

## **“NATIONAL EDUCATION POLICY 2020 AND HIGHER EDUCATION IN KERALA”**

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### **ABSTRACT**

*Systematic education policy is essential for offering school and college education in a country due to the reason that education leads to progress in society. Different countries use different education systems with different stages during its life cycle of school and College education levels. Recently, the Government of India implemented a National Education policy suggested by an expert committee headed by Dr. K. Kasturirangan, former chairman of Indian Space Research Organization (ISRO). The committee suggested both incremental and drastically changes in existing Indian education policy and give guidelines to effective implementation in the country by 2030. This is also in line with the Objectives of fourth Sustainable Development Goals to provide quality education for all citizens through fourth Educational Industry Revolution (EIR 4.0) in the country. The National Education Policy undermines social equity and democratic access to education. It impedes unconventional, critical thinking and free enquiry by tying value education up with a Vedic belief system that is not in consonance with current times and Constitutional principles. Moreover, by a blatant valorisation of and recurring fetish for a Vedic past, the policy suppresses the cultural multiplicity and diversity of the evolution of knowledge production in the country and reduces the same to a few sacred texts from the ancient period. Further, by entrusting a centralised National Research Foundation (NRF) as the sole authority to identify, approve and fund all research projects and topics, its scant regard for constitutionally-sanctioned principles and*

*practices of decentralisation. This paper reviews the related literature on National Education policy 2020 through content analysis, along with its salient features. The analysis also compares and highlights the possible effects of NEP 2020 on Kerala Higher Education System.*

**Keywords: Higher education, India, Quality Education, Kerala, National education policy,**

## **INTRODUCTION**

NEP 2020 replaces the thirty-four-year-old National Policy on Education (NPE), 1986. This policy is aligned to the 2030 Agenda for Sustainable Development; its professed aim is to transform India into a “vibrant knowledge society” and “global knowledge superpower” by making both school and college education more “holistic, flexible and multidisciplinary”, suited to 21st century needs and bring out the “unique capabilities of each student”. The National Education Policy 2020 was expected to objectively review the achievements and failures of the previous National Policies on Education, assess the new challenges that have emerged in the intervening years, and articulate a vision that can robustly connect ground realities and democratic aspirations to Constitutional directives. Despite the claims stated above, the NEP has failed to identify and address the socioeconomic challenges that have daunted India’s educational progress. While the cost of quality education continues to rise, particularly with the advent of self-financing educational institutions, an increasing number of pupils is forced to drop out even before completing a minimum level of education. Scientific temper is steadily on a decline and civic values are facing vicious attacks from an environment that is actively promoting obscurantism, social divisions and a backlash against the marginalised sections. The Policy sets up an ambitious GER target of 50% to be achieved by 2035 for higher education without earmarking public funds for education in general and Higher Education in particular. The policy depends heavily on the market and private/ philanthropic investment in higher education for the realization of its ambitious objectives. The dismantling of the affiliating system advocated in the policy will adversely affect pooling of resources and the access of students from a non-affluent background to higher education in rural and remote areas of the country. The Policy fails to recognise the Constitutional obligation by the Centre to recognize in an appropriate manner the power of states on matters of education. The Policy has virtually robbed the states

of their Constitutional rights and gives overarching powers to the Centre. It proposes to create an excessively centralised structure of authority. The States have neither the freedom to prescribe their own priorities nor to position themselves critically against the policies of the Centre. People can live on the mother earth peacefully until a favourable environment for sustainable life continues on the surface of the earth. Continuous environmental degradation activities on the surface of the earth due to uncontrolled industrial activities using non-renewable energy, and poor quality of life due to poverty led hungry, and thirsty, poor health services made the life miserable on this earth for many people. United Nations, being an intergovernmental organization in the world, is working to realize its mission of maintaining international peace, security, and cooperation along with sustainable development of member countries.

## **METHODOLOGY**

### **Sustainable Development Goals:**

In September 2015, the General Assembly of the United Nations adopted the 2030 Agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs). Building on the principle of “leaving no one behind”, the new Agenda emphasizes a holistic approach for achieving sustainable development for all.

