



Rice GIs of Kerala: Gap in Desired and Achieved Outcomes

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Case studies on Geographical Indications (GIs) prove that that it is essential to include a quality assurance clause within the legal framework of GIs, if the benefits of registration are to be accrued to the farming community. The potential positive impact of the GI for stake holders can be initiated through a strong institutional context and well organised supply chain. Support from governmental agencies is essential in this regard to build up effective promotional strategies to promote the product and its intrinsic qualities across markets. The paper analyses the performance of rice GIs of Kerala, initiatives put after the registration, the gaps between desired and achieved outcomes of the policy initiatives and the bottlenecks of the implementation of the innovation. The studies analysed recommend that revival of the producer society is essential in order to take collective decisions on defining the production limits, agreeing up on code of conduct, identifying indicators of quality, and building up strategies for marketing and consumer orientation.

Keywords: Policy lag, Policy failure, Institutional support, Innovation, Post policy measures, The Geographical Indications of Goods (Registration & Protection) Act, Geographical Indications of Goods (Registration and Protection) Rules, 2002, Special Agricultural Zones, *Pokkali* and *Kaipad* System, *Navara* rice, *Jeerakasala* rice, *Gandhakasala* rice, *Palakkadan Matta* rice, *Vytilla* varieties, *Ezhome* varieties

Outcomes of the policy or programme often lies somewhere in between success and failure. Mostly policies are implemented with a bundle of objectives. The actual problem while analysing a policy is that the policy may have achieved some of its goals and failed in some others.¹ Policies claimed as thriving by a group or individual may be counterclaimed as unsuccessful by others.^{2, 3} Hence, it is difficult to arrive at a conclusion in complete agreement on the success of a policy. If a policy has to achieve its goals, policy makers must drive post implementation follow up through competent authorities.

From the perspective of policy makers, (Geographical Indication) GI recognition is a more amenable solution to the problems faced by our indigenous products in domestic and foreign markets. The strategy of building an image of quality for a class of products made in a certain area can help our indigenous agricultural products achieve consumer acceptance quickly and can also help our resource poor farmers command premium price. Thus branding India with GI can be a new marketing strategy.

GI act as a signalling device that help the producers to differentiate their products from the competing ones in the market and enable them to build a reputation and goodwill around their products,⁴ which in turn helps the producer build a market for his produce. GI-based branding strategies as a form of market protection and promotion have long been available to wines and spirits in the European Union.⁵ There were a lot of discussions and agreements around the world regarding protection of region specific products.^{6, 7, 8} Even though, countries like India had in its possession a number of products that could qualify as geographical designators, the initiatives to exploit this potential of GI mechanism began when the country established a *sui generis* system of GI protection with the enactment of “The Geographical Indications of Goods (Registration & Protection) Act, coupled with the ‘Geographical Indications of Goods (Registration and Protection) Rules, 2002.⁹ Since then the trend of GI registration has mostly followed a positive trend.

Even though, a number of past studies attest to the tangible economic benefits attributed to the recognition of GI in developing countries impact studies on Indian context are very limited in number

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and so is the data on registered GI users. The farmers are skeptical and are not in complete agreement on the success of this policy initiative due to this reason. This paper is analysing the performance of rice GIs of Kerala, initiatives put after the registration, the gaps between desired and achieved outcomes of the policy initiatives and the bottlenecks of the implementation of the innovation. This paper is based on field observations, focus group discussions, research studies, published and unpublished reports of government departments and other development institutions. These sources are used for scrutinizing the gap between the expectation and perception of GI rice varieties. Primary data is collected through focus group discussions with farmers, researchers and other interested parties in the field.

Present Status of Rice Cultivation in Kerala: Deterioration of Culture

Paddy cultivation was a part of the proud culture of Kerala. Rice fields are slowly diminishing from Kerala, creating a threat to food security of the state. The area under paddy in Kerala has declined from 8.85 lakh ha in 1975-76 to 1.98 lakh ha in 2018-19 and the decline in production during this period was from 13.65 lakh tonnes to 5.78 lakh tonnes. Also, the share of rice in net sown area of Kerala has shown a steep decline over the last six decades from 40.49 per cent to 7.7 per cent.¹⁰ Both economic and non-economic factors have played their role in reducing the area under paddy cultivation. Economic causes responsible for the decline in area under paddy include price factors, labour problems, marketing problems and problems related to inputs. Non-economic factors also have affected the rice production scenario. Climatic changes such as unseasonable rainfall, rising temperatures and floods in recent years have worsened the situation. The south-west monsoon has become unpredictable due to which the paddy cultivation in Kerala has been badly affected. Even though the Government has introduced focussed interventions *viz.*, Special Agricultural Zones (SAZ) for focussed project based activities, assistance for fallow land and waste land cultivation, promotion of high yielding varieties and special varieties, promotion of in-situ processing and value addition including branding and marketing for augmenting paddy cultivation during 13th Five-Year Plan, it did not seem to yield positive results. Today, rice occupies only the third position among Kerala's

agricultural crops with respect to area under cultivation. The sharp decline in the area, production and productivity of rice can cause serious consequences on Kerala's economic and ecological development.

