PUNE INTERNATIONAL CENTRE

Progressive Maharashtra

POLICY ROAD MAP 2019 - 24

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Contents

Foreword

Dear Friends,

It gives us great pleasure to place before you 'Progressive Maharashtra', a Pune International Centre publication that aims to serve as a policy idea bank for the manifestos of the political parties for the forthcoming 2019 state assembly elections.

These policy proposals contained in this paper have been contributed by distinguished experts of their respective fields and deals with the important issues faced by the state of Maharashtra. A similar publication was also released by PIC before the 2014 elections that had received wide bipartisan appreciation and media coverage from the major national and regional publications.

Since 2014, the world economic order is changing rapidly: globalisation is coming under threat as the major economies are turning protectionist, the environment and climate challenges keep getting grave by the day, and new technologies such as Industry 4.0, electric vehicles, artificial intelligence will change the future of work and industry. Maharashtra, as India's leading industrial state, as a major hub of agricultural and horticultural sector, a large service economy led by Information Technology (IT) companies, and a major learning and education hub will be affected by these changes.

The state faces many other challenges due to increased urbanisation, the need for ensuring balanced regional growth, the depleting water levels, provisioning the supply of quality healthcare and education, and ensuring the welfare of the large tribal population.

We believe that Maharashtra is at the crossroad of these unique opportunities and challenges. Despite all the achievements of the state so far, we have a long way to go fulfill our potential and the legitimate aspirations of our population. Currently we have a window of opportunity to adopt technology and to drive growth that will help us meet our societal obligations of creating a just and prosperous state. The 15 research-backed and balanced policy proposals in this volume are structured around big ideas of accelerating growth, embracing new technology, improving equity, augmenting state capacity, and providing energy and environmental sustainability.

PIC is an independent policy research think tank, and we at PIC hope that this volume, like our earlier effort, would provide inputs to the manifestos of political parties and also help to create consensus towards the needed policy reforms. We are very grateful to the distinguished experts who have contributed to this volume through their scholarship and deep knowledge. Prof. Pradeep Apte, noted economist and a PIC member, led the effort to bring the volume together. In this endeavour, he was ably assisted by Shri. Vishal Gaikwad and the PIC team led by Ms. Kiran Pardeshi who worked tirelessly to put together this report. Mr. Mayur Chaudhari and Mr. Abhishek Khomane from the PIC Policy Research Coordination team contributed to editing work. Dr. Abhay Tilak, Director, Indian School of Political Economic, & Shri Sanjay Jadhav made possible an excellent Marathi translation of this publication and Ms. Falguni Gokhale, PIC Founder Member, conceived the design for this report. We are very thankful for their special efforts.

Finally, we hope that Progressive Maharashtra will be extensively discussed and debated in public. Our hope is for a strong consensus to be evolved so that the next government will be able to take us towards the realisation of a fair, inclusive, and progressive Maharashtra.

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Section 1

Seizing the New Ideas

Maharashtra has been a leading 'Industrial State' and has long been a harbinger of progressive social movements. In the present times when the Indian economy and society as a whole is experiencing several transformations (e.g. rapid global integration, unified national markets through GST, new modalities of doing business facilitated by technology and improved infrastructure) Maharashtra should endeavor to provide its leadership with innovative and progressive initiatives.

Maharashtra is integral to India's efforts to become a truly developed nation. It is home to approximately one out of every ten Indians, and is responsible for fifteen percent of India's annual economic output. By any measure, India's overall development is simply not possible without Maharashtra's.

In fact, Maharashtra needs to aim even higher. Some years ago, the Economist magazine ran an analysis, comparing each state in India to the nation that was closest to that state in terms of economic output, population and output per capita. Maharashtra had the same economic output as Singapore, the same number of people within it as Mexico, and the same level of economic output per capita as Sri Lanka.

What should Maharashtra's aspirations be today, and how might the state achieve them? If one were to set a somewhat conservative target over the medium term, Maharashtra should aim for achieving its citizens the same economic output per income capita as do upper middle income nations today and should therefore aim to be at the cusp of being a developed economy.

For this to be realized, Maharashtra has to make stellar progress on several fronts:

We propose a number of innovative policy initiatives for important states aimed at the new challenges that confront Maharashtra today. The aim is to accelerate the size and spread of the benefits of a new phase of industrial transformation.

Some of the suggested recommendations deal with issues that have a historical legacy e.g. land-rights, balanced regional development, and a sustainable use of the natural resource endowments of Maharashtra. Tribal development and health policy in addition to these legacy cum chronic issues present a complex mix of inter-related problems; it is therefore necessary to attain new dimensions of policy options in areas such as climate-change, urban governance and local government finances, judicial reforms and administrative reforms and more importantly challenges pushed by Industry 4.0.

This paper also deals with some novel ideas which deserve serious reflection and potential experimentation. These may be found in 'Rewarding gifted children' and 'New energy options on Horizon'.

We believe that sustained economic prosperity needs a predictive, stable, sustainable yet dynamic institutional framework. In the following pages we have identified a number of measures that will help Maharashtra march towards these objectives.

One of the glaring problems that confront policy makers today is information and data gaps. Relatively little information is available with which government can make informed decisions, and whatever little data is available only becomes so with a significant time lag.

Responsive Policy: Database and Information Requirement

The ability to make policy and the quality of policy responsiveness hinges heavily on the access to credible information. In last few decades, government agencies have failed to evolve the necessary mechanism and apparatus required for generating and analyzing data. Price support and market intervention schemes attempted for 'tur dal' in Maharashtra are a classic illustration of data inadequacies that have resulted in misguided interventions with disastrous consequences. These misfired interventions are almost solely due to a lack of credible data.

There are many data needs which arise with a rapidly changing economy. With the 73rd and 74th amendment, local body governance is expected to play a crucial role in the provisioning of several public goods as well as services and infrastructure.

The administrative and financial capacity of these local body governments need to be carefully assessed and assisted on an ongoing basis, reflecting what we know of their current needs, but also equipping them to deal with a rapidly changing environment. In order to achieve this efficient functioning and provisioning, local governance needs a variety of data/information that is timely and credible.

Balanced regional development and tribal development too need a fresh look and bold initiatives. We make some of these recommendations in what follows.

Regional Growth

It is necessary to recognize that a sustainable growth strategy based on asset-creation complimented with egalitarian provisioning of public goods, along with a regional comparative advantage is key for balanced regional growth.

Balanced regional development: The High Power committee on balanced regional development has emphasized the need for infrastructure-based integration of less developed regions as a necessary

ingredient to leverage comparative advantage of lagging regions. Thus, the goal of balanced regional development and future industrialization should find a natural convergence through such policy design.

- The idea of government-driven backlog removal also needs to be revisited in view of the changing investment scenario in these post- liberalisation times. Development is no more a hostage to government investment since private investment has come along in a big way and has proved to be a very important growth driver. A pertinent example of this infrastructure based integration would be recommending lower power tariffs to attract industries to Vidarbha and Marathwada.

  One notes that while the adjoining Chhattisgarh offers rates as low as Rs 4.5 per unit, in Vidarbha the cost goes up to Rs 10 per unit. The lowering of these rates has been a long standing demand of Vidarbha's industrial and political activists.

- On the issue of regional Development Boards, the Kelkar committee has recommended that the Chief Minister himself must be made the Chairman for effective channeling of funds and supervision of development projects as well as for better accountability. It also recommends more autonomy for them.

- The Kelkar committee also acknowledged that the state needs cutting-edge development approach for different regions since they have different socio-political and economic realities. For example in Vidarbha, mining, forests and tourism are the sectors with the highest potential for development. And in Marathwada, horticulture, iron industry and solar farming could well be the sectors that act as engines for growth.

- The Kelkar Committee also has a radical recommendation about extending the Sarva Shiksha Abhiyan from current Standard VIII up to Standard X across the state. It suggests what's called a "voucher scheme" for youths that blends their regular post-matriculation education with training in different schemes.

- Similarly special recommendations have also been made for improvement and universalization of health services and the provisioning of at least primary and secondary education across the state, with a special emphasis on malnutrition-affected areas like Gadchiroli, Melghat, Nandurbar, etc.

- Tourism in Vidarbha needs to be brought under special focus even if it requires a separate tourism board to be set up for it.

- Acknowledging the many difficulties and complexities involved in implementing all of this, the committee has set different time-frames for different sectors of development, instead of suggesting a uniform deadline for all.

Elimination of economics backwardness requires a multi-pronged strategy.

(i) Accelerated equalization of public goods delivered by state government (e.g. drinking water, education up to 12th standard, affordable and reliable primary health care etc.)

(ii) Leveraging the regional comparative advantage by removing policy induced barriers inherited from the past (e.g. realistic definition of forest cover which holds back many projects.

(iii) Recognizing the responsibility and the role of the union government in some critical areas such as railways, proposed locations of defense production establishments.

(iv) Infrastructural projects that boost east-west connectivity by roads leading up to coastal regions with multi modal mix.

(v) Crop-pattern and irrigation techniques based shift in promoting new agriculture.

(vi) Promotion of large scale solar energy projects in the Marathwada region.

It is equally necessary to recognize that state investments and policy reforms must be an impulse to accelerate private investment significantly.

Moreover Maharashtra state should envisage administrative reforms in enabling a third tier of government. The state government should consider the re-organization of the present set-up of the developmental board on the pathway outlined by Kelkar committee to make them influential and meaningful in addressing the needs of balanced regional development.

Tribal Development:

The tribal population in Maharashtra State is 9.35 percent of its total population as per the 2011 census. There are 181 tribes declared as scheduled tribes for the State by Presidential Order in 1950. The tribal population is spread over 13 districts of Maharashtra and some tribal pockets are in remaining, usually adjoining, districts.

- There is a need of redefining Scheduled Area in Maharashtra State and a proposal as per guidelines from the Central Government needs to be sent for notification.

- Tribal Development Department is the Nodal Department for the State for the purpose of tribal development and it works through other Line Departments. Necessary funds are provided to Line Departments for the purpose of implementation of Tribal welfare schemes. The Nodal Department has a meager presence of field functionaries to monitor the implementation of schemes meant for tribals by Line Departments. Feedback system from Line Departments to the Nodal Department needs improvement and the problems are faced even in compilation and severing of information from Line Departments as those departments also undertake schemes/work for Non-tribals. Hence, it becomes difficult to assess fund utilization and actual benefits sought by tribals.

- Hence, there is a need of devising a mechanism (technology based as well as physical) to collate and analyse feedback/information from Line Departments vis a vis expenditure meant for tribals.

- There is a need for a permanent forum inclusive of eminent personalities in science, arts, commerce, industries, education etc. This forum needs to be established to devise schemes for tribal development to handle the dichotomy in main streaming and culture conservation to guide the Government and to suggest changes on the basis of feedbacks.

- A well thought out system of valid Tribe Certificates needs to be set up to avoid hurdles for genuine tribes and to identify claims that are not genuine through necessary amendments in concerned laws and rules.

- A State level intervention for innovative Skill training, Livelihood Training, Incubation (technical and non-technical), Hand holding and structural help system needs to be devised.

- A district level office and mechanism needs to be established to look after tribal welfare schemes and implementation.

- Sukhthankar Committee (1991) had recommended provision of Tribal budget to the tune of per cent tribal population in the State which was accepted and implemented by the State Government. It would be useful if this compulsion is made legally binding. Further, the concerned law can deal with the issues like time extension for lapsing financial provisions, allocation of committed liabilities etc.

- Hence, a law compelling population dependent share as annual tribal budget needs to be passed.

- Uniform scheme for all tribals from all regions may lead to noncompliance of the objectives of the scheme.

- The criterion like tribe, geography, language etc. can be considered while framing the schemes.

- Hence, it is required to frame the schemes on the basis of criterion like tribe, language, geography etc.

- All hamlets / padas need to be declared as PESA villages and it would be advisable to appoint a local youth to work as secretary who would be a catalyst for the development of that particular habitation.

- It would be desirable to have a separate authority be created for health facilities and nutrition related interventions in tribal areas with full administrative and budgetary control.

Global Integration and Industry 4.0 preparedness

Slower growth of the manufacturing sector is the most worrying constraint that haunts India's economic development. Maharashtra with its wider, more diversified industrial base should take the lead in triggering new initiatives for the forthcoming era of industrialization. This can be accomplished by focusing on two major types of initiatives:

(i) Rapidly developing infrastructural facilities necessary for better dynamic integration with global value chain across world markets.
And
(ii) Embracing and coping with Industry 4.0

Such 'leap - frogging' to a new era of Industry 4.0 needs :
(a) The development of a series of major and medium ports across the coastal region of Maharashtra
(b) Developing East-West connectivity by road and rail.
(c) Revamping of land related legislative framework for flexible and seamless functioning of land markets including agricultural land and availability of land for several possible non-agricultural purposes.
(d) Development of a reliable water-grid across basins and sub-basins complemented by mandatory water recycling and conservation technologies.

We hope that these proposals mentioned in the PIC policy paper afford a refreshing and novel menu of policy options. We appeal to political parties, leaders, policy makers and social organizations to consider them and provide their reflections and responses.

These coming elections have provided us with an opportunity to present a policy document for the all around prosperous development of Maharashtra. We hope it will be of use.

Section 2

Policy Recommendations: Road Map 2019-24

Fourth Industrial Revolution

In the second decade of the 21st century, the manufacturing industry is undergoing a major technological revolution that is changing how products are designed, manufactured and distributed. This rapid, end-to-end digitization of all physical assets and their integration into digital ecosystems is a part of the fourth industrial revolution (Industry 4.0). Industry 4.0 promises a new frontier in the manufacturing sector, with enhanced value creation through higher productivity and efficiency throughout the value chain.

Maharashtra is the leading industrialized state in the country with a Gross State Domestic Product (GSDP) of INR 24.97 lakh crore (US$387 billion) which accounted for 15.01% of the country's GDP in 2017-18. The economy of Maharashtra is mainly driven by manufacturing, finance, international trade, technology, petroleum, and IT. The state is on a mission to become a 1 trillion USD economy. Maharashtra has also set the target to achieve 13 percent growth in the manufacturing sector, attract investments worth INR 10 lakh crore by 2023-24, and create employment opportunities for 40 lakh people by 2023-24.

The Government of Maharashtra (GOM) has identified several thrust areas in manufacturing, which include, EV, Aerospace, Defense, Green Energy, ESDM, IT, Biotechnology, Medical Devices, Textile, Food Processing, and Logistics. All these areas require the adoption of Industry 4.0 across the value chain to keep the industry globally competitive. Considering the importance of Industry 4.0, GOM should help create an ecosystem that will promote the development, application and widespread use of emerging Industry 4.0 technologies.

- Industry 4.0 is vital to achieving India's long-term vision of augmenting the share of manufacturing in the GDP from the current 17% to 25% by 2022. Maharashtra can play a leading role in boosting the manufacturing sector in India to achieve this goal.

- We highlight the opportunities and challenges of Industry 4.0 adoption in Maharashtra, along with policy recommendations to build the aforementioned ecosystem with the partnership between the GOM, enterprises, and institutions, be they academic or financial. We also explain the role of each of these stakeholders to make manufacturing in Maharashtra flourish on the back of advanced Industry 4.0 technology and next-generation leadership and talent.

The Opportunity

- The technologies that enable Industry 4.0 include smart sensors, automation devices, advanced robots, Internet of Things (IoT), cloud computing, location detection technologies, human-machine interfaces, augmented reality, 3D printing, artificial intelligence (AI), big data analytics, and mobile devices, among others.

