

DECODING
Impact
WITH RATHISH BALAKRISHNAN

DECODING IMPACT

**DECODING MILLETS WITH
SIVAKUMAR S**

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Acknowledgements

Contributors

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Sattva Knowledge Institute (SKI), established in 2022, is our official knowledge platform at **Sattva**. The **SKI** platform aims to guide investment decisions for impact, shedding light on urgent problems and high potential solutions, so that stakeholders can build greater awareness and a bias towards concerted action. Our focus is on offering solutions over symptoms, carefully curating strong evidence-based research, and engaging decision-makers actively with our insights. Overall, SKI aims to shift intent and action toward greater impact by influencing leaders with knowledge. All of our content proactively leverages the capabilities, experience and proprietary data from across **Sattva**.

Intro: You are listening to Decoding Impact, a podcast by Sattva Knowledge Institute hosted by Rathish Balakrishnan.

Welcome to Season Two of Decoding Impact. Every fortnight we will engage leading thinkers and practitioners to understand what it takes to solve systemic problems at scale. For all the curious changemakers committed to understanding the trade-offs and incentives to make this world a better place, this one's for you.

Rathish Balakrishnan (RB): [00:00:51] Millets have the potential to address the three big crises of our time in India, namely the climate crisis, the economic crisis and the nutritional crisis. India has been leading the discourse to develop the dialogue of millets globally, so much so that 2023 has been designated as the International Year of Millets by the UN. Despite these tailwinds, the millet market is yet to develop a sustainable rigour to gain a significant level of popularity among Indian consumers like quinoa or oats. This revival hence needed a systemic approach across demand and supply to enable greater scale. Today's podcast is going to be a rich exploration of how Millets has a crop of the future that can help unlock a model of production that is good for us, good for the farmer, good for the businesses, and good for the environment. To help us navigate this discussion, we have Mr Sivakumar, who is currently the Group Head of Agri and IT businesses at ITC Limited and is a member of its corporate management committee. He also oversees ITC's Sustainability and Social Investments Programme. Mr Sivakumar has also been engaged as an advisor for the agricultural industry at both national and international levels. Thank you for joining us, sir. It's a pleasure to have you as part of our podcast today.

Sivakumar S (SS): [00:02:10] Thanks for this. Looking forward to this conversation.

RB: [00:02:26] So I think as we had mentioned in the introduction, millet seems to be the crop whose time has come, 2023 being the year of Millets, the amount of conversation on Millets in India and also as part of the G20 agenda currently where we are talking about it to other countries seems to be on the rise. And while this work has been on for a while, I think the moment really seems to be now. And before going into what is happening, sir, I think it will be great to hear from you. Why Millets and what are some of the unique advantages and benefits that Millets is bringing to the conversation on the issues that are important to India today?

SS: [00:03:07] There are many dimensions. In fact, Millets, at least when you hear it in theory look like they are really magical millets from a consumer health and well-being perspective, from how they can deal with natural resource conservation and climate resilience has also potentially raised farmer incomes in particularly rainfed areas. So you could look at each of them separately. Let me start with the consumer side. You know, while Miller, of course, is several millets are there, there are some major millets, whether it's sorghum, bajra, ragi or there are many other minor millets like Kaakum, Kodo, Sawaki, and so on. Each of them obviously has different nutritional profiles, but in general, they are a great source of micronutrients and they are important for overall health and well-being. Millets are also a good source of protein-rich fibre. You know each of the micronutrients, whether you look at iron, which is an important source for early formation of the red blood cells and therefore

carries oxygen to the body or magnesium, which helps in maintaining bone health and blood glucose levels and improve nerve function. Calcium contributes to stronger bones and teeth. Zinc, which is in fact everybody realised during the Covid period the importance of zinc to the immune system function and the healing.

SS: [00:04:37] Potassium for that matter, also aids in regulating blood pressure and improving heart function. Phosphorus is very much like calcium, with stronger bones and teeth. So a host of benefits, one millet may have a little more of one of these micronutrients and a little less of the other. But all of these are present mostly in many of the millet. Then there are, of course, vitamins, B-complex in particular, which support metabolism, energy production, and nervous system function and also millets overall are low in glycaemic index. Therefore, it helps manage blood sugar levels. Even the natural antioxidant levels are higher in millets, which help eliminate harmful free radicals from the body, which means we are protected against various chronic diseases. So I think a list like this goes on in terms of not just health for the sick, but health for the healthy. It retains well-being. I think a host of these things look almost incredible. But that's what Millets can do from a consumer perspective. So doesn't it sound really incredible as to all of these are just in millets and we don't get to eat as much nowadays?

RB: [00:05:54] Absolutely, sir. I just I know you're coming in with the other aspects, but I was just as you were counting it out, I'm guessing people are going to just stop the podcast now and say, this is all I'm going to have all my life because it seems to check all the boxes of what we need for a healthy life.