Endemic and Unique: The Registered Rice GIs in Kerala

With the exorbitant and increasing cost of cultivation and the modest yield levels of paddy in Kerala, the price of paddy becomes an important determinant of area allocation as well as profitability earned by the farmer. To save the existing paddy cultivation and also to increase the area under cultivation, innovative marketing strategies which ensure remunerative prices for the farmers have to be developed. Due to the increasing awareness of food safety, there is a growing demand for origin guaranteed products all over the world.¹¹ As such, territorial origin becomes a strategic tool for differentiation in agri-food markets. Jena *et al.*, has reported that GI protection has effectively controlled the volume of supply of Basmati rice and Jasmine rice by successfully delimiting the geographical boundary of these goods which in turn, raised the price of the good and created economic benefits for producers.¹² As the cultivation of traditional rice varieties is dependent on the price received, the use of GIs will help the realization of premium prices and attract more farmers to traditional rice cultivation.¹³ Hence GI protection for agricultural products is an important means by which local actors can attract revenues from non-local actors. Among the 301 GIs registered with the GI registry of the country, fourteen GI tags belong to different types of Indian rice. Jena and Grote supports the hypothesis that GI adoption enhances the welfare of the producer households.¹⁴ The results from their study confirm that there has been an increment of income from GI rice cultivation and that Basmati rice is more profitable than the non-GI rice varieties. Perhaps the future trend of agriculture will be smart marketing using farm brands

Among the different rice types of Kerala, *Navara* (the medicinal rice), *Pokkali* rice, *Wayanadan* rice varieties of *Jeerakasala* and *Gandhakasala*, *Palakkadan Matta* rice and *Kaipad* rice have already found place in the GI registry.¹⁵ In order to gain a strong position in the market, marketing had to focus on these rice as a niche product, adding value through certification as an organic and fair-trade product or

both. Thus farmers can use the GI certification to leverage the unique identity of their product, to assure quality and distinctiveness their produce have and can effectively prevent the adulteration in the market using existing GI legislations.

The *Navara* System in Kerala

Navara is an endemic rice of Kerala known for its nutritional, religious and medicinal value. Two varieties of *Navara* rice namely, black glumed and golden yellow glumed comes under the purview of GI registration.¹⁶ It received GI protection in 2007 and *Navara* Rice Farmers Society, Chittur, Palakkad is the registered proprietor of *Navara* Rice and the boundary of the *Navara* system is represented with the borders of Kerala state. GIs are an example of a special category of public goods, *viz.* club goods, because of its properties of excludability and non-rivalry.¹⁷ As per the norms of GI recognition any farmer from any part of Kerala can produce and market *Navara*. When the production limits are as wide as in the case of *Navara*, it is practically impossible for a single producer society to solve all the issue regarding quality and market assurance.

Navara is a direct sown, short variety and the cultivation is generally confined to high lying paddy fields to make the water management easier. Even though the cultivation practices from sowing to harvest are similar to other rice varieties, no fertilizers and other agro-chemicals are applied for the cultivation of *Navara* rice as this could adversely affect the medicinal properties of the variety. There are reports that in recent past, farmers are using a variety of techniques for *Navara* cultivation, ranging from traditional techniques to those using modern inputs such as pesticides and fertilizers to cultivate their rice.¹⁸ If as such continued such practices can dissolve the perceived product differences within a producer group and high-quality producers may lose market shares to lower-quality producers.¹⁹ Thus it is equally essential to develop a quality assurance clause along with specification of sustainable production practices within the legal framework of GIs. The production process of GI products should be monitored strictly so that there will be no compromise on quality of products. For this an inspection body should be constituted under Kerala Agricultural University or Department of Agriculture, Government of Kerala. Participatory Guarantee Scheme (PGS) could also be adopted for this purpose

Most of the GIs do not have any established image in the markets at the time of registration, but in the

case of *Navara*, it's the other way around. The medicinal properties of this rice variety are internationally acclaimed. This rice is referred to in ancient Ayurvedic Literatures like, *Asthanga Hridya* for undertaking Panchakarma Ayurvedic Treatment.²⁰ But a vast majority of the cultivators of *Navara* rice are not aware of the fact that they are cultivating a GI rice. There are a group of intensive *Navara* farmers who have permanent buyers and export orders. They produce larger quantities of the rice for the market. On the other hand, the small scale farmers using traditional techniques and producing *Navara* for self or local consumption. Thus two class of producers have emerged, one group of farmers selling for Rs 300/kg and yet another class selling *Navara* rice at Rs 30/kg. In essence some of the genuine small scale farmers are deprived of his entitlements as he lacks direct access to the supply chain.

