esteemed member of our Core Group.

I would now like to request Shri Mahdi to conduct the proceedings.

Syed Shahid Mahdi: Thank you! I think we are waiting for more light but I am sure the deficiency will be made-up by the speakers. According to our programme, we, as usual, would like to have words of wisdom from Shri Prabhat Kumar because he will set the ball rolling and provide the aframework for discussions this afternoon. Thank you very much.

Prabhat Kumar: Good evening, ladies and gentlemen! It is a very interesting subject. In fact, before I say what I have to say, I would like to quote a passage from Benjamin Franklin. He says- there seem to be three ways for a nation to acquire wealth. The first is by war. This is robbery. The second is by commerce, which is generally cheating. The third, by agriculture, the only honest way, wherein man receives the real increase of the seed thrown into the ground in a kind of continual miracle; miracle brought round by the hand of God in his favour, as a reward for his innocent life and his virtuous industry. Well, nobody can deny that there has been impressive progress in the field of agriculture in the last 4 decades. New technologies and innovations in the field of agriculture engineering have been the prime movers in this change in Indian agriculture. And also, government policies, production strategies, and public investment in infrastructure as well as also in research and development, they have also helped in increasing production and the availability of food. But I am reminded of Dr. Ashok Gulati who said that it is the farmer entrepreneur who takes the risk of adopting new seeds and technologies and puts in his best effort to bring food to our tables. I think this is the time to salute our farmers. This is also time to ask ourselves what the country has given to our farmers. Are they happy? Are they prosperous? And, therefore, I think when we talk of drawing up of policy for sustainable agriculture, we must keep the welfare of the farmers at the top.

There is a very close linkage between the growth of agriculture and the alleviation of poverty and hunger. As we all know, agriculture provides income, it provides jobs and wages and it also provides goods and services to the majority of people who live in poverty. And, therefore, the experts say that the GDP growth in agriculture is at least twice as effective in reducing poverty than the growth that originates in other non-agricultural fields. Well, I think the subject of sustainable agriculture is too vast. And since I have very inadequate knowledge of agriculture, I never worked in the agriculture sector, and therefore, I will confine myself to flagging a couple of very obvious points for the consideration of our policy makers and our experts. I think there are some basic challenges for agriculture in our country. The first big challenge comes out of the fact that the demand for food, fibre and goods and services from agriculture which includes fisheries, forestry, livestock etc., the demand is increasing very fast. It's rapidly increasing. So, this is a great challenge. And the other big challenge is that there is a growing scarcity and degradation of national resources. And this coupled with the fact that we have to also look after our ecology. We have to address the degradation in the environment. So, these are the big challenges, I think. And out of these big challenges, come some key indicators which must guide the formulation of a sustainable agricultural policy. For example, the first indicator I think, is that there is a need to improve the efficiency of resources. The efficiency factors of production. Because as we all know that the possibility of increasing our cultivable land and the population of the livestock, is very limited. And, therefore, all the additional production must

come from increasing productivity. The second indicator, in my view, is that we must have direct action to conserve and protect our natural resources. We shouldn't take climate change as given. The climate change will happen but we must intensify our efforts to reduce greenhouse gas emissions. One of the things that we can perhaps do in this regard is to protect our remaining forests so as to prevent additional emissions from land use change. So, this is the second indicator. And the third indicator in my view is that if sustainable agriculture does not result in improvement in rural habitat, rural livelihood, and rural well-being, then it's not sustainable. It must result in enhancing the resilience of farmers, communities and our ecosystem. And the fourth and last indicator in my view is that we cannot think of sustainability of human and natural resources without good governance. Good governance is a must. We need institutions, we need policies, we need ways of incentivising the adoption of sustainable practices.

We need more public investment in infrastructure. We need facilitation to access to information and knowledge, at all levels, down to the farmer. All this is possible with good governance. So, these are the main indicators in my view, and finally I would just say that there are two areas which need special emphasis in our new policy for sustainable agriculture. The first is water. We know that the country would be required to produce more from depleting water resources. We also know that agriculture is the biggest user of water. It accounts for more than 80% of all water withdrawals. So, I think we need reforms in establishing secure water rights. We need reforms in pricing. We need reforms in infrastructure and also in developing water saving technologies. We need an integrated National Policy on Water. The experts have also suggested that there should be a National Institution of Water. I don't know what Dr. R.B. Singh thinks about this but there should be a national institution of water which should take the regulatory concerns into consideration. We should also look at water legislation- water laws. And it should work in a trusteeship mode and should be responsible for the larger question of water security. So that is one area which needs special emphasis. And the second area which needs emphasis in my view is the rain fed ecosystems. We know that more than 60% of the cultivated land is rain-fed. And coincidentally, it covers the tribal tract from Kerala to Bihar. It covers the tribal areas of Tamil Nadu, Andhra Pradesh, Orissa, of Jharkhand and of Bihar. They need special attention in our policy. In fact, I would say that apart from water-saving technologies, we should also look at, (I think Mr. Siraj Hussain should also look at the bias towards irrigation in our public investments and also in credit flows).

In addition, we should also look at the watershed development technologies. So, this is the second area. And, in the end I would just say that there is the most insecure and vulnerable section of our people is the marginal farmer and the landless labour in agriculture. They are without any support from the government so far as human resource development is concerned, so far as credit flows is concerned. I think we need to look at employment in the non-farm and off-farm sectors. I think we should also look at the need for entrepreneurial development among the farmers, small farmers, landless labour, so that they could become viable entrepreneurs. We should look at viable enterprises in the rural areas. These are some of the

concerns which I think must be looked into while formulating the policy for sustainable agriculture and I would just finish by saying that the true gauge of the success of our policies in sustainable agriculture would not be found in numerical data and statistics. It can be found only in the smiles on the faces of the farmers. So the next big challenge is how to bring smiles on the faces of small, marginal farmers. Thank you.

Syed Shahid Mahdi: After Shri Prabhat Kumar's very comprehensive and wise preamble remarks, I would like to request Shri Siraj Hussain, an old colleague, a fellow sufferer as Vice Chancellor, Secretary Agriculture and Cooperation, to kindly enlighten us on the government's perspective on the subject. Thank you.

Siraj Hussain: Thank you Mr Chairman, Mr Prabhat Kumar, Mr R.B. Singh and friends. I will not be talking generally about the agriculture sector, I will confine myself to the issues relating to sustainability, how they are impacting the agriculture sector, and I will touch upon 10 issues most of which relate to governance, and some of them relate to policy. Most of us are already experienced about the administrative culture of the country, and therefore, I want to leave some time for discussion on this subject. We know that due to the industrial revolution and the unsustainable practices of last 150 years, we have reached a stage where the average temperatures are rising globally. By 2030, we expect that the temperatures in India would rise by 1.7 degree Celsius to 2.2 degrees Celsius. In fact, we are already seeing the unpredictability of monsoons in various areas of the country and year after year we find that several areas are not getting adequate rain. In fact, in the common mind, the rainfall deficiency is only 10% or 12 %, but actually there are several areas of the country which have been receiving deficient monsoon for the past several years. North-west India for example, Haryana has been receiving deficient monsoons in the last four years continuously. Similarly, Marathwada, North interior Karnataka, they have been receiving deficient monsoons.

So, the so-called climate change is already upon us. In fact, it is feared that the frequency of cyclones will also increase and there is a possibility that the people living in the Eastern coast of India will be extremely vulnerable to the impact of external weather conditions and rise in water levels in seas. Floods and droughts are both likely to increase and some areas of the country will be worse affected than other areas. In fact, the estimates show that the agricultural loss by 2030 will be something like seven billion dollars, both wheat and rice are going to be affected. There are a few crops which are likely to be positively affected due to various reasons which are quite complex, but it seems that the legume crops like soya bean and groundnut may be benefitted due to increased temperature, provided the availability of water is not limited. The milk yield is likely to be adversely affected and so on.

Now, in the previous government, when the 12th five year plan was going to be formulated, it was realised that something serious has to be done consistently over a period of next five years in order to address issues relating to the impact of climate change, adverse monsoon conditions, etc. so that there is focused attention on some of these issues. Now, 10 interventions were thought to be influential in addressing this problem. Intervention No.1 was improvement in

crop seeds, livestock and fish culture. We have made good progress in this area with the technical support of IRRI and the Indian Rice Research Institute and our scientists, Prof. R.B. Singh is representing them here. We have several varieties of rice which can stand flood-like conditions and also drought-like conditions. We need to do much more in this area. So in addition to it being a policy area, it is a governance issue because there are a number of varieties, say Bhagi rice for example, which can withstand flood-like conditions and yet, in many areas, our farmers are not fully conversant in these. Recently, Kisan channel has been launched. I do not know if anybody sitting in this room has watched the Kisan Channel but I would very much request you to watch at least one programme that comes at 8 o'clock in the morning, which is about the markets. It is basically about agriculture prices. So, the Kisan channel and other channels of Doordarshan are being used but we need to do much more to take the improved varieties of seeds which can withstand extreme climatic conditions to more areas.

The second intervention which was supposed to address this issue and which was included in the National Mission on Sustainable Agriculture- there is a Mission called the National Mission on Sustainable Agriculture, which is the water use efficiency. Mr. Prabhat Kumar has already talked about it. In the new government, Pradhan Mantri Krishi Sinchai Yojna (PMKSY) has been launched, which is supposed to bring convergence of four Ministries. One is the Ministry of Agriculture which uses water, one is the Ministry of Water Resources which is supposed to bring efficiency to the use of water, there is Department of Rural Development in the Ministry of Rural Development which can use the employment-guarantee programs to create water harvesting structures etc., and then is the Department of Land Resources, which has been implementing some of these schemes in the field, especially in rain-fed areas which Mr. Prabhat Kumar mentioned. So, this is going to be one major area. The government of India, The Prime Minister has announced several times that we are committed to provide Rs.50,000 crores over the next five years to PMKSY. We have recently allotted some Rs.460 crores specifically to what we call the 'dark blocks' where the water balance is adverse and we are drawing more water from these blocks than they are getting recharged.

In fact, when we talk of the rain-fed areas, they are in some problem, no doubt, but, what actually bothers me the most is the extreme water stress which these blocks are facing in North-West India, in Punjab-Haryana and also other States like Tamil Nadu. It is an extreme situation in these States which is not fully appreciated because we see the crops green and we are under an illusion that everything is fine. Actually, things are in a very bad shape. In both Punjab and Haryana, we have allotted 460 crores to be used only in these blocks for water recharging and other measures to address that. Now here will be a governance issue; the Punjab Agriculture University has come up with a technology which will take the water in canals to the tail and then it will recharge the ground level there. But whether this technology is effective or not, we will get to see only in the next two or three years. There are several experimental technologies which need to be taken to the field in terms of increasing the water use efficiency and we hope that Punjab will again be able to show to other States that it has found the means to improve the water level by using this money. The third is pest management. Again, the realisation about

the importance of this is not there because generally speaking, we have been able to control the pests. This year, some of the crops are badly affected, in fact, certain areas of Gujarat, even under BT Cotton, are experiencing certain pests. White flies are affecting crops in Punjab. While, it remains a major issue, we have done well. However, there is a lot which needs to be done. The fourth is improved farm practices. Again, it is a governance issue. There are several farm practices which have become popular in the last few years. Direct seeding of rice is one which uses much less water as compared to transplantation of paddy. It has been popularised mostly in East India but in Punjab it has not made any impact so far. Professor R.B. Singh may like to throw some light on this how we need to take these technologies to farmers so that they can produce paddy with much less water. System of rice intensification is another technique which is being used more in Bihar and Jharkhand than in the other States. Several benefits can flow to farmers provided our system of governance in the Agriculture Department and other Departments in the State governments can address that. The sixth issue is nutrient management. You would have all heard about the adverse NPK Ratio. In fact, the Ratio is going from bad to worse. One major reason is that urea continues to be much cheaper as compared to P&K fertiliser. In P&K fertiliser, the Government was able to de-control the price partly, as a result of which the market price is much higher, but in case of Urea, it continues to be highly subsidised. So we hope that with the emphasis on the issue of soil health cards, there will be awareness among the farmers about not using too much of Urea but I think that awareness has to be matched by rationalisation of subsidy on Urea. In fact, no other country in South Asia is giving any subsidy on Urea, we are the only country which is giving subsidy on Urea and it has caused distortions.

The seventh issue is agricultural insurance. In fact, if you read in the newspapers we feel as though in insurance nothing has happened but in fact you will be surprised that in several States, Rajasthan for example, more than 50% of the crop area was under insurance last year. Surprisingly, again not very well known, in Bihar, 40% of the crop area was under insurance last year. Some States have done better, some States have not done so well. Punjab and Haryana refuse to take insurance because they say our crops are not at risk, we are fully irrigated. Rightly so, to some extent, but they have not participated in insurance. A new agricultural insurance scheme is under submission to cabinet, we will hear it very soon. The idea is that the farmer's premium should be low and the scheme should be simple. So we are working on that. All the discussions are complete, the matter is going to the Cabinet and we hope that this time we will also be able to give good publicity to this scheme. Already there is a portal where if you go and enter your details about the location of your land- you know, the district, the tehsil, the village, the crop you are growing, and there is a calculator there where you can calculate what will be the premium. This has already been done, you could try that- I will tell you the URL at the end of my presentation. But Agricultural insurance is an area where a lot more needs to happen if we have to provide a cover to farmers from the vagaries of nature. But again, there is very serious governance issue here. Any insurance product needs to have a cut-off date for insurance. You know, you cannot take insurance for a disease once you have detected the disease. So, if you know that monsoon is failing, you cannot extend the cut-off date and say that

ok, farmers can buy insurance even now. But this is what we keep doing all the time. So, a lot of discipline has to come in governance at all levels so that whatever parameters of a scheme are finalised they are honoured, come what may.

This is a very serious thing and I hope that we will be able to address this. The next is credit support. We all read that 7.5 lakh crores of crop loans will be given but actually, there is a lot of distress among farmers especially in Vidharbha etc. and one of the reasons cited from time to time in various studies and also in the National Crime Records Bureau data is that the farmers do not have access to cheap bank credit and they have to take loans from middle men from moneylenders, and they pay interest rates which are as high as 48% per annum. It is said to be one of the most important reasons and yet we find that in large number of loans to farmers become bad debts year after year because of various reasons. One of reason is the failure of crops. Now, how to get over this problem? Actually, the exact extent of the problem is not even known. That data is not really in public domain because the data is not fully computerised. You are aware that unless the data is available, no policy reform can take place. In case of commercial banks, we do have some data through the core banking software. But the entire cooperative banking is outside the structure of core banking software. We are not yet there; which means that the health of district cooperative banks, how much of loans are bad loans, how much of crop loan is showing to particular district etc. is not really in public domain. So there has to be a lot of emphasis on computerisation of the operations of cooperative banks. Unless that is done, and unless that software is integrated with the core banking system software, we will never know. In fact, what some studies of NABARD have shown that a substantial part of farm credit is highly subsidised. The rate of interest is 9% which the banks are supposed to charge. The government gives a subvention of 3% so it becomes 6%. Then, the government has said that if you repay your loan on time, then you get another subsidy of 2% which means that the farmer pays 4%. In some States like Madhya Pradesh and Tamil Nadu, the State governments are subsidising that 4% also. So, it becomes zero percent. So, in any cases what has happened is that bank managers, again a governance issue, bank managers and unscrupulous borrowers, sometimes they collude with each other. A farmer takes loan, he does not use it, somebody will take a cut and the money is invested in an FD. So, the bank meets its loan target, the farmer earns some money as interest on his FD and the bank money is secured. But that is not the purpose of this scheme. So there are lot of governance issues in flow of credit to farmers.

Then, issue number 8 is access to information. This has substantially improved in the last ten years through various means of communication. In fact, we have a very successful 'M-Kisan' portal. Kindly visit that portal- if you write 'M-Kisan' you can reach there. 1.5 crore farmers are registered through this SMS portal. They can give their mobile number and they can be registered there. Also, there is a call centre number which you would have seen on TV. 'Kisan Call Centre' is a very successful intervention. They are operating in almost all the States. If you make a call there, your call will be answered in the regional language. The farmer can ask his query. I have visited many of these call centres. The UP call centre is in Kanpur. It is managed

by IFFCO. For the whole country, the contract has been given to IFFCO. It is a very successful intervention. We are now trying to develop some artificial intelligence so that based on the pattern of receiving calls, this has not yet been done-again, a governance issue, that on the pattern of the calls that are being received in that centre, an automatic message can go to the State Agriculture University or the KVK, that people from so-and-so district are calling for such-and-such problem. Which means that the State Agriculture University or the KVK should get to know about that directly from the Kisan Call Centre not through any other means.

Issue number 9 is livelihood and diversification. The government has a number of programmes. I am not going into the details. Lastly, and in my point of view, the most important issue is the market. We have seen year after year that the farmers' production continues to go up. In fact, after the Green Revolution, another success story which has come to us in the last 7-8 years is the availability of hybrid seeds for fruits and vegetables. As a result of this, last year, the production of fruits and vegetable was more than the production of food grains. For the first time, the production of fruits and vegetables exceeded the production of food grains. Most of this technological breakthrough has come from the private sector. Hybrid seeds of fruits and vegetables are almost entirely produced by the private sector. The government's national research system is almost out of it. Farmers have taken to it even though the seeds are much more expensive. As a result of this, the productivity of various fruits and vegetables has substantially improved. Availability has also improved. But the markets are absolutely imperfect even now. Unfortunately, media is urban-centric. So, in the media we only read about the high prices. There is not a single report, in the last one month, for example, that the potato farmers who stored their potato in UP and West Bengal and Punjab in cold storages, are receiving just 5-6 rupees per kilo. They are not able to recover even the storage charges. In fact, I was in Punjab last month and they said please fill up your car with potatoes and take it for free- we don't want anything, because markets are so imperfect. As we are talking, the price of tomato in Bangalore and other South-Indian mandis is just Rs.5, production cost is Rs 3.5, and the farmer is selling at Rs.5. Markets are absolutely imperfect and nothing will work unless our market system is reformed. We were talking about Karnataka during the tea-time. Karnataka is the only State in the country so far which has taken bold steps in reforming its APMC, the agricultural market. They have reformed their law, and they formed a new company in which State Government of Karnataka has 50% equity and the NCDX, the commodities exchange has 50% equity. They formed a new company and they have already computerised 52 markets in the State. With one license, a person can trade anywhere in Karnataka. So, with this model available before us, we went to the Cabinet, we had a very detailed meeting with the Prime Minister. He is such a patient listener- you can speak and speak and he would listen patiently. Sometimes we are ourselves surprised how much patience a PM can have. So, finally the government approved that we will set up a National Agriculture Market. You may have read about it in the papers we are working with the States, we have appointed Ernst & Young as a consultant. I think in another 3 or 4 weeks' time, our tender for the software will be out. We are persuading the State governments. Ten States have also agreed in addition to Karnataka to reform their laws so that with one license you can trade anywhere. Unless the market is reformed our research, our

technology, our water usage, seeds etc., nothing works. Unless you receive a remunerative price, where is the incentive for the farmer to grow? In fact, in the last 10 years or so, after the 11th plan and in the 12th plan, the government has done a good job (both State and central government) in promoting use of drip technology and green houses.

In several States, especially in South India, Karnataka etc., also to some extent in Punjab, Himachal Pradesh, you see a lot of green houses and climate-control cold chain projects. That is why the Indian apple is now available in May-June also. Also, as I am talking this year, the farmers of apple in Himachal Pradesh will receive 30 to 50 rupees per kilo, while earlier, 5 years back, they would receive just Rs. 10 to Rs. 15. This is because now there is 20,000 tons of cold chain capacity set up by one company, Adanis, in Himachal Pradesh. Other companies have also gone there but I am telling you one company has set up 20,000 tons of capacity. So, these cold chain projects have come up, green-houses have come up, if you go to a market, you can see Shimla mirch of yellow colour, red colour, green colour and so on. These things are being produced by farmers. But unless they are linked to the market, he is not going to get remunerative price.

I will end by saying that the key to everything is the market. If we can get the markets working well, things should be fine. Why has e-commerce succeeded? Because the market is so seamless. I place an order for a phone today, it is delivered to me in 3 days even if it is coming from China, because the supply chain is so immaculately addressed. In agriculture, the biggest challenge is this. And lastly, agriculture is a State subject. People expect a lot from the Central Government, because some policies are made by the Centre. For example, the MSP is fixed by the Centre, the fertiliser price is fixed by the Centre, etc., and yet, a lot of things are done by the States. Free electricity is given by the State- Centre does not say that you give free electricity, so, several States have given free electricity and ruined their finances. Similarly, a whole lot of other subsidies in agriculture are given by the States. So, we have to work together with the States, (easier said than done), but it is a governance issue.

I must thank the organisers, especially our ex-Cabinet Secretary, and Shahid Mahdi Sa'ab (we were colleagues), for organising this and inviting me. I hope there will be some opportunity for exchange of views. Thank you.

Syed Shahid Mahdi: Now, may I request our old colleague from FAO, with a very distinguished service record both in India and in an international UN organisation, Professor R.B. Singh, Padma Bhushan, to address us on the subject. Thank you.

R.B. Singh: A very good evening to all of you, ladies and gentlemen! Mr Chairman, Shri Prabhat Kumar ji, Shri Siraj Hussain ji, distinguished friends, I must say that what Prabhat Kumar ji and Siraj Hussain ji mentioned, I think you have covered most of the very important points, very little is left, but all the same, I will try to go through and see if I am able to catch new things, probably bring to your attention only those things that probably need more elaboration. Before I proceed further, I do not know how many of you are aware about a GoI policy for farmers. It was passed in September 2007 by the Parliament and it is printed and

published. Many people do not know about it, unfortunately. And this came from a report submitted by the National Commission on Farmers, which reads 'Serving Farmers and Saving Farming'. This is the title of this report. I happened to be a member of national Commission on Farmers at that time so I am aware of this, we prepared this together. This is extremely important for us- we should be able to refer to it at some stage. I begin by thanking the organisers for giving me this opportunity to be here in front of you.

As matter of fact, I thought I will prefer to show you some facts and figures with the help of a Power Point Presentation. As mentioned by Prabhat Kumar ji, in the last 4-5 decades, we have done wonderfully well in terms of production. Please see, between 1951 and 2013, food grain production increased by 5.5 times, horticultural production-Siraj ji, you mentioned- increased by seven times and today we have more horticulture in terms of total production than the food grains to 68 million tonnes. Milk production by seven fold, we are number one in the world, fish production increased by twelve fold, but while this happened, equally important for us to remember is that poverty and hunger percentages were more than halved. And finally, from ship to mouth situation in 1965-66, and from the chronic energy deficits to Food Bill that we have arrived today. This all happened like a symphony and this is what we are talking about, and the major components of this symphony, of this Green Revolution, were technology, services, public policy, farmers' enthusiasm, political will, and you see here on the right hand side, this was the time when Indira ji came and released the stamp on Wheat Revolution.

The last point mentioned by Siraj ji, the assurance of remunerative market was the driver of this success.

And this will be again the driver for all times to come. If you provide the remunerative market to the farmer and he or she will produce whatever you name. But we face an enigma in India and this is a typical Indian enigma- despite the high growth rate of 7 to 8 percent, 1/4ths of the world's hungry and poor numbering about 200 million have their homes in India. 40% of our children are malnourished. 1/4th of the world's small hold farmers are Indian farmers. This is a very interesting figure for us to realise. But equally important is that 50% of the small holder marginal farmers are poor and hungry. So, those who produce food for us are the ones who are hungry. This is paradoxical, enigmatic. Equally bad, look at the disparity, the inequity which is the greatest depressant of development. Farmer-non farmer income gap is 1:4. 50% of the population of our country, if that is the farming community, and the remaining 50% the non-farming community, the average income gap between the two is 1:4. It's a huge inequity, and inequity breeds inequity faster, and is a depressant for development. A nation of youth- we say that 60% of our people are below 65 years of age, but also remember we also have the largest bulge of unemployed and underemployed youth. It is a demographic disaster. Can we convert this disaster into dividends? That is the question in front of us. A large number of them live in rural areas, they are sons and daughters of farmers. Agriculture, as Prabhat ji mentioned, is 2 to 3 times more effective than any other sector in alleviating agrarian crisis. Investment in agriculture is rather low compared to the people's face that agriculture has to serve. This is far below the expectation. This is why if you look at the Indian situation and the world situation,

despite the millennium development goals which we were able to meet to a certain extent, the Secretary General of the United Nations, Ban Ki-moon, in 2012, mentioned- can we impose a ban on hunger? He said yes, we can and that zero hunger is the challenge of the world. He is 67 years old now and he said that in his lifetime, if he lives another 20 years or so, or more than that, hunger will be eradicated from the world, this is what he wishes. And it is not that what he is saying is a wild chase. It can be achieved in a factual way. It has been done by President Lula in Brazil- he did it in 10 years' time. He wiped-off hunger from Brazil. And present Director General of FAO is a Brazilian, José Graziano da Silva. He was in India and met with the Prime Minister about the zero-hunger campaign, last September. Hopefully, we can do something on similar lines. Since our strategy is to reach there, there is diversification-our livestock, our horticulture, pulses ,I feel we have no reason to import pulses, we have no reason also to import oil seeds, we can produce enough of those if really organised-governance issue, priority identification issue. If we want, we can do that. We have huge shale gas - somebody was mentioning the extension gap- the transfer of technology gap- we have research technology outcomes, but those have not been translated in action. They have not alleviated poverty. Natural resource management, it was brought out very clearly by both the speakers, we just cannot go ahead the way we are doing our business today. More and more from less and less. We have diminishing resources. And that can come only from efficiency- the input-output ratio. The benefit-cost ratio. All these are the factors that should guide us, which probably we are missing. The value chain today is very important, what is the good of it if we have about 40 million tonnes of stock piled up and about 4-5 million tonnes is eaten away by rats or rots. This is painful and should not be allowed to happen. Probably there is a need for post-harvest management. Market linkage will come so many times, you cannot miss it. Climate-smart agriculture- we need to have it for moving forward in today's times. I mentioned there are triple wins of the climate-smart agriculture. What is the number one win? You have to have a smart, accelerated, sustainable productivity growth. Two, you have to have resilience, that is, adaptation. Three, mitigation. These three components are the triple wins of smart agriculture. Are we doing this? You have to do all the three together. Are we doing it in a convergent manner? This is a governance issue.

A convergence is needed between the four ministries. If you have to have climate-smart agriculture, I think this is the time to converge. There is no other way. Then, the strategy should be that you make equity and inclusiveness as a part of your working, for the same input, the output would be higher. With the right social protection, your progress will be much better. Even the PDS system suffers from governance issues. Siraj ji mentioned about how the credit really goes to fixed deposit of somebody else and some subsidies go here and there. All these are governance issues. We may have things on paper but there are many governance issues in some areas. We cannot go very far before setting our house in order.

Agriculture research, education extension, must be demand driven. We don't have to be romantic in doing research. There must be actual identification of the real facts. Therefore, we need disruptive innovation which beaks the usual way of doing business. We have to do

business as usual and therefore, I request Siraj ji, can we impose a system where we can have a very strong institution for monitoring, evaluation, accountability, and impact pathways analysis. Can we do that? We have not done it, we keep talking about it, but very little has been done. Governance issue. Trends in production of cereals if you see you see the blue lines, the trend is tremendous. But you see the pulses analysis creeping on the ground. You see, this great milkman of this country, of the world as a matter of fact, in fact, how a single person's dedication, how the power of cooperation, cooperatives, can really make a difference is an excellent example here in this country.

The white revolution came through the vision, enthusiasm, leadership, and real focus of the leader you see here. And can you believe that 15 million farmers, mostly small holders, are the ones who constitute the Dairy Cooperative. India became the world's largest dairy producer, and per capita dairy consumption is at the world's average level. I feel very strongly that if we have to eradicate poverty, hunger, malnutrition and under-nutrition, livestock sector must get a much higher priority. Look at the flow of credit to the livestock sector. Again a governance issue. If you look at the contribution of livestock to the total agricultural economy today in this country, about 30 per cent of the total agricultural output is in terms of value from the livestock sector – how much of the credit goes to the livestock sector? – very very lopsided distribution of credit and flow of support to the livestock sector. Again, paradoxical. Something which is making a difference and you are neglecting it. Again a governance issue. Of course you know the beauty of this – most important, as we go along it will be equally important, that when you develop the climate for smart agriculture: about 15 per cent of the greenhouse gases are emitted by animals, and you should be able to manage that as we go along with increasing the production, intensified production, of livestock.

Next point which many of us may not be aware of, please see that the Prime Minister says Make in India, here is something which is typical to India: if you look at Kamdhenus – local breeds of livestock – particularly your cattle, they have a mega-antibody not possessed by Jersey or Tharparkar. The Jersey is different from Tharparkar, Hariana, and Surati, and you will find that mega-antibodies, on which you can put multi-vaccines in one antibody, inject and makes the difference for multiple diseases; not found in other places, our biogenetic diversity is so rich here in cattle, you can harness it, you can become the champion in the whole world – Make in India. You will help the whole world in terms of health. Livestock-based human health – you can really make a difference. The reduction in poverty by livestock is so immense – please see in some marginal farmers – if you own one cow or one buffalo, if you own a cow and a buffalo, look at the linear decrease in poverty and hunger by owning livestock, an amazing impact.

Horticulture, likewise, we have been doing well, and we continue to do well. We must maintain the 5–6 per cent growth rate in horticulture. Same way in aquaculture – amazing growth, a tenfold increase, and this growth has to be maintained particularly in the coastal areas and in the watershed management areas. India is one of the richest centres of biodiversity, a mega centre of biodiversity, in the world – please know what you are having, what you possess – know your treasure, so that you can go to the negotiation table and can negotiate with that treasure. If you

don't know the value of your mega-antibodies, of your Tharparkar and Haryana breeds, you cannot go and negotiate in the world market or WTO. You must know what you possess, therefore, characterisation of this wealth of India is so very important. Evaluate, conserve, through use – this availability. Of course, India is one of the countries which will be hit the hardest by climate change. Please look at this table – the projected change in agricultural productivity from climate change by 2050 is the highest in the world for India. Look at the red line – 25 per cent would be the decrease in productivity if we don't do something, if business as usual goes on, by 2050 there'd be a loss of 25 per cent in agricultural productivity in India. This is so huge – no other country in the world, mind you, has this high degree of depression in total productivity due to climate change. So, India has a very special case. In the same way, you look at the water availability of crop production at risk by 2050, look at India, Central Asia, the Middle East, North Africa, these are the countries which are going to suffer the worst because of water deficit. Our soils are not only thirsty but they are hungry, and getting hungrier every day. Look at the number of micronutrient deficiencies increasing from 50 to 2005, and the number more or less today is one more added to it. So you can see the way micronutrient deficiency is increasing. Look at this increase – it is unbelievable. Sometimes we distort our governance, our contributions through mandatory help here and there, resulting in robbing our soil. The nitrogen-use efficiency through urea-use efficiency is going down, linearly going down, can you believe this is the input use efficiency of urea in India, which you see is amazingly low and declining. Also, look at the per capita water availability in India – we are already in these water stress zones, more or less reaching there – and you can see in between these two lines, the water stress is 1700 cubic mm per capita, water scarcity at 1000, and in the year 2011, we are already in between the two lines. We are reaching a crisis – water crisis.

Similarly, there is a change in the energy requirement and use in agriculture. Please look here. You can see in green part of the histogram, the bar on the extreme right, and that green part is the tractor. Mechanisation has been increasing. Look at the draft animal decreasing likewise, look at the human force decreasing in agriculture – in other words, the animated energy is going to decrease, has decreased, and will further decrease. Mechanisation should be the way. Energy management should be the major issue, which we should not neglect, and therefore if we have to proceed and if we have to manage all these things, please look at the yield gaps which I have just mentioned, particularly from the simulated average yield to the actual yield, if you look at it, you will find we have 50 per cent to more than 50 per cent yield gap. Even if we don't do research, if we stop research, and put our resources for technology transfer, we should be able to transfer 30–40 per cent of our food requirement. Look at our efficiency – this is called the Total Factor Productivity (TRP) – if we allow the kind of TFP growth we have today in India, which is almost half of that in China in terms of percentage, and likewise even in Bangladesh the TFP is 75 per cent higher than that in India, and if we continue like this, we would be able to meet only 59 per cent of the total demand in India by this trend. We would be left lurching behind. However, if we see, something which has to be brought into, look at new varietal developments – Siraj ji mentioned about some varieties which I think are equally important to realise the genetic alchemy of these distresses is the way forward. In a big way, it can be really

managed. Look at the new variety of Pusa Basmati 1509, compare this with the 1121, the most important and the most exported variety in this country, but today, 1509 is picking up. It has a reduced height, which can be used in Punjab, Haryana, western Uttar Pradesh, for raising a full crop of wheat. Therefore, by doing this, you save water, you take cropping intensity increase, you take a wheat crop just for a song – you are getting it free! So, this kind of genetic alchemy is the way to proceed, thinking is to be done. Look at India – those green patches you see are the varieties which were submerged for about 17 days, but they came back and they produced a very good crop. So, if you have flood – (either you have drought or flood) – you can really pyramid those chains together for climate-smart agriculture, and you will be able to have flooded rice or rice under flood conditions to produce a crop of 3 tonnes to 4 tonnes per hectare. Likewise, quality seed and propagation, planting material is the way in horticultural crops, as it is mentioned, this is the foremost way to really quality seed is based on genetic alchemy, plant breeders plots to farmer's field, if we allow the flow of quality seeds, we'll be able to meet the requirement. Private sectors' role and the public-private sector cooperation, therefore, becomes immensely important. Protected horticulture is so very important. Time may not permit. Solar power, remunerative crop, I have given the title solar power energy – you can harvest it, harvest the sun – and you are able to harvest it time and again and with that harvested sun you harvest the crops. And therefore, this is how we have to proceed.

Market, again I said, inclusive market oriented development, is the way ahead, you should be able to harness the markets in higher value agriculture, you will be prosperous. As you can see, the Y-axis is prosperity, the X-axis is inputs and market opportunity, with market opportunity, managing risk you just have a progressive growth. The Prime Minister said Saansad-model village programs, each Member of Parliament should be able to adopt a village, if that be the case, can they develop a climate-smart village? Yes, is a distinct possibility, could be done, has been done, and every village could become a climate-smart village. And therefore, climate-smart technologies are available – there should be index-based insurance under those conditions, climate information services, local adaptation plants, all this can result in climate-smart village, which I think today combines very well with the thinking of the Prime Minister and the Saansad-model village program. These are the ways by which to go for food security and climate change conversions. Mind you, whatever we do, we must be able to minimise the trade-offs and synergise/increase the synergies among the different ways of climate management. Small hold farmers, it has been said time and again, we don't want to take much time, they are small but their contribution is huge in terms of cereals, fruit, milk and vegetables. How much is the contribution of the small holder. I want to spend a minute here on this slide – this is the challenge of today's farmer. The first question he is asking today is that will I ever get my C2 plus 50 per cent of C2 for my produce? What is C2? – the cost of production, which includes this X, Y, Z. If that be the case, are we doing this? The government has announced this policy – are the farmers getting it?

This is here in this book; please look at it. I think we can discuss it. The facts are there. And if that be the case, we should think about it. The farmer is expecting, he talks about it. Whether

the inflation or deflation, whatever happens, we talk of inflation, market volatility and so on and so forth – we also had deflation talked about a few days ago. If that be the case, I am always the loser, the farmer says I am always the loser, whatever you do. Can we stop it? How to go about it? When will I reap fruits of new science, biotechnology, I am indebted and distressed – mention was made about the kind of interest rates we charge. Then on the other side it is said, soil has lost its physical, chemical, biological characteristics – my seeds are not germinating the way they should germinate – the farmer is asking where are my traditional seeds, which we conserve and depend on; where is the groundwater, my well is dried? Can we have jal, jal yojana? Jandhan we have. Janjal yojana? The point was made as to who is exploiting water, how much is being exploited by whom. This is a question that should be asked – social equity and use of the resources. Then finally the farmer says, can my welfare be built on solid ground, not on quicksand? If that is the question asked, are we prepared through the governance to answer this? Friends, it goes on like that, trends of farmer suicides, income are interrelated. The demand driven disruptive innovation – Atal Innovation Mission – if the points are taken into note – I will only say, integrate information, priorities and needs of farmers in the design, development and delivery of the farmer and consumer preferred products; knowledge and services, these have to be done together, which is why it will be demand driven innovation. Other things, institutions, infrastructure, organisations must be responsive to these.

