

# Combined Study of Geography of Nilgiri Mountains and Fresh Water Fisheries in the Nilgiri Area as the Interdisciplinary Study under Integrated Teacher Education Programme (ITEP)

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**Abstract** - "The National Policy of Education-2020 highlights, Teacher Education is vital in creating a pool of Teachers that will shape the next generation". The National Curriculum Frame work (NCF) - 2023 recognizes the importance of professional development and aims to help teachers facilitate the development of critical thinking and problem-solving skills in students, preparing them for the future. Four year Integrated Teacher Education Programme (ITEP) "Recognizing that the teachers will required training in high quality content as well as pedagogy teacher education will gradually be moved by 2023 into multidisciplinary colleges and Universities". With responses of all above organizations, it is recommended that the multidisciplinary / interdisciplinary studies and communications in teaching - learning activities and skill developments are essential for teachers and students as well as protection of Environment. Geography and Biology (Life Science) also interrelated each other through the Environmental science a Studies Fisheries is also the pout of the zoology (Life Science), hence it is also related with the Geographical distribution and conditions Inter-disciplinary studies between Biology (Zoology & Botany) and Geography. The teachers and learners may develop the skills of Fisheries with integrated studies between Biology and Geography.

**Keywords:** Nilgiri, Rivers, Fisheries, ITEP, NCF, and NEP.

## I. Introduction

Since the earlier presence on Earth, human have sought to make sense volcano, of their surrounding the behaviour of a the flood cycle of a river, or the optimum time mountain pass-and human developing developed way to record and pats on such information. As they ventured from their place of origin, by land and by sea, people acquired a broader perspective of Earth's processes and of the patterns and impact of human settlement throughout the world.

Modern Science and information gathering have been geographers more insight than ever before and modern technology allows it to be shared worldwide, but for many

people the facts and terms lack a context, An Understanding of Geography, both physical and cultural, provides that context-ever more necessary interaction and important, as global in for shared responsibility for Earth's future connect us all.

The geography is rooted in location, but it involves more than the position of place-names on a map. It integrates methods and knowledge from many different disciplines and encompasses both the physical & social sciences. It links all these disciplines to determine why things happen in spatial patterns. Physical geography incorporates geology, climatology, biology, ecology, hydrology, and other natural sciences, Human geography includes cultural anthropology, economics, political sciences history, demography and other disciplines Cartography, which is the art and science of mapmaking, provides graphic representations of geographic settings.

Fishery is an activity leading to harvesting of fish; It may involve capture of wild fish or raising of fish through aquaculture. It is typically defined in terms of the people involved, species or type of fish, area of water or seabed, method of fishing, class of boats, purpose of the activities or a combination of the foregoing features.

Earth's surface possesses number of depressions in which rain collects to form lakes, ponds or reservoirs. In addition there are innumerable channels, streams and rivers which possess a regular all the year round flow of water. The total amount of fresh-water present in lakes and reservoirs is about 280,000 cubic Kms. while water which is available in streams and rivers at any point of time amounts to about 1200 Cubic Kms. These provide excellent habitat for aquatic life to develop. However, collectively, fresh-water systems represent a very small fraction, less than 0.02% of the total amount of water present on our planet. That is why the total contribution of fresh-water to global harvest is about 10-12% only.

Nutrients are generally not scarce in fresh water systems but the productivity is often affected by pollution of aquatic environment. Discharge of sewage effluents in fresh water systems creates unhealthy conditions which result is

disappearance of desirable fishes and other organisms and abundance of undesirable ones.

The National Education Policy 2020 (NEP 2020) proposes a 4 year multidisciplinary bachelor's degree in an undergraduate programme with multiple exit options, ranging from a certificate after completing a year in a discipline or field, to a Bachelor's degree with research' if the student completes a four year degree programme which includes a rigorous research project in a chosen major area of Study Likewise, the master's program is intended to be flexible in its duration, depending on the prior experience of the students, A doctor of Philosophy (Ph.D.) has a minimum requirement of a Master's degree or a 4-Year Bachelor's degree with research.