SS: [00:06:08] Yeah, absolutely. So while that is on the consumer side and obviously those who start become converts, I'm well aware I'm one of them started about four years ago, but I'm a convert, and so many of the people that I know, the other one is to do with, you know, natural resource and like water, topsoil and so on, and then climate change, you know, natural resource. World at large, India also in particular the way we are consuming water like it's available forever. We don't need to bother about it the way the soil is getting damaged for many reasons. All of this, in fact, as you know, the world counts. Earth Overshoot Day. As to how long we take to renew the natural resources that we are consuming in a year. And when we started measuring, it was a balanced number, like by December 31st in a year, we will renew whatever we consume in that year. That means we have a balanced. But as years progress notwithstanding measuring this, we have not been able to manage it. And slowly, it slipped into November, October, September, and August. And now in as we reach 2023, by July, pretty much we exhaust the natural resources that we can renew by December 31st. So that means for five months, we are literally borrowing and not borrowing. Actually, one could say stealing from our children and their children the natural resources that rightfully belong to them.

SS: [00:07:42] So one needs to deal with natural resources without any doubt. The other is climate change. Generally, one knows about climate change, but there are some numbers that the Centre for Science and Environment put out on the eve of COP'27 a few months ago. For India-specific numbers. For one, India had witnessed extreme climate events in one or the other place in 90% of the days: as many as 90%, of one or the other part of the

country. Then three out of four districts are extreme event hotspots. Whether it's delayed monsoons or erratic rainfall in terms of unevenness or untimeliness or hailstorms or cloudbursts, heat waves, and so on. And as many as 40% of the districts have exhibited a swapping trend, which means that traditionally flood-prone areas witness intense droughts and vice versa. So generally, one knows climate change and we see that no rains are happening in the summer or hailstorms and heatwaves are there. But when you look at these numbers, you see how big the change has been. And now it looks like we cannot do a lot to reverse this. At least we should adapt in certain areas and perhaps take steps to mitigate further deterioration. And Millets can play a role in both adaptation as well as mitigation. And that's the reason one could say this is, again, magical from that perspective as well, because, unlike paddy and wheat, you know, whether it is sandy or loamy or clay soils, one can grow millets under different rainfall conditions.

SS: [00:09:26] One can grow at less than 500mm or more than 1500 mm and also can be grown in different temperature ranges, less than ten degrees and greater than forty degrees and at different altitudes as well. So I think it's versatile and very adaptable. And some millets like little millet can withstand even waterlogging, which is a challenge at times. And especially when exposed to some kind of stress, whether it's biotic or abiotic, good recovery also happens. From the resilience and adaptation point of view. I think some of these are really like magic. And lastly, if one were to replace, let's say, Rice with Millet, it would actually mean a reduction in irrigation water demand by as much as 33%. And Millets are also environmentally friendly because they are what are called C4 plants. That means they avoid photorespiration and therefore absorb higher carbon dioxide. I think all of these are a host of reasons why Millets came to attention after the Indian government had brought it as the Year of Millets and now the International Year of Millets at the insistence of the government. And certainly, for right reasons, we should be looking at a topic like this.

RB: [00:10:52] Thank you, sir. And I think I want to build on what you said because I think you framed it very, very clearly as the triple crisis. I think the world is facing this. You know, one is, of course, the climate crisis. And I often say that we are not exporting rice and wheat. We are actually exporting groundwater. You know, today and I think the water table is one thing, but the host of other climate change, you know, repercussions of agriculture is significant and agriculture consumes 90% of the water table in India today. So I think it is a significant aspect of our long-term resilience as a country. So the climate is one part of it. The second is the food and nutrition aspect of it. And especially for a country like India and given the global rankings that we've had and also globally, nutrition is becoming a larger question not just for the rich but for everybody and so on. The third part of it is especially, and that's something I would like you to touch upon also, sir, is the income of people in India, 47% to 51% of Indians today rely on agriculture. You know, and one of the benefits of Millets, given the profile of the farmers that are involved in the farming of Millets, is also that if we are able to unlock value from Millets, their own income goes up as a staple product, especially in environments where water table is not as rich as it used to be in Punjab and Haryana. So I'd love to also have you share about what it means for the farmer from an income point of view and from other benefits points of view as well.

SS: [00:12:23] Yeah, certainly where millets are grown at this point of time, which are relatively more rainfed regions and by the smaller farmers and marginal farmers mostly in whether it's, like I said, rainfed or arid and semi-arid kind of regions. And because they're drought tolerant, that's where it is grown and they're also low resource consuming and therefore smaller and marginal farmers can afford to grow them. Not too many inputs get used. It's reasonably widespread, although a few states grow a lot more like Rajasthan, Karnataka, Maharashtra, and U.P., grow them a lot more. Then, of course, there are other states as well, whether it's Haryana, Gujarat, Madhya Pradesh, Tamil Nadu, Telangana, Andhra Pradesh, or a little bit of Uttarakhand. I think these states take a larger share. But the first four that I talked about are a lot more and obviously being a drought tolerant kind of a crop, low resource consuming crop, there is a preference for farmers to grow millets, but by and large, it has remained to be in some pockets a subsistence kind of farming. It's not a commercial crop for multiple reasons. One, of course, we talked about a lot of health benefits and so on one side and aligning specific millets with specific consumer attributes.