We'll be finishing with the Millennium Development Goals – the goals in which we have failed, the numbers that India has not been able to achieve, the MDG 1, out of eight goals MDG 1 is most important – deals with hunger and poverty – extra effort is needed to meet the Sustainable Development Goals, which has 17 goals, the first three of which are very important – poverty in all its forms, everywhere, and 50 per cent of farmers are poor; 50 per cent of farmers are also hungry – achieve food security, and improve nutrition and promote sustainable agriculture, insure healthy lives and promote wellbeing for all ages, that is a lifecycle approach to nutrition. There are additional thrust of the SDGs – I just want to read the red one for you: only very recently NASA gave a report, and NASA predicts that 3 metre sea level rise by 2100, and that will mean an irreplaceable land loss. If on the east coast or the west coast, 3 metre sea level rise, how much land will be gone? In India, with shrinking resources, if this prediction of NASA is correct to any extent, please be prepared – can we stop our usual way of doing agriculture? BT Cotton, biotechnology, we suffer from policy paralysis for biotechnology. A bio-economy, a green economy, the interaction between genomics, processing and bioinformatics is the need of the day – hardcore science. Main policy options, then, would think of the new normal – we have a new normal. What is new normal? It has an integrated congruent outlook, and action for food, nutrition, income, livelihood, education, sanitation, hygiene, and health security. Connect all the announcements – Janadhan to Digital to Skill and so on and so forth – nutrition at the centre-stage of the government development, strong agriculture research education extension for developing comprehensive livelihood security if you want to achieve, dynamic... point was made, Siraj ji mentioned unless we have database how can we plan; the last point is that. Sound dynamic database, monitoring evaluation based on that database, and accountability to be fixed based on that database, impact pathways, effective and transparent social protection flows – this

is a shift needed for green revolution to evergreen revolution by greening agriculture and following a system approach. Friends, I would like you to have a new vision for agriculture, for the next 5–6 years, if you can do that, and the Secretary, Agriculture, is here. Can we increase our productivity by 40 per cent in agriculture? Can we? Many countries have done it, and shown it can be done. I am talking of productivity; I am not talking of yield, per se – there is a difference between the two. Can we reduce our rural poverty by 30 per cent? Can we reduce hunger by 30 per cent? Can we reduce our emissions of GHGs by 20 per cent? If we cannot, tell me why. If we can, have some target – there are ways by which we can measure – SDGs have identified the steps that we can take. Friends, a hungry child and distressed farmers cannot wait. If we recall, the epigenetic impact of deprivation – (deprivation breeds deprivation), a stunted child breeds a stunted child, it gets channelized in his or her genetic system – this is called epigenetic change. If that has happened, are we going to condemn generations after generations to be dwarf? It's a question before you. I feel that we should be able to identify that the recommendations by the National Commission for Farmers have been, in one way or the other, adopted by several of the concerned systems, including our own present government and the former government. It must be our national endeavour to continue doing that thing. However, if you want to do that, how can we bridge the serious implementation gaps – the governance gap, the action gap, the delivery gap? These are the deficits which must be filled – unless those are filled... We must act now and follow an agreed implementation-monitoring-evaluation-accountability pathway, or else we will be blaming each other and not moving very fast. And towards that, a prosperous India, as Mahatma Gandhi said, which I think sums up everything: we must be able to judiciously blend, if we have to achieve a prosperous India, through a zero hunger programme, knowledge with character, combine knowledge with character; commerce with morality; science with humanity; politics with principles – that may be the difficult part, but still it is most important! My dear friends, ladies and gentlemen, if you want to have sustainable development towards a prosperous India, not see a hungry child, or a distressed farmer then that's the way. Thank you very much!

Syed Shahid Mahdi: I think this has been one of the most substantive evenings of the series that we are having on this, and we are very lucky to have two speakers full of substance, facts – in fact, too many facts for one evening to absorb. The image that you showed at the end is very telling because now Gandhi's face is disappearing, only see the specs. I must say that it has been a privilege to listen to both Siraj sahab and my old friend, R.B. Singh. It has been so enlightening, so factual, so coherent and so relevant for all our concerns here. And I was really impressed by the last image and the last remark that you made. See, we have lived our lives, but we have to think of the future also, and when you say that a stunted child will leave a stunted trail in the future, that is I must say an intimidating image, and this is what we have to prevent. In fact, I am glad that although this business of farmers – you see, agriculture attracts the attention of media only when there is some farmer suicide – and after some time, we become, we the urban, aspirational class, this is the new terminology; it's very much in vogue. Just for

one evening, one debate, and then the whole thing dissolves. So it becomes, in my view, everything should converge to prevent these human tragedies, to prevent the largest percentage of stunted children, you see here, and to protect our future generations from the degeneration of the genes also.

R.B. Singh: Yes, it is called epigenetic change...

Syed Shahid Mahdi: It is happening. I will not try to sum-up because it has been so much... But one thing I would like to put right to the beginning. Agriculture sector has lost its visibility, which used to be there, I think, 15–20 years ago. Now we talk of so many other things, but not so much about agriculture... So, it is not in our consciousness, not so much the centre of our concern, although I think everything is based on what we produce and what we consume. I do not know, Prof. R.B. Singh, whether the so-called Swaminathan Report was published, what happened to it, etc. because was it ever discussed... I have heard Mr. Swaminathan saying that it was not even printed.

R.B. Singh: It is the National Commission of Farmers' Report, of which Dr. Swaminathan was the Chairman. Probably if you all recall, this was constituted with the NDA government in 2004; the NDA government didn't last, then the UPA government came, and the UPA carried it through, and every 6 months there used to be a presentation by all of us. We were three members of the Commission, Swaminathan was the Chairman, and there were four temporary members of the Commission – seven of us – and we made the presentation to the Prime Minister Manmohan Singh ji. Sonia Gandhi was present at quite a few of those presentations, but always the Agriculture Minister, Pawar sahab, was there all the time. This was also put up to the Parliament, and was adopted by the Parliament, and gave a National Policy for Farmers. It is available on the website.

Like you said – agriculture has lost the glamour, the visibility. We kept writing for at least four years. I kept saying this part, this part, here and there. As a matter of fact, when the BJP election campaign and the manifesto was issued, quite a few things were verbatim taken from here. More or less, almost verbatim. Now, a few things I do find – I read to you the last recommendation. I am reading from here, so I have the last recommendation I read to you. The Ministry and Departments of Agriculture, both central and states, may be structured, not only renamed. To become Ministry and Department of Agriculture, farmer's welfare (this is in this report, here)... this is what we have now.

Syed Mahdi: The very fact that the name of the Commission is not Agriculture Commission but... it is a Farmer's Commission...

R.B. Singh: The Commission was the National Commission on Farmers and the policy was National Policy for Farmers. It is made clear. And there is a foreword by Sharad Pawar ji... you look at the website. Here are the details... What I am saying: the pricing, the renaming, it has many guarantee acts; the Food Bill, it is mentioned to have a Food Guarantee Act, have a well-defined food security based on home-grown food. I am reading from here, what is in Food Bill,

same words: Food Bill based on home-grown foods. This is exactly the word. I read next one: National Food Security and Sovereignty Board may be constituted. I read from here: Agriculture Risk Fund. I read from here: a Market Price Stabilisation Fund – the government has now a market price stabiliser. Risk Fund is also mentioned. Like that. You name it. Most of the things which I am mentioning are here. It's alright. I mean you can have these names, these declarations, but what is required is a roadmap, an action map – from here how do I reach here. If I say in 5–6 years you do this much, is it feasible, not feasible? Tally also: match your resources, institutions, infrastructure; if infrastructure has a mean gap, work on that rather than going on xyz. I think this is how the whole planning has to come, programming, execution, governance has to come. So, what I am saying... Sir, I will urge you, I will recommend and pray that please get a copy. If not, I will be happy to send a copy to each one of you.

Syed Mahdi: I overheard Dr. Swaminathan saying that the Report has not even been printed, but anyhow.

R.B. Singh: No. no. It came out as early as 2006. It was placed before the Parliament. Parliament cleared that policy. 2007 September is the date of release of this policy in black and white. This is the date when Pawar sahab signed it.

Speaker: Sir, one of the issues which has been under lot of debate is what should be the MSP. Previous government could not resolve it, new government is also not meeting, if one would say, the perceived expectation. Now the question is, the manifesto of the new government said that we will provide 50 per cent over the cost of production. Now, what will be taken as cost of production? Is it C2 or A2 + FL? So, in common terms, in easy language if I say, many people think that if C2 + 50 per cent is to be given, then wheat price would increase by 300 rupees. So, that is the net effect. So, the question before the government is whether that increase in price of 300 rupees, what impact is it going to have? So, if wheat is 13 rupees, should it become 16 rupees. As I was explaining to you, already in the case of corn, our MSP is more than the global price – so, the price thing is so complex, there are implications on the entire economy. The price thing is quite contested by different people, but having said this, the increase in farmers' incomes come not only from price but also from increase in productivity, which Prof. R.B. Singh mentioned. In case of vegetables, you know, there is no MSP – vegetables do not have any MSP – and yet, farmers have taken to very expensive hybrids; Sir, *kitne rupye hota hai seeds? 300, 400, 1000 rupye?*

R.B. Singh: It depends; hybrid seeds are generally four to five times costlier than the normal seeds. You know how the BT Cotton seeds were priced, but with that quality seed, the farmer makes 25–30 per cent simply because of the quality seeds, and he has a mind to pay extra. Net profit through quality seeds could be as much as 50 per cent, also.

Syed Mahdi: Now, after these remarks, I think the floor is open for questions and discussions. Please identify yourself and make your questions brief and precise.

Speaker: I am B. Mohanty; I have done research on food crisis and its demographic impact in nineteenth century India. So, the subject interests me. Now, in this excellent presentation, two presentations, we focussed more on the institutions, governance, but the agents we did discuss but not directly. Now, what telling statistics you said, the unemployed youth, but agriculture is languishing, can agriculture absorb this unemployed youth? We already have surplus labour, but our youth, do they want to get employed, the kind of education they are getting, they don't want to stay in the rural areas, and the agriculture is managed by women and old people. (Syed Mahdi: Right; feminisation of agriculture) Yes, so what does the government offer to women? – we don't have land rights. Thank you.

Q: I have one more point. I also saw lots of insights to problems of agriculture. Are we taking some feedback from the traditional knowledge of the peasants? Thank you.

Syed Mahdi: No, this traditional knowledge has been inventorised, and a big compendium has been produced.

Q: I must apologise that I came in a little late as I was held up. I have been interested in the subject for several years – for some years I was in the Ministry of Food & Agriculture; from 1963 to 1967. Some very very major problems of food were tackled at that time. C. Subramaniam was the Minister, and I was the Financial Advisor in the Ministry of Food. I have two issues all the time, which are very puzzling to me. First, the Food Corporation of India was setup at that time, when I was there, my initiative, if I may say so after so many years have gone by, we have not been able to cover up the problem of food storages. A very very sad thing that this should happen and top priority should be given. You procure food, MSP, all that, and after that you let the food rot. It is absolutely unacceptable anywhere in the world in my opinion. Secondly, I heard some wonderful word where you said, grow food at home. I would say that we should Make in India, we should change it to Grow in India. We should have Grow in India campaign – we have lots of places where we can grow lots of things, which are lying unutilised. We should increase the varieties of products and grow in those area where at the moment nothing is growing. Still, it is possible to cultivate those areas as have been seen all over the world. Thank you.

Q: I would like to make 3–4 small points to Shri Siraj Hussain. The first point is that I think the foremost problem of Indian agriculture is that as 62 per cent of agriculture is rain fed, is the problem of harvesting of water. Many blocks are quite depleted, so the foremost action that needs to be taken by the government is the recharging of the soil, that is water harvesting. This can be done quite easily, in Gujarat, Andhra Pradesh, and Madhya Pradesh also, under NABARD scheme by raising small farmers. In Gujarat, there was in two years only an increase of 1 metre in the level of water. The second point is that we cannot increase the income of the farmer without increasing more activities like horticulture and other farmer-related activities. The third point is very important, that the extension machinery working the fields these days are very poor, a lot of emphasis on the extension work and intelligent supervision is not at all there. The fourth point is that the average holding in India of all the farmers' families is 2

hectares, approximately 5 acres ... 12 hectares, the ceiling for the agricultural holding a good farmer 10 acres of land. These days, if the farmer doesn't till his own land, he does not carry out the agricultural operations himself, and lets out the land, then the average income per acre is only fifteen thousand rupees per annum. So, in 10 acres he will receive only 150,000 annually, that is, Rs. 1.5 lakhs, which means only twelve thousand rupees a month... (Speaker interjects: What is the question?) The question is that his earning is so poor, the biggest farmers are earning only Rs. 12,000 a month compared to the salary of a Class-4 employee in a government organisation anywhere, so we must increase the MSP... the price of cereals and other things... there should be no subsidisation.

Q: Prof. Mahdi, you raised a very important point, which was completely missed by Mr. Siraj Hussain and Dr. R.B. Singh, and this is about farmers' suicides in thousands in many states. Any talk or recommendation or policy is meaningless if it does not cover the problem of farmers' suicides, and both great speakers today did not do a good job. Another thing is they talked about green and white revolutions – Green Revolution of 1967, that means close to fifty years ago, and it has still not been repeated. That means it was all fake and it was false propaganda of Agriculture Ministry... you should not take this in bad light. I am very honest and sincere with you. I do not want to offend you... People say in foreign countries that Green Revolution was just good rainfall for three years when India did not import food grains. Whatever comment I have made, you make your answer and comment on that.

Syed Mahdi: Can I just dispose of whatever you are saying: when we had started, we had 50 million tonnes total production, now we have 250 MT. I still remember the day, I was in Rome with Agriculture Minister Barnala when the sensational news spread that this year the Indian import is going to be zero. So, from food basket to zero import and all these things, that is the reply to your question, and about the falsehood, rumours spread... Of course, despite all this, the per capita food availability has been low. Despite all this, the hungry child, which was mentioned, is there. Those are the aspects, I think, that will also have to be taken care of, but that is not exclusively the responsibility of Ministry of Agriculture or agriculture research. There are so many other policy issues which will have to be brought into play.

Q: My question is to Siraj sir. The incidents of farmer suicides is common knowledge nowadays; every year it is increasing maybe because of the spectre of large-scale drought. Is there any mechanism or policy in place in the government to steady the condition of the soil in a particular place? What crop will suit it, and to enlighten and advise the farmer to act accordingly and to give implements and tools accordingly to help him even before the disaster takes place, and he commits suicide? Can he be helped that way? So, is there any policy, because if the soil is of no use for agriculture, can he be motivated to surrender it for better purposes to the national growth?

Siraj Hussain: *Aapki ijaazat ho to pehle main kuchh kaboon. Sir, humaare yahaan ek Urdu mein kahawat hai, 'Zamaane khalq ko naqqarey Khuda samjho' – to ye jo aapne farmaaya na storage ka, main ye arz karna chaahata hoon sab ke saamne, poori zimmedaari ke saath, I was CMD, FCI for two years, and*

whatever is right or wrong, I am responsible for that. As of today, against the popular perception, the grains are stored very well by the Food Corporation of India. The losses of FCI are not even 0.5 per cent. I do not know how people have come to this conclusion that 20 per cent, 30 per cent, is wasted, and even highly educated people quote totally unreliable data. The thing is that the accounts of FCI are audited every year, they are put up on the website – the losses are less than 0.5 per cent, number one. Number two, in order to attract investment in storage, Sir, the previous government, 2008, Mr. Nand Kumar was my Secretary, I was the Joint Secretary, we came up with what is called the Private Entrepreneurs Guarantee Scheme. For every district of India, the storage gap was calculated, based on the demand of PDS, the production, the procurement, etc. For every district of India, the storage gap was calculated. Then bids were invited from private entrepreneurs for setting up godowns, and the government said we will give a ten years guarantee – initially we said five years, which was increased to seven years, and then a political call was taken by the Finance Minister, who is now the President of India, who increased it to ten years. So, ten years guarantee was given. Sir, you'll be happy to know 15 million tonnes of capacity has been created in this country, and today if you talk to FCI, they are not worried about food shortage. They are saying that CAG sahab is going to ask us that you created this capacity, but today you do not have grain to keep it – how are we going to answer that? So, the thing is that today there is no storage problem with India. For FCI, there is no problem –yet. I must confess that in eastern states – Bihar, Jharkhand, West Bengal, Assam – Sir, because of governance issues... actually the topic for today's discussion is not agriculture; at least I did not understand that it is agriculture, the topic for today's discussion was *sustainability* in agriculture. It is not even written here, it is sustainability. So, that is why we did not discuss farmer suicide and all that. The point is that in eastern India, because of a variety of governance reasons, you advertise that you need a godown of 30,000 tonnes in so and so district – no bidder comes out! Seven times the Government of Jharkhand has advertised, and yet there are no bidders; Bihar also same situation, so what do you do? In Punjab, Sir, 5 million tonnes of capacity has been created. CNP is there, because in certain districts of Punjab, the choice is you create storage capacity in Punjab, and totally abolish the CAP storage – you know, what you see in the open. But the thing is, I keep giving a simple example: if you have a car which has cost you, say, ten lakhs, should you be willing to pay three thousand rupees per month for garage? Or if you think that I am not going to lose my car to rains, I will only spend 500 rupees – that is the choice before government. So, should the country build so much of storage capacity in Punjab and Haryana – that entire grain is kept in covered godowns, but there is a cost to it and the cost is not only money in rent but also you take agricultural land, Sir. So, the government made all that, and that is why I said that for every district the storage capacity was decided, the idea was that grain should move out of Punjab, within a year it should move out of Punjab. So, storage problem, except in eastern India, largely solved. (R.B. Singh interjects: What I had in mind was, there is no lack of appreciation of the good work that FCI has done. The totality in this country, with the total capacity available, but I am talking about the sector problems that arise in this country, food is not properly being stored, that was my point; secondly, I wanted to make a small suggestion that the local bodies, the Panchayats, the

District Council, what has become the main stay. In 1994, the government made an amendment to the Act, every state government will look into this and develop its institutions, but these are the institutions which will take care of the district problems, district council, state council, panchayat council... I would say that except for two or three states, it is really a languishing area. It has to be developed, because the cooperation of the local people...

Siraj Hussain: You see, now the country has realised that government should not be setting up storage with its own money. So, there is no need for any panchayat or block or any government body to set up any private sector... Sir, you can monitor a godown located in Punjab from here. I can show it to you. The technology has advanced so much, and our people have done such a good job in Punjab and Haryana, several companies have come – Sona Enterprises, who are building this road to Punjab – so, there is no need for government to get into this. Sir, what has happened is there was a time when private sector was not efficient enough. Now technology is available. The new route structure of godowns in Punjab, Sir, they use this sheet which was initially imported from Korea, now made in India, it reduces the temperature by two to three degrees. Also, if you go to Chandigarh, kabhi dekhiye, uski chat par ek pankha laga hota hai – wo pankha automatically temperature kam kar deta hai. So, we have done very well, actually.

Now, about farmer suicide. I will answer only this one and then I'll leave it to Prof. Singh. This is a very serious issue, but somehow it gets politicised. The thing is that some 60 per cent of our farms are less than 2 hectares. And this number is only going to increase with fragmentation of land. This 60 per cent will become 75 per cent, you know, in 20 years' time. So the thing is that a farm size of that level, especially in rain-fed areas, is not viable in many situations, and the level of aspirations is very high. So what is happening is that people are borrowing money for marriage, for agriculture, for whole lot of other reasons, education of children, etc., and they are not able to repay those loans. If monsoon fails, how will you repay. The major reason for farmer suicide is this. But it is not a one-off problem. It is related to water, it is related to market, it is related to availability of credit, it is related to technology of farming, it is related to global prices – Sir, last ten years, 2004–14, very good year for farming because the global prices were very high – what do you do; 2013 corn prices were \$300 approximately per tonne; today it is \$160. *Aap dekhiye, Sir, kya karega farmer, aapka corn export hin nahin ho sakta hai. Ye baat hoti hai na ke MSP badha den, kyunki aaj mujhe mauqa mila hai, aap loagon ko nahin milta ye mauqa baat-cheet karne ka, aur main bhi chhutti le kar aaya hoon, apne Secretary ko bata ke – Mantri ji baar baar phone kar rabe hain,* but I'm sitting with you, what can I do! *Hota ye hai, ke MSP ka bhut link hai. Farz kariye ke make ka MSP aur do sau rupye badha hua ho, to aur uncompetitive hain.* So, what needs to happen is introduction of more technology, better use of resources, better water technology, and better marketing.

Syed Mahdi: I have just one more comment, which is not expert comment but in a way little sort of emotional one. We have worked out the factors which are leading to the farmers' suicide. Saying that most of it is beyond our control, but can we work on it backwards to see the measures that can prevent the farmers' suicide, which appears to be perhaps a typically

Indian phenomenon now. I don't hear much about this kind of suicide in other countries. Prof. R.B. Singh, please comment.

R.B. Singh: Friends, few of these things – feminisation of agriculture, I thought, is so very important, increasingly it has to be addressed. Two, there are very specific directions for technology generation, particularly suited for the women farmers. The problem is the extension and adoption of those technologies by the women farmers, and this is where the extension gap which has been mentioned comes into awareness, training, knowledge and credit insurance. All those factors plough into that. Therefore, I think this is one thing. The known facts, known technologies, known ways of doing business should be really conveyed to the women farmers. A point was made as to the use of grassroots institution – panchayati raj, panchayat, – here again, I read from here: Article 243G of Schedule XI of the Constitution suggests, and what we have said in this recommendation, Panchayats with responsibility for agriculture including agricultural extension – if such problems are disregarded, gram sabhas and panchayat location specific problems can be attended to speedily and effectively by those people at the grassroot level. Here is a very explicit detailed involvement of the grassroot institutions and panchayats and gram sabhas, particularly to help the women farmers. It says, there are 1.5 million elected women members in panchayats. Can they be empowered? And there is a recommendation that there should be a Gram Panchayat Mahila Fund created to address the gender specific need of the women farmers. What more explicit could be here: to help the women farmers, particularly when we find that this is not happening today, and gender divide is most apparent when it comes to women farmers. In addition to the construction and modernisation of the warehouses, a very important decision was taken – warehouse receipt, and the receipt could be used as collateral to draw the credit, and so on and so forth. This is a big incentive. But what happened was the warehouses were not built where they should have been built. They are on the roadside in the towns, close to cities, and so on, but the rural areas, the off areas, the difficult areas should have been the one, probably infrastructure to take those things... The farmer is encouraged to come in there; the warehouse receipt itself won't encourage the farmer.

A question was raised about traditional knowledge. There's a tremendous compilation, where I mention that know your biodiversity. You look at the medicinal plants, you look at the richness of that knowledge which exist in the rural areas. Those are compiled. I am sorry, the awareness is missing and generally people are guided by foreign statements. Be guided by your own statements, be guided by these hard facts, be guided by what is real – had the Green Revolution not been there, think of the hunger, think of the people dying of hunger. Imagine what could happen then. Think of the deforestation which would have taken place – about 50 million hectares of land would have been wasted, gone out of agriculture, gone out of forest, had there not been Green Revolution. I mean to say, know your facts before you make a comment. I think this is very very important. Wasted lands – there is nothing like wasted lands, there is a board, there is a committee which defines and says land utilisation capacity, land capacity mapping of the whole country is available – at each block level land use capability is linked with water use capability. These are all interlinked; land without water and water without land for

agriculture has no meaning – all these mappings have been done. Why don't we really educate ourselves, and implement some of those factors, and be knowledgeable about it?

Syed Mahdi: Thank you very much. I think these are the two most substantive talks we have recently had in this forum, and I only wish that we have some arrangements for video recording. And I think lots of questions will arise because agriculture is a very vast subject, and most of us claim to have expertise in this area, because it touches all our lives. So, I think, in conclusion, I should like to thank Mr. Siraj Hussain, who is bringing us up to date about what is happening at the policy level at the centre, and Mr. R.B. Singh, of course, who is rooted in Indian agriculture, but has a global sort of perspective, having worked in Bangkok, in Rome, etc. The questions I think were interesting, which led to very substantive replies – somewhat spirited also! So, it is for me to thank... one last question? Yes...

Q: One last comment. I have been with IRA. I am Dr. Rajeev Raman, I have worked with the IRA from 1964 to 2002. I had the fortune of working with Dr. M.S. Swaminathan. Then I have worked with Dr. R.B. Singh, so I dare not ask any question to him! But I have been hearing the remarks by the person who said about the Green Revolution which was fake. A similar remark was made two years back at INSA on the 19th of October, when Indira Gandhi's birthday was there. Somebody from abroad made a similar comment that first Green Revolution took place in '65 and after 45 years there has been no second Green Revolution. Some Americans say that even first one was fake one. I as a grassroots level person had to get up and revolt – so, those who do not have the information, those who have not been in agriculture at the grassroots level, those who have not been at IRA genetics division, will have to make an effort. Another thing; it is not only in agriculture. Dr. Singh said about National Farmers Commission – I have gone through it, and there is a very sorry attitude of changing the position, changing the Planning Commission, changing people, but we should work for the country as a whole, irrespective of any political bias. I have seen the Food Security Report of Dr. Swaminathan, also, and I don't think anybody has read anything, on which somebody has worked so hard. And he has said that the Farmers Commission, the report has come out sometime in 2007, I have myself gone through it. So, do not make any remark without knowing the knowledge. You and I are eating food because people like Subramanian, Swaminathan, and Sivaraman worked for the Green Revolution.

Syed Mahdi: This is all recognised. As I mentioned, the visibility of the sector has gone down in the glamour of liberalisation, and this and that. I will allow one more comment. Yes.

Q: I am Yogendra Kumar. I am a former Ambassador. I just want to make a very brief comment. What I see as the broad situation here is really that agriculture provides about 14 per cent of GDP, but supports about 62 per cent of the population. There is a clear imbalance. Now, I think this imbalance can be restored, basically, because it also adds to urbanisation pressures. So, the imbalance can be restored if we actually start building expressways, connecting let's say the urban industrial centres to the rural areas, and knowing that these are quite difficult things, one way of doing actually is the existing highways which actually are quite

broad, too – double carriageway on one side, for example – is like, let's say, reconfiguration, you can build expressway instantly and make these kind of connections. I can say for example, if you see western U.P. as compared to Delhi, I mean they are living in different world altogether. They do not get the energy which actually you find in Delhi, for example industrial, economic, so on so forth. So, I think this is one way in which you can actually address these basic issues because unsustainability of agriculture, land holdings, so on and so forth.

Syed Mahdi: Thank you for this comment, and this is a typically urban-oriented comment that you are listening from the metropolis.

Pratap Narayan: First of all, can I request our President, Mr. Prabhat Kumar, to present a memento to Shri Siraj Hussain.

Siraj Hussain: Thank you so much, Sir.

Pratap Narayan: Also to Dr. R.B. Singh... Well, friends we come to the end of the first lecture in the lecture series. I am very grateful to Mr. Siraj Hussain who has come, and as he has mentioned he has told the Cabinet Secretary that he cannot be there. We are very very grateful to you, and what you have mentioned has been very very down to earth, particularly with your experience in Food Corporation and other places. We are very grateful. Prof. R.B. Singh has experience not only of science but management in India, but even at the global level. And we are very honoured that Padma Bhushan awardee is here. He agreed to my request to come over. I know it is a tough job for him, but he's gone along and we are extremely grateful. We are grateful to Mr. Shahid Mahdi, who I have known for nearly more than four decades, and he has also done a very able job, because his own exposure in the agriculture, both in India as well as the FAO is tremendous. Finally, I am grateful to Mr. Prabhat Kumar, who is always a leading light, and when I hear him every time on every subject, I am amazed on every subject he has something to contribute. I don't know where he has acquired this knowledge; for me, I am much older, but I would like to learn for my next life. Finally, thank you all of you, friends, who have come over and spent time. Thank you very much. The next lecture will be on the 8th of October, and it will be dealing with the subject of problems of small and marginal farmers. Thank you very much!

Second Lecture

PROMOTING INCOME SECURITY AND LIVELIHOOD FOR SMALL & MARGINAL FARMERS

October 8, 2015

Mahesh Kapoor

Good evening, Ladies and Gentlemen. On behalf of the India International Centre and the IC Centre for Governance, I have great pleasure in welcoming you all to this second lecture in our Series on Issues in Agriculture. The subject of this lecture is 'Promoting Income Security and Livelihood for Small and Marginal Farmers'. We are very happy that the Key Note speaker of this evening's lecture is Dr. R.G. Dani who is the Vice Chancellor of the Panjabrao Deshmukh Krishi Vidyapeeth, Akola. Needless to say, he brings a world of expertise on the subject. I notice from his CV that he also has a degree in Journalism. He can really use the communication skills of a journalist to explain the plight of the farmers. We are happy to have Mr. B K Taimni who is going to chair the session. He is a former secretary to the Government, a person who has done so much in the field of food and agriculture that I hesitate to talk about the subject in the presence of both these stalwarts. And with those few words, I would request Mr. Taimni to take over the proceedings of the session. Thank you.

BK Taimni, Former Secretary, Government of India:

Thank you. Good afternoon ladies and gentlemen. This is the time, the premium today as Dr. Dani has to catch a flight and we have to disperse at 6'o clock so that we can easily give him time. I will very briefly introduce to you the subject on Promoting Income Security and Livelihood of Small and Marginal Farmers. And then I am sure all of us will be very happy to hear as to what is being done from the research or on the field side from Dr. Dani about what the system is doing to address topical issue.

Ladies and gentlemen, it is not a question that Indian agriculture plays a pivotal role in the Indian economy. Although its contribution to Gross Domestic Product is now around 1/6th but very importantly, please mark these words, very importantly, it provides employment to almost 56 percent of the Indian workforce. It is also important to note that for 'Forward and Backward –linkage 'effects' of Agriculture growth, increase the incomes in the non-agricultural sector as well. Twelfth Five-Year Plan document also indicate that agriculture development is an important component for faster, sustainable and more inclusive growth approach.

In today's session, we will be talking about small and marginal farmers. Hence the question, who are the Small and Marginal Farmers? By definition, Marginal Farmer is the farmer holding

1Ha or less of land, whereas Small Farmer is a Farmer holding, more than 1 and less than 2 Ha of land. It is very important to note that the most vulnerable groups at the bottom of pyramid, of the farming population in the country are Marginal and Small Farmers. They are the most vulnerable. Please mark these words that it is important to note that the number of marginal and small holdings increased from 98.1 million in 2001 to 107 million in 2005 -06 and now as per the latest report, it is 117.60 million in 2011-12. You can imagine what we are talking about or what we are going to talk about today. It is equally important to note that is against the total number of average holdings numbering around 138.43 million and the share of marginal and small farmers was almost 83 percent of the total holdings and hence, the importance of today's discussion. As things stand today, it is worth noting that average landholding size of the marginal farmers is stuck around 0.4 hectares. I hope it sinks in. 0.4 hectare means, in common language, it is one acre of land and that of a small farmer, at 1.42 hectare leading us to the inescapable conclusion that small and marginal holders are engaged in subsistence farming and grow low value crops. They suffer from adoption of innovative technologies, inadequate access to physical inputs and credit, disguised unemployment, food and nutritional security, price risk and low incomes. As a result, their livelihood security is always at stake and ultimately suffers from poverty.

It is equally important to note that the percentage of marginal and small holders from wholly irrigated, partly irrigated, wholly un-irrigated are around 45, 11, 39 per cent respectively. It is most important to note that the total percentage of marginal and small farmers from partly irrigated and wholly unirrigated is more than the percentage of wholly irrigated area. It is also seen that these two categories of farmers are mostly from rainfed areas. Hence, the need to address all the issues germane to the critical issues relating to the country's food security and livelihood security.

It may be time to remind you or to refresh your memory as to what has happened this year. Most of you would have read the newspapers about the number of states which have been severely affected by drought. Imagine where 83 percent holdings are of small and marginal farmers, what effect the drought can have. The role of small farms in development and poverty reduction is well recognised. Global experience of growth and poverty reduction shows that GDP growth, originating agriculture is at least twice as effective in reducing poverty as GDP growth outside agriculture. This is reported by World Development Report of 2008. Small holdings play an important role in raising agricultural development and poverty reduction.

Ladies and gentlemen, it may be noted that agriculture is a state subject under the constitution of India. However, the central government plays a crucial role in shaping agricultural policies. It is equally important to note that although Indian agriculture is in private hands, yet government policies have greatly influenced space and character. I have already mentioned that 117 million out of 138 million holdings are of small and marginal farmers. The sustainability of the farmer is crucial for income and livelihood security. It is true that small holdings have high productivity than medium and large scale but has been seen that it is not enough to compensate the

disadvantage of small area of holdings for the simple reason that the cost of cultivation per hectare is also high of small and marginal farmers. Even though it is seen that farm income per hectare for small holdings is higher than the large holdings but the details of gone into also reveal that in 9 out of 20 states, reverse is true. Be that as it may, the monthly income and expenditure figures across different class of holdings show that marginal and small farmers have dis-savings. I will explain what dis-savings means. Compared to medium and large farmers, it needs to be noted that average monthly income of farmers' households comprises of income from wages, net receipts from cultivation, net receipts from farming of animals and income from non-farm business.

The average monthly consumption of farmers' households comprises of total food and non-food expenditure. According to available NSS data, the monthly consumption of marginal farmers was Rs2482 and monthly income was Rs1659, showing dis-savings of Rs823 per month. The dis-saving for small farmer was Rs655 per month. A study by National Commission for Enterprises for Unorganised Sector (NCEUS) says the "*consumption expenditure of small and marginal farmers exceeds the estimated income by a substantial margin and presumably, this deficit has to be plugged by borrowing or other means*". Hence, an obvious need for increasing productivity of small holdings and promotion of non-farm activities.

There are many issues and challenges for small holdings in agriculture in India. NSS Farmers' Survey brought out many issues relating to small and marginal farmers based on which the National Commission for Enterprises for Unorganised Sector (NCEUS) says "some of the general issues that confront marginal-small farmers as agriculturalists are: imperfect markets for inputs/product leading to smaller value realizations; absence of access to credit markets or imperfect credit markets leading to sub-optimal investment decisions or input applications; poor human resource base; smaller access to suitable extension services restricting suitable decisions regarding cultivation practices and technological know-how; poorer access to 'public goods' etc."

One of the important and critical fallout of income and livelihood insecurity is reflected by low levels of formal education and skills. As is now well appreciated, education and skills are important for improving farming practices, investment and productivity. Available data with me though somewhat old makes miserable reading. Literacy rates amongst marginal farmers was 48 percent and of small farmers was 60 percent. It is also interesting to note that the mean years of education for marginal and small farmers was 2.9 and 3.6 years respectively. I hope this is sinking in. This needs to be seen as a very serious fallout of income and livelihood insecurity. It needs to be appreciated that this is an important factor for small and marginal farmers to have a reasonable level of awareness regarding information on agriculture. The low levels of farmers' education limits public dissemination of knowledge. The NSS farmers' Survey clearly shows that awareness about bio-fertilizers, minimum support prices and WTO is associated with education levels which are lower for marginal and small farmers.

