

Annex 6. Bangladesh Knowledge, Attitude and Practices (KAP) Report

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1. Introduction

1.1 Background

The FMSP floodplain fisheries project cluster has produced a considerable amount of new knowledge concerning such production issues on floodplains. The project intended to communicate the key messages generated out of the findings of various FMSP research projects carried out in Bangladesh and adjacent Asian countries to the key audiences of Bangladesh at government and NGOs levels. The key target institutions of this communication project included the relevant government agencies, (DoF, DAE, BWDB and LGED) and NGOs who are involved in implementing various floodplain fisheries projects in partnership with the DoF.

This project emphasized communication of messages on fish friendly sluice gate management to benefit the impacted fisheries inside modified floodplains (viz. within FCD/I projects), fishing effort control measures, fish sanctuary or reserve management and conservation of SRS for adoption (uptake) by the TIs to enhancing fisheries production and benefiting the livelihood of poor fishers. To this end, clear understanding of communities' current knowledge of, and responses to, the options was considered important for developing the approaches.

This annex reports an effort to determine the knowledge, attitudes and practices (KAP) of relevant stakeholders among TIs on management of floodplain resources. The study addressed the issues relevant to the knowledge, attitudes, and practices of the concerned stakeholders on management issues and understanding of concepts and science in relation to practicing and promoting messages among the TIs at the policy and intermediary levels.

1.2 Objective

The objective of the survey was to assess the change of understanding and attitude of key actors among the TIs due to communicating new knowledge on floodplain fisheries management.

The study is expected to provide valuable relevant information on the following key areas needed promotion of messages:

- Current knowledge/understanding, attitudes and practices (KAP) of target institutions towards floodplains in relation to policy and practice;
- Perceptions and attitude of stakeholders on issues related to recommended new knowledge (fishing effort control, sluice gate management, conservation of SRS, fish sanctuary/reserve management) and to the extent suitable for adoption;

2. Survey Methodology

The KAP survey targeted key staff of TIs from government agencies and NGOs involved in floodplain fisheries management and policy development. The TIs in government included DoF, DAE, BWDB and LGED while BRAC, Proshika, Caritas and BELA from NGOs. The study also targeted BARC, MACH, and international organizations like IUCN, Practical Action (former ITDG) and WFC. A comprehensive questionnaire was developed and field-tested before the actual survey was conducted. The survey was conducted twice using the same questionnaire with minor change at the post survey. The first round survey was done at the out set of the project in July 2005 and the second round was done in November 2005.

3. Findings

3.1 Knowledge of stakeholders on fisheries issues

To assess the current knowledge base of relevant fisheries stakeholders on various floodplain fisheries issues, a questionnaire survey was administered comprising of some relevant statements and the stakeholders asked to express their opinion on five-point scale (not all, low, medium, high and very high) against each of the statements. In addition, another set of statements were made in the survey and the respondents asked to mark each of the statements 'correct', 'incorrect', or 'not sure' based on their knowledge.

3.1.1 Fish sanctuary

The knowledge of stakeholders on establishing fish sanctuaries was found to be satisfactory. The respondents were asked to express their opinion as to what extent fish sanctuaries could contribute to increasing natural fisheries production in floodplains. Figure 1 shows that all the respondents thought that sanctuaries positively contributed to increase fish production. It was observed that in both the pre and post survey rounds over 50% of the respondents said the benefit of sanctuary is very high and none said there is no benefit or low benefit. Thus, the majority of the respondents currently have an understanding' about the benefit of establishing fish sanctuaries towards enhanced floodplain fisheries production.

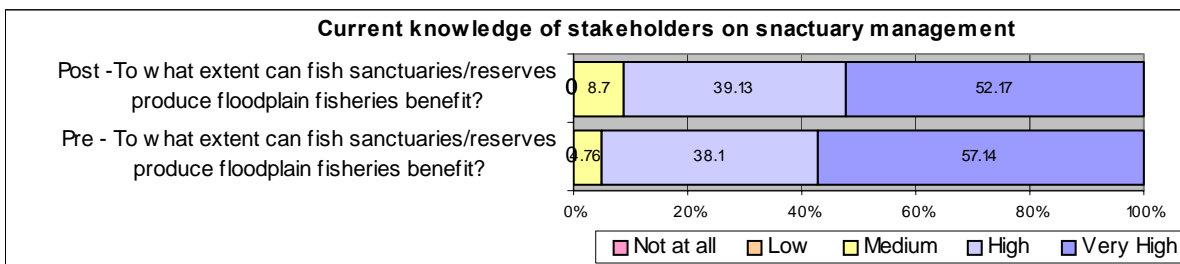


Figure 1: Knowledge on fish sanctuary

The respondents were asked whether the benefits of increased fish availability due to the establishment of sanctuary should be enjoyed by the local people, and thus whether, while planning fishing places at a reasonable distance from the sanctuary, an area should be set aside where local people could fish for their needs. Most of the respondents said yes, by ticking the correct column. In post survey round, higher numbers of respondents supported this attribute (Figure 2). However, some respondents still opposed the idea and said it was incorrect. The fact remains that the local people must reap some benefits from sanctuaries, maintaining rules of conservation; other-wise, it wouldn't be feasible / acceptable to communities for whom sanctuaries are established.

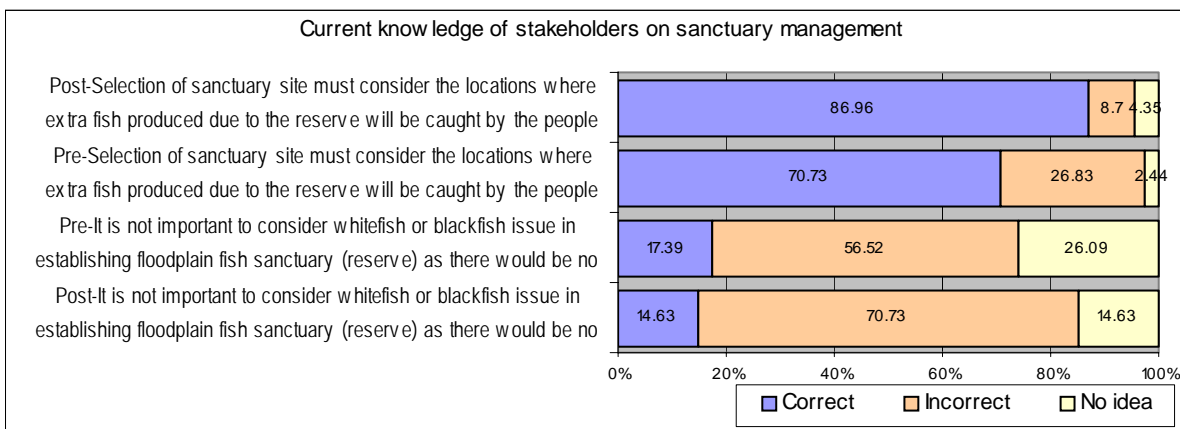


Figure 2: Knowledge on sanctuary issues

Another aspect of establishing sanctuaries is to consider the species mix in the riverine floodplain ecosystem and their habitat preference. For example, there are riverine species (so called “white fish” that preferred to spend most their cycle in a riverine environment) and beel resident species (black fish who prefer to spend most of their life cycle in a beel environment). Both the species categories are floodplain dependent, and thus considered riverine floodplain species, and both the categories need a refuge area for growth to attain maturity. A negative statement was served, saying ‘it is not wise to consider “white fish” and “black fish” issues while planning sanctuaries’, and respondents asked to express their opinion as to whether the statement was correct or incorrect (or no idea). The majority of the respondents (70% in post survey compared to 57% in pre-survey) demonstrated understanding’ by stating that the statement was incorrect (Figure 2).

3.1.2 Sluice gate management

Studies revealed that FCD/I projects have negatively impacted floodplain fisheries production within flood control projects largely by blocking fish migration (immigration) from river to floodplain beel, and reducing water extent through controlled water regimes. Recent studies (sluice gate management) suggest that there is great potential for increasing fisheries production in flood control projects, through proper, fish friendly, management of sluice gates. To this end, the timing of opening and closing gates is important, and should be adjusted with fish biology as well as with the cropping situation.

From the fisheries point of view, various studies suggested that fisheries gains can be very high if the gates are open when the water level rises in the pre-monsoon (or early monsoon), to facilitate fish immigration. Fisheries gains can also be obtained if the gates are closed during the post monsoon, to retain water inside the flood control project to allow fish to grow for a longer time. The respondents were asked to express their knowledge as to the extent the fisheries gains if the gates are kept open during rising floodwater. The survey findings revealed that at least some of the respondents did not have clear knowledge on the issue but majority demonstrated good knowledge even better at post survey compared to pre survey round (Figure 3).

