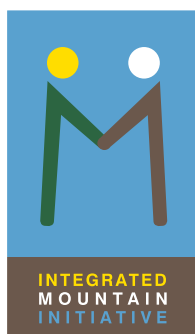


# Proceedings of SUSTAINABLE MOUNTAIN DEVELOPMENT SUMMIT - VII

Well – Being of next Generation of Farmers in the Himalayan Region

organised by:

Integrated Mountain Initiative



hosted by:

Shoolini University, Solan,  
Himachal Pradesh



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## Editorial Team

IMI Secretariat

## Rapporteurs

IMI Secretariat and Shoolini University

## ***Preface***



Shri Sushil Ramola  
President, Integrated Mountain Initiative

I am happy that the Proceedings of the SMDS–VII are with you.

SMDS-VII focused on the “**Well-being of Next Generation of Farmers in the Himalayan Region**” to address the challenges the agriculture in the Himalaya is currently undergoing due to ecological, economic and social change drivers. These formed the basis of the three technical sessions of the Summit. These were integrated in the 4<sup>th</sup> technical session to develop a holistic understanding of the complex transformational changes and possible actions. The overall objective of SMDS-VII was to create a roadmap for the well-being of the mountain people, especially the farmers who constitute the largest population in mountain regions.

A very significant session was on the “Youth Perspectives on the Future Mountain Farming” which was attended by 15 young agri-entrepreneurs from across the Himalayan states who shared their experiences of adapting to socio-economic and ecological drivers of change while also introducing new models and ideas to highlight the future of mountain farming.

The Summit at Solan was held in collaboration with Shoolini University, an institutional member of IMI, and Himachal Council of Science Technology and Environment (HIMCOSTE) and was attended by over 200 people. It was followed by ‘Conclave of Himalayan States’ at Shimla on 5<sup>th</sup> October afternoon, hosted by HIMCOSTE, where chief ministers, agriculture ministers and senior government officials from the mountain states congregated to deliberate on the same themes. The outputs from the Summit were presented and discussed among the decision makers from across the mountain states at Shimla event. The proceedings of the Conclave will be shared separately. We are thankful to our members, partners and stakeholders who organised and participated in the Summit at Solan and the Conclave at Shimla to make both these events a success.

The seventh edition of the Summit followed the earlier ones in Nainital, Gangtok, Kohima, Itanagar, Leh and Aizawl. These Summits bring together diverse stakeholders from the states in Indian Himalayan Region (IHR) to develop a common and integrated understanding of the complex issues such as climate change, disasters, mountain livelihoods and growing cities towards cohesive action. Meet of the Mountain States (MOMS), convened in Delhi every

year between the two SMDS', is used as an avenue for sharing the outcomes of the preceding SMDS with a wider audience to influence policy and action with cooperation from all mountain states and key central ministries. The reports of all these events are available at IMI's website, [www.inmi.in](http://www.inmi.in).

As you would read in the Proceedings, clear recommendations for action have emerged in line with the subthemes and along the dimensions of policy, partnerships and funding. IMI's governing council and secretariat along with our state chapters and members are already working on some of these so that momentum isn't lost. Some of it will be shared in the MOMS being held in Delhi on 18<sup>th</sup> Feb, 2019.

IMI is a civil society initiative, guided by the values of integrative, inclusive, collaborative, voluntary, democratic and open working to bring diverse stakeholders, individuals and institutions together to work on issues of mountains and enable them to realise their goals.

While we have made some progress we continue to raise the bar on our collective expectations and the potential of realising the opportunities which IMI is in a unique position to do. We need the continued support of our members and partners more than ever before to meet these challenging yet exciting goals.

With best regards,

Sushil Ramola



### *Convenor's Note*

Dr. P.K Khosla  
Chief Patron SMDS VII

The Sustainable Mountain Development Summit VII (SMDS) held between 3<sup>rd</sup> – 5<sup>th</sup> October, 2018, at Shoolini University, Solan, Himachal Pradesh and it was a significant event for Himachal Pradesh as well as for the pan Indian Himalayan Region. The theme of the summit was “**Well-being of the next generation of Farmers in the Himalayan Region**”. This theme could not have been better suited for the region as it has initiated a youthful dialogue on the future of the region with a positive outlook ensuring the development of sustained livelihood in line with the changes taking place globally. The SMDS VII hence provided a great platform for various stakeholders and most significantly for the youth and farmers to come together with agencies of governance, policy, planning and higher education.

The summit brought focus and visibility to the issues having significance to Mountain and was attended by legislators, bureaucrats, government departments, academicians and a large representation of youth. The Inaugural Session was graced by Hon Shri Mahendra Singh Thakur, Irrigation, Horticulture and Public Health Minister, Government of Himachal Pradesh. The Guest of Honour Shri Vineet Chaudhary, Former Chief Secretary, Himachal Pradesh enriched us with his rich experience of work in the pursuit of inclusive development for all.

The technical sessions which followed on 4<sup>th</sup> October were divided in to ecological, social and economic drivers of change and had key note speakers and panelists from diverse fields and narratives who brought in different solutions and ideas. These sessions highlighted the diversity of the Indian Himalayan while also focusing on the cross cutting issues that binds us all together. These sessions were followed by a session on integration which gave a holistic platform to the issue on agriculture and new age farming. The programme of the day ended with a session on ‘Youth Perspectives for the Future Mountain Farming’. This session on the stories of local youth agri-entrepreneurs with their success stories gave the participants a practical view of the future of new age farming and agri-entrepreneurship.

The Valedictory session attended by the Chief Guest, Dr. Rajiv Saizal, Minister, Himachal Pradesh, and the Guest of Honour, Prof S. L. Mehta brought to a close this SMDS VII on note of positivity on the new learning imbibed during the course of the summit with the zeal of collaboration to carry it forward.

We have been very fortunate to host such an event which has brought people of the Mountains together as a voice to collectively work towards a sustainable and healthy future of the Mountains and the communities living here and away.

Thank you.

P K Khosla,  
Chief Patron-SMDS-VII & Vice Chancellor, Shoolini University

## SMDS – VII Partners

IMI gratefully acknowledges the support, trust and cooperation of the following partners and sponsors:



## PROGRAMME SCHEDULE

### SUSTAINABLE MOUNTAIN DEVELOPMENT SUMMIT-VII

SOLAN, HP

3-5 October, 2018

Day 1 (3 <sup>rd</sup> Oct 2018, Wednesday) <b>INAUGURAL SESSION</b> (Venue: APJ Hall in G-Block, Shoolini University)	
Time (hrs)	Description
14:00-16:00	Registration & Seating of participants
16:00-16:15	Arrival of the Chief Guest – Sh. Mahender Singh Thakur-Irrigation, Horticulture and Public Health Minister, Govt. of Himachal Pradesh and seating of dignitaries on the Dais
16:15-16:25	Felicitation of Chief Guest and dignitaries and lamp lighting ceremony
16:25-16:35	<b>Welcome Address</b> Sh. P K Khosla, Chief Patron-SMDS-VII & Vice Chancellor, Shoolini University
16:35-16:43	<b>“Yoga Music Fusion Programme”</b>
16:43-16:58	<b>Summit Outline and Expectations</b> - Sh. Sushil Ramola, President IMI, and presentation of “Re-envisioning HP Apple Economy” IMI-FAO Video
16:58-17:38	<b>Key Note Lectures</b> Sh. Eklabya Sharma, Dy. Director General, ICIMOD-Nepal Sh. Mustafa Khan, Project Leader, IHCAP, Swiss Development Corporation, Switzerland
17:38-17:53	<b>Address by the Guest of Honor</b> <b>Address by the Chief Guest</b>
17:53-17:58	<b>Vote of Thanks</b> Sh. Atul Khosla, Pro V C, Shoolini University, Solan
17:58-18:10	Group photograph at Badminton Court
18:10-19:00	High Tea and walk around Shoolini University Campus
19:00 onwards	Cultural Program (Open Air Theater) & Dinner

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**Day 2 (4<sup>th</sup> Oct 2018, Thursday)**  
**TECHNICAL SESSION-I**  
**ECOLOGICAL DRIVERS OF CHANGE**  
(Venue: RTH Hall in B-Block, Shoolini University)

Time (hrs)	Description
9:00-9:30	<b>Key Note Address</b> - Sh. Devinder Sharma, Food Policy Analyst, Writer
9:30-10:15	<b>Moderator</b> – Sh. Tej Partap, Councilor IMI-HP, VC APG University, Shimla  <b>Panelists</b> – Sh. Gopal Singh Rawat, Dehradun, UK Sh. Anand Sharma- DDG Agromet Advisory Services Division, IMD, Delhi Ms. Priyadarshinee Shrestha, WWF, Sikkim Young-Himalayan Agri-preneur - Ms Divya Rawat, Uttarakhand Sh. Pratik Kumar.
10:15-11:00	Open House
11:00-11:15	Tea Break

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**Day 2 (4<sup>th</sup> Oct 2018, Thursday)**  
**TECHNICAL SESSION-II**  
**SOCIAL DRIVERS OF CHANGE**  
(Venue: RTH Hall in B-Block, Shoolini University)

Time (hrs)	Description
11:15-11:45 (15 min each)	<b>Key note address:</b> Sh. Alemtemshi Jamir, Rtd. Chief Secretary of Nagaland, IMI-Councilor, Nagaland.  Sh. Ramesh Negi, Rtd. Chief Secretary of Arunachal Pradesh, Vice President IMI.
11:45-12:30	<b>Moderator</b> – Sh. Vincent Darlong, IMI Councilor Meghalaya  <b>Panelists</b> - Sh. Rajendra Dobhal, UCOSTE, Uttarakhand Sh. PK Khosla VC, Shoolini University, Solan, HP Sh. Tej Partap, Councilor IMI-HP, VC APG University, Shimla, HP Sh. Tony Marak, Retd PPCF & HoFF, Meghalaya, Shillong Ms. Binita Shah-SDFU, Uttarakhand Young-Himalayan Agri-preneur - Ms Tage Rita, Arunachal Pradesh Sh. Ratan Aswal, President Palayan Ek Chintan, UK
12:30-13:15	Open House
13:15-14:15	LUNCH



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**Day 2 (4<sup>th</sup> Oct 2018, Thursday)**  
**TECHNICAL SESSION-III**  
**ECONOMIC DRIVERS OF CHANGE**  
(Venue: RTH Hall in B-Block, Shoolini University)

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Time (hrs)	Description
14:15-14:45 (15 min each)	<b>Key note address-</b> Sh. Shrikant Baldi, IAS, ACS-cum- Pr. Secretary to HCM, HP Sh. SL Mehta, Former DDG (Education), ICAR
14:45-15:30	<b>Moderator</b> – Sh. Atul Khosla, Pro VC and Economist, Shoolini University, Solan HP <b>Panelists-</b> Sh. HC Sharma VC-YSPUHF, Solan, HP Sh. MP Sood, Ex-Commissioner Shimla, IMI member, HP Sh. YS Negi, Agri-Economist, Shoolini University, Solan HP Sh. Mustafa Khan, Swiss Development Corporation, Switzerland Ms. Chandersuta Dogra, Journalist and Farmer, HP Sh. Kartar Singh Verma, VC Career Point University, Hamirpur, HP Young-Himalayan Agri-preneur - Mr. Khathing Luiram, Manager, Idea, Manipur
15:30-16:15	Open House
16:15-16:30	TEA BREAK

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**Day 2 (4<sup>th</sup> Oct 2018, Thursday)**  
**TECHNICAL SESSION-IV**  
**INTEGRATING SOLUTIONS**  
(Venue: RTH Hall in B-Block, Shoolini University)

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Time (hrs)	Description
16:30-18:00	<b>Moderator-</b> Sh. Sushil Ramola, President IMI, Delhi <b>Panelists-</b> Sh. Rajan Kotru, Development Specialist, ICIMOD, Nepal Sh. Tej Partap, Councilor IMI-HP, VC APG University, Shimla Sh. Atul Khosla, Pro VC and Economist, Shoolini University, Solan, HP Sh. Vincent Darlong

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**Day 2 (4<sup>th</sup> Oct 2018, Thursday)**  
**Youth Perspectives for the Future Mountain Farming**  
(Venue: RTH Hall in B-Block, Shoolini University)

Time (hrs)	Description
<b>18:00-19:00</b>	<b>Moderator-</b> Ms. Binita Shah, SDFU, Uttarakhand <b>Young Agripreneurs</b>  Sh. Biswajit Majumder Sh. Apurba Nath Ms. Divya Rawat Sh. Skarma Tokdan, Director Takshos Products Domkhar Sh. Zenwang Konyak- Nagaland Sh. Peihauding- Nagaland Sh. T Thungdemo Ovung- Nagaland Ms. Phangnon Konyan- Nagaland Sh. Anil Bahuguna- UK Sh. Netrapal- UK Sh. Ajay Rawat-UK Sh. Ganesh Kala- UK Sh. Reuben Gergan, Leh Sh. Lal Singh, HRG, Shimla, HP Sh. Vikram Rawat, HP