<b>S. No.</b>	<b>Sustainable Development Goals</b>	<b>Objectives</b>
1	Goal 1: No poverty	End poverty in all its forms everywhere.
2	Goal 2: Zero hunger	End hunger and malnutrition by achieving food security and improved nutrition and promote sustainable agriculture
3	Goal 3: Good health and well-being	Ensure healthy lives and promote well-being for all. (Affordable health services to everyone)
4	Goal 4: Quality education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5	Goal 5: Gender Equality	Achieve gender equality and empower all women

		and girls
6	Goal 6: Clean water and sanitation	Ensure access to water and sanitation for all
7	Goal 7: Affordable and clean energy	Ensure access to affordable, reliable, sustainable and modern energy for all
8	Goal 8: Decent work and economic growth	Promote inclusive and sustainable economic growth, employment and decent work for all
9	Goal 9: Industry, innovation, infrastructure	Build resilient infrastructure, promote sustainable industrialization and foster innovation
10	Goal 10: Reduced inequalities	Reduce economic & resource inequality within and among countries
11	Goal 11: Sustainable cities and communities	Make cities inclusive, safe, resilient and sustainable
12	Goal 12: Responsible consumption, production	Ensure sustainable consumption and production patterns
13	Goal 13: Climate action	Take urgent action to combat climate change and its impacts
14	Goal 14: Life below water	Conserve and sustainably use the oceans, seas and marine resources
15	Goal 15: Life on land	Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss
16	Goal 16: Peace, justice and strong institutions	Promote just, peaceful and inclusive societies (Peace, stability, human rights and effective governance based on the rule of law are important conduits for sustainable development.)
17	Goal 17: Partnerships for the goals	Revitalize the global partnership for sustainable development (The Sustainable Development Goals (SDGs) can only be realized with a strong commitment to global partnership and cooperation.)

### The Vision of this Policy

This National Education Policy envisions an education system rooted in Indian ethos that contributes directly to transforming India, that is Bharat, sustainably into an equitable and vibrant knowledge society, by providing high-quality education to all, and thereby

making India a global knowledge superpower. The Policy envisages that the curriculum and pedagogy of our institutions must develop among the students a deep sense of respect towards the Fundamental Duties and Constitutional values, bonding with one's country, and a conscious awareness of one's roles and responsibilities in a changing world. The vision of the Policy is to instil among the learners a deep-rooted pride in being Indian, not only in thought, but also in spirit, intellect, and deeds, as well as to develop knowledge, skills, values, and dispositions that support responsible commitment to human rights, sustainable development and living, and global well-being, thereby reflecting a truly global citizen.

**Curriculum and Pedagogy in Schools: Learning Should be Holistic, Integrated, Enjoyable, and Engaging Restructuring school curriculum and pedagogy in a new 5+3+3+4 design**

The curricular and pedagogical structure of school education will be reconfigured to make it responsive and relevant to the developmental needs and interests of learners at different stages of their development, corresponding to the age ranges of 3-8, 8-11, 11-14, and 14-18 years, respectively. The curricular and pedagogical structure and the curricular framework for school education will therefore be guided by a 5+3+3+4 design, consisting of the Foundational Stage (in two parts, that is, 3 years of Anganwadi/pre-school + 2 years in primary school in Grades 1-2; both together covering ages 3-8), Preparatory Stage (Grades 3-5, covering ages 8-11), Middle Stage (Grades 6-8, covering ages 11-14), and Secondary Stage (Grades 9-12 in two phases, i.e., 9 and 10 in the first and 11 and 12 in the second, covering ages 14-18). The Foundational Stage will consist of five years of flexible, multilevel, play/activity-based learning and the curriculum and pedagogy of ECCE as mentioned in para 1.2. The Preparatory Stage will comprise three years of education building on the play, discovery, and activity-based pedagogical and curricular style of the Foundational Stage, and will also begin to incorporate some light text books as well as aspects of more formal but interactive classroom learning, in order to lay a solid groundwork across subjects, including reading, writing, speaking, physical education, art, languages, science, and mathematics. The Middle Stage will comprise three years of education, building on the pedagogical and curricular style of the Preparatory Stage, but with the introduction of subject teachers for learning and discussion of the more abstract concepts in each subject that students will be ready for at this stage across the sciences, mathematics, arts, social sciences,

and humanities. Experiential learning within each subject, and explorations of relations among different subjects, will be encouraged and emphasized despite the introduction of more specialized subjects and subject teachers. The Secondary Stage will comprise of four years of multidisciplinary study, building on the subject-oriented pedagogical and curricular style of the Middle Stage, but with greater depth, greater critical thinking, greater attention to life aspirations, and greater flexibility and student choice of subjects. In particular students would continue to have the option of exiting after Grade 10 and re-entering in the next phase to pursue vocational or any other courses available in Grades 11- 12, including at a more specialized school, if so desired. The above-described stages are purely curricular and pedagogical, designed to optimize learning for students based on the cognitive development of children; they will inform the development of National and State curricula and teaching-learning strategies at each stage, but parallel changes to physical infrastructure will not be required.