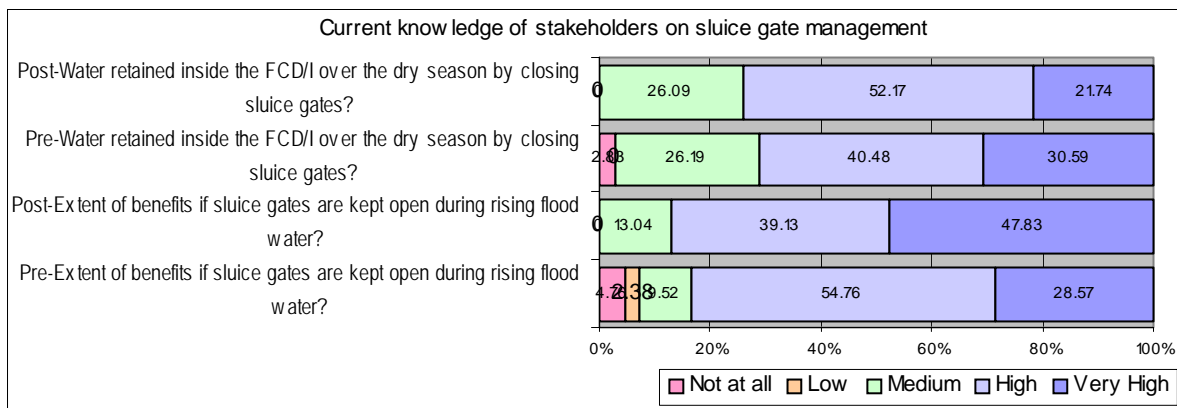


Figure 3: Knowledge on sluice gate management

3.1.3 Conservation of SRS

SRS (self recruiting species) are the small indigenous fish species found in open and closed waters that can breed and repopulate both in open and impounded water-bodies, and are the main source of protein for the poor households in Bangladesh. These species are however, under serious threat of eradication, due to poisoning or dewatering from closed water aquaculture, over fishing, and habitat reduction in open waters, thus affecting the nutrition and income of poor households. Policy planners often ignore the importance of these species and thus suggest massive aquaculture and large scale stocking of floodplains with carp. However, various studies suggest the need for conservation of these species both in aquaculture, and open water management practices. To this end, it was felt important to get the opinion of stakeholders on the conservation needs of these species and they were asked to express their opinion as to the extent to which SRS contributing to financial and

nutritional income of the poor people. The majority of responded were found to have an understanding of the importance of SRS as observed in both the survey rounds (Figure 4).

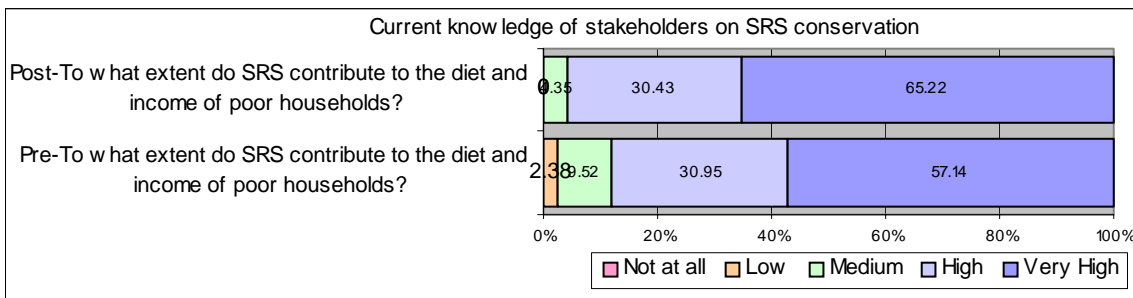


Figure 4: Knowledge on SRS

3.1.4 Diversification of rabi crops

Dry season water shortages in floodplain beels has been identified as one of the key obstacles to sustainable natural fisheries production, as the most of the beel become dry (or near to dry), making the fish vulnerable to both natural and fishing mortality, leaving hardly any stock to balance population size and maintain production level at a sustainable level. Moreover, boro rice (winter rice) cultivation is widespread in the flood plain beel basin and this crop is termed a water hungry crop. It requires 10,000 cubic meters of water abstraction to irrigate 1ha of boro, while alternative rabi crops like onion, garlic, wheat, maize, winter vegetables require one-third or one-fourth of the water requirement (irrigation) of boro rice.

Therefore, a large volume of scarce dry season water could be saved and made available for fish, if a substantial part of the floodplains could be brought under alternative rabi crop cultivation, instead of boro. To this end, varying knowledge levels were found among the respondents, and found increased knowledge among the respondents in post survey than the pre survey round (Figure 5).

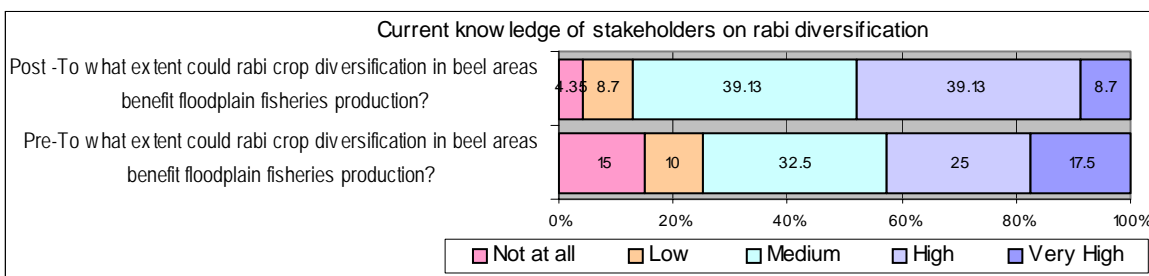


Figure 5: Knowledge on rabi diversification

3.1.5 Seasonal fishing closure

It is evident that Bangladesh’s floodplain fisheries have been under serious fishing pressure. Studies reveal that the fishing pressure is such that less than 2% new recruits can manage to escape being caught at the end of each year, and if this situation continues the floodplain fisheries are likely to decline substantially. Therefore, it become necessary to adopt seasonal closure of fisheries, and various projects have been trying fisheries management in conjunction with communities and have experienced positive results. However, there are questions to be resolved as to what would be the best time for seasonal (time closure) closure, to ensure maximum benefit. To this end, respondents were asked to express their thoughts on when to adopt seasonal closures, and whether most benefit would be obtained from wet season, or pre-monsoon, closure.

The respondents expressed almost equal preference for both the seasons. The fact here is that closure in any month or season (two months or three months) is beneficial to varying degrees. However, it has been assessed that pre-monsoon closure could give better results as this protects

the brood prior to spawning season, and if the brood stock is protected pre-monsoon, they can successfully spawn in early monsoon with the onset of the rains. As observed, understanding of the respondents become clearer in the post survey compared to that of the pre survey (Figure 6). However, a few respondents said there would be no benefit of seasonal closure whether it is adopted in monsoon or pre-monsoon. Thus it can be concluded that there is gap in knowledge among some stakeholders on the necessity and timing of seasonal closure.

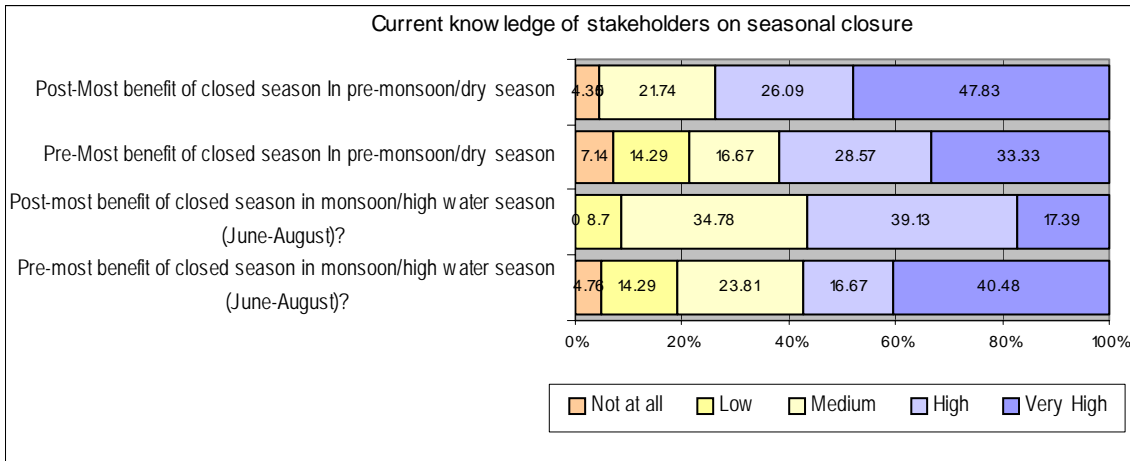


Figure 6: Knowledge on effort control

Another statement specifically asked the respondents whether dry season closure (January-April) could produce substantial benefit and most of the respondents (around 70%) said correct in both survey rounds and few (less than 10%) did not have any idea on the issue.