**Day 3 (5<sup>th</sup> Oct 2018, Friday)**  
**VALEDICTORY SESSION**  
(Venue: APJ Hall in G-Block, Shoolini University)

Time (hrs)	Description
<b>8:45 – 9:00</b>	<b>Arrival of the Chief Guest</b> – Dr Rajiv Saizal, Hon’ble Minister for Social Justice and Emp. and Coop. Govt. of Himachal Pradesh <b>Guest of Honor</b> - Prof SL Mehta, Ex. Vice Chancellor MPUAT, Udaipur & Former DDG Education ICAR) Seating of dignitaries on the dais
<b>9:05-9:10</b>	Welcome address by Sh. Atul Khosla, Pro VC, Shoolini University & Felicitation of Chief Guest by Smt. Saroj Khosla, Shoolini University
<b>9:10-9:25</b>	Presentation of outcomes and recommendations by Sh. Sushil Ramola, President IMI
<b>9:25-9:35</b>	Screening of documentary on “Dr. R S Tolia” – Ms. Fantry Mein Jaswal, Secretary IMI

<b>9:35-9:40</b>	Passing on the baton to the hosts of SMDS-VIII
<b>9:40-9:55</b>	Address by the Guest of Honor and Chief Guest
<b>9:55-10:05</b>	Vote of thanks by Prof Sunil Puri, Registrar, Shoolini University
<p style="text-align: center;"><b>High Tea</b>  <b>Lunch at Faculty Club (13:00 hrs)</b></p>	

Day 1: 3rd October, 2018.  
INAUGURAL SESSION

**WELCOME ADDRESS**

*Dr. PK Khosla.  
Chief Patron, SMDS-VII and VC,  
Shoolini University*

It is a great moment for Shoolini University to host Sustainable Mountain Development Summit-VII which aims to improve and discuss the fate of the mountains and the welfare of Himalayan farmers. It is a fragile ecosystem, and these mountains are young and still growing. We are exploiting our mountains by rapid unplanned infrastructure and industrial setup. The protection of the Himalayas is the protection of the people living in the Indus basin. Any disturbance leads to natural disasters in the form of floods. Himalayas have been the abode of the *yogis* and *rishis* or the learned men and were a treasure of divine knowledge systems. The protection of the Himalayas is a priority.



There is a need for the government to look beyond population to area ratio and focus on the area instead. We need more representatives voicing our concerns of the need for a separate ministry for Himalayas. If agriculture has to grow in this region, it has to be a combination of several crops with livestock. Solution is to give high value cash crop by having different types of cropping system. Secondly, we should have processing industries for the Himalayan produce. This will give double income and livelihood. We can take lessons from China, where they are slowly shifting from cultivation to production and manufacturing. Unfortunately we on the other hand still remain a producer country. Without processing facilities, agriculture in the Himalayan region cannot grow. In order to double their income, we have to think out of the box. Hence processing facilities and introducing new technologies hold a huge significance. These are issues that will be discussed in the coming event. With power and knowledge, these mountain issues that require collective voices of the mountain people, everything is possible. Let us protect, conserve and preserve our mountains from east to west.

## **SUMMIT OUTLINE AND EXPECTATIONS**

*Shri Sushil Ramola,  
President IMI,*

This movement has been building since 2010 and the initial inspiration came from Dr RS Tolia to focus on the common issues of the mountain region to build a platform and engage all stakeholders in finding solutions by working on various policies.

This summit is all about the well-being of next generation of farmers who constitute 70% of the population, particularly in the context of climate change and challenges they face. The farmer should be content, healthy and successful. Traditional farming faces several challenges leading to migration. It is the need of the hour to reverse that trend and make it worthwhile for the mountain communities to prosper using our natural resources- land, water, carbon sinks, agriculture, and the recreational facilities. To be able to integrate all these assets is much needed because the current generation owes it to the next generation to preserve what we have inherited from our forefathers and hand it over to them- to build and not to deplete. The next generation of farmers call themselves agri-entrepreneurs. They are educated, technology savvy and have a world view of best agriculture practices. Mountain communities have diverse uniqueness- whether it is horticulture, aromatic plants, spices or using the forestry produce. So the next generation of farmers wants to redefine agriculture and transform it through their vision, passion and energy. This summit is dedicated to them. One must learn from people who have already gotten into agri-entrepreneurship and left their well-paying jobs. Apple is a common produce of the mountains which unfortunately has fallen behind. We hope to transform the farming economies by targeting the economy at 10 times of what it is today. This summit will be the starting point for realizing that vision of IMI has for making the people of our Country proud of our mountains.

## **KEY NOTE ADDRESS**

*Dr. Eklabya Sharma,  
Dy. Director General, ICIMOD-Nepal*

Shri Eklabya Sharma, Dy. DG, ICIMOD, in his keynote stated that apple farming is a good solution to most of the problems of mountain regions. Globally mountains occupy 22% of land, home to 915million people, 50% of world's population depend on goods and services from the mountains. Yet Mountain region does not receive sufficient attention and investment- not just financial but also human efforts. Hind Kush Himalaya spans across 8 countries from Afghanistan to Myanmar. 240 million people in living in HKH. 1.9 billion people are impacted downstream. 10 major rivers originate here and are the lifelines of the mountain communities. Hence, the IMI initiative is essential to bringing focus back to the mountains. The HKH is a global asset for food, energy, water, carbon, and cultural and biological diversity. In his opinion one should take into account the fact that the vulnerabilities, risk and opportunities of downstream are dependent on the mountains.

Dr. Sharma also stated that despite being resource rich, there are many issues in the mountain region, such as-

- Poverty and migration.
- Major drivers of change.  
Climate change (mountains are hotspots), land use/cover change, infrastructure development, hydro-power dams, urbanization in mountains, globalization, increased access, out migration, feminization of Natural Resource Management.
- Mountain specific policies lacking.
- Transboundary and common regional issues like Disaster Risk Reduction
- Differential capacities of institutions
- Gaps in knowledge (consistent, comparable and representative data ; long term monitoring)

Furthermore, the agreement signed in Paris on 1.5 degree by all countries is too hot for the mountains. The Hindu Kush Himalaya will warm even more compared to the global mean and more rapidly at higher elevation. At this rate mountains will warm more than 5 degrees. In this light all our agricultural crop has to change accordingly.

One of the resources for mountains in the upstream and downstream is glaciers. In the current scenario 33% of our glaciers will be lost in a 1.5 degree world. And with the current emission 69% of our glaciers will be lost. It will impact the Indus basin, as the dependence of agriculture on glaciers for irrigation is very high. The Ganga and Brahmaputra rivers are rain fed and affect agriculture, springs, forestry, and hydrological cycles. Floods cause 30% deaths and 60% displacement which can be overcome by co-operation of Mountain countries.

Some 60- 85% of the rural population is dependent on the biodiversity, both directly and indirectly for their subsistence. It is also a source of hydropower however 80% population lacks clean energy and is dependent on biomass.

Furthermore, 30% of the people in the HKH suffer from food insecurity and 50% of the people are malnourished. These are due to climate change impacts which directly impacts agriculture. Traditional food systems are also being replaced by rice and wheat due to modernization. Other issues includes, low returns for agriculture, non-agricultural forms of livelihood and abandonment of land amongst others.

Dr. Eklabya Sharma further informed that ICIMOD is working across boundaries at a landscape level as the cross cutting issues of the Himalayan nations makes partnerships are very important for change and improvement.

## **KEY NOTE ADDRESS**

*Dr. Mustafa Khan,  
Project leader IHCAP, SDC*

Dr. Mustafa Khan, Project Leader of IHCAP, SDC in his keynote address stated that the paradigm of sustaining agricultural systems in the Mountains is worth pondering upon. That there are several challenges which humans face today, like land use changes apart from climatic changes, availability of water resources. At the same time, there are also strengths

like the diversity of mountain crops. In Himachal Pradesh and Uttarakhand, the crop diversity is a marking feature where 6 different types of crops being cultivated in the same plot. The second interesting dimension in mountain agriculture which provides inbuilt resilience is the land holding patterns. Farmers here hold land at the top, some in the valley and some in the middle of the mountain. In case of floods and destruction in the valley, the farmer is still left with options to cultivate at higher altitudes. A new research focus has to be provided in the context of climate change. The second critical gap according to him was in terms of the capacities of the framers and the capacities of the staff at agricultural departments in the Himalayan states which needs to be enhanced. There needs to be asset of instructions available on how to approach when a disaster happens. The third major focus area is discussion on a multi stakeholder dialogue platforms. There is a need to have more platforms where policymakers, scientists and practitioners can talk to each other and come up with solutions.

Dr Mustafa Khan informed that SDC under IHCAP runs a bilateral program between the Government of India and Government of Switzerland- supporting each other with knowledge and technical partnership for the implementation of the National Mission for Sustainable Himalayan Ecosystem of the GOI. The organization works with all the 12 Himalayan states on a common set of parameters and indicators using a common methodology. Comparable maps of the Himalayan states with the GOI and the 12 Himalayan states involved are now available. For Himachal Pradesh, development of the NAPCC project for climate smart agriculture has been implemented by the Dept of agriculture.

Dr. Khan further informed that in partnership with HUC, ICIMOD, SDC will be starting the glaciology training, followed by training programme in springs next year. That they have also initiated 5 research projects at the regional- HKH level on critical issues- such as water resource usage, climate resilient cities in the mountains etc.

#### **ADDRESS BY THE GUEST OF HONOR**

*Sh. Vineet Chaudhary,  
Former Chief Secretary, Himachal Pradesh*

Shri Vineet Chowdhury, Former Chief Secretary of Himachal Pradesh, stated that Sustainable Development demands a lot of discipline which is often missed on by communities. For instance, mark II hand pump was introduced in Himachal Pradesh in late 80s. Today, there are 38,000 hand pumps all over the state. However what remains unattended in the mountains is the absence of system of recharging ground water. At present, the high court of the state supports the banning of groundwater exploitation. Hence at one point in time, mark II hand pump was seen as development in the state, when in reality it wasn't sustainable for the environment and future generations.

Himachal has probably one of the best social indicators in the country whether it is health, literacy or per capita income. However, this also implies that the aspirations of the people will rise of and may conflict with the definition of sustainable development. Many farming communities may aspire to move to urban areas.

Shri Vineet Chowdhury further remarked that in the past 36 years the basic issues of the state have remained the same. There is water shortage, lack of infrastructure and insufficient human resources. Adding on to social change are the climatic changes. The mountains have seen unprecedented rainfall and snowfall after 55 years, yet it received little media coverage on a national level. Hence according to him when we look into sustainable development, we must ensure that it is development in its truest form and is inclusive for the environment and people living in the mountains.

#### **ADDRESS BY THE CHIEF GUEST**

*Hon Shri Mahendra Singh Thakur, Hon. Minister of Irrigation, Horticulture and Public Health, Himachal Pradesh*

Shri Mahender Singh Thakur, Hon. Minister of Irrigation, Horticulture and Public Health of Himachal Pradesh welcomed all the guests to Himachal Pradesh, which is also called *devbhoomi* or land of the divine. He acknowledged that it was an honor for him to be present at this two-day summit, where scholars and researchers who are experts in the field and have spent their life in researching about various issues related to life on the mountains have gathered in one platform. That was the son of a mountain farmer he knew the challenges faced by farmers. Those women played a major role for success of any policy. The Hon. Minister invited attention to the fact that Dr YS Parmar, former Chief Minister of Himachal Pradesh played a major role in improving the financial situation of the state. That Dr. Parmar understood land holdings are negligible in the state, so he transferred thousands of acres of land to small farmers who started planting apples. A small apple orchard sold for Rs 2 lakhs which is equivalent to Rs 50 lakhs in today's times. And this was done without any promotion or media publicity, but only through word of mouth. People liked the idea and started planting apples in whatever land they had. Shimla and five other nearby districts started apple farming in a big way. And at the prime of this new strategy 4 crore boxes of apples were sent from Himachal Pradesh alone.



However this number has dwindled to merely 1.5 lakh crores due to untimely rains, hailstorms and various other factors. Besides apple farming can only be done at a particular height, and most of the area is covered by forest. He therefore advised IMI to look for more ways to increase agriculture in the mountains and come out with solutions to various challenges faced by the farmers.



**Day 2 (4<sup>th</sup> Oct 2018, Thursday)**  
**TECHNICAL SESSION-I**  
**ECOLOGICAL DRIVERS OF CHANGE**  
**(Venue: RTH Hall B-Block, Shoolini University)**

Key Note Address: Sh. Devinder Sharma, Food Policy Analyst, Writer

Moderator : Sh. Tej Partap, Councilor IMI-HP, VC APG University, Shimla

The focus of this session was on the well-being of the next generation of mountain farmers as it is recognized that in order to fully predict the future for the next generation of farmers, it is essential to understand the current situation in the farming sector. The session discussed the following ecological drivers of change:

- Climate Change
- Irrigation/Water
- Agricultural Diversity
- Organic Agriculture
- Soil Quality

**Key Note Address:**

*Sh. Devinder Sharma*

*Food Policy Analyst, Writer*

In his keynote address Shri Devinder Sharma spoke on the current status of mountain farming and agriculture in the Himalayas, comparing it with practices in other countries. He spoke about mountain farming in Nordic countries such as Finland, Norway, Sweden farmers are supported through subsidies by the European Union, including the opportunity to travel to other European countries. India lacks such support systems for its farmers. He was of the opinion that Himalayan farmers living in the high mountains are treated at par with a farmer in Punjab or Rajasthan. The same tendency is reflected in other aspects such as the academic curriculum in the upcoming agricultural and horticultural universities in the Himalayas. Instead of account for the uniqueness of the region (its ecology, environment and geography), the course structure follows a homogenous pattern. Such an approach to studying and researching the Himalayas has contributed to the failing development process and decline of the agricultural sector in the region.

