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# **Supply and Value Chain Analysis in the Marketing of Marine Dried Fish in Bangladesh and Non Tariff Measures (NTMs) in International Trading**

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## Abstract

In Bangladesh about 7.3 million people live in the coastal fishing villages whose livelihood in some way depend on coastal and marine fishing. It is estimated that about 20 percent of total marine catch has been dried round the year with the substantial production during October to April and, marketed both in domestic and international market. In the current marketing system, producers have no influence over marketing and supply chain management, rather strongly managed and monopolized by giant traders, brokers, as well as giant super market companies, whose intervention results price distortion in domestic market and, there by, erodes profitability and preference of primary producers.

In the supply chain management of marine dried fish four intermediary stakeholders e.g., dry fish traders, wholesaler, medium operator, retailer etc. are involved between producer and consumer. Aside with is, involvement of backward stakeholders, identified three as fisher, piker, and wholesaler, with the primary producer are considerably high that results 22 percent value addition to the raw fish, even before going to be dried. Although a number of stakeholders are identified with the supply chain management, but, necessarily all are not involved in all cases. The number of intermediaries and stakeholders varies depending on the extent of market; for localized market supply chain is too short but numbers of backward stakeholders are virtually same in all circumstances. The value addition is found highest 105 percent from wholesaler to retailer, followed by 90 percent from wholesaler to exporter. Theoretically there is a positive correlation between value addition and profitability, the more the value addition, the more the profitability. In case of traditional and long supply chain; profitability is not as high as the value added, because profit share among the multi-stakes and also eroded by the huge transportation cost, high transportation toll particularly in the *Ghats* of river routes. In contrary in a short supply chain, managed by private business entrepreneurs, NGOs and super market, both the profit maximization and profit distribution are considerably high. Supermarket secure as high as 150 percent profit. Surprisingly, in all cases, primary producers secure considerably less profit, only 5 to 8 percent whereas their involvement in terms of labor, time etc. is the highest. The major cause of price exploitation to the producers is *dadan* (non institutional money lending) that make producers bound to go for 'conditional engagement' in the fish drying business. Therefore these monopolistic and manipulative practices by both the wholesaler and super markets are not curtailed by any counter-vailing power of the producers.

In relation to dry fish export, the increasing non-tariff measures (NTMs) acts as critical barrier despite having huge international market demand and prospect. These NTMs has emerged from the Uruguay Round of the Multilateral Trade Negotiations and agreements on Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) measures. Though the WTO SPS and TBT agreements impose a bound obligation to the exporting member countries to improve food quality as per set international standard, but the compliance cost related to SPS obligation is too high, and thus government is reluctant, otherwise unable to meet the set criteria.

Therefore the study recommends for appropriate policy intervention for financing dry fish producers so that they managed to escape from the vicious chain of non-institutional money lending system and can secure more profit. This is also recommended to strengthen domestic technical regulations or standards to overcome technical barriers to dry fish trading in international market.

## **Research Background**

Drying of marine fish is very common in the entire coastal areas of Bangladesh and these dried fishes have demand both in domestic and international market though the people involved early in the production chain (fishing and drying) add relatively little value and make little profit. The reasons for this less value addition at small-scale producer level are presumed to be the poor product quality and lack of market access due to various institutional and non-institutional barriers e.g. high transportation cost/toll/taxation, price exploitative market players between producers and consumers etc. Most of the fish dryers currently dip the fish in insecticide to reduce losses from insect infestation. These pesticides are harmful to health and thus, this product can not reach widespread consumers particularly those who are health conscious.

To support the small scale marine fish drier for producing quality dry fish a research titled 'Improvement of Food Quality of Traditional Marine Dried Products Using Low Cost Solar Tunnel Drier' has been conducted through collaborative effort of Bangladesh Agriculture University, SUFER project of DFID and Participatory Research and Development Initiative (PRDI) of Bangladesh. This research initiative has developed user-friendly appropriate technology and allowed fish to be dried without the use of pesticides. Still, PRDI is supporting the small-scale producers, (particularly of women in its working area e.g. Moheshkhali and Saint Martin Island) for producing pesticides free dried fish and also expanding its market in urban areas. PRDI is trying to develop a producer supportive entrepreneurship through supporting small-scale fish drying and facilitating the direct linkage between producers and consumers, ignoring the price exploitative market players in between producers and consumers.