SS: [00:13:51] I think some of that offtake has not taken off, although farmers do grow it and much of it goes into non-food consumption and therefore relatively low value. From the farmers' side, while it is resource-conserving, as I had mentioned, and climate-resilient, where it is done is more by default. It is not that consciously where resources will potentially get consumed ten years from now and therefore I should start conserving now. It's not that kind of a deliberate choice in the larger part. So while the growing side has some activity happening, but there are questions on economics and significant upliftment of margins. And then of course, given the focus that happened on many other crops or productivity improvement. The level of increase in productivity hasn't been substantial. In fact, the overall acreage, like you mentioned, come down compared to the time of the Green Revolution days. So I think it's happening potentially exists from the farm income side, but there are issues that one needs to navigate through before that potential is realised.

RB: [00:15:19] The point you made right now, which is also contrasting with what you said earlier, is if it's such a magical crop and if it has so many benefits, the land coverage shouldn't be coming down, it should be going up. And so it will be good to sort of deep dive into what are some of those systemic challenges that I think are holding back the promise of Millets. And as you rightly said, anyone who has consumed it has become a convert. But we need way more converts, both on the farmer side and on the consumer side for this to happen. And one of my personal realisations always is, you know, when you talk about the millets, you assume it is one thing. But, you know, there are more than 150 varieties of millets. And even in your introduction, you talked about, you know, the most common ones, the rare ones, and there are so many regional varieties. How does that complicate the challenge of Millets overall as well? Maybe it'll be good to start with that premise and then go from there.

SS: [00:16:13] So let's look at a very broad level. We talked about consumer well-being, health and all that and, therefore, demand-side aspects. At one level, there is a centre-of-plate opportunity for millet as a more nutritious staple. On another level, there is a snacking opportunity as a more healthy snack and both are very large markets. But if you look at anywhere between 17 to 20 million tons of millet, depending on what you are counting in

and keeping out actual value-added consumption of the kind that I talked about as why millets are preferred by consumers. It's a very small fraction of this because a broad awareness level of nutrition and health exists if you ask anybody. Millets good people say very likely, yes. But the key barrier, for starters, isn't taste. You know, one has got used to rice and wheat for a few generations now. And consequently, we say that no, these are tastier and more refined as in rice and wheat as opposed to millets. Even the look and feel. I hear complaints from consumers who started new in terms of the colour or the texture of the food that goes in. And even cooking time and effort. A lot of people say, okay, you can't just consume millet as is. You need to soak them for a few hours. And so that again is a challenge, how consistently they get cooked and so on. So time and effort are also an issue.

SS: [00:17:51] On top of all of this, there are a lot of complaints about the price. Also, people say, Yeah, we would like to consume flour made of some of these. But it seems to be much more expensive than wheat atta or rice for different kinds of dishes. I mean, obviously one has to work on popularising recipes, possibly initially through some kind of proportionate mixes which will balance the taste and all that. Snacks, of course, do benefit from masking the taste is enhanced with some spices or sweeteners and so on. But the larger volume comes out of the centre of the plate, and therefore one needs to deal with that. Also just adjoining that when you look at it. The challenge is actually a part of processing, but pretty much one can also see them from a demand perspective as relevant as the shelf life. And how long can the flour of millet stays fresh is an issue? When will it start developing a little bit of bitterness or rancidity because of its high lipid profile which exists? And then of course, moisture is the hidden enemy in many of these millets and therefore right kind of dehulling and drying or optimising moisture is something which hasn't been well managed so far. I mean, that's another barrier. You know, machine efficiency for dehulling is very low when hardly you recover 70% or 80% of grain and therefore the remaining comes as an old broken and that impacts economics.

SS: [00:19:41] So therefore whole separation itself of the husk is not so easy. One Diyala is not suitable for all millets. The size is different, the shape is different, and the husk content differs. So I think all of those kinds of issues. The other kind of a barrier which is there and now if we turn to grow at the end of the day, if you have to consume more, yeah, 20 to 30 million tons. There is plenty of millet, but it's the right kind of millet that we want. Right. Consumer attribute, as I mentioned. And MSP. The minimum support price increase in recent times has helped. You know, if one counts from 2014-15, it is almost doubled as opposed to some 50% increase for other grains. So, therefore, the price support has come. And if you say it as it is, it's a lower offtake for the value added. I talked about the price being one of the issues from a consumer perspective. Further headroom for prices, rather low in terms of how much further you can take it up to make it meaningful for the farmer. And while talking about production said as it is, the cost of production is low because it's a low input consuming, low resource consuming crop and therefore further cost reduction is also not possible. So much to improve the profitability. And therefore, the only available route from a farmer's perspective one is, of course, yield improvement. You look for better varieties that are aligned with the consumer traits that we spoke about, more extension work, planting practices or pest management and harvest practice, and so on the second is

the quality as per end-use. I mean, how do you get the right cultivars for the kind of end-user and map them to the consumption? This also means that given the level of complexity in dealing with multiple types of millets in one kind of mill, what makes possible sense is moving things like post-harvest activities of drying and dehulling closer to the farm. Because one type of millet is grown and therefore you can customise machines there and it's a near farm value addition, possibly by groups of farmers, whether a farmer, producer, company or otherwise will also mean ploughing back a little more money into the hands of the farmer and nearer farm value addition is ideally done there as opposed to moving it downstream and making it much more complicated. So there are obviously challenges, as magical as it is in terms of potential, the challenges are also literally 360 degrees in terms of consumption side, in terms of prices, in terms of processing side or farming side. So it's a classic case of how you look at the whole system to solve it and not pick up one piece at a time and try and solve it.