Shri Devinder Sharma further stated that the Himalayas are witness to a high rate of migration which puts the future of the region in great danger. The Himalayan region is a hotspot for biodiversity and has a unique ecosystem which needs protection, preservation and conservation. Lack of focus on the sustainability of the region has led to decline in the agricultural sector, loss of livelihood, and as a result, increase in out-migration. The number of uninhabited villages in Uttarakhand has drastically increased resulting in the phenomenon of “ghost villages”. Almost 17,000 villages have been found to become empty with more than 2 lakh people migrating out of Uttarakhand in search of better job opportunities in urban and industrial areas which readily absorb cheap labour. A major factor behind this trend is the lack of sustainability in the agricultural sector. Compare the scenario with Himachal Pradesh where the agriculture sector is in a better state, although it faces similar challenges of youth migration. Today, most mountain villages in the Himalayan region are occupied by old

people or young migrant workers from Nepal as a result of mass exodus of the local young population. Hence he stated that there is a need to preserve the Himalayan mountains as well as the future of agriculture in the region.

Inviting attention to the 2016 Economic Survey of India he stated that the income of farming families in 17 states of India (comprising half of the country) is Rs. 20,000 per year. It roughly translated into a monthly household income of Rs.1700 which is insufficient for rearing a single cow. A NITI Aayog report shows that between 2011-12 and 2015- 16, the real income of farmers grew every year by less than half a percent - 0.44% to be exact. Another report by the OECD highlighted that in past two decades, farmer income has largely remained static. While input prices have increased, the output prices have remained the same. The chief economist of the US department of Agriculture also mentioned that since 1960, farmers in America have faced a steady decline in income. Therefore, there is a dire need for the agriculture sector to be re-evaluated and re-strategized in order to support economic growth and welfare.

Another major challenge to be addressed as pointed out by Shri Devinder Sharma is the question of farmer suicide. From a procurement price of Rs. 76 per quintal, the price of wheat increased to Rs. 1415 per quintal in 2015 – a 19% jump. In comparison, in the same time period, the salary of government employees has risen by 120 to 150 times, college professors by 150 to 170 times, school teachers by 200 to 300 times and corporate employees by 300 to 1000 times. This explains why the agriculture sector is unable to sustain itself despite the heavy subsidies received by farmers. Farmers are denied their rightful income as they do not see a proportionate increase in wealth unlike other professions. There is also a wide gap in their productivity as a result of which they are unable to compete with farmers in America or China. Punjab offers 98% assured irrigation to its farmers resulting in the highest productivity of wheat, rice and maize in the world. Yet, it has become a hotspot of farmer suicides.

He stressed that a change in mindset is required. Movement of agricultural labour and farmers into the urban sector is often wrongly perceived as a positive shift for the economy. Many believe that out-migration is an inevitable product of economic growth. However, such processes produce several complexities in urban areas such as overcrowding and congestion, lack of sufficient job opportunities and rising inequality which are difficult to counter.

Given these challenges, there is a need to produce a different development paradigm for the Himalayas. Agriculture in the Himalayas needs to be protected and conserved in line with the unique context and local knowledge available in the region. In the presence of conflicting arguments and understanding of what serves as an optimal solution to the problems of today, novel ideas must be adopted. Payment of ecosystem services (PES) is one such idea that has a tremendous potential to transform the agriculture sector in the next five years. The Himalayas generate unique ecosystem services which must be tabulated, calculated and monetized into economic costs and values. This will help protect the ecosystem and provide compensation for people living in fragile environments and conserving the ecosystem. It could also help resolve present and future conflicts such as political battles over water sharing between different states. A recent report by a multi-member group of researchers was presented in Chandigarh recommended a payment of Rs. 40,000 per acre to every farmer in the Himalayas region as payment for preserving the ecosystem. Such solutions have great potential to transform the life of farmers in the country.

The cropping pattern presently practiced in India must be redefined in order to transform the future of farming. In Andhra Pradesh, a scheme has been designed to turn 60 lakh farmers from chemical to non-chemical farming by 2027. In order to compensate for the initial decline in agricultural productivity, farmers must be subsidized for at least 3 years. In Andhra Pradesh, the Azim Premji University showed that the productivity of crops in non-chemical areas increased by a minimum of 11% for paddy and Brinjal 79% in a span of one year. Hence, our paradigms must shift from chemical to organic resources responses in farming. Such claims are back by research conducted by the United Nation and the World Bank. Chemical usage in agriculture is predominantly responsible for environmental hazards including the production of greenhouse gases. Hence, the agriculture sector must be reformed.

Finally, Shri Devinder Sharma stated that there is a need for decolonization of the mind and thought process in order to find solutions that can tackle the problems pertaining to one's local context. The answers do not lie in the experiences of other countries like America or Europe and that the local knowledge and expertise must be tapped to find solutions to the current problems.



## **PANELISTS-**

### **Sh. Gopal Singh Rawat, Wildlife Institute of India, Dehradun, Uttarakhand**

Sh. Gopal Singh Rawat spoke about the future of highlanders or the agro-pastoral communities arguing for a need to take a holistic view of the upstream and downstream linkages that incentivize or disincentivize communities from taking up farming. Such an approach would help understand the major drivers of out-migration and reflect on the increasing interest in urban life at the cost of a declining agriculture sector. There is little reliable scientific data on different agro-climatic zones which prevents accurate predictions on the changes occurring in the farming sector. There is a clear absence of research related to future cropping patterns and marking of vulnerable agro-climatic areas in different districts.

Rather than focusing on the success stories of few apple farmers with large land holdings and capital to buy invest in large quantities of pesticides, it is essential to provide research and other forms of support to farmers with small land holdings (up to half an acre of land).

Secondly, herder communities, particularly comprising young shepherds who live in the mountains must be identified trained in the basic principles of graze land ecology. The right type of education on managing pastures and preservation of traditional ecological knowledge can greatly benefit these communities as well as the environment.

### **Sh. Anand Sharma- DDG Agromet Advisory Services Division, IMD, Delhi**

Sh. Anand Sharma spoke about the role of water in Himalayas highlighting that it is not water scarcity that is the problem. Instead, it is water mismanagement that needs to be addressed. In the Himalayas, water is essential for irrigation and drinking purposes. Hence, the future of farming will depend on the predictability of water availability as well as climate. In the Himalayas, there is great hope for the future of agriculture due to high rainfall in comparison to many other places like Israel and Singapore. Water requirement for most crops is between 400 and 700 ml which is sufficiently available in Himachal Pradesh and Uttarakhand. Hence, scarcity of water is not an issue as much as its mismanagement.

The use of water harvest technologies and weather forecasting can greatly benefit the farmer as well as account for future water consumption. Currently, water harvesting is not practiced. Further, deforestation and increase in cemented built infrastructure have prevented the capture of rain water which has the potential to irrigate farmlands.

Only 10% of mountain agriculture is dependent on glaciers. Snowfall is of high significance to mountain agriculture as it can be harvested and conserved for water usage; however, in recent times, western disturbances have become weak resulting in decreased snowfall. The presence of glaciers allows a tropical country like India to grow temperate crops in the Himalayan region besides providing strong river systems. Hence, they must be conserved and protected.

### **Miss Divya Rawat, Young-Himalayan Agri-preneur, Uttarakhand**

Miss Divya Rawat presented the view of an agri-entrepreneur from the Himalayan region and spoke about the role of young entrepreneurs in inspiring young people to take up new opportunities. Using new innovative models such as farmer-producer company and cultivating crops such as mushroom can help generate livelihood, improve income and serve as a means to stop or limit migration in states like Uttarakhand. Besides, cultivation of crops such as mushroom which are grown indoors do not face the challenges of human-wildlife conflict or overdependence on rainfall or snowfall.

### **Ms. Priyadarshinee Shrestha, WWF, Sikkim**

Ms. Priyadarshinee Shrestha spoke on the importance of biodiversity in the context of the Sikkim and Darjeeling. Communities living near forests for centuries have witnessed rapid transformation in the agro-economic and forest landscapes. Monoculture practices in the production of tea and removal of cattle sheds have made forest areas less accessible to

communities that have historically lived near forests. Hence, the burden of conservation practices is borne unequally by local communities as they lose access to natural resources. One example is of water resources which are exploited increasingly in order to meet the growing demand of urban areas. These results in loss of access for farmers who are the original custodians of these water sources (located within forest area). A comprehensive examination requires such issues to be studied both at the macro and the micro scale. Policies and programmes must be designed in a manner that allows natural resources to be made available to people who are closest to the environment.

Both Sikkim and Darjeeling are part of the Himalayan biodiversity hotspot with a large portion of land reserved for forest and protected areas. The agro-ecological landscapes form seamless continuity with the forest areas and communities living around these forests share deep connections at a personal level. Water and nutrient cycles at the landscape level are changing due to various reasons including climate change. Within this landscape, a major challenge emerging over the past decade is the issue of human and wildlife conflict (HWC). For Sikkim which is poised to expand its organic farming acreage, the agricultural loss suffered by farmers comes as a major challenge in achieving targets. The HWC narrative is similar across the border in the Darjeeling Himalaya and in most mountainous states making HWC a key stressor for livelihood and nutrition security. Sikkim's recent bill in the state assembly, the Wildlife (Protection) Act (Amendment) Bill, 2018 allows villagers to protect their crops and livestock from wild animals. The bill is an indication of the extent and scale of the problem that communities are facing and the insufficiency of the existing management of HWC juxtaposed with conservation policies. HWC management would require a multipronged approach involving the support of multiple departments, and the realigning of existing programmes to reduce or manage human wildlife conflict to be advocated along with the need for recognition of the problem that goes beyond the domains of the forest department.

Human wildlife conflict has cascading repercussions on small farming communities and comes as an overlaying challenge on people already grappling with issues brought about by climate change and market access. Under these prevailing circumstances, the loss from crop depredation gets magnified manifold, with very little mechanisms for redress, putting a question mark on the well-being of farmers. There has been a marked decrease in traditionally-cultivated crops with HWC coupled with changing market demand and consumption patterns. This has led to a decline in agricultural diversity and an erosion of food cultures. Further, climate change impacts on agriculture through changes in phenology, altered soil quality, higher incidences of pests and disease infestations, decreased water availability, etc. are the factors that are constantly at work though many a times not easily discernible.

The well-being of farmers requires a holistic understanding of these issues and requires actions aimed at conservation of agrobiodiversity, ensuring water availability and climate mitigation and adaptation. Conservation of agrobiodiversity in the face of introduction of new crops needs a balanced approach. Whether well-being is to be looked at only in terms of economic returns at the cost of changing cultural-scapes with far reaching consequences will

be under question. For instance, changing consumption patterns driven by a created market demand for more processed foods has led to erosion of food cultures, loss of nutrition and a wide-scale problem of plastic waste accumulation in the mountains region.

Finally, water availability is a determining factor for agriculture and requires our attention. In the mountains it is mainly rain fed; hence, any change in water regime could have far reaching consequences. Springs and streams that are the main sources of water for agricultural purposes are highly vulnerable to changing climatic conditions, and long-term measures for their conservation should be a priority. Safeguarding water sources should be explored to ensure measures that go beyond reviving the drying springs, and to have a holistic approach of identifying important recharge zones that are important for all villages and towns and ensuring these are strictly conserved for the future.

### **Mr. Partik Kumar, Revitalising Rainfed Agriculture (RRA) Network**

Understanding groundwater as a common pool resource allows us to shift our focus from wells (sources) to aquifers (resources). By using such as lens, the focus moves from merely looking at what is going on to explore a broader variety of aspects at play. For example, how would one balance livelihoods and ecosystem needs, or what happens to economic returns from groundwater and how does the drinking water security get affected when an aquifer depletes?

While mismanagement can be seen as the defining problem in the water sector, one can understand it better in the light of “misgovernance”. If we create a bad system and hand it over to people to manage, they will manage a bad system. Therefore, the outcomes will be bad too. This is a larger governance issue. For instance, consider the issue of springs in Himachal Pradesh where every village faces acute shortage of water. *Bauris* and springs are permanently drying up or becoming seasonal and there are several reasons for this phenomenon to occur. First, there is a fundamental disconnect between the source and the resource. The government, policies and various departments managing the source are handling drip irrigation, bauri construction and other irrigation works but no one is discussing the resource itself. One has to understand that there is a need to look more closely at the resource, at the overall well-being of the springs as they form the main source of water in the mountains. One has to widen the way one looks at springs as it also comprises groundwater, recharge points and so on. The NITI Aayog published a report on springs without the involvement of a single stakeholder who has any knowledge or expertise on springs.