Even though, consumers have to pay high price for the *Navara* rice in the market, the premium price paid by the consumers was not getting translated to a higher procurement price. Ayurvedic pharmaceutical companies are key stakeholders involved in *Navara* supply chain. The gap in information from the perspective of these pharmaceutical companies is one of the key limitations in achieving the targeted market access and producers share. The society should actively negotiate with the ayurvedic entities across Kerala and also the country highlighting the specialities of *Navara* GI. Further, we can expand the scope of GI by exporting to various foreign destinations.

***Palakkadan Matta* and Initiatives to outdo the Implementation Lags**

Palakkadan Matta rice is the second agricultural product in Kerala to receive GI registration and it is cultivated in Palakkad region of Kerala. *Palakkad Matta* Farmers Producer Company Ltd. registered *Palakkadan Matta* as a GI in 2007. Geographically differentiated products can create economic value if the origin is valued by consumers.²¹ The correlation between the geographical region and the quality attribute should be proved unambiguously for a GI to be meaningful to the consumer. For this public policy on establishing GIs should include an examination of whether such a correlation exists before protecting the regional name.²² In the case of *Palakkadan Matta*, the scientific community in the state and officials of the Department of Agriculture are unsure about any scientific basis for the geographical link as claimed in the application (NAARM, 2008).²³ The theoretical

concept of GI may be contradicted if influential actors in the supply chain get chances to manipulate the production standards and certification policies.²⁴ Hence any reservations in this direction should be thoroughly investigated and ruled out.

There is ambiguity over the varieties that come under the purview of registration. As per the Application, 10 varieties comes under the purview of registration which include traditional farmer varieties like, *Chenkazhama*, *Chetadi*, *Aravakkari*, *Aryan*, *Vatton*, *Ilupappoochampam*, *Chitteni*, *Thavalakannan* and new high yielding varieties developed through formal plant breeding. Further, the registration document mentions about the flexibility element allowed for the varietal component.¹⁶ Any varieties with *Matta* properties cultivated in Palakkad can be added to this list. Some of the varieties mentioned in the registration list are popularly cultivated in other parts of Kerala also. The crop production practices are also similar to other rice varieties and the system of cultivation is not strictly organic, as some farmers use fertilizers, plant protection chemicals and other agrochemicals in crop production. The applicants of GI registration claim that the tropical weather of Palakkad, soil and water properties peculiar to Palakkad region, easterly wind that blow through the Palakkad gap and the rivers that flow from the Western Ghats determine the unique taste of *Palakkadan Matta*. But empirical evidences to prove the authenticity of the claim are not very handy to the consumers. Therefore the registering company/government machinery should take necessary actions to specify its distinguishing characteristics, establishing the good-place link, designing elements of codes of practices, developing mechanisms for quality-control and methods of governance along the supply chain.

Even though, *Palakkadan Matta* comprises of about 40 per cent of the production in Palakkad,²⁵ the produce was not marketed or promoted as a GI as majority of the farmers were not aware of the GI status. This product reaches the consumers through Supplyco as any other rice variety and in that process mixing with other varieties also takes place. Devi *et al.*, has reported that it is difficult to trace the origin of *Palakkadan Matta* rice after processing as they are ultimately sold under different brand names depending on the processing entity.²⁶ Moreover, the millers denies the geographical link and is unsure about the benefits GI recognition can bring in.¹⁶

Consumers often express strong preferences for domestic products based on an affinity to their home region and the wish to support domestic producers²⁷ and the same is evident in the case of *Palakkadan Matta* also. Consumer is identifying the product according to origin linked qualities.²⁵ Lucatelli raises concerns about possible anti-competitive practices; particularly the risk of monopolistic cartels and unjustified barriers to entry can negatively affect the success of a GI.²⁸ Hence if information asymmetry is ruled out from production side, *Palakkadan Matta* growers can realise differentiated price by ensuring genuineness of the product.