Study findings suggested that fishing closure in any month of the year can contribute to increased fish production to varying degrees, ranging from a minimum of 25% increase in catch for August closure, to as high as 102% for January closure. Thus, if closure is adopted in any month of the year the minimum increase in catch is substantial - 25% (as per the PIRDP modeling results). To learn more, participants were asked to express their opinion on whether this negative statement is correct that 'closure in any month of the year would produce very little impact (say less than 5% increase in catch)'. Majority the respondents support this negative statement, saying it was correct, thus implying that they have little knowledge on the issue, while some disagreed with the statement (Figure 7).

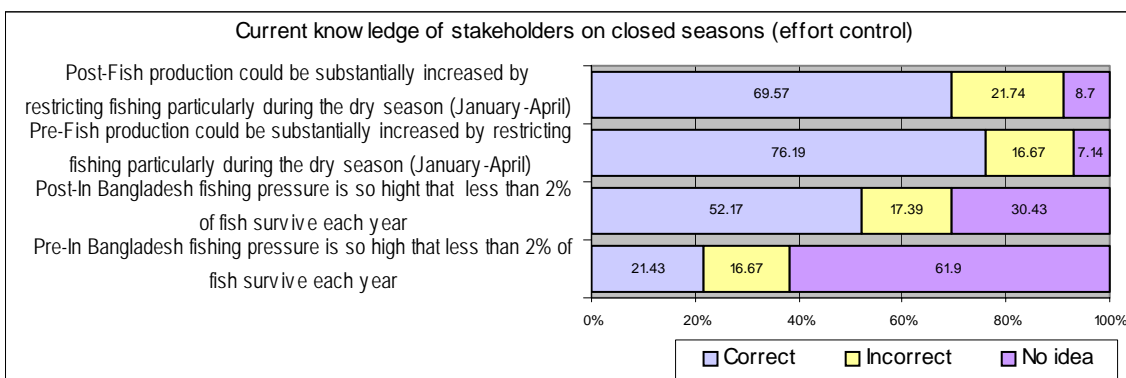


Figure 7: Knowledge on closed season (effort control)

When presented with the statement: 'fishing pressure is very high in Bangladesh's floodplains and studies revealed that less 2% fish survive each year', -many participants (61%) stated that they did not know about the issue, whilst 21% stated that this was incorrect (Figure 7). Thus only 17% of respondents had an idea as to the detrimental effects of current fishing pressure (although they gave the right answer, for this type of true/false question the possibility of them just guessing is high, despite the 'don't know' option being available).

3.2 Attitude of stakeholders on fisheries issues

Attitudes of stakeholders on various fisheries management interventions have been assessed through responses made to various attitudinal statements.

3.2.1 Fishing effort control

Limiting fishing effort for sustained fisheries was one of the statements and most of the respondents showed positive attitude to limiting fishing effort or support effort control measures. Figure 8 shows that majority of the respondents agreed with effective control of fishing effort in both the survey rounds, realizing that the current level of effort is very high and a cause of declining floodplain fisheries production.

The issue of whether the seasonal closure should be pre-monsoon or in monsoon is not clear among the respondents. Although majority favored pre-monsoon closure over monsoon closure, there were opinions against pre-monsoon closure too.

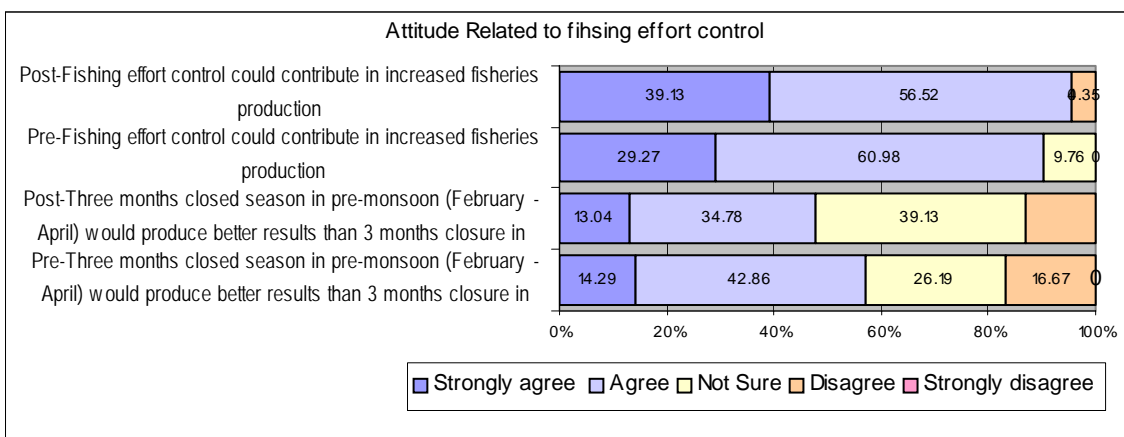


Figure 8: Attitude on effort control

3.2.2 Conservation of biodiversity and SRS

The attitude of respondents towards conservation of SRS was positive. Data shows that the majority of respondents (69%) agreed with the statement that removing SRS by poisoning during pond preparation should be discouraged. However, 21% disagreement with the statement and 4% were not sure as to whether the SRSs would be removed or not. Currently there is no regulatory regime on the conservation of SRS in aquaculture practices; rather removal of SRS is encouraged in aquaculture practices, as these are treated as weed fish that compete with culture species in ponds and hamper desired fish species' production. Although, there is no regulation, 86% respondents showed a positive attitude and agreed with the statement that the government should formulate a legal framework for conservation of SRS for the benefit of the poor.

Apart from SRS, the majority of the respondents showed a positive attitude towards conservation of biodiversity, environmental protection, and poor peoples livelihoods, as opposed to the idea of increasing aquaculture production in floodplain management planning. This statement however, is linked with the issue of conservation of SRS. Figure 10 shows that majority of the respondents showed a positive attitude to this issue. However, some showed a negative attitude, considering the environment and biodiversity issue, rather preferring an increased production approach and some did not have any preference (Figure 9).

Although the majority of the respondents showed a positive attitude towards the conservation of SRS and biodiversity, the majority of them supported the idea of an intensive fish-stocking program in the floodplains as the best option. Note that the impact of intensive floodplain stocking with carps on SRS has not been clearly evaluated and is not understood, however, it is assumed that large scale

stocking in the wild may have a negative impact on SRS and access of poor to fishing. Analyzing this statement it can be ascertained that the respondents could not articulate various facets of floodplain fisheries issues, including environment, conservation, biodiversity and livelihood of poor, with production options, and thus their attitude is still biased towards increased production over other important aspects.

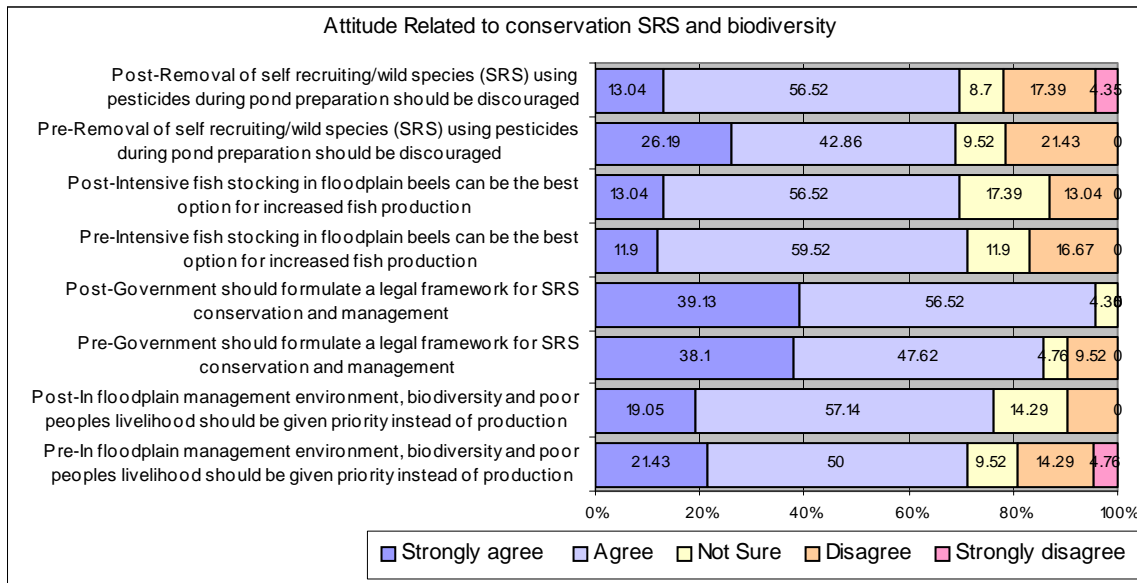


Figure 9: Attitude on SRS

3.2.3 Sanctuary management

A positive attitude has been observed among the stakeholders surveyed about the establishment and management of floodplain fish sanctuaries for the sustainable conservation of fisheries and benefits thereof. However, there are differences in attitudes among the stakeholders as to the norms and systems of sanctuary management and majority preferred community-led flexible management could produce better results, as opposed to strict government management control.