In fact, entrepreneurship development involves a complex set of interlinked activities related to commercial production of commodities, value addition to the commodities, supply and delivery of inputs, and marketing distribution and trade of the commodities. The main problem of poor entrepreneurship development in the country is that effective value chain linkages among the farmers, traders, processors and business service providers are yet to develop. Small-scale producers need to be integrated with domestic as well as international market. This is especially true for the high value perishable commodities.

In one hand, development of profitable technology plays an important role in promoting entrepreneurship; on the other hand value addition to the micro level production initiatives is also a prior issue. The government has also provided the agro-entrepreneurship with various incentive packages including tax exemption, import duty concession, special budgetary allocation and export promotion. But it is necessary to examine how the policy issues supports the marketing of dried fish both in domestic and international market and what more policy support is need to make this sector producers benefiting and sustainable.

## **Overall research objectives**

The specific objective of this study is to produce a value chain analysis of the dried fish produced in Cox'sbazar coastal areas and also analyze the existing government policies supportive to the development and promotion of entrepreneurship.

## **Specific research objectives**

- To examine the existing marketing system and estimate the cost, margin and profit of producers and traders involved in the marketing chain.
- To identify the institutional and non-institutional barriers e.g. transportation cost/toll/taxation, illegal extortion to the movement of dried fish and to identify price exploitative market players in between producers and consumers.
- Government policy analysis in terms of quality control and marketing of dried fish both in domestic and international market
- To analyze the role of women, ethnic community people and poor fishing communities in production and marketing of dried fish.
- Review socio economic and livelihood impact of the technology on the small scale dried marine fish producers of Moheshkhali Island, Cox'sbazar
- To suggest some policy measures that will be supportive to the small-scale fish drying and facilitating the direct linkage between producers and consumers.

## **Output achieved**

- The existing marketing system of dried fish, institutional and non-institutional barriers e.g. transportation cost/toll/taxation, illegal extortion to the movement of dried fish etc has been identified
- Publication of an evaluation report outlining the findings and recommendations for producer benefiting entrepreneurship development
- Draft action plan for this sub sector
- Organized a national level workshop involving key stakeholders acting in production and value chain and also involving national policy planner.

## **Materials and Methods**

The study used data both from secondary and primary sources. Primary data has been collected employing the following techniques;

- i) Participatory Rural Appraisal(PRA)
- ii) Focus Group Discussion
- iii) Stakeholders Interview

### ***Participatory Rural Appraisal (PRA):***

PRA were intended to gather following socio-economics information primarily from the fisher folk households and dry fish producers

- Identifying local resources and opportunities for improving (existing)/identifying (alternative) income generating activities;
- Ranking the identified opportunities
- Assess the role of dry fish to the livelihood earnings of the coastal people
- Asses the production and marketing nature of dry fish at local market

Total 12 sessions of PRA has been conducted in 6 fishing villages, 2 in each village. The fishing villages are; *Kutubdia, Moheshkhali, Ghatibhanga, Kutubdia para, Teknaf* and *Sonadia*. Selection of fishing villages has made on the suggestion of partner NGO, COAST Trust, who has been working with those fishing communities for long years.

### ***Focus Group Discussion (FGD)***

We conducted 18 sessions of focus group discussions in all the 6 selected fishing villages for collecting qualitative data. The specific aim of those discussions were to collect information on mechanism of raw-fish collection, pricing and value addition on raw fish at different levels, fish drying and marketing mechanism, pricing and value addition on dried fish at different levels, marketing chain transportation and value addition and finally loaning on dried fish business.

### ***Stakeholders Interview***

In the supply and marketing chain of marine dried fisheries products, we identified following stakeholders' e.g.

- Fishers
- Dry Fish Producers
- *Aratdar*
- Commission Agents *Pikers*
- Whole Sellers/ Super Market
- Entrepreneurs / NGOs/ EPB

Therefore, apart from PRAs and FDGs we also conducted one-on-one interview with the associated stakeholders mentioned above. In this regard we developed separate questionnaire by stakeholders. All the questionnaires were reviewed by the BFRF executive committee members and then field tested before interviewing.