RB: [00:22:44] And reminded, sir, of how typically when ideas come out of research, they have high potential and then they have to meet the market's window of viability. And this is true for every sector. And I feel like what you said about Millets is that the consumer is willing to pay so much and the farmer has to make X amount of money and that has to meet. And if there is a way to make the promise of millet work within that economic boundary, then there is value. I want to actually mean you made a lot of very important points. I want to double-click on a few of them a little bit more. One point you made was around the preference of the customer from a taste cooking style, all of that point of view. Are there some varieties of millets that are more, you know, easier to fit into that taste mould and, you know, cooking style moulds today than other millet, sir? And do you over a period of time see that it will become an 80 over 20 where let's say 20% of the variety actually accounts for 80% of all the consumption that we will have today, and that is that the most scalable way of even promoting millets for us in this country.

SS: [00:23:52] Yeah, I think obviously there are a few major millets as I said, which have some reasonable popularity and on the 20-80 basis they can get scaled. There are the top three in terms of jowar, bajra and ragi, which are sizeable in terms of already crops which are there and half of all the production is bajra. In fact, some amount of research also has happened on that front in terms of some yield improvement and so on, because that's been the topmost row. And the next largest is jowar, which is half of bajra and then ragi, which is half of jowar. So there is very clearly an 80-20 working there. But I think what is useful to look at is, you know, how do you create that demand from multiple perspectives? As I was thinking, some kind of a three-pronged positioning, just that 20-80 angle or something. So we talked about different millets having different properties, more underscore, and therefore consumers said this is why to want to consume this millet or a mix of millets then you're positioning it like a smart food for consumers who can afford to pay. That's one segment very clearly. And then you have potentially a lot of scale coming from several government programs. As you know, the government is a sizeable food buyer and distributor within government programs, one to the Anganwadi and so on. The mother and child millet consumption for mother and child, because that's how you can deal with stunting, which is malnourishment, which is a major issue which is there.

SS: [00:25:43] And the related thing is also in terms of midday meals to create demand at scale. So for certain highly nutritious kinds of cereals, how do you get there? And part of 20-80 will also work here. And then some of that will go into the first part that I talked about. And lastly, since we were talking about those farmers growing and sustenance and all of that, another important segment is really in terms of farmers who are growing millet themselves. If you, for whatever reason, make it attractive enough to eat it as a cash crop and then say that farmers actually sell it off and instead buy other staples, then obviously you are taking away the potential nourishment which could have been retained much needed in these rainfed areas for the farmers. And therefore, how do you build awareness so that a portion of it is consumed by the farmers for their own self-consumption? So while there are multiple millets and multiple benefits, one needs to again look at it in a segmented fashion. So where do you get value from? Where do you get volume from and how do you ensure part of it is also retained by the producers themselves? As different ways of tackling this.

RB: [00:27:05] And I think two thoughts emerged from what you're saying. One, as you rightly said, there are probably multiple markets for this, which is the value-added, you know, product. There is a staple product, there is a local consumption product and more and especially global exports as well. And I think we were at some point the leaders in exports. And second, how do we break this down and then map the right millet to the right use case? You know, I think that will probably be very critical. And also, as you were speaking, sir, I realised that it is important because if you want to look at the economic thriving of a larger group of farmers, the more varieties we enable, the greater the regional economic thriving as well. Because if it's only going to be some varieties, then we have a certain homogenisation that will happen. And a lot of the rich diversity they have, we have within millets will get lost. So finding a way to do that I think is going to be an important aspect. And I think your market segmentation idea is to say don't think of it as one homogeneous market, but break it down to the staple market value-added market, others to the global markets. Local consumption, I think is going to be a very, very important part. The second thing that I was thinking of as you were speaking earlier about taste is we sort of, you know, underestimate how taste is acquired over a period of time. Like we were not a rice-eating and wheat-eating community from the start. I mean, we were probably more millet eating than rice. And remember, it was a kid about getting the milk adds and the egg adds, etcetera, which sort of changed our foot plate in some sense. And do you see that as being an important part of this, which is to not assume that people will not like it, so they will never like it, but cultivate the taste for millets and a focused approach and manner? But I'd love to hear your thoughts there because you've seen a range of decades of growth in some things like this.

SS: [00:28:48] Yeah, like I briefly mentioned earlier, in another context, I think the issue is how you popularise certain recipes. How do you start with a certain level of mix? It's not that you switch 100%. There are 10%, 15%, and 20%. So you need to get that right balance. So, therefore, innovation has to happen on that front in terms of how you bring that to do it over a period of time. Just by bombarding a communication, there's a great consume. It will not happen. You need to also do this recipe and have a fair amount of work does happen. Both

the effort by the government at a general level and marketeers at a brand level in terms of how you create these recipes and product development. And then slowly it works because we just say consume this particular millet and you leave it at that. It is very unlikely that consumers will develop a taste for it in a few days. Do it this way. Like one is used to creating, let's say, Poha something which is very similar. How do you add different kinds of spices, and which spice goes well with it? And there's an area of work that people do and then popularise. So the developing taste needs to happen with all this surround sound and then it works.