It is equally important to note that small holdings need credit for both consumption and investment purposes. This has led to indebtedness among the small and marginal farmers. However, the indebtedness for the small & marginal farmers from formal institutional sources is lower than large farmers and the reverse is true in the case of informal sources. That means the borrowings from the known institution, that is, the private sector or the village baniya or whoever is much more in the case of small and marginal farmers. The dependence on money lenders is the highest for sub-marginal and marginal farmers. At all India level, the share of formal source varies from 22.6 percent to 58 percent for small and marginal farmers while it varies from 65 to 68 percent for medium to large farmers. Dependence of small and marginal farmers on informal sources is high even in states like Andhra Pradesh, Punjab and Tamil Nadu. For example, small and marginal farmers of Andhra Pradesh have to depend on 73 percent to 83 percent of their loans on informal sources. The NSS data also shows that across social groups, the indebtedness through formal sources is lower for STs as compared to others.

There are several other factors which are having adverse effects on the small and marginal farmers like the challenges of globalisation in the sense that the policies of huge subsidies and protection policies by developed countries have negative effects on small holding farmers in developing countries. Similarly, climate change is a major challenge for agriculture, food security and rural livelihoods for millions of especially farmers of small and marginal holdings.

There is enough evidence to suggest that poor and poorest of the poor households are vulnerable to a range of risks affecting individuals, households or whole communities. In addition, they have community risks such as droughts, floods, cyclones which can have a devastating effect on their livelihoods. Small and marginal farmers are vulnerable to all these risks. Risks which can adversely affect the small and marginal farmers are health shocks: illness, injury, accidents, disability; labour market risks resulting in unemployment and underemployment and then there are harvest risks.

Ladies and gentlemen, I hope I have been able to share with you the challenges and opportunities before the small and marginal farmers. It is very important. The subject was simple, for the simple reason that it has the life-giving effect on more than 80 percent of our land owning class. We have great pleasure in now requesting Dr. Dani to share with us his views about ensuring income and livelihood security.

Dr. R. G. Dani, Vice Chancellor, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola:

Good afternoon ladies and gentlemen, at the very outset, I would like to acknowledge the IC Centre for Governance for giving me this opportunity. I am very thrilled to see my old friend and mentor Mr. Rajan Das Mathur. I am very appreciative of the initiatives taken by Mr. Pratap Narain and my friend Mr. I P S Anand. I am especially thrilled to see Dr. Rajani Raman and Dr. Gulati after nearly 40 years today, as I was a student in the Indian Agricultural Research Institute, Pusa here and shall we say, old habits die hard. Meeting old friends is a joy and I must

say that I find myself at a very sentimental juncture as I will explain in my presentation. Mr. Taimni has certainly done a favour to me by giving you a very thorough background.

All I can say is now I am settled in the United States. I retired from ICAR and I have taken up this job as the Vice Chancellor. My family is in Houston and this morning, as I was telling my wife that I am supposed to make a presentation before a group of very knowledgeable retired and powerful people, she said make it very simple and don't try to impress them because I want you to come back. They will make you stay in India. I said okay, I will make a dumb presentation and then if it sounds dumb, ladies and gentlemen, that is on purpose.

In my presentation today, whatever time I am allocated, I am going to stop at 5.45 and if I must answer a few questions, I will be happy to and without being too rude, I would like to leave at 5.50 so that I am comfortably able to catch my flight.

Speaker: Is your presentation on the internet? Can we get it?

Dr. R G Dani: I don't have it as yet but if you like, I would put it on the internet. That is not a problem. If I am able to accomplish the five goals I have listed in my presentation today, I think that would be a purpose well served and I am going to make a serious effort. As you have sensed, it is very necessary to have a status report and reality check. Everybody has a different perspective and what I say here is more from an individual or a university professor's point of view. I will make it clear that I don't represent the government or any governmental agency at this particular forum. I would like to stress the fact that in collaboration with the IofCs since I took over three years ago, we have started a very unique experiment and I would like to give the highlights of this experiment because this has some relevance and the essence of this training is what we call lifesaving leadership training for guiding individuals and policymakers. On a very optimistic note, we have initiated what we call multilayer education taking the lessons that we have learnt from the experiences of the university extension teams. Incidentally, the university has been operating since 1969 and if I am able to also touch this last thing, when I say university contribution, I am trying to emphasise the point that the role of the agricultural universities still remains unparalleled because we are by mandate the only R&D institution that is given the task of coming out with research recommendations. We still have to single-mindedly focus on this last and then the other subjects as you will see will follow.

I would like to make a mention of some of the topics listed here because these are some of the distress factors which I was mentioned and then I will make an effort to come to the de-stress factors or notes of optimism on the basis of some factual data that we have generated.

I have all the time. Today, let me restrict myself otherwise I will end up confused and I won't say anything meaningful. I think from my own perspective and my own first-hand experience, I will share a few things as I have listed out here. What seems to happen is there is no doubt that some of our technologies or crop varieties which I have listed and I have some illustrations at

the end of it that I will show you. University claims that we have released 1200 technologies so far and we will give you a highlight. And our claim is that they are working and then we say this over and again at every forum that the six major factors that are responsible for farmers' suicides. University does not have anything direct to do with it. I will list out those six factors. But what happens is even if there is a little bit of prosperity as it sets in because we have given the farmer a very good cotton variety. We have given him a few secrets and he has faithfully followed our extension team and then he earns a little bit of income. What happens is there are politicians in his town who will say they will make him a sarpanch and then he ends up funding half a dozen fellows and the hooch flows like crazy. In our studies, we have also found out that on top of all farmers' suicides, one of the most immediate devilish reasons is that he was under the influence of alcohol but what is happening is the moment the university says that alcohol is involved, there are half a dozen organisations that will pounce on us and they say that we are just passing the buck and that it is our responsibility and that we have failed and it is an eternal argument. I will only make a passing mention but the fact is this is a striking feature that there is almost a one to one correlation that if you look at the number of farmers' suicides, one who committed suicide, alcohol was definitely involved.

There is a culture of subsidies and debt-forgiveness which is unrealistic. I was in a meeting yesterday in Mumbai. This is the first trading aspect of our policies. In a situation like Maharashtra, it is absolutely necessary. I do support some of the facts, some of the policy steps that have been taken that if there is full assurance given to the farmers on one single factor such as forgiving the debts, it does help but the fact is if it were to be so easy, the problem would have been solved. The inevitable conclusion there is, I am making a very daring statement here that we should watch against some of the misleading kind of leadership organisations and with due respects including to the media. University suffers a setback every time there is bad publicity given to a technology. I will give you one sharp example, about two months ago, a crop of soyabean in the district of Yavatmal which is in my jurisdiction, there was a sudden outbreak of what we thought was yellow wheat mosaic virus, it turns out that was a thing called shoot fly. The symptoms were similar. Shoot fly had never appeared; it is still a matter of dispute. But some organisations grabbed the university by the throat and said that our experts had given them wrong advice and hence, they needed full compensation for the entire crop loss and then I lost all my energy and two weeks, I had a battle with the press saying that we are re-examining the matter and still there are some disputes. To give you an example, in the same district, we have many good success stories. Hardly, anyone ever highlights those stories which I will be showing you. That is what I am saying that this is an atmosphere charged with pessimism and we need positive examples.

If I am able to make my point clear, this is what we are emphasising now. We need quality agricultural education and infrastructure development. We need diversified farming and alternatives in sustainable development. We need women-centred agro industrial development and most of all, perhaps the order is not important. You can list it in any order that you like. Livelihood security and effective risk assessment training; effective risk assessment training is

one important thing and one sharp example I would like to give is on the mobiles that we are using, today's Indian Express incidentally carries a wonderful story of how some of the social media people prevented a farmer's suicide in Maharashtra. I will advise you to read it. I was very happy to read it as I was driving to this place and I read it. There are examples where people are using internet-based services. We give mobile-based advice and there are 60 portals within the state of Maharashtra who are giving you every day advice if you are a farmer but sometimes, you have problems with the connectivity and all that. But risk assessment training to the farmer is very important and the training sometimes can be a warning system. If you are able to warn them a few days ahead that there is going to be a hailstorm and that they should do something, even that is a great sort of training. We are one step short at risk assessment training and we are great at post mortems but we are not good at a few warnings a few days ahead.

We are facing the most difficult challenge of what we call Modifying Environment into Predictable Harvest. Incidentally, I have an International Farmers' Dialogue coming up. I have a few brochures here. That would be the theme. I would love to see all of you at the conference in Akola and then even without the conference. My appeal to you is till you see the work of the university and a small university, your appreciation of the problems as well as the solutions, ladies and gentlemen, would be incomplete. There are 63 agricultural universities within the ICAR system, that we call State Agricultural Universities System. If you have not visited some of the farmers' fields located in the interior, please do that and then come back here and have the next part of our discussion.

I would also like to make a mention of the fact that after I took over in August 2012, the first thing I did was an MoU with IofC because my own journey in life has been guided by IofC and anyone of you who is sitting in the audience has visited the IofC Centre at Panchgani in the last 45 years, there is a chance that I may have met you. I have trained over 200 economic and non-economic staff so far at Panchgani in different trainings. We have had one International Farmers' Dialogue conference in collaboration with what is known as Farmers' Dialogue International which is a part of Initiatives of Change, IofC. It is a very powerful organisation. They have a website called www.farmersdialogue.org. I recommend you see it. We have the next planned in February. God willing, we will go ahead with it. We have through the dialogue some vision into the farmers' suicides prevention. My experience is that we need UGC type of recommendation for creative leadership courses that we are running at Panchgani. And then we have to tailor some of the courses that are being administered at Panchgani to match the ones in the universities especially agricultural universities.

The experience which is relevant to today's subject is we have shortlisted certain types of ideals which are required here. I think the last two points that I would stress, trust building and collective leadership remain our working ideals and inner governance and respect for inner voice can surely and effectively lead to normal as well as crisis situations resolving and these are some of the virtues listed. I will just display it for a few seconds. I won't go through it.

Coming to the subject, my worthy predecessor has done a big favour and already listed out many of the facts and figures. The only different thing that I am trying to do now is now trying to give you a smaller picture that of the Vidarbha region which is the mandate of our university, those 11 districts if you know which are in the eastern part of Maharashtra. They are in the news because of the phenomenally high number of farmers' suicides. This is almost like the world capital of farmers' suicides which is a very unfortunate fact.

Some of the facts as you were seeing are about the same as what we have in Vidarbha where we have three climate zones. Definitely, there has to be a variation in the climate, variation in the technology. As you will see the green zone as what we call a higher rainfall where paddy is a dominant crop and then the pink and the other ash colour, the yellow colour; yellow colour is of course, the problem soil which is the cotton-dominated area. Vidarbha is the world's capital of cotton in terms of acreages or the plantation area but not the yield.

This is an approximate distribution of landholdings. As you will see, majority is small and medium. There is further more information.

This is my economics group which has done the work.

At this point, I think it is helpful to go through the list of constraints as we see it from the eyes of the Vidarbha farmer. Once again, we can take our own criteria for prioritising those. You can list out anything as number one, number two; that would still be okay. In the last three years, I think climate or unpredictable variations in the climate has been the number one cause of uncertainty. And these are what we consider as challenge areas because like I said, our task is to generate technologies and in generating the technologies, we keep these as our working ideals.

Now the consequences; there is no getting away from the consequences.

Q: What is the productivity in Vidarbha? How does it compare with others?

Dr. R G Dani: I have some data there. I have major crop-wise data coming up. What you have to remember is 83 percent of the area there is dryland farming so that answers part of the question. There is a study group in Akola; there is a man by the name N M Kale who had conducted the studies and then the last one is some of his findings. There is some similarity and match, global type of findings that cash crops such as coffee and cotton, then there are facts about marginal number, the debt number is not an absolute number but it has to be. Even a small amount of debt can cause this sort of unfortunate loss of life.

Q: Rs300 can be that number?

Dr. R G Dani: That number has to be checked. It is probably some old data that my economics team has put in there. But I said that there is a note of caution that debt becomes a

criteria; let us say indebted farmers. But there was a ray of hope year before last when we conducted this International Farmers' Dialogue and the reason I am showing you this is that there are four presentations that I would quickly mention. This is Phil Jefferys; he is an Australian sheep farmer who stressed the point that farmer suicides is a global phenomena and he said that in Australia, there have been farmers' suicides because the farmer had to borrow money from the banks against the mortgaging of land and sometimes, they don't have rain for three years in a row and so there was no crop. Banks started taking away the lands and the farmers committed suicide.

This is Monica Haworth, a British farmer; a small apple farmer and her son committed suicide. She came to Vidarbha and what you are seeing is she met some of the unfortunate Vidarbha families and she gave some information. She even earned the name of Mother Teresa of Vidarbha. I am going to share a part of that information.

This is Juliana Swai, a farming expert from Tanzania who gave us an entirely new idea which I will be listing out.

Q: Have there been any incidents of suicides in America as well?

Dr. R G Dani: Not that I have known of; there may have been. But I want you to pay attention to what Monica Haworth said in UK, the farming is listed as the scariest of all the professions. What Juliana Swai from Tanzania says is prevention is possible by way of farm women's alertness because she said that in most of the villages, women are almost able to predict and she even made an announcement in the conference. She challenged all the women present and said, let us come out with a slogan that we don't want to be widows and orphans. Only then will it stop. Don't hesitate to give out a list of people who you think are very prone to suicides.

Then there was an expert from the US, Ms. Jenny Hunter who gave us a clue. She said that farmers who commit suicide have the tendency of remaining in isolation for too long followed by a period of complete silence. Unfortunately, these things are mistaken as signs of extreme drunkardness. I don't blame anyone because that does happen. But I think this is where some concern is involved. These are very easy to understand clues which were given by these people. They say that if you take care of these factors and Monica gave us example of a counselling group that they have started in their village. Mind you that she lost her own son and then she started this group. Her claim is in Britain, for the last 13 years, this IofC-inspired group has done so well that there has not been a single suicide wherever they went and they have covered a lot of ground. That is something to be noted. The most important thing she said was that, that group does not have any outsider, no government representative, no experts and no psychiatrists. It is just local intense farmers.

I can go on but I am going to skip some of my slides and come to what the university has been doing because that itself will give you some idea of what has been possible. Let me keep this.

These are some of the broad themes that we have and I must acknowledge the fact that a lot of our research funding rather exclusively comes from the Indian Council of Agricultural Research. Are there any people in this gathering who know what KVK stands for except the IARI people?

Speaker: Yes, Krishi Vigyan Kendras.

Dr. R G Dani: I am very glad to hear it. This is my home audience and I don't have to stretch too much. Because I will tell you that my university has 11 KVKs and 7 belong to the university and 4 are private and they are doing very well and my KVKs were given at a place called Bhandara in Gadchiroli and incidentally, Gadchiroli is a naxal-affected area. Three of my KVKs are in the heart of the naxal zone but ladies and gentlemen, they have been selected as number one in all India by the ICAR team because what you see there is a transformational technology; we are going to get a glimpse of it. These are some of the perils that can be avoided. We have said that the culture of monoculture, growing a single crop whether it is cotton or paddy is dangerous. Then people sometimes follow the same package of practices and then there are simple things like doing the right things at the right time.

These are some of the goals that we have kept in mind. What you see in red is the problem and what you see there in blue is the solution.

Q: Do you have the soil mapping of the area?

Dr. R G Dani: We have the National Bureau of Soil Survey and Land Use Planning whose headquarters is in Nagpur. They have an extensive survey of the entire area. Let me just complete. I am very quickly going over.

B K Taimni: It is 5.40 now.

Speaker: We cannot allow him to go away without satisfying ourselves.

Dr. R G Dani: I want to make sure that you are going to call me again. This is something which we take pride in because these are the steps that we have suggested, mix cropping with fishery, sericulture, beekeeping and these are not just theoretical examples. I have some tree-based farming, livestock management and these are some successful initiatives.

Let me come straight to the contributions of the university in every major crop. We have a popular variety or a hybrid which is still the ruling hybrid. These are some of the names. We have some farm equipment.

These are my KVKs. These are some of the things that we do in collaboration with some of the national and international institutions. This summarises that we have so many technologies out

of which varieties and hybrids are 152 at this time. I think 25 are still ruling. Then we have regular seed production programme. We have very successful farm implements and I am going to show you some pictures.

Here are the examples of successful varieties. I only give a very straightforward example because sometimes I have to talk to or for most of the times I have to talk to farmers. I was with a group of policymakers yesterday and then sometimes I really have to be on the oxygen all the time because there are people saying that I am failing and I am not doing anything and I show this and tell them that I am not failing and these varieties are still there and not a single farmer who has tried these varieties has ever complained. As you can see, every major crop the university has a big success story and not just food crops but horticultural crops and flowers.

This is a very, very successful brand of agri equipment. This little dal mill, I have seen people whether it is extreme hot temperature, there is no crop around, there is complete crop failure but a group of farmers particularly farm women have kept their village and economies alive because they have these machines running where there is electricity. They get electricity at least for four hours. This simple dal processing machine keeps them alive. This is a new technology that the university has introduced. If you know the crop of turmeric, you have to dry it for 4 days whereas this machine gives you turmeric powder with a high curcumin content right for sale within 24 hours. We have women's empowerment programme where people have taken leads and we have simpler things for vegetables processing, things like land cultivation in a standing crop where you have ber, ziziphus crop or you have sitaphal, you have wild tur. Tur or Arhar is a very popular crop there. There we have land cultivation which is a success story.

I am just going to show you a few success stories and then I am going to close.

Q: Is agroforestry a part of your enterprise?

Dr. R G Dani: Yes, agroforestry is a part of our enterprise. Low cost management in poultry. These are the names of the farmers. And then they are our ambassadors. We have major programmes we call Krishi Doots. Tatas and Reliance Foundations are our big partners and we train Krishi Doots. We go to interior areas and we train farmers for about less than a year's time and then they go back and spread the message and they come out with success stories. Then silk and tussar culture is also a successful enterprise. We have just awarded a few women farmers. I am almost coming to the end.

Soya processing, I admit that soybean crop has failed in the last two years but the processing of soybean is a die-hard industry and then people have come out with very successful stories.

Organic farming: our university is the only university that offers a training course and we have now a third batch of one year's training, a diploma course in organic farming. It has been very successful and the farmer in Yavatmal, I have seen that last year, cotton was a total failure but in

his crop, soybean and arhar were successful where he was practicing organic farming. University has certain varieties of cotton which we call desi kapas which are extremely successful.

This is the last slide. Soybean and chickpea seed production: some people are able to support our seed production systems and there have been a lot of successes. The very last thing that I would like to say is these are some of the policy options but as I have said I have shared with you the optimistic things that the university has found out and then on the larger matters of policies and what needs to be done, I mentioned in the beginning itself that strictly speaking, points beyond the jurisdiction of our university.

I want to sincerely thank you for giving me an opportunity for sharing this information with you. This is a race against time and I must very, very rudely leave but my worthy predecessor has set the ball in motion. If there is any question that you would like to save for me, maybe one question?

Question and Answer Session

Q: I am staying at Wardha these days and I have done some work around Yavatmal. Are there some hope models?

Dr. R G Dani: Hope Generation programmes.

Q: There is one Mr. Sharma, they are not investing any money but with all the local cows, local goats and all that, have you done a case study? My request is since your target is Vidarbha ---I am talking about Mr. Sharma in Yavatmal because there are a lot many -----

Dr. R G Dani: Organic farming, can you read Yavatmal?

Q: I read that; I am not blind. My question is can we replicate that model.

Dr. R G Dani: I would not say anything which is not repeatable and which is not predictable.

Q: Do you think it is not replicable?

Dr. R G Dani: What I am saying is whatever I am saying is repeatable and predictable. I only talk of things that are repeatable and predictable.

Q: Do you think the models which have stood the test of times of 10 years or 15 years, can we study or is there any study that you have done?

Dr. R G Dani: This is a new study and I have said that we are trying to combine organic farming taking, there is a thing called Integrated Nutrition Management that some people know about, it is similar to that. You combine many different factors and then use the organic model

and I can tell you that we are on the brink of success. With these words, I thank you all. I hope you will give me a chance again.

Q: Are you doing any work on aquaponics?

Dr. R G Dani: No, not yet.

Vote of Thanks: Thank you Dr. Dani. We are very grateful to you for having taken the trouble of coming here all the way and making this excellent presentation not only based on academics but also practical knowledge. I request Mr. R D Mathur to present a small memento on our behalf.

Thank you Mr. Taimni for chairing this session and also for giving your opening remarks covering a wide area and with all your experience, thank you very much.

Third Lecture

DIVERSIFICATION IN INDIAN AGRICULTURE

November 13, 2015

B D Gupta

Hearty welcome and very Happy Diwali greetings to all of you on behalf of IIC and ICCFG. We are today having the third lecture in our lecture series on Governance Issues in Agriculture. Today's subject is on Diversification in Indian Agriculture. As you are aware, in order to maximise the component of agriculture in our GDP, it is very essential that we explore new avenues of diversification. We should explore some new avenues moving away slightly from our conventional agriculture. With this in view, we have lined up two eminent speakers on the subject, both being experts and actual practitioners as on date in this field. We have Shri Ajay Jakhar. He is a citrus farmer based in Maujgarh, Punjab. He is renowned for developing citrus farming in the country. Today, India has a prominent place in the global map of citrus farming. He is the Chairman of Bharat Krishak Samaj which is a non-political, non-sectarian association of farmers advocating for farmers' prosperity. He regularly holds seminars and conferences on issues of relevance to the farming community and speaks at various national and international fora. His articles appear regularly in various newspapers and publications. Those of us who read his column in Indian Express will vouch for his comprehensive approach to tackling important issues of agriculture. He is the Editor of agriculture magazines like Farmers' Forum, and Krishak Samachar, both targeting farmers, policy makers and those that influence policy in India.

We have another speaker, Shri Pravesh Sharma, Managing Director, Small Farmers' Agri-Business Consortium. Shri Pravesh Sharma is an IAS officer of 1982 batch of Madhya Pradesh cadre. He is a post-graduate in history and has more than 32 years of experience in various administrative positions in Madhya Pradesh in land revenue, management and district administration till 1998 and later at the centre in various departments more prominently in agriculture cooperation, consumer affairs, food, public distribution and rural development.

We have Shri J N L Srivastava, a stalwart in agriculture affairs to chair today's session. Shri Srivastava is an IAS officer and Former Secretary, Agriculture, Government of India and has long experience in cooperative and agriculture sector. He has also been Secretary, Department of Animal Husbandry. He has represented India on a number of international organisations like FAO and WTO. At present, he is Convenor of Task Force of MoUs of PSUs in the Fertiliser and the Agro sector. He is also a Convenor of Ad-hoc Task Force for Result Framework Document constituted by the Department of Performance Management in the Cabinet Secretariat of the Government of India. Presently, he is working as the Managing Trustee

Indian Farmers' Fertilizer Cooperative Limited (IFFCO) Foundation. He is engaged in developing innovative models for promoting agriculture and agro-processing, cooperatives and women empowerment.

I request Mr. Srivastava to deliver his Opening Remarks first on the subject and conduct the proceedings thereafter.

J N L Srivastava, Managing Trustee Indian Farmers' Fertilizer Cooperative Limited (IFFCO) Foundation:

Thank you very much. I would like to compliment the IC Centre for Governance for organising a discussion on issues in agriculture. Everybody says that agriculture is very important and key to the Indian economy but when it comes to such issues, I think adequate attention is not paid. So I must compliment all of you. What is happening in the diversification of Indian agriculture? What is the dynamics of this diversification? What is happening is relatively from the staple crops like cereals, there is a much faster growth of commodities like fruits, vegetables, livestock, meat, poultry and things like that. I think the audience must know if these sectors had not grown, Indian agriculture would not have grown by 3.5 percent as per the Twelfth Five Year Plan. In fact, the crop sector grew only at the rate of 1.5 percent or so. Sectors like horticulture, livestock, and fisheries have been able to sustain the growth of Indian agriculture. That is the importance of the diversified agriculture.

Return on land is much larger in this sector. In fact, it is the largest generator of employment in the rural sector. It has enhanced the income of the farmers. I think it has played the most important role in reducing poverty especially from the rural areas. That is the importance of diversified agriculture.

Sometimes, a couple of doubts arise in the mind. One is, in some areas for instance, where it is taking place, horticulture and other crops are replacing them, you will be very happy to know that so far as rice and wheat is concerned, the area has not gone down; it is almost stagnant. What has happened is that these commodities have really replaced coarse cereals and things like that. This country has almost two-thirds of rainfed area. Lot of horticulture has grown in the rainfed area. Therefore, as far as the food security is concerned, that is not affected by rapid growth of diversified agriculture. Rather, today we are talking about food security and nutritional security. Frankly, this country is achieving nutritional security on account of diversified agriculture that I just now mentioned.

The other concern is the issue or question now raised is, is diversified agriculture inclusive or is it exclusively small and marginal farmers. In fact, studies have indicated that small and marginal farmers relatively have gained more from the growth of this diversified agriculture because they may be short of capital but they have adequate labour. Labour productivity, employment, income generation have all helped the small and marginal farmers. I think all of us know that

almost 85 percent of the farmers in this country are small and marginal. Their holdings are very small; the holdings are getting smaller and smaller. But this group of people have benefited more from the growth of diversified agriculture. If we really look at the whole situation, take livestock or dairy, who owns dairy? We have found that livestock in this country is most equitably distributed. 67 percent of the farmers own 67 percent of the cattle. Rather in the case of other crops, the distribution of land is not so equitable. Any program which helps livestock really leads to equitable growth of the economy. Same is the case with vegetables. Small people grow vegetables on small plots and get good income.

The other thing is if you really talk about gender equity, it is diversified agriculture. Take dairy, take vegetable production and now medicinal and aromatic plants are also a part of this whole system. In fact, studies have indicated that 70 percent of the operations of diversified agriculture is done by women. If this sector is growing, generating income, creating employment, I think it is the most inclusive thing that has happened.

I think it is very interesting that the subject is so important and it is before us. I am very glad to see two very distinguished speakers. In the case of diversified agriculture, issues relating to production, support systems, infrastructure, institutions, whether the small and marginal farmers is a part of the value chain, what percentage of the consumer price and so on. There are a large number of issues in diversified agriculture also especially because these commodities are highly perishable. Take vegetables, fruits, milk and other things. That is one aspect of the total diversified agriculture. Therefore, there is risk in it. Whereas there is MSP for most of the other commodities like for pulses and cereals. But for vegetables, milk etc., there is no MSP as such. Frankly, there is a risk on one hand of weather and on the other of the market. These diversified agriculture commodities are very vulnerable from that angle.

I am very happy that we have Mr. Ajay Jakhar who understands under what circumstances a farmer is really into this diversified agriculture. What are the problems he is facing? And at the end of the day, I suppose the whole purpose of the discussion is not only to give a status but also to see what could be done. I think that would be one of the important things of this whole exercise. Mr. Ajay Jakhar understands everything; he is a farmer himself and a very, very progressive farmer. He is not a gentleman farmer; he is a farmer but a gentleman. He goes to the field. He stays more than 15 days on his farms. He knows every aspect of operations of agriculture including the diversified agriculture.

One of the major issues in the case of diversified agriculture, especially fruits and vegetables and horticulture and other things, as I said, is the risk of market. On the one hand, we have the risk of market and on the other hand, we have 85 percent of the people as small and marginal farmers. How do they manage their production, where do they sell, how do they sell, how do you really build their capacity, how do you really bring them together? This is the most important work which is being done by my friend Mr. Pravesh Sharma. And I must say to all of you that Pravesh has a passion. He had a passion to build up this organisation, Small Farmers'

Agribusiness Consortium which he is engaged in looking after the most key challenges of diversified agriculture and horticulture and all that.

I would also like to mention another thing. When Mr. Balram Jakhar used to be the Chairman of Bharat Krishak Samaj and when he became the agriculture minister, some of you might have seen the figures, the horticulture budget was raised from 8 crores to 100 crores. It is a matter of great pride that the Chairman of the Bharat Krishak Samaj who became agriculture minister raised the budgetary support from 8 crores to 100 crores. If I look at both these speakers, I find that their heart is in this diversified agriculture. I am very glad that they are here. I won't take much time and request Mr. Ajay to really start the dialogue and after he has made his points, we will have some discussion. He has agreed not to leave early and will be here with us. And after that, I will request Pravesh Sharma to give his views. I am also very happy to see Sanjeev Chopra here. I thought I will mention later but I must mention here that if any programme in the Government of India has really got a major push in the last few years was a programme on horticulture. One of the weaknesses in the government is we frame very good programmes but we fail to implement it competently. I think all of you should give a round of applause to Sanjeev who managed the National Horticulture Mission competently that whatever you see happening in horticulture which, of course, Pravesh and other people are supporting, Sanjeev took the real initiative and many things happened. Maybe, I will mention them a little later again but I thought since he is here, I must mention it. Thank you.

Ajay Jakhar, Chairman, Bharat Krishak Samaj and Citrus Farmer:

Thank you so much Mr. Srivastava. I thank the organisers for inviting me to speak at this programme. I will talk on various aspects of diversification which are normally not discussed when diversification is discussed. I will not go into criticising Green Revolution, I will not go into normal things that we tend to read and hear about when we discuss diversification. Mr. Srivastava, there is no way I can leave before I get to hear what Mr. Pravesh Sharma is going to say because this is a very good opportunity to hear him speak.

Let me start by saying that few years ago, the policy makers came to the conclusion that after 60 years, farmers are still hungry and the country was without jobs and we were facing great problems on the farms and rural areas. Lots of undernutrition and malnutrition was there and so they enacted the Food Security Act. To create those reserves, they decided that they needed to buy more food grain and need to store it. So they banned export of wheat and rice. In 2007, I think they banned export of wheat. In 2008, they banned export of rice. Till 2011, for 3 to 4 years, they were banned. At the same time, the price in the international market of wheat was 60 percent higher than what was available for four years to the farmers here. For rice, it was 150 percent. And all the time this was happening, politicians and farmer leaders and farmer organisations were very happy with the miniscule Minimum Support Price increases that they were getting. They were miniscule compared to what the international prices were. What happened because of that? Simultaneously, the government also found out through the NSC or

through their intellectual NGOs that there were no jobs on the farms. There were rural areas and people were without jobs. So they started NREGA. MNREGA later became a programme. That increased wages substantially. For example, when cotton was selling at Rs2000 a quintal, the cost of picking cotton was Rs2 a kg. Today, cotton is Rs4000 a quintal and the cost of picking is Rs6 to Rs8 a kg. You can imagine how profitability got reduced. When all this was happening, at the same time, the government decided that because cost of inputs of DAP and other things were rising, we must also increase the Minimum Support Price. So they started increasing Minimum Support Price which now most economists who supported those high prices are today criticising it for leading to food inflation. You started a Food Security Act so you could feed cheap food to the people. Cheap food costs Rs24 to collect, store and distribute which you are selling at Rs2 today. I don't know how long we can do that. At the same time, we started a job programme which increased the cost of cultivation of crops. The end result of all this is farming became unprofitable. All that the government gave to the farming community was of no use. The food inflation negated everything.

And also what would have happened if we had not increased the Minimum Support Prices and allowed exports to happen. First of all, it would not have led to this problem where diversification itself becomes an issue today because it has forced all pulses to go out of cultivation and everyone is doing rice and wheat cultivation. When price of any crop rises by 50 percent or by 60 percent or 150 percent, the profits of the farmer will increase by something like 4 to 5 times and if you have 4-5 times of profits of 4 to 5 years at a row, it really means that you would have entered these bad years of low production, bad weather and low international commodity prices with no bank debt. You would have today entered with no bank loans, no compounded interest, and no money lending interest. Actually, I think this very act of trying to help the poor people, trying to help people by a Food Security Act, by trying to help people has actually been counterproductive which comes to the point that it is not the objective of the policy which is important. Everybody can make good objectives. Even a four-year old can make good objectives. It is the detailing of the policies which is more important. How do you reach those objectives and that is the crux of the problem.

Look at what happened to cotton prices. Cotton in 2011 or 2012 was Rs7000 a quintal. All the textile industry got together and they collected a lot of money and they went to the minister and they paid the government money. I can afford to say that because I am not in the government. I really have no problem with it. They changed the cotton export notification 17 times in 18 months. Practically, cotton exports ceased. Now because cotton exports ceased, then obviously farmers could not use that increased value they could have got. They could not use that money. That is what we have told the Maharashtra government also that the farmers are committing suicides in Vidarbha and Marathwada today because they have entered this bad phase with high compounded interest of moneylenders and from banks. If you had allowed farmers to make that Rs5000, Rs6000 or 7000 for sale of cotton when it was happening, farmers would not be in debt today and not be in distress today. That is a point of view that I at least as one from a farmers' organisation, personally and our farmers agree to this. What I am saying is that

policymakers are absolutely confused between cause and consequences. We make policies to mitigate the consequences of a problem rather than solve the problem itself. That is a short-term solution and that is what is leading to distress. And it can be validated that if after 60 years of independence, we are still trying to feed farmers cheap grain, then there is something drastically wrong with the way policy is being made in this country. And redistribution of resources, I don't think is a sound strategy for this nation going forward. It is not at least sustainable; it might be sound in a short-term but it is not a long-term sustainable policy that we have. And what I am trying to relate this is to diversification of agriculture because if we had not gone through this cycle, people would naturally be without incentives or disincentives from the government, be doing what they were doing.

As a consequence of giving higher MSP to rice and wheat, pulses production reduced in the country. The rise in the price of pulses today is not coming to that but what I am trying to say is because pulses production reduced in the country, it is a possibility that the consumption of proteins in rural areas and malnutrition in rural areas is more than urban areas because we moved away from doing pulses. The area under pulses has drastically reduced. The calorie intake for rural areas is much less than it is for urban areas. That is the fact and figures I have; even while people in rural areas will be doing more physical labour than they will be doing in urban areas.

On one side, we have a storage problem, we are the largest meat exporter in the country, on the other side, we have a problem of hunger. I completely disagree with many economists and academics who talk about controlling food inflation with imported fruits and vegetables, milk, chicken legs and everything. That is a very major issue we have with many policymakers and the solution to this is and it comes back to diversification that can we not make small farmers self-sufficient to grow most of their needs themselves. I think there is a difference between self-sufficiency of the world because you will keep reading that the population is going to become 9 billion, 9.6 billion people and we will need a lot of food. As a farmer, let me tell you that this is our opinion that there is more than enough food to feed the world for the next 100 to 200 years. I really don't subscribe to the point of view that we are running out of food. And there are lots of reasons I can go into if there is time later as to why there will never be a shortage of food. And then there is the issue of self-sustainability as a nation. That is also possible. We can grow in irrigated areas and transfer to rainfed areas but that does not solve the problem. The problem will only get solved if individual farmer families become self-sufficient wherever they are. If they can design policies and we can make it in such a way that they are able to grow their own daily proteins or daily fruits and vegetables needed by them and I think it is very much possible to do it because most of the small farmers don't have a marketable surplus to take to the market. All these programmes which I will be coming back to later actually don't help the farmers. All these subsidies related to production and others never help the farmers. Fertiliser subsidies never help the farmers in rainfed areas because they use very less of it. It is not an equitable pattern of growth.