Post Implementation Issues: *Jeerakasala* and *Gandhakasala*

Traditional rice varieties are slowly diminishing from Kerala, creating a threat biodiversity of the state. The share of High Yielding Varieties in net sown area of Kerala has increased from 15.56 per cent in 1969-70 to 93.55 per cent in 2011-12 indicating displacement of traditional rice varieties from existing areas.²⁹ *Wayanad Jeerakasala* rice and *Wayanad Gandhakasala* are traditional aromatic rice varieties grown of Wayanad District of Kerala. It is non-basmati rice yet has a unique taste and aroma when cultivated inside Wayanadan boundaries. Kerala Agricultural University and Wayanad Jilla Sugandha Nellulpadaka Karshaka Samithi jointly applied for the GI recognition of *Wayanad Jeerakasala* rice and *Wayanad Gandhakasala* rice with a view to save this variety from extinction and to improve its market access. In this regard, Wayanad Jeerakasala rice and Wayanad Gandhakasala rice received GI status in 2010. Both these rice varieties are traditionally cultivated by Wayanadan chettis, Kurichyar and Kuruma tribal group who consider it to be handed over to them by their forefathers and has a moral imperative to conserve it as an obligation to the future generation. But those individual farmers or groups who fall outside this universe of obligation become vulnerable not being able to achieve any economic benefits. Hence, although the climatic conditions are favourable, the cultivation of '*Gandhakasala*' and '*Jeerakasala*' are restricted in extent in Wayanad³⁰ owing to high production cost, lack of market access and incidence of fraud or duplicate products.

GI are IPRs that protect the goodwill and reputation of these differentiated products but they are in no way self runners. The potential positive impact of the *Gandhakasala* and *Jeerakasala* GI for consumers, producers, and rural regions can be

initiated only through a strong institutional context and well organised supply chain. This process is likely to involve some re-organization of the product's existing supply chain, leading to modifications in well-established commercial relations and distribution channels.³¹ These varieties are mostly traded on the informal markets and lacks a common procurement and processing system. The progressive farmers who has permanent buyers and export orders were selling these varieties at Rs 60-100/kg.³² It was found that majority of the resource poor farmers including the traditional producers from the tribal areas were unable able to explore the benefits of this channel as it is very difficult to locate such consumers and convince them about the quality of the produce.³³ The marketing costs tends to be at the higher side since the area lacks specialised milling facilities to mill aromatic rice's from the area. Rice development programme' 2019-20 aims to promote and encourage traditional speciality rice production. In this connection the scheme also provides operational support to Padasekhara Samities to set up rice mills, fallow land farming and GAP registration.³⁴ Such opportunities can be effectively utilised by the producer societies for the developing infrastructure facilities required for the processing, marketing and sales in the GI jurisdiction.

There are not many studies done on the export prospect of *Gandhakasala* and *Jeerakasala*. But studies indicate that there is a strong demand for the aromatic varieties from Asian countries in U.S.³⁵ They majorly import it from Thailand, India and Pakistan. Further, USA is one of the major importers of basmati rice from India. The studies on market potential of *Gandhakasala* rice in Germany indicate an interest among the consumers for *Gandhakasala* depending on quality, cooking attributes and taste.³⁶ With regard to problems in exporting to foreign destinations, lack of institutional support, lack of continuous supply and lack of processing facilities are the major hurdles as identified by the farmers in the area.³³ Marketing and promotion of GI products in various export destinations is also a challenging task as the GI producers may have to adopt different distribution channels in different countries for selling the same product.⁹ State level arrangements are needed to manage and coordinating all the stake holders involved in the supply chain to solve these issues and enable them to explore newer export destinations .

The aromatic varieties of *Gandhakasala* and *Jeerakasala* are very much popular among the domestic consumers as well. Dishes made from these aromatic varieties are served to distinguished guests as a mark of respect and love since long in Kerala.²⁹ In order to explore the untapped potential of these traditional cultivars and to exploit the GI status of the crop, farmers from outside the district are even ready to practice leased land farming in Wayanad.³³ In regional markets, *Gandhakasala* and *Jeerakasala* rice varieties are facing severe competition from similar aromatic rice varieties which were cultivated in other states which are flooding the markets of Kerala. In the domestic market, consumer ethnocentrism can make purchasing decisions favourable to local producers.³⁷ For the GI recognition to be meaningful; the society should promote the GI rice by highlighting the difference between Wayanadan Aromatic Rice Varieties and those cultivated elsewhere through a GI marketing campaign.

If the question is about whether over years *Jeerakasala* and *Gandhakasala* has justified their GI status? It is often suggested that a GI is justified, if and only if the benefit that consumers get from the exclusive label outweighs the cost of providing that information and of enforcing the restriction.²² *Jeerakasala* and *Gandhakasala* are traditional scented rice varieties which experienced an overlook because of the overemphasis on *Basmati*.³⁸ Government agencies should incentivise the production process, provide marketing assistance, establish control modalities and support the promotional campaigns so that stakeholders at different ends of the supply chain can positively experience the GI. The heterogeneity present in the characteristics, resources and strategies of the individual members of the producer society should in no way negatively affect or influence the GIs journey to success.