RB: [00:30:30] Absolutely. And I think the point about recipes is an important one because like, it sort of starts from the consumer behaviour and then works backwards rather than just communication, which sort of leaves at the higher level as well. The third point you mentioned, sir, is that I wanted to come back to our aspects like moisture, self-value and how much does it say? Are there any technological breakthroughs that you think are critical today that are necessary? I mean, even from a technological breakthrough, from, you know, processing from seeds, etcetera. Do you feel are critical in this or is it just an adoption problem that, you know, what needs to be done is available, but it's not just getting adopted? I'd love to hear your thoughts there.

SS: [00:31:10] Yeah, it's more of some amount of R&D work that is certainly required in this area. Work on what is the best way to optimally do dehulling and drying in a manner. That it enhances the shelf life and improves the yield. There are a couple of areas where R&D funds should flow in. Certainly, this will be one of them. What we already know on how to deal with it is more like 10% I would put and 90% is yet to be researched and discovered. I've seen in a few competitions in recent times some of the start-ups working in this space, some amount of effort also happening for some of the national institutions and some other companies which are working on the brands obviously also are looking at what do we do on the processing front. But there is an area where the research funds should certainly flow through. And of course, the other area is also in terms of how you create attribute-specific cultivars so that we pronounce certain areas. If someone requires more bone health and calcium needs to come in. So how do you work in a particular kind of cultivar? And so things of that kind would also make it a lot more appropriate from both a consumer perspective and farmer economics perspective when you do that. So that's another area of research as opposed to a plain yield improvement work, which of course continues.

RB: [00:32:40] I want to come to the last part of what I picked up from what you said, sir, which is really establishing infrastructure closer to the farm so that the benefits accrue to the farmer. And we are also able to work with different varieties. I'm not an expert, but one of the things I've always recognised is the disaggregated nature of farmers in India often makes it challenging for creating infrastructure that is decentralised. You know, the farmer producer organisations are a good model, but even there, I mean in my learning has also been that miniaturised versions that farmer producer organisations can find viable and manage with their level of quality of throughput becomes an issue. As you think about this decentralised infrastructure, which I think for India is absolutely necessary and for millets given their regional variations are necessary. Who's going to be critical to play a role here, or is it the industry setting this up in a way that is decentralised? Is it sort of FPOs becoming

larger, more organised and hence having the structure? Or is this something that a state has to invest in the sort of enabling as a public infrastructure that enables it? But what do you think will be viable for us to be able to make this work as an approach?

SS: [00:33:52] Ideally, FPOs investing in some near-farm infrastructure would work better because we have seen many other areas where investments are done by the government. But capacity utilisation hasn't been a good number of areas across the agriculture sector in terms of fruit preservation and also in terms of some amount of grain processing and all of this. So I think it is important that you create ownership on the part of the farmers to align with how on-farm work is done. Post-harvest activities are done in a manner that feeds into the processing activity and FPO level. And obviously, at an individual farmer level, it's not viable. And as you take it further downstream, as I said, segregation is going to be an issue multiple types of millets need to get done in the same machinery and so on. So this is also not as viable as a solution. Therefore, I mean, of course, there can be government support as it happens for FPOs to get there. There is an Agri Infrastructure Fund, but when the right machines are invented for the right sizing at the level and brought in, that would be a good model to create. For immediate post-harvest processing and thereby making it production ready for the next level in the value chain. The value addition, which is also good, means both for operations as well as for the realisation of a better price from a farmer's angle.

RB: [00:35:36] Now, this is very, very helpful. I wanted to sort of summarise what we spoke about. We talked about four different challenges, you know, on the whole. The first challenge we talked about, maybe I'll start at the end, which is really how do we build the decentralised infrastructure? We said, you know, now working with FPOs to establish that decentralised structure I think is going to be important because it allows for the specificity of infrastructure to the crop and the type of millets that we're raising. I think that's one part of it. Second, we talked about the need for R&D that is required for solving some of the more shelf life problems, processing problems, etcetera, which are critical. And as you said, we are probably 10% progress that we've made over the 90% that we need to achieve. And I think that is important. Third, changing consumer behaviour on taste by starting with consumer behaviours first. So starting with recipes rather than just broad-based communications, I think is going to be important. And then looking at part of the plate, you know, where are you coming in 15%, 10%, etcetera. The fourth part of it is to segment the market for millets differently and then map the varieties to the markets and grow the market separately et cetera, I think is going to be important as well. Apart from this, I just wanted to check if are there other more important investments or priorities that we should focus on for us to go to Millets before coming back with the next question that had.

SS: [00:36:59] You know, one of the other things, you know, earlier also, you, let's say, reposed a puzzle in terms of the price, possibly unwilling to pay a higher price and farmer needs a higher price to make it viable. And how do you make both of these meet? Because there is so much magic in Millet. I think that's an area that I can build on and see how do you make this more remunerative for the farmer without necessarily paying from the pocket of a consumer, that's another magic we need to create to make it work. You know, in some sense, where these problems are tackled, it's like tomorrow's opportunity being largely pursued with yesterday's solution framework. You know, we had different measures to

popularise many, many aspects of agriculture, whether you give free water to keep the cost lower for the farmer, free power, subsidised fertiliser and so on. Obviously to support Farmers who are resource-poor. One needs more production to be self-sufficient. This is the way to make it happen. But many of these actually will work counterproductive in the case of millets. These are water-saving crops, which are good for the world. These don't use as much fertiliser, which is good for the world from an emissions perspective and we continue to follow yesterday's solution framework. Then obviously these are not going to get popularised. So how do you create additional income for the farmers from possibly the carbon and natural resource offset markets is where the part of the solution lies rather than from the consumer. I mean, there are increasing net zero commitments that are happening, and voluntary markets are emerging. So how do you create value out of natural resources being consumed here, the soil is improved here in terms of emissions being reduced here and all of that and create a value and get it to the farmers, whether as individual farmers or through the FPOs is one way to ensure that you improve the farming viability without pinching the consumer pocket, other than for, of course, a small segment which for right attributes will be willing to pay a higher price for an otherwise large majority. This would be a route to take.