While Industry 3.0 focused on automation of single machines and processes, Industry 4.0 connects machines and IT systems on a cyber - physical platform in the entire value chain of manufacturing. The machines not only interact with one another using the internet but also analyze critical data, predict failure improving the overall efficiency of the systems, and minimizing risks.

Industry 4.0 offers benefits of cost reduction, higher efficiency, safer factories, and faster speed to market. Industry 4.0 can provide Maharashtra's manufacturing sector the much-needed platform to stay competitive in the global market.

The Challenges

Widespread implementation of Industry 4.0 in Maharashtra is still at its infancy compared to its global peers. To progress, we will have to deal with several challenges.

- Building smart, connected, and intelligent Industry 4.0 factories would require significant capital investment to bring transformation in the entire value chain of manufacturing.

- Micro, Small and Medium Enterprises (MSME) that form the base of the manufacturing sector face several obstacles to participate in Industry 4.0. Some of these include lack of awareness, inability to buy & develop technology, inability to attract highly skilled talent, lack of capacity to collect and integrate data into ERP/CRM database, lack of proficiency of shop floor workers in the English language, and fear of job losses.

- The current workforce and leadership need to build skills and expertise in new-age technologies, which are evolving and changing rapidly. An industry with legacy systems, obsolete workforce, and the lack of business leaders who are ready for the Industry 4.0 era will hinder widespread adoption Industry 4.0.

- Enterprises are concerned about cyber security as one of the top risks associated with the adoption of Industry 4.0. This concern will have to be dealt with expeditiously and effectively.

- GOM should play a pivotal role in creating promotional policies with thoughtful regulations to promote adoption of Industry 4.0 in Maharashtra to make the local industry globally competitive.

Suitably incentivized public-private partnerships for this purpose should be created. A good example of this is the IITB-Monash Research Academy based in Mumbai. A large number of private sector industry partners are exploring research in exponential technology. GOM should promote such partnerships in all Government funded higher education and research institutions.

- GOM must play a crucial role of a technology promoter, strategic partner, and a first buyer of the new exponential technology through innovative public-private partnerships.

MSME

- MSME the backbone of Maharashtra's economy. With more than 3 million MSMEs, the state has the largest number of MSMEs in the country, which contributes more than 80 percent of the total employment and 40% of the exports.

- However, MSME segment has very little access to technology due to the high barrier of cost, inadequate know-how, lack of digital infrastructure, and lack of adequate cyber security solutions. Putting the Maharashtra MSME sector at the forefront of the fourth industrial revolution will need a significant push in terms of funds, infrastructure, technical expertise, and exposure — areas where the Government's intervention can make a substantial impact.

- At a national level, GOI has set up SAMARTH Udyog Bharat 4.0 as an Industry 4.0 initiative. It has supported the following four Common Engineering Facility Centres for industry 4.0, one of which is in Maharasthra.

- Center for Industry 4.0 (C4i4) Lab, Pune.

- IITD - AIA Foundation for Smart Manufacturing, Delhi.

- 4.0 India at IISc Factory R&D Platform, Bangaluru.

- Smart Manufacturing Demo & Development Cell at CMTI, Bangaluru.

- GOM should set up platforms with manufacturers, vendors and customers as the main stakeholders and with experimental and demonstration centres for Industry 4.0 with the objective of spreading awareness as well as also networking optimally for resource sharing, providing common platform of industry 4.0.

Policy Recommendations

Skilling

With the advent of Industry 4.0, some jobs will disappear, some jobs will be transformed, and some new jobs will be created with a pace that has not been seen before. The availability of adequate talent – both at a strategic leadership level as well as on the factory floor will be a top priority as Maharashtra travels the path towards Industry 4.0 transformation. Enterprises are likely to create several new roles, which will require Industry 4.0-ready skilled labor force. Re-skilling and up-skilling in Industry 4.0 will have to be done with a mission mode.

- Skills and expertise in the areas of Industry 4.0 technologies, such as data analytics, robotics, machine learning, AI, cloud, Industrial IoT, additive manufacturing, etc. need to be developed and offered through collaborative efforts of GOM, industry and academia.

- The present-day workforce would need to be re-engineered to fill new roles arising due to Industry 4.0. The next-gen worker needs to be digitally strong and have a clear understanding of the domain and have problem-solving abilities.

- Maharashtra would need to develop a robust training infrastructure to ensure the up-skilling of its existing workforce. Any worker operating in a smart factory will be required to have an understanding of practical as well as engineering and programming skills.

- Computer literacy with understanding of work in common programming languages will be an essential skill in the future. Both of these skills require extensive education, training, and professional development. GOM should play an active role by mandating relevant curriculum in educational institutes as well as in the vocational training infrastructure.

Industry: Public-Private Partnership

- Maharashtra is one of the leading manufacturing and IT destinations in India and houses some of the world's largest companies. Maharashtra's IT expertise, along with infrastructure, can now be leveraged locally to catalyze Industry 4.0 adoption in Maharashtra and India. Industry should invest in developing new-age technology solutions to create a deep convergence of cyber and physical systems. Industry should increase their focus on international partnerships in diverse forms.

- The industry must be an active partner to the GOM in skilling and research in the areas of Industry 4.0.

- More specifically, GOM can have a three pronged approach in term of building awareness, platform and projects. Creation of digital ecosystems based on The Open Source Platform, accelerating time-to-market using SaaS approach (Software as a Service), facilitating SME's access to innovative digital services without having them to invest on expensive infrastructures or licences will be the key. Further promoting tools, systems and approaches that can be effectively integrated within the SMEs production, with a special focus on production performance monitoring systems to gather data to streamline processes will be another key.

- Centers of excellence (CoEs) in Industry 4.0 technologies should be set up in Maharashtra. The CoEs can support in (a) evaluation and implementation of state-of-the-art Industry 4.0 technologies, (b) development of products, prototypes and patentable solutions in the field of Industry 4.0, and (c) developing Industry 4.0 specific solutions, industrial automation, human-machine cooperation, and self-optimizing production systems. CoEs can also provide practical examples from businesses nationwide, make concrete recommendations for action, and provide a test bed for startups and organizations. For example, NASSCOM, along with the Ministry of Electronics & Information Technology (MeiTY), Government of India, Government of Karnataka and ERNET, has set-up the CoE of IoT in Bengaluru. The CoE–IoT is an IoT startup accelerator that is attempting to build an IoT ecosystem, connecting various entities such as startups, enterprises, venture capitalists, Government, and academia. Centers like CoE-IoT will enable startups to emerge in the areas of IoT, big data, AR/VR, AI, and robotics.

- To support these endeavours, a Rs. 500 crore Maharashtra State Industry 4.0 Transformation Fund should be set up, which, apart from other promotional activities can provide loans with a subsidised interest rate to MSME for digital transformation to make them Industry 4.0 ready.

- **Startups**

- The startup policy announced by GOM recently has gone an extra mile to give preference to exponential technology-led startups, changing the tendering process for the startups and also mandating industry meeting certain conditions to have minimum 10% of their public procurement from startups. Maharashtra can further invest in establishing startup incubators dedicated to Industry 4.0 in every major city of Maharashtra in the areas of IoT, Robotics, AI, AR/VR and other exponential technologies. Further startups will have to be integrated in the entire Industry 4.0 transformations. For instance, in China, Sense Time, an AI startup, is helping academia to build AI labs, basic AI textbooks and promote educational transformation.

Industry Associations

- Industry associations in Maharashtra should take upon themselves the take of adapting and embracing the Industry 4.0 agenda since the window left for adjustments is limited.

- At a national level, some initiatives have been taken for reskilling on Industry 4.0 technologies and their potential applications for the entire workforce. For example, NASSCOM is working with IT/BPM companies (such as TCS, Infosys, and Accenture) and academia to create a NASSCOM-branded learning platform to reskill/skill 1.5–2 million people on next-gen technologies within 4–5 years. Similarly, FICCI has developed a technology platform Resource Integration of Sustainable Employment (RISE) to strengthen the process mechanism of the skill development ecosystem using big data analytics. The platform is intended to help policymakers and industry to strategize for the future requirements of the skilled workforce.

- We need aggressive initiatives at state level Industry associations and individual companies in Maharashtra. They can work towards creating a collaborative learning ecosystem in their respective sectors to a skilled workforce and students on the latest technologies. Recently, MCCIA has identified an approach to help drive the adoption of smart manufacturing in MSMEs based in Pune. It wants to create an Industry 4.0 platform by bringing MSMEs interested in the adoption of Industry 4.0, experts, and companies having an industry 4.0 solution together. GOM can support not only MCCIA, but also other initiatives to pilot and scale the effort across Maharashtra.

Academia

- Immediate state wise audit of all the higher educational, technological institutions in Maharashtra should be undertaken to understand the current level of preparedness in terms of exponential technologies and Industry 4.0. In-depth analysis for each sector should be carried out to understand the needs of the future and to launch programs to develop new skills and competencies.

- Academia must lead to open disruptions such as open knowledge (Udacity, Coursera, Khan Academy), open-source development/collaboration (GitHub), open innovation (Quirky) and open research (Materials project, OSDD). For example, to make AI accessible to everyone, Tech Mahindra, along with AT&T and the Linux Foundation, has launched a user-centric, open-source platform called Acumos. The idea is to make this available to universities and colleges, as well as school students, and create a library of AI solutions that people can use. AI can be made simple, in a way that even people in small towns and villages can create businesses using it as they are doing today with the mobile phone.

- GOM must mandate Industry 4.0 oriented curriculum in state-driven education boards at a graduate level. There is a need to enhance the quality of teachers and modernize learning infrastructure.

- GOM should set-up high-quality career counseling centers in leading academic institution to help students (and their parents) compete in the emerging dynamic job market.

- Besides reskilling the current workforces, a futuristic view of building Industry 4.0 talent pipeline will have to be taken. Take AI as an example. China is trying to build AI capacity from school level education itself. For instance, a10-volume AI textbook series designed for primary and secondary school students in China was launched in 2019. Artificial Intelligence Experiment Materials is a 33-volume textbook series that was published for Chinese schools in 2018.

Global Collaborations

- GOM and industry must also seek global collaborations. The World Economic Forum - Centre for the Fourth Industrial Revolution has already been set up in San Francisco. As a sister center, World Economic Forum - Centre for the Fourth Industrial Revolution in India (C4IR), is proposed to be set up in Maharashtra. The C4IR will allow policymakers and leaders in India to stay ahead of the curve by gaining unique insights into new forms of governance and new technology applications and connect with cutting-edge technology innovators globally. The C4IR should also have focused studies on the dynamics of creation and destruction of jobs, allied issues on skilling, and develop India specific Industry 4.0 framework.

To Conclude

- Using its comparative advantages, Maharashtra can ensure a competitive future for Maharashtra's manufacturing industry through coordinated interventions on several fronts including robust, imaginative and aggressive policy framework, facilitating new skills, training, education and research and startups. Indeed, with a large manufacturing base, a significant IT industry and a burgeoning consumer base, Maharashtra is in a unique position to fully harness the potential of Industry 4.0 as well as create a leadership position for Maharashtra.

Section 3

Promoting Effective Governance

With the five-year term of the elected government in Maharashtra drawing to a close, it is essential to focus on the priorities in governance that should form the bedrock of the government that comes to power post-October 2019. The saptapadi that underlies governance would cover: (a) effective and lean general administration; (b) decentralizing power and responsibility; (c) responsive policing; (d) reform and repeal of outdated legislation and legal processes; (e) accessibility of government; (f) accountability systems; and (g) political resolve.

General administration

The present system of overly centralized administration not only goes against the tenets of democracy but also militates against efficiency in administration. Starting at the top, there is need to drastically reduce the number of departments manned by very senior officers. Many departments can be subsumed into a larger parent, e.g. horticulture and animal husbandry into agriculture and school education and higher education into education. Since there are Directorates for every specialized function, manned, in some cases, by those with domain expertise, a single Secretary to coordinate secretarial functions would help reduce the bloated number of Secretaries in state government departments. Promotions to higher levels in the IAS, IPS and the IFS should be strictly on merit: those who do not meet the required standards of both probity and efficiency should be given the option of voluntary retirement or eased out of service at the appropriate time.

As is being done at the central government level, selected posts of Secretaries and Directors/ Commissioners which need to be headed by persons with experience and expertise in that particular domain, should be filled in through lateral entry on a contractual basis. State government servants who fulfil the required qualifications would also be eligible to apply.

The feeling is prevalent among field officers that staff who are exclusively recruited for manning Secretariat positions have little comprehension of the realities at field level. Government should examine whether a system which provides for transfers between line and staff positions would contribute to a more responsive administration.

Powers to transfer staff in Groups B, C and D should be delegated to departmental Secretaries / Directors / Commissioners and Divisional Commissioners. This would ensure greater ability of these officers to deliver results, with their enhanced control over the staff under them.

Administrative processes should be simplified and technology employed to ensure prompt disposal of applications relating to a host of permissions, including building permits, immovable property transactions, starting businesses, obtaining driving licences, etc. Human interface should be kept to a

bare minimum to reduce the possibility of economic rent extraction.

Local governments

For a state which was a pioneer in local government reforms, Maharashtra seems to have lost its way in the last three decades. Opportunities to make amends after the passage of the Constitution 73rd and 74th Amendment Acts have also not been adequately utilized by successive governments in the state.

In the rural areas, the state government should aim at transferring the sectors earmarked in the Eleventh Schedule of the Constitution of India fully to the Zilla Parishads. The 2014 Report of the Centre for Policy Research, New Delhi for the Fourteenth Finance Commission indicates that Maharashtra has fully devolved only 11 subjects to the ZPs, with the local bodies only implementing schemes in respect of the remaining 18 subjects.

Available information indicates that rural local bodies are not fully staffed, especially at the supervisory/managerial levels. It should be incumbent on the state government to post a suitable person within two months of a request being made to fill a post, failing which the local body should have the powers to appoint a qualified person to the post through direct recruitment.

Maharashtra is reaching a position where there will soon be parity between its populations residing in urban and non-urban areas. Effective management of urban areas requires a completely different approach to urban governance issues. Extensive devolution of financial and administrative powers to urban local bodies to make them truly "local governments" is the need of the hour. Maharashtra experimented with the "Mayor in Council" system in the Municipal Corporations of Greater Mumbai and Nagpur from 1998 to 1999, with executive powers being vested in the Mayor and the members of his Council. The initiative was summarily abandoned in 1999, barely a year after its adoption, probably because elected corporators resented their executive powers (in the different Committees that were part of the earlier system) being severely curtailed and because the state-level politicians, including especially the MLAs of the two cities, saw a powerful Mayor as a threat to their own positions.

Even so, there is no denying the need for Municipal Corporations and other municipal bodies to be endowed with far greater administrative and financial powers than is the case today. One would not favour the direct election of a Mayor since it goes against the grain of the system of parliamentary democracy prevalent at all other levels of government. However, the Mayor can be vested with financial powers up to a certain limit. The present system of Standing Committees and Subject Committees, with powers of administrative and financial sanctions vested in them, should be continued to provide an environment of participatory decision-making in bodies, the decisions of which impact the lives of

thousands of their citizens.

Mega-administrative bodies and parastatals like the regional planning authorities for Mumbai and Pune, MHADA, etc. have, over time, cut into and eroded both the planning and implementation functions of the elected municipalities, often with the complicit support of the state government. All decisions on development of urban infrastructure in Municipal Corporation areas should be taken after extensive consultations with the local bodies and after ensuring that aspects of water supply, traffic management, solid waste management, etc. are fully taken into account. The same principle should apply in respect of the MLA local area development funds allocated by the state legislature for works sanctioned by MLAs. Projects taken up using these funds should have the approval of the relevant local authority and should dovetail into the requirements of the local population.