Moving to the question of wildlife -monkeys are not coming into agricultural fields because of the issues of the forest. This is also happening due to the drying up of springs, as a result of which, forest areas are going dry, leading to forests fire. The wild animals are left with no option but to step out of their habitats to look for food and water. The government looks only at budget allocation when it looks at water distribution, while ignoring other important areas. For example, in order to derive water from the ground, we use the gravity of water to pump water out. This is a significantly costly process of extraction and we currently lack a system to bypass this. It is essential that the government and relevant departments focus on addressing these areas.

Then comes the issue of ghost villages in Himachal Pradesh which are converting into ghost farmlands. These pieces of land, that now lie fallow, were used earlier to cultivate millets, pulses, and red rice. Post-abandonment, the land lacks nutrition which is an essential component for crop cultivation. This is another area that requires significant policy and public attention.

Finally, it is important to recall that our system was resilient because agriculture, livestock and forest were closely integrated. However, these systems lack integration in the current times. Village communities are often completely disconnected from their land which not only impacts life and livelihood, but also results in long-term ecological costs.

In short, there is a clear disconnect between the source and resource which must be addressed at multiple levels.



## Summary

- The Himalayan region has a unique ecology, geography and socio-economic context which requires a differential approach in addressing existing challenges
- Farmer incomes have been on a steady decline resulting in numerous social and economic challenges such as out-migration, declining crop productivity, suicides, and growth concentration in urban and industrial centres
- Novel solutions such as payment for ecosystems have the potential to supplement incomes, conserve the environment and resolve political battles over resource sharing
- The cropping pattern presently practiced must be redefined in order to transform the future of farming moving from chemical to non-chemical techniques
- In order to find solutions, one must look in one's own backyard and tap into local knowledge systems and expertise
- There is a need for reliable scientific data on different agro-climatic zones, and research on future cropping patterns in different districts to support small farmers
- Human-wildlife conflict and the loss of forest access for local communities due to conservation efforts are emerging issues that require adequate attention
- The issue of water mismanagement is greater than that of water scarcity and can be addressed by treating groundwater as a common pool resource and therefore, moving the focus from wells (sources) to aquifers (resources)
- Resilience of the mountain ecosystem requires integration of agriculture, livestock and forest
- The move from food and livestock-based agricultural systems of the mountains to economic security has led to a contradiction between the needs of the farmer community and ecologists and scientists



**TECHNICAL SESSION-II**  
**SOCIAL DRIVERS OF CHANGE**  
**(Venue: RTH Hall, B-Block, Shoolini University)**

Key note address: Sh. Alemtemshi Jamir, Rtd. Chief Secretary of Nagaland, IMI-Councilor, Nagaland.

Sh. Ramesh Negi, Rtd. Chief Secretary of Arunachal Pradesh, Vice President, IMI

Moderator : Dr. Vincent Darlong, VC, Martin Luther Christian University, IMI Councilor Meghalaya

Moderator's Remarks-

Dr. Vincent Darlong began the session on Social Drivers of Change by welcoming the panelists to share their experiences on social aspects driving change. He said that even as the discussion centered on the next generation of farmers, there is a need to worry more about the present generation of farmers and mainly the young people. Saying that this is an issue that needs to be deliberated upon in view of not just the next generation but also in view of the present, he further extended his point by mentioning, *"Having worked with a number of communities -- especially in the northeast, I am convinced that every generation will take care of itself and have the ability to do so. Every generation is improving itself socially, ecologically, and economically. I am sure that the next generation of farmers will also be able to look after itself."* He said that experience seems to suggest that more and more young people are turning away from farming. He concluded his address by calling on the panelists to talk about how the next generation can be encouraged to come back or stay for farming in the mountain areas.

**KEYNOTE ADDRESS:** Sh. Alemtemshi Jamir, Rtd. Chief Secretary of Nagaland, IMI, Councilor

Sh. Alemtemshi Jamir started the address by emphasizing the point about social drivers of change. He said that subject present here is the social drivers of change in the Himalayas and the solution for the well-being of the next generation of farmers. Change is being discussed all over the world, he said. And the change that the people are talking about is quite frightening -- Artificial Intelligence, robotics, and spacecraft. Now, people are talking about technological singularity wherein new cultures or civilizations will emerge. Remaining neutral, he said that fortunately or unfortunately, we have not been left out and that impact of technological change is with us.

He said that if migration from the mountains to the cities is discussed, it is happening because the youth are connected with the city through their mobile phones. Every day, they are connected through phone calls and internet and they are getting to know what life in the urban areas is like. When it comes to urbanization, most homes -- no matter how faraway -- now have dish TV bringing urban life and its images in. Sh. Jamir said that if census towns around here are deliberated upon, where people are probably earning 50 percent of their non-farming income, it is because people are hurrying to catch up with the rest of the world in terms of purchasing refrigerators, TV, mobile phones, and so many gadgets, thus making them look for other forms of income. He stressed that among many other things, so much more is now heard about atrocities and crimes committed against women -- the voices of women are being heard more, technology is making their voices heard beyond the countries. This way, technology is also adding to the empowerment of women. He pointed that we are the subject of change and it is this change that we are grappling with. The point that he said was trying to make here was that we cannot avoid change; we cannot stop the process; it is already in motion. He said, we have to adapt to this change that is much like global climate change. We cannot stay stagnant. He further said that the world too is seeing technological changes that we are learning to adapt to, and this is the point that he was trying to make. He called on the participants to look back at the history of mankind. He said, 20,000-30,000 years ago, we were primitive beings living in trees and caves. Then, there was a paradigm shift of the hunter-gatherer that continued until about 8,000 years ago when there was another paradigm shift by humankind to cultivation. It was the demand of the age. Then, mankind shifted to settled agriculture and now, with science and technology, it is experiencing even more changes in human society. Similarly, the agriculture of the mountains also needs to go through that paradigm shift. Taking the example of Shoolini University that is so advanced and high-tech, he said that we could also explore possibilities of modernizing and improving the conditions of run-down government colleges to better high-tech colleges. Similarly, he asked: "*Can we not envisage a different type of agriculture in the mountains?*" The second aspect he highlighted was that we must also look at mechanization. He said that we have innovation, invention, and even import from Japan and China. When agriculture is not updated, large-scale migration is witnessed and labour is the most valuable asset in the mountains. However, what is seen now is that there is less labour. This change should be supplemented by migration. He said that agricultural colleges should not just teach about agriculture but also have laboratories and they need to be modernized.

Sh Jamir further said that in Nagaland, even after over 70 years of India's independence, there isn't a single cold storage in the state. And there also isn't a single processing unit in Nagaland. These are the things that need to be changed, he said. He continued by saying that although we are happy about the recognition of *jhum* as a means of agriculture but the products of *jhum* should reach a commercial scale and into processing.

Another important aspect of discussion he highlighted is legalization -- in the sense that systems of land holding need to change. If people are leaving villages with smaller land holdings, new systems must be brought in through which larger land holdings can be made available so that educated youth who want to introduce new farming methods can go back

home to farming and make use of the land. He said that we need to change our way of thinking and reverse the age-old histories and processes of colonialism, zamindari system, and so on. He stressed on the need to look at what we can do with empty and fallow lands. He said that legislators will be required and thus there is a need to legalize the system of farming. He emphasized that there is a need to bring in the youth and see that the legal systems also comply to the changes that are taking place around. Today, he said, our focus is only on industries -- startups, incubators, and accelerators. He posed questions such as why we cannot talk about startups, incubators, and accelerators in the agricultural sector! He said that the way of modernization that has taken place in our industries must also be translated into our agricultural sector.

Sh. Jamir said that roads, connectivity, health, and good education in the mountains are of course a must and these things are possible if we put our minds to it. Good governance he said is essential to ensure that these sectors are efficiently run. There should be clear cut policies in line with the SDGs(sustainable development goals). Lastly, he said: *"We, the mountain people cannot play on to the image of being remote, distant, fragile, and marginalized and hence, must move forward with the times and technology."*

**Keynote Address: Sh. Ramesh Negi, Retd. Chief Secretary of Arunachal Pradesh, Vice President, IMI**

Sh. Ramesh Negi began by saying that it is a part of general awareness that the society is always evolving and changing. Quoting sociologist Gabriele Tarde he said, *"In the realm of the social world, everything takes place as invention and imitation, with imitation forming the rivers and inventions the mountains."* He further quoted Tarde by saying -. *"All similarities of social origin that belong to the social world are the fruits of some kind of imitation, be it the imitation of customs or fashions through sympathy or obedience, instruction or education, or naïve or carefully considered imitation."*

Dominant culture he said has this premise of innovation and imitation. He said that this is probably because of evolution that we are all affected by dominant culture. Citing the past 200-300 years, he said that there was the Victorian period that spoke of tradition, then came the literature of Industrial Revolution and its impacts are witnessed, and we have all been affected by it even in this country. He said that today, our lifestyle and our aspirations are affected by industrialization and this is a social change is unavoidable for mankind. This is a reality. He said: *"Most of us must have traditionally been from farming families but with time, farming traditions have been absorbed in cities and in larger systems. Many of us rarely visit our villages and we also do not have adequate knowledge about farming."*

The remotest areas now have internet.

He said that most of the drivers in Delhi are from Himachal Pradesh and Uttarakhand and even in Arunachal Pradesh, most of the electricians are from Bihar. Hence, there is the entrepreneurial challenge to tap into skills.

## **The Impact of Dominant Culture**

He said that among the village youth, the dominant culture is with social media, news, and communication. It is again the dominant culture that becomes important, he said. Sh Negi pointed out that today, traditional knowledge centers and systems within the villages and families have died down. He said that this is the challenge that arises in the way of reviving agriculture and horticulture in the Himalayan community or even in other areas. In most cases, he said, the next generation does not want to follow traditional livelihood such as fishing and agriculture. This is because neither are these traditional methods taught in school nor communicated in the family as to what these practices are. He said that he realized this about the policies in the government as well as in academia. Sh Negi asked, *can we do a study of how the psychological drivers, the social drivers, and social change in the family change the aspirations and lifestyles of the current generation?* Citing the case of his own village, he said that there had been a direct impact in his village as well as family with education and female literacy. He witnessed that the younger brides were all educated till 10th standard and did not want to get in the menial labour of picking up firewood from the forest.

He said that additionally, the government has given gas and Himachal Pradesh has received electricity. This change happened and at the same time, the people there said that they will not rear cows. Thus, he said, these are social changes and along with them, the educational and economic paradigms have resulted in a decline in individual household rearing.

He also noted that when he visits his village, he packs tetra packs of milk because milk is not available in his village. These, he said, are markers of social changes. The second question was is agriculture and horticulture by choice or by compulsion? He said that it is an issue that needs to be looked at. He also said that it is not very easy to migrate as the expenses in urban areas are very high and so are the hardships. Pointing out that the villages are getting thinner with decreasing population, he asked: *"Can we force the people to stay back?"* He said that for this, there is a need to look at the available policy option along with what society wants with education. One cannot stop people moving out. But the challenge, he said, is whether we are making agriculture viable for those who are doing agriculture by compulsion.

He sought consideration on the question of choice as mentioned by Sh. Jamir --The younger generation is coming back, popularizing our traditional culture, agriculture, and horticulture. And proceeded to ask: *"Do we have literature that is woven around the documentation of historical knowledge of our agricultural traditions and are we teaching it in our syllabus, giving it a place of prestige in the local folklore, local educational systems, and advocating for a farm-based folk history?"*

## **Summarized Main Points--**

The session on Social Drivers of Change was focused on the effect of social changes on agriculture practices. Again, laying a stress on the issue of migration, urbanization was highlighted as the key factor behind migration. Rural youth get attracted toward the cities to catch-up with the modern world which has become easily accessible due to urbanization.

Paradigm shift has been observed in the history of mankind, but it was not as clearly visible in the agriculture sector. Then, the question was raised that does the mountain agriculture need new-age farmers to adopt different practices?

**Against this background, the following points were discussed:**

Four major aspects, i.e. specialize, mechanize, modernize, and legalize, were suggested to bring a paradigm shift in mountain agriculture.

1. **Specialization:** In the context of specialization, crop diversification, shifting to high yielding crops and the commercialization for new age farmers were mentioned as the key factors. Himachal Pradesh has the tendency to adopt new crops apart from apple for the economic growth.
2. **Mechanization:** Innovation and reformation in the field of agriculture is required as the mountain regions are facing acute shortage of agriculture labour due to migration. The only way out is the mechanization of agriculture.
3. **Modernization:** Mountain agriculture is lacking the modernization of agriculture, specifically in terms of shortage of storage facilities, processing units, and post-harvest facilities.
4. **Legalization:** There exists a problem in the existing land holding system and the legislation needs to be reformed in favour of new age farmers/youth.