To succeed in agriculture, to succeed in diversification which is one of the ways to succeed is that we must document and deliberate failures. This government and every policymaking institution in the world is very busy talking about successes. They make books, they make articles, and they have reports talking about success. Success, I think, is an illusion created by data because failure is real and visible and we don't want to talk about it. Data can be tutored to prove what we wanted to prove and this is what has been happening in the country. And I think that is something we need to figure out. Obviously, the biggest agriculture risk is policy being made for the farm sector by non-farmers and this is something that I think is the root cause of every issue we have. There is this review of book today by Mr. Thorat and Mr. Gopalakrishnan and it gives five reasons. I managed to see the snippets of the book, five pillars or five-pronged plan but they don't talk about talking to farmers, they don't talk about discussing farm policy with farmers and that goes to the root issue of the farm policy and to diversification. If you don't talk to people who are practicing, you cannot talk down to people. We are not in Pakistan where Musharraf can talk down to people. If you don't discuss with the people whom you are trying to help, you won't be able to help them in the first place. At the end, I will come to why you should help us not because you have sympathy for farmers but it is because you need us in cities much more than farmers need you. And I will come to that later. The role of the government to control the commodity prices in the short-term is very limited. The value of horticulture produced in India and thank you Mr. Sanjeev Chopra is far greater than of cereals produced in India. The government at the same time procures less than 20 percent of India's farm produce in any form. I think it could even be less than 10 percent. Like I said, there is no data available. The government procurement mechanism is only taking 10 to 20 percent of the production. I think it will be very good if government got out of the way for that 10-20 percent also. That is one of the issues that also holds back diversification because incentives are being given to whatever the government is procuring. Like I said small and marginal farmers don't have a marketable surplus. They are not even being helped by the whole mechanism of procurement and especially farmers in rainfed areas.

Like I have already said, I think farmers are in a position today to feed this country indefinitely. That is a key, key difference. I will just give the various ways we could feed ourselves. I will just give you a little example. There is a yield difference in my farm and the better farm in my village and the better farm in the village has a yield difference between that farm and the research centre. We can just bridge the yield gap. Forget new technologies, forget new systems. We can just build the yield gap and with that, I think we can increase production by 25-30 percent. If we improve machinery, if we have better machine for sowing, we can improve production without any extra inputs, without seeds. In fact, use of seeds will be less. You will have no extra fuel requirement, no extra water requirement, no extra fertiliser and no extra pesticide requirement and the production of this country will go up by 25 percent. And Mr. Nand Kumar taught me that if I give deworming tablets to indigenous cattle, your milk production in the country will go up by 25 percent. Rs50 is the annual cost of giving deworming tablets. There are many ways to actually go into diversification by very little cost. Money is not a big thing. As a Farmers'

Organisation, people are surprised when we say that we do not want more money. We are saying that whatever money you are giving to us, let us agree to reallocate it in such a way that there is growth, there is equity. There is more money being spent in this country and the world on cosmetics than it is on agriculture policy; the whole farm space. Forget armaments, we can understand but even cosmetics. Even people spend more money on that than the various state governments spends on farm space.

40 percent of the produce in the United States is not sold, is not eaten because it does not look good. And why I am coming to that is because there is excess production in the world. While every economist and academics and policymaker and bureaucrat and officer was talking about controlling food inflation for five years, we were the only farmers' organisation talking about the upcoming deflation that we are facing in prices. People actually laughed at us. That becomes a problem. So United States and food exporting nations, even the poorest food exporting nations in Africa are laughing away to the banks today because the Government of India is importing pulses from these countries, from Australia and they are actually subsidising farmers in the West. They have a problem allocating funds to subsidised farmers in India but they are happily subsidising farmers anywhere in the world from where they are procuring high quantity of pulses. And for diversification, international trade negotiations become very important. For example, I will come back to cotton. 20000 cotton farmers in the United States get 3 billion US dollars of subsidy. When you do a rough calculation, you convert the 3 billion US dollars, it comes to around 19500 or 20000 crore rupees, you divide it by 20000, it comes to something like 76 lakh rupees per farmer in the US gets cotton subsidy. Now the problem with the international trade negotiations is that the farmer organisations don't want India to have trade agreements with other countries. I think the bureaucracy and policymakers are not trained to negotiate better trade agreements which will be beneficial to Indian farmers.

We are stuck right in the middle. But without international trade agreements, Indian diversification will not progress. I think so the growth of fruits and vegetables into the country for the last ten years has been 20 percent on an average. I don't know how much it has been. It has been far more growth than the growth of horticulture produce increase in India. So negotiations become very important. If India was having a trade agreement with the United States on cotton and let us presume that there were no cotton subsidies in the US, the cotton production would fall and when the cotton production falls, the cotton prices would go up from Rs4000 to Rs8000 and you would not need to give subsidies to Indian farmer. For that, we need to be able to negotiate. The Indian government since the last one year, ever since Modi has come, we have revitalised WTO negotiations but the problem is that the government does not understand that WTO is becoming irrelevant. Countries are signing close loop agreements with themselves. Australia signing with China, Europe is signing with North America on TTIP. These new trade blocs will not allow imports of our produce to go there. And I think if we are talking about diversification, I think we can grow so much fruits and vegetables that we won't have anyone to eat them. And so diversification itself poses a problem of profitability for the farmer as to how you are going to use that produce.

And obviously, you come to the topic of food processing. But government spends a lot of money on food processing. I think barring the last few years, for three decades the growth in food processing industry has reduced decade upon decade upon decade. It is not growing in spite of all incentives. I was called by the Ministry of Food Processing and the honourable secretary collected a few secretaries, joint secretaries, additional secretaries of the ministry together and said here is Ajay Jakhar and he is always criticising us and that is why he has been called here. Let us see what he has to say. I said that I had only one question to ask them. Whether the officials of Ministry of Food Processing ever met the officials of Indian Council of Agricultural Research and the answer was why they should meet them. And that is the crux of the problem. If you don't have a processing variety, what are you going to process? And that is why there is a coordination problem within the government. When we are talking about diversification, these are the things we need to be tackling.

We export a huge quantity of commodities. It has been in the newspapers that India is a net exporter of agricultural commodities. What are we exporting? We are exporting rice and wheat which are low volume products and rice and sugarcane which is a water consuming product. We are exporting water in one form and we are importing rainfed crop; we are importing pulses. That is the diversification that has happened in this country and I am going to come to it that we can actually move away from it and I am going to give some suggestions also today on how to go about it.

Before we manage to do any of that, the first and the foremost important thing that needs to be done for the prosperity of the farming community or this country is aggregation of data. There is no data being aggregated. And the private sector does not have the financial depth to aggregate data. I really think that the government has to collect data and make that available to other institutions, the private sector companies which are there for profit or even non-profit organisations. They can analyse the data and we can have more analysis of data because without

Q: What kind of data?

Ajay Jakhar: Data would mean soil health, even soil moisture. You don't know how many tomatoes are grown in the country. In fact, we don't know how many farmers are there in the country. We don't have land records. All this data needs to be collected because if we don't collect data, you can't design policies. If you have better data, you have weather data historic records, you can even design cheaper insurance policies. There is no way you can have insurance policies which will be acceptable and commercially viable for commercial companies if you are not able to get data. Data is a tool to design better government policies. There is a great lack of data. I don't know you can ask the Ministry of Agriculture but I think the data which is basically available is for the crops which the government procures or a few crops which the private sector procures like corn or something but it would not be available for the

rest of the crops and we have hundreds of crops and what their production cycles are. I think that is greatly required.

One of the things for diversification which is always talked about is technological breakthrough like how we can have crops that withstand drought or flood, flood tolerant or how we can have technologies which will increase photosynthesis or we can have crops that will do their own nitrogen fixation. There are technologies which will also increase yield which also help diversification but nothing is black and white or right or wrong in policy. You might have the same technology which will fail in one area and which will succeed in one area and that is why, I keep coming back to that you need farmers to help design what technology is there.

GM crops such as BT cotton has been suggested as risk mitigation technologies also. 80 percent of the world's GM cotton is variety cotton. But 100 percent of Indian GM crop is hybrid cotton. When two cotton varieties are crossed together, the progeny plant is bigger than the parents. And because it is bigger, it has got more leaves, more foliage; it is like a bushier plant. It requires more fertiliser, it requires more water, it requires more inputs and its seeds are more expensive. It might do wonders in Gujarat where there is irrigation but it will fail in Maharashtra which is rainfed because your risk is more. If it rains, it is a very good crop. But if it does not rain, you add risk to it. The same technology could be good in one area and the same technology might not be good in another area. 80 percent of cotton hybrid varieties occupy 20 percent of the area in India and 20 percent of hybrid cotton varieties occupy 80 percent of the area. Why I am talking about cotton is because whitefly menace has been in the news. Over 1100 hybrid cotton varieties are available in the market and I think they have gone through a process of getting certification which is absolutely rubbish. The government has to somehow get a regulation and cut it down to 400 or 500 varieties and the government has to insist as a part of its diversification programme that even where cotton is grown in a village, they have to make incentives that at least 30 percent of the cotton is not hybrid and is variety cotton. I am not talking against a technology. But I am just saying you don't need diversification only to move away from a crop. Within the same crop cycle, you also need diversification. Otherwise, these pests are going to increase and multiply many times over.

Technology can be like a knife; you can actually cut yourself or cut the fruit. You really don't know. But I basically think that private sector is required because Indian Council of Agricultural Research has not been able to deliver what the farmers would have hoped would deliver. Even though we want the private sector to deliver, we can't trust the private sector to deliver. Because they have the sole objective of making profits which is nothing wrong but they have consisted manipulated regulation in such a way that we are in this mess today. I think the need is for very strong regulation and very strong enforcement of that regulation so that we have an atmosphere where people can prosper because otherwise it is crony capitalism. A few companies which have access to corridors of power, are coming out with new seed varieties. They are stealing seed varieties from ICAR and Sir will know that most seed varieties coming out of the private sector today have been stolen from the Indian Council of Agricultural Research by paying

money. I don't think the private sector is doing any research. They are just stealing varieties. Most of the varieties are being stolen which are being prepared by the government sector and there is nothing we can do about it.

How can we design diversification? What are the reasons? If food security was an issue, then you would design it depending on how many calories per acre you would be able to generate. Corn generates something like 7.5 million calories per acre. Rice generates 7.4 million calories per acre and wheat generates just 3 million calories per acre. Sweet potato generates 10 million calories per acre while potato generates 9.2 million calories per acre. But when the Green Revolution happened, we overlooked all these. We overlooked potatoes and sweet potatoes. Because now when you look at potatoes and wheat, the difference is three times. When you look at potatoes and even rice, the difference is more than 40 percent. This is where diversification comes in. How do you design diversification? You just don't say that we will grow fruits and vegetables. Nobody wants to buy fruits and vegetables because there are so many of them. This is how we have to design.

Then we have to see what the ecological footprint of that diversified crop that you are growing is. You could say that while corn will consume something like 107 gallons of water per pound produced. This is what I got from the internet. Rice 403 gallons of water whereas potatoes will take only 30 gallons. So when you take value for money, when you take ecological footprint, you need to keep that in mind when you are designing a diversification. No diversification will work until and unless extension services are revived in this country. After we became food sufficient, the extension services in the country collapsed.

With this government, there is a huge move to transfer lot of government responsibilities to the private sector. There is a blurring of responsibilities as to what is the public sector going to do? Is health a public sector thing or is the education a private sector? These are issues that are circulating inside. It is an ideological thing. I will not go into all that. All I am saying is that extension services will have to be the responsibility of the government to deliver. Private sector efforts are welcome and they can complement government sector; they cannot supplement government initiatives. And if we do not do that, all diversification initiatives or any initiative of the government is bound to fail. The holy cow of agriculture is extension services. One of the suggestions we have given to the government is which I don't think the government is going to listen to but we will keep talking about this which is that ICAR should be broken up and extension should be made into a different department and research should be made into a different department because together they are not producing anything substantive for this nation. That is one of the suggestions we have given. We obviously need coordination between different departments for diversification to become a success story the way we would want it.

There are many contentious issues that are there. You had FDI and retail during the last government and you have Land Acquisition Bill now. As a farmers' organisation, we told Mr. Jetley also that why on earth should the government try and get something on which there is no

agreement. There is so much low hanging fruit that everyone will agree upon. Why don't you just go and do those little, little things that everyone agrees upon. The last government and this government have wasted so much political capital that they could have enacted so many better policies and gone ahead.

This is another problem we have that we have to find policies which are deliverable at the end of the day. We cannot start saying that the policy was good. It did not get implemented. The policy was good but the opposition did not support it. The vice chancellor of the Agricultural University in Punjab said that the farmers are stupid and they do not understand. They should not have used this pesticide. They are wrong. Tell me what is the university doing? They have not come out with any crop in the last 20 years. And he actually said that the farmers are stupid and the farmers should have looked after better and they are in trouble because they did not do what they were supposed to do. And if you were to go to Punjab and you were to ask farmers as to whether they have ever met an extension officer or have you ever met Punjab Agricultural University officer, 99 percent would say no. The only interaction the farmers have with the government officials is on getting subsidy for something or the other; filling out those subsidy forms. There is no interaction. The only interaction that the farmers have with Punjab Agricultural University is when they have melas and the farmers go there, attend the melas, see the stalls and they come back. These are basic issues.

The second contentious thing that farmer organisations don't talk about is because if a farmer organisation goes and says that reduce MSP, then everybody will kill him. If he goes and says that there should be no free electricity, again the farmers would not want to talk to those leaders. The basic issue is of equity. Rainfed farmers are getting no subsidies. They don't buy fertilisers because they cannot afford it or it is not a part of their cropping pattern and so they don't get those subsidies. They don't have enough produce to sell to the government and so they don't get production subsidies. If you are going to Madhya Pradesh, half the Madhya Pradesh has this problem that fertiliser use is less and so less subsidies go there. And I am going to come to the figures of Punjab again as to how much the Punjab farmers are getting as subsidies. We need to design policies in such a way that there is equity. And the equity has to come to the small farmers. The equity has to come to rainfed farmers who are the majority of the farmers and who do not have a voice. Because what I have realised is people who have got something will cry more when they lose it than people who have nothing and demand something. That is a basic psychological effect that we have.

For diversification, Punjab has 41 lakh hectares of sown area. It uses 27 lakh tonnes of urea. The total subsidy given by the central government to Punjab on account of fertilisers amounts to something like 5000 crore rupees. I thought it was much more but the Fertilisers' Association gave me these figure of Rs.5000 crore. I think they might have given me a smaller figure lest it could sound bad. Even if we presume that it is Rs5000 crores, let us add other subsidies that the Punjab farmers get. They get Rs5000 crores of free electricity. In Abohar, I have saline water and I have water logging and so I don't even use that free electricity. Even that Rs5000 crores

of free electricity that is being given to Punjab farmers is not going to everyone. It is going to something like 60 percent of the farmers. So Rs5000 crores of fertiliser subsidy, Rs5000 crores of subsidies which would include free electricity, some free cheaper seeds or horticulture-produced subsidies; it comes to a figure of something like Rs10000 crores subsidies. And when you do Rs10000 crores and 41 lakh hectares and you divide it and do all the calculations, it comes to something like Rs25000 per hectare which every farmer is getting, which comes to something like Rs10000 per acre. Now as a farmers' organisation, we are saying that for diversification, for saving Punjab from water crisis, electricity crisis, salt pans that the lands are becoming is that, first of all, subsidy inversely proportional to land holding sizes so that there is equity. And large farmers like me who own more than 10 acres of land should not get any subsidies which will mean that 20 percent of the farmers in this country who own around 40 percent of the land will not be eligible for subsidies. If we use that for Punjab, subsidy for Punjab will come to something like Rs15000 per acre. If the government was to say that tomorrow, we are not giving you any cheap fertilisers, we are not giving you any free electricity and we will give you Rs15000 per acre and you can grow what you want to grow. I think you don't need a government initiative or diversification. Farmers will stop growing rice and other products and they will automatically go to pulses. But the political system does not have the guts to take it to the farming community. I am going to be writing about it now and I think personally as a farmer that if this offer was given to me because I called up around 50 farmers from different areas of Punjab who grow different crops and I asked them this question that if they got Rs15000 per acre, were they ready to give up all subsidies. I think this is the best time to put this policy in place because paddy prices are low, cotton prices are low, production is low and everything is low. Today, farmers will jump at it. The timing of rolling out of a policy is as important as the policy itself. If paddy prices were twice what it is today, nobody would go for this policy. I think the timing of rolling out a policy or giving an initiative is very good. These are the kind of policies that would be required to allow for diversification to come. Aggregation of land holding sizes because land holdings are small and that obviously remains a challenge and Mr. Pravesh Sharma, I should say, will be talking about pharma producer organisations as the way forward. I will not go into that but why we need diversification is because we need to create jobs. Industrialisation does not create jobs. It only creates efficiency. And actually the number of jobs reduces as efficiency is increased. Horticulture, animal husbandry, fisheries create five times the number of jobs than any other investment will generate. I think that is why we also need diversification. And together we can maybe get integrated economy where the farmers can actually prosper.

Another item that you require for diversification is mechanisation. When farmers go and buy machinery and I told this to the honourable agriculture minister who is still the agriculture minister to tell Mr. Modi as he returns that once you buy machinery, you start working for the bank for the rest of your life. Because if you own 2.5 or 5 acres of land, you go buy a tractor, you buy a sowing drill, you buy a rotavator or a plough or something or the other, you total bill comes to around Rs4-5 lakh. Even if you take 10 percent as the rate of interest, that Rs5 lakhs

amounts to something like Rs50-60000 as your interest component of that limit and that is not even your income from your land. Once you buy an equipment, you work for the bank for the rest of your life. I say that this has what has happened because of Green Revolution. It is not a consequence of the Green Revolution; it is the consequence of how our policies were designed. Let us not do this when the second Green Revolution is being targeted in eastern India. And the minister said that this is the problem you face in Punjab. It is a problem you face on your land and the rest of the country will not face this problem. I will take his word for that. These are issues that are required to successfully roll out any initiative. It is just not making people grow a different crop. It is how that crop is grown, we can actually increase the production on one side and we can reduce the cost of production on the other. When you do sowing of onions, if you have a better machine, if I grow my onions on a flat ground, my yield is less. If I grow it on a raised bed, it is more. These are things for which you need mechanisation. Small farmers don't have that machine. That is why I am saying that because of diversification, we will be able to grow so many more crops. I mean so much more fruits and vegetables that there won't be anyone to eat it. And for that, we need food processing. But for food processing, we need processable varieties. Even when we process food or we produce in excess of what we want, if we don't have international treaties, who will we export these fruits to? I think everything is related. It is just not what we grow. I think profits on the farm are not made on the farm. They are made elsewhere of policies or how policies are elsewhere.

Agriculture productivity and GDP are taken as measures of growth. It is my favourite line of saying that GDP is not how prosperity must be measured. Every time my tractor has an accident or even, the tyre gets punctured, the GDP of this country goes up. That is how the GDP is calculated. Every government paper that comes out will talk about GDP as a measure of growth. Every farmer's prosperity in this country when it is talked about, agriculture productivity is taken as a measure of growth. I think agriculture productivity is also not a measure of growth because when one farmer works hard, he becomes rich. When all the farmers work hard, all farmers become poor because nobody wants to buy our vegetables. Both the things are wrong. We need a new measuring scale. If we can't measure success, there is no way we will be able to design a plan for it. That is why we need data; we need a better measurement scale also for this. Struggle over how losses and gains from state action are allocated in the farm sector is what is termed as food politics. There is always a constant struggle between low food prices for consumers and higher prices for farmers. And how government decides this balance is what defines the politics of food. And if the policymakers could calculate or could do a CAG sort of a presumptive calculation of how much it costs to keep farmers happy on the farm or how much it costs because farmers migrate to urban cities, government would realise that it is much cheaper to keep the farmers on the farm and keep them happy there. The largest migration in human history is taking place for the last many years which is from rural areas to urban areas. And I think a figure that was given to me by NITI Aayog was that 4.5 million people are migrating from rural areas to urban areas in India every year. I just did a calculation on my calculator; it comes to something like 12500 farmers are

coming to cities every day. I think if there was diversification, there were better policies, it would be cheaper to keep those 12500 people per day in the villages than we flock in cities and we design policies, sewage systems, metros and all that stuff. It is just not going to work. I thank everyone for their patience. And if there are any questions, I would like to take them.

J N L Srivastava: You all must have heard that there are lots of complex issues are involved. We will now take some questions from the audience.

Questions and Answer Session

Q. Kamal Taori: I am working in Wardha on some project. The last point which you made on migration from rural to urban areas is the bane of all problems. The problem is there is so much of loot-led system. The point is how to organise these rural people, how to market the concept that they can be much better by activating the rural areas through policy support, funding, technology and so on and so forth and not taking agriculture only but a total holistic package of rural development. How to develop that lobby? That is my question. The last point made by you is most important. How do you proceed further in implementing it? Only farmer will not do. There should be a lobby for rural areas which will fight for all these issues. I think there should be a focus on that. We will be very happy if that is marketed by those who are working in the rural areas.

Ajay Jakhar: Unfortunately, I think it is never going to happen. And I will give you reasons for it. Since Panchayati Raj came into existence, the solidarity of the farmers is finished. You will see that there are farmer leaders since Panchayati Raj became a common concept in every village. When the election happens for those panches and sarpanches, there are 20 people contesting against each other in every village which was not there earlier. And because of that, multiparty democracy at that panchayat level, farmers' solidarity is finished. For example, if in a village, I want to do an agitation because price of rice is less, then there are other four people who say that if Ajay Kumar is joining this agitation, he will become more prominent and so they pull you down like the story of the frog. And the second thing that has happened is that in every farmer family, now you have a certain amount of income that is not dependent on the farm. In every family, there is one person who is working off the farm. And because you are not fully dependent on farming and because there is multiparty democracy at every street level I think farmers' solidarity is never going to happen in this country. It happens in forms of agitation which happens for 4-5 days and then we have a multicoopt society where government will give initiatives to sugar in one year and to rice in one year and to wheat in one year. So we have different crops. Unless and until the farmers are organised on the basis of the crops they have, I really don't think it is going to happen for these two or three reasons. It is unfortunate but I am just giving you my views.

Q: I must compliment you for a wonderful presentation. Based on your experience, what is your prescription for small and marginal farmers who have two hectares of land? What should

he grow so that he meets his own need and also earns a decent amount of money so that he can live a dignified life?

Ajay Jakhar: I think for farming to prosper in India, one of the crucial things is to create jobs off the farm. In fact, this is what I told the World Economic Forum last week to Mr. Phadnavis and Har Simrat Badal who asked me what my takeaways from this seminar were. I said forget my takeaways, I will give you my giveaways. My giveaway is very simple that if you want to get re-elected, there are only two things that are required, happy farmers and off farm jobs. If you can't do that, both of you are history, I told them. I am not coming to production, I am not answering your question because prosperity of that small farmer is going to come from off farm jobs and it is going to come not from the farm. Like I said, profitability does not depend on how good I am at farming. Every time I do good, everyone does good, we all become poor. The prosperity is not about agriculture production; it is about your rural livelihood. Can you produce your own milk? Can you do your own little vegetables? How can you reduce your cost of living without having to go to the market to sell the surplus produced? I am not saying we don't need FPOs, we don't need aggregation, how all this is going to happen and that is why in my speech, I talked about self-sufficiency of a small farmer family and not self-sufficiency of a country or of a region. I am not talking about transferring of grains from one part of the country to another part of the country. It is not going to work. It is like a more holistic picture and he will have to grow his own needs. Till he does not grow his own needs, so many farmers are going to buy fruits and vegetables in the market. He should be able to do that himself. There are models of household. It is called home state farming in Bangladesh. There are models where it has happened in the world and I think it can happen.

Q: I am trying to do some little things in the field of agriculture. I am clubbing two questions together. I belong to a farming family. I went into academics for some time but now I am going back to farming. On Mr. Jakhar's point about leadership, there are no two opinions that his family has taken the leadership of the farmers for the last two decades and I would like to congratulate him for that and also compliment him for his presentation. My fundamental question is there are two important words written in the IC Centre for Governance. I have been in touch with ICCFG for the last 5-6 years and the topic today is governance issues in agriculture. Mr. Jakhar runs Bharat Krishak Samaj. I would like to know what this organisation does and what its system of governance is. My second question is do you think you are the sole benefactor of the farmers and no one else understands this system? Or you believe — your family alone is capable of handling this responsibility — the way you are running the system? I request you to elaborate on this. I am not criticising you.

Ajay Jakhar: In so far as our activities are concerned, I will give you my visiting card and you can go to our website and you can see the activities being undertaken by us. And regarding governance issues, you would come to know about this if you had been a member of our organisation. If I have met you before and you can see our activities in our website and I have not taken the sole responsibility of the farmers and their problems. This is my hobby and I do

what my conscience allows me to do. I don't see whether Mr. Atri likes it or not. I don't wait to see whether the things I do are liked by somebody or not. I do what my conscience allows me to do and things which I think are right and in the interest of the farm. I really don't care for criticism because if I start trying to be politically correct and thinking whether that will be liked by all or disliked by all, in that case, I will end up doing nothing. We do what we think is right and this is what we do.

J N L Srivastava: Mr. Jakhar is frank in whatever he says.

Q: I compliment you for an excellent presentation but what I understand from your presentation is that the government policies are in a complete mess and that is the main reason for the problem in Indian agriculture and I fully agree with you. My question is why does government allows import of fruits and vegetables in such large numbers which is creating a huge price recession in the Indian market; even fish and other things? There are being imported at zero duty all over. I think it is bogey to call that we are under WTO pressure. It is like an old saying. What is apparent on the surface is different from the reality underneath. This is across the board in industrial world that you talk of liberalisation but you practice and protect your interest. So government has thrown Indian agriculture complete to international market. That is a big mess we are in.

Secondly, is there any data available on how much of the government's budget goes into agricultural rural areas where 70 percent people still live? 55 percent is agriculture. I read in one paper that now only 10 percent government budget is going into rural areas. The data is being compiled. Irrigation today is less than one percent of GDP. In 1951, it was around 8-10 percent. Government is not putting money on Indian rural areas and agriculture. If you compile this data, why should metro be constructed in Delhi and around? That is one fundamental reason why today agriculture is in a mess. What I specifically want to know is why the government has thrown Indian agriculture to the vagaries of the international market?

J N L Srivastava: I will answer the question at the end when my turn comes. We will take one last question and then I will request Mr. Pravesh Sharma to make this presentation and then we can resume the Q&A session.

Q: We have been talking about diversification. But small millets have been totally left out which used to be called as coarse cereals once upon a time. Now because of the high quality of nutrients, they are renamed as nutrient cereals and mostly, in Karnataka and other places. Even in food processing, there are breakfast foods which are made out of these minor millets and small millets. In your diversification programme, besides rice and wheat, you are thinking of pulses and you have left millets altogether because it is a poor man's food crop.

The second observation which I want to make is I heard about the National Consortium of Small Farmers and I think somebody from there was also to give some lecture in this series. If

the small farmers unite together, if they have some sort of a cooperative like the milk cooperative, then what will be the outcome? What will be your opinion if it works well? 'IF' is a big thing in this country but you have left minor millets as a whole. That is a very important crop.

Q: Prem Shankar Jha: I thank you from the bottom of my heart for a wonderful presentation. I learnt an enormous amount. I am an economist and not a farmer I am afraid. I just wanted to ask a couple of things. You have very clearly shown that the level of risk now for small farmers in general and particularly in the rainfed areas is beyond bearing. Two things strike me. Why is there no attempt to have crop insurance or loans against standing crops? We do that for industry all the time. If I have wood, for example, or some agro product in my godown, I will get a working capital loan against that but I will not if that same thing is standing in the field. This requires crop insurance. One small suggestion that I thought of if you combine loan against standing crops with a hedge interest rate against crop insurance, against failure for the bank; for example, if the loan rate is 7 percent and you add 5 percent more, I have done some calculations. It would make an enormous difference. It would keep the loan viable and it would transform the availability of the crop.

Another small point is long ago, in the Rice Research Institute, Dr. Swaminathan was really promoting the idea of whole crop utilisation. Today, we have got to an extraordinary situation where the technologies have been fully developed and beginning to be commercialised where biomass can be converted into transport fuels. Why are we not already doing it already because it is so new? It is happening in London and it will happen elsewhere. The technology actually happens to be of a firm whose CEO is an Indian although he is an American. All that is there and it will come to us. Can I suggest that you look at this closely at the potential for this because it will double or triple farmers' incomes? It will also reduce the threat of drought? Thank you.

Pravesh Sharma, Managing Director, Small Farmers' Agri-Business Consortium:

Thank you for this opportunity to address this gathering. First of all, my apologies to Ajay that I am one of the culprits, non-farmer in the agriculture policy space but I think over the years, listening to people, I have picked up a few good ideas. I must also, at the outset, make the disclaimer that my views are not the views of the Ministry of Agriculture. I am here in an individual capacity though I am, of course, associated with the Ministry and some of the things that I will talk about emanate from my position in the government. I think Ajay has spoken with great passion as he always does from his heart, from an experiential point of view. And I will attempt to perhaps add a few things but put what he has said and what I would like to say in a framework. Then I think we might be able to bring the discussion to a more focused sort of level and address this issue of diversification which Mr. Srivastava started.

I think the three objectives of Indian agriculture which have remained constant since 1947 and I think are as relevant today and perhaps certainly will remain relevant for the next couple of decades is that we must continue to ensure that our agriculture is globally competitive even more so now with the challenges that he spoke of and many of you spoke of. It must be ecologically sustainable because everyone knows the challenges on the ecology front and the third objective also which he mentioned very correctly is that it must be socially inclusive. So globally competitive – I am sorry sir, globalisation is a fact of life and we are not going to be able to turn the clock back. We can debate about why we got there. It has to be ecologically sustainable and it has to be socially inclusive. Given this broad objective which policymakers and farmers I think alike face, where do we find ourselves today? And many of the things that Ajay spoke of, I was going to put it differently but I think to buttress his very passionate views, I would like to suggest to you that Indian agriculture today can be seen as a series of three interlinked crises. I would like you to visualise them as three concentric circles. So at the centre of the first circle, is what I call commercialisation without risk mitigation. Mr. Jha I think very aptly put his finger on it in his question. The truth today is that our agriculture is basically market-driven. 15 years ago, 3/4th of the agri GDP value came from staples like cereals, pulses and oilseeds. And only 1/4th came from what we call high value agriculture – horticulture, fisheries, livestock, dairy and poultry.

Today, the market having changed its preferences and farmers having received those signals and responded, 3/4th of the GDP of agriculture comes from high value agriculture and only 1/4th of the value comes from the staples. When Mr. Srivastava was the Secretary, Agriculture, it was almost like 50:50. We were going through a period of transition. This has happened virtually unnoticed and when I say unnoticed, to the larger public, to the urban public in particular and to many policymakers, to many of our friends in the media, this comes as a surprise. I heard somebody say, in fact, Ajay said this that the government should get out of agriculture marketing. In fact, the government was kicked out of agricultural marketing more than a decade ago. Just think of one number. The gross production of all agricultural produce in the country last year, and I am rounding it off, was around 900 million tonnes. That includes all the staples, all the horticulture crops, sugarcane and anything which is produced on the field. The government's procurement of wheat and rice is around 70-75 million tonnes. It is less than 10 percent. 90 percent plus of agriculture produce is basically being traded on market-driven principles. We have a problem there and we will come to that problem.

Our first problem is and he is right that small and marginal farmers have responded in far greater measure than medium and large farmers to this opportunity in the market because obviously, they will try to maximise family labour, they will try to maximise that small plot of land that they have but very correctly stated, there is no adequate risk mitigation. Technologies are today being marketed by private sector dealers and not by government extension system. There are, of course, problem with the government extension system but the truth is that what the farmers demand, that the government extension system does not have to offer. Farmers want to know what is the best hybrid cauliflower, the best hybrid tomato. That is not what the

government extension agent was trained for. He was trained for regular hikes in wheat and rice and maybe pulses. He has become irrelevant.

NSS data shows that the single biggest source of knowledge for the farmers is the private input dealer. 19 percent of the farmers said that they got their advice from an input dealer. Only 6 percent of farmers said that they got their advice from a government extension agent. So obviously, input dealers are thrice as more effective in driving farmers towards crops and technologies than government extension agents are. I had the occasion last year to lead a mission to Maharashtra after the last drought and I remember standing in the field in a ruined BT cotton crop and was talking to a farmer. He had a two acre plot of land and I asked what his father grew on this land. He said jowar and I asked him when he shifted to BT cotton. He replied about 7 years ago. I asked him in these seven years, how many years did he make money. He said three. I said this year again he was ruined. Next year, would he think of changing or diversifying? His reply was classic. He said that he would jolly well grow cotton only. I asked him why. How was he so convinced that he can make money? He said if was able to earn money even in one year, that would make up for all the years he lost. I said son, this is not your knowledge. I told him that he would have got this from some book or wherever. I asked him who had said this to him. I said that he was told this by the guy who had sold him the seed packet. He said yes. Now look at the power of the private extension agent who is able to convince this chap that he has to just keep on doing this and one good year and all his losses would be wiped out. He is basically gaining nature. Maybe, as Ajay said BT cotton is excellent for irrigated areas but it is causing a lot of problems in non-irrigated areas. So that is our first inner core. You have the market which is demanding high value products. You have farmers who are responding to those signals. You have the private sector between which is largely transmitting these signals and carrying these products to the consumers but you have unsustainable risks. This is crisis number one.

The second crisis – the second circle. There is an ongoing human resource crisis in agriculture. Again some people referred to it. Part of this human resource crisis is a crisis of structural adjustment. It is a good thing that people are moving off the farm. I don't think it is such a terrible thing that people want to go to the cities. If we have a right here, I think every citizen of India has a right to aspire to this lifestyle. The problem is that they arrive with such poor skills, half the city migrants are standing outside people's gates as security guards. That is a very undesirable way of shifting people out of agriculture. I quite agree with you. And on the farm are policies, and our whole strategy for production which does not address the people left behind which includes women in very large numbers, older people and we don't have the kind of machines which would address the needs of our small farms and so we have a big crisis there.

And the third outer circle and that is where Mr. Srivastava and I would have to take part of the blame is what I call the crisis of unstable policies. Ajay, in great graphic detail described many of those policies. We do respond in knee-jerk short-term adhoc manner. Onion prices go up, raise

the MEP. If they go up further, ban the exports. If prices go up internationally, ban exports because we want to address a domestic constituency. Policymaking in agriculture, as a person who spent 18 of my 32 years in government in agriculture both in Madhya Pradesh and Delhi, I have to admit, perhaps if you study policymaking in agriculture, it displays the worst form of political economy. It shows constant and shall I say, pernicious and sometimes, vicious interference by actors who are perhaps not driven by the best of motives. Let me not say further.

Given this framework and given this context, some of the consequences are, I would say, only natural and to be expected. But why is it that on the one hand if we are talking about the growing commercialisation and the growing demand and the changing food basket and how in larger and larger volumes, high value products are in demand, why is it then that some of it is not flowing back in terms of widespread value to the agriculture sector? And here I will introduce an element which again in many policy dialogues gets completely missed as far as India is concerned. And that is India's unique model of growth in agriculture and I put my neck out when I say this, which is not going to follow the trajectory of any of the developed economies. And what is this unique aspect? The unique aspect is our largely vegetarian status. China with a comparable population grows 500 million tonnes of grain. They import another 200 million tonnes. With 700 million tonnes and our 260-270 million tonnes, what is the catch? The catch is unlike all the developed economies of north and South America and Europe, as these countries grew richer, they shifted their food consumption from cereals to animal protein. And so they needed larger and larger quantities of cereals to feed the cattle which then they ate as meat. That is not going to happen in India. It takes 10kgs of grain to produce 1kg of beef. It takes 5kgs of grain to produce 1kg of pork. It takes 1.6kgs of grain to produce 1kg of chicken meat. Whether with 80 percent Hindu population, this will never be a major beef eating country. Sorry, I don't want to get into a controversy but let us just accept the reality.

