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I want to start with some remarks, picking up what has been said earlier in the first comments about taking up the international dimension. From my perspective, a transformation process, and each program within it, has to think about positioning itself within the global megatrends, which are taking place all over the world. I see the following important aspects: First, when we talk about transformation, it is not only about technological innovations. It is also about social innovations and indeed the Corona crisis shows the importance of changing behavior. Second, we see changing patterns of trade. South-south trade is increasing. Third, in a lot of countries, we see that digital competencies are seen as a key enabling technology which has to be combined with very specific competencies within each country.

In my country for example, in Germany, the machinery industry is a core area of competence. Thus, a lot of the emphasis put on digitization is its application in the machinery industry, and the slogan of industry 4.0 is a very important aspect in Germany because it reflects the specific combination of the sectoral and key enabling competences. Fourth, we also see that innovation policy is changing with regard to the goals we have. We have the newly debated paradigm of mission-oriented innovation policies. We have the sustainable development goals, and innovations are a key issue if we really want to address the grand challenges.

Another major issue is that it is not enough to look on the supply side of new innovations only. With regard to the application of the competences, which are building up in the programs, it is very important that we have an early demand for these applications. Start-ups need a perspective, that there will be demand for their products. But also from a systemic perspective, learning in the market is a key prerequisite; you need communication in the innovation system, and producer-user interaction to improve your innovation continually. Finally, early market demand, or even better, announcement of future market demand which specifies the characteristics of products or services in advance, at the start of the innovation process, are also important. And here I see the need for an integrated policy of the state of

Kerala, to think about a whole set of products with challenging new specifications for which Kerala would be willing to promise procurement if the innovators are able to come up with new solutions which fulfill these specifications.

Applications of the innovations also involve different sectors and segments of the economy. It is the combination of the ideas developed in high-tech industries together with the competencies in traditional sectors what makes an economy successful. But we also know from the experience with a mission oriented innovation policy, that this poses a big challenge for governance. With regard to policy making, you have to integrate policies which support innovations with policies for specific sectors. There is a need to integrate the policies of different Ministries. And steering such integration also means that you need strategic intelligence and institutions coordinating different ministries. Finding the successful combinations of existing competencies in traditional sectors, new competencies to be developed in innovation programs, and strategic positioning within the megatrends becomes a key challenge for transforming Kerala to a knowledge based economy.

Green innovations are increasingly coming from countries of the South. Some research at our institute also shows that especially the role of frugal innovations in green innovations is increasing, India as a country has a very important history and very high competences in developing frugal innovations. Thus, I think it would be a good opportunity to look into the programs you have established, what the role of such frugal innovations could be. So again, it is combining the strengths of Kerala with global trends and with the build-up of a knowledge economy, where future success can be found. Building a combination of programs which make Kerala into something like a hub of sustainable frugal innovations - would that not be a vision to go for?

We have seen that the knowledge economy is associated with many innovations. What does the goal to transform Kerala into a knowledge economy mean to the "Kerala model of development"? I have pointed out the need to combine key enabling digital competences with innovations and traditional sector strengths. I think the same holds for the "Kerala model of development". If Kerala is able to enhance its successful development model now with the competencies of a knowledge economy, it might come up with the "Kerala model of development 2.0". Thus, Kerala might become a very important role model for achieving the SDGs. Surely, this requires a lot of work to be done, and does not come easily. I think Kerala has done quite a lot of good things with regard to establishing the "Kerala model of

development" already in the past, and it will be doing so again, if it successfully combines the "Kerala model" with the new opportunities of a knowledge economy.

Thank you very much.