The Traditional Pokkali and Kaipad System

Pokkali and *Kaipad* are examples of location specific integrated farming strategy implemented as rice fish sequential farming system in brackish waters of Kerala. Farmers follow traditional climate resilient cultivation practices which are exclusively organic. Paddy cultivation is practiced in the low saline phase and prawn farming is practiced in the high saline phase. Agricultural operations for rice cultivation begin in mid-April and after the completion of harvest operations of paddy in October, fields are used for

prawn filtration. Both are completely organic system of cultivation using saline tolerant varieties and no fertilizers or plant protection chemicals are applied. Traditional Pokkali varieties include *Cheruvirippu*, *Chettivirippu*, *Kuruka*, *PonKuruka*, *Mundakan*, *Anakodan*, *Eravapandy*, *Orkayama* and *Orpandy*. Salinity-resistant indigenous rice varieties *Kuthiru* and *Orkayama* are preferred by Kaipad farmers. As a part of efforts to rejuvenate these ecologically responsible farming systems, Kerala Agricultural University (KAU) has released High Yielding Variety (HYV) to suit these systems. Rice researchers of KAU have come up with *Vytilla* varieties to suit Pokkali areas and *Ezhome* varieties to suit Kaipad area. This unique and complex combination of agro-climatic conditions have long been recognised as factors which attribute a distinctive quality to the rice produced.³⁹ Pokkali fields are prevalent in coastal regions of Alappuzha, Ernakulam and Thrissur districts and Kaipad fields are across in the coastal tracts of Kannur, Kasaragod, and Kozhikode districts. As an initiative to save this indigenous-organic rice farming systems of coastal Kerala, KAU joined hands with the respective producer societies of Kaipad and Pokkali to apply for recognition of these agri-products. Even though, *Pokkali* rice received GI status in 2007, *Kaipad* rice received the Geographical Indication tag only in 2014. Even though Pokkali holds an organic certification, the organic certification process is still in pipeline in Kaipad.

Kerala Agricultural University and The Pokkali Land Development Agency are the registered proprietors of *Pokkali* rice. The GI registration permits the exclusive global right to the concerned farmers to cultivate *Pokkali* paddy and sell the finished product in the brand name of *Organic Pokkali* the world over.⁴⁰ Kerala Government has taken up many initiatives to promote *Pokkali*, but unfortunately failed to come up with a successful business model for marketing *Pokkali* rice. An amount of Rs 2 crores was earmarked to increase the acreage under cultivation of speciality rice's including *Pokkali*.⁴¹ Measures were taken to incentivise *Pokkali* production. In the initial years of registration, area under *Pokkali* cultivation has seen substantial increase in acreage and realised much higher production.⁴² There were reports that exporters were ready to procure *Pokkali* rice at Rs. 150/kg and the rice in domestic markets is being sold at Rs 35-40/kg.^{33, 43, 44} Plans were in pipeline to sublet the *Jaiva Pokkali*

trademark owned by KVK to Pokkali farmer Producer Company. Case studies on GIs prove that that, If the benefits of registration are being accrued to manufacturers/big traders in the sector, it is more likely this can lead to dilution of quality of GIs and might result in misuse of GIs in the long run.⁴⁵ Intermediary influences identified to have a very significant impact on the business as per responses from Pokkali farmers.⁴⁶ When traders of Pokkali enjoyed more economic benefits than the actual producers, this have had adverse implications on the improvement of the socio-economic conditions of the actual producers of the Pokkali and further tend to have negatively affected the functioning of the society

A Successful Model: *Kaipad* GI Rice

KAU and Malabar Kaipad Farmers Society are the registered proprietors of *Kaipad* rice. Malabar Kaipad Farmers Society is actively seeking solutions to problems of farmers cultivating '*Kaipad* rice'. Presently, the society is very active and it procure the *Kaipad* paddy at a rate of Rs. 2 more than the MSP and if the farmers are selling as rice to the society, they procure it eat rate of Rs 50/kg. Recently in 2018, NABARD funded a selling point at Kannapuram Panchayat and the MKFS is marketing through this outlet. And in this outlet the parboiled rice is marketed at Rs 70/kg, raw rice at Rs 65/kg. Initial success enjoyed by a GI may not be sustainable; if consumer attention is not liveable over time.⁴⁷ A consumer may try a new GI to explore the novelty concept and further may switch his interest towards the new products available in the market. It is the duty of the stakeholders to promote sustained consumption through awareness campaigns and advertising strategies. There is more to be done in this regard. There is ample scope for enhancing the income of farmers through value addition by diversifying the products. The group of farmers should be able to set up their own milling units so that they can ensure the quality of their produce and be able to get a fair price for their product.