This will never be a major beef eating country. With 15 percent Muslim population, it will never be a major pork eating country; let us accept it. As per the NSS data, the single most popular meat is chicken which has the most favourable ratio of grain conversion to meat. 21 percent Indians said as per the NSS data that they eat chicken. Let us assume that this will double over the next 20 years as the country becomes richer and modern and more KFCs and McDonalds open up, okay, fine. But given the way grain production is rising, we still have more than enough for our dairy, poultry and for our other needs. In fact, if you go by the Planning Commission estimates, we have already met our targets for 2020 but let us assume that they were very modest and they were unrealistic. Even if we were to touch around 300 million demand by about 2025, we have the grain to meet that demand. We are never going to see the kind of scenes of these huge combines churning out the grain in the truck and putting it in the silo. It is not going to happen in India for the simple reason as I said. Given this, you already have a situation where your farm population is far more than can be sustained by the 14 percent GDP. You are the only country in the world with 14 crores farm households. That is 140 million farm households. There are 650 million people or 65 crore people who are still on the

farm, dependent on farming. The GDP is only 14 percent. There is a World Bank study of 2009 which calculated that the per capita contribution of an agricultural worker to the national GDP in India at 2009 US\$ prices is only 600 dollars per capita. The per capita of a non-agricultural worker which includes all of us except Ajay is 2400 dollars per capita in 2009. That is not the bad news. The bad news is this gap is diverging. People like us who are contributing 2400 dollars per capita are likely to earn close to 3000 dollars per capita in another ten years time while the guys who are contributing 600 dollars will end up at around 550. As citizens, I think we will accept that this is unsustainable. This is obviously a recipe for social crisis and conflicts and nobody would like to perhaps justify a situation like this. What can we do and I would like to present five points. I call it my little panchsheel for agriculture and I would like to maybe then include that and generate more of a discussion because this group has some very eminent people with some very good ideas. And some of these things Ajay has referred to but I will try and put that in my five point framework.

The first and foremost framework thing today is given these 14 crore households, there is no methodology, there is no technology, there is no communication strategy that can address these households as individuals. We need aggregation and the organisation that I have worked for over the last five years, in fact, as it happens, today is my second last working day and I shall be relieved on Monday. Thank you for the opportunity to be able to present this here. But we took this idea of the need for aggregation with support from colleagues like Sanjeev in the ministry and I am happy to say today that we have more than a thousand what we call FPOs, Farmer Producer Organisations but these 1000 between them have mobilised only 2 million farmers; just 20 lakh farmers. 14 crores, 20 lakhs; there is a long way to go but the idea that aggregation is necessary if we want to take the farmers into the value chain, I think is embedded in large part of the country. We definitely need a far greater momentum, we need far greater resources and I am happy to say even the report of Mr. Thorat and Mr. Gopalakrishnan that Ajay criticised have also flagged this issue that aggregation is perhaps the key to addressing this current farm crisis.

The second issue on which Mr. Jha is an expert, I will tread on a very dangerous ground in his presence but again it is an issue that is not talked of certainly in the popular media and it remains within the confines of the NITI Aayog, the erstwhile Planning Commission, the finance ministry. Our agriculture is the most undercapitalized agricultures in the world. Ajay said that if you gave him Rs15000 per acre and he would be happy. I hope that his wish does not come true because with Rs15000, you are certainly not going to be talking things about putting things on a sustainable pathway where you can generate a surplus, you can have some stock of capital building up. Today, we look at headline numbers of bank credit which was 6.5 lakhs last year. It is targeted at 8 lakhs this year. But if you disaggregate that farm credit, 50 percent of that so-called farm credit is for agri business, for stock held in warehouses by traders. Flat 50 percent or perhaps, it is more than 50 percent because there are other ways to disguise it. We have calculated that the net outgo to the farming sector in terms of crop credit is anything between 1.5 to 2 lakh crores. If you look at our gross cropped area of 20 crore

hectares, that is nothing. That is highly, highly undercapitalised. The Reserve Bank of India's last report says only 15 percent of small and marginal farmers have access to institutional finance. So 85 percent of the people in farming are borrowing at interest rates that start at 36 percent. I don't know of any agricultural activity that can generate a rate of return to service a loan like that. He is going to be in continuous debt and he is just going to be borrowing to stay alive. And certainly, there is going to be no surplus, certainly there is going to be no capital accumulation and the rest of it. The second part of my panchsheel is there has to be a national mission on lending and the Small Finance Banks is a great start but it is too little. We probably need 100 Small Finance Banks at one go. I think in this country, there is a great emphasis and I think it is almost like wisdom now which cannot be challenged that incrementalism has got us here. Incrementalism has prevented some of the worst things from happening to us. Sure incrementalism has definitely stood us in good stead in many sectors but I don't think we can make a philosophy or religion out of it. And certainly in agriculture today, incrementalism is going to work. Aggregation is number one and targeted financing especially to small and marginal farmers is number two.

Third, again of the policy dialogue. Land leasing: today, the single most pro-poor action any state government can take and I stand before you as a culprit for I was the agriculture secretary for four years in Madhya Pradesh but I could not convince the chief minister that just registering the tenants will be such a big legal step for them. Let us put up the title of the landowner. Let us not give any right of ownership to the lessee. But let us at least give a piece of paper which he can take to a bank and borrow. NSS data again shows 80 percent of small and marginal farmers lease in land; makes sense. It is only in Punjab now that they have started to be reverse leasing because small and marginal farmers are completely unviable. So they would rather give their land to a medium or a large farmer and at least work as labour. Obviously, that is unsustainable in large parts of the country like Rajasthan, Madhya Pradesh, Jharkhand, Orissa and Chhattisgarh. You will have to have some reasonable method of recognising tenancy. You cannot drive tenancy underground. Along with the abolition of zamindari, we have also abolished tenancy because tenancy is a very terrible thing and it will to concentration of land. Operational holdings will increase and so we have pushed it underground. But it has shown us that the worst possible effects are being borne by the weakest and that is why I have put it in my category of the unsustainable risk.

Fourth is Ajay spoke about it and I completely agree that mechanisation has to come in, in a big way on a non-owned but leased model. The world over people don't own combines and modern equipment. Those are owned by either companies or machinery banks and are available for lease. If a typical farmer owning five acres of land buys a tractor, you can be assured he will not just work for the bank but he will basically be bankrupt in a matter of five to seven years. Because unless you work a tractor for 1000 hours every year, you cannot make money on it; the typical owner cannot work it more than 200-300 hours because even if he rents it out within the village, there is a limit to which they can hire it out. We need a very different model on mechanisation and unfortunately, this is an issue which are not paying attention to.

And fifth and again Ajay has mentioned but I will again reiterate this. Trade liberalisation is the need of the hour. We are today competitive in most of the crops that we grow. There is a Balassa Index which measures competitiveness internationally. Most of the crops that are grown in India except a few oilseeds are competitive in the world market. But as Ajay says for reasons of political economy, we have this ad-hoc policy. We are not a reliable player in the world market. Nobody wants to get into long-term deals with us and I agree that you cannot throw open all the doors and allow the world's subsidised produce to flood into India. You have to start with internal liberalisation. For the last one year, my organisation has been leading the project to create the National Agricultural Market and I can perhaps on another occasion, if given the privilege, like to share some of the things that we are hearing from the states. The kind of resistance to that idea, the kind of interest that have been pushed trying to delay because they realise it is going to come and whether they can delay this at least by a year or two. And all kinds of bogeys and all kinds of fears, most of them irrational are being raised. But the truth is as Ajay said when you approach a farmer and ask him to try this hybrid seed which can double his production, he asks why he should do that because his price will halve or even go down by 2/3rd and that he would like to stay at a sustainable level. He says he understands about the market needs and let him grow just about what he thinks the market needs.

These are the things we are all grappling with. I am sorry there are no "officials" here to perhaps take the question that many of you have on your minds. The nearest official that I have in mind is Sanjeev who was very much a part of the ministry and has seen the transition from the old regime to the new and besides his own fantastic work in the Horticulture Mission, Sanjeev and I have seen how some of these issues get sidetracked or buried. Thank you for giving this opportunity to address this distinguished audience and I will be happy to hear your questions. Thank you.

Question and Answer Session

Q: Anand P. Gupta: I am an economist. I have three questions, two for Mr. Sharma and one for Mr. Jakhar. The one for Mr. Jakhar is about the crony capitalism that he talked about. If he can articulate that issue; how can we address the issue of crony capitalism. Mr. Sharma made a wonderful presentation. The first point that I have a question on is that you were trying to convince the Chief Minister of Madhya Pradesh about the idea of recognising leasing on land by the small farmers and that somehow did not work out. Can you share as to why the Chief Minister did not buy your idea? Secondly, you talked about the issue of internal liberalisation before we seriously talk about external liberalisation. Can you talk about some of the issues that you have been talking about? Thank you very much.

Ajay Jakhar: Regarding the question about millets, we have been invited by NITI Aayog next month to take a group of experts to give our suggestions on the farm economy of this country. And we have invited Mr. Satish and if you deal with millets, you would know he is with the Millet Association and he is one of the experts that we are taking only to talk about millets. I

just did not mention it here but it is very much high on our agenda for livelihoods not just production but for the livelihood of the farmers. And similarly, we were invited by the Governor RBI just about a month and a half ago where we had again taken ten experts to talk to the RBI Governor and the whole team at RBI and on the issue of agriculture credit, ten people gave presentations to the RBI Governor and his team on different aspects of agriculture credit and I think they are very well aware of what the problems are and I think they are trying to do what they can do limited by whatever constraints they had. One of the things that RBI has done now is that they have said that 80 percent of the loans will have to be given to small holder farmers. I think there are nitty-gritty issues that need to be tackled. For example, how do you come to know who a small farmer is when you take a loan? When you take a loan, you have to give your bank documents for hypothecation. If you are taking a loan for a certain amount for which only two acres of land is required, you will give only documents for 2 acres; you will not give documents for 8 acres. Every loan that someone takes where hypothecation has been done only for two acres or one acre will qualify as a small farmer. We tried to explain all these points to the RBI but I think they are well aware of what the issues are and that is what we are doing as farmers' organisation because this is a question that Mr. Atri asked as to what we are doing as our activities. As part of our activities, we try and give the farmers' point of view to the system.

As far as crony capitalism is concerned, maybe it was not the right word but agriculture input companies which are in the agriculture sector, the farmers are buffeted from both sides. On the one side, you have pesticide companies, seed companies, tractor companies, you have power tiller companies. For example, for mechanisation, we have been asking for allowing free imports of farm machinery into the country. Where does crony capitalism come in? I will just give you an example for mechanisation. The mechanisation industry now goes to the government and says that they are creating jobs and don't allow machinery to come in. But obviously those jobs are not enough and the machinery that they are selling is not enough. The same power tiller, you will be find in Bihar today, if you go to the dealer and say that you want subsidy on this, then the price is different. If you say that you do not want subsidy and will make full payment in cash, the price is much lower and that is what crony capitalism is. They are using the opportunity because they have access to those empowered to frame detailing of the policy in such a way that the benefit from this. This is happening for tractorisation. This is how seeds are sold or how pesticides are sold. We have also gone to Ashish Bahuguna in his new avatar for quality control and request to make it compulsory for every pesticide shop like when you go and buy medicines, it is compulsory for every pharmacy to have a trained pharmacist. He needs a degree and he needs to give a bill and things like that. We have request for making those rules compulsory for pesticides also but at the end of the day, all solutions lie in extension services and government extension services.

Pravesh Sharma: On the question of leasing, it is quite evident that too many of the landed interests are today part of political governance structures. And they don't buy this idea of revealing the true nature of their holdings. It is true that our initial bout of land reforms was

largely subverted. People managed to put out parcels in the names of all kinds, some people say even animals, dogs etc. The powers that be today in the political structures are not sympathetic to ideas like this because it would perhaps dilute from their economic power. That is very simply put. Chief himself is a very small farmer and said that he understood what I was saying and said that it was very important. He said that it will be politically difficult for him to push it through in his cabinet. What do you do? I tried twice. I made a paper and one good thing in government is they can always appoint a committee and it went to various committees and debated over samosas several times saying what do we do. But it never went to the state cabinet.

I can share with you another earlier episode. I was a Director in the Prime Minister's office and Mr. Vajpayee was the Prime Minister. I have been pushing this idea for a long time. At that time, he had just become the prime minister and he was keen and of course, I pushed this idea. Being the wise man he was, he asked me to first discuss this in some academic context, organise a seminar. We organised a seminar in Mussoorie in the National Academy of Administration. Mr. Appu had also come for that. Obviously, all the intellectuals and we even called a couple of MPs who supported the idea. But on the downside, we also were honest enough to put down and when it went back to Mr. Vajpayee, he said that 'इसमें बहुत ग़दर होगा' (there will be a revolt because of this). We just left at that.

Ajay Jakhar: I think it is a state subject. The central government can do nothing about it in the first place.

Pravesh Sharma: The central government cannot. The central government puts out so much money in agriculture.

Ajay Jakhar: By the way, Madhya Pradesh does not even have a Land Ceiling Act.

Pravesh Sharma: It has a Land Ceiling Act. You have bypassed it, so let us not talk about that.

Ajay Jakhar: I have not bypassed it. I am telling you. That is the opinion that everyone has.

Pravesh Sharma: It allows certain kinds of holders to hold in excess of that 55 acres.

Q: Mr. Ajay, you have already put in your presentation that GDP is not the right way to measure the economic development as far as the agriculture sector is concerned. You fortunately mentioned that you are being invited by NITI Aayog also. Perhaps that could be the right forum where you can discuss that inform this gathering as to what transpired there. In case, that does not happen, then since your organisation is representing a large number of farmers, can you organise some economists' meet that it should be done this way because I have been hearing this for quite a long time, maybe for the past ten years. And very recently, 15 days ago, I read that it has been stated by some Nobel Prize winner that he has done some

research in India and it should be done like this. I have sent that cutting to Mr. Tawri also that now Nobel Prize winner has also started talking about this. My question is when is the right time to get this done. It is not as if someone's property is getting lost. There are so many things which can be done. Generations after generations, we are talking the same thing. Are we waiting for India to be ruined to implement this?

Q: Rajiv Sachdeva: Mr. Ajay made a point that today a small farmer typically cannot survive unless he has some off-farm income also. You have also mentioned that all the farming policies, agriculture policies are flawed and not consistent with the expectations of the farming sector. Why don't you additionally work towards increasing the off-farming income of the farmers in addition to the on-farming? Have some measures been taken because I am sure there are no policies which govern that aspect? Make the income of off-farming better in the village so that they can concentrate and focus and become more independent with on-farming. One of them, for example, could be and maybe, it is an absurd suggestion because I don't have much experience in this field but a lot of people, as you yourself mentioned, who are not farmers or who don't probably understand much of farming, lot of people who have never been to a farm also properly actually are making policies. Why don't you encourage people on the farm, even if it is a small farm of a hectare or two to set up a rest house or a guest house so that people from the cities who are curious pay to stay in a village or a farm and gain the experience?

Ajay Jakhar: As a farmers' organisation, we are trying to get Angus Staton and Joseph Stickler to come and talk to this country because I think the way policy is being made, we want them. We are already in the process of trying to get them here in some capacity to come and speak. As a farmers' organisation, we are very limited with our finances. We do not go and tell the farmers as to what they should be doing because we don't have enough financing. We do not take finance from the private sector as an organisation and we do not take funding from the government sector also. We are basically surviving on internal revenue generation that we can get or from cooperative organisations like IFFCO if they support us. Because we are limited, we decided only to focus on farm policy because if we think we can change one farm policy, we can make one RBI initiative on rural credit, it will affect millions of farmers. There is no way we can go and tell the farmers to do what they want but like I said and someone also said that you have to get people off the farm. When we go to various conferences, we are asked to keep young people in the farm. I ask why we should do farming. Send somebody else to the farm. We want jobs in cities and obviously, skill development is required. We are limited because of our reach and finance because of that.

Q: My question is to Mr. Ajay. As he said, extension is the weakest link and if it continues to be the weakest link and if it continues like this, where do we go? It is very difficult to imagine. If extension has to be strengthened, the state governments have to be taken into confidence. What is happening today is that extension is the states' major responsibility but the centre is taking up one by one and we are expanding. Where do we end? Unless we tell the states to take up extension, to spend on extension, to nurture extension because most of the state governments

are giving up extension except only few state governments. Central government is trying to revamp it saying that they are trying to help but this is not going to help. When you go to meet NITI Aayog, can you discuss how extension can be strengthened so that the technology transfer can take place? If the technology does not reach the farmers, farmer is never going to be prosperous.

Ajay Jakhar: Extension is required. But the state governments have no funding to even give salaries. First of all, if you ask 99 percent people of India as to which is the government department which is supposed to give extension, they don't know. They might say KVK but actually it is Atma, and as they say, even the soul is dead. We are saying that the government has to fund and that is why I said in my speech that if the government could tabulate the cost of other ventures, if the government has money for giving higher pension under OROP, the government has more money to give Seventh Pay Commission raise, if the government has funds for all these, ---

Q: Does it have the money for this? That is the whole problem.

Ajay Jakhar: It will still manage to give. It will print more. What I am saying is the central government will have to fund extension services. State governments will never be able to do it practically. It might not be right Mr. Chopra but there is no other way.

Pravesh Sharma: On this point, I wanted to give a counterview. My submission is we are not going to see major public investment going to extension as we go forward. And I will tell you why I am making this statement. Please refer to the point I made that if 3/4th of your sector is addressing market-driven demand, the government is not a player there. The government is a player when over 80 percent of the output was feeding into your national food security sort of objectives. The government saw value in putting people, giving them a 30-year career pathway and assuring them of job security saying that you keep updating your skills and keep going back to the farmers. Today, these guys are irrelevant as I said. They don't have the kind of knowledge of horticulture, dairy, poultry, fisheries which the farmer is asking for. That is coming to him from the market. What we are going to see is a further expansion of private sector-driven initiatives in extension. We may debate the rights and wrongs of it but I am just stating the reality to you. We are looking at a separate model in the work we did in the FPOs. We have found that wherever 1200 farmers have aggregated and made their group, registered the producer company and started getting some value from making this group, the first things that happens is their input costs fall by about 10-15 percent; naturally, when they are buying in bulk. Secondly, they find that now the bigger traders are willing to talk to them because they have some bulk to offer. Of the 1000 that we have promoted in the last five years, at least 200+ that I know have hired agriculture graduates as private extension paid for by the FPO. But they are serving the need of that particular value chain with these FPOs. For example, in Madhya Pradesh, several of them are into seed production and they realise that without a technical person supervising, the seed would fail at the certification stage, so they say, let's pay this guy

Rs15000 or Rs20000 and he is going to be our employee. They have BSc. (Ag), MSc. (Ag) graduates who are reporting to the FPO and they are taking care of the technology part. We see more of these hybrid models perhaps emerging. In many cases where companies are getting into contract farming, they are placing technical people with these farmers groups saying that we want this particular type of potato but we want sizing to be very important especially for the guys who are buying for chips etc. For them, even size is very important otherwise their assembly line gets disrupted. They are putting in their technical people. We will probably see more hybrid models and market-driven models than government taking up this. Of course, that does not stop you from taking your suggestion of talking to NITI Aayog but I thought let us be realistic about where things are going.

Q. Dr. Mathur: I have worked in trade ministry. I am a retired civil servant and I have a doctorate in international economics and I want to answer Mr. Pravesh Sharma's point of view of liberalisation of the economy. For example, if you know the history of PL-480 which was coming to India, India was a big food importer right up to 1970-75 because studies have shown that American cheap food had completely depressed the food prices in India. That is why L K Jha's Commission was made in 1970s with Lal Bahadur Shastri's Jai Jawan Jai Kisan and they gave the support price for procurement. Now international food is very complex. For example, Japan has 6 or 8 times the domestic rice prices. It does not allow import. There is so much of subsidy for all this in European market. It has to be on case to case basis. India is a very efficient producer of food grains. We have to internally liberalise the market. But as far as our external market is concerned, our negotiations as Mr. Jakhar said have been very bad in the WTO. We have got into a very bad situation and giving huge subsidy. Unless we protect our market across the board by finally calibrating each case, our agriculture will just be thrown to the docks and there is a depression today. I think policymakers have to look at it and open the market.

Q. Ram Narain: I have seen China and one difference that I have seen between India and China is that they are providing cottage industries within rural areas and that serves two purposes. I think in India, it is absolutely absent. I visited an area in China having 1500 families having 75 cottage industries. The advantage is that you are providing employment in rural areas itself for the people instead of their migrating to cities and creating slums. More important in the Indian context, we read everywhere that 30 percent of the agricultural produce is wasted because there is either a problem of marketing or whatever. If you bring agro industries, then the point which we are also making, those industries will transfer knowledge to the farmers, take their produce at reasonable price and do that. I am wondering why in India we are not going for rural agro industries.

Q: I have two very small and direct questions. In the Economic Survey 2014-15, they have mentioned about model APMC Act. What are the chances of having a model APMC Act and secondly, what is the scope for food processing industry or secondary agriculture?

Pravesh Sharma: I think that also answers Dr. Gupta's question about internal liberalisation. There is no scope for the central government to impose model Act all over the country. That is a state subject as Ajay said and it is within the domain of the states and they are driven by their own political economic considerations. One little window which the central government has is the trade window. The last government as well as this current government flirted with the idea of using that trade entry in the central list to try and create a unified national market. But correctly and wisely it was decided that this would be something which would go against the idea of federalism because the truth is states' look at agriculture very differently from what the Government of India looks. Kerala looks at agriculture very differently. Kerala has no issues about food security because they import all their food but they are very concerned about their plantation crops. Tamil Nadu does not allow rice to go even from one district to the other. You have these two extremes and perhaps, you cannot have a uniform system.

So the idea of a National Agriculture Market which is like an electronic market is going to be a virtual market. It is not a physical market. But at the backend will be these APMCs. The idea is to gradually incentivise the states to come on board and to allow farmers to sell. It is a great irony in this country that if you are making a pen in Chennai, you can sell it anywhere in the world without any restriction. But if you are growing wheat in a district in Tamil Nadu, you can only by law take it to the nearest notified market. This is a country of farmers and we all say that Bharat is an agriculture-based country but the truth is the farmer is the most unfree of all the economic actors. There is no question about it. We have to accept that and I personally think and Mr. Jha is writing a lot on this and I am a great follower of his writings that perhaps it is the only sector, sorry again sir, to disagree with you, it is the only sector where the winds of internal liberalisation never happened.

We focused our liberalisation on the financial sector, on the external trade sector and on the industrial sector to a great extent. We completely left out agriculture. That is why there is so much mismatch. Remember the \$600 per capita and \$2400 that I spoke about. It shows our policy failure. Let us accept it. As a country, as a society and certainly as part of policymaking system, I accept that we have not been able to convince the political masters that there is a huge amount of injustice, that is the only one word one can use, being done to these producers. We are depressing their prices. There are studies, the late agricultural economist, Dr. D S Tyagi who was assassinated did a wonderful study before he was assassinated. He was assassinated for not recommending high enough MSP prices. I am sorry that was the bad old Khalistan problem days. He was assassinated at Tilak Lane, in the heart of Lutyens' Delhi because they felt that he had not proposed a high enough MSP. Dr. D S Tyagi showed in his brilliant study that effectively agriculture in India has been taxed at the rate of about 15 percent between 1950 and about 1980. Now if you calculate the value which was siphoned of agriculture, we can see why the condition of agriculture is what it is today. It was protected. It was overprotected. There was no competition allowed. It was mollycoddled in one sense. But it did tremendous damage to the cause of agriculture and weakened many of our production systems to a point where today they must have this dole. The terms of trade after 1991, whether we may like the agreement on

agriculture or not but one of the things that happened because of globalisation was that we had to raise the domestic prices to give our farmers some sort of parity with international prices even if you were not allowing them to export. That is also the plus side of it. In the last decade, the terms of trade have turned positive but in the last 2-3 years, because of the weather-related crisis, again I believe that it is not very good. On subsidies, I quite agree with you that the last calculation which is of 2013 shows that our net subsidy to agriculture is only around 6.5 percent. We can go up to 10 percent. In addition, if we change some of the ways in which we give subsidy which is how most of the West is doing now which is producer income support, we could actually go much higher. We can't actually afford to go much higher. We can actually go up to 10 percent even today but the country does not have that kind of money. So all this criticism of free electricity and cheap fertiliser still does not subsidise the sector to a point where it is beyond our WTO commitments or it is unsustainable. I will make this little point. Thank you so much.

J N L Srivastava: I think we had an excellent presentation and also discussions and we have realised that this issue is very complex and requires a lot of initiatives on the political side, policy reforms, institutional reforms, technology, extension and so on. I think all these issues have come up. I want to add only one point that agriculture is the largest private sector enterprise in the country. Farmer is the private enterprise and he will decide what he has to do. Policies, programmes, incentives have to be in such a manner that he is able to realise increase in his income and also improve his status. What we find and what I suggest is that there are some programmes of the government on the table today. Take skilling India.

We are talking of non-farm sector initiatives for the farmers. Advantage of Skilling India initiative can be taken for skilling and for providing an exit route to the farmers from agriculture because obviously, I think almost 30 percent people have to move from agriculture to non-agriculture if you really want to improve their incomes. This 'Make in India' is good if agriculture sector, whatever is to be manufactured, mechanisation, technologization, may be it picks up under that programme,

I think this would be an excellent thing to happen. Similarly, digital India is another initiative. We are talking of how do you get extension to the farmers.

I think if this programme succeeds and then the rural areas will get lot more information, knowledge and extension as Pravesh was saying. If private sector is getting more and more into this, then digital India programme could succeed and the agriculture sector could take a major advantage of this.

Even smart cities; we all know that all the diversified agriculture, all these products are there and urbanisation is really going to help. If the smart city concept really comes up, maybe, all the peri-urban agriculture etc. is going to develop. My suggestion is whatever is on the table today

in the form of a programme, the agriculture sector should try to see in what manner they can take advantage of this.

I am very grateful to the audience; a lot of very good discussions have taken place. I would like to thank all of you and let us hope that the Indian agriculture prospers and Indian farmer is very proudly able to say that his condition has improved and everybody recognises that in spite of all weaknesses of our policies and programmes, India is food secure and we are able to feed millions of people and overall poverty has also come down. Achievement of Indian agriculture can never be minimised. I think that point one has to know and appreciate.

Vote of Thanks: Thank you Mr. Srivastava. I now request our Secretary General Mr. Shanti Narain to present a memento to the chairman and the two speakers. I would like to convey deep gratitude on behalf of IC Centre for Governance to Mr. Srivastava whom I have known for more than two decades and he has always been forthcoming and with his deep knowledge, he has excellently conducted the proceedings. We are very grateful to him.

In so far as Mr. Ajay Jakhar is concerned, that is the third generation of the Jakhars. I started my dealing with Mr. Balram Jakhar and then Mr. S K Jakhar, IFFCO Chairman and now he is the third generation. I have been interacting in his activities. I am very grateful to him that he accepted our invitation and illuminating the audience.

I have heard so much about Mr. Pravesh Sharma from Mr. Taimni and unfortunately, he could not come and your presentation has only proved what he has been saying. I wish we had some more time or maybe, even after you retire, if we are in touch, we will find another opportunity for a similar interaction. Thank you all very much.

Fourth Lecture

SKILL DEVELOPMENT IN FARM AND NON-FARM SECTORS

December 11, 2015

I P S Anand

At the outset, I regret to inform that an esteemed and a senior colleague of ours has passed away earlier this morning. In fact, concurrently around this time, the last rites are taking place and many of us are perhaps still attending that. But he will be greatly missed. We pray for his family and also pray that his soul rests in peace forever. As a mark of respect for the departed soul, I would request all of you to kindly join and stand with us in silence for two minutes. Thank you very much.

Good day friends. On behalf of the IC Centre for Governance, I welcome you all to the fourth lecture in our series of five lectures. The next one is on the 15th January, 2016. This entire series has been devoted to governance issues in agricultural sector. Today's subject matter basically revolves around skill development in the farm and non-farm sectors. This is a subject matter which has been picked up after a great deal of deliberations because most of us felt that this is an area where a lot is being done and that needs to be looked into, evaluated and then seeing what further recourses need to be taken in this area. For instance, a recent National Sample Survey results which have come out show that 90 million rural households are there in the country. Out of these, 70 percent of the households are having land of only one hectare or less. That means how many people today are living with very small fragmented land holdings. If you see their average monthly income that the survey brings out, it is less than Rs6500 per month which is bare minimum, something which can work out with a great deal of support. When you see a programme of NDTV regarding Bundelkhand, it shows that this support or perhaps this safety net is not working effectively. The manpower development, skills upgradation for the farm and the non-farm labour is of great importance. A lot is being done but I think it is only green shoots which are showing up and much more needs to be done in this area.

Luckily, we have got today keynote speakers, both of whom have had tremendous experience and expertise in this area. I am looking at the door thinking Gayathri is coming in. I am told that she is on her way. The second keynote speaker is our old friend Dr. Rita Sharma. She is a former IAS Secretary, Department of Rural Development. She has spent a lot of her working years in the agriculture-related sectors. We are fortunate that she agreed to come and talk to us.

Mrs. Gayatri Kalia who is awaited is stuck up in the traffic. She is also someone who has worked in this area for more than two decades and her total exposure is 25 years in a lot of areas.

As Chair, we have Mr. M C Verma who is also a colleague in our core group of ICCFG. He has spent a lot of time in the Planning Commission, in the government and abroad and all of it in the manpower development. He has been in Nigeria, Cambodia and in a number of other countries working as an expert for upgrading the manpower development. Without taking any more time, I request Mahesh Bhai to take over please. Thank you.

M C Verma, Former Technical Advisor, UNDP:

Thank you I.P.S. Since we are now only two, obviously you can take as much time as you like. I would only say a few words to set the context for today's discussion. Since I.P.S. Anand has already mentioned about the Survey on the incomes in the rural areas, let me go back to another survey; the 68th survey of NSSO in 2011-12 gave a lot of data on employment and unemployment. Lot of that data is apparently better. The situation looked better than what it was about seven years earlier in 2004-05. But still the unemployment rate especially for the educated workers has been pretty high. It has declined over the last decade but it is still very high. For example, the female unemployment rate for educated workers was more than 15 percent; the definition of 'educated' is 10+ whereas for the males in the rural areas, it was more than 8 percent. These figures look small but they must be juxtaposed against the other set of figures which comes from the unemployment register of the Employment Exchanges where something like 40 million persons have registered themselves. It is also true that out of those, a lot of people have registered themselves in several exchanges. So there is multiple counting. A number of them register themselves because they want better jobs. One has to discount for that.

There has been research on that subject. Even then, the numbers are very high. They are higher than what the NSSO throws up and that is a cause for worry because most of the people who go to the employment exchanges are normally 10+. A lot of them are graduates and above. We already know that both rural and urban graduates apply for jobs for peon in a state like UP in very large numbers. What it shows is there is very great demand for jobs in the market and the regular jobs are still scant. The two surveys indicate that there has been improvement even in that. There has been improvement in percentage terms; it may not be in the absolute terms. But the other facts are that 29 percent of workers in the rural areas are still in casual wages, casual labour type. That percentage is also declining. I have not worked out the absolute numbers. But 50 percent are still in self-employment and a lot of those who are in self-employment are basically farmers but there are also others who somehow make do. They just survive. And all those who are outside farming proper need a lot of skills to get a decent job or decent work if not job because sometimes job is sometimes considered synonymous with regular living and regular jobs. What we are seeing is that despite all the progress in the last decade, thanks to a very large growth in the GDP worldwide, not only in India, there is still a lot of work to do and we have also to ask some other difficult questions.

We are concentrating here on the agricultural sector but we understand now that there are lot of people who are engaged in urban agriculture. We have to ask ourselves the question as to whether those people who are in the urban agricultural sector also need specialised skills and how are those provided. The other question which in fact, you might have dealt with in detail is that a number of schemes which the government had started long time back, like training and visits, like TRYSEM and a number of other schemes like the extension schemes do not attract any notice anymore. Perhaps, they have been subsumed in DDU-GKY scheme which we are hoping Gayatri will deal with. But we also have a role for the NGOs. There are very large numbers of NGOs in the country; they are in lakhs and a number of them are engaged in skill development. There is no doubt about it and some of them, of course, now are attached to the NSDC, National Skill Development Corporation of India but many others are not directly mandated by the NSDC. We have to ask ourselves as to what can be their role in this sector.

And lastly, I would throw open the general question which is can DDU-GKY or any other scheme help achieve demographic dividend for this country. Whether we can supply skilled persons from the rural areas not only for domestic work but also for other countries like Germany and Japan which are suffering from shortage of labour? Thank you.

With this background, I now request Dr. Rita Sharma to give her presentation.

Dr. Rita Sharma, Former Secretary, Department of Rural Development:

Thank you Mr. Verma. Everyone can see that presentation. Good evening friends and I thank Mr. Verma for the introduction and I would like to thank the organisers of the IC Centre for Governance for giving me this opportunity. I am indeed very honoured and privileged to be here to share with you some of my experiences. I remember coming here about 3 or 4 years ago when I was the Secretary, Department of Rural Development and the National Rural Employment Guarantee Programme was just two years into its implementation and there was a lot of interest in it. So I came here and I had some sharing of experiences at that time also.

Let me just mention that in addition to being Secretary, Rural Development and after that, I was in the National Advisory Council which was set up under the UPA 2 and currently, I am also on the Board of Trustees of some of the international organisations in agriculture. You are all familiar with ICRISAT which is based in Hyderabad but I am a board member of the International Rice Research Institute which is in Manila and also of the World Agroforestry Centre which is in Nairobi and something called AfricaRice which has its headquarters now in Abidjan and about two years ago, I was Commissioner for Asia on the International Commission on Sustainable Agriculture and Climate Change. My presentations and my submissions to you today are going to have a slight bias towards this whole issue of sustainability, of Climate-smart Agriculture (CSA), issues of building resilience and reducing vulnerabilities.

Before I begin my presentation, I would like to share with you that before I came here, I was speaking to someone about this presentation in the afternoon and they gave me a little bit of advice and that advice was three things basically. They said that this was an evening programme; it is not early in the morning and that I should be brief. Just now Mr. Verma told me that I could take as long as I liked. I will not try and do that and I will go by the advice first and try to be brief. Secondly, they told me to remember that they are not going to remember anything I say. What I have done is there are some 27 slides in this. You can take them as you wish but right at the end, there will be two slides which are called summing up. That is to address the issue that people are not going to remember what you said and the third thing they said was to tell a joke. I am not very good at telling jokes. I looked up and enlisted the help of a character who lived many, many centuries ago. Many of you must be familiar. His name is Mullah Nasreddin. He was a very wise man and he had something to say about everything except that he also had a little bit of a phobia on speaking to large audiences and also to gatherings. He was asked to make a speech and he prepared for it. He went there and after they had introduced him generously, he was asked to take the stage. He stood there for half a minute completely speechless. I hope that is not going to happen to me. Then he said that the human mind was the most wonderful device in the world. It starts functioning the instant you are born and never stops functioning your entire life. Let me put it that way until you stand up to make a speech. Thank goodness for the PowerPoint and we have moved since Mullah Nasreddin and now we have got the PowerPoint which I think is a very useful crutch for poor speakers like myself and so, we will use the PowerPoint presentation to take us forward.

The title which has both been introduced by Mr. I.P.S. Anand as well as Mr. M C Verma is under the overall umbrella of governance issues in agriculture. Today, we are looking at skill development in the farm and the non-farm sectors. The way I have organised this presentation is very briefly to look at the first dimension which is the present status of agriculture. I will spend a little time on the changing scenario because if skills are to be developed, then we should know how the agriculture scenario is changing and then tailor those skills according to the demand which is being generated. The third dimension will be looking at skill development both in the farm and non-farm sectors. The fourth section is looking at if agriculture is changing, are we also changing in terms of the nature of the agency which supplies the skills or delivers the skills and builds the capacities namely the agriculture extension and agricultural advisory services? Are there commensurate changes with that is happening? And lastly, like I said, there will be two slides. If any of you want to go off to sleep, that is fine. You can do that because in the last, we will try and sum up what we spoke in the other 26 or 27 slides.