Government must walk its talk where the intent to actually transfer power to rural and urban local bodies is concerned. The administrative heads of the ZPs (CEOs) and Municipal Corporations (Municipal Commissioners) should be officers with experience of at least ten to fifteen years in government or in similar organizations. Serious thought should also be given to placing District Planning Councils under the chairpersonship of the ZP President or the Mayor of the largest Municipal Corporation in a district, depending on the relative proportions of rural and urban populations in that district. The Minister of the State Government can be a member of the Council, to help provide inputs from the state government. But a clear statement must be made that the state government is fully committed to strong and responsive local governance systems.

Providing financial muscle to rural and urban local bodies is crucial if local governments are to satisfy the needs of their citizens. Property tax alone cannot meet the financial requirements of local governments, tasked with meeting development and infrastructural needs of their citizens. The state government should set up an expert committee to examine the extent to which a share of indirect taxes accruing to the state government, through the GST and other sources, can be allocated to local bodies and the formula that can be devised to share this amount amongst the many rural and urban local bodies.

Policing

Securing the safety of citizens and ensuring the provision of speedy justice is a primary responsibility of the executive and judicial arms of the state. Apart from extraneous influences that have impaired the efficient, nonpartisan functioning of the police force, there is also the need for a police force that is adequately staffed and has clarity about its functions.

Taking a leaf from the recommendations of the Second Administrative Reforms Commission, police functioning would improve greatly with a separation of its law and order and routine policing functions from the task of investigations into serious criminal offences. The full-time assignment of policemen with expertise in the latest techniques of criminal investigation to finalize criminal cases early and lodge charge sheets in court in the timeframe prescribed by the Code of Criminal Procedure would not only deter potential wrongdoers but, more importantly, infuse confidence in the common citizen about the fairness and efficacy of the criminal justice system. Placing the criminal justice system under the judiciary would insulate investigations from the pernicious political pressures that have bedeviled the Indian criminal justice system.

A government that is serious about developing an efficient police force must also devise systems to insulate the police from unwarranted political interference. Ensuring fixed tenures for senior police officers at the highest levels and setting up police service boards to handle matters relating to transfers and disciplinary matters would contribute to far more responsive and effective functioning of the police force.

Reform and repeal of outdated legislation and legal processes

Maharashtra still has laws that have been enacted over a century ago, with a number of provisions in these laws having no relevance in a 21st century context. The Mumbai Municipal Corporation Act, 1888 is a prominent example. But even legislation drawn up in the 1950s before the formation of the state and in the years thereafter needs a relook in the context of a changed environment. The Maharashtra Land Revenue Code, 1966 and the Bombay Police Act, 1951 need to be overhauled in the context of a rapidly changing law and order / security scenario and to utilize an important asset like land as an engine for driving economic growth. Maharashtra also needs to look at reframing labour laws to create an atmosphere conducive to promoting growth while also safeguarding the interests of workers. A host of laws that still perpetuate the license-inspector raj need to be phased out while introducing legal provisions that contribute proactively to the ease of doing business.

Some specific examples can be given here:

(i) There is a strong case for doing away with archaic tenancy laws which perpetuate the confusion about land ownership. Government must set up a committee to work out a simplified system for leasing of land, taking into account the existing transactions between landlord-owners and actual cultivators.

(ii) Digitization of land records, to the extent it has been carried out, has not brought clarity to the issue

of land ownership. This has a two-fold consequence: it complicates the process of land purchase / acquisition for agricultural and non-agricultural purposes and it affects the use of land as a fungible asset by the landowner to raise capital for investment purposes. The government must develop a system of land titling, with titles being guaranteed by the government or an independent agency, as is the practice in a number of countries.

(iii) All cases relating to land ownership and cultivation rights should be moved from the state revenue department to the civil courts. This will ensure that all such cases are decided by those with judicial experience. It will also do away with the role of the revenue department in adjudicating land matters, an area where its quasi-judicial role has been unsatisfactory, leading to a huge backlog of cases.

Accessibility of government

The crowds that throng Mantralaya in Mumbai bear testimony to the fact that, apart from opacity in rules and processes which inhibit the common citizen getting her work done, there is still a lack of access to the right information and to the right persons in government who can and ought to meet the expectations of the common woman/man. The Maharashtra government website is woefully inadequate when it comes to informing the citizen about the procedures she should follow to get a particular work done. The website is focused more on putting forth not-so-useful information on departmental activities rather than on the steps needed to secure a particular benefit or license. Government departments need to focus on online processes for securing permissions, with human interface being kept to a minimum.

Government must enforce the provisions of Section 4 of the RTI Act, which make it mandatory for government departments to make all data and information available on a website. This would help reduce the volume of RTI applications, a significant portion of which relate to seeking information that is not readily available.

Above all, access of the common citizen to public servants, both political and administrative, should be the norm rather than the exception. The focus should be on the use of technology (email, telephone, WhatsApp, etc.) to facilitate access rather than compelling the public to waste time and money in engaging in face to face contact.

Accountability systems

Accountability of the executive to the legislature has weakened in recent years, with the Public Accounts Committee no longer seen as the terror it was considered at one time. If greater autonomy is also to be

given to local bodies, accountability, especially on financial matters, becomes an even more crucial issue. Local fund audit bodies need to be strengthened to enable them to act as watchdogs for the Accounts Committees of local bodies. Salient findings of the Reports of the PAC and local body Accounts Committees should be widely disseminated in the public sphere, so that the taxpayer is made aware of how her money is being used.

Even more important is the role of the Lokayukta in checking corruption and misuse of public money. As in the 2013 Lokpal and Lokayuktas Act, which brings even the Prime Minister and Union Ministers under its ambit, Maharashtra state has also provided for covering all functionaries from the Chief Minister downwards under the Lokayukta Act. The Lokayukta must have a strong, independent investigative agency at its disposal for prompt prosecution of offenders. Its findings should be tabled annually in the state legislature and given publicity to raise public confidence in the impartial dispensation of justice.

Political resolve

The saptapadi will be complete only when the above six perambulations around the sacrificial fire are consummated by the seventh and final round. This is the existence of the necessary political commitment to ensure responsive, quick and honest governance. Politicians coming to power need to commit to three cardinal principles of governance:

(a) Decisions, barring those dealing with policy, will not be taken at the Mantralaya level. These will include giving permissions on a case by case basis and deciding contracts for the supply of items under different programmes.

(b) Transfers and postings will not be handled at Mantralaya. For all levels below the highest echelons of the bureaucracy and the police, service boards comprising officers of the respective departments should, on the basis of clear norms, decide postings. For the highest levels of the bureaucracy and police, a Civil Services Board of very senior officers known for their integrity should decide postings after taking into account the aspects of merit, competence and integrity.

(c) To realize the aim of providing a secure environment to citizens, the police force (in respect of both its law and order and criminal investigation functions) should be fully insulated from political interference. The future Maharashtra government should give serious thought to implementing the recommendations of the Second Administrative Reforms Commission in this regard.

Section 4

Reforming State Laws

It is suggested that Government constitute a Committee to study the Maharashtra Statute Book, to make suggestions, relating to three aspects of Statutes studied:

- Continuation or repeal of selected statutes

Enclosed in Annexure I, is an Illustrative List of Acts that we believe could be eliminated from the Statute book, without any loss of ability to govern the state, since they have become obsolete in view of subsequent legislation and/or cease to bear any relevance to current conditions.

- Consolidation and codification of multiple laws into one act

Government has already constituted a committee for consolidating all land revenue laws into MLRC, under the Chairmanship of Shri Gaikwad, mentioned above. Similar action is suggested in the following areas as well – Higher Education, Labour Law, Devasthanam Inams, Police related Acts, Markets & Fairs Act, etc.

- For continuing statutes study and modification of provisions in the current context, in the following legislations: ZP & Panchayat Acts, Municipalities Act, Waqf Act, Fragments & Consolidation Act, Felling of Trees Act, etc.

- Continuation or modification of processes and forms included in the statute, again in today's context

- Establishment of Standards across statutes using IT Act definitions, for periods and service of summons, absence of advocates and officers, other procedures & processes, time periods, etc. using currently available Information Technology (IT) and Digital Telecommunication (DT) tools, to improve efficiency and effectiveness.

- Simplification of language of all statutes and regulations, including translation into Marathi, the State Language

- Bringing up-to-date all fines and punishments in various laws – a great precedent has been laid down by the Companies Act, 2013, and it's amendments till date, including the requirements issued by SEBI

- Sunset clauses for acts and limiting dates for retrospective litigation opening without mitigating circumstances which are listed

- Constitute a regular Statutes Review Committee (SRC) to annually review State Statutes – for annual updation of selected statutes. Each year, the Committee could review statutes relating to specific Ministries/Departments, to complete all, in 5 years. 9 months for report submission, including draft

legislation. Release for public & administrative feedback, within 2 months. Within the balance 1 month, the final report with crisp recommendations to be presented to the relevant Ministry/Dept. Ministry to make agreeable change commitments to the Committee and to the Public. This process should result in a leaner and more effective statute book.

II. Review and reform of dispute resolution processes under the selected statutes

- Updating Forms and procedures at Quasi-Judicial bodies – regarding the above 5 focus areas. Study for rationalization and standardization to minimize duplication, using available IT and DT tools is needed. A Forms & Procedures Committee (FPC) of IT and Law experts to work in tandem with the SRC, within the same time-limits, to revise age-old forms and processes (including floors and ceiling limits for filing plaints at different venues) to help reduce un-necessary wastage of time, effort, paper and other resources – and reduce opportunities for corruption and arbitrage as well. Input for this is available from the March 2018 report titled "The Anatomy of Judicial Pendency" by the Gokhale Institute of Politics & Economics (GIPE).

- Minimize the number of steps of adjudication to arrive at closure. For example, in revenue matters, there is a provision of 2 appeals only. However, in practice, under the pretext of 'revision', adjudication is done at 2 more levels. This can be reduced to 2 levels all told – one appeal and one review. An overall time limit of process time could be conceived and implemented. Also, 'banning venue/forum shopping' through issuance of appropriate rules with FPC recommendation, can bring multiple forum litigation to a halt. Also, FPC could make specific suggestions to minimize litigation in key areas, viz., Revenue, Labour, Charity Commissioner, Co-operative & Administrative law.

- Reducing State utilization of Court systems and court time - the single largest burden on Judiciary resources is that imposed by State governments and their agencies for their own 'excessive' litigations. Former Law Minister Shri Veerappa Moily's draft "National Litigation Policy" has made several suggestions to reduce this burden. State Governments could adopt most of them. For intra-governmental disputes the use of ADR (Alternative Dispute Resolution) methods would reduce burden on courts, and increase responsibility of executive officers for mediated closure. Creating an "Ombudsman" for mediating between State litigants and with consent even litigants where the State is a party. Should the State GAD issue orders that give the Ombudsman's rulings effective power for implementation, the process could be effective and efficient. FPC could set guidelines for establishing cost benefit metrics to justify litigation - starting or continuing litigation or curtail/ terminate it.

III. Review and reform of dispute resolution infrastructure

- Physical infrastructure

Most tribunals and QJ bodies suffer from lack of appropriate space, furniture and other relevant infrastructure. Since this is for the benefit of litigants as much as the judiciary and executive Government needs to review the availability of requisite infrastructure annually through the FPC and implement recommendations.

- People infrastructure

Requirement for training of law officers, magistrates, court staff, etc in tune with the new procedural requirements and technologies. Here again, FPC could be tasked to make recommendations which could then be implemented.

- IT & DT Infrastructure

- Creation of a Data Grid on State Statutes and Rules & Regulations issued there under – MahaNiti – to be run by the Ministry of Law & Judiciary. Individual ministries to be responsible for maintaining up-to-date contents in respect of laws that they are respectively required to administer. This will reduce opportunities for information and time arbitrage that drag cases and cost litigants as well as the judiciary more than they ought to.

- Creation of a Database of precedent-value Judgments/ orders that will be easily and cheaply accessible to both litigants and judges - MahaNyay. This should be accompanied by rules of procedure changes that require research of such databases prior to acceptance of any filing, to ensure frivolous and repetitive litigations do not enter courts and waste court as well as litigant time. A note on this is in Annexure 7. Providing research assistance and Legal assistance to litigants, would minimize filings which will lead to minimization of delay.

- Finally, there needs to be an Information Grid containing information about all State Government schemes that enables citizens of the state to understand what the Govt of Maharashtra is offering them, including direct to account benefits and so on – MahaMahiti. Dissemination of this information will effectively stop information arbitrage and reduce corruption and delay by agents who inhabit the corridors of power. This will also lead to reduction of disputes and thereby pendencies and the increase of justice delivery.

- Ministry- /Department-wise web presence and web-based performance reporting

To ensure citizen connect and minimize State-citizen disputes, individual ministries could set up web portals as a part of MahaMahiti. These could provide answers to queries (FAQs), accept suggestions from

citizens and report to citizens on the actions taken by the concerned ministry/department in the past quarter/year. This could go a long way to minimizing communication /understanding gaps between citizens and government, thereby again reducing disputes. This is routine in corporate India. For companies that are listed and have considerable 'public' participation, SEBI requires information disclosure for just this reason. Due to the effective implementation of law by MCA and SEBI, India currently (October 2018) ranks 7th out of 190 nations in the World Bank's Ease of Doing Business Report, on the 'Protection of Minority Investors' parameter.

Section 5

Finances post Fiscal Rules Legislation: Road Ahead

1. Introduction

The State of Maharashtra, once known for prudent fiscal management witnessed a steep deterioration in its performance since the mid-1990s (World Bank, 2002). During the first half of the 1990s, Maharashtra had the lowest revenue deficit and the second lowest fiscal deficit to GSDP ratio among the 14 major Indian States. It also had a low stock of government debt. The sharp downturn in the State finances after mid 1990s encouraged the government of Maharashtra to join many of the other States in accepting the debt waiver offer of the 12th Finance Commission in exchange for passing the Fiscal Responsibility Legislation in 2005.

The years following the enactment of the Fiscal Responsibility Legislation (FRL) in April 2005 showed significant improvement in the deficits of the State of Maharashtra. However, after some initial improvement for a couple of years, once again there appears to be a deterioration. Though the situation in the post-FRL period is not as bad as it was prior to the enactment of FRL, the fact that the fiscal health of the State has not been consistently good or improving, is indeed a matter of concern.

2. Key Fiscal Indicators vis-à-vis FRL Targets

Maharashtra has met the FRL target of Gross Fiscal Deficit to GSDP ratio target in several years but Revenue Deficit target has been missed in many of the years. The FRL as it stands presently, does not suggest expenditure targeting or any targets on the receipts front but our experience with FRLs seems to suggest that second generation FRLs should look below the line and set targets for specific expenditure categories. Our case would become stronger as we proceed and obtain greater insight into the missing of Revenue Deficit targets by taking a closer look at the two components of revenue deficit viz., Revenue Expenditure and Revenue Receipts.

In the post FRL period we find that Revenue Expenditure to GSDP ratio shows a declining trend in general, so clearly excessive expenditures is not the reason for Revenue Deficit target having been missed. The missing of Revenue Deficit target thus appears to be on account of Revenue Receipts not having kept pace with expenditures. Revenue Receipts comprise of Tax and Non-tax revenues and Intergovernmental transfers. We now turn to the issues involved with each of these sub-components:

(a) Revenue Expenditure

On the Revenue Expenditure front, it seems that neither the size nor its growth is problem at the moment since a declining trend is observed. The more worrisome feature of the fiscal consolidation process on the expenditure front appears to be the share of revenue expenditures allocated to Public and Merit Goods in general and education and public health, in particular. Expenditure to these categories

have been lower in the post-FRL years as compared to the pre-FRL years. What is even more disconcerting is that the share of committed expenditure, which is a sum of interest payments; salaries and pensions, has reduced thus resulting in greater discretionary fiscal space for the government and yet the share of Public and Merit goods has not improved. Thus, clearly there is a need to force the hand of the government to re-prioritise and re-direct expenditures on revenue account to Public and Merit goods. This could be done either by introducing incentive transfers from central government or by introducing some form of expenditure targeting in the second generation FRLs.