Currently, the focus of government policies is primarily on industrial startups rather than on agriculture. Special attention to the agricultural startup is required along with the development of infrastructural facilities such as roads, health, education, and good governance etc.)

## **Panel discussion**

### **Sh. Rajendra Dobhal, UCOSTE, Uttarakhand**

Dr Rajendra Dobhal began his discussion by saying that migration is a major concern for Uttarakhand as it shares the International Border and migration from the borders is a concerning matter for India

He shared ghost villages are apparent now and it also leaves behind land that remains fallow and uncultivated. Looking at the model of West Bengal -- if your land has remained uncultivated for

He said that ghost villages are apparent now and this also leaves behind land that remains fallow and uncultivated. Looking at the model of West Bengal -- if a piece of land has remained uncultivated for over a long period of time then the government takes it. Whereas, in places like Uttarakhand, the land continues to remain unattended with the migration of people. So, the issue at hand that he pointed out is that the people do not want to cultivate the land but at the same time, they also do not want to give it up for cultivation to others. Thus,

one of the solutions that he mentioned was that the government can become the owner of such lands. The government should undertake the unutilized land to make productive use of the same with shareholding by the people. The issue is also of small land holdings. He stressed that the IMI needs to look into all these issues and gaps and come up with solutions so that they can be conveyed to the government and work can be done as a pressure group to ensure that change takes place.

**Prof P.K. Khosla, Vice Chancellor, Shoolini University**

Professor Khosla started with the question as to what will be the expectations of future generation of agriculture and farmers? He said that they could be graduates, technicians, or educationists. If they are physicians, engineers, or doctors then they can migrate easily to urban areas without any problem. In the present context, he said, graduates find it difficult to find jobs. He said that in the present day, people in villages are leaving their homes as they want daily wage jobs even if it for Rs 6,000-Rs 7,000. He mentioned that this year at Shoolini, there was a plan to start agriculture in the university and 16 hectares of land was required. He said that people approached the university delightedly, saying that their land was available for lease. What does this mean? He said that this indicates that people do not see any benefits in cultivation. He said that the responsibility of educational institutions now is to introduce food processing, cold storage, medicinal plants, high value cash crops, and so on. This he said is now the pertinent responsibility. He quoted his son to make a point: *"I fail to understand, as my son often says, now that we have started education on agriculture, we must raise demonstration models so that the income of farmers can also increase. In the universities, we must create models and demonstrate it so that the graduates will be tempted to stay back."* He said that agriculture universities and other educational institutions should develop the demonstration models that can be implemented by the youth and new age farmers. He pointed out that if there is no persuasion by the government, things will obviously be slow. He mentioned that first chief minister of Himachal Pradesh, Shri Y.S. Parmar, as a politician took a team of experts around the world to see the modern techniques of agriculture and horticulture that were being adopted in the Western countries. This, he said, gave him the opportunity to learn and see new things for 21 days.

He said that agriculture in the hills needs to be promoted so that the future farmers can be agripreneurs. He also said that though there can be several strategies to promote new age agriculture, the question is about how to promote it and how we can do it. He said that, sitting here among the panelists, he thought that Shoolini University should play a role in changing the education. He also mentioned that he is a member of the Himalayan University Consortium (HUC) and they often talk about B.Sc. in mountain farming. The question now is that who will join it? Where is the job? He ended by saying that issues of employment and profitable farming must be taken into consideration as the youth will be the drivers of the future

**Sh. Tej Partap, Councilor IMI-HP, VC APG University, Shimla, HP**

Dr Pratap participated in the discussion saying that it had been understood so far that this is the flood stream of change driven by human values, ecological considerations, and the economic lure present there. The force of change is so strong that this dimension should get precedence for when there is discussion about it on a different platform. In the social context, there are a lot of ground changes -- be it because of global changes, flow of information, or also economic changes. In such a scenario, he said, we must ask the farmers what they want instead of imposing what we think is best for them. He said that it is important to ask the locals/farmers concerned about whether they want new farming methods, medicinal plants, or if they would want to quit.

### **Sh. Tony Marak, Retd. PPCF &HoFF, Meghalaya, Shillong**

Sh. Marak took a more philosophical stand to the issue at hand and started by saying that amid a lot of points that had already been made; his presentation would be more philosophical than those presented thus far. He said: "*We are on the threshold where the problem of a shrinking agriculture has to cater to the burgeoning population.*" Under the social driver of change, he said that a strong family makes a strong community. In the panel discussion, he said, that the ecological, social, and economic drivers were talked about, which of course are all interconnected.

However, he said, growing up from being a child who used to follow his grandmother who was a shifting cultivator, he could see the transition take place where youngsters stopped doing what they had seen their parents and grandparents do. He said that natural calamities, be it floods in Kerala or Tsunami in Indonesia, beg the question of whether they were actually natural.

Sh. Marak said that line of thought calls for introspection into our lifestyles.

He said that the different issues discussed on platforms like this must also be percolated to the grassroots. Otherwise, there will be yet another summit where the same issues will be discussed. He quoted that someone had said, "*If you want prosperity in the plains, you should have peace in the hills.*" He added that he would leave it to the audience to reflect upon this statement.

He said that he was recently listening to Dr Kevichusa's speech wherein he spoke of three types of people found in any given society. This he said has been established by noted sociologist and public intellectuals and it was first stated by supporters of democracy in ancient Greece. The first group he said is the idiot, who is not necessarily mentally deficient but who is self-centered and selfish. The idiot is always looking out for his personal gain. He has no skills, no character, no virtues, no knowledge to be able to live and contribute to a flourishing society. The second kind of people he said are the tribes people, by which the Greeks meant those who are not able to think beyond a small group. Their ultimate allegiance to their own group and they are always suspicious and fearful of what is new, different, and alien to them. They always deal with other people through intimidation, force, and violence. The ideal person for them is the warrior and their ultimate god is tribalism. The third group

he mentioned to be the citizen. Someone who has the skills and knowledge of public life and strives for the common good. He knows his rights, but he also knows his responsibilities.

He said that as we progress materially and technologically as a society, we are affected by idiotic and tribalistic drivers of change. And many times, we fail to distinguish between our needs and our wants. He furthered his point saying that we need to go back to the roots and mountain culture and focus on the wise utilization of resources. He said that we should look back into the system of community, family, and spiritual connection with nature. He also said that nothing belongs to anyone, we are just stewards, and managers of the resources. He highlighted that there is a need to go back to look after the community culture that used to exist in the mountains, not just for research but to also look after our farmlands. He concluded by saying: *"We need to focus on relationships with ourselves, with each other, with communities, and with nature. A strong family will give a strong society and a strong society will give a strong nation."*

### **Ms. Binita Shah, SDFU, Uttarakhand**

Ms Shah began by making the point that what is social can be elastic and expanded. Sociology can be discussed as much as possible. It also depends on what is change. She said that she would look into change as positive or negative and speak on both sides.

She said that she herself is an example of social change. She cited her own story saying that 20 years ago, she decided to go back to her ancestral land and adopt agriculture as a part of life as a choice and not by force. It was, she said, a deliberate decision. She moved to her ancestral orchard which is 34kms away from Nainital. She said that social driver was what motivated her to go back to the village and agriculture. It was for her, not an economic, scientific, or research driven decision. She said that she did not want the urban life and was fortunate enough to be able to go back to her farm.

On the flipside, she said, it is the social drivers that are also driving people out of the mountains today. The first priority for most is education and health. Going back 100 years, people have been migrating from the mountains ever since mountains itself. This is not a new concept -- especially, as seen in the case of men. It was the children, women, and retired old people who stayed behind. Hence, agriculture, livestock, and the landscape were always looked after. Mountain people were responsible custodians of this landscape. This landscape, she said, was looked at as one entity--there were the forest, the agriculture, land, people, and animals as one entity.

So, now there are TV and mobile phones as the indicators of change. Now, women do not want to stay back. The aspirations of women have also changed. Social media, TV, and daily soaps do not show women farmers. They are instead shown glamorous heroes and heroines who become the aspirations of the young women. If women do not stay back, livestock does not stay back. She highlighted that she had seen villages that do not have animals and livestock, and furthered her point to state that livestock is incomplete without women.



Another issue that she said needs to be discussed under social driver is wildlife. This, she said, is a primary problem of agriculture as seen in Uttarakhand. Wild boars for instance are hunted down by humans without understanding that human beings and wild boars are part of the same food chain. Today, after so much activism, talks, and discussions, the farmers can finally control the wild boars. So, there is a social divergent. She said that measures and help should also be extended to prevent the wildlife from destroying the crops. However, she also said that farmers have yet to march and demand such changes in policies. One of the reasons for disinterest in farming is also the MGNREGA which gives 100-120 days of daily wage for unskilled labour.

Another important issue in the mountains that she discussed was fodder or hay. She said that when we grow millets, we also grow fodder. She said that irrespective of what we farm, we are not only growing crops but also growing fodder. She also said that we are also managing the grasslands and the entire biodiversity along with the farmers and their livestock.

She remarked that the women in Uttarakhand spend a total 250 labour days on collection of fodder and firewood for free as a part of tradition. This is a part of something they are born to do. Each haystack costs roughly about Rs 12,000. Now, these women may not want to work in the forests, but this is a role that is assigned to them. She said that the question that arises is why are the men not doing it? If there has been progress in the aspirations of women, the question that arises is if men can and should also take their burden.

She concluded by saying that the aspirations of the women have increased so much that it is now said that they would prefer to marry a man earning lower wages but living in the city over a farmer with better income living in the villages. In a village, she said, we are told that in the marriage hierarchy, farmers are not even seen on the lowest rung.

In this new age, agriculture will begin with the people who are farming now coming back and those who will pick agriculture by choice.

### **Ms Tage Rita, Young-Himalayan Agri-preneur, Arunachal Pradesh**

Ms Rita began with her introduction and how she came to be associated with wine making. She said that she belongs to Ziro, Arunachal Pradesh and her background is agricultural engineering. She said that she hailed from a family of progressive farmers. On the topic of social drivers of change, she said, she will narrate her story. She said that she represents an independent woman who is an agri-preneur and a wine maker. Today, the kiwi wine she makes is the first ever organic kiwi wine in India. Fifteen years ago, with the help of the horticulture department, the farmers started cultivating kiwi and there was a huge production. Sadly, there was no market, and so the local consumption was very less. The rest of the produce was given to cows and pigs. However, it was considered unsuitable even for the pigs

as it caused a loss of fats. She said that she saw very large amounts of kiwi being thrown and this was a sad sight. She decided to make wine also because of the location of her place which is very cold. She said that she realized that there was a gap between modern technology and traditional wine making. So, they decided to make the most modern wine. In making wine, the entire kiwi cultivated from her place and neighbouring areas was also utilized, thereby adding to the value addition of the product. This wine also highly benefited the farmers and at the same time, it also works on employment generation for the locals. The other villagers and farmers are also now able to learn the art of wine making as this concept was new to them with so many raw materials being utilized in its manufacturing

She mentioned that when she started making wine, it was so that it could compete in the international market and she also conducted environmental research. She said that they also have a lot of barren lands that are now utilized for kiwi cultivation. She remarked that she had come to realize that the cultivation of kiwi helps replenish the environment and contributes to the carbon sink.

She said that when she first bought kiwi in 2016, the farmers gave it to her for Rs 20 per kg. However, the next week, they charged Rs 40 and thus increased the prices even more after that. This year, she said, they sold the kiwis to buyers in Jaipur. She also said that the farmers are now harvesting kiwi before time because now, the new buyers want it irrespective of whether it is ripe. Although it is not good for her work, she said that it made her very happy because the farmers are now exploring new markets and therefore new opportunities.

She said that her kiwi wine is 100 percent organic and she uses all modern machinery imported from France. She concluded by saying that therefore, she tells her people that there is a way out with new farming techniques and alternatives.

### **Sh. Ratan Aswal, President Palayan- Ek Chintan, Uttarakhand**

Mr Ratan Aswal said that he has worked in several Himalayan states, including Nepal and Myanmar and he looks at the Himalayas from a singular perspective. He said that in mountain society in India, irrespective of whether one is talking about farming or animals or livestock, the biggest contribution has been of women who have also contributed immensely to the rearing and development of children. This significant role of women is seen all across the Himalayan countries. However, he said, what has happened now is that despite the change in time and the new increase in work burden for the women, their status has remained the same.

One of the reasons for migration, he said, is the increase in hardship for women as well as the lack of adequate health and education facilities for them that have forced them to look for better conditions outside. The maternity health of the women is especially given significance as women are often shy to discuss it. He said that if we look at Uttarakhand and Nepal, one of the issues faced by women is that about 50 percent of them are anemic and when women who do not have enough blood give birth, even the babies are born anemic. Thus, he said, the well-being of women is linked to the well-being of the child and the community. Another health issue that women often hide and remain untreated for is piles.

He said that they had conducted a survey from Nepal and Uttarakhand amongst school girls of classes 11th and 12th wherein they asked them who they would marry between a boy earning a monthly income of Rs.10,000 in the village and a boy earning the same Rs.10,000 in a city. Most of the girls, i.e. around 91 percent, said that they would marry the boys working in the cities. The first priority he said was to work toward bettering the conditions for women and only then could there be a discussion on agriculture and farming in the mountain states.