These are some very well-known indicators and I am not going to spend too much time on them. I will just highlight the second bullet which says agriculture now contributes only 14 percent to GDP and yet over 55 percent of the population draw their livelihoods from agriculture. One can well imagine the extent of underemployment and low productivity in the sector and I would like to flag this because as we move forward in the telling of the story, you will recognise how things are changing. The second thing I would like to highlight is that the

small and marginal farmers, as also pointed out by I.P.S. Anand, that we have got now an average land holding size of about 1.2 hectares. We have got 80 percent people who are small and marginal farmers and they all have low levels of education or largely, low levels of education and skills and high indebtedness. These are some of the situations that we are looking at.

Very briefly, we now know that the famous Green Revolution of ours was both a cornucopia and a Pandora's Box. We all know that as a result of the Green Revolution, we became self-sufficient and we put those critics to rest who had spelt out doom and gloom namely Thomas Malthus two centuries ago and Paul Ehrlich who wrote in 1968 the book which was called the 'Population Bomb' and said that countries like India with huge populations are not going to be able to sustain themselves, nor be able to feed their people. The Green Revolution put paid to that kind of pessimism. However, we also know that the Green Revolution was restricted to areas which were irrigated and had the resources and it completely bypassed the dryland and the rainfed areas and its thrust was largely on the major cereal staples namely wheat and rice.

But if we look at the Pandora's Box part of it, it was the environmental problems which were unleashed as a result of the Green Revolution and we now know that states which were very intensively cultivated, western UP, Haryana, Punjab now saw rapidly falling groundwater tables, they saw decline in soil fertility, loss of carbon, organic matter, land erosion and very importantly, all those agrochemicals that we were pumping into the system, were entering our food chain and were contaminating the surface and the groundwater as well.

What now? Over the last 10 to 12 to 15 years, we are seeing changes in the agriculture system and what is transforming the agricultural sector. Some of these drivers of change are: Urbanisation which we all know; the changing demographics of farmers which Mr. Verma also talked about, regarding population dividend, young people moving out of agriculture. They don't want to be involved in the drudgery of agriculture, transplanting rice which is extremely full of drudgery. So the young people don't want to be there; they are moving out leaving women and older men in the rural areas. A big middle class is now emerging and that is looking at and wanting dietary changes. What crops need to be grown to address those dietary changes is also one of the areas which is impacting on our agricultural sector.

A major ICT revolution is happening which is helping us to transmit information where earlier there was only the person to person information which could be transmitted.

Sustainability issues from the adverse impacts of the Green Revolution are also a major concern and the expanding role of the private sector whether it is the corporate private, that is the 'for profit', 'not for profit' are also going to make a difference in the way we look at agriculture and deliver services or be involved in skill development.

Now the climate genie is squarely out of the bottle and as we speak here and discuss here, the Paris Conference is ongoing to see how much of that genie can be pushed back into the bottle. The issues of adaptation to climate change because despite what they do in Paris, the world is going to continue to warm and countries like India and especially the rainfed areas and the marginal farmers are the ones who are going to take the brunt of it having not contributed a bit to global warming.

And last but not the least, very importantly governance issues are now looking holistically at the agrifood and the value chain, not just the production systems or not just a single crop but the entire value chain. I think it is these drivers of change which are actually transforming the way agriculture will look and what impact it is going to have on issues of skill development.

This is just a little visual thing. As you can see, we are in 2015, we have got 30 percent urbanisation and by 2050 when our population is expected to be 1.6 billion, we are going to be half in the rural areas and half urban.

This is the female, male labour use in rice production. In Uttar Pradesh, Tamil Nadu, Assam, you can see that a large number of women are now involved in the agricultural operations. India's growing middle class population expected to be of the order of about 600 million by 2025 and about a billion of middle class in 2040 are all going to make and have their impact on what crops to grow and what will be in demand.

We all know and I remember when I was in agricultural economics, the first thing that I learnt was Bennett's Law which says rising incomes lead to diet diversification. It will move towards non-grains and meat, fish, dairy, fruit, vegetables and it will move towards processed foods already very visible now in the urban areas and prepared foods brought away from home.

The ICT rural mobile phone penetration – this gives you an idea of what it is like. Rural subscribers – 42 percent. Over 1 billion mobile phone users as on June 2015. Teledensity is 80 of which the rural teledensity is 59. Teledensity means the number of mobile phones per 100 people; almost 50 percent in the rural areas. Of course, there may be some people who have more than one phone. But this is just to give you some trends in the direction in which we are moving.

And then we have what we call Farm To Fork and Plate to Plough which are food value chains where we are now looking not only at crop production. Earlier, crop production was the sole item on which agricultural extension technology dissemination machinery focused. Today, we need to be looking down the value chain, looking at farming systems as a whole. We are looking at livestock, fish, trees etc.; the whole issue of harvest, post-harvest, losses, wastage, processing, marketing, retail and consumption. And that is a very good thing. Because you will see further down that different levels have spawned their own needs for the kind of employment and skills that are required.

We are now looking at skill development in the farm sector. I would like to spend a little time on this little diagram which I have prepared. If you look at it, I think it encapsulates what we have just discussed. At farm level, the push is coming from the agrarian distress, climate change vulnerability, issues of land and water degradation, indebtedness, off-farm opportunities - young people moving out of agriculture. Outmigration is a different thing. But even here, once they come to the urban areas, they may not be very gainfully employed. They live in slums and perhaps the quality of life sometimes is worse than what they leave behind. But outmigration is happening. Ageing farmers and feminisation.

If you look at the consumer level, population growth, income growth, because of the growing affluence, urbanisation, diversification of food requirements and dietary habits and now people claiming and wanting certain kinds of quality and also the whole issue of organic farming as well.

If we look at skill development, what kind of skills do we want? We are looking at climate-smart sustainable agriculture. Just this afternoon, I was listening to the Minister of Agriculture replying to the debate in the Lok Sabha on drought. His thrust was also on **जल वायु परिवर्तन से सम्बन्धित खेती पर विशिष्ट ध्यान दिया जाएगा**, that is, focus will be agriculture related to climate change. And what does this mean? What does it mean in terms of skills? It means that we apply the appropriate science and technology options. Today, if we find that pesticides and insecticides using chemicals is harmful for soil fertility and for the human health, we need to be looking at those varieties which have been developed, which are drought-resistant, salt-resistant and which are resistant to pests and diseases. How do we apply that science? We need a new set of skills for applying the right and appropriate science using knowledge-intensive and resource conserving best practices. Earlier, T&V person just went there and gave them the seed and the fertiliser advising to apply it at a particular time and the task was done. Today, we need more knowledge-intensive communication of information and knowledge-intensive practices. You must have heard of something called zero tillage. We use the zero till machine and you plant your crop without over-training the soil. You are saving in terms of the energy, less carbon into the air and you are also saving in terms of water. You have systems by which you can save water, you can save seeds. The systems of rice intensification which many of you may know is a set of practices which is spread from farmer to farmer and from NGO to NGO although our scientific establishment refuses to take cognizance of it but it saves 90 percent on seeds and it saves 50 percent on water. Those are the kinds of things that we need to be looking at.

Improving efficiency of input use – we flood our fields with water and so much water is wasted. We are now looking at improving the efficiency. We have heard of drip irrigation. We have heard of sprinklers by which we can improve the efficiency use and working towards natural resource management practices.

This I think is a very new thing which has happened. The Ministry of Agriculture has now been renamed after 70 years as the Ministry of Agriculture & Farmers Welfare. They have brought farmers welfare centre stage. It is not only about increasing production, not only about having macro level food security of self-sufficiency, it is about looking at social security, reducing vulnerabilities, improving the resilience of the small and marginal farmers and their resource-poor communities who are living on the edges. And for this, we already have an old age pension scheme. We need to see if it is reaching the farmers. How do farmers manage crop failures and natural disasters? There are some horrific pictures on the television as far as Bundelkhand is concerned. Two consecutive droughts and what do we need to do? Trees on farms is one option. Claiming 100 days of employment under NREGA, people should have job cards and should be able to access such a big scheme which is a safety net. Receiving entitlements to subsidise food grains under the National Food Security Act. We have entitled the people to purchase rice at Rs3 and wheat at Rs2 from the Public Distribution System. The state governments must make that available. Accessing credit, accessing insurance cover and claiming compensation: it is all very well to have a scheme but are we able to convey that information to the farmers who most need it? And once a drought occurs, are the farmers able to get the compensation? These are some of the issues that we need to look at.

It helps the small and marginal farmers if they come together in producers' collectives both in terms of the inputs which they purchase. There is savings and economies of scale and they are also able to sell their produce and find a better market if they collect their produce together. We now have a large number of them, the latest of them is the Farmer Producer Companies which are being set up under Section 25 of the Companies Act. And now if you look at the food value chain, you will see those areas which are attractive to the youth. They may not be very interested in bending double over the rice and paddy fields but they are now interested in using ICT for price discovery. They are interested in looking at markets. They may be interested in scientific storage and improvement of shelf life, grading, marking, packaging etc.; the whole gamut of post-harvest technology and agro- processing and entrepreneurial skills to be able to build on them. This is a new area along the value chain where the young people from the rural areas, people with farming background who understand these things, may not be educated enough to be able to get into the ITIs or get very gainful employment in the non-farm sector, be able to do this. And for this purpose, the present government, although this was started in the earlier time, was the Skill Development Mission which is now called the Pradhan Mantri Kaushal Vikas Yojana where skill development in greenhouse technology, implementation repair, custom hiring and all that gamut of agriculture-related non-farm activities is ongoing. And as part of that exercise, there is something called the Agriculture Skill Development Council which advises the national skill development corporation and the various partners in terms of what kind of demands are generating in the market. Most importantly, as was mentioned the old trisome which has now got converted into the Skill Development Programme and the old IRDP which is now in the National Rural Livelihoods Mission where women come together in self-help groups and which I think now is called the Deen Dayal Rural

Livelihoods Mission to take up income generating activities such as vermicomposting, beekeeping, mushroom which requires less land but are income generating.

Have a look at this very interesting chart where it displays the share of power in percent terms available in Indian farms. In 1971-72, machines accounted for 39 percent of the share of power and draught animals was 44 percent. See the last column. That is for the year 2012-13. 90 percent of the power is now coming from machines and the agricultural workers are relatively less. This is the trend that indicates that mechanisation is happening and mechanisation is good. It augurs well for the youth of the country to be able to participate in this. What does this mean in terms of the agro service providers, the people who will develop these skills, people who will develop capacities? Traditionally, these have been the government sector, public sector monopolies which have delivered the extension, the technology, the knowledge and the information. But the nature of the agricultural extension providers is changing. It is changing from a linear and a supply-driven system to a more pluralistic one and demand-driven. Earlier, both Mr. I P S Anand as well as Mr. Verma have mentioned the role of other agencies and they are all coming in, in a very big way to fill up this universe.

Different extension providers, of course, have their own expertise and not anyone can cater to the entire demand but different agencies and different systems have their own advantages and the role of the government needs to be one of coordinating them and to be able to bring them together on a single platform so that we can have information about who is doing what. The ICT explosion has made it possible to leapfrog over the old interpersonal mode of imparting information and knowledge. And while on many fronts, a one to one, person to person interaction is important but a lot of information can now just be sent across through the ICT. In all of this, therefore, the role of the government is changing to being one of an enabler, a facilitator, a coordinator, a converger rather than going out and doing everything themselves. They may have to do in those remote areas where there are no other service providers but where the service providers are coming in and they need to be encouraged, the government's role should be more to ensure that it is a level playing field and the people who are going to be the beneficiaries are not short-changed on account of many of the other players.

I have just very briefly and broadly categorised to give you a sense of the kind of people who are now providing these services and helping in the development of the skills. In the public sector, there are still the state extension services but most of the states have begun to reduce their bureaucracies. The old extension services are now almost half their size because of financial crunch. The new district level Agriculture Technology Management Agencies (ATMA) are now taking the place and they are much smaller. In one district, maybe, there will be about 10-15 people under one ATMA. The Krishi Vigyan Kendras in every district are also the ones who do the frontline demonstrations of the new technologies and train the farmers. Farmers' collectives themselves are internalising extensions and skill development. Big cooperatives like Maha-grape and so on don't need the government extension services. They are able to bring those best services, best extension and best technology from wherever in the world and pass it

on to their members. The private for-profit firms, they are the corporate sector, they are input suppliers, they are seed companies, they are agri-businesses, contract farming arrangements; there are a large number of different models now in the farming sector.

Then there are the private not-for-profit agencies, that is, the NGOs, the foundations, the trusts, those who are now also running through the Corporate Social Responsibility kind of funds. Then there are public, private partnerships such as para extension workers, para artificial inseminators, agri clinics, young people out of colleges with a B.Sc. Agriculture degree setting up small agri clinics and then transferring technology or skills.

And last but not the least, the mass media and the ICT which is also a very, very important player in the new developing scenario.

Now let's have a quick look at the skill development in the non-farm sector. We need to recognise that 55 percent workers in agriculture contributing 14 percent to GDP is not going to be sustainable. And therefore, there is a need to pull people out from the over surplus and the huge low productivity agriculture sector. The non-farm sector so far, although, someone said the green shoots are there, you can see that things are happening but the scaling up has not yet happened. Non-farm sector has not been able to provide adequate and gainful employment especially to farmers 80 percent of whom are small and marginal and a large number of them are either illiterate or have very, very low skills and low formal education. How are we going to absorb them and which industry or which service is going to be able to absorb such people? If you look at the break-up, the agriculture sector is 14 percent of GDP, industry is of the order of about 28 percent and services are of the order of about 58 percent and India has gone straight from agriculture to services without a major industry manufacturing sector cum developing.

If we look at some of the other Asian countries, Malaysia, the share of employment in manufacturing, Malaysia is 50 percent, Korea is 62 percent, China is 31 percent and in India, it is only 12 percent. The services sector is not going to be able to absorb too many of the unskilled people. Construction sector has been able to take up but we need much more in terms of the manufacturing and the industry sector and that is why I think the call for 'Make in India'.

We now have a new Ministry of Skill Development and Entrepreneurship who are targeting 50 crore youth by 2022. This process started earlier and it is now being further fortified by the present government. At present, out of that 500 million, about 5 million have been trained and they have not only been trained, the important thing is to get them placed also in terms of salary, employment and so on. We must recognise that these are going to be entry level positions and so if a person from a rural area with very minimum skills and formal education is being trained as a security guard and comes here to a metropolis or a big urban centre to become a security guard, their salaries are of the order of about Rs6000 or Rs7000 whatever is the bare minimum wage. There is a lot of private and public engagement in this process of skill development. We have the National Skill Development Corporation which has been

functioning for five years, the Pradhan Mantri Kaushal Vikas Yojana is also ongoing and they have identified some 235 private sector partnerships for training and capacity building, each to train 50000 people over the next ten years. A new concept that has come out where the training can be demand-driven is the idea of 38 private sector skill councils and these sector skill councils are in services, manufacturing, agriculture and various informal sectors. What kind of employment, what kind of demand is going to arise and are we ready with course curriculum, qualification packages to be able to meet that demand is part of this skill development effort. Maybe, we will have to wait a couple of years to see how much of this is actually going to be successful.

The public sector itself is generating a lot of employment and if you have a look at this, the Department of Health and Family Welfare with the village level ASHA workers, the Panchayati Raj set up, the women and child with a large number of anganwadi workers and so on and of course, the agriculture which is now looking at a very important deviation from the earlier thing which they call a farmer-to-farmer extension, the successful farmers employed on an informal basis by the agricultural departments to be able to get trained themselves first and then take their skills to other farmers. This is also going to generate a fair amount of employment at the village level so that you can have people in farming and from that farming family, there can be one person who is working as an ASHA or working as an anganwadi worker or working in terms of farmer-to-farmer extension teacher. These are some of the newer areas in which this is going to happen.

Just to sum up in the next two slides, what are the takeaways from this entire presentation? We all recognise that there is a transformation which is happening in the agriculture sector. It is no more simple production-oriented T&V saying here are the high-yielding varieties, here is the fertiliser, these are the package of practices, go ahead and do it. It is not that now. It is diverse and it is going to be complex and they are going to be many, many players in the agriculture sector. There is a change in the farmers' demographics. You are going to be looking at larger number of women and your extension programmes will need to be tailored, skill development programmes will need to be tailored to women farmers. Farmer welfare is coming centre stage after this agrarian distress which has manifested itself in the worst form of farmers' suicides. What kind of social security, what kind of safety nets are we putting in place so that this distress is reduced? Increasing the focus on climate-smart agriculture, sustainable and diversified farming system is going to be the very important thing of the future.

Looking at it from the point of view of skill development, from the point of view of employment, from the point of view of addressing and keeping youth in agriculture; the whole holistic food value chain managements.

Harnessing ICT revolution for farm productivity and recognising that the universe of extension and service providers has changed and that the government functionaries is only one part of this very wide and large range of private and public-private partnership providers of service. In

all this, the most important thing is the role of the government to look and to revisit its own role, do we need to go around and do all the extension ourselves or concentrate in those remote areas where nobody else is reaching, conserve our resources for that and for the other areas, let other partners and the other players play their game. Government's role should be providing a level-playing field, ensuring that small and marginal farmer is not short-changed. And in the non-farm sector skill development, we look at the National Skill Development Mission which is targeting 50 crore by 2022 and I have heard but this is still in the discussion that they are proposing a 2 percent cess for skill development. They are even proposing a Skill Development Service. Now what shape this service is going to take and whether they are going to be able to go through remains to be seen. We have already got the higher education cess, we have got the education cess and now there is going to be a 2 percent cess for skill development. These are all things which are up there. There is nothing certain about them. But they are in the public domain and discourse and discussion is going on with it. Of course, the National Rural Livelihoods Mission is also being supported in many places through external multilateral support and they have done very good work in Madhya Pradesh and also in Bihar through the self-help groups.

This is, in a way, a little bit of an overview of what the agriculture sector will look like, where we need to look at in terms of skill development and so on is the entire gamut and not just the old production systems that we used to look at earlier. This is the end of my formal presentation but there is one little story that I would like to share with you or rather an interesting fact. I don't know how many of you are familiar with it.

The year 2015 has been a year of many, many international firsts. We had 21st June as the International Year of Yoga and 2015 was also declared as the International Year of Soils and we also know that the old Millennium Development Goals were replaced now by the 17 Sustainable Development Goals. We are now having the COP21 which should be a very historic one if our system has to survive. There was one other very interesting fact. I don't know how many of you took note of it, on 13th August, 2015, the world observed what is called the Earth Overshoot Day. That is a very interesting statistics. It is on this day according to the ecological actuaries who do this exercise and they do it in an organisation called Global Footprint Network. On 13th August, the earth and the planet and the world actually used up all the resources which the earth renews in a year's period. It is called the Earth Overshoot Day. There are 365 days in a year. It took the world to use up all its resources on an annual basis 358 out of the 365 days in 1970. In 2015, that figure has now come to 225 days as on 13th August but what is even more startling is that while the world has used up all its annual resources much earlier that is by August 13, in India, we used it up by 30th June. We used up our entire year's supply by half the year. I came across a very nice thing, I am not a prophet of doom and gloom but this is what someone said, "It used to be full 365 days almost in 1970, in 2015, it has come to 225 days on 13th August. The day it comes to 1st April, we will not only be fools, we will be damned fools and we will be doomed fools as well". On that note, I would like to thank you all very much for your attention.

M C Verma: Thank you very much. It is a very elaborate macro presentation of the situation and very educative and we learnt from you a lot of things which we did not know ourselves. Thank you for that. We would like to throw the floor open for questions.

Question and Answer Session

I P S Anand: That was a very excellent presentation. I have two questions. At couple of places, you mentioned about the financial constraints that the agricultural sector faces. You seem to be suggesting that agriculture is not getting the kind of allocations that it should but given the political economy in agriculture, why is that happening? Secondly, towards the end of your presentation, you gave a figure that 5.2 million people had been trained. What about their placements? How much has it cost to the government for training these 5.2 million people?

Q. Kamal: The presentation was excellent and we keep hearing about GDP and all those things in the normal course but what was most amazing was what you said at the end of the presentation that we are over-consuming the resources. That means that we are not going to leave behind anything for our children and grand children. This means that the problem is holistic and very serious. Any compartmentalised solution may not help. The new development bodies may come and go but my request to you is since you have been in various departments like rural development, in agriculture, in skill development, if you could now take a holistic view and share as a part of governance issues in agriculture because now it is a question of survival. My suggestion and question is if you could accommodate somewhere localisation, local knowledge, local skills, local resources, indigenous seeds, domestic water, domestic cows, Indian systems because the problem is holistic. Government may come and go but you need to take a holistic view of the whole issue and give due weightage to localisation in the IT.

Q: In fact, I would continue on the same pattern which my previous speaker had mentioned. We have to take a holistic view. There is no other way. You raised some numbers on unemployment. Female employment seems to be quite an area of concern which is quite relevant from your talks. What are we going to do? Mechanisation is not going to solve the issue if you don't have resources. Huge entry into the labour market and mechanisation is not going to solve the problem of increasing our employment and female numbers are much higher than mere entrants into the labour market. And limited resources and you were saying that we are already over consuming, how are we going to deal with this problem because unemployment is going to be a big issue and there has to be governance and a holistic approach to this.

Q: K Mahesh, Special Secretary, NCR, Delhi Government: The grassroots politics has become so dominant since 1970s and most of the Members of Parliament, MLAs, local Panchayati Raj institutions are mostly found in the agricultural sector. Why is it that the political representatives have not been able to accord top priority to the agricultural sector when they are so much dependent on people in the rural areas for their votes cutting across caste and villages?

Q: I am from the corporate sector and I have a slightly different view but the problem remains the same. When you do planning for the next 15-20 years, you assume that right now we are here and we want to be there. If you were to forecast on population expansion, to a limited extent, it will be like this. Now let us assume a lifestyle for what you think your farmers or an average man as to what calorie he should get, how much protein he should get and so on and then multiply this and that gives you the demand let us say for the output of the rural sector and see how many tonnes of wheat he needs. Then go backwards and see what the productivity level is. Do we have enough area? Where do we need to do more research and see where there is a gap? And that gap is going to be filled up by either by research or skill development programmes. If that is not done, all these numbers of 25 percent and 50 crores and all that is in good intention. But if you do not know what your requirements are and what your gaps are, you are going to have gaps by design.

The second point is and you rightly talked about how much of the global wealth is consumed, and as you said, on April Fools' Day, we know we have been April Fools but that may be a little late in the day. But the fine point is there are lots of technologies available and this is where you have to think out of the box. I will give you one instance. There is a technology called Aquaponics. I am not a scientist. But people say that 80 percent of the fresh water supply would be used for food, for agriculture. If we increase our population, we will need more. In that technology, you dig a pond and fill it up with fish and you feed the fish. When the fish will die it will get back and dirty the remaining water. If you don't flush out the water, you will have dead fish. You take this dirty water which actually is a fertiliser in a different form. You put it through a biofilter which is very simple and that dirty water becomes fertiliser. Then you put that in plants. The plants suck up the water as much as they want to suck and they will suck up all the nutrients. You have got fresh water and you put the fresh water back. It is not that you recycle the water, you do not take fertiliser, you do not take pesticides. This is something which is possible and we have to do R&D in such areas. This technology is a spin-off of hydroponics done by NASA when someone there said that he is not going to carry all the vegetables because it is a bit expensive. That was hydroponics purely chemical, this is what it is based on. You will have organic food and this will take care of 2/3rd of the places which are dependent on monsoons. Definitely, this can work. There are so many agricultural universities and extension agencies and impress upon them that we had the Green Revolution, now why can't we have these kinds of technologies. We have to spread the word. I have done a bit of work on that.

Dr. Rita Sharma: Let me begin by saying and also disclaiming that I don't have the answer to all the issues and the things that you have raised. But I will share with you the way I look at it from whatever experience I have. The issue was raised that there was a financial constraint. Why is that agriculture is not getting the kind of resources that it deserves. I think all of you and we all are aware that most of the work in agriculture and I have been the Secretary, Agriculture in the state of Uttar Pradesh also, is done through the machinery which is a state government's machinery and agriculture being a state subject, the allocations to the state extension services are very varied across the states. In Uttar Pradesh, we do not give a great deal of funding to the

state government's agriculture departments. There are other priorities. We all know that many times those priorities are political in nature and some of the first things which get cut are some of the agricultural projects as Mr. Mahesh mentioned that this happens despite the fact that the grassroots politicians and the politicians in many of these largely agricultural states are people whose constituencies are farmers. And yet at the same time, if free laptops have to be distributed or other freebies have to be given, they sometimes get the priority which is a onetime thing rather than investing in long-term agriculture, research, extension and education. So there is a financial constraint and that is why many of our state agricultural universities are in a very, very bad shape. And perhaps, that is also one of the reasons why there is such a proliferation because the space which is now contracting because the state governments are unable to fund these state extension services. It is there that a large number of other actors from the private sector, from the NGOs, from Farmers' Collectives are now coming in. And that may not be such a bad thing. Perhaps, what is more needed from the government's funding is to put into long-term improvement of land, improvement of water resources into improvement of irrigation and leave things to the other players who we can see now are doing better and come in terms of being facilitators and regulators.

It was also asked about the placement of 5.2 million people who have been trained. This is one of the strong points I would say of the new system of skill development. Earlier Mr. Verma or someone mentioned TRYSEM. I used to run that programme as Rural Development Commissioner in UP many, many years ago. It was very supply-driven.

(M C Verma: Mr. Kaw was the originator in a way.)

Dr. Rita Sharma: Yes, and I implemented his programme as RD Commissioner. We had a large number of young people being trained and while they were being trained, they were given support and incentives. Once they were trained, we just left them on their own devices and asked them to go to a bank, get a loan and become an entrepreneur and it does not work like that. Today, if someone tells me to chuck up my pension and become an entrepreneur, I think I would find it quite difficult. Here, we are making many of these people who were very poorly educated, we trained them in TRYSEM under some Master Training Programme and then left them to their own devices. The programme did not go beyond a certain point. There were some people of course, and the banks were reluctant to give them loan to these people. Sometimes, what happens is the programmes are designed with very good intent and if you look at our programmes and plans, many of them are very good. But the crux lies when this goes into the actual grassroots implementation. Recognising that it has certain shortcomings, they tried to plug it in the next round of programmes which said that they are going to source out the training programme to private sector institutions but the programme is not completed until 75 percent of those who are trained are also placed. Therefore, this whole idea of the Sector Skill Councils which are about 38, some are in the hospitality sector, some are in construction, some in plumbing and so on. People need plumbers; all of them possibly and therefore, the Sector Skill Councils are the bridge between the private sector, the construction and where the jobs

and the employment is coming and what kind of skills are needed there and those who are providing the skills and training these people. This system with the Sector Skill Councils is hopefully going to be a new innovation and therefore, while I don't have the exact number of their placements but in the Ministry of Rural Development, as the Secretary, I used to run a programme like this for the rural resource poor household youth, there we did manage to get 75 percent of the people placed and we put that list in the public domain on the portal and we found that a large number of them were placed. It is a different thing that sometimes, they came from rural areas and were placed in urban metropolises and suddenly, they could not cope with it and a percentage of them went back again to where they came from. Those were flaws and shortcomings which as you went along, sort of improved the programme. This is what is being envisaged. I think if you go on to their website, this information of 5.2 million which I also got from there would probably also tell you how many of them have been placed.

Dr. Kamal Taori was my old boss. He was a part of all the programmes. We learn as we go along, I suppose. The point that he raised that the programmes should be holistic and I could not agree more with him but the way our government's functioning is arranged, we work in vertical silos. We are vertically responsible to the parliament on the budget and the money that the individual secretaries get or the individual departments get. It is difficult to work horizontally. Many things have been tried as we were discussing during tea, the whole issue as to whether we can create durable assets from NREGA, for that you needed to work horizontally across different departments so that you could have the pumpset coming in from one department, the well being created under NREGA and you could then have a productivity-oriented rural durable asset. It was called the convergence of NREGA with other departments. I started in 2008 and we issued joint guidelines from different ministries and it took a very long time. It is still quite hard and in some of the states, they still don't do it. If we have to have a more holistic view, Dr. Taori, I think it must flow, there must be some sort of architecture, a mechanism either at the cabinet secretary level or at the PMO level which is able to see across the ministries rather than each secretary looking at his or her own work. On a smaller scale, at the district level, the concept of Agricultural Technology Management Agency was envisaged as a facilitator which would be able to take a bigger view. But in upscaling that programme, they again have standardised so many things and it has become one of those things where you go out to be just another extension agency. That is the best that I can sort of respond.

Let me just share with you one other thing. As I mentioned to you, I sit on the some of the boards of international organisations. They had the same problem. Each centre was doing its own thing. Rice research was doing its own rice, ICRISAT was doing its legumes, pulses and so on and the one on Maize in Mexico was doing its own thing. These are totally autonomous bodies with their own boards and they decided in 2007 that they are going to do a cutting across horizontal convergence. They came up with something called a consortium where all of them would be independent and yet have certain systems to work with under an umbrella of consortium and then they developed something which is called the Consortium Research Project. It is not just the rice people doing their own thing but if you are looking at the value

chain in rice, then you need others to come in also. One composite project called the Consortium Research Project in which several or three or four centres came together so that there was no duplication and there was synergy. They started that in 2006-07 and till date, they are still struggling. They have only 15 centres and they have a more evolved system of wanting to come together. We have about 50-80 ministries and having to come together would not be an easy task. It is not that it cannot be done; it can be done but I think it needs a very, very strong will to drive it because bureaucracies by nature tend to resist such kind of change.

M C Verma: Kamal also mentioned localisation which means it can be done more easily at the state level.

Dr. Rita Sharma: IT, in the state and also at the district level where you are looking at this. The other point which you mentioned was about using traditional technology and using grassroots and local technology and time tested. What you are saying is very, very right and maybe, the signals emanating from this government do talk about using technologies, talk about organics, improving local breeds and so on. But let me share with you, does anyone know about Systems of Rice Intensification (SRI)? SRI is something which was started in Madagascar. There was a Jesuit priest who saw that very little water was available and they wanted to grow rice; rice is a water-guzzling crop as you all know. But they were able to do rice cultivation by changing the dynamics and the agronomics of the process. We flood fields with water and why do we do that because when we flood them with water, the weeds die normally, naturally because of the water and only the plant survives. We save on the weed part of it. By using technologies in which more practices by which lesser seeds are used, transplanting is done at an early age rather than the 15 days at which the normal transplanting is done and using weeders in between, they were able to reduce the seed rate by 90 percent, water use by 50 percent and still get high yields.

You must have read in the newspapers a couple of years ago when they said that some farmer in Bihar had got some 22 tonnes. Of course, the SRI practitioner said that it ruined their cause because that was some sort of a freak thing but one and a half to two times, they are able to increase yields with lesser water and lesser seed. This set of practices has not emerged from the technical, scientific establishment. They have emerged at grassroots, farmer-to-farmer, NGO to NGO, that is how it spread. I have tried so many times to bring it to the attention of the Ministry of Agriculture that here is something that is so climate-smart that you are even reducing the methane emissions by using less water and why don't they go for it. The moment they ask the ICAR, the ICAR says that they have their problems with it. Till our scientific establishment does not agree, this does not move forward. It is moving on the NGO to NGO, farmer to farmer basis, but it has not been internalised nor is it being mainstreamed. Like what Dr. Taori was saying sometimes it is easier to say let us use local and traditional knowledge but we need a scientific and an open mindset to even appreciate that and to take it on board. Those are some of the issues. It is not that all the traditional knowledge is cast aside. Improvement of breeds and many other things are taken on board.

Again, it was mentioned about the holistic approach and this is something for which I don't have the answer. I tried as Secretary, Rural Development to bring it. We did achieve some measure of success which is now being reflected in many of the states but it is a hard thing to do. And everyone needs to be on board to be able to do take it up.

Mahesh mentioned about grassroots politics and why is it that these people whose constituencies are not enthusiastic to vote more monies and vote a higher budget for the agriculture sector, I think there are other competing interests also and sometimes perhaps long-term investment in agriculture is something which does not offer immediate dividends. Everyone knows that a rupee spent in agricultural research gives you huge dividends but the gestation period is long and we have short-term priorities and that is the way is the nature of the beast that these priorities don't get reflected. I don't know there may be some better explanation or some better ways of doing things but that is how I look at it.

The next question was on skill gap analysis; the corporate sector is very neat and calculates everything saying that this is the trajectory, scenario 1, scenario 2, 3 and you work according to the mapping that you have done. Then do the analysis and say that this is the gap and you need to fill it. To some extent, I think the government does that too in terms of the projections that you need for calculating the food requirement and then you work according to that. But I agree with you that the particular innovation that you mentioned Aquaponics is something which is a technology. I remember when drip came, nobody understood that but today, it is mainstreamed and it is part of the government's Sustainable Agriculture Mission and it is very much on the cards. This needs to come and be informed and the Ministry of Agriculture should take it up. I agree with you 100 percent.

Q. Dr. Rajani Raman, Agriculture Scientist from the Agriculture Research Institute: I have been very patiently listening to you. I was in the genetics extension of IARI. I keep attending these lectures to learn more about what is happening outside the research labs. What I want to know is in Tamil Nadu, the National Disaster has not taken as the human made disaster as they say. The administration officials did not try to control the floods from the dams. That is why this manmade disaster became more than the natural disaster. What I want to say is the people in the administration who have no idea of hydrology or water management, if they are controlling the administration in agriculture which happened in Tamil Nadu, the whole of the rice crop in Tamil Nadu has been washed away. I belong to Tamil Nadu. But the point is the way the administration controlled the agriculture in Tamil Nadu, the whole of Tamil Nadu is flooded and there is no rice crop in Tamil Nadu available now. How do you control such people who are holding on to politics, without knowing science, without knowing agriculture? They only want to shout in parliament but the common man suffers. How are you going to get the agriculture in Tamil Nadu? Agriculture is the main crop of Tamil Nadu. I am saying having worked in the IARI from 1964 to 2002. I started my career when Dr. Swaminathan was the head of the botany division. I know what is happening in IARI and what is happening around. Nehru said, 'everything else can wait, but not agriculture'. The way the politicians are leading

the country especially what happened in Tamil Nadu is very serious, the Ministry of Agriculture has to take a very serious note of this in spite of party affiliation or not. That is my request to you.

Q. Kaushal: I am not an expert on agriculture. I am not competent to ask any question on agriculture but I have two brief observations. One about the answer you gave to Dr. Kamal Taori about why the schemes were not delivering. And the other was what Mahesh said about why the issue is being not raised in parliament or elsewhere. My observation is both based on facts and experience. About Dr. Kamal's question, there are lots of brilliant schemes as you yourself said. The plan is brilliant and lot of studies are done and lot of deliberations go into it and then they don't succeed. The reason is we forget the basic factor which is that we don't consult people for whom we are working, for whom we are making this scheme. And there is a small fact to support what I am saying. I am not giving any comments from my police experience, but where you consult people, you succeed because you know exactly what they want and that is the purpose of democracy. In Andhra Pradesh, there is a young IAS Officer, Devesh Ranjan launched a scheme which is now approved by the World Bank and all authorities. He went to each block and consulted people as to what they wanted and picked some people among them and succeeded.

As regards Mahesh's question, recently, we conducted a survey of Delhi Municipal Corporation through an institution called Praja from Bombay. They have very scientific methods and they identified issues by asking people vide a questionnaire and there were two issues that came out that were bothering the people. The issue is not relevant but the two issues had maximum number of complaints pertaining to corporation. They raised the issues in the corporation meetings. They were absolutely different issues. They are only busy talking building, licences and other things but not the basic problems of the citizens of Delhi. It is right that they are elected from certain constituencies but they never visit those constituencies. They go and talk about everything else because they have to make some money.

Q. I P Shah: Considering the amount of wastage of crop, I don't see any silos for storage of crops after harvest in rural areas. What are the reasons for that? The world does it but why don't we do it?