(b) Revenue Receipts : Tax; Non-tax Revenues and Transfers

On the Revenue Receipts side we discuss the performance of the State with respect to Tax collection; Non-Tax collection and Intergovernmental Transfers.

On the Tax front, the Tax to GSDP ratio crossed the 7% mark in 2012-13 but since then it has always been well below it, which is most certainly a matter of concern. The own tax revenue to GSDP ratio too has stood under the 7% mark since 2006/07. However, with GST in place, Maharashtra has benefited on account of it being a large consumer State. In the first quarter of 2018, the Government's revenue went up by almost 40%. The significance of even better Tax collections from GST was emphasized by the Finance Minister of the State himself when addressing a function on the second anniversary of the GST regime.

On the Non-Tax revenues front, Maharashtra's performance has been dismal. As a percentage of GSDP it has declined form 1.29 percent to hardly 0.56 percent during the 12 year period from 2006-07 to 2017-18. An accurate estimate of Non-Tax revenue is difficult in the existing budgetary classification as revenues from lotteries are not accurately provided in case of all state budgets. Also, some of the receipts are notional. However, keeping these caveats in mind, a look at the performance of Maharashtra on the Non-Tax revenue front shows that cost recoveries are dismal and have worsened in case of social and economic services, thus clearly suggesting that there is ample scope for improvement. The negligible recovery from investments in PSUs comes as no surprise at all and adds to the problem of low Non-Tax revenues. Persisting with investments in loss making PSUs, as is currently happening, despite huge losses flies in the face of economic wisdom and brings to the fore the role of vested interests being catered to. Thus greater effort to improve GST collections and non-tax revenues would certainly lead to an increase in the size of the pie. Also, major reforms are required in case of curbing investments in the loss making state Public Sector Undertakings.

Intergovernmental Transfers is the third important constituent of revenue receipts. Total Transfers to the state of Maharashtra constitute over 2% of its GSDP. Of this, the share of Finance Commission transfers (which are rule based) has been around 60% while the share of other grants (which are

discretionary) was 40%. The 14th Finance Commission has tilted the balance in favour of Finance Commission transfers which constitutes roughly 75% of the total.

In the context of intergovernmental transfers we find that separating the contribution of Central government transfers from the overall fiscal performance of the State points to a worrisome aspect of the fiscal consolidation post FRL i.e Revenue Receipts net of transfers in the post FRL period is seen to be lower than the average of five years pre-FRL. We also find that a fall in grants results in an increase in own tax revenue. Further, we also observe that it is the social sector expenditure which has faced the major brunt of the expenditure compression that has been effected in the post-FRL period. The major learnings in this context are (a) the State's incentive to raise its own revenues appears to have been blunted by the availability of transfers from the central government. This points to the need for incentive compatible transfers and (b) lump sum grants may not be the best way to provide for local public goods. Alternatives to lump sum grants, such as matching grants or tied grants, might need to be explored. Thus, a close look at the composition and design of intergovernmental transfers is a must.

3. Borrowings

On the Borrowings front, Maharashtra was very much in the limelight as a high debt State in the pre FRL period. However, slowly but surely the debt to GSDP ratio in Maharashtra showed a secular decline from 2006-07 onwards. Despite this the average expenditure on debt servicing during 2012-17 was Rs 30,652 crore, which accounted for 89.1% of average public debt receipts, according to CAG report. However, in more recent times a look at the components of Public Debt shows that there has been a shift away from loans from the Central Government towards internal debt. Issuance of SDLs dominates amongst the sources of internal debt. The state government has reduced its borrowings from the longer term debt towards shorter term debt. Since short term debt normally carries lower interest rates, this has a favourable impact on the interest payments to GSDP ratio. Maharashtra, which was the second largest borrower in the market in FY17 at 10.5%, has lowered its share to 4.4% in Fy19.

In Budget Speech 2019, the Finance Minister of Maharashtra said the State's debt currently stands at at Rs 4,14,411 lakh crore and it had bettered expectations. The FM said that in spite of the debt, the 'financials' are 'healthy' as 'the debt is estimated to be 14.82% of its GSDP as per revised estimates and the financial position of a state is considered healthy if the quantum of debt is below 25% of GSDP.

While it may be true that the debt situation in Maharashtra is currently under control, it does not take much for the situation to deteriorate as borrowing, by definition, is a convenient way out for politicians who walk the tight rope of wanting to spend more so as to increase their 'popularity' on the one hand and not wanting to increase taxes, which make them 'unpopular', on the other. Also, what is important

to ascertain is what these borrowings are being used for. A first principle of budgeting teaches us that borrowings must only be used for asset creation and not squandered away on conspicuous consumption. One possible way of ensuring that this would happen is to earmark future borrowings to specific projects and if necessary to specific expenditure heads within the project. Such project based borrowings would ensure that borrowings are being directed correctly channelized.

4. Road Ahead

Thus, the larger picture that emerges is that the State of Maharashtra has indeed behaved fiscally responsibly on some counts: Gross Fiscal Deficit target has been kept under check; size of revenue expenditures has been kept under check; tax collections from GST has shown an improvement and debt management of the State has been handled responsibly. On some other aspects however, the State has not measured up to expectations: expenditure on Public and Merit goods has taken a hit; Non-Tax revenue collections have been very poor; investment in loss making PSUs continues; revenue raised seems to be well below potential as is evident from an earlier study which showed that own revenues rose when transfers were cut.

Thus, learning from the fiscal path that the State has traversed, a five point agenda for charting the road ahead seems to suggest itself. The last of these i.e. relating to Intergovernmental Transfers is a policy prescription not for the State government, but a macro level suggestion, since it has significant implications for State's revenue collections and expenditure prioritization.

(1) Tax revenue has improved with GST but Maharashtra is at an advantage here with a large consumer base. Hence, there is scope to increase collections substantially.
(2) Very poor and deteriorating performance on Own Non-Tax revenue collections - cost recoveries must improve and investment in loss making PSUs must be curbed. This requires hard policy decisions as it would go against entrenched vested interests.
(3) The increased size of pie needs to be directed towards increased allocation for Public and Merit goods. There appears the need to force the hand of the government in this respect either via incentive transfers or by some kind of expenditure targeting in the second generation of FRLs.
(4) Earmark fresh Borrowings to specific projects – this would ensure that borrowings are being channelized towards asset creation.
(5) Incentive compatible design of Intergovernmental Transfers is a must – A close look at the composition and design of Intergovernmental Transfers is called for so that State governments are not dis-incentivised to tap their revenue potential and some form of matching or tied element is introduced for channelizing resources towards Public and Merit Goods.

Recommendation:

The situation in the post-FRL period is not as bad as it was prior to the enactment of Fiscal Responsibility Legislation (FRL), the fact that the fiscal health of the State has not been consistently good or improving, is indeed a matter of concern.

Clearly there is a need to force the hand of the government to re-prioritise and re-direct expenditures on revenue account to Public and Merit goods. This could be done either by introducing incentive transfers from central government or by introducing some form of expenditure targeting in the second generation FRLs.

Greater effort to improve Goods and Services Tax collections and non-tax revenues would certainly lead to an increase in the size of the pie. Also, major reforms are required in case of curbing investments in the loss making state Public Sector Undertakings.

Borrowings must only be used for asset creation and not squandered away on conspicuous consumption. One possible way of ensuring that this would happen is to earmark future borrowings to specific projects and if necessary to specific expenditure heads within the project. Such project based borrowings would ensure that borrowings are being directed correctly channelized.

Section 6

Accelerating Agriculture Growth

As per the Economics Survey of Maharashtra 2018-19 the share of agriculture and allied activities sector in the total Gross State Value Added (GSVA) is declining over the period resulting in cascading impact on other sectors like agro-processing industries, trade, hotel & restaurants and various services. Although the State is one of the most industrialised states in the country, agriculture & allied activities sector is still predominant in the State with its social structure to be primarily agrarian with about 53 per cent of population relying for livelihood on this sector. Dependency on weather conditions, increasing number of marginal & small farmers and reduction in the area of operational holdings, high expenses leading to non-profitability and market uncertainty continues to be the prime concerns of the sector in the State.

With this background it becomes necessary to rethink then agro policies in the state and how we can improve the existing polices. Also one needs to think whether new policy initiatives are necessary to strengthen and boost the agriculture sector.

Government has given more importance to secure the increased production by giving subsidies on inputs like water, power, seeds and fertilizers and by increasing the minimum support price (MSP) rather than through building new local infrastructure and capital assets in irrigation, power, storage facilities, cleaning and sorting facilities and primary processing. As a result of this the production base from low-cost regions to high-cost ones, causing an increase in the cost of production, regional imbalances, and an increase in the burden of storage and transport of agriculture produced.

Land reforms: The existing tenancy law and the changing realities of the countryside, the restrictive provisions in the tenancy laws should be scrapped. Leasing in and out land should be made legal and hassle-free. Landowners should be able to lease out land without the fear of losing it, even if they are absentee owners. Wasteland can be given on lease to non-farming entities for a long duration for forestation.

One important issue related to is law related to land reforms are included in the Ninth schedule of constitution so that they are not challenged before the courts. Central government and state government need to reexamine this.

1. Minimum 50 hectors of land can be leased out to non-farming entities for minimum 30 years lease at nominal price.
2. Horticulture shall be considered as forestation.
3. Waste land also can be considered for creation of solar farms.
4. Carbon Credits for such forestation as applicable be made available to entrepreneur.
5. While doing this government need to ensure that the title right of land is not transferred and land

cannot be mortgaged for further investment. This will protect the right of the farm owner and also it boosts the private investment.

The precise contribution to redistribution that this type of intervention can is related to the kind of participation that those who are going to use the land.

Seeds: The Government needs to encourage Genetically Modified (GM) crop field trails. And the results of these experiments will help it to form a concrete framework for field trials of GM crops.The implementation should be without losses of further time.

Water : Water management was neglected due to water conservation management. Laws, rules, notifications and agreements are required to handle the irrigation projects. To implement the legal process, the law has to be implemented by concerned officers, fixing their jurisdictions and providing them rights, etc. Maharashtra has nine irrigation laws but under eight of them there are no rules which means nothing is prescribed by the law. Due to the non-implementation of the law, its good provisions are not in force. Government need to prepare Rules & Regulations to institutionalize River Basin-wise Water Management. Integrated State Water Plan at present is limited to surface water only. It needs to be revised at the earliest by incorporating aspects related to groundwater as well. Water Governance structure, as envisaged in MWRRA Act 2005, demands River Basin Agencies (RBA). Convert Irrigation MWRRA (Amendments & Continuance) Act 2011 may be repealed to restore MWRRA's original powers. Convert State Water Council into Water Policy, Governance & Regulation Forum. Role of State Water Board may be correspondingly enhanced significantly to monitor the implementation of State Water Policy & Water Laws. Task Force may be constituted to complete operative part of MWRRA 2005, MMISF 2005, MIA76 & MGDMA 2009 (Rules, Notifications, Appointments & Empowerment of Canal Officers, etc). Switch over to Demand Side Management & make the irrigation system in Maharashtra compatible & amenable to the demands of WMGR. A mechanism may be developed to ensure that Standard Operating Procedures (SOP) of water management are scrupulously adhered to. Hydro-meteorological data base required for water budgeting, auditing & benchmarking may be urgently developed. Standard software may be made available for preparing Preliminary Irrigation Program (PIP) & canal schedules. Project-wise PIP & canal schedules may be made available in public domain on or before a prescribed date MWRRA may ensure that Standard Operating Procedure (SOP) is followed Development Corporations into RBAs. MWRRA may be restructured & strengthened.

There is a requirement for diversified cropping systems in the perspective of climate-related risks. Cultivation of pulses can be an imperative strategy for climate resilient agriculture (CRA). Pulses are legumes which enhance soil fertility. Along with pulses horticulture and fruit processing activity be promoted.

Water recycling and reuse by government departments, Municipal Corporations and private sector industries should be made mandatory and encouragement given by tax concessions. The Government should come out with a policy on sewage treatment and wastewater recycling.

To prevent water evaporation installing a floating solar panel on large water bodies shall be prime solution. Incomplete dams be completed on priority along with water transfer arrangements. As far as possible such transfers shall be through closed pipes up to point of utility. Flood irrigation shall be avoided / banned. Only micro irrigation will be implemented.

Reservoirs constructed for hydropower production can be used for irrigation purpose instead of electricity productions. To compensate the loss of electricity same can be generated by installing solar plants on arid land and waste land.

Extension services: Extension services are critical to providing crop management advice – such as the type, amount and relative importance of farm inputs, crop choices, irrigation scheduling, and market options – and to improve agricultural and livestock practices. Government shall ensure that extension officers are available free of charge to assist farmers where and when needed. More godowns should be set up and maintained properly for better storage and reduction of wastage.

Domestic and International Trade policies : The Government needs to improve the procurement facilities such as drying yard, weighing bridge, etc.

In India agri-futures trading is minor. Farmer's planting decisions are based on the last year's prices instead of future prices. For better price discovery and to hedge the price risk we need to develop agri future market. To create Indian agri-futures market government must emphasize on (1) training and capacity building of resource organizations (2) initiatives implemented in Bihar and Rajasthan can be used as ideation process for other regions (3) gain confidence in functioning by giving more emphasis on commodities which are not protected by heavy government intervention; (4) production centres for such crops need to recognise first and then delivery centres can be constructed around them and future trading can be encouraged in these regions; (5) learnings from China can help emphasis on agri-futures, reduce Govt. protection, and customize products, (6) government should encourage and motivate the trading agencies to directly participate in the futures market and (7) forwards and options instruments have to be encouraged.

There is an increasing need to set up a stable and predictable agricultural export policy which targets revival of the whole value chain from export-oriented farm production and processing to transportation, infrastructure and market access.

Agriculture data and related issues: Agriculture data needs to be reliable, and with 'high-frequency' that will reflect the necessary details and scope of the problem at a granular level. The finer the level of details of the data, the more precise and accurate the solutions can be. Upon collection and storage, the data should be sliced by region, crop, rainfall, humidity, etc for management and monitoring purpose.

It should also be updated regularly with the help of other public/private institutions involved in data management.

The Union Government should establish a central-level institution with branches at state-levels for data management. The institution should facilitate appropriate and standardized collection, validation and dissemination of data through various sources.

The Government of Maharashtra needs to set up a high-level committee to address the problems related to integrity and timeliness of agricultural data. The committee should submit a report within the fix time period and its findings should be made public for suggestions.

Regional Imbalance: Region-wise agro-processing industries/parks need to be encouraged to promote agriculture and to protect agricultural produce from market price fluctuations. There is a great potential for cotton processing, soya food processing, and fruits and vegetable processing industries in Vidharbha and Marathwada.

To promote horticulture in backward regions of Marathwada and Vidarbha, a programme like 'Horticulture Mission' needs to be implemented.

Section 7

Higher Education Reforms

Introduction

Multiple commissions have been established by state governments in Maharashtra over the years with a view to reforming higher education in the state, and various papers by eminent authors have been penned on the same topic. The need to reform higher education is an almost obvious point, and we will not belabor it here. What reforms are likely to be the easiest to implement, and will carry the most bang for the buck, is the focus of this paper.