### **Techniques for liberalizing Undergraduate Education**

NEP has suggested many techniques to be implemented to realize liberal education like STEAM (Science, Technology, Education, Arts & Design, Mathematics), multi-disciplinary, and cross- disciplinary education. A liberal arts education enables students to develop both sides of the brain – both the creative/artistic side and the analytic side. Aesthetic, social, and moral capabilities can greatly enhance one’s scientific capabilities, and vice versa; and education across all such fields can improve the capacity and desire for creativity and innovation, and enhance the students’ skills in communication, ethics, service, critical thinking, cooperation, and collaboration. Similarly, research on STEAM model is consistently showed positive learning outcomes, including increased creativity and innovation, critical thinking and higher order thinking capacities, problem solving abilities, teamwork, communication skills, deeper learning and mastery of curricula across fields, an increase in social and moral awareness, besides general engagement and enjoyment of learning. Table below summarizes some of the steps suggested in NEP for liberalization of undergraduate education.

S. No.	Techniques/Steps	Details
1	Multidisciplinary environments and institutions	Student choice and competency-based STEAM model of multidisciplinary subjects across the different disciplines offered in multidisciplinary HEIs. All universities and autonomous colleges must aim to become composite multidisciplinary HEIs.
2	Breaking silos within universities	In the present system, students are streamed into narrow areas such as science, or engineering, or art, or professional or vocational subjects, and allowed to study within their stream. This is a harmful practice and if allowed flexible to develop cross-disciplinary capabilities they will develop both the creative and analytic sides of their brains. This also supports cross-disciplinary collaborative study and research among faculties.
3	Imaginative curriculum and pedagogy	Offering flexibility in curriculum, and choice-based course options to students in STEAM subjects is possible by increasing faculty and institutional autonomy in setting curricula. Accordingly, pedagogy will emphasize on communication, discussion, and opportunities for cross-Disciplinary and interdisciplinary thinking.
4	Establishment and strengthening of departments needed for multidisciplinary and cross-disciplinary	Departments related to all areas of society are truly needed for a multidisciplinary and stimulating Indian education and environment will be established and strengthened at HEIs across the country.
5	Liberal education to be accompanied by rigorous specialization	Liberal education will consist of great flexibility in choosing courses to satisfy core subject distribution requirements, together with a selection of courses to establish expertise in a chosen field or fields (called majors, dual majors, or minors). This will ensure well-rounded individuals to become experts in given

		disciplines Or fields.
6	Inclusion of lessons in <i>seva</i> / service as part of liberal education	Where ever possible, courses will include relevant and educational local community services as part of their curricula to help develop socially conscious individuals, and to help connect the subjects that student's study to life.
7	Internships and research opportunities	In liberal education, students will be provided with opportunities for internships with local industry as well as research internships with faculty and researchers at their own or other HEIs or research institutions. This component earns fixed credits and is considered as the part of the liberal arts degrees.
8	Flexible Bachelor's degree options	Liberal education based undergraduate degrees regardless of the subject will be of either three- or four-year duration. Three years of undergraduate degree programmes without research components and four years undergraduate degree programmes with research projects may be offered in liberal education. Bachelor of Liberal Arts (BLA) or Bachelor of Liberal Education (BLE) degree (or BLA / BLE with Research) will be offered by those institutions which are ready to run such programmes consisting of a broad-based liberal education together with rigorous specialisation in a field or fields. The three-year traditional B.A., B.Sc., as well as B.Voc.