RB: [00:39:42] I think it's a very important point that you mentioned. And I think the framing that you had, which is really how we build the right models for today's environment and not for yesterday's world, I think is important. And I feel the time is right also for an accounting model that looks at who is accruing the benefits here because it's not just a customer accruing benefits, it's also the markets, it's the environment. And if you don't create the right incentives for those benefits to accrue, then you know, they don't get measured, you know, because then it gets measured based on what a consumer is willing to pay. But the value of millet is actually accruing for the environment and the society. And as you rightly said, the carbon market type of structure is a way for accounting for those benefits. That I think is important. And I think it's a very, very important point and I'm glad you brought it up. I wanted to make two points. One is related to this, which is to the old model, to the new environment and the context we are in. Are there some learnings from the Green Revolution, sir, that you think we should make sure we don't repeat? I mean, there are so many positives from the Green Revolution, but it took a certain approach towards mass cultivation production as we now have a new staple crop that we are sort of bringing to market and looking to change farmer behaviours. And you have the, you know, the experience of having seen the Green Revolution play out. Are there some learnings you would say we should keep in mind saying, you know, those are things we should not do again and maybe those are things we should sort of keep in mind and do here?

SS: [00:41:10] Yes, absolutely. If we are to move from Green Revolution to I don't know what word is calling for millet revolution, perhaps a brown revolution in that word has not been taken up. So from the green revolution to the brown revolution, there are a few things that one must continue to use because there have been good and a few things possibly we need to unlearn. You know, at a macro level, the government played the lead role and ensured that a full 360-degree solution was put in place in terms of getting high-yielding varieties of seeds and ensuring that the extension work reached farmers and ensuring that farmers rest

of the enabling elements of irrigation is available and then put in place a procurement system and then eventually brought it out to public distribution. So the lead role played by the government made sense because it is the food self-sufficiency objective with which all of this is put together. So obviously no element was left out that one needs to wait and see whether it will work or not. But all of that was put in place. So in terms of thinking through that, you need to put the whole solution in place is very much relevant as an aspect that one must continue because we saw also here all elements which are important, whether it's demand creation through benefit awareness or product development or processing development or production, crop R&D or policy framework, including potential voluntary markets for carbon that we just last talked about and even possibly water and all of this.

SS: [00:42:42] The basic difference is that it needs to be brought down to a little more micro level because, you know, food self-sufficiency was at a macro level, demand existed that we were short of food and therefore you produce and it reached the farmer and the consumer at both ends. But now we need to make it a little more demand responsive because we saw that just producing more millets is not helping. Because we have 20 million tons of millet, but not enough value added because the demand responsiveness of the value chain and the rest of the production system need to be orchestrated by the market. They are multiple segments. As I talked about, there are some segments which need to be anchored by the products and markets. There are some segments which could continue to be dealt with and led by the government. And so therefore, it is in terms of how you create that micro-level ecosystem, which would mean potentially a fair amount of collaboration. Also because these different elements are often dealt with by different organisations.

SS: [00:43:53] Someone in crop R&D and someone else in branding and along the whole value chain there are different sets of people. So, therefore, how you get collaboration going in a demand-responsive mode will be a slightly newer kind of angle, you know, of course, a few organisations like ITC are better indoors due to diverse business inside the group. You know, as you are aware, we have launched ITC Mission Millets as part of the International Year of Millets where we brought together the different capabilities of hotels, businesses and foods, business and Agri businesses all reside inside ITC. It's a collaboration that I was talking about from an external perspective that is eminently possible inside and therefore that much more seamless and effective and hotels work on recipe development, consumer immersion and all of that. The food business works on process development for shelf-stable manufacturing, and the agribusiness works with the farmers. To the FPOs and mass digital ecosystem for improving that. So as a part of this, a range of products put in the market at one end to all the way working at the farmers. So I think the shift from green to brown revolution has to obviously continue some good lessons and some unlearning to suit the new context.

RB: [00:45:23] And I mean, I think two thoughts. I mean, you made a lot of good points, but two thoughts that stood out for me, for me, were very, very critical. One, I think at the time of the Green Revolution, we probably assumed an infinite availability of natural resources in some form, like our use of water, use of soil. We said, you know, this is going to sort of keep replenishing itself. The boundaries don't exist. I think we are more aware of the boundaries right now. So designing for it, enabling the right incentives for it and accounting for it in

some form, I think is going to be very, very important because otherwise, we will sort of get to another irresponsible dead end, which I think we cannot come back from this time. So I think that's another important one. And the second is, like you rightly said, how do we establish an orchestration of the demand where it's an industry-led demand approach and not just one industry? And I think that's a very important point, but multiple industries so that this sustains itself. Because I think looking back, one of the learnings from the green revolutions is one state offers incentives that are not time-bound. Revoking them becomes very hard and it often then becomes a question of how do you sustain those incentives against the practical reality of where markets have reached. I think it becomes a challenge and I think establishing the right market approaches here that take into account the benefits of the farmers I think is also going to be an important part of the process.