The focus of this paper is on asking how higher education can be made more relevant to society along three dimensions:

(i) helping individuals have a more rounded education than is the case at the present.
(ii) A more important role for industry/workplaces in terms of imparting education, making use of educational facilities and designing course curriculum.
(iii) Getting the incentives right in terms of the ongoing evaluation of educational outcomes.

Higher education is as much about real life skilling as it is about acquiring expertise in the subject matter area of choice. While it is important to acquire skills pertinent to the physical sciences in a Bachelor of Science degree, it is also important to acquire a working knowledge of personal finance, the basics of political science, and an insight into India's modern history. Higher education isn't complete until it is reasonably well rounded. A minimum program revolving around the topics mentioned here needs to be formalised, and included as a part of every degree awarded in the state.

Higher education is relevant for its own sake, but the bottom line is that it only becomes relevant when it leads to employment. Employment of both the students that pass out of a university, but also of resources that have been established in the university.

Students need to be equipped with skill sets that are applicable across domains: a working knowledge of spreadsheets, basic presentation skills, and effective business communication, for example. Each of these need to be included as a part of the curriculum no matter the field of specialization.

In addition, there needs to be very close collaboration between industry and academia when it comes to utilizing the resources available to an educational institute, particularly in Maharashtra's rural areas. Soil testing laboratories are one pertinent and currently under-utilized example.

There needs to be more meaningful collaboration between educational institutes in Maharashtra, across three separate dimensions.

First, higher educational institutes in Maharashtra need to imbibe best practices when it comes to higher education from comparable universities in Asia, in particular China. A more careful study needs to be done of rural universities in China, Japan, Taiwan and South Korea to assess the role that they have played in developing extension services related to agriculture, and see if that model can be replicated in Maharashtra.

Second, there needs to be a continuous flow of information, faculty and students across rural universities in India. Maharashtra, given its status as one of the richest states in the country, can and should take a role in facilitating a program that allows for this to happen, beginning with neighboring states. Later on, this can be expanded to other parts of the country.

Third, this same flow (of information, faculty and students) should be facilitated within Maharashtra, but at the rural-urban dimension. To be clear, this flow needs to happen both ways. Schemes can be worked out to have promotions to faculty and degrees to students be given only if such an exchange has taken place.

The number of campuses across the state needs to go up, but the point we make is rather nuanced. While we feel no hesitation in recommending that the number of campuses go up, this doesn't necessarily mean that each new campus should be large in terms of scale and scope. The advent of the internet, and the availability of online learning courses such as SWAYAM mean that mobile campuses can be opened up at hitherto remote areas. The feasibility of doing so, and integrating such campuses in line with the suggestion above needs to be thought about.

There is, it should be acknowledged, always the danger that colleges end up becoming little more than feeder lines for the corporate world, and this is a danger that needs guarding against. That being said, it is entirely fair to say that academia today does not meaningfully serve the needs of industry, rendering higher education in India largely ineffectual, if not worse.

There is a large gap between the needs of industry and what academia provides, and the gap is even more palpable when it comes to educational institutes in rural areas. Academia needs to interact more with industry in the following areas: courses offered, curriculum design, mode of teaching, method of evaluation, internships.

Courses Offered: a periodic review needs to be undertaken of courses offered as a part of a degree in higher education, and efforts need to be made to involve representatives from industry during the modification of these courses. In certain cases, more than an overhaul, a completely new course might

need to be offered, but the input of industry is critical. A structure needs to be put in place for this to be implemented.

Curriculum Design: Practical, hands on work experience as a part of the coursework, a case study based approach, wherein the case studies are those that have relevance in the field, and a regular evaluation of the past semester/year's design suggest themselves in this regard.

Mode of teaching: Not all classes in all subjects need be taught in a classroom, and in certain cases, the balance might even be tilted in favor of learning on the job. Germany's famed apprenticeship model (about which more below) is an approach that needs to be adopted at scale in India.

Method of Evaluation: Examinations need to change in terms of their design, structure as well as their very method. It is unlikely - in fact, all but impossible - that students will need to regurgitate memorized answers in the real world, and therefore testing them based on this approach is redundant at best. Most examinations are still conducted using pen and paper, and that itself needs urgent reform.

The much lauded German apprenticeship model is a critical component of higher education going forward in Maharashtra.

"The dual system is firmly established in the German education system. The main characteristic of the dual system is cooperation between mainly small and medium sized companies, on the one hand, and publicly funded vocational schools, on the other. This cooperation is regulated by law. Trainees in the dual system typically spend part of each week at a vocational school and the other part at a company, or they may spend longer periods at each place before alternating. Dual training usually lasts two to three-and-a-half years."

Of particular interest in this regard is the "fachschule" method of imparting education in Germany.

Fachschule are institutions of continuing vocational education and upgrading training in the tertiary sector that, as a rule, requires the completion of relevant vocational training in a recognised occupation requiring formal training and subsequent employment. Fachschulen exist in the following fields:

- agricultural economy
- design
- technology
- business
- social work

This is, to our minds, the single most important component of reforms in higher education in Maharashtra. WIthout meaningful integration of practical work experience in an educational degree, students are simply not equipped to join the labor workforce.

Even more importantly, acknowledgment needs to be made of the fact that the awarding of a degree is a spectrum, rather than a binary model. One key aspect of the fachschule approach is that focus is on the ability to do the work that you are being trained for, rather than gain academic knowledge for its own sake. Earning a degree today involves a significant amount of effort and time, but not necessarily the ability to practise that which has been learnt. The reverse is also true: there exist today professionals with the skill to execute jobs in various industries and services, but without the requisite degree.

For example, a dentist's assistant may well be able to perform many tasks in a clinic that even a newly trained dentist may not be able to. While the dentist's academic knowledge is far more, the amount of hands on work that the assistant has done over the years is, on the ground, a more valuable skill.

Some happy medium needs to be implemented wherein recognition of skills gained by doing, rather than by learning is given by the higher education system. To our minds, this is the single most important reform that needs to be implemented.

That being said, these reforms must necessarily be a part of the whole: without a thriving MSME sector, and without effective legislation requiring firms to be a part of such an arrangement, it is unlikely to be effective at scale. While these are issues that are beyond the scope of this paper, the point is important enough to be reiterated, with greater emphasis:

Without meaningful on the job experience as a part of one's higher education degree, one's education simply isn't complete.

Grade inflation is a well studied, omnipresent feature of higher education the world over, and India is no exception. Our suggestions about reforms aren't so much about the inflation of grades in itself, but about the incentive mechanism at the heart of the phenomenon. If firms recruit on the basis of grades, and universities award grades, it is all but inevitable that there will be grade inflation over time. The link that needs to change is that between grades and recruitment: and that can be effectively done only if the apprenticeship model outlined above is pursued to its logical conclusion.

One of the outcomes of the apprenticeship program is that firms are likely to recruit on the basis of sustained interaction with students, rather than on the basis of the grading system. This also has the benefit of reducing asymmetries of information between students and the firms that will do the

recruiting. Grading ought to be one component of the recruitment decision making process, not its entirety.

Performance evaluation: the accreditation system associated with higher education in our country (and therefore in Maharashtra) needs a systemic reformation. Currently, mandated authorities evaluate the performance on a regular basis, but with hardly any input from industry. Consequently, their inputs are recognized at best tangentially. The inclusion of either alumni, or industry or preferably both in the evaluation mechanism itself is much more likely to lead to meaningful reform and consistent updation in higher education in Maharashtra.

More concretely put, the job of government is to set the rules, but not be a participant in the process of evaluation - at any rate, not be the sole evaluator of the performance of a university.

Rewards: In relation to the point above, state funding, the grant of autonomy with regards to syllabus, course design and the ability to expand facilities needs to be tied not to the ranking awarded by government authorities, but tied explicitly to relevance in terms of employability. The more recruitment goes up for a particular university on a year-on-year basis, the greater the extent of state support.

Section 8

Nurturing Gifted Children

"Gifted" is an all-encompassing term used to signify high ability and talented children who have the potential to accomplish exceptional success in one or more domains such as numerical, logical, social, scientific, entrepreneurial, political or artistic. According to the United States National Society for the Gifted and Talented (NSGT) the definition of Gifted includes all areas of a child's life: academic, artistic and social.

There are estimated to be around 50,000-70,000 Gifted Children between the ages of 6 and 25 in Maharashtra. The Kothari Commission Report, 1966 has touched upon the topic of educating gifted students but suggested no concrete provisions for the gifted, who are an intellectual asset of Maharashtra. Scouting and nurturing them is a unique opportunity as these children often go on to become the leaders in their chosen field.

School achievements cannot become a measure of giftedness. Most gifted children do not become stars in school, in fact many are underachievers or remain unnoticed. Such gifted learners require additional training, coaching and exposure to challenging academics and activities, so that they evolve into effective problem solvers and thinkers. Furthermore, gifted learners frequently have pronounced competence in a selective subject area, often making them angular in their abilities (as opposed to well-rounded). Therefore, educational goals for such learners cannot be fitted into standard, one-size-fits-all curriculum. There are many special provisions in educational policies of advanced countries like USA, Germany, Switzerland, Finland, Australia, Singapore etc, however, with its unique, geography, demographic and multiple dialects, Maharashtra's policies should be carefully crafted to suit its specific needs.

There are unique challenges posed by the diverse demography of Maharashtra: for example, the challenge of children from underprivileged communities, especially the tribal and nomadic communities, is that these children often perform as well as their privileged counterparts in non-verbal tests but they score low on verbal tests, this happens because the dialect they speak at home and in their community is very different from the standard the standard or official language used in tests. As the tests are almost always in formal state language, it puts these children at a disadvantage during standardized testing. Moreover these dialects do not have scripts and are limited to spoken-only format. Thus tribal or nomadic children do not get exposed to literature and consequently have limited ability to express in formal languages.

The special needs and requirements and the educational goals of gifted children cannot be fit into a standard, one-size-fits-all curriculum. This Chapter lays out set of recommendation to nurture gifted children in Maharashtra.

Recommendations:

1. Allocating Budget to Scout, Nurture, and Grow Gifted Children:

Of the 19% of the total budget amount, there is currently no significant provision made for gifted children education. As close to ~20-30% of the previously allocated budget for education sector remain unutilised, a portion of this money can easily be earmarked for the gifted children education without disturbing the already existing expenditures under the education sector.

2. Move towards semi-inclusive model of schooling :

The all-inclusive model is the most common model in Indian public school where everyone in the class is taught at the same level irrespective of their potential. We must move to a semi-inclusive model in which there are after-school programs that offer extra coaching/training to a small number of students with higher potential in addition to the regular classroom instructions. This is more common in western countries with after-school programs such as GATE (Gifted and Talented education), however, we also found the tribal MENSA program run near Pune by Dr Narayan Desai in agreement with this model.

3. Reform teaching and teacher education:

This can be done by giving teachers the flexibility and autonomy to design their teaching methodology and lesson plans as per student's potential and ability, making teacher training programmes more professionalised and research-focused, making National and State Eligibility Tests (NET and SET) more competitive and focused on critical thinking, and restricting active teaching hours to a lesson time of 35 minutes daily.

4. Reform curriculum and learning techniques :

This can be done through measures such as unit-based learning, introducing 'Theory of Knowledge' as a subject for secondary grades and allowing gifted children to pursue self-paced learning. Multiple forms of accelerated learning which include entry into school, non-graded classroom, grade skipping, curriculum compacting, concurrent enrolment, grade telescoping, and levelling within the grades must also be introduced.

5. Facilitate Distance Education and Online Education :

This can be done through promoting and facilitating e-learning, investing in infrastructure and staffing at examination centres for online courses, and free and open education with voice-over in local dialects in rural areas. In an innovative move, gifted children from private schools can teach those from the public as part of after-school community programs. . All learning material should be provided free of cost or at discounted prices to families who are unable to afford it. Besides this, online e-learning resources should be made available to students who have the potential for self-learning.

6. State Talent Search Examination(STSE)

For early identification and enriching the gifted students accordingly, the exam should be conducted for 8th standard students. State Talent Search Examination (STSE) should be designed in all regions in Marathi and English to encourage participation from rural and tribal students multiple testing points for gifted children, incorporating the concepts of 'Self-selection, Opportunity, Autonomy, and Acceleration' in education of teachers and gifted children, and smoothening the transition from schooling to higher education. Lastly, the scholarship amount and awards should be revised for all levels.

7. Involving former gifted students

A Joint Task Force/Committees of former gifted students and experts formed under the government must also interact directly with the children through visits. Not only will the gifted children benefit directly from interacting with such mentor-figures and role models, the practical and on-ground lacunae will also surface through such interactions and help unearth qualitative data for experts, which may otherwise remain undiscovered through quantitative yearly monitoring and assessments.

Section 9

Education for Civic Learning

The need of education for civic learning and democratic engagement for building citizenship is particularly relevant for the Indian society which is characterized by high degree of diversity in its social, ethnic, racial and religious belonging. Maharashtra, the second-most populous state and third-largest state by area in India is also the wealthiest state by all major economic parameters and the most industrialized state. Given these attributes, it becomes even more important for Maharashtra to evaluate its standing and contribution towards larger civic learning.

It is observed that community determined values that influence the behaviour of people from diverse groups are often contradictory to democratic norms and practices.

Education has the potential to cultivate democratic norms of behaviour and positive citizenship by enabling youngsters to work, interact and participate in civic life with people representing diverse cultures and perspectives. At present, school and higher education for civic learning has not become the main component of the Indian education system in general and Maharashtra in particular. It is not totally absent, but is largely confined to service-learning programmes, and courses on human rights and gender which are being selectively implemented. The old state board Marathi and English medium schools do emphasise on "Value Education" (Mulya Shikshan), but that is largely confined to preliminary introduction and lacks any evaluation of learning and practice.

Recommendations

a. Reform curriculum.

The curriculum should be reformed to include themes that deal with diversity, inequalities, poverty, discrimination associated with caste, ethnicity, gender, race and colour and linguistic dialect. It must use examples to incorporate the experiences and perspectives of wide range of groups from a variety of cultures and groups within a pluralistic society. For example, local insights available in Ahirani, Konkani, Vharhadi and other dialects of Marathi, the folklore carries immense wealth of values and ethics to be deployed in social life. This knowledge should be imparted through special courses to all students irrespective of their discipline.

b. Develop individual skills and capabilities to deal with diversity and disparity.

This will require a new pedagogical methods and teaching strategies that would help students from diverse, racial, ethnic and cultural groups to attain skills and attitudes needed to function effectively within a democratic society. These methods include inter-group dialogue, cultivating mixed-peer groups and activities such as ethnic clubs, cultural affairs and social events, exploration picnics, study

tours, participation in democratic practices at rural level like in Gram Sabha.

c. Motivate students for action and democratic engagement.

The educational system must encourage students to take up community engagement and collective action for public good.This includes assignments and projects that include study and engagement with deprived groups and minorities, collective action for addressing common problems and achieving greater public good and practising working in a pluralistic society. Some schemes should involve greater participation from students like the "Jalyukta Shivar" and encouraging participation in private efforts like "Water Cup programme" of Paani Foundation through idea of "ShramDaan"

d. Study and adopt practices from civic education models in other countries.

The Maharashtrian education system can adopt best practices from civic education models from other models like NCERT and from other countries/regions such as the USA, Scotland and Greece. The American civic education system rests on four elements namely knowledge, values, skills and actions; the Scottish model emphasises on infusing the curriculum with rights-based approach and ethos, whereas the Greek model adopts cross-curricular themes and optional subjects within disciplines to impart citizenship education. We can study these models and adopt practices and approaches customised to our needs.