He said that another issue witnessed especially in Himachal Pradesh and Uttarakhand is unemployment. He also said that if we want to reverse the migration, we must deliberate on it. He said that government agencies, departments and policies must bring about changes in the livelihood of the mountain citizens.

Lastly, he said that one more issue is the issue of revenue of the land. Mountain farmers have small land holdings. So, it is seen that when new infrastructural development is introduced, the land is often acquired. He concluded by saying that the solution to this would be to compensate the locals with land so that they can continue to sustain themselves independently.



## TECHNICAL SESSION-III ECONOMIC DRIVERS OF CHANGE

### TECHNICAL SESSION-III: ECONOMIC DRIVERS OF CHANGE

*Moderator – Sh. Atul Khosla, Pro VC and Economist, Shoolini University, Solan, HP*

The Indian economic is over \$2 trillion out of which agriculture contributes 12% to 15%. Manufacturing accounts for about 30% of the total share of the economy. As India gradually advanced towards a developed economy, the proportion of the service sector will continue to see a drastic increase with a parallel decline in the agriculture sector. In discussing the economic drivers; hence, it is necessary to look beyond farming. Economic progress would require out-of-box thinking and promoting other sectors such as tourism, services and telecom. It is useful to examine economies of other nations with large hilly areas to understand how other states with large mountain population evolved. This would help laying the context for India's economic journey.

#### **Dr SP Katiyal- Member HP-PERC**

Indian academic institutions have often failed to deliver what is discussed in summits and similar platforms into actionable outcomes. Such extension work was taken forward by the first chief minister of Himachal Pradesh, Shri Y S Parmar, who worked towards taking discourses from the academic institutions to the people at field. Today, there are examples of other extension workers like His Excellency, the governor of Himachal Pradesh, who has followed a model of zero budgeting and taken the initiative to bring policy planners, academicians and farmers together and connect them to the ground realities.

There are several factors that facilitate extension workers in taking initiatives to the grass root level and turning them into successful deliverables. Some of these factors are constant, others are variable. It is the role of academic institutions and other institutions to maintain a balance between diverse stakeholders and also, to involve those people on whose behalf actions are being taken. The active participation of the beneficiary is essential. Therefore, organizations should work at the grassroots. Similarly, what is achieved at the grass roots must be showcased in major platforms.

#### **Sh. SL Mehta, Former DDG (Education), ICAR**

Sustainability of the mountains and younger generation depends on the participation of the younger generation. Twenty years hence, sustainability-related challenges will have some solutions given the support of science and technology that are being employed towards mitigating problems of the existing age. In the current scenario, integrated farming system is best suited and has been adopted as a successful model all over India. However, it is important to note that there are several constraints which have come up in recent past such as population increase which has resulted in decreasing land holdings, market integration, urbanization and so on. Socio-economic changes with larger processes such as globalization, infrastructural development and changing consumption patterns of the population are having accumulated impacts on the agriculture sector.

Although the agriculture sector is moving forward, it is plagued with high expectations from people. In the age of television and social media access, the public holds high demands which are often difficult to match. In order to meet these rising demands, the government has also been taking initiative in establishing institutions to help with new farming methods. Further,

scientists have responded to this call. Today, technological advancement serves as a crucial factor that could be utilized in the new-age of farming, for example, through development of new plant types which can withstand drought. Such new methods have calling given opportunities to grow off-season vegetables, thereby increasing the net income of the farmers. Hence, Himalayan farmers have a lot of scope to grow in the agriculture sector.

Another important change taking place is in packaging and transportation of commodities. The roads are improving, and transportation services are making life more convenient. There are several new opportunities in agriculture with food processing and value addition becoming the most critical for this sector. Post-harvest management has hence assumed great important in increasing income.

Organic farming is another successful model as seen in the case of Sikkim. Nursery production is important. We need to invest in good quality input to ensure the quality of production is good as well. Creating new rural markets is also important for the success of farmers. Ultimately, the aim is to generate high income and employment for the farmers. Establishment of poly-houses is another initiative that can help farmers through the use of technology. Similarly, vertical farming opens numerous possibilities for small households.

It is worth looking into the case of farmers in Myanmar who have adopted bamboo structures in farming to generate high yield. As a consequence, the tourism sector in the mountains is thriving in the presence of unique, high-value mountain products as well as organic farming practices. Popular departmental chains such as Big Bazaar now have special segments where people want valuable healthy food. Hence, there is ample scope to capitalize on the new market.

In such a scenario of high potential for growth, skill development and off-farm employment occupy critical position in the lives of local communities as they can help generate additional income for households. Also, given the fluctuating nature of market demand and supply, systems need to be in place to regularly keep farmers updated on market demand and supply scenarios. This would help mitigate potential losses. Although Infrastructure has been developed, there is always potential for more.

There are several imperatives for change including-

- Blending traditional wisdom with new technology
- Strengthening the value chain from planning and producing to processing and market
- Building an enabling policy environment for investments and business developments
- Improving livelihood of mountain communities in order to reduce migration
- Creating farmer federation groups to bring farmer communities together through initial handholding in order to enable farmers to access better opportunities together.

## **Panelists**

### **Sh. MP Sood, Ex-Commissioner Shimla, IMI member, HP**

Economic scenario ultimately boils down to the development of the people. Similar to the case of Bhutan, the well-being of the next generation mountain people and mountain farmers is the ultimate goal.

If we consider the standard of living 20 years ago, we can notice the tremendous changes that have come about, not only through farming but as a result of the blending synergies of many activities, both on and off-farming. These activities include floriculture, horticulture, pisciculture, agriculture including animal husbandry, etc.

Land holdings in mountains are small; however, there is great potential to harvest them to the optimal level. For example, mountains act as the glass house of other area since they allow the cultivation of several varieties of vegetables, many of which are off-season. In such a scenario, clubbing agriculture with other industries such as mountain tourism, home stays, food processing, and handicrafts could greatly enhance the income of the individual household and help reduce migration from the region.

**Sh. Ranjit Sinha, Secretary- Planning, Uttarakhand.**

An important question to consider when discussing the topic of sustainability is - from whose perspective are we looking? If development is considered as a function of many variables, then balancing those variables becomes a critical exercise. Any policy that is incorporated within the existing governance system takes time to show results. It is important to focus on lasting solutions. For example, education affects across generations and at four dimensions – the individual, the society, the environment and time.

We often talk about connectivity. Our hills are connected with the rest of the world; however, often such a connection is limited at the superficial, surface level? It is important to deepen the connection, both forward and backward. Empowering the youth with cultural roots as well as knowledge is an important step towards creating lasting change. Similarly, our institutions are disconnected. Where it is the education system (private or government schools), funding becomes very important. In order to establish a greater connection across institutions, adequate funding must be provided to all academic institutions and the focus should be on qualitative, rather than quantitative measures.

**Mr. Khathing Luiram, Manager, Idea, Manipur**

Today, the policies of the government and various departments are failing. As a result, agribusiness is not a viable option. There are several challenges at stake such as:

- Lack of credit opportunities
- Lack of option to mortgage property in Manipur and many north-eastern states
- Lack of sufficient banking infrastructure

In order to spur agribusiness, it is very important for the government to design more practical and easily-executable policies. Processes should be made easier for the farmer in order to support his initiative.

**Dr. Kartar Singh Verma, VC Career Point University, Hamirpur, HP**

It has often been observed that there exists a fundamental disconnect between bureaucrats and research institutes. Such a disconnect extends into other stakeholders as well. Hence, there is a need to change one's perspective.

Currently, 67% of the area in the IHR is under the forest cover. One may ask, what is the use of this forest area for people who live in the mountains? There is a clear lack of awareness regarding opportunities. It is essential that the youth is made aware of the potential and the scope to take loans and partake in entrepreneurial activities. We have the technology to support them. Himachal Pradesh is a case in point which has a large forested area, is even considered a forest state. While It has many horticulture nurseries, there exist very few people with higher education in farming. This must change.

**Sh. YS Negi, Agri-Economist, Shoolini University, Solan HP**

Through multiple discussions, the issue of land consolidation for the migrant farmer has emerged as an old problem, but one that is slowly nearing a solution, especially in some place such as West Bengal. A second issue is the question of the “future farmer”. Are we referring to the descendants of the existing farmer or the new generation of entrepreneurs engaging in the farm sector? Both these possibilities show that the farming scenario can change in the future, for the better.

Economics propagates the idea of demand and supply so one must consider these both at the micro and macro level. At the micro level, the only source of capital generation with the farmer is land. This piece of land allows the farmer to invest a certain amount and make additional capital gains from his farming business. Hence, over a period of time, through multiple cycles of investments, there would be some endowment for his future generation. With that perspective in mind, there is sense in starting with small things since Economics has a way of working and from the point-of-view of the farmer, he can foresee the market demand.

From the point-of-view of farmer-need, for example, Darjeeling tea, the same can be achieved in terms of global impact. One cannot expect the future generation to engage in farming activity in the same manner as the past generation given the large variety of professional choices. Hence, the future farmer’s aspirations will be based on his contemporaries who would be engaged in other professions. A farmer would also seek freedom of mobility. Many agricultural operations can be managed from the mobile phone. These are all considerations to keep in mind when imagining the “future farmer”.

**Sh. Mustafa Khan, Swiss Development Corporation, India**

In the context of the Himalayas, there is a rich history of traditional knowledge that has lived for centuries and been passed on through generation. However, with the advent of infrastructure development, large sections of society, including many members of the older generation, seem to be getting disconnected with the traditional knowledge systems and medicinal plants.

Migration is another important trend in the modern world. There are communities that stay behind and prefer to cultivate high-value cash crops with high output, there is a scenario of

high demand which can lead to major challenges, particularly when seen in parallel with out-migration numbers.

Third issue is that of hydropower development and its implication in downstream areas. Since 2012, the number of floods has been on a rise. Hence, information-sharing between upstream and downstream communities is essential as it carries significant economic and social implications including threat to life.

#### Recommendations-

- Climate change adaptation should be made an integral part of the forestry and agricultural plan
- Green bonds for adaptation projects should be taken into consideration

### **Summary of Discussions**

- Zero budget framing model involving all policy makers, academicians, farmers, to see the handoff the experience of that model
- Involve those people who will be benefited, and increase the regional presence of IMI specifically
- With the advent and advancement of science and technology, future challenges will have potential solutions through economic globalization, increasing accessibility, dynamic demography, and improved infrastructure
- Bridging the gap between technology existence and usage for the benefit of farmers
- Improve logistics and transportation system to increase profits for farming community. Other solutions include rural marketing outlets for processed agriculture products, poly house cultivation of vegetables, cultivation of high value, ornamental crops, production in remote areas which would increase availability and affordability of vegetables
- Adoption of high yield crops, vertical strawberry farming, nutritional and medicinal values of species, organic products preferred by customers
- Potential for expanding tourism and organic farming, labeling and certification scheme guarantee, skill development and off-farm employment; training programmes need to be rescheduled according to local conditions; demand and supply scenarios are changing, promote cold chains, market intelligence, quality input chains
- Increase the density of all-weather roads, use of ICT can increase crop production, household income, blending traditional wisdom with new technology, strengthening value chain, enabling the policy for investment
- The synergy of various farm and non-farm activities
- Promotion of low tunnel and high tunnel poly housing
- Helping farmers with financial planning, and make services' financial inclusion accessible
- If we want to develop entrepreneurs, then we need to think about the use of forest, can we ignite the minds of young people, we need to change the perception of young people, build their confidence about technology



- Freedom to move without worrying about the fields, we need to take help of ICT using models adopted across the world
- Implementation of land titling system to allow farmers to avail loan facilities
- Blending traditional wisdom with new technology
- Harnessing of agro-climatic conditions of the Himalayas that provide competitive advantage
- Creation of context-specific policies
- Balancing the interest of various stakeholders
- Skill development and training of manpower
- Using green bonds as a source of finance
- Building the Himalayan brand for better packaging and pricing
- Include climate change discussion in design of future policies
- Enhance food processing activities including cold storage facilities



## TECHNICAL SESSION-IV INTEGRATING SOLUTIONS

Moderator : Sh. Sushil Ramola, President IMI, Delhi

Sh. Sushil Ramola started the session by saying that it would focus primarily on the solutions, the next generation of farmers and their well-being. He said that the objective in this session is to find solutions through which the well-being of farmers can be facilitated, i.e. making them successful, content, and healthy, so that they can realize their aspirations and dreams.

He said that in this session, all the aspects and integration across the many sessions will be assimilated. And the three dimensions across which integration can take place will be discussed. The first, he said, is the integration of the entire ecosystem, i.e., the living organisms and everything in the physical environment and all their interrelations. The well-being of the ecosystem, he said, is facilitated with our own well-being, and this is the first dimension.

The second dimension is the ecological, economic, and equity drivers of change. The equity aspect encompasses social drivers. And the third dimension of integration is across the stakeholders -- from policy-maker on one level to the grassroots players on the other hand and in between is all the other stakeholders and how they work together.

