

Title: **Capacity and Non-Compliance in A Quota Regulated Fishery**

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Abstract: Two of the main problems in fisheries management are over-fishing and over-capacity driven by the production externality inherent in common property resource use. Quotas have been introduced to cap total catches, and regulations such as input restrictions and limited entry have been used to reduce the capacity problem. Economists generally agree that to ensure efficiency, quotas should be individual and transferable. Individual quotas remove the incentive to race to fish and thereby the incentive to build up or maintain excess capacity, while transferability ensures efficiency since the more efficient agents in the industry can buy quotas from less efficient agents. However, when firms have the opportunity to exceed their quotas (at the risk of being detected and punished) and enforcement is imperfect, it is not necessarily the case that efficiency can be achieved by use of individual transferable quotas. The production externality is only dealt with imperfectly. With imperfect enforcement of quotas, firms may have incentives to build up excess capacity relative to what is needed to produce the quantities specified by their quotas. Furthermore, firms with more excess capacity may have stronger incentives to violate quotas. In this paper, we investigate these links between production capacity, quotas and illegal fishing. We start out by theoretically analyzing the relationship between production capacity and illegal fishing. We show that excess capacity leads to increased illegal fishing, and that the possibility to exceed quotas (imperfect enforcement) gives firms incentives to build up excess capacity relative to what is needed to produce the quantity specified by their quotas. We then provide an empirical analysis of the relationship between illegal fishing and fishing capacity using data on the Norwegian cod fishery. The implications are that unless quotas can be enforced perfectly, additional management instruments are required to deal with the incentives to build excess capacity, which in turn exacerbates the problem of illegal fishing.