Section 10

Towards Universal Healthcare

Maharashtra is the second populous state in the country. It is one of the most developed states in India contributing 13.3% of the country's GDP. The state has made impressive progress in improving the health of its population in last few decades however a lot more still remains to be done.

Some of the major challenges include:

- Financing and provisioning is a key area for reforms: Fixing uneven distribution and under - utilization of funds in the public sector healthcare and access to healthcare across the state
- Insufficient facility readiness, low provider skill, clinical management capacity is another area that is ripe for reforms
- Involvement of private sector in healthcare to deliver on the healthcare promise needs more work

Recommendations

1. Tackle delays in financing and expenditure in public health sector.

The all-India average of per capita expenditure on health is Rs.1217, whereas Maharashtra's expenditure is much lower at Rs.850. It's shocking that despite Maharashtra being one of the top contributors to India's tax base and GDP, the budget allocated to the health sector in the state is facing regular cuts. The state is not merely witnessing budget cuts, but there is regular budget under-spending too. 29% of the health budget was unspent in 2016-17. The sector is already burdened by insufficient resources, is heavily understaffed and the staff overworked.

Research indicates that much of the allocation happens on a historical basis, without clear links to the actual requirements at these facilities and regions, leading to the build-up of surplus cash-balances in some places and persistent shortages in others. There is need for considerable improvement in this process as well, including, potentially, the introduction of annual zero-based budgeting.

Maharashtra government would need to complete the automation of their payment-system back-ends and move entirely over to a process of timely bank-account based disbursements for all their payments. This move would improve both the tracking and utilization of all available government funds.

2. Improve access to, and performance of, public primary facilities.

In Maharashtra, every citizen should be entitled to essential primary, secondary and tertiary health care services that are guaranteed by the government. The range of essential health care services can be offered as a State Health Package (SHP) that will cover all common conditions as well as high-impact, cost-effective health care interventions for reducing health related mortality and disability. A panel of

experts should determine the package of services taking into account the resource availability as well as the health care needs of the state.

3. Human Resource needed to deliver assured Universal Health Care (UHC).

A large number of Community Health Workers (CHW), ANMs, nurses, doctors, technicians, management personal will be required. Each district should have (1) at least 5 or more CHW training centres, 1 per 2 blocks (2) District Knowledge Centre (attached to the district hospital) which should include a medical and nursing college in the districts having more than a million population and (3) Maharashtra should explore starting the three and a half years B.Sc. Community health courses after 12th Science in District general hospitals. This Strategy will benefit local candidates and in the long term will minimize shortage of trained manpower.

4. Regulate private healthcare access, cost and quality.

This can be done through positioning a strong State Health Protection Mission as a benchmark price-setter and as a design partner of the Insurance Regulatory and Development Authority (IRDA). The hospital licensing process should be strengthened (to tackle uneven healthcare supply across the state). A comprehensive price-control mechanism should be devised to exert control on all healthcare prices and to limit market forces through multiple measures.

5. Engage private sector in primary healthcare.

The private sector health care providers can be roped in by giving free/subsidized access to latest technology, training and basic healthcare products, to offer better and a wider range of primary healthcare at 'reasonable' fees. Government can develop a strong system of auditing and accreditation of private healthcare providers to control quality and promote such accredited healthcare providers actively.

Section 11

Governing Urban Spaces: Fresh Perspective

Maharashtra is one of the most urbanized states in India. However, at the disaggregate level there are a lot of blocks that are untouched by the process of urbanization. Such blocks and the surrounding regions are laggards when it comes to attainment of developmental status. As an aside one may mention that there has been a huge increase in Census towns apart from a definitional issue both of which lead to a serious underestimation of officially measured urbanization in Maharashtra. This is not a matter of pedantic nicety but the fact that large spaces of human habitat are not recognized or administered as urban means a significant distortion in fund flows via the welfare schemes. One more issue of some relevance is the spatial nature of urbanization in Maharashtra. This has to do with the fact that the census towns have largely grown in close proximity to the large cities. This has an implication needing a fresh perspective for in planning which needs to be outward rather than inward looking.

There needs to be an overall framework for the agenda. The best we can think of this is in terms of good governance plus. Governance to comprise of policy framework (informed by basic economic principles); capacity to understand and implement such policies (continual renewal and building of it) and transactions costs reducing simplification of processes and protocols. In addition three other things are essential. These are, one, empowerment of city level governments (decentralization complete with 3Fs, i.e., Finance, Functions and Functionaries); two, putting together a real time urban data base/ warehouse/ observatory to capture reliable, consistent and comparable data (physical outcome and financial) without which clearly a well-articulated position or plan is not possible and three, creating and independent monitoring and evaluation office (IEO). We now briefly elaborate on just four essential points that need urgent attention and action required to make our urban spaces vibrant and dynamic from the twin lens of livelihood and liveability.

Need for Urban Data Base

There is an urgent need to have a real time data base/ warehouse comprising of relevant, reliable and consistent data that is not only collected at a point in time but is updated and maintained over time with reasonable frequency. It would be useful to consider the lens of liveability and livelihood aspects this would involve socio economic data on budgets and actual spending on local basic amenities and services, and outputs or outcomes. Then there would have to data on investment in economic activity as well as on infrastructure from both public and private sources as well as the realization in terms of physical change that will need to be documented. This would lead to growth and jobs data on which will be of interest. The urban spaces are characterized by large amount of informality and hence data within informal subsystems would be essential. This would deal with establishments, employments and incomes. Then there would be objective as well as perceptual data elements that would have to be covered. The latter may be leveraged by using IT leveraged survey techniques that involve minimal costs and can indeed can be scaled up. The data would have to be collected reflecting financial aspects of

allocations/ actual expenditure, but one would also like the output or outcomes or index of outcomes data (which would obviously be with a lag and low frequency). Indeed, mapping of spatial aspects could be captured through satellite data which again will be continually updated. The last aspect would perhaps allow the Existing Land Use (ELU) to be available on a continual basis and thus lend greater efficiency to the DP process which currently mired in controversy. The level of disaggregation will have to be decided too. Just as an example, the RERA website now allows us to cull out incremental real estate development with great deal of accuracy and precision. Whilst we can gone on adding to this, Occam's razor principle must be applied and the minimally critical list should be zeroed in on.

One of the consensual elements towards good governance that has emerged in recent times is the acceptance of setting up of regulatory bodies that are independent and at arms-length from the government of the day. This idea needs to be extended in trying to identify an appropriate organization which will do the job. This must have the sanction of the highest relevant authority as well as general acceptability. Protocols that must be followed will have to set up that would allow collection, sharing and collation of such data that will be decided upon. Ideally however, we would wish for a Statistical Board for Local Bodies to be set up where real time data flows in (not collected) and is available to the various stakeholders with appropriate gate-keeping protocols.

Empowerment of ULBs

The city level governments in India are weak. Cities are creators of wealth but are not self-sufficient given their traditional revenue handles. Indeed, many of the text book local taxes were usurped by the State government in Maharashtra and in any case, in the post GST scenario there are few possibilities left barring rationalization of user-fees. Thus, grants from higher level governments appear the only way to empower ULBs. It is important to note that these should not be seen as hand-outs but rather as pragmatic investments, given that the fruits of a vibrant city economy are enjoyed via the buoyant tax revenues largely by the higher level government. It is therefore a case of nurturing the golden goose.

Constitutionally, post 74th Constitutional Amendment, the instrument provided for this purpose is that of State Finance Commissions (SFC). These SFCs are mandated to be set up every five years and they are to present an award/ recommendations including the formulaic financial devolution to take care of the vertical and horizontal imbalances that arise between the State and urban local bodies (ULBs) amongst others. As is obvious, the role of the SFCs between States and Local Bodies is supposed to mimic the role of Finance Commissions (FCs) between Centre and the States. Unfortunately the SFCs in Maharashtra have been dysfunctional. In case of the four SFCs' recommendations in Maharashtra thus far not a single financial recommendation has been accepted. This is in sharp contrast to the FCs recommendations that are routinely accepted by the Central Government. It is imperative that SFCs

should be deemed to have the same status as the FCs and their awards including financial recommendations should be treated with utmost seriousness. This becomes even more important in the post GST regimen where almost all the revenue handles have been subsumed under GST.

One of the key reasons for this, apart from mind set of the State government and the lack of discretionary fiscal space with the State. Also there is the unfortunate fact of reliable, consistent and comparable data not being available. Such a financial and physical data would allow the SFCs to use it as a basis on which they could design adequate, equitable and efficient devolution formula to the ULBs and PRIs. The result is that the fund flows from the State to local bodies, both urban and rural take the form of ad-hoc transfers at best and an exercise in political pork barrelling at worst. In this context we may mention that a comprehensive and transformative report dealing with empowerment of ULBs submitted by a committee under the Chairmanship of Shri. Sharad Kale with Shri. Gautam Chatterjee and Shri. Ramanath Jha as members, has been lying with the Maharashtra government. Decentralization with the accompanying 3Fs must be truly implemented if we want our cities and towns – which are the engines of growth – have to be government and nurtured as they ought to be. All of this merits a serious look and action by the government of Maharashtra on an urgent basis.

Revisiting DPs at City and Metro levels

Clearly, well laid out plans are essential for any urban space but equally well we need to tweak the current practice. The current development plans (DPs) are statutory physical spatial plans mandated to be created periodically. Such physical/ spatial land use plan must be backed by a well-articulated vision on one hand and in its turn the vision must be backed by reasonable principles-led planning.

Turning to extant practice of creating DP in Mumbai we note that the conformity of outcomes with regards to the plan is less than 10%. This implies that we may not be having the resources to fulfil what we is enunciated in the DP, and/or the underlying assumptions were not informed by realism and further that there are no binding constraints on agents and agencies concerned to follow the plan. In the midst of all this we merrily continue like the Bourbon Kings forgetting nothing and learning nothing! We need to seriously delve into why this has come to pass and take away important learning in such exercises in the future. The DP then degenerates into a sort of a wish list without foundation in reality. Indeed as an important aside, we may mention that Existing Land Use (ELU) mapping is the first and one of the most arduous and confusing parts of the DP mandate to the expert consultants. The fact of the matter is that it is fact-check about the city landscape in detail that is compiled ab-initio every 25 years or so! This is a colossal waste of time and energy and the fact that the city does not have an observatory or a data warehouse that would provide such information that is updated in near real time means that this duplication is essential.

Predicting an economy at a disaggregated level (production structure) is very difficult indeed, complex even for the steady state economies of the West. Indeed, its meaning is oftentimes indecipherable. For India it presents itself as near to impossible. So is the case of predicting demography. But, both these things must be done in order to provide a basis for the plan that is traditionally put together. The best one can do here (praying apart) is to indulge in sensible scenario building and be modest about it.

A sense of realism must put binding constraints on the plan making. These constraints, apart from those that arise from information to which we alluded above, come from political filter, lack of adequate economic resources, and extant capacity to interpret and implement the plan design. Allied to this is the issue of lack of temporal prioritization and link with the relevant budget. It should be made mandatory that in budget presentation reference should be made to the DP whenever a project is to be initiated. The reality is that once the DP is passed it is all but forgotten/ kept away only to be referred to for purposes of extracting fees or worse still, rent seeking.

Often in the financial program PPPs are mentioned without acknowledging the fact that our capacity in the public sector has been dismal in closing deals efficiently. Pure optics or elegance in these matters clearly ought to be sacrificed at least somewhat at the altar of realism for DPs to be meaningful. But the matter of lack of capacity on the part of the agents is deep rooted and generic even in more mundane things: the ones mentioned above are of the difficult variety. We cannot go into detail about the related issue of HR policy et al. here, but we mention it because many times this is passed over with conspiracy theories with attribution of deliberateness. Whereas we do not deny the various nexuses at play and great deal of rent seeking, the point is that it is not universal and great many times the reasons are to be found in lack of capacity in our agents.

In a world of uncertainty and incomplete information, especially dealing with a developing economy and its cities which are inherently undergoing structural transformation, it is well-nigh impossible to predict its state 20 years hence with any confidence.

The crucial point is to be rolling, strategic and minimalistic with street design as a beginning point. Over specification often leads to credibility being a casualty! In carrying out the exercise of DP keep an eye not just on the city boundaries but more importantly perhaps on where it's likely to expand spatially. This also implies that if possible work at the periphery first (in a green-field mode and only then turn to inner city renewal which is bound to be messy and conflict ridden). In the same vein perhaps we need to recognize that not all the crucial problems of a city (say, affordable housing; SWM et al,.) are likely to find a solution within the city limits and hence viewing from a Metropolitan lens could be pertinent and useful.

The important matter of securing adequate resources: Land based Fiscal tools

Adequacy of financial resources is of essence for cities to be well managed. Apart from exploiting the revenue handles available with the cities to the maximum possible extent, the cities need to be enabled, with appropriate checks, to raise resources from the financial markets. The third way, as mentioned above is through devolution by the State and Central finance commissions.

Another way, which is largely unexploited, is to make use of the fact that urban lands typically are highly valued. The trick is to leverage these values and raise resources to finance the urban infrastructure and provisioning of local public good and services. Whereas land is characterized by fixity of supply, the development rights on them are prescribed to them by policy. Such policies can augment the effective land supply but it needs to be done with care. We need to begin with a proper documentation of public lands and then manage them optimally. Once this is done, optimal land management can be achieved thereby leading to additional resources. Further one the facts of putting infrastructure in place is the emergence of positive externality that the persons who own land in relevant areas enjoy. Given that these are in the realm of unearned profits substantial part of this can be fairly taxed away by the State. This leads to a whole host of tools that are referred to as Land Based Fiscal Tools (LBFTs). Charging premium and generally charging FSI, as well as property tax, impact fees, development charge are some of the LBFTs that are used in practice. These are ways to use this highly valued resource (viz. land) that can be used to raise resources for urban infrastructure development. One of the priors for fully exploiting LBFTs is getting an organizational and institutional frameworks right for managing at least the Public Lands through creating Land Commissions/ Regulators or Companies. There are examples galore of Land Companies as well as use of LBFTs in the world. We must learn from them and implement them in practice in India.

Thus whereas land-based fiscal tools (LBFTs) can emerge as a major instrument for leveraging funds for city level infrastructure development. Implementation of this requires several pre-requisites (all doable) and importantly, capacity building of local bodies. One of the major issues here is that constitutionally, Land is a State subject. So, the resources raised through these measures (at least a large portion of it) have to be ring fenced by the State for devolving them to the local bodies. Again, the State needs to show a statesmanlike attitude in doing this. We would not be off the mark in legitimately expecting this of, at least, the progressive and aspirational urban States like Maharashtra.

The Way Forward:

The local public finance is missing in India. India's future is urban and we need to nurture urban spaces as a matter of pragmatic policy. Whilst these present several challenges, we consider but a few which we

consider crucial and call for immediate thinking and action.

1. Need for Urban Data Base: This is essential if we want to envision and plan for well managed/ governed cities. It leveraging is the smart element in this and we should set up a statistical board with the sanction at highest level so that protocols are followed and information/ data flows seamlessly in real time.

2. Empower ULBs: Adequate resources have to be provided by using revenue handles optimally, Take SFCs seriously and devolve adequately, equitably and efficiently. Act on the recent report by Kale Committee on strengthening ULBs.

3. Revisit DP making: The extant way of formulating DPs is unrealistic and needs to be discarded. It should be minimalistic, strategic and rolling rather than micro detailing. Right of the way street design should be the beginning point and there should be a rolling character endowed to DPs. Where the city will expand should be kept in mind and we need to adopt a metropolitan lens.