Promotion of agro-tourism around a GI could serve the added purpose of promoting the GI by strengthening of brand image.⁴⁸ Agri-tourism is a relatively new concept in India. Despite having a rich biodiversity, natural landscapes and a proud agricultural history, the concept of farm tourism is left underexploited in India. The captivating scenic beauty, rich biodiversity, traditional cultivation

system and the authenticity provided by GI recognition together can promote ecotourism in the *Kaipad* and *Pokkali* tracts. This can create new avenues to a complementary stream of income via farm-stays, farm direct marketing, value addition and sustainable agriculture

Conclusion: The Rice GIs that Failed to Innovate

All the cases of GI's analysed recommend that revival of the producer society is essential in order to take collective decisions on defining the production limits, agreeing up on code of conduct, identifying indicators of quality, and building up strategies for marketing and consumer orientation. External support from governmental agencies is essential to build up effective promotional strategies to promote the product and its intrinsic qualities across international markets. One major finding regarding *Navara* rice is that GI is registered without prior consultation with local stakeholders to agree on common code of practice for use of GI. In such cases various levels of quality of product may tamper the differentiated image of the GI product among the consumers. GI is essentially associated with the concept of terroir.²² The concept of terroir which indicate the link between the geographical area and the quality attribute of the product should be proved beyond ambiguity. The ambiguity regarding the terroir is hindering the progress of stakeholders of *Palakadan Matta*. The trade of *Gandhakasala* and *Jeerakasala* rice, faces domestic competition from similar aromatic rices from other states. In addition to branding, some restriction on volume is required for geographical identifiers to achieve product differentiation to raise prices.⁴⁹ In the case of *Pokkali* and *Kaipad* System of cultivation, volume of supply is effectively controlled by geographical conditions. Larson confirms that GIs, by virtue of establishing production limits, are likely to create a positive impact on natural resource sustainability and on biodiversity conservation.⁵⁰

Effective protection involves a balance of interests between consumers, producers and governments.⁵¹ The basic interest of all the stakeholders is to protect their indigenous GI's from misappropriation by other entities. In addition it is important for the producer to sell his products at a good margin. On the trader's side, improved market access may be his ultimate objective. Consumers have a legitimate interest to obtain genuine products and Governments interest may be in fulfilling the international obligation and to

promote rural development and sustainability. Realisation of all these objectives is contingent upon collective action along the supply chain.

References

- 1 McConnell, A policy success, Policy failure and grey areas in-between, *Journal of Public Policy*, 30 (2010) 345-362 doi: 10.1017/S0143814X10000152.
- 2 Stone D, *Policy Paradox: The Art of Political Decision Making*, 2nd edition, New York, NY: W.W. Norton (2002).
- 3 Fischer F, *Reframing Public Policy: Discursive Politics and Deliberative Practices*, Oxford: Oxford University Press (2002).
- 4 Barjolle D, Paus M & Perret A, *Impact of Geographical Indications: A Review of Methods and Empirical Evidences*, In Contributed paper prepared for presentation at the IAAE Conference, 16 – 22 August, 2009, Beijing, China, 1-114.
- 5 Babcock B A & Clemens R, Geographical Indications and Property Rights: Protecting Value-Added Agricultural Products *MATRIC Briefing Paper 04-MBP* 7, Midwest Agribusiness Trade Research and Information Centre, Iowa State University Ames, Iowa 50011-1070 (2004).
- 6 Murphy K M, Conflict, confusion and bias under TRIPS Articles 22-24, *American University International Law Review*, 19 (5) (2004) 1181-1230.
- 7 Kerr W A, Enjoying a good port with a clear conscience: Geographic Indicators, rent seeking and development, *Journal of International Law and Trade Policy*, Saskatoon, 7 (1) (2006), 1-14.
- 8 Faria S M, *Producer's Perspective towards Geographical Indications Recognition Process in Brazil- An Analysis of Difficulties Found in the Process and Possible Improvements*, M A thesis, Centre for International Studies of Ohio University, USA, 2010, 160.
- 9 Das K, Select issues and debate around Geographical Indications with particular reference to India, *Journal of World Trade*, 42 (3) (2008) 461-507.
- 10 KSPB [Kerala State Planning Board], *Economic Review*, Various issues <http://spb.kerala.gov.in/index.php/economic-review/archives-er-59-09.html> (1986-2019).
- 11 Lukyx D M M & Ruth S MV, An overview of analytical methods for determining the geographical origin of food products, *Food Chemistry*, 107 (2) (2007) 897-911.
- 12 Jena P R, Ngokkuen C, Rahut D B & Grote U, Geographical Indication protection and rural livelihoods: Insights from India and Thailand, *Asian-Pacific Economics Literature*, 29 (1) (2015) 174-185.
- 13 Radhika A M, Thomas K J, Kuruvila A & Raju R K, Assessing the impact of geographical indications on well-being of rice farmers in Kerala, *International Journal of Intellectual Property Rights*, 9 (2018) 1-11.
- 14 Jena P R & Grote U, Changing institutions to protect regional heritage: A case for Geographical Indications in the Indian food sector, *Development Policy Review*, 28 (2) (2010) 217-236.
- 15 Blakeney M, Krishnankutty J, Raju R K & Siddique K H M, Agricultural Innovation and the Protection of Traditional Rice Varieties: Kerala a Case Study, *Frontiers in Sustainable Food Systems*, 3 (2020) 116, doi: 10.3389/fsufs.2019.00116.