### **Holistic development of learners**

The key overall thrust of curriculum and pedagogy reform across all stages will be to move the education system towards real understanding and towards learning how to learn - and away from the culture of rote learning as is largely present today. The aim of education will not only be cognitive development, but also building character and creating holistic and well-rounded individuals equipped with the key 21st century skills. Ultimately, knowledge is a deep-seated treasure and education helps in its manifestation as the perfection which is already within an individual. All aspects of curriculum and pedagogy will be reoriented and revamped to attain these critical goals. Specific sets of skills and values across domains will be identified for integration and incorporation at each stage of learning, from pre-school to higher education. Curriculum frameworks and transaction mechanisms will be developed for ensuring that these skills and values are imbibed through engaging processes of teaching and learning. NCERT will identify these required skill sets and include mechanisms for their transaction in the National Curriculum Framework for early childhood and school education.

### **Reduce curriculum content to enhance essential learning and critical thinking**

Curriculum content will be reduced in each subject to its core essentials, to make space for critical thinking and more holistic, inquiry-based, discovery-based, discussion-based, and analysis-based learning. The mandated content will focus on key concepts, ideas, applications, and problem solving. Teaching and learning will be conducted in a more interactive manner; questions will be encouraged, and classroom sessions will regularly contain more fun, creative, collaborative, and exploratory activities for students for deeper and more experiential learning. Experiential learning 4.6. In all stages, experiential learning will be adopted, including hands-on learning, arts-integrated and sports-integrated education, story-telling-based pedagogy, among others, as standard pedagogy within each subject, and with explorations of relations among different subjects. To close the gap in achievement of learning outcomes, classroom transactions will shift, towards competency-based learning and education. The assessment tools (including assessment “as”, “of”, and “for” learning) will also be aligned with the learning outcomes, capabilities, and dispositions as specified for each subject of a given class. 4.7. Art-integration is a cross-curricular pedagogical approach that utilizes various aspects and forms of art and culture as the basis for learning of concepts

across subjects. As a part of the thrust on experiential learning, art-integrated education will be embedded in classroom transactions not only for creating joyful classrooms, but also for imbibing the Indian ethos through integration of Indian art and culture in the teaching and learning process at every level. This art-integrated approach will strengthen the linkages between education and culture. 4.8. Sports-integration is another cross-curricular pedagogical approach that utilizes physical activities including indigenous sports, in pedagogical practices to help in developing skills such as collaboration, self-initiative, self-direction, self-discipline, teamwork, responsibility, citizenship, etc. Sports-integrated learning will be undertaken in classroom transactions to help students adopt fitness as a lifelong attitude and to achieve the related life skills along with the levels of fitness as envisaged in the Fit India Movement. The need to integrate sports in education is well recognized as it serves to foster holistic development by promoting physical and psychological well-being while also enhancing cognitive abilities.

#### **Empower students through flexibility in course choices**

Students will be given increased flexibility and choice of subjects to study, particularly in secondary school - including subjects in physical education, the arts and crafts, and vocational skills – so that they can design their own paths of study and life plans. Holistic development and a wide choice of subjects and courses year to year will be the new distinguishing feature of secondary school education. There will be no hard separation among ‘curricular’, ‘extracurricular’, or ‘co-curricular’, among ‘arts’, ‘humanities’, and ‘sciences’, or between ‘vocational’ or ‘academic’ streams. Subjects such as physical education, the arts and crafts, and vocational skills, in addition to science, humanities, and mathematics, will be incorporated throughout the school curriculum, with a consideration for what is interesting and safe at each age. 4.10. Each of the four stages of school education, in accordance with what may be possible in different regions, may consider moving towards a semester or any other system that allows the inclusion of shorter modules, or courses that are taught on alternate days, in order to allow an exposure to more subjects and enable greater flexibility. States may look into innovative methods to achieve these aims of greater flexibility and exposure to and enjoyment of a wider range of subjects, including across the arts, sciences, humanities, languages, sports, and vocational subjects.