Regarding on-site management, the attitude of the majority was found to favor strict sanctuary management rules, that there should be no fishing allowed year round. This is probably due to the fact that if a flexible norm of fishing is allowed, it encourages fishing within sanctuary making it harder to maintain the sanctuary for conservation purposes.

Regarding the aim of conserving fish populations as a whole, covering white and black fish, both knowledge and attitude among the stakeholders was found to be poor. In both the survey rounds majority supported beel for sanctuary management as river is not under any management (out of lease). White fish sanctuaries can create wider benefits as these are usually established in river systems where they can also act as refuges for migratory white fish, amongst other species, thus benefits of white fish sanctuaries usually cover a wider range. On this matter based on findings implying that they would prefer sanctuaries to support both white and black fish, protecting both riverine and beel resident species (see Figure 10).

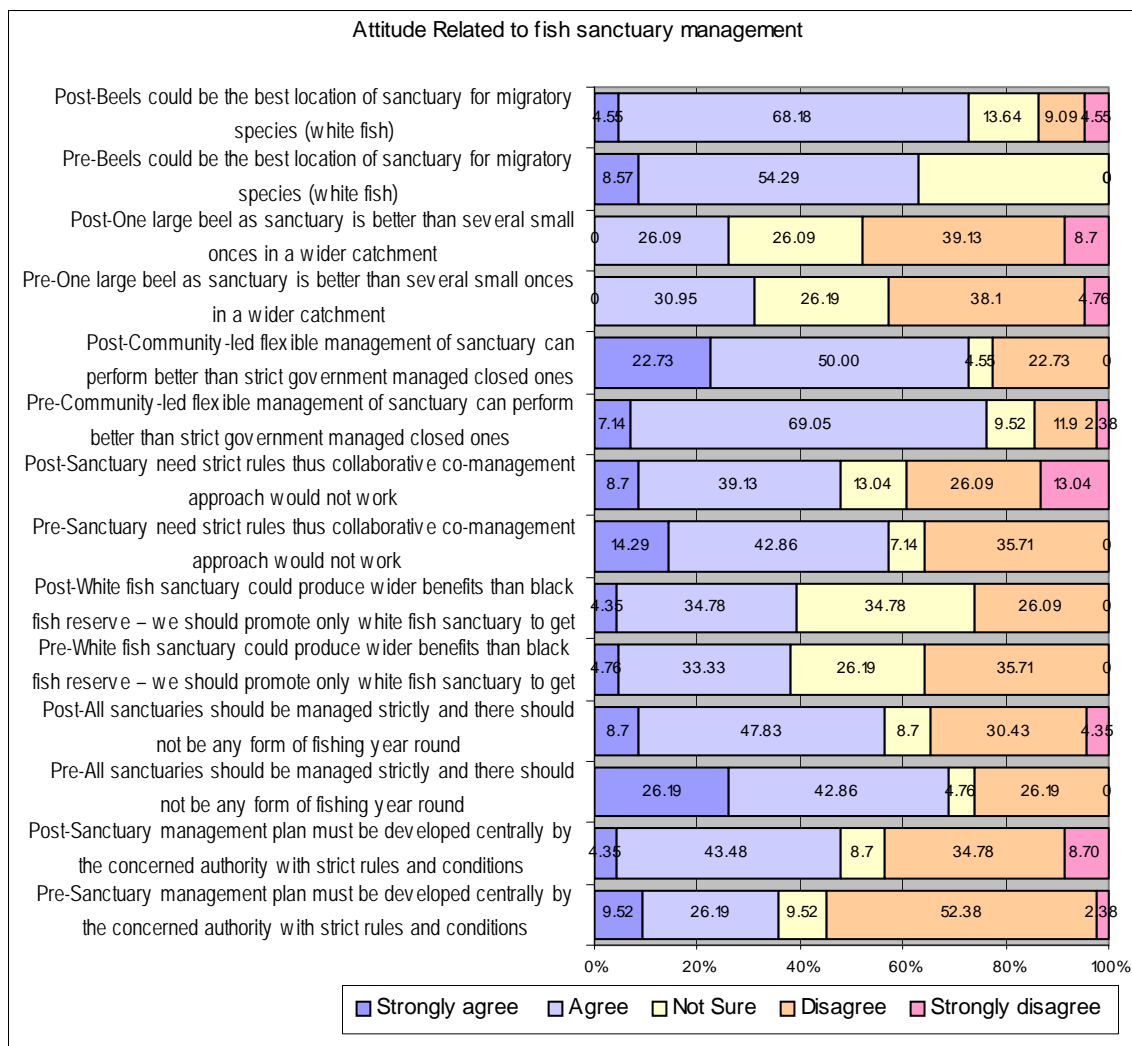


Figure 10: Attitude towards sanctuary management

3.2.4 Sluice gate management

Sluice gate management targeting fisheries production enhancement and livelihood development for the poor people living inside FCD/I project is an important issue in poverty reduction and environmental management. Studies recommended that sluice gates could be managed in a way that would benefit fisheries production and biodiversity inside FCD/I and improve the livelihoods of poor fishers without damaging crops.

However, this requires policy and management decisions as to whether and how these sluice gates could be operated in a fish friendly manner, when they have been built for the sole purpose of flood protection for crops within FCD/Is. The attitudes of relevant stakeholders on this issue are key to putting the research findings in to action.

It should be noted that strong currents and turbulence could be a major barrier in fish friendly operation of sluice gates, particularly for small fry and hatchlings. A relevant statement was made that ‘opening gates in rising water will restrict fish movement due to high current and turbulence’ but the majority of respondents disagreed, reckoning that it would facilitate fish migration. However, a number of respondents were undecided, and agreed with the statement that opening sluice gates in rising floodwater would not serve the purpose of fish migration (see Figure 11).

Although some practice and research findings show that existing sluice gates can facilitate fish migration, there is a belief among some stakeholders that sluice gates can only protect crops from floodwater, and that as no provision is explicitly made for fish movement, it is not possible through

these structures. Responses from stakeholders to this were positive, as the majority disagreed with the statement and some respondents believed that it was not possible to use the existing gates (without required changes) for fish migration and a few said they didn't know (Figure 11).

Although more than half showed a positive attitude and supported the statement that frequent gate opening in rising floodwater is better than continuous longer opening, a good number said they had no knowledge on the issue and disagreed with the statement (Figure 11). Attitudinal differences exist that need to be worked on to enhance knowledge and adjust attitude.

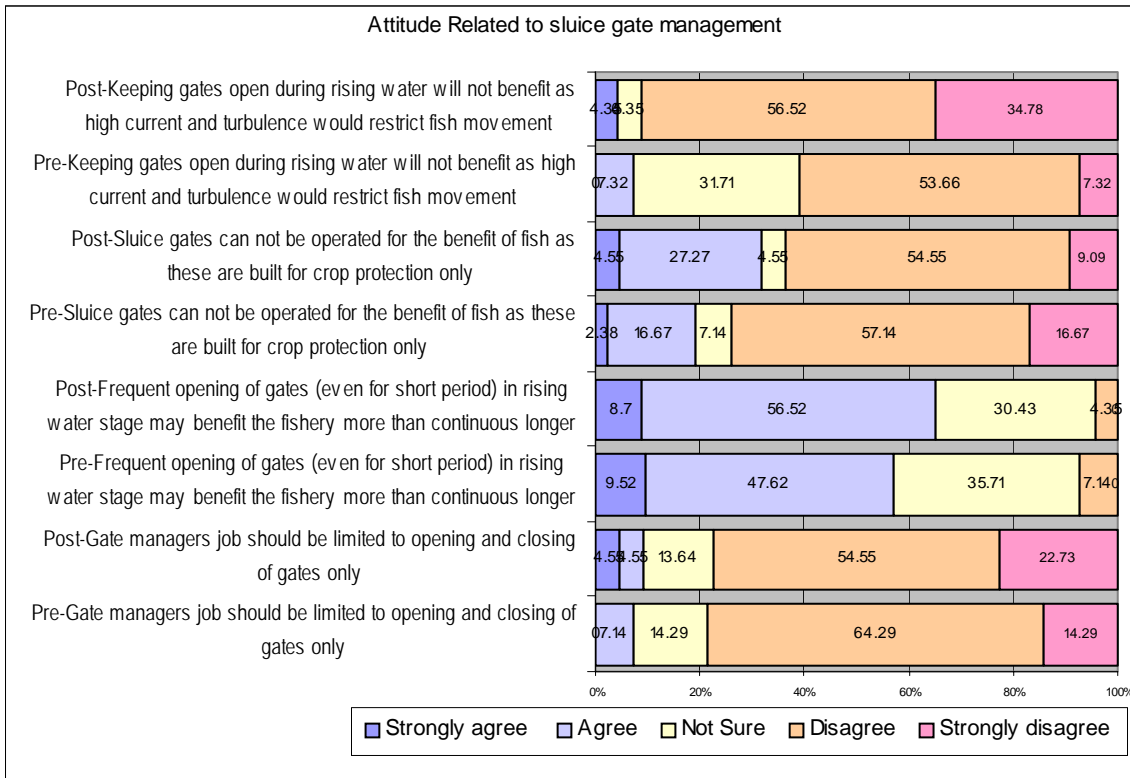


Figure 11: Attitude related to sluice gate management

3.2.5 Management options

Although most of the donors supported government fisheries projects, working in smaller management units, based on single water-bodies (except MACH and some CBFM2 site), the respondents showed a strong bias towards wider management units (catchment-wide integrated floodplains management as opposed to single water-body management). Survey findings shows that majority were in favor of catchment-wide management (Figure 12).