K Mahesh: Have they made the development processes skilled with respect to certain skills as aspirational because keeping in view the nature of human society which does not respect the dignity of labour, for example, the carpenter, if you have an ad in the newspaper for the job of peon, it will be flooded but for the job of carpenter or mason, it won't be that much including drivers. There is a shortage of drivers in this country. How do you make attempts to makes these skills aspirational because it is not just offering the skills? Are the youth ready to take on those skills and work on because their dignity would be hurt? It is a traditional kind of a thing in the family and you are looked down upon because of the class hierarchy.

Q. Kamal Taori: We have worked almost 15-20 hours day in and day out to achieve certain things, what haven't we done precisely like we did not accept the involvement of the people from the heart? Is there something that we have left out?

Dr. Rita Sharma: Dr. Rajani, I can't answer your question as to why everything is in the hands of politicians and the politicians who are not the people who understand the science have led to this situation where you had such floods in Tamil Nadu and they were not necessarily a natural disaster, partly, as they say there is a change in the climate, the environment, in the air and water, unseasonal rains, longer droughts, longer floods and so on. We are a democracy and we elect the politicians. Tomorrow, if we think we have to elect people who understand these things better, we should do it. But just to share with you and I say this because the International Rice Research Institute where I am on the board of directors, they have worked with the Indian government, that is, the ICAR to work on varieties of rice which are flood tolerant. They have matched what they call the submergence gene with the local high-yielding varieties called Swarna and the Swarna and the submergence gene have worked together to get a new variety which is called Swarna- Sub1 and it has taken Eastern India by storm in places like Assam, Orissa where you have regular floods. During the time of the flood, the variety becomes dormant and once the flood gets receded, it gets back up again. That is considered one of the major breakthroughs in terms of the varieties since you mentioned flood.

The other issue about why we don't see more silos in the rural areas. You may not be seeing silos, now one sees more silos than ten years ago but there are many programmes of foodgrain storage which they are now working on in which they are encouraging the private sector to take loans and funding from the government on very, very easy terms with an arrangement that they will store their food grains with them and they will rent their storage whether they make a silo of whatever. It is called Gramin Bhandaran Yojana and whatever they make will be hired and enter into a contract for the next 20 years so that is worth the while of the private individual to make the land. I am afraid I will not be able to answer to tell you why exactly they are not silos and the other things. I think perhaps we need to look at it a little bit more closer.

The other issue that you raised about the mindset of the people, dignity of labour and so on, I think that is something which is part of our culture, part of our social fabric and gradually as people become more and more efficient and professional in the kind of choices and in the kind of work that they are doing, I think those are going to breakdown. I will give you a very simple example. At one time, to be a cook was not considered a very dignified thing and so on and so forth and they did not go for it. Today, some of the best people who come on TV and the programmes that I watch the most are people who are in the cooking business. You make them chef. They are doing the same thing. It is the same with people who are now in construction, plumbing, carpentry and so on but I think those cultural changes are happening and in schools also, this whole concept of dignity of labour needs to be inculcated.

M C Verma: I have a small question. What is the Ministry of Agriculture's view likely to be in COP21 in Paris?

Dr. Rita Sharma: I have responded that I could to most of the questions. The point which Dr. Taori said that there is a need, of course, and I think perhaps in the earlier years, it was more of a top-down business of making the schemes. Now the buzzword is demand-driven. Go to ask what is needed and then tailor your programme to what is need and not make it supply-driven but make it demand-driven and part of that exercise is perhaps the need for us to consult. We people do go, have consultations but perhaps it needs to emerge even more from the grassroots and as you mentioned, both your observations one can have, no disagreements with them. Both are very, very apt. You have made very pertinent and relevant observations and that is the way it should be.

Q. Dr. Rajendra Kumar: You are well aware Ma'am that our agriculture sector is in distress. Agriculture's share in GDP in 1990 used to be 50 percent has now come down to 14 percent. Despite this, the government is not giving due impetus to increasing the production. What the government is doing is basically providing subsidies to farmers and provides minimum support prices. As you mentioned that our resources are getting depleted and we have already over-consumed the resources by April, what is the government doing about increasing the productivity because this is one of the most important things.

Dr. Rita Sharma: A lot of things actually. You are aware that a lot of things have been done to increase productivity in terms of development of new technologies which are higher yielding, in terms of bringing irrigation to the farmers' fields, in terms of using technologies for better, lesser wastage and so on. Government is doing a lot of things. But I wouldn't be very unduly alarmed over the fact that your GDP is going down in agriculture for the simple reason because that is the classical model and classical way in which development has occurred. That is you started with a large number of people in rural areas and agriculture was 80 or 90 percent of the population.

When you look at the other countries also, gradually as more skills are needed, you move into the manufacturing sector or the services sector, then people are gradually pulled out of agriculture. The ideal situation would have been 14 percent of GDP contributed by 14 percent of population in agriculture. But the problem is 55 percent of the population is only generating 14 percent of the national income. That means that a lot of people over there are either not working or are working at a very minimal and a very low level. That is why you want to pull people out and give them additional or other non-farm income so that they can supplement their home incomes. Our task should be to enable and generate within the services and the manufacturing sector but that is also not happening as the manufacturing sector has more automation so that unskilled people are not being absorbed. Where will they go? That is the problem and so either we skill them to be able to be absorbed here or we have this kind of a situation where 55 percent people are only generating 14 percent income. That is something

that the whole of the government is grappling with and that is why the PM is making 'Make in India' come here and make it more labour-intensive, make the manufacturing more labour-intensive. The services are now becoming less labour-intensive although they are now generating 60 percent of our national income.

Q: Dr. Rajendra Kumar: We all know that hundreds of wonderful things are happening at the village level. But unfortunately, these are not proliferating at the mainstream institutions. R&D is not participatory and we are telling the people what they should do or not do which is not working out.

Dr. Rita Sharma: If the ICAR heard what you were saying, they would up be in arms. They have the Krishi Vigyan Kendras, agricultural universities and so on.

Dr. Rajani Raman: As an experienced person sitting in IARI, when we developed some new varieties, we used to go to a village near to our institution and we used to test it there. And anyone with a new variety would go to that village and talk to the farmers. What has happened is people who work for a small salary at the grassroots level, people with BSc. and MSc. came through the employment exchange but the concept of one culture is neither in parliament nor in a village. I have seen it in my 40 years of experience and I am seeing the degeneration of people. It happens everywhere.

Dr. Rita Sharma: I think every generation says that. Let me tell you in the COP21, India has submitted something called India's INDCs. As you know, there was a Kyoto protocol of 1997 or 1998 and there the thrust was common but differentiated responsibilities which means that the developed countries have polluted the world and have created this greenhouse gas blanket and they have to set it right. We are new players in the block and we need the space to make our development. If we use coal and other things and polluted the climate, that is our right. That continued for that much time.

M C Verma: That is the government's view. I am talking of the Ministry of Agriculture's contribution to it.

Dr. Rita Sharma: In the meantime, of course, the clever developed cunning people said that India and China had become the biggest polluters after the US and let us see what you can do voluntarily. These were not binding commitments and that we should take them on voluntarily. And since there was a lot of pressure and so on, India also said okay, since it is voluntarily and we are doing it for ourselves, there was no legal binding and no one can come and say we haven't done this. If you have seen the document, what they have said is take on the commitments yourself, do it voluntarily. These are called INDCs, Intended Nationally Determined Contributions and in the documents, India has very ambitious targets. There are three dimensions of that target; three relate to mitigations and one relates to adaptation. We are going to reduce our emissions by 33 percent by the year 2030 from what it was in 2005.

We are going to create carbon sinks to absorb and sequester carbon from carbon dioxide to the tune of 2-3 billion tonnes of carbon dioxide equivalent by 2030 by planting wateries because they are natural sinks. And thirdly, we are going to reduce our usage of fossil fuel energy so that by 2030, 40 percent of our energy will come from non-fossil fuels. And one thing to do with agriculture is we are more bothered about adaptation. We are concerned about the fact that our farmers are bearing the brunt of these long droughts, unseasonal rains, floods which are coming as a result of climate change and it is the small and marginal farmers who are becoming more and more vulnerable. Ministry of Agriculture wants money for adaptation. There is a Green Climate Fund for 100 billion dollars which is now being negotiated. They have said that they will give 50 percent for mitigation and 50 percent for adaptation. But in actual fact, it is mitigation which corners most of this fund and where does this money go; it goes to renewable, people who are doing the wind energy and the solar energy and the big private sector is doing that. It goes for energy efficiency, people who manufacture car equipment so that they can get better energy efficiency and it will go into a lot of forestation which is good because part of the forestation, the Ministry of Agriculture has said, should be trees on farms.

Adaptation is a poor cousin of mitigation and the Ministry of Agriculture is saying that they must give us the money for adaptation because we have very few resources for adaptation which flow to the farmer. On the adaptation front, the government says that they don't have an adaptation policy. We say that all our development programmes have the component of adaptation. Adaptation comes as a co-benefit of programmes like NREGA, Rashtriya Krishi Vikas Yojana or National Food Security Mission and so on. They also claim and that is in the INDC that 2.8 percent of India's GDP in 2010 went into adaptation by default because it went into development programmes which have an adaptation component. Ministry of Agriculture is asking the government to stop this humbug and to tell us how much is actually reaching our farmers. We need to quantify that and see how much actually reaches there or is it just being siphoned away.

M C Verma: Thank you very much.

Vote of Thanks: Before I propose a Vote of Thanks, I request Mr. J S Oberoi to give Dr. Rita Sharma a memento on behalf of the IC Centre for Governance.

On behalf of the IC Centre for Governance and the India International Centre, we thank Dr. Rita Sharma for an excellent presentation and for a very, very strong participative audience that questioned and made this discussion more lively. Thank you very much.

Fifth Lecture

ISSUES IN FERTILIZER POLICY

January 15, 2016

Pratap Narayan

It is my pleasure to welcome you all on behalf of the IC Centre for Governance as well as the India International Centre for this last lecture which is the fifth lecture in the series on Governance Issues in Agriculture. The first lecture was held in September 2015 on Policies for Sustainable Agriculture. The second lecture was held in October 2015 on Promoting Income Security and Livelihood for Small and Marginal farmers. The third lecture was held in November 2015 on Diversification in Agriculture. The fourth lecture was held in December 2015 on Skill Development in the Farm and Non-Farm Sectors. Today, is the last lecture on Issues in Fertiliser Policy and fertiliser being the main input for agricultural development, we have chosen in to be the last. I regret to announce that Mr. Anuj Kumar Bishnoi, Secretary, Department of Fertilizers, Ministry of Chemicals and Fertilizers has not been able to come to chair the session because he has been called for some Group of Ministers' meeting. It is my great privilege to introduce to you the two keynote speakers, Shri Anwarul Hoda, Chair Professor for Agriculture, Indian Council for Research on International Economic Relations (ICRIER). It is very difficult for me to give his introduction but I will briefly give a few points about him. I am particularly grateful to him for having agreed at a short notice to come here. Anwarul Hoda joined the Indian Administrative Service in 1962. During the period 1974-81 and again 1985-93, he worked in the Ministry of Commerce, Government of India in various positions. In 1993, he was appointed Deputy Director General ICITO/GATT and in 1995, he took over as Deputy Director General, World Trade Organization, Geneva and in which position he continued till 1999. From 2004 to 2009 he was a Member of the Planning Commission, Government of India. From 2009 till date he is Chair Professor, Trade Policy at Indian Council for Research on International Economic Relations (ICRIER). He has written extensively on trade policy issues during the last three decades. I cannot name all the publications but a few of them are: *Developing Countries in the International Trading System in 1987*, *Tariff Negotiations and Renegotiations under the GATT and the WTO: Procedures and Practices in 2001* and *WTO Agreement, Indian Agriculture in 2002* and *WTO Negotiations on Agriculture and Developing Countries* co-authored with Dr. Ashok Gulati in 2008. We are very grateful to him for his presence here. We hope to profit from your lecture today.

The other keynote speaker is Shri Satish Chander, Director General, The Fertiliser Association of India since 2008. It is very difficult for me again to introduce him because he happens to be my great, great grand successor in that position. I have known him for two decades. Even then, I will try to give a brief introduction. He initially started his career in the Delhi University and

thereafter, joined the central services. Over the next thirty years, he worked in various ministries – Education, Home Affairs, Finances, Mines, Planning and finally, Ministry of Agriculture and Cooperation. I came from Railways directly into Fertilisers but he has virtually seen every ministry. As Joint Secretary to the Government of India in the Ministry of Agriculture, Department of Agriculture & Cooperation he was the Controller of Fertilisers and Central Registrar of Multi-State Cooperative Societies. He was on board of a number of PSUs and Multi-State Cooperative Societies, including IFFCO, KRIBHCO, Bharat Coal Mines, Agriculture Insurance Company of India and Agriculture Finance Corporation. He has been associated with a large number of high level Committees constituted by the Government in addressing the issues regarding the Indian agriculture. He has been actively associated with the Government in the reform process of the fertiliser sector. Apart from his present assignment, he is on the Board of the Certified Crop Advisor Programme - India conducted by American Society of Agronomy. He is also on the Board of International Plant Nutrition Institute (IPNI), U.S.A and Virtual Fertiliser Research Centre, USA under International Fertiliser Development Centre. I thank him very much for agreeing to be here with us.

Before I request the two keynote speakers to speak, I will make some brief introductory remarks. In my remarks, I am not going to give any opinion. I am only going to raise certain issues which are important from the point of view of fertiliser policy. And sometimes, I feel that we tend to ignore fundamental points and the most important point that you read in the media, economists, theoreticians, politicians and everybody saying today that we cannot afford fertiliser subsidy which is not in isolation; it is a part of the agriculture subsidy. My submission is that farm subsidy is not peculiar to India. It is a universal phenomenon. Even much developed countries having higher level of development provide much higher subsidies. The figure for 2013 indicates European Union, whether you look at it per capita or per hectare, Japan which is many times more, astronomical figures, USA, China - 2171\$ per hectare, 193.95 \$ per capita, in India, at 20\$, we are saying that heavens may fall, and our consumption is much lower. Even if you say that these figures for India include only fertiliser and agricultural subsidy, if you double it up and make it 40\$, taking into subsidy on irrigation and power, even then you are nowhere near what the developed countries are giving.

What is more important while we are struggling to increase our fertiliser consumption production and increase our agriculture production, these developed countries either subsidise their agriculture to reduce agriculture production and they have sophisticated names like payment in kind and Agriculture Support Programme, we use subsidy which is a dirty word in the economics books and that is why we are criticised. When everybody says that subsidy cannot be afforded, why were subsidies introduced. Subsidies were introduced for the simple reason that in the early 1970s, in the wake of the oil crisis, it was realised that the costs had gone up beyond the reach of the farmers. And therefore, the very objective in the Green Revolution to increase consumption was getting defeated and so they brought down the price. When they brought down the price, the industry and imports became unviable. That is why to increase consumption, price for the farmer was kept low, unrelated to the cost and to ensure the health

and growth of the domestic industry, reasonable cost of production and distribution was also assured and the difference was paid as subsidy.

If you see the figures, the consumption has gone up but if you look at the production, up to 2001-02 and later on, to some extent, up to 2009, there was a fast growth of the industry and imports were reduced. But now with the distortions having come up, we are heavily importing and there has been no investment in the industry in the last 15 years despite heavy subsidy being given but it has not done properly. According to me, we still have a long way to go. If you look at the land area, the only two comparable countries are India and China from the population point of view although their arable land is 2/3rd of our land. Yet if you look at it, we also started development at the same time in the early 1950s and we are proud to have a production of 12 million tonnes of nitrogen phosphate, China has got 36 million tonnes of nitrogen phosphate. Look at the consumption, we have total nutrients as 24 million tonnes and 144kgs per hectare and China has reached 53 million tonnes and 433kgs per hectare and this is reflected in food grain production both in total as well as kg per hectare. And therefore, we have also to keep in mind, although we are very proud to say that in our Green Revolution, we have become self-sufficient, reducing land man ratio from 0.34 in 1951 to 0.14 in 2013, unless you increase the productivity, you can't meet the demand.

Causes of sharp increase – everybody is saying that the subsidy is increased but we don't look at it. The reason is while people say that subsidy is high and we cannot afford, the prices of fertilisers have been kept so low up to 2000-06 etc. While the costs of inputs have gone up significantly and particularly, when you look at phosphoric acid and ammonia which are imported, it has impacted not only the increase in price but also the devaluation of the rupee and at that time, a dollar was Rs13 and today a dollar is Rs67. Even if the same price is retained in dollar, not increased, where would you reach? RNMG costs much higher. These cost factors have to be taken into account. Implementation is antagonistic to the avowed objective. Everybody talks right from the politicians that urea is overused. But when it comes to pricing, urea price has been kept fixed and phosphate potash has been raised so high with the result you will see the figures in the last column that the distorted ratio is coming up and our productivity is stagnant.

Finally, I will say there are fundamental dilemmas of subsidy. There are three stakeholders in the subsidy arena. Farmer from the point of view of ability to afford cost-based price; government from the point of view of ability to afford fertiliser subsidy and fertiliser industry from the point of view of the ability to remain viable and grow to meet increasing demands. Out of this, any rational policy can satisfy only two parties. If farmers cannot afford cost-based price and industry and imports have to be viable, government has to bear the difference in subsidy. There is no alternative. In the other scenario, if the government cannot afford subsidy and industry and import have to be viable, farmer has to pay the cost-based price. Whether they can afford or not is a different issue. They have to pay that. The third scenario is a farmer cannot afford to pay the cost-based price and I have no doubt because 85 percent of the

farmers are small and marginal farmers having land up to 1 or 2 hectares and they are producing only for their own consumption rather than for sale. If the farmers cannot afford cost-based price and the government cannot bear subsidies, supply, both indigenous and imported may be rendered unviable. This is exactly the situation which is happening over the last one and a half decades. There is no magic formula which can ensure that the farmer does not pay full cost, government does not subsidise and the industry imports also remain viable to meet the increasing demand. I think that is the real paradox.

With these few words, I request Mr. Hoda to make his presentation.

Anwarul Hoda, Chair Professor for Agriculture, Indian Council for Research on International Economic Relations (ICRIER):

I do not have a formal presentation because I thought since I am speaking at a gathering which is quite knowledgeable on matters relating to fertiliser, I will not make a presentation giving all the facts and figures but only raise the issue and the subject of my intervention is also 'Issues in Fertiliser Policy'. I have had exposures to the problems of fertiliser not only when I was looking at Indian agriculture but also when I was looking at the Indian industry. In that respect, when I was a member of the erstwhile Planning Commission. I had the occasion to look at all the issues related to the industry. And just before this meeting, I was asking Mr. Pratap Narayan as to what has happened to those units which had been sick and are closed. Are we doing something to revive them? That is the industrial aspect. If we only speak on the basis of what is in the interest of agriculture, then the industry aspect will not come in that much because all that we want to ensure is the farmer gets the supply of fertilisers at a reasonable price. That can be either on the basis of imports or on the basis of domestic production. But if we look at the industry angle also, we have to then look at what the constraints are on the industry aspect. Of course, the explanation or the exposition given by Mr. Pratap Narayan also brings out the problem that industry is also a stakeholder and that the industry has to be viable. The industry will just close down and shift to something else if they do not get adequate returns from the production of fertilisers. If subsidy has to be given, it has to be shared between the fertiliser industry and the government as Mr. Pratap Narayan clearly brought out. In this, I will also raise problems from the industry angle and not only from the agricultural angle.

Let me say that it is well known that in independent India, agriculture has made implicit strides and in 1950, we were almost a basket case. But today, we are exporting 12 million tonnes of rice alone. We are also exporting other commodities in very substantial quantities. We are no longer a country depending on imports. We are self-sufficient as well as more than self-sufficient in many things. The production of food grains alone has risen from something like 50 million tonnes to something like 270 million tonnes now. Of course, the farmer has played a big role in this. But the three big things that have helped the farmer are irrigation, better seeds and of course, fertilisers. Chemical fertilisers have a critical role. Can we apportion how much role has

been played by fertilisers as opposed to the other two factors that I mentioned? That is very difficult.

But people are certain on one thing that the role of fertiliser has been critical. This is the aspect that we have to first contend with. But what has happened is that while the production of food grains has been going up, the consumption of fertiliser has been going up but the domestic production of chemical fertilisers has not been going up in the recent 10-15 years or so. Earlier, it did go up. And that has created a situation in which we are importing 30-40 percent of our needs. This was far from the minds of the early planners who had gone very far in trying to ensure that we are self-sufficient. Self-sufficiency in fertilisers was considered at that time to be a sine qua non, a prerequisite for self-sufficiency in food grains which was a desirable objective in any case. That is the first aspect that we have to contend with today that domestic manufacture does not match the consumption of chemical fertilisers.

Second and this is an aspect that Mr. Pratap Narayan has spoken about. Indian government decided to subsidise inputs for agriculture. Why did they decide that? I have not seen a clear write-up on firm decision or a clear decision to subsidise all the inputs. But rationalising government decision at that time, I have come to the conclusion that the government wanted enough production and for that, the farmer had to be subsidised because the production that they wanted had to be at a price which was low all the time. The prices could not be low if the farmer paid the full price of the inputs. In order to meet the twin objectives of the farmers' production efforts being viable and at the same time, the urban consumer not having to pay a very high price, that is, remunerative price for the farmer as well as fair price for the consumer. We had to ensure that the farmer got inputs at a lower price than otherwise he would have had. Therefore, by that means, the food prices were kept low. That really should have been the basis of the decision for subsidising inputs including fertilisers.

But what has happened is that now and this is especially because of the fact that the prices of fertiliser have risen world over. The input cost of fertilisers has risen. The government's decision to keep the price especially of urea at the same level as earlier has resulted in the fertiliser subsidy increasing by leaps and bounds. And what has happened is that fertiliser subsidy has been one of the main causes for fiscal deficit that our economy has witnessed. Fiscal deficit was one of the main causes for the macroeconomic imbalance that overtook the Indian economy after 2010 or so and brought down the level of economic growth, the level of growth of the GDP. Fertiliser subsidies were a big contributor to the fiscal deficit. This is the second key aspect that I want to bring up.

The third aspect is that there has been a tendency among the farmers to apply chemical fertilisers in an unbalanced manner and that has been aggravated. I will just turn to that.

These are the three basic facts that I would like to draw attention of the audience to and these three basic facts lead me to spell out at the outset the basic issues in fertilisers which I have been asked to do, the challenges in fertilisers. The first challenge which flows from the

observations that I made that the consumption of fertilisers is increasing but the production is not. The first challenge is increasing domestic manufacturing of chemicals and fertilisers. That is the first issue. The second issue flowing from the fact to which I drew your attention that fertiliser subsidies have increased so much that they are impinging in a big way on fiscal deficit and fiscal deficit is causing macroeconomic imbalances and holding up India's growth and development. The second issue in fertilisers is reducing subsidies that distort trade and production. And the third issue which flows from the imbalance in the use of fertilisers is promoting a balance use of fertilisers for increasing agriculture production.

Let me take you through some of the details connected with these three basic issues that I have spelt out. Let me take these issues in turn. The first major policy issue is: can we increase domestic manufacturing of chemical fertilisers? I am not advocating that we return to wrong policies of the import substitution era which happily ended with the introduction of economic reforms in 1991. In that era, the domestic production or domestic manufacturers were encouraged to manufacture without being competitive. The idea was as I mentioned just now to achieve self-sufficiency without any regard to the cost. The most economic feedstock for urea, that is, natural gas was not available domestically and there was a general constraint on foreign exchange in those days, manufacturers were encouraged to use naphtha and other feedstock. And then we had the Retention Price Scheme which came into being. I am sure all of you are aware of the scheme which had with all the inefficiencies and diseconomies that we can think of.

Today, the situation is different. Government has decided that urea plants in the country will get natural gas at the pooled price of US\$ 10.5 per mmbtu. Since this price is higher than the price of about US\$ 3; it was US\$ 3 until recently prevailing in the gulf countries, it has been estimated that many of the natural gas-based plants will become uncompetitive even after making allowance for the freight that has to be paid. The calculations made in ICRIER show that out of the 30 plants, of course, three of them are naphtha-based and so they are uncompetitive, but of the remaining 27, at least 9 units will become uncompetitive if they are asked to compete against imported urea.

This brings us back to the dilemma that was there earlier when the Indian manufacturers' prices in most cases were much higher than the international prices of urea. As you know, we have a precedent available of a joint venture plant. I am referring to the Oman arrangement in which there is joint venture which produces fertilisers and urea to be specific in which the guarantee has been made by the government that they will purchase that and there is a guarantee for supply of natural gas at a certain price.

The big issue here is should we be increasing the manufacturing domestically of urea; I will come to the other two fertilisers later. Or should we be getting it manufactured in other countries where the feedstock is cheap. That is an issue and I am only spelling out the issues. Personally my view, of course is, this is not a part of the spelling out of the issues, that a balanced view has to be taken and the domestic manufacturers have to be given protection. I

would recommend about 12.5 percent which on today's prices will fully protect the natural gas-based manufacturers. And then, we should also take a view to afford this protection for the future manufacturers in India. I think this will considerably raise the domestic production. In this, special attention has to be given to ensure that the urea units that have closed down and has to be scrapped, the infrastructure available to those units are utilised for setting up completely new plants. And together with this, we should not give up the other alternative of replicating this Oman experience and having more joint venture setups. This would be my recommendation but I think I am only spelling out the issues and the issue is quite clear as to whether we should be increasing the capacity domestically or not.

The second big issue is that of subsidies. What should we do regarding subsidies? The concern here is that subsidies cause distortions to trade and production and prevents both the producers - the industrialists and the users - the farmers from responding to the price signals as the economists want us to do in order to ensure that there is no misallocation of resources. As I have also mentioned that it is not only distortion but also that they cause macroeconomic imbalance by putting the fiscal situation under great strain. The fiscal deficit of the central government had already moved to very high levels in the year 2008-09 when it was as much as 6 percent of the GDP. I am talking of the peak year when the international prices arose considerably. Fertiliser subsidies constituted something like 29 percent of the fiscal deficit. This is one aspect of fiscal deficit being caused by the rising prices.

There is another aspect and that is of WTO commitments. The rise in fertiliser subsidies which is increasing the input subsidies in general, is putting India's adherence to WTO commitments under strain. Under the WTO rules, the total non-products-specific subsidy must not exceed 10 percent of the value of the agricultural output. In the year 2008-09 which was the peak year for fertiliser subsidy, this percentage which should have been 10 percent rose to 15 percent. Fortunately, it has come down subsequently. India argued that this was something in which they should take into account a number of exemptions that are allowed in the WTO for input subsidies given to low income and resource poor farmers. Our calculations in ICRIER show that if we take that into account and based on a generous interpretation of WTO rules, even in 2008-09, the percentage of the input subsidies in India as compared to the value of agricultural output was only 1.5 percent. According to our interpretation, we are clear but our interpretation is perhaps a generous one and others don't agree with this. This has not really been tested and debated in the WTO. But I have a feeling of discomfort that people will challenge this. After the law has been written, then they go through, they apply the law as it has been written and they do not apply economic common sense. As the law has been written, there are some danger points there, some loopholes. These are the two aspects which should make us look seriously at the fiscal deficit, the resultant macroeconomic imbalance and the WTO angle.

While on this, I will go to the third point which is really a connected point which is of imbalance in the use of fertilisers. Mr. Pratap Narayan has already brought out that and I don't have to dwell on that but there is tremendous imbalance in various states. At the national level,

one finds that the imbalance is not obvious. But when you look at the figure in the state levels, there is a huge imbalance as brought out by the presentation made by Mr. Pratap Narayan. You must all be aware of the nutrient-based subsidy scheme that was introduced in the year 2010. The idea was to give the subsidy on the nutrient content and to freeze the subsidy and make the farmer pay whatever price was there in the market minus the subsidy. What actually happened for various reasons was the nutrient-based subsidy scheme was not applied to urea and in the meantime, another thing happened, that is, the prices of the other two fertilisers went up sky high.

The cumulative result of the partial rollout of the nutrient-based subsidy scheme and the steep rise in the international price of all fertilisers was that the farmers continued to pay low price for urea and much higher prices for the fertilisers. As a result, the imbalance has increased. It is just the opposite had happened. The idea was to correct the imbalance by introducing NBS but the defective way in which it was implemented ensured that the reverse happened. The imbalance increased after that. What can we do in this situation? Obviously, all the points that I have made point towards the need for bringing down the level of subsidies. Politically, however, it is well-nigh impossible to make any substantial reduction in fertiliser subsidies. As a way out of this mess, it has been suggested that instead of making cheaper fertilisers available, let us change the way we give the benefit to the farmer and making direct cash transfers to the farmers. This will help the government to move towards a decontrol of the production, price and distribution of fertilisers. This will also change the situation vis-à-vis the WTO rules as direct transfers are deemed to be decoupled income support and decoupled income support is not counted as a subsidy that should be reduced in the WTO. Moreover, the farmer will have the freedom to purchase the type of fertilizers on the basis of the soil needs rather on the basis of differential pricing.

This is an important policy issue. I am again moving from spelling out just the issues to suggesting what the solution is. My subject of intervention is only to identify the issues which I have done. The issue is high prices, fiscal situation, WTO and imbalance but that leads towards a solution. And one solution that has been suggested I have spelt out. There is a difficulty with that situation and with that solution also. The developed countries notably the US, EU and even Japan have shifted to decoupled income support because they are incentivising the farmer to even leave agriculture. The idea is that since agriculture is generally uncompetitive internationally, some of them can be weaned away from the profession. In that situation, decoupled income plays a very good role. If a farmer earns say \$100000 from his holdings, if he is guaranteed that if he leaves agriculture, he will be given \$100000, then he can at least cease to produce agricultural commodities which he cannot produce economically. Actually, to be honest, that is less simple than it looks because the farmers in Europe in particular, their attitude was not that they have got a guarantee that they will be paid \$100000 if their agriculture was not profitable and therefore, move away from agriculture. What the farmer did was that having got this assurance of decoupled income support, he thought that he has to do something but what can he do? The farmers generally decided that they should continue to do what they

have been doing for the last 30-40 years and that is to produce more. They got decoupled income support and still they continued to produce. The earlier idea that this will cause minimum distortions has not really worked in those countries.

This brings me back to the Indian situation as to whether it will benefit the farmers if he is given the type of benefit that he is getting through low fertiliser prices. The honest conclusion that I have come to is that it would but then it is for the others to give their opinion.

This brings me to the third issue which is the imbalanced use of fertilisers. If we have direct cash transfers, then this differentially-priced chemical fertilisers will not be there. So one incentive will go away. But additionally, it would be necessary for the government to ensure that the farmer uses the fertilisers on the basis of the soil needs and in that, there is not a decision that has to be taken. The government has already announced the programme for Soil Health Cards. There the only issue is that in order to make this practicable, we have also to increase the infrastructure of our districts so that Soil Health Cards are not only issued to all the farmers but they are also renewed from time to time because unless you have enough infrastructure for soil health testing, they won't be able to it.

I have left out one point that was in dealing with fertilisers, I confined my treatment to urea. I skipped the other two fertilisers, phosphates and the difficulty in phosphates and also with potassium fertiliser is that the raw material here is not available here. And it is very bulky to transport those raw materials. At least, as far as phosphatic fertilisers are concerned, I think there would be advantage in doing the same things as one of the measures that I am suggesting for urea is to have joint ventures abroad so that you either transport the phosphatic fertilisers or phosphoric acid. I am not very keen to advocate that we should have enough capacity for manufacturing them in the country. I think we have to leave to the private sector to take a view on the basis of profitability. There is a very big difference between the situation of urea and the situation of these two fertilisers. With these remarks, I will end my presentation.

Pratap Narayan: Thank you Mr. Hoda for your very nice enunciation of the various implications and what possible solutions are there. I will now request Mr. Satish Chander to make his presentation and after that, we will take some questions from the floor.

Satish Chander, Director General, The Fertiliser Association of India:

Thank you very much. Some of the issues have been highlighted by Mr. Pratap Narayan and also by Mr. Hoda but I think there are many, many more issues as far as the fertiliser policy is concerned. I will try to deal with the issues and maybe, while raising the issues, some of the questions which have been raised will also get answered. The brief outline of my presentation is here: what is the importance of fertiliser; status of fertiliser industry which is very important; what are the fertiliser policies? What is the impact of these fertiliser policies and governance issues? There are serious governance issues as far as this sector is concerned and what can be the way forward.

A question was asked by Mr. Hoda as to what is the contribution of fertiliser to the overall agricultural production. Let me tell you that it is well-documented that the contribution of chemical fertiliser to the agricultural production is not less than 50 percent. Other inputs are important, water is important, seed is important but this is well-documented. Let me give you one example. Synthesis of ammonia in the 20th century is the biggest invention which has happened. If this had not happened, half of the world would have been hungry. We cannot run away from the fact that chemical fertilisers are very important, organics etc. are important; they have their space but without chemical fertiliser, we cannot have nutrient. There is no substitute for that. Fertiliser is the major driver of growth in Indian agriculture and for ensuring the food security of the country.

When we talk about fertilisers, we have talked about urea, DAP and Potash MOP. These are not the three nutrients that we need. When we talk of fertiliser policy, we have to talk of 16 nutrients. Today, the problem is the deficiency of secondary nutrient, sulphur; micronutrients like zinc, iron are the serious issues in the fertiliser policy which have totally not been addressed. We are talking only of urea. This does not lead us anywhere. In the fertiliser policy, what is important is the fertiliser use efficiency. When we apply urea, only one bag is taken by the plant, one goes below the water and one goes in the air. Similarly, the fertiliser use efficiency of phosphate is only 20 percent, potash is 50 percent. The challenge is in the fertiliser policies and application of fertiliser apart from the pricing policy is the fertiliser use efficiency.

I think lot of things have been said about the Indian industry. Let me give you certain facts to show that the Indian fertiliser industry is one of the most efficient industries in the world. We are the leaders as far as the efficiency is concerned, both in the production in the environment and in safety. Now look at this slide. Energy consumption trends in ammonia plants. If you look at it, now over the period, we have come down from 12.48 Gcal which was required to produce one tonne of ammonia to 8.42 Gcal which is a reduction of 33 percent. This is done by our plants which are 45 years old. Our latest plant to be set up is about 20 years old.

Another indicator is energy consumption in production of urea. About 30 years ago, we needed 8.87 Gcal to produce one tonne of urea. Now we have come down to 6.04 Gcal, again a reduction of 32 percent.

This is a study done by International Fertilisers' Association and they have compared the plants. This is in respect of ammonia where Indian plants are doing the best, 8.29; this figure speaks for itself as far as efficiency is concerned. Similarly, if you look at the environment standards, the safety standards and I would only like to add that as far as the energy consumption is concerned, there is an Energy Conservation Act now and certain standards have been laid down under that. Every time, we are getting the best possible compliments as far as the fertiliser sector is concerned. This is one sector which has been doing what the Act wanted us to do for the last 25 years.

Look at water consumption. This has been reduced by 50 percent over a period of time.

I will now come to the most important issue which has been raised about import dependence, production and self-sufficiency. If you look at the figures, when you talk of nitrogen, in spite of the highest priority given in the allocation of the gas, we are 60 percent import dependent today. 60 percent of the total requirement of nitrogen in the country is imported. This is imported in the form of LNG to make urea here which is about 33 percent. We import finished urea of about 8 million tonnes. We import DAP which contains 18 percent N and we import NPK which again contains N. This is the status in which the Indian fertiliser industry operates where we are 60 percent nitrogen import dependence, phosphate 93 percent import dependence and potash 100 percent import dependence.