4. Land Based Fiscal Tools: Every avenue of resource raising needs to be exploited. As an important prior we must set up land commission/ companies to document, manage and monetise at least public lands. There is much learning to be had from the practice and experience from the world over.
Recommendation

The most important prerequisite is the availability of an adequate data base. An institutional mechanism is required that provides data on physical, financial as well as other profile parameters related to inputs and outcomes/ outputs related to the domain of operation of ULBs. In fact, what is required is not just a data base but ideally a data warehouse that would track and update relevant variables in real time. With the technological advance and tools like the GIS, it should be possible to put it all together.

The writing of complex PPP contracts these clearly are crucial instruments to undertake the much needed urban infrastructure investment. There is a real lack of capacity (apart from the other rectifiable lacunae pointed out by the not so recent Dr. Vijay Kelkar Committee report on the matter) when it comes to writing complex PPP contracts from the public sector's viewpoint.

there is an urgent need to have a real time data base/ warehouse comprising of relevant, reliable and consistent data that is not only collected at a point in time but is updated and maintained over time with reasonable frequency. As a useful aside we will also be able to view cities as economic entities and compute city level GDPs, discussions around which are currently in vogue. This takes us to some interrelated questions that need to be answered or at least kept in mind as we proceed with the project.

There would have to data on investment in economic activity as well as on infrastructure from both public and private sources as well as the realization in terms of physical change that will need to be documented. This would lead to growth and jobs data on which will be of interest. The urban spaces are characterized by large amount of informality and hence data within informal subsystems would be essential. This would deal with establishments, employments and incomes. Then there would be objective as well as perceptual data elements that would have to be covered.

The city government itself will find it a useful tool/ input to design evidence based policies and to monitor the implementation of avowed policies. This will lead to better governance and delivery. As an aside a sunset of this data base will also serve the State Finance Commission to do its job with greater ease and efficiency, leading to more meaningful award. In addition, the data-warehouse will facilitate independent evaluation of performance of the governmental policy implementation.

Section 12

Preserving Cultural Heritage

Culture is increasingly being seen as the fourth pillar of the discourse on sustainability. Along with the social, environmental and economical, it is imperative that culture be thought of as essential to livable habitats. Culture is a dynamic process. Ever changing but yet with firm connections, continuities, and overlaps with the past. Our cultural heritage can be broadly understood as consisting of the Built Heritage (various buildings and archaeological remains), Material Heritage (examples of crafts and craft traditions), Natural Heritage (places of natural beauty and of importance for the ecosystem) and Intangible Heritage (oral traditions and performing arts).

Throughout human history change has been constant and the concern for protecting our heritage does not mean fossilizing the past. On the contrary Cultural Heritage needs to be seen as an essential component of sustainable development policies. Our Heritage is important not only for the sense of continuity and identity that it gives us but also for the valuable knowledge of resource management that is embedded in our past. Whether its traditional water management systems or sacred groves which protect biodiversity, our past has a lot to offer for our future. Cultural heritage, in all its categories, is a non-renewable resource. It is subject to pressures of development. As the existing development models end up in flattening of the cultural contours, this cultural capital is eroding at an alarming rate.

Concerns of heritage protection can no longer piggyback on mainstream development processes but have to become an integral part of our visions of growth.

The broad policy concerns that to look at culture as a whole are mentioned below -

a. Comprehensive 'National Culture policy' – Lack of Culture policy for India has been a much-discussed topic of public debate. As of 2018 CE we have monument centric legislation and few lines in the town planning acts of various states. In most of the cases cultural heritage has been seen as a concern of the various state tourism departments. A comprehensive culture policy can establish guiding principles for various stakeholders involved with managing our cultural heritage.
b. Legislative Framework - A robust legislative framework for managing cultural heritage would be the next step in managing our past for a livable future. The culture policy can again act as an enabling frame of reference for such a task.
c. Information Management - Information, its management, and availability are key aspects of sustainable planning. Mapping and Documenting our heritage and setting up an exhaustive Heritage Information Network will provide the planners with the right data at the right time and also provide opportunity for all stake holders to actively engage in the decision-making process.
d. Capacity Building – Capacity building at organizational and individual level will determine the success of our efforts to manage cultural heritage.
l. Capacity to act meaningfully and consistently on matters of Heritage.

ii. Capacity to coordinate and relate with other organisations for Heritage Management.
iii. Capacity to maintain long term focus on goals of protecting and managing heritage for livable habitats.
iv. Capacity to participate in decisions regarding Heritage resources.

The recommendations that follow, focus mainly on Built, Material, and Natural Heritage Resources. It should be mentioned that these categories are more for convenience from a policy making perspective as in reality many of the cultural resources will tend to occupy many categories.

1. Built Heritage – Built heritage comprises of all the built components of our historical living environment. Built heritage is not only monumental buildings like temples, forts, or memorials, but also humble buildings like houses, markets, post offices, schools, etc. Built structures like river ghats, wells, towers, bridges, etc. are also considered in built heritage.

Built heritage is the largest tangible component of our past. It therefore is a representation of our collective identity. Without built heritage the past is just stories. It is left to the imagination of the future generations and therefore its memory becomes weak over time. Built heritage is an anchor that provides a tangible context to our collective cultural memory.

Built heritage is also a resource. Many heritage buildings serve their purpose to this date. Many, if conserved well will continue to serve us even in the future thereby

saving on our scarce resources. Across the world, built heritage has been successfully used for image-building and branding of places thereby attracting tourism and investment.

For all of the above, a comprehensive approach for the conservation of the built heritage is necessary. A sporadic, monument-centric, and cosmetic approach will never yield the intended results.

Recommendations

i. Documentation and listing is the first step towards any conservation action. Heritage listing for each city and district of Maharashtra is the first priority. Comprehensive lists made as per globally accepted formats need to be prepared on a priority basis so that any further action is possible.

ii. Notification of the heritage lists is the second step. The listed structures need to be given legal recognition and protection.

iii. Listing should recognise individual buildings as heritage as well as identify areas where buildings and built components have a collective heritage value. Such heritage precincts should also be part of the heritage lists.

iv. Heritage regulations at two levels need to be framed. The State should frame overall policy level rules and regulations while bye-laws that take into account the peculiar heritage of a place need to framed at the city and district level.

v. Heritage regulations urgently need to be made incentive-based and empowering for heritage property owners to conserve their buildings and benefit through them. The current restrictive nature and punitive tone of the regulations needs to be changed on priority.

2. **Material Heritage** - The handcrafted products which make up our material Heritage, are made with the help of simple, indigenous tools by craftspeople who belong to a strong fabric of tradition, aesthetic, and artistry. Objects that are crafted by hand embody a unique identity and convey a special sense of purpose. Crafts not only define our cultural roots but are a testament of age-old traditional wisdom and social memory. Traditional crafts are a reflection of a way of life and culture, passed on from one generation to the other.

Recommendations

i. The crafts have to deal with changing lifestyles and have to compete with mass-production. Interventions from designers can help reestablish the relevance of these crafts.
ii. The approach towards craft conservation needs to be community oriented.
iii. It is important to ensure that the decision of an individual to continue with the craft practice or to take up alternate means of earning a livelihood, be one of choice rather than of compulsion.
iv. The status of craftspeople and communities needs to be safeguarded by adequate recognition, identification and registration with the Government.

3. **Natural Heritage** – Natural heritage includes range of terrestrial and aquatic ecosystems and the services they provide. Nature has always been an influential and integral factor in our culture and livelihood. It forms the foundation for existence and quality of life to humans.

Recommendations

i. Identify, notify and conserve unprotected ecologically sensitive areas on macro as well as micro levels, which will also focus on areas with presence of RET (Rare, Endangered, Threatened) species

and fragile natural heritage elements such as origins of rivers.

ii. Increase in the protected areas (terrestrial and aquatic ecosystems) and encourage insitu conservation of wildlife.

iii. Thorough and speedy implementation of acts such as The Biological Diversity Act 2002 and Forest Rights Act, 2006 ensuring participation of people in:

a. Scientific research, documenting, monitoring and conserving biodiversity
b. Conservation of community conserved ecosystems
c. 'Protecting peoples' rights on biodiversity

iv. Environmental acts and regulations should prevail over the developmental policies

v. Natural grasslands and meadows should be protected in their natural state as they support unique grassland biodiversity and should not be altered or converted into tree plantation zone.

vi. Existing historical and traditional systems / practices should be dovetailed in to natural heritage policy. E.g. sacred natural sites, traditional water management systems, forts, etc.

Section 13

Agenda for Climate Change

The State of Maharashtra with Area of 307,690 Sq Km including over 700 Km of coast-line and a population of 112,372,972 (2011) has a huge Environmental footprint. It can play a key role in contributing to India's NDC Commitment and go beyond to set a new International example.

Some recommendations for achieving the above by the Govt and the People -

Increase awareness and information about Environment and Climate Change reality

- Create on-line Govt. platform for regular monitoring of data, information, regulations etc. and for displaying status of pollution and emissions for each district and Taluka.
- Make state-level emissions inventory every 2 years starting from 2019-2020 onwards.
- Involve researchers, academics, experts and citizen groups in decision-making and tracking the progress of environmental preservation and Climate Actions by the State.
- Introduce relevant information on Environmental Degradation and Climate Change in all subjects in Schools, Colleges and Universities. Encourage innovative use of Social media.
- Finance innovation and experiments in sustainable and low carbon practices including R&D on clean energy techniques and also on new negative-emission technologies.
- Train women Self-help groups and un-skilled labor in Green infrastructure and RE Tech.
- Popularise Carbon calculator culture and encourage Energy and Carbon Auditing for industries, commercial buildings, residential buildings and individual households.
- Enhance awareness about preventive measures in management of droughts, heat-waves sudden floods or sea surges and enhance climate change adaptation capabilities.

Policy reforms to reduce fossil fuel dependence with no new investments for Coal

- Modernise existing coal plants with technology for more efficiency and less carbon emissions. Replace Coal with gas-power and explore even Nuclear power addition.
- Empower the public for ambitious rooftop Solar power generation for 5 GW in 5 years.
- Execute robust net-metering policy for solar power in metropolitan cities by enabling DISCOMs to change 'Business Model' to benefit from RE supply and distribution.
- Incentivise R&D in Battery technology for encouraging distributed RE generation (Tesla Wall model) and use RE microgrids for rural areas that lack adequate electric power.
- Legislative reforms for replacing Diesel Gen-Sets with Solar Gen-Sets across all back-up applications. Make it mandatory for all new buildings – domestic, commercial, industrial.
- Maximize energy efficiency and distributed solar capacity in all government Institutions.
- Create Solar charging infrastructure across the State for the E-vehicles of the future.

Modernize state-wide infrastructure to increase the overall power supply

- Invest for aggressive prevention of electricity theft and T&D loss which compromise system efficiency. Device innovative new tariff system for BPL consumers.
- Introduce smart-grid systems for higher resilience to climate fluctuations and also to enable flexible revenue generation from dynamic 'Time of Day' tariffs schemes.
- Leverage IOTs and smart-home concepts to bring shifts in electricity consumption behavior by bringing more visibility to real-time electricity and water consumption.
- Use blockchain technology to empower consumers with the choice of power supply in real-time open-source mode instead of being dependent on State DISCOM.

Land use reforms with strict compliance for all new developments

- Integrated Planning for all new Urban Centres like PMRDA and Satellite Cities.
- Device modular 'low-carbon' economy cluster development in peri-urban regions.
- Maintain 'built to open sky' ratio in urban areas preserve small Ecological Footprint.
- Encourage electronic connectivity-based work culture to reduce need for physical travel.
- Expand E-Governance and drastically reduce paper-work in Govt procedures/practices.
- Introduce stricter norms for Environmental Impact Assessment and Environmental clearances to projects in Govt/Industry that can have lower Ecological foot-print.
- Extensive use of GPS mapping to track illegal construction activities and destruction of Ecology and Climate Resilience in newly developing peri-urban areas.

Innovative Comprehensive Mobility Plans

- Integrated planning for buses, metro-rail and BRTS corridors including a focus on last-km connectivity – the absence of which forces people to use private vehicles.
- Design 'Wheel & Spoke' public transport architecture for all new major townships.
- Improve cleanliness, comfort levels and easy connectivity of all public transport.
- Incentivize E-vehicle across 2 / 4-wheel industry. Mandate E-buses across the State.
- Improve road-safety and maintenance of roads and side-strips to reduce dust pollution.
- Power all Bus stations, Railway Stations and Airports totally with Solar Energy.

Increase State-wide Green Cover to Triple the Carbon Sequestration capacity in 5 years

- Incorporate mandatory preservation of forests and green patches for Biodiversity.

- Enforce land-use reforms to preserve water bodies and catchment across the State.
- Maintain and protect environmental flows of groundwater, streams, rivers and wetlands.
- Enforce revised norms for Construction Industry for climate-resilient design and material choice for reducing the inherent need for electrical heating/cooling requirements.
- Encourage development of Green-Field township models for all future expansions.
- Protect wilderness areas in and around the cities and villages with citizens involvement.
- Restore coastlines and reduce seawater pollutants to increase carbon sequestration.

Enhance efficiency of Water & Waste management to reduce Pollution & Energy Wastage

- Reform Regulatory policies to support circular economy in waste management.
- Introduce policies and incentives to support environmental startups with good potential.
- Enforce strict air and water quality standards and increase STP capacity to prevent water pollution. Enforce mandatory green-zones around all rivers and water bodies.
- Revise and raise fines for Local governments people and businesses who cross the permissible limits in pollutants and emissions with strict environmental auditing systems.
- Icentivise organic farming practices and make farmers and consumers more aware.
- Initiate Govt. campaign for sensitizing people towards more attention and care for the Ecology and Environment in the changing 'Climate Challenged' future.

Section 14

Harnessing Bio-Fuels

Hydrogen: A fuel for future

India is one of the biggest emitters of Green House Gases (GHG), which total annual GHG emissions increased from 2,136.8 million tons (MT) of CO_2e in 2010 to 2,607.5 MT of CO_2e in 2014[1] and so the continuously upward trend. Additionally a developing country like India needs sustainable and affordable energy source to fuel its growth. India imported 85% its crude oil demand amounting to USD 88 billion in FY 18. Out of India's total diesel consumption of 80 million tons, 35 million tons was consumed by public transportation sector (trucks and buses).[2].

Clearly we need an alternative.

Hydrogen is essential element in ecosystem. Right from water (H2O), which chemically contains 2 atoms of Hydrogen and 1 of oxygen, hydrogen is most abundantly available. Unlike conventional energy source viz. hydrocarbons, hydrogen does not produce any greenhouse gases by combustion. If hydrogen is used in a fuel cell, it emits only water vapour.

The concept of hydrogen economy relies on its characteristics as it is light, storable and reactive, has high energy content per unit mass, and can be readily produced at industrial as well as decentralised scale. Further as hydrogen can be used without direct emissions of air pollutants or greenhouse gases and it can be made from a diverse range of low-carbon energy sources, it is looked as a good solution for global warming and climate change issues.

Many countries are racing to materialise hydrogen economy. Japan has set a target of having 40,000 fuel cell vehicles (FCEV) on road by the Tokyo Olympics in 2020. Toyota, Nissan and Honda formed a joint venture with major gas and energy firms to add 80 new Hydrogen stations to existing 100 ones in Japan to promote Hydrogen economy. Japan's Ministry of Economy, Trade and Industry (METI) is expected to spend $975 million on hydrogen projects till March 2020.

China has initiated withdrawal of subsidies on BEV and will now offer them to FCEV and related ecosystem. China has also developed 230,000 m2 area near Yunfu city as "Hydrogen Energy Industrial Park". It is estimated that China has spent $12.4 billion in 2018 for supporting fuel cell vehicles.