The focus and priority of floodplain fisheries management varies from project to project, however, the common target of all project is primarily technical, i.e. production increase with lesser focus on social, institutional and environmental issues. Thus, government projects often have large-scale floodplain stocking components aimed at increasing production rather than conservation and sustainable management of existing natural stocks. The majority of respondents showed positive attitude to the statement that 'intensive stocking in floodplain beels can be the best option for increased fish production' (figure 12).

Conversely, in another relevant statement most of the respondents agreed to floodplain fisheries management compared to promotion of aquacultural production, disagreeing that 'we should emphasized and promote increased aquacultural production as opposed to put much effort on floodplain fisheries management'.

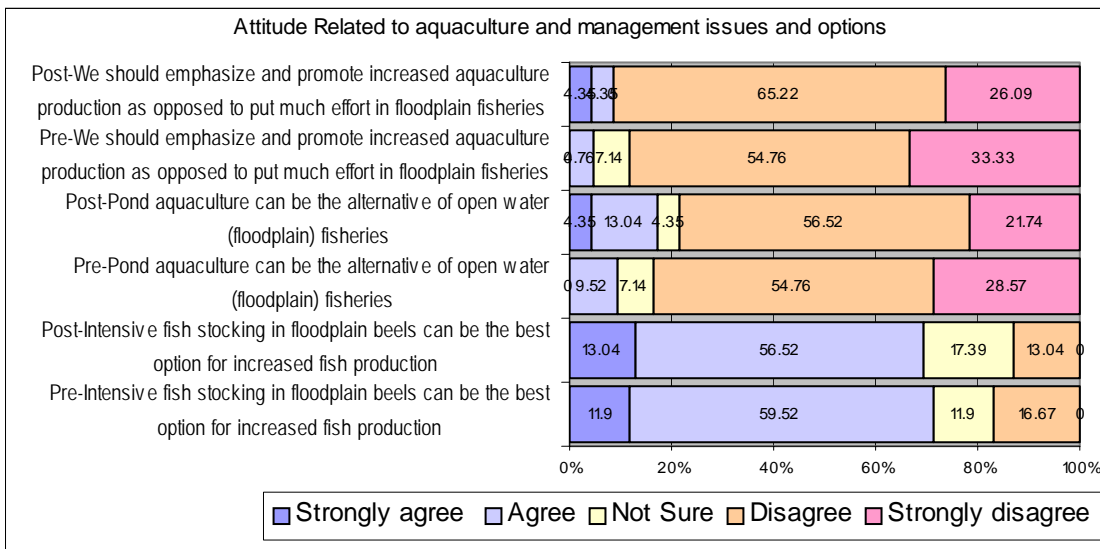


Figure 12: attitude towards management options

3.3 Practice

The practice of any intervention or management option in floodplains whether physical (effort control, cropping pattern or sluice gate management) or skill development (training) or research (hydrology monitoring or fish catch monitoring) is the reflection of acquired knowledge that influence the attitude of decisions makers/planners of any organization or agency and finally brought in to action through a set of activities. In judging the practice, it is therefore most appropriate that the practice level information can be best assessed through physical observation and/or review of relevant reports and documents. It is also a key that there should be a policy or a plan or a guideline in place for activities that are in implementation at field level to achieve some set of objectives.

3.3.1 Practice related to fish friendly operations of sluice gates

To this end, respondents were asked to respond whether they (their respective agency) have any policy or plan against some interventions relevant to floodplain fisheries/resources management. In response to having a policy or plan on fish friendly operation of sluice gate, varied responses were found in case of more than one respondents from the same organization or department. Of the two respondents (Project Director and Environment Consultant, small scale water management project) of LGED, one said they have most appropriate policy/plan for fish friendly sluice gate operation while one said the policy is appropriate (he feels that there is scope for further development) (Figure 13). However, this policy of plan is for the project, not necessarily for the LGED as whole. The respondents also said that they have guidelines on fish friendly sluice gate management available, which is effective/most effective from the field implementation point of view (Figure 14).

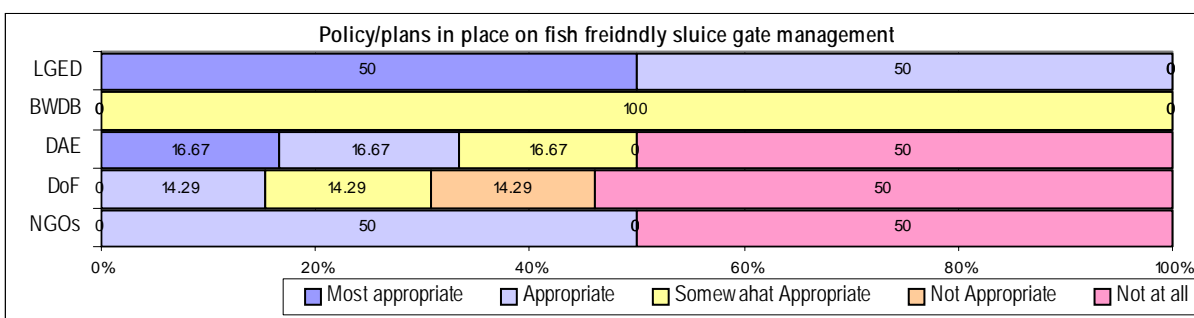


Figure 13: Policy or plan in place on fish friendly sluice gate operation

The respondent from BWDB said they have a policy/plan on fish friendly sluice gate management in place but is not updated & comprehensive and thus from the qualitative point of view was ranked as

somewhat appropriate (which is better than not appropriate). Although, BWDB has a policy on fish friendly operation of sluice gates but they do not have any guideline on this thus no clear instruction on how to make it operational at the field level is available without which it may often be difficult to make it operational (Figure 14).

The participants from DAE responded differently on the issue of sluice gate management though they are from the same government agency. Here half (3 out of 6) of the respondents said that DAE has no policy or plan on fish friendly operation of sluice gates while one said it is there but not appropriate, one said the it is appropriate and the other said most appropriate. The persons who said yes and appropriate are associated with DAE project and thus the plan is project based. However, on the issue of presence of a guideline related to fish friendly operation of sluice gate, all but one said DAE does not have any guideline on the issue (Figure 14).

Like the DAE, DoF also has no organizational policy of plan on fish friendly operation of slice gate as 50% said so (Figure 13) while one each said there is a policy/plan on the issue and that is most appropriate, appropriate and somewhat appropriate respectively. The respondents who said there is such a policy they referred to DoF's project plan. It is noted that the FFP and CBFM2 projects of DoF have been trying fish friendly sluice gate operation where appropriate in the project sites.

The DoF is lacking of any suitable guideline at their organizational on fish friendly operation of sluice gate as 57% said there is no any (Figure 14). Therefore, it can be said that the DoF does not have any organizational policy or guideline on fish friendly sluice gate management, which is important for fisheries enhancement inside modified floodplains though. However, DoF has recently developed an inland fisheries strategy where the issue of fish friendly operation of sluice gate is incorporated.

NGOs (Caritas, Proshika, BRAC, BELA) working as partner of DoF projects were also asked about their organizational policy or plan on sluice gate management and found that 50% said they do not have such plan and others said they have effective plan on the issue (Figure 13). But again that is also at project level (FFP and CBFM2). In terms of having any guideline for sluice gate operation, over 80% said there is no such guideline at their organizational level while others said they have effective guideline on the issue (Figure 14).

Besides having a policy or guideline on fish friendly operation of sluice gates, it was also strived to get an understanding of the organizations current program/activities on sluice gate management in place at the field level under any project or as regular organizational activities.

As regard to the field level activity of relevant government agencies and NGOs on fish friendly operation of sluice gates to facilitate fish migration and enhancement of impacted fisheries inside modified floodplains (within FCD/I projects), the responses are rather frustrating. As seen that the LGED only practicing fish friendly operation of sluice gates at their project (small scale water management project) sites and according to their assessment the extent of practice so far in place is effective. However, it is not confirmed whether other projects of LGED has similar activities or not.

It is learnt from the responses that BWDB has no sluice gate operation activity that could contribute to enhance fish production and species diversity (through facilitating fish migration between rivers and floodplains) within FCD/I projects at the field level although they build most of the FCD/I projects in the country that caused serious negative impacts on floodplain fisheries (Figure 14).

