



# Employment generation in the Egyptian aquaculture value chain: implications for meeting the Sustainable Development Goals (SDGs)<sup>☆</sup>

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## ABSTRACT

Egypt faces multiple interlinked challenges such as unemployment, poverty and gender inequality that pose tremendous barriers in the current efforts to achieve sustainable development. Aquaculture is a primary sector of the economy that has high potential to not only provide nutritious food, but also to contribute to the national economy. The aquaculture value chain provides substantial employment generation opportunities, including for females and the youth. This paper assesses employment generation along the different stages of the aquaculture value chain in the main governorates that are responsible for about 80% of the Egyptian aquaculture production. In particular it analyses data from surveys in hatcheries (N = 40), feed mills (N = 14), fish farms (N = 234), and fish trading and retailing (N = 182) as a proxy of employment generation patterns for the entire sector. We estimated that aquaculture generates 19.56 Full Time Equivalent (FTE) jobs per 100t of produced fish along the entire value chain. However most of these jobs are generated for males over 30 years of age, with few jobs for females or younger people. Most jobs for female are currently generated at the retailing stage. Boosting employment generation across the entire value chain, especially for females and the youth, can contribute to the attainment of multiple Sustainable Development Goals (SDGs) such as SDG 8 and SDG 5.

## 1. Introduction

Global unemployment rates stand at an alarming 6%, with close to 200 million people being out of employment (World Bank, 2017a). Unemployment rates in Africa are even higher, officially standing at 7.9%, but possibly being much higher (World Bank, 2017a). However in some African countries such as Egypt, current unemployment rates can stand even higher, at 12.1%, despite recent reduction (World Bank, 2017a).

Aquaculture is a primary economic sector with significant potential for employment generation. Globally, aquaculture provides more than 23 million direct and indirect full time jobs, largely concentrated in developing countries (Ottinger et al., 2016; Valderrama et al., 2010). Employment generation from aquaculture has been significant in regions which have struggled to develop more viable long-term employment pathways (Grealis et al., 2017). Women play a major role in aquaculture value chains globally (FAO, 2016), but they often receive

unequal benefits from their involvement (Kruijssen et al., 2018).

As global fish demand is expected to increase by about 47 million tonnes in the next few years (due to both growth in population and per capita consumption), global aquaculture output is also expected to increase by 19 million tonnes (FAO, 2017). However, this still leaves a demand-supply gap of more than 24 million tonnes. The expected expansion can offer substantial employment generation opportunities, especially for youth and females, as well as possibilities for creating and expanding small- and large-scale businesses in the sector (FAO, 2017; Shaalan et al., 2018).

Egypt is one of the countries where aquaculture can generate important socioeconomic benefits. Currently Egypt has the largest aquaculture production in Africa (Shaalan et al., 2018). Given its strong current growth (see next paragraph), aquaculture can contribute to curbing the country's persistently high unemployment rates, particularly for women and youth. Youth unemployment is high both for males