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Indigenous knowledge (IK) on marine and estuarine fisheries: an evaluated opinion

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Introduction

Indigenous knowledge (IK) relates to wisdom, knowledge and teachings, and refer to the matured long-standing traditions and practices of indigenous local communities of the area concern. It is often customarily conjoint to indicate **Traditional knowledge (TK), Traditional Environmental Knowledge (TEK) and Local knowledge (LK).** It is pertinent to refer that TK is broader in coverage and includes IK as a type of TK held by indigenous communities. In the present opinion update, basic indigenous knowledge and its role in marine and estuarine fisheries are briefly discussed hereunder. The term 'indigenous knowledge' is preferred and empirically explored concerning such knowledge base of marine fisherfolk in India with special reference to Indian Sundarbans coast which is gathered from marine and estuarine fisher folk of Sundarbans coast since 1980s. These coastal fisher folk have clear traditions and custodianship over their knowledge, guiding the use of different kinds of crafts, gears, techniques, *etc*., over the years. The fact is that their indigenous knowledge may change with respect to a particular season, time and/ or place of fishing. They may also have certain obligations and regulations that accompany and prevail in the local community to justify any activity, including the unsustainable harvesting of resources.

Evaluation

Local or indigenous communities in India as well as in the Sundarbans coast depend on their indigenous or traditional knowledge for survival. They use their indigenous marine fisheries knowledge or marine environment-related knowledge, which can be referred to as a place-based or community-based knowledge, and relates to the diversity including interactions between marine fisher folk and fish species of the place concerned. This place-based knowledge distinguishes one coastal community from another and such knowledge is invariably orally passed for generations from person to person. In fact, indigenous knowledge (IK) can be explained with reference to i) Ecology and Environment, ii) Marine Fishes, iii) Crafts and Gears, iv) Fishing Techniques, v) Indigenous Practices, vi) Indigenous Management Mechanisms, and vii) Indigenous Regulations of the coastal community concerned.

The present perspective opinion of this author (NCN) had its root from the study of "**Crabs and Crab Fisheries of Sundarban**".[1] "**Dry Fish Production Profile of Indian Sundarban**",[2] "**Fisheries Sociology of Indian Sundarban**",[3] and "**Livelihood in the Indian Sundarban – An Appraisal**".[4] Besides these relevant books, several research articles of this author provide inputs and value to the evaluation of IK. These helped ensure pertinent values to IK with special reference to coastal fisheries of Indian Sundarban coast towards coastal fisheries conservation as well as on environmental management using IK related information. Thus, this evaluated opinion is expected to help develop appropriate coastal fisheries management plan and/ or coastal zone management plan, and to contain unsustainable harvesting of marine living resources of the region concerned.

Relevance

Herein, studies on IK can be undertaken in relevance to **IK on ecology and environment** as follows**: i)** IK about fishing grounds, ii). IK about topography of seabed, iii) IK about nature of bottom soil, iv) IK about depth of water, v) IK about colour of water, vi) IK about lunar position, vii) IK about weather, and viii) IK about natural guidance. However, such IK researches can be extended to marine fishes, crafts and gears, fishing techniques, indigenous practices, regulations and management mechanisms. Interestingly, indigenous practices involve social practices, religious practices, socio-cultural practices and belief systems. IK on indigenous regulations involve regulations on land, on sea, on conflict resolutions, and regulatory measures. IK on management mechanisms relates to cooperation on land, cooperation on the sea, and in the estuarine sector. It is revealed that cooperation is key factor of successful fishing which starts with the setting up fishing camps on land, extended to the cooperation on the sea during natural calamities, emergencies, and to fight against sea piracy. In broader perspective, management measures are required towards adoption of co-management model balancing social system and ecosystem.

Significance

Fishing is an age-old occupation of mankind evolving out of necessities towards successful venture through the generations. Indigenous knowledge of the local fishermen communities is deeply ingrained in such endeavour, using bio-socioecological dimensions involved in fishing including socialization to occupation. In the Sundarban coast, significance of fisheries of Hooghly-Matlah estuarine system[5] as well as fishing as an occupation can be revealed from the case studies of Jambudwip by Raychaudhuri[6] as well as village level case study of Hara and Sultanpur by Pramanik.[7] It is mentioned by Pramanik[7] that fishermen of Sundarban coast can identify six different depressions (*hal*) of fish movement and can select fishing date and spot of fishing based on lunar phase (*tithi*). They know the right kind of crafts and gears, and the techniques involved in fishing. Indigenous fishermen can innovate techniques of using of improvised crab trap as attachment of bag net.[8] As such, there is wealth of information

and cooperative wisdom towards success in their occupation which may lead to market mechanisms, policy integration as well as export promotion at the national level.

Conclusion

To conclude, in general terms, all indigenous knowledge (IK) is traditional knowledge (TK) but all TK is not indigenous knowledge as IK has regional reference and TK has no such regional connotation. IK is developed from experiences gained over centuries. It is embedded in local culture and environment and orally transmitted from generation to generation. An empirical study of IK and TK can help to understand the fishermen's knowledge and wisdom and indigenous means of conservation and management of marine fisheries resources as well as the significance of fish in their socio-cultural and religious life. This will provide pertinent information about their attitude, acceptance and dependence on resources and resource management issues towards formulation of effective management action plan along the coast at the state and national level.

Acknowledgement

None.

Conflicts of interest

We declare that there is no conflict of interest of any kind.

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