### **Curricular Integration of Essential Subjects, Skills, and Capacities**

While students must have a large amount of flexibility in choosing their individual curricula, certain subjects, skills, and capacities should be learned by all students to become good, successful, innovative, adaptable, and productive human beings in today's rapidly changing world. In addition to proficiency in languages, these skills include: scientific temper and evidence-based thinking; creativity and innovativeness; sense of aesthetics and art; oral and written communication; health and nutrition; physical education, fitness, wellness, and sports; collaboration and teamwork; problem solving and logical reasoning; vocational exposure and skills; digital literacy, coding, and computational thinking; ethical and moral reasoning; knowledge and practice of human and Constitutional values; gender sensitivity; Fundamental Duties; citizenship skills and values; knowledge of India; environmental awareness including water and resource conservation, sanitation and hygiene; and current affairs and knowledge of critical issues facing local communities, States, the country, and the world. Concerted curricular and pedagogical initiatives, including the introduction of contemporary subjects such as Artificial Intelligence, Design Thinking, Holistic Health, Organic Living, Environmental Education, Global Citizenship Education (GCED), etc. at relevant stages will be undertaken to develop these various important skills in students at all levels. All curriculum and pedagogy, from the foundational stage onwards, will be redesigned to be strongly rooted in the Indian and local context and ethos in terms of culture, traditions, heritage, customs, language, philosophy, geography, ancient and contemporary knowledge, societal and scientific needs, indigenous and traditional ways of learning etc. – in order to ensure that education is maximally relatable, relevant, interesting, and effective for our students. Stories, arts, games, sports, examples, problems, etc. will be chosen as much as possible to be rooted in the Indian and local geographic context. Ideas, abstractions, and creativity will indeed best flourish when learning is thus rooted.

### **NEP 2020 and Higher Education in Kerala**

The higher education scenario in the state is impressive in quantitative terms. But there are several issues related to the quality/ equity in higher education. The growth of non-philanthropic investment in higher education, emphasis on marketable disciplines, dearth of qualified teachers, constraints imposed by central laws and regulation etc. are some of the

major factors in this regard. The state's emphasis on distributive justice, reflected in the state government's effort to facilitate access to higher education for all segments of the population, is incompatible with the exclusionary approach of competitive selection and vertical privileging that is in vogue at the national level, as is evident from several policy pronouncements including the NEP 2020. Problems of higher education of Kerala need special attention which the NEP of 2020 ignores. Changes to the larger system must be done in consultation with those who are at the core of this process of knowledge production and reproduction, namely State governments, universities, teachers and students. The following specific issues need to be highlighted.

### **1. Enhance Devolution of Funds from the Centre to States for Increasing GER**

A progressive perspective on higher education today should address the concerns of expansion, excellence and equity, in the overall context of the country as a whole and the specific context of the State of Kerala in particular. Kerala has made substantial progress in education during the last two centuries. With universal literacy, near total retention at school level and GER of 37% of the relevant age group in higher education, Kerala is far ahead of most other states in the country in terms of the spread of education. These achievements are severely undermined by the rapidly escalating unmet demand for higher education, unwieldy expansion of the self-financing sector, and the weakening of the university system. To achieve the target of 50 % GER in higher education, as envisaged in the NEP 2020, larger devolution of funds from the Centre in the higher education sector is necessary for the state of Kerala. The fund distribution formula of 60:40 between the Centre and the States for central schemes with several constraining conditions severely impinge on the state's autonomy and economic capabilities.

### **2. Establishment of Higher Education Institutions of Multidisciplinary Nature**

The current expansion of higher education in the southern states has been largely in the private sector, and the bulk of it has been restricted to professional courses ranging from engineering and medicine to relatively new vocational programmes. The real challenge is to nurture and strengthen our universities without destroying their diversity by forcing them into a straitjacket of a standardized frame. To ensure quality and access and to meet the growing demand for higher education, more Higher Education Institutions (HEIs) of national

importance in teaching and research of a multidisciplinary nature have to be established in the state with the help of the centre. It may be noted that central investment in higher education in Kerala is relatively low compared to the national average.

### **3. Strengthen SAAC Model of State Level Public Agencies of Assessment and Accreditation**

Ranking of universities at the global level has gained prominence in the last decade due to the demands of global capitalism in the context of the emergence of the knowledge economy, the spread of the higher education system and the growing importance of universities in the field of research. Such rankings, analogous to the rankings of countries by credit-rating agencies, though useful for international capital, miss the social role of the HEI which is associated with its specific location. Not surprisingly, national and international rankings obscure the commendable achievements and social commitment of state universities. Educational programmes cannot be evaluated merely on some crude quantitative indices since such indices ignore the mission of education. Research ranking systems likewise, which focus on citation indices, or lab-industry interfaces, ignore the qualitative importance of research. Besides, they cannot be applied uniformly to sciences and non-Science programmes. Kerala State Higher Education Council established the State Level Assessment and Accreditation Centre (SAAC) in 2019. Along with national criteria for assessment SAAC has developed state specific criteria of assessment for evaluating the performance of HEIs in the state. It is also in the process of developing the Kerala Institutional Ranking Framework (KIRF) based on the quantitative and qualitative data gathered by the SAAC. State level public agencies of assessment and accreditation rooted on qualitative state specific criteria of evaluation should be recognised. The pioneering effort of KSHEC in establishing the State Assessment and Accreditation Centre (SAAC) of Kerala under the Kerala State Higher Education Council deserves support and recognition.