16 Kocchar S, Institutions and capacity building for the evolution of intellectual property rights regime in India: IV- Identification and disclosure of IP products for their IPR protection in plants and animals, *Journal of Intellectual Property Rights*, 13 (4) (2008) 336-343.

17 Rangnekar D, *The Socio Economics of Geographical Indications: A Review of Empirical Evidence from Europe*, 2003, [on line], https://unctad.org/en/PublicationsLibrary/ictsd2004ipd8_en.pdf (accessed on 12 January 2018).

18 Joshua H, *Navara, A Medicinal Rice: An Exploration of the Changing Production and Consumption System*, Master thesis, Department of Plant and Environmental Sciences. Norwegian University of Life sciences, Norway, 2012, 30.

19 Crespi, John M & Marette S, Generic advertising and product differentiation, *American Journal of Agricultural Economics*, 84 (3) (2002) 691-701.

20 Kumari L S, *Status Paper on Rice in Kerala*, <http://www.rkmp.co.in/sites/default/files/ris/rice-statewise>Status paper on rice in Kerala.pdf>, 2012.

21 Teuber R, Geographical indications of origin as a tool of product differentiation: The case of Coffee, *Journal of International Food and Agribusiness Marketing*, 22 (3) (2010) 277-298.

22 ICAR (Indian Council of Agricultural Research), *Geographical Indications Mapping: Palakkad Matta Rice Draft Report of Field Experience Training*, Hyderabad: National Academy of Agricultural Research Management, 2007, 81.

23 Josling T, The war on terroir: Geographical Indications as a Transatlantic trade conflict. *Journal of Agricultural Economics*, 57 (3) 2006) 337-563.

24 Bowen S, Development from within? The potential for Geographical Indications in global south, *Journal of World Intellectual Property*, 13 (2) (2010) 231-252.

25 Rose N C D, *Impact of Geographical Indication on Palakkad Matta Rice Farmers in Kerala-An Economic Analysis*, M.Sc. (Ag.) thesis, University of Agricultural Sciences, GKVK, Bangalore, 2011, 155.

26 Devi L G, Saritha R K, Ranjitha K, Solanki R K, Thangaswami A & Alone R A, *Geographica Indications Mapping: Palakkad Matta Rice*, 2007, [on line], http://eprints.naarm.org.in/67/1/F-81_Palakkad.pdf (accessed on 10 May 2018).

27 Lusk J L, Brown J, Mark T, Prosek I, Thompson R & Welsh J, consumer behavior, public policy, and country-of-origin, labeling, *Review of Agricultural Economics*, 28 (2) (2006) 284-292.

28 Lucatelli S, *Appellations of Origin and Geographical Indications in OECD Members Countries: Economic and Legal Implications*, OECD, COM/AGR/APM/TD/WP (2000) Paris, 15 (2000) 73.

29 Gopi G & Manjula M, Speciality rice biodiversity of Kerala: Need for incentivising conservation in the era of changing climate, *Current Science*, 114 (5) (2018) 10.

30 George P S, Bastian D, Radhakrishnan N V & Aipe K C, Evaluation of aromatic rice varieties in Wayanad, Kerala, *Journal of Tropical Agriculture*, 43 (1-2) (2005) 67-69.

31 Rangnekar D, *The Socio Economics of Geographical Indications*, WIPO, (2004) (8), [on line] <https://doi.org/ISSN1681-8954> (accessed on 17 November 2018).