Hydrogen Mobility Europe (H2ME) is a flagship project launched in 2015 to develop the network of Hydrogen refueling stations across Europe. This has brought together four most ambitious initiatives on hydrogen mobility in Germany, France, Scandinavia and the UK to initially place more than 1,000 hydrogen fuel cars on the road.

In USA, hydrogen economy developments are taking place across several states including California, Connecticut, New York, Colorado, Hawaii, Massachusetts, New Jersey, Ohio and Pennsylvania.

By 2021, at least 11 automakers including Toyota, Lexus, Hyundai, Kia, Honda, Mercedes-Benz and BMW will have rolled out hydrogen fuel cell vehicles. Other entrants in this space include Tata Motors, Pininfarina S.p.A. (owned by Mahindra & Mahindra), Riversimple and the RONN Motor Group.

Maharashtra , A Potential Hydrogen Economy

Out of the 29 states of India, Maharashtra is the 3rd biggest by area with 2nd highest population. It is one of the most urbanized and industrialized states with 45.2% population living in urban area. In case of economy as well, Maharashtra is one of the key states driving Indian economy with share of 14.1% in national economy. More than 10% of the national industrial investment in last 2 decades has been done in Maharashtra[3]. Along with industry and services, the agriculture sector also prominently contributes to state economy with 12.4% of national net sown area (FY18) is in Maharashtra.

Energy is the crucial resource to power such high growth. In FY 18, the state of Maharashtra consumed about 8,673 thousand tons of diesel out of national consumption of 80,991 thousand tons accounting for 10.70%, most of which is used for transportation with some quantity consumed for generator sets and agriculture pumping for irrigation.

Hydrogen is one of the most versatile fuels which can be can be used as an alternative fuel for IC engines and also in process industry as reducing agent. It can be used in its pure form in fuel cell or can be mixed with conventional fuel.

Let us look at first as potential for hydrogen in bus transport.

Intercity and village connectivity in Maharashtra is primarily ensured by state public transport buses which carried about 67 lakhs passenger per day in FY 18 with 18,652 buses. It is estimated that MSRTC buses effectively travelled 55.72 lakh kilometres per day. Within-city (intra-city) public transport system is available only in 21 cities across Maharashtra and is catered either by local public transport utilities or MSRTC with fleet of 6,172 buses. Biggest among city transport utilities are BEST, Mumbai and PMPML, Pune with fleet of 3,058 and 1,425 buses respectively.

Most of these buses are diesel fired emitting carcinogenic particulate matter and polluting fragile urban environment. Additionally, barring three bus utilities, all are loss making. Top three transport utilities (MSRTC, BEST and PMPML) have incurred loss of Rs. 2,832 crores in FY 18[4]. The rising cost of fuel and

higher maintenance cost of diesel fired buses can be attributed as major reasons for such loss. This adverse financial condition of diesel powered public transport companies points to a huge potential for cleaner, affordable and locally available fuel.

Transportation sector will be the first to get disrupted by hydrogen but is not the only in which hydrogen can be used. Hydrogen can also potentially used in standalone power generation replacing diesel generation sets as well as agriculture pumps replacing fossil fuel pumps.

Producing Hydrogen

Conventionally, popular method of hydrogen manufacturing is 'Steam Methane Reformation (SMR)', which uses fossil fuel as an input, making the produced hydrogen as nothing but 'reformed' fossil fuel. Hydrogen can also be produced by electrolysis of water. However, in spite of decreased price of renewable electricity in India (Rs. 2.44 per unit), hydrogen production through electrolysis route is not economically viable yet. These manufacturing constraints bring us to production of hydrogen with biomass as a source. Biomass can be obtained from waste (agriculture as well as urban) and by dedicated energy farming. Biomass can be further processed with two methods viz. methanation and gasification to produce carbon neutral environment friendly hydrogen.

An agrarian country like India has much more promising opportunity to reduce cost of hydrogen production through biomass-hydrogen route. Our analysis shows that, hydrogen at price of Rs. 160 per kg can attain parity with diesel with equivalent energy capacity. Considering present electricity prices, only bio hydrogen can attain such a low price band.

Reference : [4]Economic Survey of Maharashtra, 2018-19, page 170-173

Urban waste to hydrogen

Maharashtra is one of the most urbanized states in the nation. The MPCB estimates total daily waste generation of 22,897.8 metric tons (MT). 27 municipal corporations are the biggest contributors with 84.72% share in MSW generated. Overall, only 34.70% of the waste (7,945.5 MT per day) is treated scientifically, while remaining is dumped unscientifically[6].

Due to thrust of Swachha Bharat Abhiyan, collection of waste in ULB area is increasing gradually. The untreated waste not only poses a threat to health but is also a wastage of resource. This waste can be a source for hydrogen, with theoretical potential of 230 metric tons hydrogen per day.

Even if we considered waste generated only in 27 municipal corporations, there is potential to produce 200 ton of hydrogen per day through 19,401 MT per day MSW generated. Though theoretically hydrogen can be produced from any form of waste, for commercial viability, we are focusing on hydrogen production from dry and garden waste only, which is typically 40% of the MSW. Hence, commercial potential for hydrogen through dry and garden municipal waste can be estimated as 150 tons hydrogen per day. This can potentially power to 15 lakh running km per day, sufficient for 10,000 buses each running 150 km/day. This clearly indicates that theoretically hydrogen from MSW can satisfy whole bus public transport demand in corporation areas.

The cost of setting up a plant with Hydrogen production capacity of 2 ton per day from 100 ton waste per day is around ₹ 50 crores. Considering the fact that the municipal corporations have to spend money on tipping fee for the waste, one can assume that the waste will be freely available for Hydrogen generation. Hydrogen produced from such cheap source will be at par with diesel and can be replaced economically.

Hydrogen 'farming'

Maharashtra is still agriculture dominated economy. However, higher input costs for farming, rising climatic uncertainty and market fluctuations has made agriculture sector debt ridden. The agriculture situation is such grave that out of 36 districts in Maharashtra, 14 are considered as 'Farmer Suicide Prone'. In this light, hydrogen as an assured market for agriculture waste and dedicated biomass farming will help in reducing uncertainty along with providing additional source of disposable income for farmers.

Cereals, oil seeds and cotton are the crops cultivated in Maharashtra which produced surplus agriculture waste. It is estimated that, considering 100% of agriculture waste is available for hydrogen production, the state has theoretical potential of producing 750 thousand tons of hydrogen per year (2,000 tons hydrogen per day) using 38 million tons biomass waste.

Out of total geographical area (30.7 million hectors) of the state of Maharashtra, 5.2 million hectors is forest while 3.5 million hectors is uncultivable land. Gross cropped area is 23.2 million hectors with fallow area is 2.6 million hectors. Other cultivable land which includes cultivable waste land, pastures and tree groves is 2.5 million hectors[8]. Considering full (100%) utilisation of cultivable waste land, pastures and tree groves, the State has theoretical potential of producing 3.7 million tons hydrogen per year (10,000 tons per day). Present legal framework allows corporate farming on waste land for energy generation.

Maharastrian farmers are technologically advanced and progressively adapt to different farming practices. Dedicated biomass farming for hydrogen will lead to massive formal and informal employment opportunity in agriculture sector and will also create assured source of income free from market fluctuation.

Using Hydrogen

The hydrogen so produced needs to be converted into usable energy form. It can be done through fuel cells. It is an electrochemical device that converts the chemical energy of hydrogen into electricity through chemical reactions. Fuel cells can produce uninterrupted electricity for as long as hydrogen and oxygen are supplied. At present, fuel cells are available at $1,000 -1,200 /kW. In case of Indian scenario, we believe that the cost of a fuel cell can be brought down to 30% at $350/kW. Further the costs are predicted to reduce drastically with mass scale manufacturing. Department of Energy, USA, pegs the cost of automotive fuel cell system at $46.16 /kW for production scale of 5 lakh automobile systems of 80 kW each[9]. By 2025, costs will further decrease to $38.34/kW.

Market shift to hydrogen economy

There have been such false starts in the past, however present is the right time. The recent successes to get cheap power by solar PV technology and global thrust to shift to more cleaner economy has developed driving force for hydrogen economy. Depleting fossil fuel reserves and dynamic oil based geopolitics has generated massive traction to be independent in energy sources for India. Investments in hydrogen can help foster new technological and industrial development in economies around the world, creating skilled jobs.

Hydrogen economy is not just a fuel substitution activity but a complete paradigm shift from hydrocarbon economy. It is well proven now that current system of fossil fuel based hydrocarbon economy is hurting more than helping. There is need to raise a parallel system to carbon economy, starting from resource supply chain for biomass to development of safety code and standards for use. Such system should be technologically feasible, economically viable and environmentally sustainable.

Conclusion – Benefits to Maharashtra

Going beyond replacement of fossil fuels (diesel) in transportation industry, hydrogen can also be used in for agricultural appliances and standalone power generation. This substitution is expected to save $37 billion equivalent forex reserve (For Maharashtra about $5.2 billion per year). Potentially, hydrogen economy can reduce ~150 Million tons of CO2 emissions per annum (for India), contributing more than 30% to India's INDC commitments singlehandedly. As agriculture residue will be utilized in hydrogen manufacturing, it will save emissions due to burning of residue. Tracing from past data, this will lead to saving of 210 million tons of GHG equivalent.

The agriculture based hydrogen economy will prove to be big boost to debt ridden agriculture sector with potential surplus income of ₹2,000 to ₹2,500 per acre from sale of crop residue. Further dedicated biomass faring will generate assured disposable income of ₹25,000 per acre per year to 10 million farmers across the nation. Overall hydrogen economy will potentially lead to incremental income of ₹1,300 billion to the agriculture sector for India. It is also expected to create 500,000+ jobs in Bio-hydrogen plants, supply chain management for skilled/ unskilled workforce and opportunities of rural entrepreneurship in biomass aggregation.

In addition to hydrogen as source of energy, it can also be used as energy storage resolving critical energy challenge of managing the variable output from renewables like solar and wind. It can also facilitate decarbonisation of a range of sectors – including chemicals, iron and steel – where GHG emissions mitigation is difficult. Strategically, hydrogen will provide secure sustainable and independent energy source for India's development.

We believe that the time for Hydrogen Economy has arrived . and as in many other fields, Maharashtra can take the lead!

Section 15

Making Maharashtra Globally Competitive

It is well-known that Maharashtra (M) has always been an industrial powerhouse of India and also has been the top FDI destination in India, since 1991. The latest (2019) policy document, "New Industrial Policy 2019- For Futuristic Maharashtra", (NIP) which has unfortunately not been adequately discussed in the public domain, contains some useful ingredients which could propel M onto the next stage of industrialization. The purpose of this Note is to highlight the current status of M's industries and to focus on the hitherto unexplored opportunity of 'entering Global Value Chains (GVCs)', as a way forward, especially for the SMEs of the State.

A. Facts and Key-Trends

- M has attracted more than 30% of all the FDI coming to India in the last 18 years
- Post-1991, M has commissioned about 25% of all the domestic investment projects sanctioned in terms of investment and 45% in terms of number of projects
- Three Top investment-attracting sectors – IT; Fuel and Metallurgical, followed by Chemicals and Textiles.
- In the last three years, M has attracted about 15% of all the domestic investment, next to K and G.
- Significant rise in the Implementation rate during 2018.
- MSMEs – Konkan and Pune top destinations for investment as well as employment
- M constitutes about 28-30% of India's exports
- M at 13 in EoDB...!!

B. Policy Initiatives

- Single Window / MAITRI
- Sector-specific – Retail; Textiles; IT; Defence; Renewable / Solar; Bio-Tech; MMDP; Electronics etc.
- Encouraging Women Entrepreneurs
- Udyog-Aadhaar for MSMEs
- PPP Infra Projects

C. NIP 2019 Highlights

- Creating well-developed Infrastructure, including Private Infrastructure;
- Leveraging Special projects such as Samruddhi Mahamarg; DMIC;
- Promoting Thrust Sectors – Electric Vehicles, Aerospace; AI/Robotics/Nanotech etc.;
- Employment Generation mainly through Manufacturing and emphasis on MSMEs, via – Institutional Support; Cluster Promotion, Facilitating Public Funding;
- Fiscal Incentives for Mega Projects in Specified Areas;

- Facilitating Ease of Doing Business via Regulatory simplification;
- Strengthening the District Industrial Centres;
- Building global brands across sectors

A Word on the Relevance of GVCs:

Today, as recent research reveals, more than two-thirds of the global trade comprises trade in intermediates/ components, which is mainly driven by the leading MNCs. This trade takes place through the numerous 'global value chains', or 'international production networks', - wherein the process of production is fragmented into a number of manufacturing as well as service- related activities, spread over several location across the world.

Consequently, for the individual SMEs, their location-specific competencies and efficiencies now form the key to enter into these GVCs and subsequently, move up the value-chain. Recent policies and trends in many developing nations - especially the Asian countries, unambiguously demonstrate that these countries are devising specific strategies to enable and empower their industries to enter into these GVCs and thereby generate additional income, employment and exports.

Some shining examples of this approach include - China, Philippines, Vietnam etc., which have successfully utilised the GVCs in sectors as diverse as Food-Processing; Textiles...to Electronics and ICT. The way forward in that direction is to facilitate the entry of our SMEs into these GVCs through specific policy- initiatives. (The 'Vizag- Chennai Industrial Corridor' (VCIC) Report prepared by the ADB throws light on - how certain select industrial sectors in that region can capture the global markets through GVCs. (ADB,2017). There is thus a golden opportunity unleashed by the forces of globalisation and technological change to leverage Maharashtra's industrial power and competency in manufacturing and services / R&D, to create global brands.

Needed – An Integrated Approach

The following measures have already started bearing fruits. "Make-in- India", "Progressive Liberalisation of FDI", "EoDB Initiatives in several States"... etc. In addition, there are the SEZs and some 'MSME Clusters'. India has recently entered into many FTAs with countries, most of them envisaging reduction in import tariffs on several products/components. What is now required is a strategy to implement the integrated approach, considering the above-mentioned achievements and features. Some possible contours of the proposed 'Investment-Industry-Trade (IIT) Policy, couldbe :

A. Targeting of FDI and strategic collaborations with specific industries and specific locations, in order

to enable the local industries to take advantage of foreign expertise and technology to enable their entry into GVCs.

- B. Efforts to enhance exports and international brand building of local products high leveraging of the GVC ready setup or products/ services. This could be done by enabling and nurturing vibrant SME clusters.

- C. Designing the FTAs in such a way, so as to incorporate the FDI- GVC nexus to benefit the local industries.

- D. Needless to say, the horizontal IP, in terms of provision of better infrastructure and connectivity, flexible labour laws and land acquisition procedures, will play a key role in this scenario.

- The proposed Governance Structure or implementation - mechanism could take the following shape:

- The State Governments need to identify, along with other stakeholders (Trade and Industry Associations), the local GVC-ready sectors and offer them non-fiscal incentives

- 4. Experiment with a few SEZs and / or SME clusters – this strategy which can create huge employment- potential at the regional / district level.

D. The GVC-Imperative for Maharashtra

- M MUST take a lead and be in the forefront by a conscious design to target the sector and region-specific MSMEs in particular, to get into the GVCs
- M has proven strengths in - Engineering, IT; Design; R&D; Pharma; Auto; Textiles, BFSI; etc.
- GVC-enablement should be a conscious policy by GoM.
- The FDIs should be so targeted so as to supplement those sectors which are / have the potential of becoming GVC-ready
- This will boost local value addition, growth and local employment
- Skill-development to receive top priority

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