The Policy proposes to transform the regulatory landscape in higher education by ensuring that the four tasks of regulation and academic standard each performed by "distinct, independent and empowered bodies" and within one umbrella institution viz. The to-be-established Higher Education Commission of India (HECL)- It cites the need to "create" checks-and-balances in the system, minimize conflicts of interest, and eliminate concentration of Power" as the reasons behind the delegation of tasks to independent bodies. The proposed four verticals of HECL are: (i) National Higher Education Regulatory Council (NHERC) to regulate higher Education, including teacher education, while excluding medical and legal education. (ii) National Accreditation Council (NAC) to supervise the work of accrediting institutions & specify "phased benchmark for all HEIS to achieve set levels of quality, self governance, and autonomy i.e. to act as a meta-accredit body. (iii) Higher Education Grants Council (HEGC), to fund and finance universities and colleges, based on transparent criteria. This will replace the existing University Grant Commission (UGC). (iv) General Education Council (GEC) to create a framework, the National Higher Education Qualification Framework (NHEQE), for charting "graduate attributes" i.e. expected learning outcomes for higher education programme.

The National Council for Teacher Education will come professional standard setting body (PSSB). The PSSB will include professional Council such as Veterinary Council of India, Council of Architecture, Indian Council of Agricultural Research and National Council for Vocational Education and Training.

The National Curriculum Framework (NCF) 2023 is a guiding document that outlines the goals, principles, and objectives to transform the education system, it provides a roadmap for curriculum development quality teaching methodologies, and assessment practices. The N.C.F. 2023 aims to promote holistic development by emphasizing not

only academic knowledge but also 21st century skills, values and overall growth and development of students. It emphasizes inclusivity and equity in schools, ensuring that quality education is accessible to all learners, catering to their diverse needs.

The N.C.F. 2023 recognizes the importance of professional development and aims to help teachers facilitate the development of critical thinking and problem-solving skills in students, preparing them for the future. Overall, the N.C.F. serves as a comprehensive framework to guide education policies, curriculum design, and teaching practices, creating an effective and relevant education system.

## II. Nilgiri Hills

It is a mountainous region of Tamil Nadu. The peaks of the Nilgiri rise abruptly from the surrounding plains to an elevation of about 6,000 - 8,000 feet (1,800 - 3,400 meters); one of them, Doda Betta (8,652 feet [2,637 meters]), is the highest point in Tamil Nadu. The Nilgiri Mountains form a part of Western Ghat in North-western Tamil Nadu, Southern Karnataka and Eastern Kerala in South India,

### Peaks in the Nilgiri

The highest peak is Doddabetta peak (2,637 meters), 4 km east Southeast of Udhangamandalam, 11°24'10" N 76°49'14" E. Closely linked peaks in the west of Doddabetta range and nearby Udhangamandalam include is

- 1) Kolari betta: height: → 2,630 meters (8,628 ft)
- 2) Makurni: 2,594 meters (8,510 ft)
- 3) Kattadadu: 2,410 meters (7,933 ft): 2,439 meters (8,002 ft) 2,375 meters (7,792 ft)
- 4) Kulkudi Snowdown (height - 2,530 meters or 8,301ft) 11°26'N 76° 46'E.
- 5) Club Hills (2,448 meters or 8,031 ft) and Elk Hills (2,466 meters or 8,091 ft) 11° 23'55" N 76° 42' 39"E

### Rivers of Nilgiri Biosphere Reserve

All the rivers in the Nilgiri Biosphere Reserve start their journey from mountain sholas, grasslands or wetlands. Fairly good rainfall in the region accounts for the countless small brooks which run for some distance but get absorbed by the top soil of the slopes, before they gain enough strength to flow further. These brooks become rivers and provide our drinking water, nourish our agriculture, and support many endangered species. While each river is unique, all rivers are part of larger systems, and have common characteristics that enable us to understand how they function and how to protect them.