32 Seed Care, *Twenty-Fourth Annual Report, 2013-2014*, Chennai, 2014.

33 Radhika A M, *Implications of Geographical Indications for Rice in Kerala*, 2019, PhD. Thesis, Kerala Agricultural University, Thrissur, Kerala, India.

34 GoK [Government of Kerala], *Rice Development Program 2019-20*, Circular No. TA (1)12516 dated 3 April 2019. Department of Agriculture and Farmers Welfare, Government of Kerala (2019).

35 Anonymous, *Developing an Aromatic Rice Industry in the Arkansas River Valley*, The Natural Soybean and Grain Alliance, 700 Research Center Blvd, Fayetteville, Arkansas 72701, 2018, 40.

36 Hannah A & Claudia M, *Marketing Gandhakasala: Local Varieties for Livelihood Options*, 2013, [on line] <https://www.umwelt.uni-hannover.de/fileadmin/institut/pdf/BioDIVA-BriefingNote3-2013.pdf> (accessed on 7 December 2018).

37 Ittersum V K, Meulenberg M T G, Trijp H C M V & Candel M J J M, Consumers' appreciation of Regional Certification Labels: A Pan European Study, *Journal of Agricultural Economics*, 58 (1) (2007) 1-23.

38 Rekha T, Martin K P, Sreekumar V B & Madassery J, Genetic diversity assessment of rarely cultivated traditional *Indica Rice (Oryza sativa L.)* varieties, *SAGE-Hindawi Access to Research Biotechnology Research International*, 2011, doi:10.4061/2011/784719.

39 GoI [Government of India], *GI Journal*, 52 (2013), http://www.ipindia.nic.in/writereaddata/Portal/Images/pdf/Journal_52.pdf.

40 Shamma N, *A Study on Farmers Perceptions on Prospects and Problems of Pokkali Rice Farming in the State of Kerala*, M.Sc. (Ag) thesis, 2014, 141, Professor Jayshankar Telengana State Agricultural University, Hyderabad.

41 Nandakumar T, GI tagged rice varieties to get a boost, *The Hindu*, 2014, <https://www.thehindu.com/news/national/kerala/gitagged-rice-varieties-to-get-a-boost/article6309995.ece>.

42 Martin K A, Acreage under Pokkali cultivation goes up, *The Hindu*, 2011, <https://www.thehindu.com/news/cities/Kochi/acreage-under-pokkali-cultivationdips/article6706973.ece>.

43 Shibu B S, A new brand mantra takes root in Pokkali rice fields, *The New Indian Express*, 2016, <https://www.newindianexpress.com/cities/kochi/2016/aug/25/A-new-brand-mantra-takes-root-in-Pokkali-rice-fields-1512628.html>.

44 Jena M, *Climate-Smart Pokkali Farming Needs Machines*, 2017, <https://indioclimatedialogue.net/2017/10/16/mechanise-climate-smart-farming-food-security/>.

45 Gopalakrishnan N S, Nair P S & Babu A K, *Exploring the Relationship between Geographical Indications and Traditional Knowledge: An Analysis of the Legal Tools for the Protection of Geographical Indications in Asia*, ICTSD Working Paper, Grossman GM, 2007, 1-65.

46 Anson C J & Pavithran K B, Pokkali rice production under Geographical Indication protection: The attitude of farmers, *Journal of Intellectual Property Rights*, 19 (2014) 49-53.

47 Yeung M T & W A Kerr, *Increasing Protection of GIs at the WTO: Clawbacks, Greenfields and Monopoly Rents*, 2008 [on line], University of Guelph, Canadian Agricultural Trade Policy Research Network, http://www.uoguelph.ca/~catprn/PDF/Working_Paper_2008-02_Kerr.pdf (accessed on 12 December 2018).

48 Reviron S & Paus M, *Special Report: Impact Analysis Methods, WP2 Social and Economic Issues*, 2006, [on line] SINER-GI Project, Sixth Framework Program, European Commission, https://ec.europa.eu/research/fp6/pdf/fp6-in-brief_en.pdf (accessed on 7 June 2018).

49 Carter C, Krissoff B & Zwane A P, Can country-of-origin labeling succeed as a marketing tool for produce? Lessons from three case studies, *Canadian Journal of Agricultural Economics*, 54 (2006) 513-530.

50 Larson J, *The Relevance of Geographical Indications and Designations of Origin for the Sustainable Use of Genetic Resources*, 2007, [on line] http://underutilized-species.org/Documents/PUBLICATIONS/gi_larson_lr.pdf (accessed on 2 December 2014).

51 Jain S, Effects of the extension of Geographical Indications: A South Asian perspective, *Asia Pacific Development Journal*, 16 (2) (2009) 65-86.