There are many issues in this. One of the issues raised was that for the Indian industry to be competitive, they should be given an advantage of 12 percent in the import duty. I think this was a point made just now by Mr. Hoda. The fact is, let me take the example of DAP. It is directly relatable to the WTO also. As far as the DAP is concerned, there is a bound rate of 5 percent. Now let me look at the duty on the raw materials whether it is rock phosphate, whether it is ammonia, whether it is phosphoric acid, the duty is 5 percent. The subsidy on domestic and imported is same under NBS policy. Still our industry is operating and competing by bringing all the raw materials at the same duty as the finished product. We have been telling the government that if they cannot reduce the duty on the POP because of the bound rate, they should at least reduce the duty on phos acid and ammonia. This has not been done.

This is the outreach as far as the Indian fertiliser industry is concerned. We are in every nook and corner of the country. We are the third largest producer in the world and we have 30 urea plants and we are having a total of about 160 plants. This is the outreach which is known to everyone and I will not delve on this.

I will now come to the policies. How the policies have evolved over a period of time and where things have gone wrong, where the policies need to be corrected, they were totally neglected. We started in 1977 with a Retention Price Scheme. A point was made by Mr. Pratap Narayan and rightly so that when the Indian farmers needed inputs at a reasonable cost, this RPS scheme was introduced where subsidy level to begin with was about 10 percent and we were able to realise 90 percent from the farmers. Where has the urea RPS taken us today? Today, 75 percent of our cost of production is subsidised. We realise only 25 percent from the farmers. We have to depend upon the government for 75 percent. I am not talking of the issues in the policy. The way our policy is implemented, our bonafide cost of productions is not recognised. If there is a tax imposed by the UP government, VAT, legitimate tax, they have the right to put tax under the constitution and we have to pay that tax. When we go to the government because the cost of production is fixed by the government, MRP is fixed by the government and when we ask what about this tax, they don't bother. Marketing margin, we are paying to the Reliance Gas; pay us as we are paying for all the gases. We are giving marketing margin for all domestic gases and for all imported gases. When it came to RIL Gas six years ago, there was no hearing. We

had to go to the court. We brought the order from the court. Pricing policy is one thing. How the way the policies have been implemented has affected this industry.

We started in 1977 with our RPS which continued. In 1992, all of a sudden, there was a decontrol of P&K Fertiliser. Total subsidy was withdrawn and the urea price was further reduced by 10 percent. As a result, the policy had to be reversed and went back to the RPS policy. Now I am not going through the small changes that have taken place in the policy but I am only covering the major policy developments.

The next major policy development was in 2009 and till 2002, we were self-sufficient in urea. Whether we are importing LNG etc. is a different thing but actually, for producing the final product, we need 20 million tonnes of urea and we were producing 20 million tonnes of urea. Similarly phosphate, we were bringing the raw material but we were self-sufficient. After that, we are now importing 8 million tonnes of urea, 6 million tonnes of DAP, another 4 to 6 million tonnes of potash which in any case, we have to import. But now, we are importing 33 percent of the finished product. It is all again linked to the policy.

But coming to the major policy change which was announced in 2009 was the NBS policy. NBS policy was meant for the whole of the sector. And as rightly pointed out by Mr. Hoda, this policy was implemented from 2010 only for P&K sector and urea was left out. If I talk about subsidy, a point was raised that the price of P&K fertiliser has gone up. Why have they gone up? In 2008-09 and 2009-10, even the MRP of P&K fertiliser was fixed by the government, cost of production was also determined by the government. Here, we came on a fixed subsidy. The fixed subsidy has been gradually reduced. There is nothing wrong in it. The subsidy has to be reduced. The cost of imports has been going up. Foreign exchange which was at Rs40-42 when this was implemented is now Rs67. If we just factor in that, the government is saving about 25-30000 crores on subsidy on P&K fertiliser. That is a good step. Secondly, what has happened is in spite of this price variation, the availability which is always an issue and the farmer is concerned with two things, the price at which he gets the fertiliser and the availability that he should get it on time. Today, the government asks us why we are importing. They have put restrictions that we have imported in February and March and they will reduce the subsidy. These are the questions which we are asked. But as far as the policy is concerned, if it had been implemented in the spirit with which it was announced and it was almost ready to be announced; all work had been done and GoMs had gone through it but finally, at the last minute, this was held up.

Another major change which has taken place is the urea policy has again been revised in 2014-15. Two things have happened. Positive but I will take you through the way it has been implemented. Firstly, I will come to the existing urea plants where we produce about 22-23 million tonnes of urea. Pooling of gas has been done which the industry wanted for a long time because the raw material gas is allocated by the government, price is fixed by the government so that no unit should have the advantage of being allocated the domestic gas. For whatever

reasons, when the plants came up, there was a long-term agreement and we asked for pooling of gas which has been done.

The second thing which has happened was that our fixed costs, conversion cost, when we convert it into urea in our plants has not been revised since 2002. After lot of exercise, GoM was set up. We had gone before the GoM. These two changes have taken place. Finally, we got an increase of Rs350 per metric tonne and this was an increase which was due since 2002. Today, we are in 2016. In between, two pay commissions have come in. Our executives also need revision in their pay. Our employees also need revision in pay. Finally, after lot of efforts, we got an increase of Rs350 per metric tonne. It went through the GoM and finally, the cabinet approved the same and notified. We had submitted our bills. But the payments have not been made. The file is held up.

The other thing on pooling of gas where it has been done, what is pooling of gas? Earlier when we were asking for pooling of the gas, they said that it was not possible and it cannot be done and that we have so many contacts. Every individual company has contact with LNG, long-term etc. We said that it can be done. Finally, they have done it now. The facts remain the same. After the pooling has been done, what is the next thing to be done? I will buy the gas at my own price wherever I have a contact but if my average price which initially was 10.5 and if I am buying at \$18, I will give the difference of 7.5 to the pool. And if I am using a domestic gas at \$6, 10.5 is the pooled gas, I will have to pay 4.5. Now the way it has been implemented is fine but when it comes to GAIL actually doing it, give the money and adjust the money, they say that they cannot do it and as and when they get the money, they will do it. As far as the policy is concerned, I will only say that our fixed costs since 2002 has not been revised and paid to us.

Another point which was made by Mr. Hoda was that we can get a preference of 12 percent in the duty and we are not competitive. Let me give you the facts and figures. During the period 2008 to 2014-15, our average gas price was more than \$10-11. The urea which is imported into the country and which is even now produced outside is about \$3. But the country was importing urea at an average price of about \$400 during those five years. My concession of 30 units which was worked out was paid after using the high cost gas of \$10.5 by the gas-based plants, the average was \$220. If I translate that into monetary terms, the Indian fertiliser industry during those five years has paid to the government about Rs1 lakh crores. This is under subsidy concession scheme. I am repeating that in spite of using the gas at \$10-11, average cost of production which was given to the industry under the policy was \$220 only whereas we were importing urea at \$400 which was produced at an average cost of \$3. I am just flagging some of the important issues.

What is the impact of these fertiliser policies? Low price of urea continues. There is increase in the subsidy bill. Industry is pushed towards sickness and there is imbalance use of fertilisers. Mr. Pratap Narayan had mentioned three players in this total game – the farmer, the government and the industry. Let me add one more which is the soil. We are destroying our soils by these pricing policies. I will come to that but let me show you through this graph. The

price of urea is constant. You can see that the cost of production is going up and this cost of production is going up because of the cost of raw materials. Even today, as I explain, we are importing 33 percent of the gas even for the urea or we can show a similar for P&K. Subsidy is fixed. Today, the level of subsidy which used to be 10 percent which I said earlier, urea is 75 percent today because of the pricing policy. We say that we have a very large number of small and marginal farmers. We cannot do here. If I take the neighbouring countries, just to give an example, in Pakistan, a bag of urea is Rs2000. Here, a bag of urea is Rs286. I am totally ignoring the secondary nutrients, the micronutrients. Just to give you an example of zinc which is to be applied in small quantity, it is limiting the efficient use of the NPK also. It is inducing serious medical problems in new-born babies, young women and immunity problems. These are serious problems but we are not thinking about them. We are just putting the money in the name of the farmer. These pricing policies of the government instead of helping the farmers, it is inducing imbalance fertilisation. We want balance fertilisation; no one can question that. We are conducting soil test. What is the next step after soil test? Balance fertilisation; give the fertiliser for right use. But this pricing policy of the government is exactly doing the opposite of inducing imbalance fertilisation.

Next is unpaid subsidy bill. This graph shows that this is what is due to the industry which is 45000 crores. And in between in 2009-10 and 2010-11, why it has come down is because during that time, the government had no money and they gave us bonds of 27500 crores and which we had to sell it at a discount of 15 back to the government to the RBI and we suffered a loss of 15 percent. These amounts that I am showing, I am not saying that something more should be given, industry should be given and I will come to that slide later on. This is as per the government policies. We are saying that this is according to their policies whether good or bad and it is payable by them. They have taken our goods. If I seriously look at this, my right to do business is totally breached. You take away my goods at 25 percent cost and don't pay me 75 percent. I am not saying that it should have been little more or that they have not recognised this cost or that cost. I am not saying that. As per the policy, they are not paying me. This is where we stand. 50000 crores due to us, 10 percent on that is 5000 crores. The total profit of the industry is not 5000 crores. I will show you that in the next slide. Where have we led the most efficient industry?

This is the net worth. When RPS scheme was introduced, Mr. Pratap Narayan here had implemented this scheme. 12 percent return post tax on net worth. When in 2013-14, I went before the GoM and gave them a presentation, now it is -2.3. We are not getting anything and half of the plants are making losses. We are surviving only because all the companies are doing something different like somebody is selling seeds, someone is doing some other type of business and some have diversified. This is the status that we have negative returns on the total business operations of 22 million tonnes that we do.

We are talking about issues. I will be honest to this audience. I will give you certain facts. I do not know whether this distinguished speaker here, how much difference it can make to the

plight of the industry of what recommendations can be given. We have now come to a stage where we plead to the government for years together. It takes some couple of years to take a decision. The decision is taken but cabinet decisions are not implemented. I have stated two examples to give to the industry. Rs350 per tonne after waiting for 15 years which is my fixed cost, conversion cost. The file is ready and all calculations have been done. But it is lying somewhere on the table saying why should it be given and how much it works out to, how much crores. Second is the ease of doing business. For P&K fertiliser, what is NBS policy? NBS policy is that there is one fixed subsidy which will be given to the industry and it can fix its own MRP but to make sure that the subsidy which is given should be passed on to the farmers in the form of lower price. We are tested for that. We are asked to give our data. We have no issues as far as the fertiliser industry is concerned in asking any questions. We are governed by the fertiliser monitoring system. We have to put all our data. We are watched day in and day out. There is no problem. Our payment procedures have been made complicated. Earlier, the subsidy on the urea used to be on dispatch and now they have shifted to receipts. They have divided it into two on account payment and balance payment. All those issues are there. We are working with the government. We have no issue on that.

A simple decision was taken. Under the NBS, there used to be a primary freight and secondary freight. The secondary freight was abolished. We said please abolish it. They reduced the subsidy and we are saying that the subsidy could be reduced further or to take away the subsidy. Now the primary freight remained. An initiative was rightly taken where it was said that there was no need to give the primary freight and that it will be merged so that we don't have to raise the bill; it was for ease of doing business. We were very happy. It went to the cabinet and it was approved. A press release was issued and a press conference was also called. But it is yet to be implemented. Somebody went and it was said that this fellow was making this and this, stop it. In the policy, so many issues have surfaced which has nothing to do with the pricing and we are keeping them apart. Now the industry is in litigation with the government. We have to go to the court for every small matter. We have got orders from the court but the orders are not being implemented. I can give any number of examples. This is the micromanagement of the industry. We are so much micromanaged. For every small issue, the industry cannot breathe and all the time is wasted running after the government. Nothing comes out of it. Payments are not being made. New things are being added. One can go to any length. There is no ease of doing business here. And there is absolutely no decision-making. You give them any number of letters, you tell them in advance that NBS rates have to be announced on 1st February and I have to print my price on the bag and I have to print how much subsidy is there. Almost three months pass up till June, nothing is done and ultimately, we take our own decisions and print some MRP based upon the earlier NBS rates. As I said, I can give any number of examples; it is endless. You ask for anything, any clarification. Let me give one more example. In urea policy, there is a policy for production up to reassessed capacity, that is, 100 percent. Now the new policy which has been announced last year and we welcome it. They said that we can produce beyond 100 percent, as much as we can, provided they will give us the lowest of the fixed cost. The fixed cost, the conversion cost is different for different plants. If there are 30 plants, then

there are 30 different conversion costs. The lowest is only Rs1600. Under the policy which has been notified after approval from the cabinet, after everything has been done, the minimum cost is Rs2300. This is hardly about \$25-30. Nowhere in the world, can you convert from gas to urea at \$25-30. Now, we are coming to an end. They have not implemented that order. I do not know whether I should produce urea beyond 100 percent or not because I do not know whether I will get Rs1300 or Rs2300, whether I will make money or lose money. We have written a number of letters asking for clarification as to what will be applicable, what is the policy and so on. But there is no reply. This is endless which is going on. As far as this country is concerned, I think we are nowhere near seeing any light at the end of the day.

What is the way forward? Last week only, we had a meeting with the finance minister also. We had a pre-budget meeting where we requested the finance minister that as far as our subsidy bills are concerned, we know that there are fiscal constraints, it was not an overnight issue and there is a legacy involved. The place where we have reached has not happened overnight. It has taken 8 years, 10 years, 12 years or 15 years. We asked them to divide into three years and to give us the balance subsidy in three years. We have said that we are prepared to work for direct subsidy to the farmers and the industry is prepared to go up to any length. We have been working with the government. I am sure all of you know that our total movement is tracked. We are not given the balance payment till it reaches our retailers. We have 2 lakh retailers. They have to confirm the receipt of the fertiliser and if they do not confirm the receipt of the fertiliser, we cannot get the balance payment. Not only that, more restrictions are put, government has to certify, the quality has to be certified. All those issues are there. We are prepared to work with the government for direct subsidy to the farmers.

As far as direct subsidy to the farmers is concerned, we have even gone to the extent of explaining to the government that even if some 100-200 crores are to be invested in having some POS machines etc. where simultaneous transfer of subsidy can take place, that can be done. We want that subsidy should directly be given to the farmers and the industry should be allowed to work. When we talk of joint ventures overseas etc., we are telling the government to at least reduce the duty on raw material. If I set up a joint venture for phosphoric acid or for ammonia, now as far as setting up the joint venture is concerned, let me clarify that we have joint ventures already in Senegal, Tunisia, in Jordan and in South Africa where we are producing the phos acid. What is the incentive to me for bringing the phos acid here? When I set a joint venture there and bring phos acid, I am supposed to pay 5 percent duty. If I bring DAP finished product, I am paying 5 percent duty. What is the incentive for me? We are saying to at least reduce it to 2.5 percent. More so, why is it competitive because under the subsidy policy, same subsidy is given for domestically produced DAP and imported DAP. It is the same. Till we shifted to the NBS, the domestic industry had the advantage where the subsidy was 20 percent higher than the imported DAP. But that was done away with. We were very happy and said that we did not want that and asked them to give the same subsidy and said that we will deal with the international market because we as buyers also have strength because India is a market today. If India does not buy, the international prices crash. We know our strength and

we know how to deal with it. Give us a fair treatment. But what we are asking is just a differential of 2.5 percent between finished and raw material. We know that as far as the direct subsidy is concerned, it may take another 1 or 2 years because we have to capture the data of all the farmers and we are ready to capture that because we have gone right up to the retailer level. We have all the data of how much goes to every retailer. The farmer comes and we have to capture only his data. And we have given them the model. There are three flagship schemes of the government: Jan Dhan Yojana, Aadhaar card and Kisan Credit Card and all that we need to do is capture their data. We will do that. But some issues are raised that he is a tenancy farmer and so on. Today also, anyone can buy any amount of fertilisers. The only way out is to free the industry and don't route the subsidy through us. We don't want subsidy. We are not able to serve the farmers. We can do lot of extension services. We have no money. We have to do it. We are just surviving.

I would only like to add that we are having very good programmes for soil testing and so on. Quality is very important and if we don't capture micronutrients, it is meaningless. But ultimately, where is the option left with the farmer? If he has again to go and buy urea, there are 300 products in the fertiliser control order. He cannot apply better products. Their water soluble fertiliser where fertiliser use efficiency is 90 percent, there is a 50 percent saving on water, 50 percent saving on fertiliser. Why are we not promoting that? There is no subsidy on these products. Let me tell you that these products are growing at the rate of 15-20 percent though the base is low. What the farmer wants is the quality nutrients. He is not looking at subsidy and he is applying all that. Urea costs Rs5360 per tonne and water soluble fertilisers are in the range of Rs50000-60000 to 1 lakh. He is buying them and applying them where the fertiliser use efficiency, water use efficiency is up.

Our plea is whatever can be done by the distinguished people sitting here who had wielded all the power during their time, if they can carry the message that we don't want subsidy and take away the subsidy from us. Allow us to live. This is our plight that I could share with you in brief. I think we can now take questions from the floor.

Pratap Narayan: Thank you very much Mr. Satish Chander. The floor is now open for questions.

Question and Answer Session

Q: I would like to ask Mr. Chander as to what is the power and authority with their association. Is there a screening or auditing closely of the cost structure that they displayed to the government? And thirdly, when you give directly to the farmer, don't you think it will have more corruption and problems at a lower level? I am a farmer and I know even today what the issues involved are.

Satish Chander: As far as the first question is concerned, as an association, we don't have any authority. But this is a very respectable association set up more than 61 years ago. We command lot of respect. We were being consulted till now and we are consulted even now by all the

ministries and departments. We are invariably represented in all the committees. This association has a lot of say in the international forums where we play a very important role. We have lot of persuasive powers but somehow, if things go beyond logic and reasoning and are decided on considerations other than logic, reasoning, rationality, then we have nothing to do with it. I can't deal with it.

The second question about auditing, yes, we are thoroughly audited by everyone and I can say with lot of pride that there has not been even one instance where even one paisa of the subsidy has been misused. Now if because of the government policies and it should not be taken in any way as a reflection, if a bag of urea costs Rs200 here and costs Rs1200 another 2kms down, there is a normal tendency, there is illegal trade and that goes on. These are all side effects of all these policies. We are audited and let me tell you that as far as P&K fertiliser is concerned, we have to give all data and for urea also. We have to feed it into the online system any purchase we make, any raw material we make. Monitoring is done and we have to give the MRPs and thereafter, when we give our bills, they go to the cost accountant to determine the reasonableness of the profits because NBS for P&K, MRP is open and the price has to be reasonable. We have been telling the government to please tell if I can make one percent or two percent profit and we never get any reply from the government but so far they have not come across anything to say that our prices are unreasonable. Luckily, as far as the fertiliser sector is concerned, we have a public sector, a very cooperative sector and private sector. Government is running their own plants and their officers are sitting there. They are the CMDs of their company and are sitting there on the board. If the price of DAP is fixed, they know what is the price and the government knows what the price is. Nothing is hidden from the government. We have no issues as far as the audit is concerned and we are subject to whatever requirements laid down by the government and we do accordingly.

As far as the direct subsidy is concerned, is the present system a perfect system? Because ultimately, in direct subsidy, unlike many others where the subsidy is given, the beneficiary has to be identified; it is not available. For example, food subsidy, it is not given to everyone. Though in liberal terms, they may say that it will be given to 70 percent or in rural areas, it will be 80 or 90 percent, 70 percent in urban areas and so on. But here, there is no restriction. Anyone who is doing farming, can go and buy the fertiliser across the table. It is available to everyone. Later on, we are saying that once the beneficiaries are identified, if they want to restrict to small and marginal farmers or whatever, they can do it. But definitely, direct subsidy to the farmers will address large number of issues; almost all issues will become non-issues when it goes as direct subsidy to the farmers. Government will also know how much they can pay. With the subsidy bill, this question comes to our mind that even the budget presentation and all that, everyone knows how much the subsidy payable is. This is my consumption. This is my 55 million tonnes, 31 million tonnes of urea. Everyone knows about it. Why is the money not provided? Is the budget exercise a true reflection of the income and expenditure?

Q. Dr. Anand P. Gupta: I have two questions both addressed to both our learned speakers. There is a perception that a good part of the subsidy accrues to the fertiliser producers. Of course, the farmers also benefit but the farmers do not benefit 100 percent of the subsidy. As I said, this is a perception and I would like you to share to what extent is this correct. My second question is, that once the DBT is implemented, how much do you think will be the subsidy burden on the government? Do you have any estimates on that?

Satish Chander: As far as the subsidy being given to the producers is concerned, I have explained to you the efficient way the industry runs. Our raw materials, our final products, the moment it leaves, we are under central excise. The moment we import our raw materials, everything is monitored, kilo to kilo. These are the plants where the gas is allocated by the government. I cannot produce less urea by taking more gas. I cannot burn my plants. The production goes right up to the retailers and they acknowledge it. There cannot be a better system where there can be any diversion. What exactly is in your mind? You are saying there is a perception.

Dr. Anand Gupta: Gold-plated fertilisers --- at one time.

Pratap Narayan: Let me cover this. If the industry was gaining as you were saying as subsidy, the return figures he has shown, if the industry was gaining, why wouldn't they have expanded? Why has there been no investment for 15 years? Anybody and this argument of gold-plating has gone a bit too far. What is gold-plating? After doing all that gold-plating and all those allegations, you are producing 110 percent and the return is -2.5 percent. Where is the subsidy going? Unfortunately, people are not willing to give up their theoretical considerations. On direct payment of subsidy, the industry is asking to decontrol. Let me remind you, unfortunately, I have been involved in the system for more than three and a half decades. Why was subsidy brought in and introduced? Phosphate potash prices went up in the international market and the then agriculture minister, Mr. C Subramaniam raised the question that the farmers cannot afford it and so some subsidy should be given. Give it to the farmer; it was Mr. Subramaniam who called my grand, grand predecessor and said that he cannot give subsidy to 120 million farmers and had no such mechanism. He said that we control the price fixed by them and he would give us the subsidy. People are talking of direct benefit transfers. It is good from theoretical consideration in Harvard books. But what is the mechanism to handle 135 million farmers? Today, I have run that office. A very simple office with 50 people and monthly bills were coming, payment was made. Today, 125 banks transfer free cost?

Dr. Anand Gupta: That is the second question.

Pratap Narayan: I am saying about the cost which you are talking about.

Satish Chander: I think much water has flown since the subsidy scheme was introduced. It was good to introduce and it led to setting up of the plants. Let us not criticise everything. When the policy was introduced and implemented, up to 2000, it worked very well. But it stopped working in 1990s onwards; the policy should have been revised. There was nothing

wrong with the policy. It was well thought of and well executed. The policy should have undergone a change. The government in order to save the subsidy bills started tinkering with the industry. Let me tell you, when the RPS scheme was introduced, capacity utilisation was 80 percent. It was increased to 90 percent, then 95 percent and 98 percent. If I do not produce at 98 percent, I lose. Today, the fertiliser plants being so old, as I mentioned, we are producing at about 108 or 110 percent. If I don't produce, I cannot survive. Perforce I have to produce.

About your second question on what are the estimates of subsidy, it is very simple. Subsidy is a function of cost of production minus the MRP which you want to give to the farmer; the difference between the cost of production and MRP is subsidy. It is for the government to decide the level of subsidy. Our simple question to the government or the economist was this, is any economic activity practical where you give 75 to 80 percent subsidy? Forget about industry etc. How long can you survive? And this is going on increasing.

Anwarul Hoda: Before answering this question, I would just like to raise one point that was made in connection with what was said by Mr. Satish Chander. On the reduction of import duty from 5 percent and its relationship to the 5 percent duty on DAP being bound, let me say that if the duty is bound, it is bound against increase. The commitment is that you shall not raise the duty above 5 percent. There is no effect of that binding for reduction of duty.

Satish Chander: I fully understand that. My point was that ---

Anwarul Hoda: I am not arguing with you. I am just correcting the point that you made from the point of view of WTO rules. There is no binding against decrease.

Satish Chander: I agree with you that there is no binding. The point I was making was 5 percent in a different perspective that if I do value addition in my country, I should get some advantage. Now I cannot get advantage of more than 5 percent because it is bound. I cannot ask for increasing the import duty to 10 percent. It is not possible. The only thing I was saying was I fully understand that in urea, you can increase. There is no difficulty to increase in urea or NPK but on bound item, we know how it happened and under what circumstances. I was in the Ministry of Agriculture. I know the history. USA was the main supply of DAP to India. They wanted to capture the market. They had insisted and put that 5 percent duty at that point. No one knew even in the Government of India or in any of the ministry that the significance of putting a bound rate of 5 percent. We realised that later on when it came in context of the industry. I fully understand that it can be made 0. But here the question is of giving protection. If we make it 0, then obviously, whatever little protection of 5 percent that I have, goes away.

Anwarul Hoda: On the question of who is being subsidised, the industry or the agriculture, I have a point of view. In the pre-2000 era, the cost was higher than the international prices. There was the concept of import parity price. If the import parity price of urea was 100 and you were subsidising from 200 to 100, then obviously, that benefit was being taken by the industry. If the cost of production of the domestic industry was higher than the cost of imports, then

much of the benefit of the subsidy was being captured by the industry. But now, the situation has changed.

Satish Chander: I will not agree here for the simple reason ----

Anwarul Hoda: Now the situation has changed because the international prices are generally very high. My interpretation of that is most of the subsidy that is being given is subsidy to the farmer and not to the industry because much of the industry is producing at a cheaper price than the international price. The old thing that the industry is being subsidised does not apply nowadays at least as far as urea is concerned.

Satish Chander: I would only like to respond to say that even earlier and I have given you the statistics about the Gcal, when we produce urea, 90 percent of the cost is the gas cost, feedstock and rest is the conversion cost. Gas price is not in the hands of the industry. If we don't have a domestic gas and if we have to import gas, then obviously, the feedstock prices are higher, the cost will be higher. Subsidy is not given to the industry because it is inefficient. That is the point I am making. We were not given subsidy because we were inefficient. That is all.

Speaker: Why do we call it a subsidy as far as the industry is concerned? It is a misnomer. It should be called compensation. Subsidy is to the farmer. As far as the industry is concerned, it should be compensation.

Q: I have a question for Mr. Hoda. You had mentioned about the calculation done by ICRIER that 10 plants would disappear at the pooled price of \$10 per mmBtu. Now the situation is 16-17 ----- the contract with the Rasgas of Qatar has been renegotiated and most of our gas is coming from there. The industry had the opportunity to buying it directly from the market but there were some complications. Now this \$10 will become \$5. The pooled price which was originally \$10 will become \$5 and domestic price is less than \$4 and the Qatar gas would come at about \$6-7. At \$5, maybe you would like to do a fresh calculation and see what will be the impact on the Indian industry and how many plants would be competitive vis-à-vis imports under the new scenario of gas price?

Anwarul Hoda: Today, the gas price has already come to \$8 from 10.5 and this has been notified.

Speaker: It should come to \$10 delivered.

Q: While dealing with all about chemical fertilisers, I think with Sustainable Development Goals and all this stuff and about sustainability as such, the fuel prices going up and other things which all of us are familiar with, have you ever thought about organic farms?

Pratap Narayan: We are running against time. Organic farming is beyond today's subject. I will answer it when we meet next.

Satish Chander: We have made estimates of all the nutrients which we can get from animal waste, agricultural residues and it cannot be more than 1.5 or maximum 2 million. Today, I am already using 24-25 million tonnes of nutrients. There is no substitute for it. Organics have their own place. They have to be used in a balanced and in an integrated manner. But to say that they can be substituted, we will have a situation of hunger and half of the world will die.

Pratap Narayan: In fact, I had had the privilege of talking to no less a person than Dr. Normal Borlaug and he just stated in one sentence that if you denied fertiliser use to the farmers, you are condemning the world's population to hunger. Please understand that fertilisers are nutrients, NPK, just as we take proteins, carbohydrates and vitamins, you can go up to this. In China, I will give you the figure. They are using much more organic manure than we can afford. Why are we not using that much organic manure is a separate subject for discussion. They are using as much as 10 tonnes per hectare and yet their usage as I showed in my slide is 433 kg per hectare. We are very proud to have come when the subsidy scheme started, from 16 kg to 146 kg or something and now it has gone down to 120kg. What is our productivity? It got directly reflected in productivity.

Speaker: Our productivity compared to China is half.

Pratap Narayan: Productivity is half, the reason being that not only we are not using organic manure, it is very easy to say it but organic manure in India comes from animal dung etc. In our villages, they use it for fuel. Where is it available for being applied as compost?

Satish Chander: They have their own space and they have their own importance but they cannot substitute chemical fertilisers.

Pratap Narayan: They cannot meet the requirement of fertilisers.

Q: I have one question for Mr. Satish Chander. You mentioned that you are highly dependent upon import of raw materials. Let us take the question a bit differently. Are we aware what the profit margin of the importers is? Are they earning a lot of profit from us eventually leading to India subsidising them? You gave an answer to this. You said that the Indian industry decides the global prices and if you stopped imported, the prices will crash.

Satish Chander: I will not say that we control but we influence as a market. If India buys less DAP as you can see and in international trade, a number of things are happening. Earlier, all our imports were coming from the US; DAP from Russia, from Middle East. Now all this trade has shifted to China. All our imports of urea apart from Oman which is under a different agreement and even that agreement was criticised at that point of time as to why it was signed but that is a different thing. It has all shifted to China and China has influenced the international markets and our urea and DAP imports have all been overtaken by China. If China is not in the market, we will have to pay \$100-200 extra per tonne. That is the situation. India as a market can influence. Today, if any plant has to come up or any production has to come up; lot of production is coming up but financial closures are difficult. Where will we sell?

India is the market and everyone is coming to India. But to your question, earlier, yes, the subsidy which has gone in the name of foreigners, probably, when we touched in 2008 and 2009, 1lakh crore, the beneficiaries were someone else, the suppliers.

Q: Let me add to what was said. International market operates on demand and supply. We are not the only importers in the world. We may be 20 percent of the global importer but there are producers in 5 to 7 countries. There is a demand and supply which works and that is what decides the price. We actually buy at the best price.

Satish Chander: We influence the price.

Q: If there is no demand, the producer who has invested billions of dollars in developing those mines and other facilities, he will charge whatever he can charge. When the demand is going down, he is selling at rock-bottom prices. This would carry a wrong notion that when importer pays a price, that goes to that producer. It is an international market.

Satish Chander: I think it was a very causal question.

Q: But the causal question leads to the notion that the subsidy is to the industry. Subsidy is for the farmer and industry is crying all over the place to take it away.

Satish Chander: If we had any vested interest in the subsidy, why should we be saying for the last ten years to take away the subsidy from us?

Q: I would like you to comment on the impact of chemical fertilisers on the health of the people.

Satish Chander: Chemical fertilisers do not have any impact on the health of the people. If there is an imbalanced use of fertiliser, like you keep on using urea when it not so much required, the urea will destroy the power of the soil and the fertiliser that the plant needs will not be taken and the fertiliser use efficiency would further reduce. And the urea which is not taken by the plant will either get into the water or vanish into the air. If you take anything like milk or something else more than the required quantity or do not take it in a balanced way, then it may have some impact otherwise chemical fertilisers have to be used in a balanced manner and they do not have any ill-effect on the health of the people.

Q: Everybody says that that fertiliser is for the farmers and not for the industry. Agreed. But the farmers have a totally different point of view. They say that this is not for them at all. Their argument is that when the CACP fixes the Minimum Support Price, they inbuilt only the subsidised price of the fertilisers. Where is the subsidy for them? It can be considered a subsidy for them, if the full price of fertiliser, the unsubsidised price of the fertiliser is factored in the ultimate price. Where does the subsidy go? Subsidy goes to the middle class people who are sitting here.

Anwarul Hoda: There were a couple of questions hanging in the air. I wanted to fill those blanks. First of all, a point was raised that if the pooled price comes down as indeed it has, then what would be the competitiveness? Certainly, it will change the competitiveness. When I said that a number of India's industrial units will become uncompetitive or have become uncompetitive because of 10.5 being fixed, I never said that they would disappear. If you remember, I also said that if they can be protected through a simple mechanism of a tariff being imposed of about 12.5 percent, with the pooled gas prices going up, the need for fixing a tariff will be much less and if the gas price becomes even more competitive, then we will be in a position to export urea as China is doing.

A number of observations have been made as to whether this is a subsidy or should it be called a compensation or whatever, by changing the nomenclature, you don't change anything. First of all, while calling anything a subsidy or not a subsidy, you have to see what the definition of subsidy is. The definition of subsidy that the economists give, there is a definition of subsidy that the WTO agreement gives, you have to first decide what your starting point is. My starting point is that any payment that is made by the government for ensuring production of anything is a subsidy because you cannot describe it as anything else. Now the definition that this is not a subsidy because there are inherent disadvantages in India is not very valid because if there are inherent disadvantages, then don't produce, import the finished product. In deciding whether it is a subsidy or not, we have to be mindful of the need to define subsidy and in India, it is being defined as anything that goes from the budget of the central government or state government is treated as a subsidy.

Q: I came in late but I heard most of the conversation here. A lot has been said about the issues, the policy objectives and what needs to be done. One thing is very clear that the policy needs to be changed and the subsidy mechanism needs to be changed because for the last 20 years at least, the policy has achieved only one objective. The stated objective might have been balanced use of fertiliser, promotion of the industry, etc. but the single objective that has been achieved is somehow the subsidy has been reduced through NBS, through changing parameters and that is reflected in the industry's health. In the total cost of production, the industry's contribution in terms of profit is very insignificant. Most of it goes either to the suppliers or goes to the employees, capital cost etc. Now that level has been squeezed. You need to put water to keep the level in some shape. How do we really communicate and influence the government to do the obvious and that obvious is, remove all subsidies if they don't have any money and if they want to give the subsidy with whatever money they have, either give it to the consumer in the form of food subsidy or give it to the farmer in the form of fertiliser subsidy. Leave the industry alone because that level has been squeezed. There is no further thing left. If we can deliberate on how do we do that, how do we communicate. We have been saying this but somehow or the other, it does not happen. We are too scared to touch the urea price because so many farmers will get annoyed. We do not want to touch P&K fertiliser because it has already become so expensive; we have no control over the rupee. The rupee and dollar parity keeps growing. There are many other fundamentals but again, it falls on the industry that

somehow, they should do something. Where do we go? If we can deliberate a little bit on that, your guidance on that will be very helpful.

Pratap Narayan: Thank you. We will wind up. I am very grateful to Mr. Anwarul Hoda and Mr. Satish Chander for taking the trouble and explaining things. I am also very grateful to the participants for their participation. This issue is so complicated that in my mind, subsidy is nothing but from the right pocket of the government to the left pocket of the government. When I was ED FICC, they suddenly increased the price of naphtha at that time and when I sent the subsidy bill, the Secretary, Expenditure called me and said that he could not afford it. I showed him the factor. The first item was increase in the price of fuel oil and naphtha for fertiliser. The Secretary Mr. Harbans Singh said that he had done it to increase the revenue of the oil company. I said then pay for it. He asked me what I meant by that. I told him this was from the right pocket of the government to the left pocket of the government. If you want to give Rs100 to ONGC, you give it directly and I have no problem but when it is routed through me, you are very happy that Rs100 has come to ONGC but you are paying Rs120 because there is royalty on that. After royalty, there are taxes and there is my working capital. He was so convinced that he asked me to go to Geetha Krishnan who was then the joint secretary and tell him that in future, the price of fertiliser should not be increased. Most of the things are from the right pocket of the government to the left pocket of the government. Thank you very much.

Shanti Narain: I have a pleasant duty to perform. Thank you so much being with us here and for giving us very knowledgeable inputs on the fertiliser pricing. Please accept small mementos on our behalf.

IC CENTRE FOR GOVERNANCE

3, Palam Marg, 3rd Floor, Vasant Vihar, New Delhi-110057

Tel: +91-11-40809939

Email: iccfg@yahoo.co.in, Website: www.iccfg.net