### III. Few rivers of the Nilgiri Biosphere Reserve are briefed below

#### Pykara river

Pykara River originates in the Mukurthi peak and passes through a hilly tract, generally keeping to the north and turns to the west after reaching the Nilgiri plateau's edge. There are a number of falls formed by this river, and the last two falls of 55 meters and 61 meters respectively, are known as Pykara falls. After reaching Wayanad, this river turns westward and has a fall near Theppakadu, off the Gudalur-Mysore road. From here, this river is known as the Moyar River and continues its journey towards the east, where it joins the Bhavani River at 2 Denaickankottai. Finally this river ends at the Bhavanisagar dam. Pykara is the largest river in the Nilgiris District. It is of sacred value to the Toda community.

#### Sigur River

Sigur River springs up from the Udhagamandalam slopes. Two streams the Malkod from Pykara Hill and the Billikallu halla from Billikal betta join to form this river. After a point it is joined by Sandy Nallah stream, flowing towards Kalhatti, which is about 9 kms north-west of Udhagamandalam. Here it drops 52 m and forms a beautiful waterfall (Kalhatti waterfalls), after which it flows along the Sigur Ghat and finally joins the Moyar River.

#### Bhavani River

Bhavani River rises in the Upper Nilgiri plateau, drains the Attapadi valley in Kerala, collects the waters of the Kundah river and flowing past Mettupalayam joins Moyar river at Bhavanisagar. Further on it reaches Cauveri river at Bhavani town after a 217 km flow. About 90% of the river's water is used for agriculture. Pesticides from the tea estates of the Nilgiris District seep into the Bhavani. It is estimated that tea estates and coffee pulp houses add about 1.5 million litres per day (MLD) of effluents to the river every day.

#### Pandiar River

Pandiar River originates in the grasslands on the northern slopes of the Mukurthi National Park and joins with the Punnapuzha river, a tributary of Karimpuzha. This is one of the last free flowing rivers of South India which has not been dammed. Karimpuzha River originates from the western slopes of the NBR, near the Mukurthi Peak. Cherupuzha river, which joins the Karimpuzha near Karulai, originates from the forests to the north-west of Upper Bhavani 4 reservoir. This river is the largest tributary of the Chaliyar (Beyepore river). The Karimpuzha joins the Chaliyar at Chaliyar mukku, near Nilambur town in Kerala and flows west to join the Arabian

Sea. This river is famous for its freshwater fish species diversity. Important endemic fish, such as the Tor malabaricus and Glyptothorax annandalei have been described from this river.

#### Siruvani River

Siruvani River originates from the Siruvani Hills and is one of the tributaries of the Bhavani. The Siruvani waterfalls and the dam named after it are located 37 kms to the west of Coimbatore. Water from the Siruvani river is renowned for its taste and mineral properties and is one of the main water sources for Coimbatore city. Coonoor River originates from the south eastern slopes of Doddabetta range and collecting waters from streams in and around Wellington, flows through Coonoor ghats to feed the Bhavani river at Nellithorai near Mettupalayam. The Kallar river collecting waters from the Catherine Falls (76m) below Kotagiri on its westward flow meets at the same confluence.

#### Kabini River

Kabini River is a confluence of the Panamaram river (originating from Lakkidi Hills, Kerala) and Mananthavady river (originating from Tondarmudi hills, Kerala). After flowing through Mananthavady town, the Mananthavady river joins the Panamaram river near Payyampally. Two kilometers from Payyampally, the Kabani River forms an island called Kuruva Island, spreading over 950 acres containing diverse and unique flora and fauna. Downstream from the island, another tributary of the Kabini River, called the Kalindi, joins it. The Kabani flows through Kerala only for a stretch of 8 kms. And turns eastward to join the Cauvery river at Tirumakudal in Narasipur, Karnataka. The Cauvery finally empties into the Bay of Bengal.