DoF is also seen not making much progress in this respect as 57% of the respondents said that they do not have any activity relevant to fish friendly sluice gate operation at field site while others said whatever the have activities relevant to sluice gate management at field level is to some extent between not effective to effective/most effective at the project level. Similar situation prevails in DAE where over 80% said they have no such program or activity at the field level (Figure 14). NGOs also do not have any field level activity or program on sluice gate operation as 80% said no except one said they have effective field level activity on fish friendly operation of sluice gates, this is again under a project.

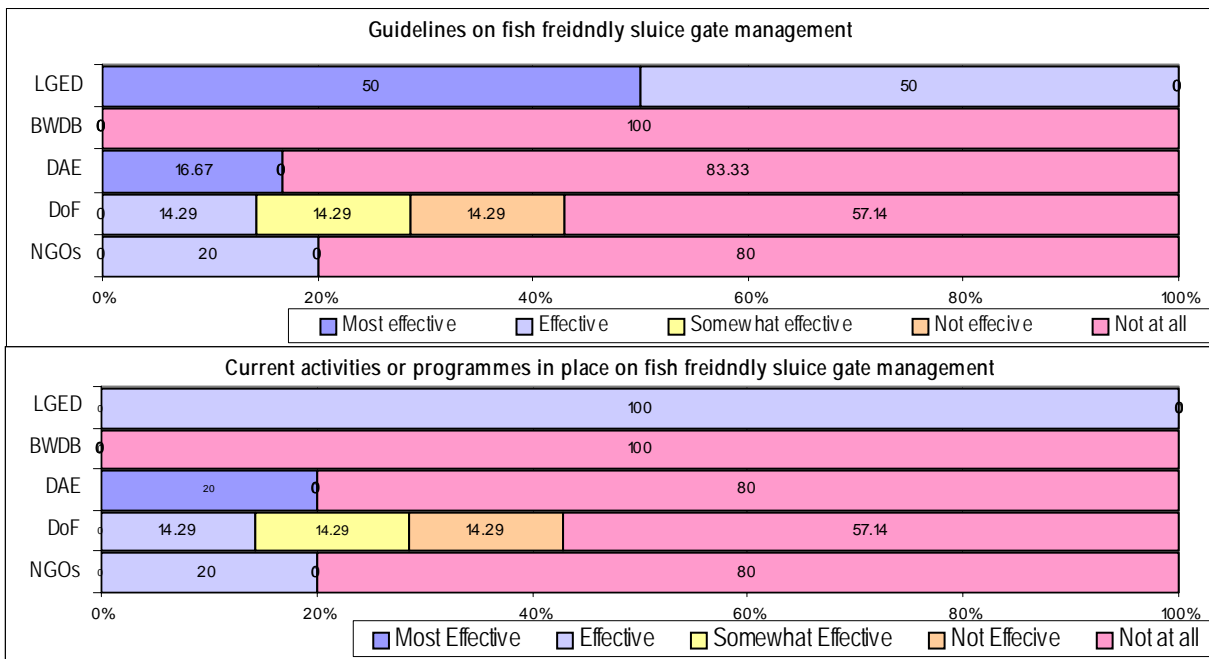


Figure 14: Guidelines and field activities on fish friendly sluice gate operation

3.3.2 Practice related to conservation of SRS (self recruiting species)

Self-recruiting species that are quite diverse and rich play a vital role in the diet of the poor people of Bangladesh. These species are available in all sorts of wetland habitats including open flowing rivers to closed or small seasonal rivers/khals and large flooded haor basins to small seasonal beels within FCD/I projects and large semi-closed baors to small closed ponds including aquaculture ponds. These species are however, seriously impacted due to habitat alterations, over fishing, drying up of wetlands and removal from aquaculture ponds as weed fish. The fisheries policy also ignored the value of small SRS and lacking of any specific guideline to protect these species. Although availability of SRS is still at a reasonable extent due to their high resilience, the production trend is declining, thus care is needed to reverse the trend. It is therefore, imperative that DoF, NGOs and other relevant government agencies should come forward to protect the SRS for benefiting the poor.

To this end, LGED has a policy or plan to protect the SRS as claimed by the project director of “small scale water management” project however, the environment specialist of the same project said that they do not have any policy or plan on conservation or culture of SRS. Thus it is questionable whether the project has any such plan or not. BWDB has no policy on conservation SRS. Majority of the respondents (over 70%) from DAE also said that they do not have any policy on SRS conservation while 2 respondents associated with projects said they have effective policy on SRS (Figure 15).

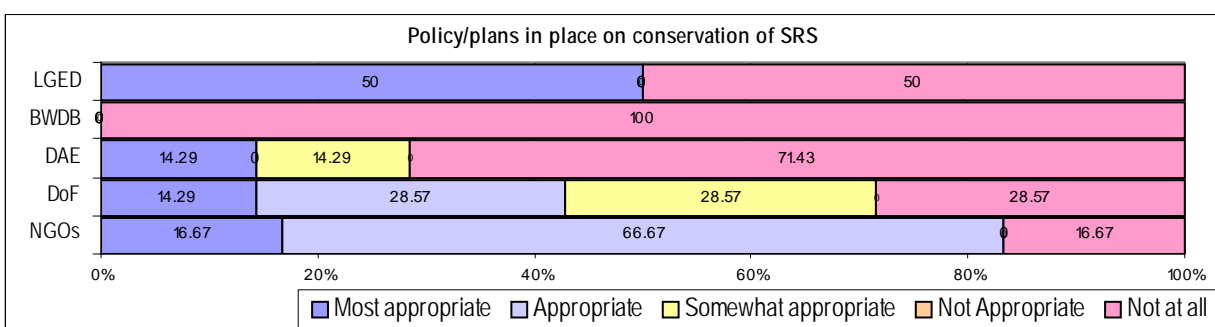


Figure 15: Policy or plans in place on SRS at organizational level

DoF being the national focal point of fisheries should have an explicit policy on SRS conservation and protection. As found in the survey, 29% respondent said that they do not have any such policy while 29% mentioned about a policy but that is not appropriate (Figure 15). This means majority of the respondents have a feeling that no appropriate policy DoF has on SRS. However, 44% respondents of DoF said they have policy on SRS and that is appropriate/most appropriate but the policy or plan they claimed exist only at project level. In contrast, 3 out four NGOs claimed that they have plan for conservation of SRS and they feel the policy or plan is appropriate.

There is lacking of a guideline on SRS conservation and management in all four relevant government agencies active in floodplain fisheries at varying extents. Although the project Director of LGED claimed that have policy/plan on SRS conservation and management but they are lacking of any guideline for the implementation of activities at the field level aiming at conservation and sustainable management of as both of them (project director and environment specialist of the project) said they are lacking of any relevant guideline (Figure 16). BWDB also have no guideline on SRS. DAE is also lacking of a guideline of SRS as over 70% said so, however, one (out of 6) of the respondents (14%) said they have most effective guideline and one said the guideline is not effective.

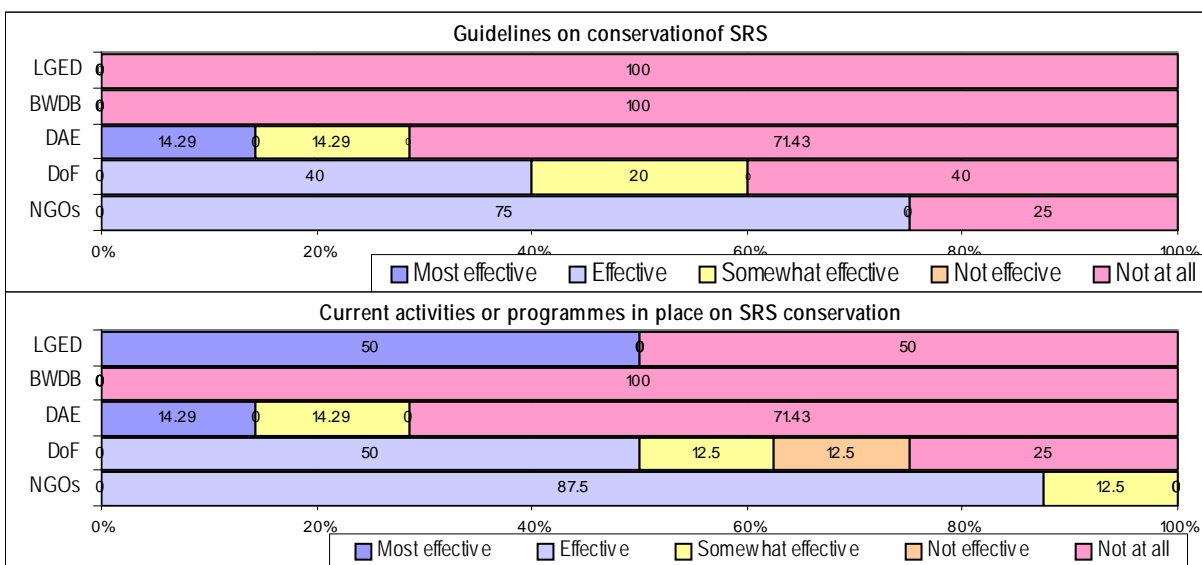


Figure 16: Guideline and field activities on SRS

DoF is also lacking of a guideline except what they have at the project level (40% said they do not have any guideline on SRS). However, the project level guideline appeared effective as the respondents mentioned. However, 20% assessed the guideline as not effective (Figure 16). The NGOs claimed that the guideline they have on SRS is effective while 25% said they do not have any guideline on SRS although all NGO said that they have policy/plan on conservation of SRS.