### **Major Considering Factors**

*Identifying Trading Partners In dry Fish:* Value chain analysis is a comprehensive look at the activities of different trading partners, e.g. Raw Fish Suppliers, Dry fish producers, Middle man/aratdar, wholesalers, Retailers, Consumers etc.. Understanding the interaction of these trading partners as well as their roles within the supply chain is important in understanding the product and information flow.

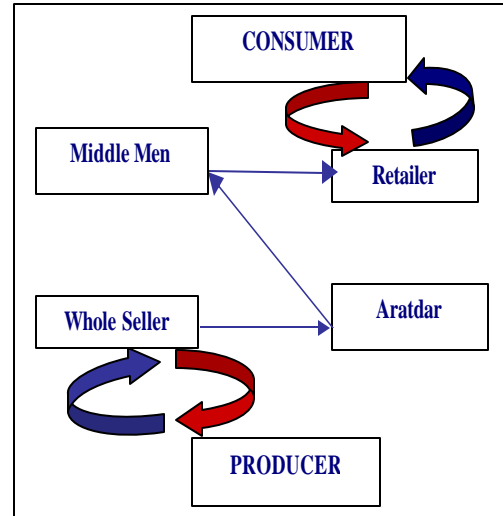
*Production and Distribution Channel:* The Value Chain Analysis more importantly examines channels. The distribution channels recognize that product flow is identical at the front and back ends of the supply chain, although between the producers and the retailer's store shelves the flows are very different

*Considering factors at production level:* Production and distribution channel as well as the value addition and the profitability of dried fish business strongly influenced by the following external factors, which to be considered and examined properly; the considering factors are;

- Sources of finance, NGO/ Public Financial Institutions/Local *Mahajan*
- Inbound Transportation Cost
- Quality, Fresh raw Fish
- Contractual Production System
- Illegal Toll by the Local *Mastans*
- Toll Maintaining Minimum Moisture Level and Packing

*Considering factors for Domestic Marketing*

- Outbound Transportation Cost
- Illegal Toll by the Local *Mastans*/ Traffic Police
- Quality Seal Certificate
- Value Added Tax
- Import Market Liberalization



*Fig 1: A typical Supply and Marketing Chain of Marine Dried Products*

*Considering factors for Export Marketing*

- Safety and Quality matters; GATT agreement of the Sanitary and Phytosanitary Measures (WTO Article 3)
- Tariff and Non-Tariff Barriers
- Export subsidy