#### Fisheries

The landscape of Nilgiris district is adorned by beautiful mountains, valley and plains. The highest peak of South India, Doclabetta (2660m above MSL) is located here at the junction of Western & Eastern Ghats. The average annual rainfall is about 125 cm and the atmospheric temperature ranges between 0°C to 26°C. Water resources are mainly in the form of streams and small rivers connected to reservoirs. Based on water sources, there are 12 hydroelectric power projects existing in this district with a total installed capacity of around 831.4 MW. The native fisheries resources (endemic species) of the district include Minnows, Donio, and Puntius species. However, when the area gained importance as resort to the Colonial rulers some of the District Administrators took keen interest in the development of cold water fisheries and introduced the exotic fish species such as mirror carp, leather carp, scale carp, doctor fish and rainbow trout.

## **Inland Fisheries**

India has a large number network of rivers, canals, lakes, and ponds, which contribute more than 30% of the total fish production. Major part of this comes from 'capture' fisheries and partly from 'culture' practice. The river system of the century has a total length of about 45,000 kms which includes 14 major rivers, 44 medium rivers, and innumerable small rivers and streams. The riverine systems is divided into:

- (i) The Ganga rivers system.
- (ii) The Brahmaputra rivers system.
- (iii) The Indus river system.
- (iv) The East Coast river system.
- (v) The west coast river system.

In India, a large variety of crafts (boats) have been designed for marine and inland fishing. The nets or gears and other devices for catching fishes are also numerous and ingenious. But both crafts and gears were invented centuries ago and probably have remained static and have shown little or no change or improvement in India, unlike in other maritime countries. This has hindered or restricted the exploitation for our seas and Inland Waters i.e. rivers lakes etc. It is only in the last decades or two of 20th century that some attempts have been made to the motor boats and modern steam vessels for the purpose.

## **IV. Integrated Teacher Education Programme**

The four year integrated teacher education Programme (ITEP) envisions the creation of passionate, motivated, qualified, professionally trained, and well-equipped teachers capable of designing and implementing developmentally appropriate learning experiences for students at different stages of school education, The ITEP seeks to ensure that the prospective teachers are given the highest quality education in content, te pedagogy, values, and practices.

The National Education Policy 2020 highlights "Teacher education is vital in creating a pool of school teachers that will shape the next generation Four Year Integrated Teacher Education Programme (ITEP) "Recognizing that the teachers will require training in high quality content as well as pedagogy teacher education will gradually be moved by 2030 into multidisciplinary Colleges and Universities".

## **V. Discussion and Recommendations**

Geography and Biology (Life Science) may interrelated with each other through the Environmental studies. The Fish and Fishery Science (Fisheries) is the part of the Biology (Zoology-Life Science). The Fisheries also may be interrelated with the discipline Geography (Environmental Study). The

present Education Policy emphasizes the integrated study and Skill Development. Based on the new policy of Education the new National curriculum Framework has been constricted. The new National curriculum Framework 2023 (NCF-2023) recognizes the Integrated Teacher Education Programme (A four year integrated Teachers Training course-content-cum Methodology). In this reference the teachers and learners may go above the Limits of disciplines (subjects). The skill development does not bound under a single subject.

The Rapid advances in science and Technology have put the Scientists and Technologists on their heels to cope up with the simultaneous changes that have occurred during the past decades. Various types of revisions, rectifications as well as modifications even all together ideas that developed in numerous fields of specializations have required to be incorporated with the advanced level concepts in order to keep pace with the recent researches advanced in the concerning fields of the study. The innovative techniques have put the researches on consistent "think" and "rethink" level to entertain higher concepts related to biology.

Based on the present study the following recommendations can be advanced since the incorporation of units of Geography of Nilgiri a significant role in bringing about.

- 1) Awareness towards health and hygiene through cleanliness of the water resources in the Nilgiri region, drainage it.
- 2) Awareness about the protection of flora and fauna of Nilgiri Hill region and Rivers.
- 3) Awareness about the rare and endangered species from Nilgiri Hills and water resources.
- 4) Combined study of Geography as Fisheries and skill development under Integrated Teacher Education Programme (ITEP) is seen recommended by Indian Education system.

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