Regarding the current program or field level activities related to SRS conservation and management, two respondent of LGED responded differently. The Project Director (small scale water management project) claimed that they have field level program or activity on SRS while the specialist of the same project who working exclusively for the project for long time said they do not have any field activity specially targeting conservation of SRS. It is known that the LGED project is mainly targeting increase production of rice by protecting floods (or water management) while mitigating fisheries through facilitating (introducing) fish stocking based floodplain aquaculture within empoldered areas.

The BWDB as usual do not have any activity at the level aiming at conservation of SRS. DAE is also having no organizational activity on SRS at the field level (as 71% said DAE has no field programme on SRS) while they have some activity to manage floodplain fisheries under development projects. The situation of DoF as mentioned by the respondents is not very promising as 50 said they have an effective field program but that is at project level and 25% said that DoF have no such program at the field level indicating that the field activity has under project is not focused on SRS. Three out four

NGOs claimed that they have effective programme on SRS at the field level (Figure 16).

3.3.3 Practice related to establishment of sanctuary/reserve

Bangladesh floodplain fisheries are under serious threat of over fishing, more and more people are getting involved in fishing either part time or full time. The destructive fishing practices viz. complete dewatering in the dry season and by fixing bunds across channels/water ways (fixed engine) are in rising negatively impacting fish production and species diversity. Establishment and management of fish reserves or fish sanctuaries (now popularly used in Bangladesh) have been tested under various projects. The government is also taking it seriously for extension of this intervention. However, before wider practice, it is important to have a policy and guideline on sanctuary management so that these could produce benefits as well as contribute to livelihoods of the poor fishers who subsist mainly on fishing.

To this end, respondents were asked whether they have any policy/plan and guideline on sanctuary and the extent of its appropriateness or effectiveness. Figure 17 shows that BWDB has no policy/plan and thus no guideline and field activity relevant to fish sanctuary establishment and management. LGED also has similar situation but the project director, Small-scale Water Management Project claimed that they have sanctuary policy and that is appropriate to serve the purpose. However, the Environmental Specialist who is responsible for environmental assessment of project interventions and working full time for the project said they do not have any explicit policy on sanctuary management. Both of them however, agreed that LGED do not have guideline on fish sanctuary establishment and management and so they do not have relevant field activities.

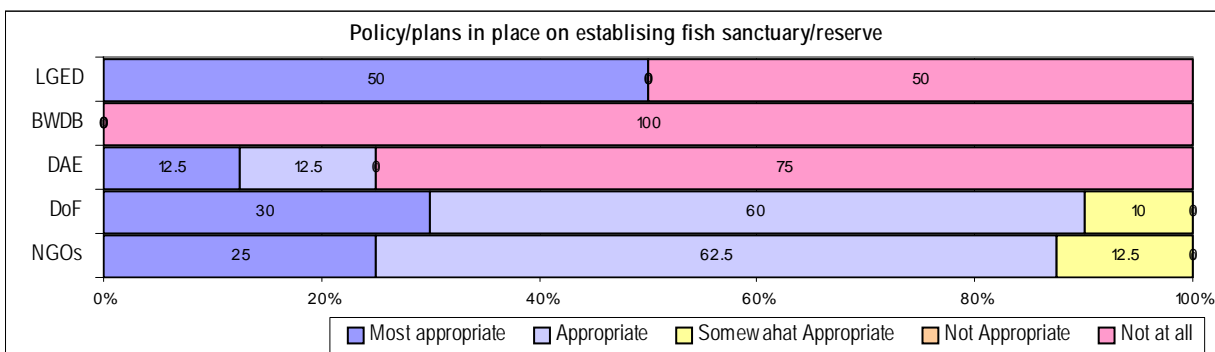


Figure 17: Policy or plan on fish sanctuary management

Although majority (75%) from the DAE said they do not have any policy in place on fish sanctuary management, respondents working for the DAE development projects said they have plan at their project level where conservation of natural fish in floodplains is considered. They however, respondents mentioned that DAE is lacking of any workable guideline for management of fish sanctuaries (Figure 17).

In contrast, there is policy and plans on fish sanctuary/reserve management in place at DOF and partner NGOs. However, most of the respondents highlighted that the policy/plan and the guideline on fish sanctuary needs improvement to make them most appropriate to technical, social and institutional contexts.

All the respondents from partner NGOs said that they have field level activities relevant to fish sanctuary establishment and management. Two NGOs felt assessed that their relevant field activities are being effectively implemented while one NGO felt it is not up to the mark and one felt it is running very effectively.

DOF respondents have varied observation and assessment on fish sanctuary related to the level of effectiveness to produce the desired out puts. More than half of the respondents (70%) have a feeling that field implementation of sanctuary activities are running at effectively/most effectively while 30% felt it is not up to the mark (Figure 18).

DAE has practically no field level activities on fish sanctuary establishment. However, one DAE respondent associated with development project claimed that field activities relevant to conservation of fisheries are running most effectively at project level.

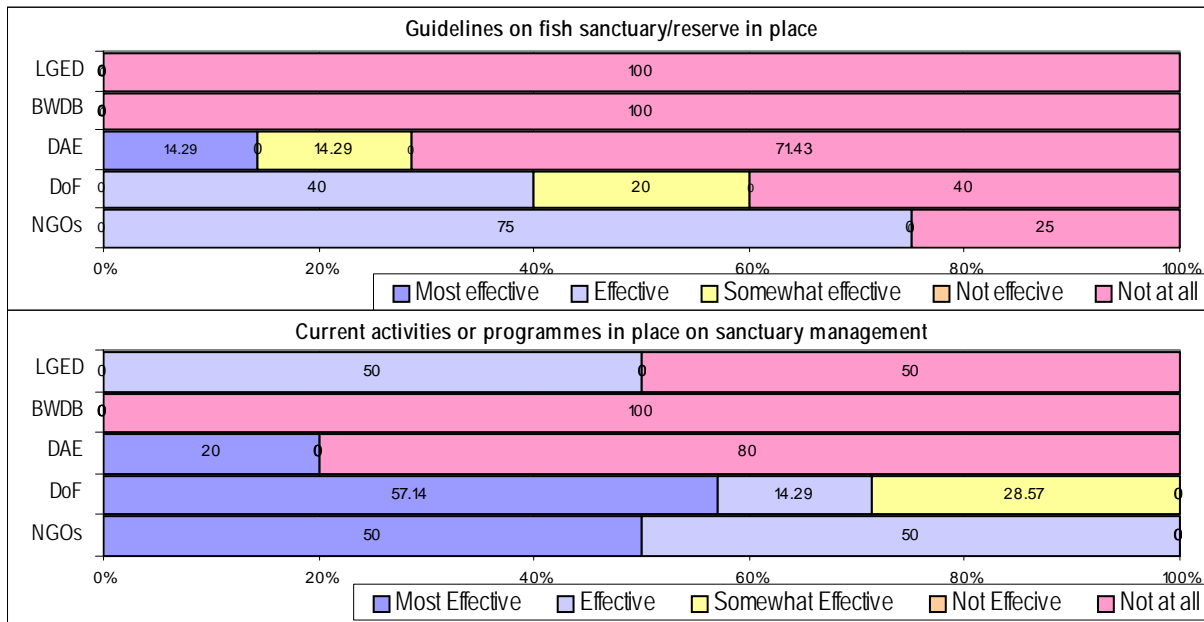


Figure 18: Guideline and activities on fish sanctuary management

3.3.4 Practice related to fishing effort control measures

All the respondents of DoF said that they have policy/plan and guideline on fishing effort control as measure to reduce fishing pressure and thereby enhance floodplain fisheries production and species diversity. However, regarding the policy in place there have been varied opinion as seen in Figure 19 that 60% felt that the policy/plan on effort control now they have is most effective/effective while 40% felt it is not that effective as it should be (somewhat effective/not effective). Similar observation is revealed in case of having a guideline on effort control at DoF where majority said that the guideline they have is effective while one said they do not have any guideline on the issue. At field level implementation of effort control measures, majority expressed satisfaction as to the level of effectiveness of the intervention although a few expressed dissatisfaction regarding effectiveness to produce any impact.