### **4. National Research Foundation. -Fund Socially Productive Research**

The proposal to establish an NRF with an annual grant of Rs. 20000 crores for promotion of research, which in current prices is .01 % of GDP, is too paltry an effort to meet the research requirement of the country. Besides, even this sum needs to be expended on socially productive areas. For this, a part of this sum must be shared with state governments.

And both at the level of the centre and the states, adequate representation should be given to academics from all disciplines and regions in the country in the research-funding bodies. Efforts should be made to forge close interaction with universities and research institutions and funds should be made available to socially productive, region-specific research projects undertaken by the state institutions of higher studies and research.

##### **5. The Scheme of Cluster of Colleges –Central Assistance Inevitable**

Kerala also followed the UGC directive to establish clusters of colleges way back in 2010 under the leadership of the Kerala State Higher Education Council and financed by the government of Kerala. The concept of cluster of colleges needs to be examined seriously in the context of the opportunities the system provides for collaborative learning. Different models of clusters have emerged across the world. Clusters have been set up around administrative structures, which would co-ordinate the functioning of the units. Individual institutions have also grouped together on their own to share the benefits of mutual cooperation. There are also clusters with one dominant member supporting smaller units. Clusters have been formed for specific purposes, like sharing Information Communication Technologies (ICT) in teaching- learning, civic engagement by institutions of higher education etc. Apart from sharing resources, the clusters have provided opportunities for teachers to develop and offer new courses. Students have gained by exposure to experts in different institutions. The possibilities of opening up new areas of knowledge have emerged in the process. Obviously, clusters have developed in response to the infrastructure and academic needs. Special central assistance is required to strengthen this pioneering initiative of Kerala which can remedy several problems associated with the affiliating system.

##### **Present status of Research and Innovation in the HE sectors in Kerala**

We first restrict attention to the present status of research activities of the higher educational sector in Kerala and the visibility of the research output in the global context. From Table 6 of the AISHE Report [2], out of the total enrolment of 3,73,99,388 students in India, there are 3,880 students enrolled in Integrated Ph.D. in addition to 1,69,170 students enrolled at Ph.D. Level, i.e., a miniscule 0.46%. We find that out of 10,95,842 students enrolled in the higher education sector in Kerala (University departments, constituent colleges and affiliated colleges), only 6686 are pursuing their PhD degrees. This is just 0.61%

of the total, but this compares well with the All-India figure of 0.46%. Because of the many aggregators of bibliometric data like Web of Science, Google Scholar or Scopus, it is possible to use data analytical techniques to make cross-university and cross-country comparisons of research performance in a nuanced and fine-grained way. Indeed, nearly 40 such world university ranking exercises take place on an annual basis with India having its own adaptation called the National Institutional Ranking Framework (NIRF). Global ranking of academic universities was first introduced in 2003 by the Shanghai Jiao Tong University in what is now known as the Academic Ranking of World Universities [3]. Since then, many university rankings have emerged, the most prominent being the Times Higher Education World University Rankings (since 2004) [4]. Other well recognised efforts are the QS (Quacquarelli Symonds) World University Ranking (since 2004) and The Performance Ranking of Scientific Papers for World Universities by the Higher Education Evaluation and Accreditation Council of Taiwan, HEEACT (since 2007). These rankings, as well as many other similar rankings, e.g. the Leiden rankings (CWTS, Netherlands), the EU Assessment of University-Based Research (AUBR), the Scimago rankings [5] are based mainly on research indicators and focus predominantly on indicators related to the research function of universities. Very few HEIs from India make it to such list, and not surprisingly, even fewer from Kerala. The most prestigious, and also the most controversial ranking is that of ARWU – only one institution from India made it to the Top 500 list, namely the Indian Institute of Science in Bangalore. One of the largest ranking exercises is that found in the Scimago Institutions Rankings and in their report for 2020, out of the 3897 institutions that were ranked globally from the higher educational sector, only 241 (6.18%) were from India and of these, only eight were represented from Kerala (i.e., 3.32% of the Indian total); see Table 1. On a demographic basis, Kerala which has about 0.5% of the world population should have had nearly 20! The Republic of Slovenia which is nearly seventeen times smaller than Kerala on a demographic basis has five in the list.