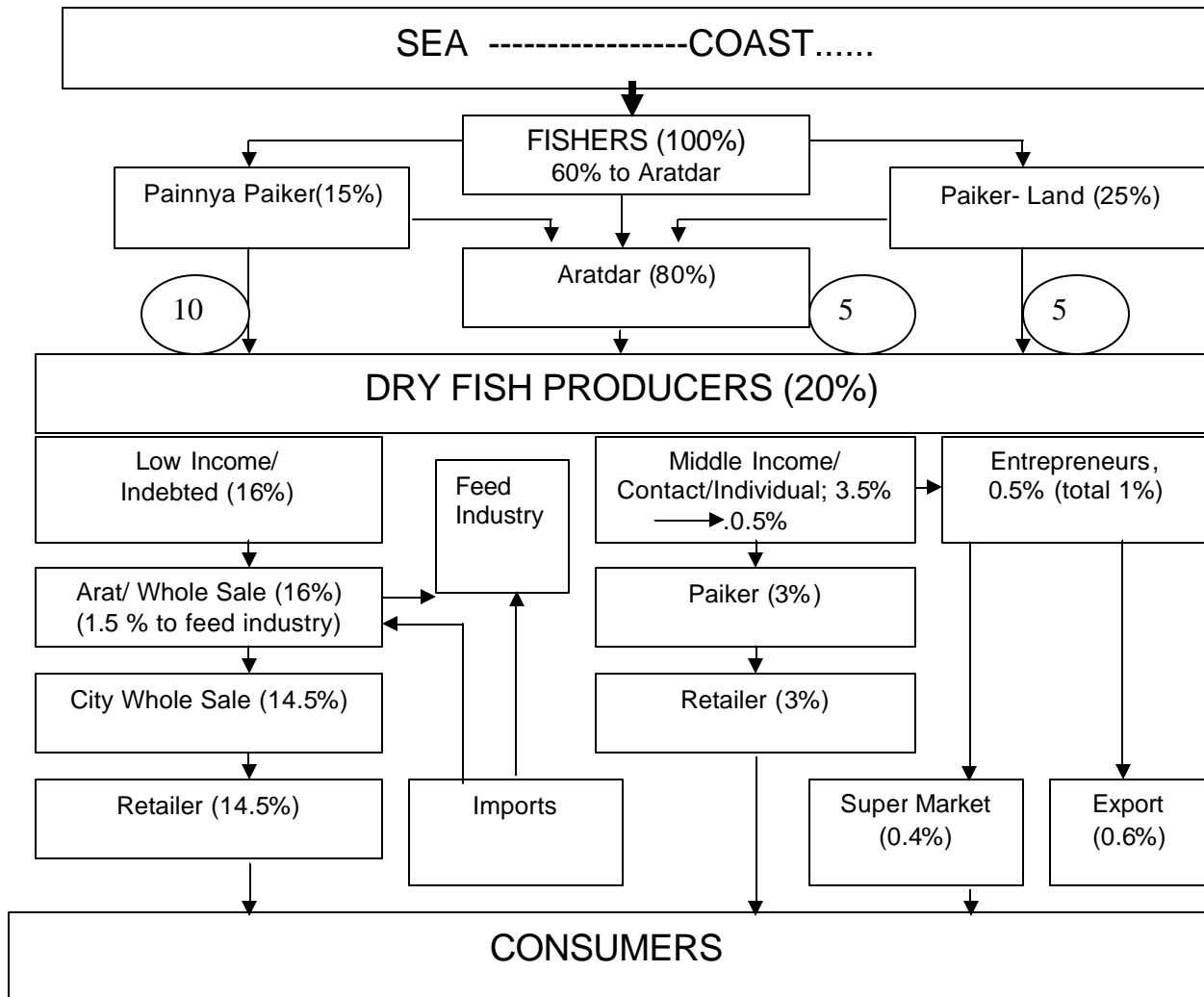
**Result and Discussion**

**Discussion of Results and Findings**

i) *Supply Chain in Domestic Market*: Generally an identical supply chain of marine dried fish would be comprises of several stakeholders like producer, whole seller, aratdar, middleman, retailer and then, at the top, consumers. But in the supply chain analysis it is found that the number of intermediaries and stakeholders varies depending on the extent of market; for localized market supply chain is too short. Therefore in a standard common marketing chain, generally exists in country’s domestic marketing pattern, we identified four intermediary stakeholders e.g., dry fish traders; wholesaler, medium operator, retailer etc. between producer and consumer. Aside with this a number of backward stakeholders e.g. fisher, piker, and wholesaler, are identified. The number of backward stakeholders is similar both in long and short supply chain.

In supply chain we found that, about 20 percent of total marine catch has been dried round the year with the substantial production during October to April. Interestingly we found two types of *Pikers*, land based piker and *pinnya paiker*, dealing with the marketing of raw fish at the very initial stages of fish harvesting. We found three categories of producers involved in dry fish production, are;

Fig 2: Supply and Product Flow of Marine Dried fish in Domestic Market



- Low income/poor of Indebted producers
- Middle Income Group
- Private on NGO Entrepreneur's

The majority of dry fish producers are from low income group and this supply chain is comparatively long than the remaining two. The producers of this supply chain are highly indebted, majority of them are women and work either as contact labour or contact producer who sold their product beforehand against taking of advance money in the lean period.

In contrary, production managed by middle income group and entrepreneurs poses short supply chain and their share in dry fish production is less only 4 percent out of 20.

ii) *Supply Chain in Export Market:* Usually, in Bangladesh, dried fish are produced mostly in traditional way; dipping fishes in saline water, drying in open places and, very often, using pesticides to prevent pest infestation. So, traditional dry fish producers are out of export market as they could not meet the Sanitary and Phytosanitary (SPS) measures. WTO SPS and



TBT agreements impose a bound obligation to the exporting member countries to improve food quality as per set international standard, but the compliance cost related to SPS obligation is too high, and thus government is reluctant, otherwise unable to meet the set criteria.