RB: [00:46:44] I had two follow-up questions about that. I'll ask them together. And I think then we can move on to the last part of the discussion. One, sir, is one of the other learnings of Green Revolution is also been that the producers of products, rice and so on or anything moved away from their own consumption to purely a market-based approach which resulted in adverse impacts for their own, you know, family and nutrition levels that are showing up in many surveys and results that we have. And so what was an economic incentive became a health crisis in some form. And is there a way we can learn from that and ensure that the producers are consumers of products, especially given the magic of millets that we've been talking about? I think that was one question I had, sir, and I would love to get your thoughts. And the second related question is, you talked about industry-leading this entire effort and you've been a pioneer at ITC to be able to do this. But as an insider, it'll be great to get your thoughts on what is the industry sentiment around Millets today as well. Are they being cautiously optimistic? You know, are there certain barriers from an industry lens that we should be aware of? Because as you said, if the industry has to lead it, knowing their constraints and knowing their sentiment, I think is also going to be important. So those were two questions I had about what you had mentioned earlier.

SS: [00:48:00] So in terms of producers retaining for consumption for its nutritious value, there are both kinds of examples in Green Revolution. I think one can learn from both. And like I said earlier, of course, the solution is in raising awareness of the benefits of consumption and certainly some retention it will lead to. And if part of the value comes out of things like offset natural resource markets and carbon markets, then it also naturally will lead to some amount of retention rather than a completely market price-based kind of situation. You know, we have interesting examples in the case of retention because the government buys fair average quality of produce in certain states, and farmers just work on maximising the yield, but for domestic consumption will actually buy better quality wheat. Are there examples of that kind also in terms of saying that this is all right for probably making some Maida and some biscuits and all of that, so, therefore, it's okay for your average quality into the procurement system? But for my home consumption for making the right rotis and chapatis and all of that, I need a better quality with more broken starch content or more hectolitre whatever parameters there. And therefore we'll say that I'm selling off what I have at MSP, but I will buy even if it's slightly more expensive for consumers.

SS: [00:49:28] So there's that extreme also. And the other end not only not retaining enough and in fact interesting example from case studies on milk, in fact as it has milk become more and more commercialised, the retention became very limited. And in fact therefore children were very little milk because it was a powerful incentive to sell it off and therefore had a nutrition challenge. So one needs to balance both. Of course, we talked about supplementing through other programs like the Mother and Child program and the mid-day meal and all of that where one cannot retain or where one is not growing. But it's an important area. It's not just producing for somebody else and ignoring my own health and well-being as a producer. Make me aware, creating accounting systems and incentives in such a manner that I don't lose out in giving away what I'm producing is something that we cannot ignore in this round of action. In terms of what the industry is seeing, certainly, there is a lot of buoyancy. No doubt one sees that yes, hard work is involved. It will take time. It will not be an overnight scaling that will happen. One can bring in a fair amount of innovation. Like I said in our own case, I can talk about a range of product millets starting with 100% to as low as 15-20% in different kinds of flour. You have cookies and noodles and different kinds of snacks and all of that. So it's a range of products which are there. Not only pure millet flour, which is available in the market, but an interesting recent addition was to create a multi-millet mix so that the consumer can mix it and nutrify the regular food at home. And this comes with multiple millets for a lot of nutrition, it has sorghum, ragi, bajra, quinoa, and many others. So there are different kinds of innovation taking place and yet we know that it's a long haul. And but given that a fair amount of awareness is being built through the International Year of Millets. So there is a tailwind which is there that one must make use of. Multiple companies coming and talking about multiple products is also good in terms of the decibel levels from a consumer perspective and government also, I think a very useful incentive structure as the PLI scheme where injection of millets into many of these products, whether for domestic or for export markets, is also supported. So it's a buoyancy and optimism, but we know it will take time.

RB: [00:52:29] As a last part, sir, I just want to sort of bring a lot of what we talked about together in terms of tangible actions. You know, as I was reading your profile, one of the things that struck me is that you probably have the most 360-degree view of the agriculture ecosystem. You know, you're from Nirma, you've been in NABARD, you've informed state policy, you've been in the global forums around the policy. And of course, you're an industry veteran. One I wanted to ask you from your vantage point is, are there some things that are already working well, establishing the right infrastructure or the right type of programming that you think is worth emulating? And also, any, you know, action in the, you know, social impact space that you're that you feel is in the right direction? I think that will be great to hear in terms of what is already working well that I think we should do more of.