He said that there has been a discussion on climate change and how it impacts farming. And also, on how the ecological dimension affects farming. Under social drivers, it was discussed how rising aspirations, migration, and animal wildlife conflict amongst many others affect agriculture in the mountains. And under economic drivers, how economic disparities exist in the income of farmers. How farmers are protecting the ecosystem services, especially the women, and how they can be provided with compensation.

He said that he would like to raise a challenge as stated by Mr. Atul Khosla -- that if we have to compensate the farming community, we need to double the level of income as compared to our GDP for our farming community in 15 years' time. The challenge is to get our policies, technology, and entrepreneurs to work together for that. And IMI is committed to working on these challenges.

He concluded by saying that he would like to ask the panelists about how the solutions can be integrated in terms of policy, funding, and collaboration, all focused toward building the next generations of farmers. Thus, at the centre, he said, lies the next generation of farming.

### **Dr. Rajan Kotru, Development Specialist, ICIMOD, Nepal**

Dr Rajan said that the policy solution is working with the NITI Aayog with the experience accumulated and looking at policies that are in alignment with each other. He said that often, it is seen that forest policy is not in alignment with agriculture policy. And if we want to look

into Himalayan policies, there is a need to look at where the incompatibility between policies exists. Here comes in cross-sectorial synergy.

The second point he said is policy intelligentsia. He said that we know that many things are always going on at the national and state level. There is a need to find out exactly when the discussions are underway, where the best practices, entrepreneurship knowledge, and best farming practices have to be pitched in, and tap that policy gap. He said that with the experience gained, they were able to work with the NITI Aayog to bring together not just knowledge of eight countries but of the 12 Himalayan states. He said: *"We tried to build a policy narrative as well as how it can be linked to other sectors in the Himalayas -- for instance, how sustainable tourism can lead to other livelihood options."*

The second question, i.e. where the financing/funding is, can be addressed by integration and coherence of investment on the ground; investments as per the land use plan and those mentioned in the earlier sessions about how much we look into our own backyards. He said that the backyard for us here is our entire landscape. There should be a coherence of investments based on the land use plan that gives due place to the farmers who are maintaining our natural and cultural legacy. He said that another point is the Green cess. He said there is an absolute need to lobby for a green cess for the Himalayas by giving the argument of ecosystem services that range right from provisioning to support, to providing cultural services. The third point under funding is that institutions have to come together and lobby. Green cess is a good idea. The third is what we call incentive-based mechanism. This is something based on a management plan in place and the services provided by these farmers has to be recognized under this. These green investments have to flow back to the Himalayan landscape. The fourth point is that India should look into green bonds as it is picking up well in other mountain countries like Nepal. He said that India should look toward green bonds as well as those who invest in the green sector. He said: *"If you look at traditional housing infrastructure and farming structures, they are green."*

Lastly, he spoke in favor of collaborations amongst the mix of institutions. The Himalayas share border with six countries and the security issues in the ghost villages must also be addressed. This is raising security concerns in India. There, he said, we should work as a group of institutions, as a lobbying institution to come together with its ideas to articulate the green development of the Himalayan region.

#### **Sh. Atul Khosla, Pro VC and Economist, Shoolini University, Solan, HP**

Sh. Khosla stated that the first and foremost idea he has regarding policy is consistent policy and this he said has been a challenge for the Himalayan region. He added that this is very relevant as it has different dimensions, be it inter-state, across states, or inter-departmental. Also relevant, he said, is that all new governments should maintain these policies. Farmers subsidy should not be modified by the new government. A coherent national mission for the Himalayas is a great idea to ensure a common way of thinking and to bring synergies

together. He asked: *"Can there be a cabinet minister-level portfolio with a mountain representative driving the national mission of the Himalayas?"*

He added that the second important idea is to build the Himalayan brand, be it for the produce, the green cess, or others. By this he basically meant that we should coherently build a Himalayan brand similar to the Darjeeling tea. Third on policy is the importance of infrastructure. Economy cannot grow without infrastructure. Green cess has to fund infrastructure and infrastructure in turn will push the farmers toward productivity and profit.

In terms of funding, there are some tactical things that could be done. For instance, opening up some privilege funding mechanism for the farmers, opening some preferred banking channels. There needs to be serious lobbying with the Finance Minister and RBI for funds for the Himalayas.

Finally, on the issue of collaboration, he said that many times in discussions, the major businesses are left out. He also said that there cannot be rapid economic and serious growth anywhere in the world without collaborating with major industries. And thus, he concluded: *"I would make one recommendation. Can we somehow get policy-makers to work on these collaborations? Can we have engagement with the chief ministers and governments to be more open to collaborations with industries?"*

#### **Dr. Vincent Darlong, Vice Chancellor, Martin Luther Christian University, Meghalaya**

Dr Darlong started by posing a few questions for the attendees and the panelists. In regard to funding, policies, and collaboration-

Should IMI have a strategic plan (for the next five or 10 years) and based on that,

How should these issues be addressed?

A strategic plan, he said, would give us a clear idea of what we want to achieve.

On funding, He said that we need to be clear on what the funding is for- whether it is for research, managing the organization, or organizing platform like SMDS. Based on this, funding could come in so many different ways. For instance, funding for research could come from many Himalayan universities. Each of the universities could propose a particular research of which IMI could become a partner. He said that if not, we could collaboratively prepare because we have a list of funding agencies with the Government of India and all they need is a proposal especially for the Himalayan region and for the North East. Now, he said, there needs to be clarity on what we mean when we say funding and for what purpose. He said that funding can also come from international agencies.

In the context of policies based on strategic plan, he raised questions on if we wanted new policies, work on the old existing policies, or develop the sector of policies. He also said that many of these issues need to be examined and only then can we clearly articulate and engage in the area of policy.

He further said that as far as collaborations are concerned, we can again have these with several stakeholders -- government, research, educational institutions, and so on. However, when it comes to the North East, our collaborative ideas should go beyond that as large areas are under community control. Building on this understanding, it is very important to explore collaborations with community institutions, traditional village councils, and even district institutions.

He concluded by saying: *"To come back to the first point on strategic plan, i.e., how we would like to move forward and narrow down the areas of funding, collaboration, and policies."*

### **Dr. Lalbiak Ngente, IMI Councilor, Mizoram**

Dr Ngente began his discussion from the statistics on the youth. He stated that today, out of the 7 billion people in the world, around 25 percent are 24 years of age and below and 1.2 billion are between the age of 10-19. He connected the age group categorization to better understand and explain what motivates them, especially in the rural areas where 36 percent of the population is located. The youth, he said, are drawn to urban areas and end up facing difficulties in finding employment. Among the many factors are gender discrimination, access to finances, access to land resources, and most importantly education. He said that therefore, it is upon all of us to work together so that we can bring changes and ensure that the youth are motivated to stay behind while also making a livelihood to carry out farming. He said that to achieve this goal, it is necessary to create a competitive environment where profitable activities can flourish.

In this new trend, he stated that the youth have a fundamental role to play. There is a clear need to develop leadership with a global vision to ignite the mindset of the youth so that the youth can embrace the modernity and contribute to the sustainable development goal of food security, agriculture, and rural prosperity.

On collective funding and collaboration, he stated that the 12 Himalayan states are very diverse and have their own specific issues. And therefore, there is a need for specific solutions to all the different issues.

Ultimately, he said that everyone needs to work together to achieve all this.

### **Dr. Tej Pratap, Councilor IMI-HP, VC APG University, Shimla**

Dr Pratap added to the discussion with the view that focus of the policy must be on consolidation of land holding and value chain development. The farmer community, he said, is a complete chain, right from the community level to capital support. He also asked what the scenario would be like if cooperatives, self-help groups, and other stakeholders came in and utilized the lands of absentee landowners in order to address the market needs.

He concluded by saying that there is a need to have options of livelihood that should be created as there are complexities across the mountain states.



## **Youth Perspectives for the Future Mountain Farming**

### **Moderator**

**Ms. Binita Shah, SDFU, Uttarakhand**

The objective of the session is to talk about the future of mountain farming. Young entrepreneurs, who are well educated, are turning to the lands with innovative farming methods, and new technology to tap into the immense potential that mountain farming has to offer. And they are rightly being called as Agri-preneurs. Highlighting such heroes, who are not job seekers but creators, can inspire many more.

### **Young Agri-preneurs**

#### **Vikram Rawat- Himachal Pradesh**

He is banker by profession and forayed into the field when he did a study on apples. In 2003- purchased land and decided to establish a demonstrative orchard on apples. Along with that developed the infrastructure. Through rain water harvesting, developed water storage with a capacity of 8 lakh liters. He also started slowly organizing the farmers in Kasol, Himachal Pradesh. He initiated the cultivation of exotic vegetables and started cultivating with farmers in 2006 and within 4 years the production had increased by three times. After about 8 years he had 1200 farmers working with him. Today 4400 farmers work with him and 1300 farmers are involved in vegetable cultivation. And all this has been done without any subsidy or government support. The turnover is above 1cr. The employment in the orchards has also increased. One of his two daughters has a degree in B.tech and has been absorbed in the same orchard and is paid as a professional.

For youth farmers all stakeholders from the government, research, NGOs need to help to ensure that the new age farmers get the essential support. The move from traditional to modern technology and equipment is the next big step.

#### **Phangnon Konyak- Nagaland**

She is an agri-entrepreneur and has a group of 31 individuals venturing into the export and import of agri-entrepreneurial products. Nagaland has several local products and has started coffee plantations. The group of 31 of farmers and traders source their requirement directly from the farmers in order to avoid middlemen. They have identified some key commodities- Naga chilly, coffee, honey. They also face unique challenges like an inland depot in Guwahati which is very far and have only one airport. Further, for customs airport one has to go to Guwahati, for which refrigerated trucks are needed. The government is requested to give post-harvest benefits to the farmers along with a request to state ministers and Chief Minister to push to make the airport at Dimapur a customs airport. The group is venturing into exports but the middlemen involved cut the profits of the farmers at the grass root level.

#### **Zenwang Konyak- Nagaland**

He has identified technological problems faced by mountain farmers. With the focus on low cost technological solution, he makes light machinery for farmers especially of hilly areas.

He started when he was in high school he came up with two machines- a tea picking machine and a hydro meter machine. In tea farms a large number of laborers are needed to pluck tea leaves. The department of science and technology is funding the project and it is under production. The Hydro meter machine pumps water and generates electricity and can go up to 1km high. This will help generate electricity in hilly areas through kinetic energy and principle of hydro power which can pump water high up and also generate electricity.

### **T. Thungdemo Ovung- Nagaland**

He is a scientist by profession and a farmer by vocation. Having studied crop biotechnology from UK, he chose to be a farmer because he was always interested in the food industry. Nagaland receives heavy rainfall in monsoon - making it difficult to grow crops. Hence he has introduced new crops that can survive in such environment. Crops like tomatoes can grow in such climate and are in huge demand.

### **Peihauding- Nagaland**

He is currently pursuing his post-graduation is an innovator. He has invented a Plant Organic Absorbing Device(POAD) to extract minerals from plants without cutting it which was his first invention. Another invention is an organic healing paste – which enhances the healing process in plants and also enhances the roots and bark formation during grafting. The first prize awarded by IIT Guwahati for this invention speaks all about it. Currently he is also working on the Bio enhancer made by ingredients from organic sources; it is a fertilizer to ensure soil fertility and development of the plant. He has reached out to 200 farmers by training them about his inventions.

### **Netrapal- Uttarakhand**

He has worked on citrus juices and produced 4 lakh liters of juice in Bauri, Uttarakhand. He wants to work similarly on mangoes. But due to land consolidation there are issues that we face challenges. However, the land consolidation act of 2016- needs to be implemented without which his working process is getting hampered and limiting his work. The implementation can help youth in moving forward.

### **Ajay Rawat-Uttarakhand**

A journalist from Pauri, Uttarakhand he writes about youth and his reporting encourages the youth. He also has a consultancy for people who have come back to farming. Through this consultancy he is also working on layered framing system. They have attempted to do a voluntarily system of land consolidation by putting 2 hectares together. Bio fencing is done to combat the problem of wildlife encroachment on farming land. This layered system of



farming which was initiated about 3 years ago is working as a model, here in the last corner of the field lime is cultivated, followed by large cardamom and kiwi and even *paan* to act as an obstacle to wild animals.

### **Zenorin Stephen Angkang– Manipur**

Zenorin, owner of ‘Hill Wild Chocolate’ has a chocolate making company. She studied Astrophysics and then management and even worked for a software company. After that he went back to Manipur. When people look at northeast, they see it as a pristine exotic place so he was searching for products which are local to the region. Ukhrul, his home district, being a hilly area is not a place where huge industries could have flourished because of the topography of the hills. Hence being a chocolate lover and India being a sweet loving nation he decided to make chocolates infusing local products found in the wild. He first started with pumpkin chocolate. Pumpkin seed has always been available in the area so he decided to utilize it. The second product to be introduced was king chilly chocolates and then a common nut grown on tree. At this point I also started planting trees.