- iii) *Value Addition in Domestic Market*: Value addition starts from the very first dealing of raw fish from its harvesting point. Around 60% of total catch directly go to the land-based *Aratdar*, majority of whom have own fishing vessels or make advance payment for the fishes to be caught. The remaining 40 percent raw fish goes to the *Paikers* or Commission Agents. The fishers' sell-out the catch as mixed composition to the commission agents. Most of the *Paikers* are appointed by *Aratdars*, so maximum catch by any means finds its destination to *Aarat*, and thus poor people have no access to the direct purchasing of raw fish. If someone wants to purchase raw fish from *Paikers*, s/he must have to purchase a mixed composition of fish.

People of low income group usually purchase raw fish from local market, on the other hand contract producers get supplied from the entrepreneurs or local *Mahajan*, who directly collect required fishes from the *Aardat* or from the commission agents. The commission agent in *Aarat* is particularly useful because he deals with the local language speaking fishermen as well as with the raw fish supplier. Therefore the involvement of several stakeholders in fish handling contributed 22 percent value addition to the raw fish, even before going to be dried. The value addition is found highest 105 percent from wholesaler to retailer, followed by 90 percent from wholesaler to exporter.

- iv) *Value addition and profitability*: Theoretically there is a positive correlation between value addition and profitability, the more the value addition, the more the profitability. In case of traditional and long supply chain; profitability is not as high as the value added, because of profit sharing among the multi-stakes. On the other hand operational cost of doing business is considerably high, which erodes preference and profitability. Profit erosion mainly occurred due to huge transportation cost, high transportation toll particularly in the *Ghats* of river routes. It is found in *Mosheskhali* that only the *Ghat* charge added 12 to 15 percent more value while transporting as a bulk more than 50 Kgs.

In contrary in a short supply chain, managed by private business entrepreneurs, NGOs and super market, both the profit maximization and profit distribution are considerably high. Supermarket secure as high as 150 percent profit. Surprisingly, in all cases, primary producers secure considerably less profit, only 5 to 8 percent whereas their involvement in terms of labor, time etc. is the highest. Therefore these monopolistic and manipulative practices by both the wholesaler and super markets are not curtailed by any counter-vailing power of the producers

- v) *Non Institutional Credit System*: The major cause of price exploitation to the producers is *dadan* (*non institutional money lending*) that make producers bound to go for 'conditional engagement' in the fish drying business. *Mohajons* and their money lending system is a common phenomenon in all the coastal areas. In absence of sufficient collateral and due to lapses of the government financial agencies, local *Mohajons* flourished. In all the fishing

villages of study area, it was observed that other than *dadon* (lending for specific income sources), general loans were also available through out the year. Such loans were offered for a short period of time. Usually, one paddy season or fishing season (4-6 month) is the longest time for such kinds of loan. The conditions for lending do vary from area to area. Mainly three types of loans were seen in these villages. These were: a) cash to cash, b) kind to cash and kind, and c) kind to cash. The rate of interest was found higher for kind to cash loan. Despite higher rates of interest, villagers socially accept such kinds of loans, as they do not have access to formal institutions and the loans are available through the year. Village wise terms and conditions for getting loan are given below:

Thana	Village	Pattern of dealing		Remarks
		Pattern	Rate of interest-Tk.	
Cox'sbazar	Kutubdia Para	Cash to Cash	48 – 60	Gold kept as collateral amounting about two times higher than borrowed money.
		Cash to Kind	120	
Kutubdia	Dhurang Boroghop	Cash to Cash	120	Only interest has to be paid monthly, without considering whenever principal to be returned.
Moheskhal	Jelepara Ghatibhanga	Cash to Cash	100	Basically repayment period is six month – commensurate with fish and paddy season.
Tenkaf	Khonkarpara Kachubunia	Cash to Cash	60 - 120	Time – not fixed, interest calculated monthly.

