

# Ranking Cities of Gilan Province in Terms of Sustainable Management of Fishing PAREH Cooperatives Using TOPSIS Technique

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## Extended Abstract

### Introduction

Fishing is one of the most important agricultural sub-sectors. In this sub-sector more than 100 million tons of fish is produced per year that is effective in human nutrition and well-being, so by providing livelihood to more than 200 million people. Southern part of Caspian Sea with very different characteristics, suffers from various coastal problems. This area is over-populated and its sensitive and unique habitats must be protected from destruction. Biodiversity is under threat in some areas and natural resources are deteriorating. In this area there is a pattern of cooperative utilization known as PAREH cooperatives. Each cooperative is comprised of 60 to 120 fishermen. In the Southern part of the Caspian Sea one governmental pattern is dominant and cooperatives have the right to exploit in a special range and in a specific time (second six months of the year). Since this pattern only pays attention to exploitation of fish stocks, management, conservation and recreation is neglected. Gilan Province with the highest employment in coastal fishing and the lowest five-

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year average catch is the most challenging province in terms of PAREH cooperatives functions. According to the previous and Field studies, the basic parameters and variables derived and Management model for sustainable coastal fishing of the coast of Northern provinces in general, And the Gilan province in particular, classified into the following four cases.

1) Sustainable coastal fishery, 2) Beach management, 3) Resources reconstruction management, 4) Conservation management.

This paper tries to prioritize the aspects affecting the sustainable management of coastal fishing then find which dimension is better in terms of stability and then find out which of the cities of the province has better situation in terms of ideal conditions for sustainable management of coastal fishing.

### Methodology

In this research for priorities and ranking cities of Gilan province in terms of sustainable management of fishing PAREH cooperatives TOPSIS technique has been used. TOPSIS is one of the most efficient methods of multiple criteria decision making approach for prioritizing alternatives based on similarities to ideal solution. TOPSIS is to prioritize ideas by measuring the degree of similarity with the ideal mode. This is based on the Euclidean distance between the case and ideal mode. The best solution is a solution with the minimum distance between the case and ideal solution and has the farthest distance with non-ideal solutions.

The research populations are 1) the CEO or board of directors of PAREH cooperatives in Gilan; 2) experts of Fisheries Research Organization in Tehran and Gilan and experts in sustainable coastal fishery management. The first group was asked to assess the sustainability of cooperatives and the second group was asked to find options for sustainable management of coastal fishing and prioritization of sustainability indicators affecting coastal management in the province. The first sample size was calculated according to the Cochran sampling formula that obtained in 36 cases and second sample were 20 experts which Snowball method is the technique used for selecting them. As the first specialist in the field of sustainable

coastal fishery management model was selected and then the next person identified and selected by previous expert.

### Results

The weights are calculated using the Delphi technique shows that policy dimension has the maximum weight among Indices of sustainable management of coastal fishing PAREH cooperatives. The results also hunted coastal city Langerood in terms of sustainable coastal fishing management has the minimum distance with the ideal solution, also it should be mentioned that Talesh and Astara cities are unsustainable cities of the province in terms of coastal fishing

### Discussion and Conclusion

The results showed that the city Langerood in term of sustainable management of coastal fishing has the minimum distance from the ideal solution. However, the other fishing cooperatives of Gilan province, especially cooperatives in the west of the province are far from ideal model and are less stable. It should be mentioned that Fishing in the East to the West coast of the Caspian Sea is deteriorated. As we move from Golestan province instability in coastal fishing is increased. This is also true for fishing cooperatives in the province so Unsustainable fishing in the cities of west much higher than in east of the province.

According to the results and high ecological instability in the coastal area of the Gilan province, spatial, fishing tool and time policy should be considered strictly and fishing in other seasons should be deal seriously and fishing in the spawning season should be prevented. Additionally the reconstruction effort should be considered seriously in the fisheries organization agenda, and measures should be implemented to involve fishermen in controlling and monitoring process of fishing and fishery resources to economize Fishing in the Caspian Sea. Also fish culture in cages can prevent additional pressure on the sea.

**Keywords:** Sustainable management of coastal fishing, PAREH cooperatives, TOPSIS technique, Gilan Province, fish culture in the cage.

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