The partner NGOs of the DoF involved in implementing various projects (e.g. FFP, CBFM, MACH) have policy/plan on fishing effort control measures (closed seasons and closed area) at their project level. The respondents from the four NGOs mentioned that the plan on the issue they have in place is effective. However, regarding the guideline on effort control measures, respondent from one NGO said they do not have any guideline while two NGOs said that they have effective guideline on effort control. The practice of effort control measures at field level was assessed and found that some NGOs only enforce closed area as measure to reduce effort level, they do not practice closed season (time closure) at field level. While other NGOs do practice only closed season at the field level as a measure to control efforts (Figure 20).

DAE do not have any policy/plan on fishing effort control measures at organizational level. However, at project level, they have plans not to affect floodplain fisheries. Likewise they do not have any guideline on effort control as over 70% mentioned so during the survey although two project level respondents said they follow a guideline that is somewhat effective. Majority of the respondents have the same feeling that the relevant field level activities are not there in place except at project level, which they mentioned, effective.

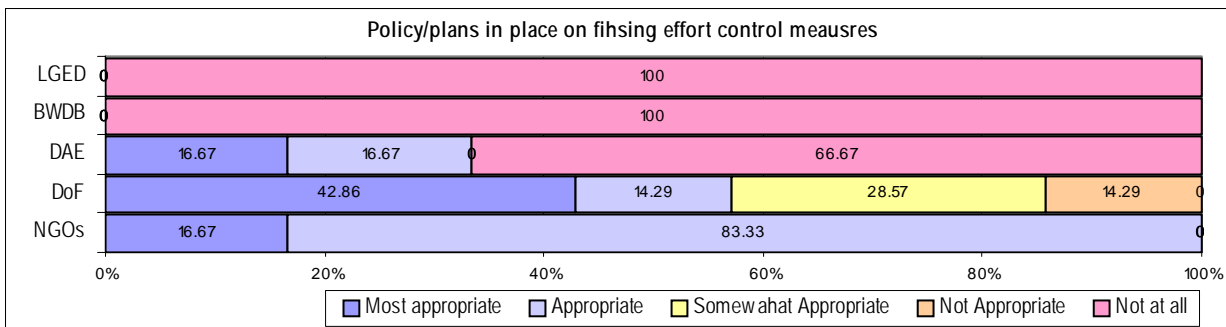


Figure 19: Policy or plan on fishing effort control measures

LGED has no policy and guideline on fishing effort control measures at its organizational level. However, the project director claimed that they practice closed season as effort control measure at field level and that is most effectively being implemented. BWDB has no policy, guideline and field level activity on fishing effort control.

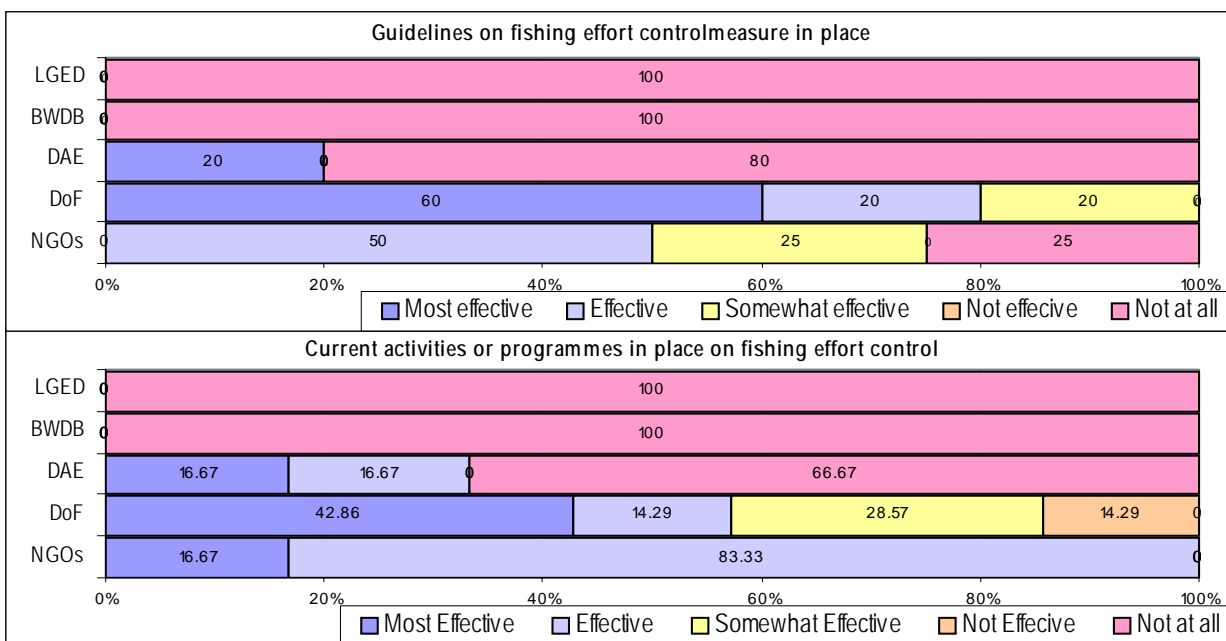


Figure 20: Guideline and activities/programme on fishing effort control measures

4. Conclusion

Knowledge

- Knowledge on fish sanctuary/reserve was found satisfactory among the stakeholders surveyed among the government and NGOs. Most of the respondents have good understanding of the benefit of sanctuary in enhancing fisheries production and conservation of species diversity. However, the understanding of key issues in establishing sanctuary in terms of locations (whether it should be in rivers or in beels or in both the habitats and for why), about the rules (whether flexible or rigid), about numbers (one large sanctuary of several small instead) was found not very clear. However, in the post survey better understanding of the issues was reflected.
- Regarding sluice gate management respondents demonstrated a broad understanding of sluice and its operation to benefit fisheries. Majority have an understanding that sluice gate can be operated in a way that have potential for benefiting fisheries inside FCD/I. However, regarding timing of opening the gate for realizing maximum fisheries benefit was not clear among some stakeholders.

- Majority of the respondent have clear understanding on the benefit of SRS conservation to support livelihood of poor and supported that government should come up with a regulation on SRS conservation.
- Respondents demonstrated good understanding of fishing effort control but did not have clear idea about the extent of current fishing pressure on Bangladesh floodplains. There is also lack of understanding in the key issue of duration and timing as to when the fishing closure should be, whether in the pre-monsoon dry season or in wet season? However, during the post survey round the stakeholders demonstrated better understanding on the issue.
- Understanding regarding rabi crop diversification in floodplain beel areas for benefiting floodplain fisheries was found not clear among majority of respondents. During the post survey round some enhancement of understanding in this issue was recorded.

Attitude

- Majority of the respondents showed positive attitude towards fish friendly operation of sluice gates to benefit the impacted fisheries inside FCD/I projects.
- The issue of discouraging or stopping removal of SRS (treated as weed fish) from aquaculture ponds is not supported by all stakeholders even though majority has a feeling to conserve SRS. It is due to the fact that aquaculture recommends cleaning of SRS to get good production of desired cultured species. Although majority showed positive attitude on SRS conservation and its importance but majority supported massive floodplain stocking with carps that may have negative impact on SRS. Issues related to environment and biodiversity are well discussed in the country and the government has projects on biodiversity conservation, but some respondents still showed positive attitude towards increased production at the cost of biodiversity and environment. This may be due to the production biased national policy of the country.
- Majority demonstrated positive attitude towards sanctuary management but many were found strict on inflexible centrally dictated sanctuary management rules as opposed to community managed flexible norms.
- Majority showed positive attitude on sluice gate management in way to benefit fisheries. They also supported that the gate managers scope of work should not be limited to gate operation only rather be widened to cover over all fisheries and crop management issues. The BWDB also supported fish friendly operation of sluice gates and for which they are willing to extend any assistance.
- Regarding the boundary of floodplain fisheries management positive attitude of respondents was observed. Their attitude towards the conventional approach of defining single beel as management unit, majority preferred considering wider catchment as management unit for floodplain fisheries to produce better impact.
- The stakeholders also showed negative attitude to the conventional thought that aquacultural production can be the best alternative (or replacement of floodplain fisheries). Majority showed negative attitude to initiate floodplain aquaculture at the cost of floodplain fisheries, which often the policy stakeholders support.

Practice

- Various attributes relevant to good practice of floodplain fisheries management and enhancement are found poor among all the stakeholders of government and NGOs. It is found that the BWDB practically has no plan and activity at the field level relevant to floodplain fisheries.

- DoF's activities relevant to floodplain fisheries are still project dependent. However, through FFP they have developed good skills and understanding. DoF, through the FFP developed inland capture fisheries strategy and submitted to Ministry of Fisheries and Livestock (MOFL) has incorporated all the issues, if approved, improvement at practice level is expected.
- Although all the TIs except BWDB mentioned that they have field level activities on sluice gate management, effort control, sanctuary management, conservation of SRS, most of them do not have any policy/plan or guideline on the interventions. The plans and guideline that the TIs mentioned they have are not at up to the standard (not appropriate) that need improvement to make them comprehensive.
- The activities relevant to FMSP options suggested are in place at the project level of TI's not at the organizational level thus still need effort to mainstream the better practice of FMSP new knowledge in to practice.