SS: [00:53:18] You know, of course, millets since the time it was seen as a national year of millets, there have been a fair amount of action and part of many states, most notably Odisha in terms of the Millets mission. And of course, there's still a long way to go, but it's a notable kind of case. But what I can pick up both from a social impact and the overall approach is the model of Operation Flood, the Amul model and how it was nationally scaled. Two things could pull out. One is the necessary condition and one is a sufficient condition, if

one wants to put it that way. You know, among the first things I heard on the Amul model was no Anand without Mumbai. In fact, in our very first induction programme, Dr Kurien was talking about this, which is a market first. We talked about the conversation today. You know, markets and milk sheds were linked in a National Milk Grid in the whole design of the project itself. When the operation was getting created, you know, if you didn't have a market in Mumbai, the Anand Co-operative wouldn't have succeeded. And that was the whole idea. You can't just be production centric and keep producing more and hope that it will get consumed. However low the price is. First of all, it was low price. Obviously, it's not attractive enough, but it needs to be a demand-responsive production system. And in this case, how you create that for high-value millet variants is a takeaway. So therefore the necessary lesson from there is market first.

SS: [00:55:03] While I talked about the systems approach, one needs to deal with everything. The pump priming has to happen from the market, the demand side of it. And the second element is, is that the systems perspective is the integrated intervention. It is just creating demand that is not good enough. One needs integrated intervention. Not one at a time that I raised production. Now I create demand. Next, I create processing solutions next because before they get scaled. Like in the Start-Up world. You know, there is an idea and it's tested. And before it gets scaled, there's a valley of death. You have to leap over that valley of death to succeed in scale. And if one doesn't do this as an integrated intervention, single interventions are likely to be lost. And therefore one is forever searching for that potential magic thumb stage. So therefore, the same example of Operation Flood and the Amul model scaling in terms of productivity through feed conversion efficiency was brought in veterinary care to raise the competitiveness or technological innovation to process buffalo milk first for the world actually at that point in time to deal with perishability and balancing lean and flush seasons and marketing. So I think integrated intervention is the sufficient condition for that systems approach something that would underscore as another takeaway from that. The market first and integrated intervention as a systems approach. I think these two are things that one should bring in here, both for potential economic value, environmental value and social value. And millets do possess that kind of opportunity.

RB: [00:56:47] Absolutely. The last question from my side, sir, is just what you've talked about. I think it sets the framing very well. One question I always ask people in the podcast is what is the role of philanthropy in all of this? Because I genuinely believe there are things that philanthropy should not do because it will skew the market or it will create perverse incentives. But there are cases where philanthropy can add the right catalytic value. Here, maybe I'll broaden the question a little bit. From your experience of seeing all of this, what are some areas that you think philanthropy can contribute also would like to ask you, where's the role of the state as an investor most relevant in this entire piece? I think that that would be another question that I would have.

SS: [00:57:28] So I think two areas of philanthropy could potentially be in farmer capacity building because that's obviously the weakest part of the value chain in terms of resource, risk, exposure and many of these angles. So therefore in farmer capacity building, while we talked about Farmer Produce Organisation as an institution which will help, I think there is a journey that one needs to take there. And farmer capacity building is one area that

philanthropy can go in. Obviously, FPOs also will succeed only when there is commercial glue to it. As to why are we coming together, how are we going to benefit from this? Ah, the area which is the starting point. Without that, obviously, the sustained progress will not be there. But there are elements in terms of how you create capacity for self-governance, how you create capacity for the democratisation of rights within the FPOs and there are elements which need to happen. There are commercial aspects which the market will take care of. There are governance-related aspects in which philanthropy can play a role and the government's role potentially is in facilitating and creating some kind of framework and a rule book for this natural resource and carbon market equivalent that I talked about. While much of that can happen, as interested buyers and sellers of these credits can come together and create those markets between the thought and scaled action, there is always a gap and it is in linking that where the government can also come in. And of course, the other more direct role in the case of Millets was in the form of creating that scale through the government programs for the mid-day meal as well as for the mother and child programs a significant amount of scale can come from there. It's a more direct role which can also come in from the government.

RB: [00:59:49] So I think for me, this was, you know, a phenomenally insightful conversation. And as you were talking, sir, the one thing that struck me was the idea that the growth in Millets is not just about ensuring that a magical crop sort of becomes more viable, but I think it's also in ensuring that we are able to design for the new age agriculture model that takes into account some of the ecological constraints, the market constraints that we are working off. And that involves a certain level of rethinking of the economic model, which is who pays, you know, for the benefits. The second is to institutionalise this market-first approach that has already been done in Operation Flood and sustaining that thinking. And third, is designing for diversification, you know, because we sort of homogenise everything and then sort of scale it. But can we create an approach that actually matches diversification and scale? Because once we do that, I think the benefits accrued for the farmers at large are significantly more. And those are the very first principles of design that I think will help us think about how to, you know, look at scaling the power and the benefits of millets, not just for India, and honestly as a global product that India can spearhead as well. So lots to think about and lots to share. Thank you so much for your time and your rich experience and I hope you enjoyed the conversation as much as I did.

SS: [01:01:12] That's a succinct summary, Rathish. I greatly enjoyed the conversation. I think many elements have been pulled out through your interesting questions and conversation.

***Outro:** Thank you for joining us here on Decoding Impact. We hope you enjoyed this episode and the conversation with our expert. To learn more about Sattva Knowledge Institute and our evidence-based insights, follow us on LinkedIn, Twitter and Instagram and explore our content on our website, all linked in the description.*