### **Research and Innovation in the HE sectors in Kerala – The Prospective View**

Here we peer into the crystal ball and envisage a sustainable model of the Higher Education enterprise in Kerala using a simple Fermi estimation. We expect that by 2040, India's population will grow to 1.6 billion. At current ratios, Kerala would then have a population of around 43 million. If approximately 10% of this will be in the college going

cohort (18-23), at a GER of 50%, the college going population in Kerala will be approximately 2.15 million. Note that as per the latest AICTE report this population is about 1.1 million now, i.e., the college going population will double in 20 years. Following the NEP to its logical conclusion, these students should be enrolled in about 60 universities, with an average enrolment of 35,000 students. Only at this size, will we have the scale and spread to compete with universities like the University of Ljubljana, let alone Harvard, Oxford, or Tsinghua! All this is easier said than done. Government must use carrot-and-stick measures to bring about the consolidation of the very heterogeneous set up now (23 universities and 1348 colleges) into such a system where critical mass to undertake research-intensive activities is facilitated. Universities are of course free to set up extension centres and campuses to reach remote regions to make the teaching-only component of higher education accessible to students in such areas. It is worthwhile to enquire into the economics of such a consolidation. NIRF 2020 data that is available shows that the cost of a student per year in an engineering institution varies from Rs. 10 lakhs at a premier IIT, 5 lakhs at a premier NIT, to Rs 2 lakhs at a top state university like Anna or Jadavpur. For most engineering colleges, these costs are as low as Rs. 50,000 per student per year. For arts and science colleges, the costs range from about Rs. 20,000 to about Rs. 4 lakhs in the exclusive liberal arts colleges that have recently sprung up. Costs of a medical education are significantly larger, but the numbers are very small. It is reasonable to assume an average cost per student in 2040 (taking a totality of all 60 universities) of Rs. 1 lakh per year, to work out a requirement of about Rs. 20 thousand crores per year. Kerala's GDP in 2040 may be Rs. 20 lakhs crores (assuming a doubling to take place), and this means that the HE budget is just a modest 1% of the GDP of the state. This is consistent with figures we have computed earlier in Table 2. Many studies have shown that a country or region that devotes about 3% of its GDP to gross expenditure on R&D (GERD) needs about half a percent of its population to be gainfully employed in its research and innovation activities (i.e., about 500 per lakh of population). This compares with the estimate of 15 researchers per lakh of population in India made by the Economic Survey of India 2016-17. Kerala, with a population of 43 million in 2040 should have about 215,000 R&D workers, and given current trends, these would be mainly in the knowledge and service sector. Given that an active R&D worker may have a tenure of 40 years (age 30 to 70), we need to replace the R&D population at the rate of about 5400 PhDs a year. At present, only



6686 are pursuing their PhD degrees, i.e., a flow of about 1600 PhDs a year in all. Even if one uses a very generous estimate, that about half of these doctorates are in science, technology, engineering, and mathematics (STEM), that will mean only about 800 PhDs. Thus in 20 years, we need to scale this up by a factor of 6 or 7!

## **CONCLUSION**

A periodic improvement in the education system is essential for human development and sustainable progress in society. Reforms in the education system by considering various success models in developed countries and customizing such things with local needs is the present requirement for a country to prosper. India, being a fast-developing country with 130 crores human capital can prosper and overtake other developing countries by planning and adopting an appropriate education model. In this aspect, the present National Education Policy proposal 2020 is an inclusive plan with many innovations to provide liberal but specialized and customized both school and college education by incorporating research components both at school and college levels. Apart from highlighting the features of the proposal, in this paper, we have analysed the strengths and weaknesses of the proposal and offered some suggestion to further improve the model as an optimum model by considering the local conditions of the country.

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