*Fig 3: Nature of non-institutional credit system in dried fish production and marketing system*

But the types of non institutional credit in fishing or fish drying are different than the traditional social credit system. Two types of informal credit lending have found in fishing and dry fish trading system these are;

- *Commission System:* Fishers having own fishing vessels and other required fishing efforts usually take money from the local *Aratdar* depot owner as commission basis to meet running expenses. An average fishing trip rounds approximately ten to fifteen days, which involves around taka 70,000 to 80,000 per trip ( 1 USD =Tk 69)\*. The condition of commission system loaning is to give a share of catch, varies from 10 to 12 percent, as commission or repayment of loan taken. The price of catch fixed beforehand and remain unchanged whole over the fishing period.
- *Contract System:* Contract System is the widely practiced informal money lending system found both in fishing and fish drying business. Usually the influential and rich fishing vessel owner provide fishing permits and loans to fishermen and pay them for

their catch, without giving them any other benefit. In contract system fishers act simply as fishing laborer. People who are highly indebted and belong to low income group take loan from *aratdar* or *mahajan* as contract system, in contrary, middle income group people take loan from either from NGOs or entrepreneurs.

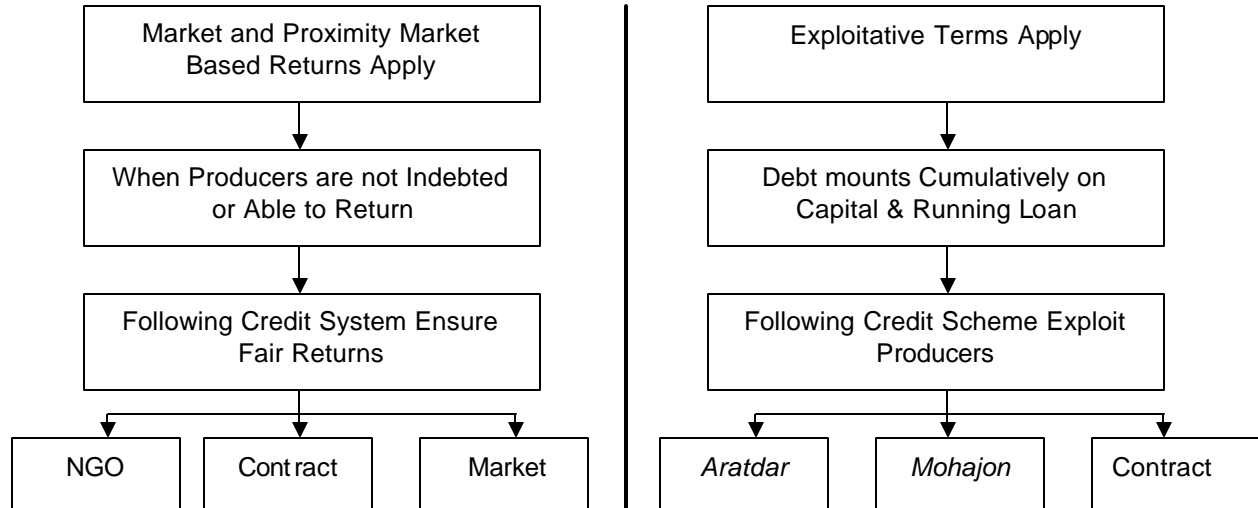


Fig 3: The Debt- Return Linkage

## Recommendations

The study recommends for appropriate policy intervention for financing dry fish producers so that they managed to escape from the vicious chain of non-institutional money lending system and can secure more profit. This is also recommended to strengthen domestic technical regulations or standards to overcome technical barriers to dry fish trading in international market.

Besides, there is a scope of increased competition in marketing particularly at the assembly phase, where the level of bargaining between fishermen and middlemen is often unequal due to financial dependency and poor access to the existing marketing system

## Word Meaning

**Arat:** Place of storing bulk amount of fish, food grains for trading

**Aratdar:** a person who deals fish business (invest for fishing, fish purchase and selling both in domestic and foreign markets)

**Dadan:** Non-institutional and conditional money lending system

**Ghat:** Small local river ports

**Mohajan:** Rural business man who gives conditional loan to the poor villagers/ small scale producers

**Mastan:** Local muscleman often blessed with illegal political powers

**Paiker:** Middlemen who enjoys benefits both from the sellers and buyers

**Painnya Piker:** The middlemen who deals before landing of fishes (Pani is a Bnagla word meaning water)

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