After facing pricing issues initially, this agri-entrepreneur is emerging as a grand success. However pricing and quality management are still his biggest concern. What started as a small enterprise with Rs 2000 now generates Rs 49 lakhs annually.

### **Christopher Lepcha- Kalimpong**

Hailing from Kalimpong, an agricultural district he started farming right after college as he comes from a farming family. At that time in his village everyone else was cultivating ginger as a cash crop and following traditional farming methods. Slowly since 2000 aspirations have gone up so everyone started looking for alternatives to cardamom and ginger which were not producing high yield at that time.

He started with cultivation of *dallae* (round chilly) and also provided them in nurseries in several villages. In the same time, cardamom also vanished from the jungle. Meanwhile *dallae* cultivation proved to be successful and his village went on to become the highest producer of *dallae* in the district. He is also trying to bring innovation in post harvest packaging and finding buyers from cities as far as Delhi. He has now started with horticulture crops like avocado and kiwi.

### **Reuben Gergan-Leh**

An aerospace engineer by training, he has been working on Renewable energy in Ladakh for 8-10 years and one of the initiatives taken was the Implementation of 2500 green houses in the cold desert. This has brought drastic changes in the home owners especially below poverty line home owners being able to gain something. In the last survey it has been found

that they are earning Rs 80,000 more as they sell the vegetables in the market in winter when there is a shortage.

Rocket leaf is a part of Korean cuisine however locals aren't aware of it. Leh being a tourist area, Korean restaurants are coming up and the farmers are readying themselves for such requirements well in advance.

### **Biswajeet Majumdar and Apurba Nath- Tripura**

Apurba Nath comes from an agricultural family and upon completing graduation, decided to do organic farming. For organic farming he already had the materials needed such as cattle, cow dung. They had one acre land and started experimenting on it. He started initially with making two fertilizers and one pesticides using bio pesticides like cow urine. After one year improvements in the cultivation were seen. He collaborated with Biswajeet Majumdar and planned further to replicate this organic farming model. In 2013 they were able to nurture and produce 14 items in total such as rice, vegetable, fishery, compost, poultry etc, over an area of 5 acres of land. 2014-15, they were also awarded Rs.50,000 for coming first by the Government as a success story. In 2015-16 they made a profit of 18 lakhs in farming.

### **Skarma Tokdan, Director Takshos Products Domkhar, Leh**

He is from Domkhar, a remote village in Leh, Ladakh. After doing his graduation in Chandigarh and then masters in social work, he started his career in his native village with parents after doing a short diploma in food processing. The family owned orchard of apricot and he started to think of diverse ways to use apricot. The cover of the apricot used to be thrown away. And I wanted to do something sustainable development with apricot, a term I came to know in my university.

He started a food processing unit in 2003-2005, which was a sustainable unit, and a successful startup. He formed a collective with 18 people called self- reliance cooperative society to have a unified voice on apricot processing and enterprises. With a collective voice, the local hill council paid attention and introduced a research on apricot. The collective bought a land for 4 lakhs and tried for subsidies. On the other end they also contributed Rs100 each in the self- help group. Fortunately, they were also extended help by a Member of Parliament and were able to form a structure. After this in 2014 under the CSR of NHPC project, they were able to receive some machinery.

In 2014 they finally found a buyer in Patanjali. In the first year itself 100 ton of apricot was supplied to Patanjali. Within 3 years they were able to establish a factory worth Rs.1.5 cr. After struggling for 15 years, last 5 years have been happy and successful. He is now a job provider and decision maker in the company. And today he runs a total of three organizations; one of them is Takshos Products. He is also the MD of a cooperative society. And finally he is also the secretary of the Sham belt of Charitable Tribe of the Society. Today he also supplies all variety of vegetable to the army. There are also challenges he continues to

face as Ladakh is cut off from the rest of the World for 6 months. There is also the challenge of non availability of funds. Overall the future of farming remains positive.

### **Ganesh Kala- Uttarakhand**

For the last 18 years he has been working in Uttarakhand in community development work but is originally from Uttar Pradesh. In the last year he established social enterprises and laid a foundation to address gaps and explore more potential. This foundation is divided into five domains- health, livelihood, learning, science and spirituality. Additionally the traditional knowledge and belief system of the mountains is also seen from the perspective of development. Through this newly established program he will give training and consultancy to youth on social entrepreneurship.

**Day 3 (5<sup>th</sup> Oct 2018, Friday)**  
**VALEDICTORY SESSION**  
(Venue: APJ Hall in G-Block, Shoolini University)

## **VALEDICTORY SESSION**

**Chief Guest – Dr Rajiv Saizal, Hon’ble Minister for Social Justice and Emp. and Coop. Govt. of Himachal Pradesh**

**Guest of Honour - Prof SL Mehta, Ex. Vice Chancellor MPUAT, Udaipur & Former DDG Education ICAR)**

The Valedictory session began with the arrival of the Chief Guest, Dr. Rajiv Saizal, and the Guest of Honour, Prof S. L. Mehta.

The Welcome address was given by Sh.PK Khosla who appreciated the efforts to organize the conference and brought a formal close to the Sustainable Mountain Development Summit VII. The Summit, held over two-day invigorating sessions, saw several interesting discussions, with the major focus on policy development to improve the life and livelihood of mountain farm communities while enhancing the sustainability of the ecological system. Dialogues between people were organized in a way that reflected the rich regional diversity of the Himalayas and the varied experiences of participants in relation to the modernization and development processes in the region.

A documentary on the life of Dr. R.S. Tolia, Founder President of IMI and a visionary, was shown as a tribute to him.

The baton for SMDS VIII was passed on to Meghalaya and with this the curtain was drawn to SMDS VII



## **Presentation of outcomes and recommendations by Sh Sushil Ramola, President IMI**

The summit discussed various challenges that mountain people face and understood how these challenges can overcome if all the mountain states come together. Whereas there are pockets of challenges and gloom, there is bright ray of hope and none of that was represented better than the last session on 15 agri-entrepreneurs who had chosen to be new-age farmers after receiving good education and working with best organizations outside their regions. Mostly, as a result of their rural backgrounds and calling, they felt an obligation to return to the roots where they belonged. This is the ray of hope - these young entrepreneurs who are working in 10 different areas in the Himalayan region, right from kiwi wine-making to exotic farming.

Various recommendations that have come out of the sessions are listed below:

### **Session-I Ecological drivers of change**

- Establishing commission for farmers for monthly income based on the minimum guarantee model
- Redefining the type of cropping pattern
- Identify people/agencies that have access to resources
- Integrate forests and livestock
- Recognize, understand and study traditional practices in shifting cultivation which are environmentally sound
- Compensate Himalayas communities for the ecosystem services that they provide
- Preserve natural water sources and improve efficiency in water governance, especially for agricultural sector
- Conceive a holistic approach to address the problem of human wildlife conflict

### **Session-II Social drivers of change**

- Design policies that would enable consolidation and productive use of land, and ensure implementation
- Absorb appropriate technology and create linkages to deal with issues related to lack of labour availability
- Use advocacy and communication mediums to promote role models through sharing of success stories to regain the place of pride for the agriculture sector
- Popularise traditional culture and preserve traditional knowledge systems
- Understand the local food chain, and synchronise with nature and wildlife
- Promote farm-based folk history in schools and amongst the public

- Train youths to complement agriculture with entrepreneurial opportunities such as eco-tourism, medical tourism, restaurant business, livestock rearing etc.
- Focus on the role of women play in preserving ecology and agriculture

### **Session-III Economic drivers of change**

- Compensate farmers for the discriminating decrease in their incomes over the years through an income support programme
- Provide economic value to the efforts of the farmers, particularly value in the agriculture economy and compensation for preserving ecology
- Create a National Mission to realise the various synergies that exist between forestry, water and agriculture.
- Create rural marketing outlets for processed agricultural products
- Scale up successful experiments and provide value additions and market linkages
- Synergise mountain farming with other activities based on the needs of the region

### **Session-IV Integrating Solutions**

#### **Policy**

- Bring out best practices to fill the policy gaps and incompatibilities
- Develop people-oriented policies which encourage multiple options for livelihood and take care of carrying capacity of ecosystem
- Emphasis on green sector and green infrastructure leaving space for states to articulate it
- Strategic planning for 10-15 years to provide a road map for the next generation of farmers
- Develop holistic research proposals with Himalayan universities & IMI partnership
- Integrate all stakeholders at policy level government. departments, academia, universities, private sector, NGOs and farmer groups
- Policy for consolidation can productive use of shrinking land holdings
- Move from control regulation to incentive-based policies

#### **Funding:**

- Re-case allocated funds based on development disability of mountains and deployment of the same to farmers and rural communities.
- Innovate funding mechanisms for farmers that can open up traditional banking options

- Adopt green cess/bonus in the Himalayan region to incentivize the farmers towards entrepreneurship along with infrastructural development and support
- Encourage green investments for the Himalayan agri-based entrepreneur
- Integrate investments at ground level as per the land use pattern so that benefit goes to the deserving people including farmers and women self-help groups.
- Create a coherent National mission for development in the Himalayas to ensure economic and social equity, including GST and other taxation mechanisms
- Lobby with the Finance Ministry and 15<sup>th</sup> Finance Commission to explore funding channels for Himalayas
- Aggregate needs into loans and grants through Indian and international banking systems, CSR etc.

### **Partnerships and Collaborations:**

- Create business plans for the preservation and conservation of the landscapes and not piecemeal initiatives
- Create collaboration between institutions that are committed to the mountain regions on national and international level
- Collaborate with industries and service sectors to realise the natural assets and potential of mountain regions
- Collaborate between different institutions as the Himalayas share border with six countries; transnational institutions should be encouraged to come together with their ideas to articulate the green development of the Himalayan region
- Encourage Himalayan states to come together to realize and deliver value to the mountain people for eco-system services
- Build “Brand Himalayas”

For billions of years, our planet has survived, the climate has been changing, the earth has been doing through transitions. Populations have been wiped out before as well. Humans need to worry and protect themselves, environment will protect itself. Therefore, what is required is a change in thinking. Earlier approaches will not work. And as Einstein said, “We cannot solve the problems that we face today, with the same thinking with which we created those problems.”

### **Address by the Chief Guest- Dr Rajiv Saijal, Hon’ble Minister for Social Justice, Empowerment and Cooperative, Govt. of Himachal Pradesh**

Dr. Rajiv Saijal complemented the achievements and sincere efforts of IMI for the past 7 years and expressed his desire to see the successful fruition of the recommendations in the form of policies based on the discussions at the Summit. He recognized the occasion as one that enables every to learn and acknowledge the need to act before it gets too late. India is a country of diversity from the sky-touching Himalayas in the north to the feet-touching seas in the south, to

the rain states of east to arid deserts in west. Mid-India is highly dependent on rains. Hence, policies must be devised keeping such rich diversity in mind. The Himalayan people have a simple mindset and golden hearts despite the challenging climate and ecology here. He stressed that we must make policies keeping in mind the ecology of mountains. For instance, large amount of rainfall in the region has adversely affected crops, properties and livestock.

He congratulated IMI for taking this initiative on sustainable development theme. It is a far-sighted approach to provide social security, increasing their income, encouraging non-farming ways to earn. The last stage is to implement these recommendations and see results. Thus, people would like to incorporate new ways used by farmers in UP and Gujarat. To make giant leaps one needs to take small steps first and that has been taken here. Expectations of people are increasing, the government is also becoming aware, and hence, we can expect better policies in the near future.

**Address by Guest of Honour, Prof SL Mehta, Ex Vice Chancellor MPUAT, Udaipur & Former DGE Education ICAR**

Prof. Mehta appreciated the session by agri-entrepreneurs. He said the sessions gives a hope of a bright future. He said development in science and technology is taking place at a very rapid rate, therefore we need to find solutions but what is needed to be emphasized upon is social development. In the 1960s, all governments focused on universities, but the attention has now dwindled. Most agri-universities who lost their status and recognition are no more investing sufficient funds for infrastructure and agriculture promotion. We need to have linkage among different stakeholders including farmers. They are innovative thus; we need to learn from them. The journey is long, and the aspirations are high. Any program will succeed if the focus is on increasing the livelihood and income of the people. There will be a major jump in income which will accompany value addition. If every state can have thousands of such young agri-entrepreneurs, we can see a rapid growth in the economy and lives of the Himalayan people. They will usher in prosperity. He shared that presently he is positioned in Myanmar and the country is far behind when it comes to development and needs help of other countries including India.

**Vote of thanks by Prof Sunil Puri, Registrar, Shoolini University**

Prof Sunil Puri spoke about the need for the upliftment of the people of the mountains. The views and feelings expressed by guests are a treasure and the presence of the chief guests, key speakers, panelists, delegates and their reviews, finding and researches have only strengthened the purpose of the Summit. He appreciated IMI for organizing SMDS and said an event of this magnitude cannot happen overnight. The wheels started moving long time back with IMI and Shoolini University's PK Khosla, with extensive planning and execution to make it a success. He thanked all the supporters, media and press for their presence and support.