Chaired by: Pullin, R. & Scholtens, J.

Fish for food and nutrition security for the global poor
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This triple panel includes 12 papers that interrogate the significance of fish and fisheries for food and nutrition security. It builds on four ongoing research projects that aim to understand and improve the contribution of fish and fisheries to food and nutrition security. The Fish4Food project (focusing on urban poor in India and Ghana); the DriedFishMatters project (focusing on dried fish in South and South-East Asia); the SmallFishFood project (focusing on small indigenous fish in Africa) and the IKAN-F3 project (focusing on Indonesia). These projects, each with their distinct regional focus, aim to understand local-to-global fish value chains of typically underappreciated small, cheap and dried fish, and to develop greater appreciation for their vast contribution to alleviating ‘hidden hunger’ and for their provision of millions of livelihoods. This panel series creates space for sharing and discussing interim results by junior and senior researchers working in these projects.

The biological potential of producing small fish to improve human health in African inland fisheries
Jeppe Kolding, Paul A.M. van Zwieten, Felix Marttin, Simon Funge-Smith and Florence Poulain

Inland fisheries of Africa are increasing with around 3.7 percent per year. The vast majority of this increase is due to fisheries on small pelagic fish, which occur naturally, or are introduced, in nearly all lakes and reservoirs. Fishing pressure on most small species is still only a fraction of the pressure on large fish species. There is a large potential for increased production. Small fish are processed, sold and eaten whole. Most of the catch is sundried which is the most environmentally friendly and energy-efficient processing technology available, requiring limited investments. Malnutrition, or so-called “hidden hunger”, is responsible for about a third of premature deaths in sub-Saharan Africa, and small whole fish are among the most vital suppliers of micronutrients, such as vitamins, iodine, iron, zinc and calcium, which all play a critical role in cerebral development, immune system support and general health. Thus, the unique combination of high-quality protein and important micronutrients in small fish plays a significant role in combating the triple burden of hunger, micronutrient deficiency and non-communicable diseases. Yet, national and regional food policies virtually overlook the essential link between production, distribution and consumption of small sundried fish and human health. Catching small (pelagic) fish, which are sun-dried, distributed widely away from their origin, affordably purchased in local, often remote markets and consumed whole, is the most high yielding, eco-friendly, low carbon dioxide (CO2)-emitting and nourishing way of utilizing the high productive potential of African inland waters. However, a range of social, technical, economic, legal and policy barriers inhibit the full potential of utilizing small fish to improve nutrition in low-income populations. These include outdated fisheries management legislation and food safety challenges in processing and marketing. In addition, their local use as fishmeal in animal feeds, including for aquaculture, is increasingly competing for these resources.

Making small fish visible in food and nutrition security to combat malnutrition in low and middle income countries
In 2014, the UN Committee on World Food Security's for the first time had fish on the menu and concluded that fish deserve a more central position in strategies for securing people adequate food and nutrition. However, fish is often not fully recognized in relevant work and is strikingly missing from strategies for reducing micronutrient deficiency. Small fish species, which are consumed with bones, head and viscera, have large potential to contribute with several important nutrients and may play a strong role for food and nutrition security. Small fish are a source of highly bioavailable calcium, vitamin A, zinc, iodine and iron which are considered the main nutrient deficiencies globally. In addition, fish contain marine fatty acids and high quality animal proteins. A nutrition-sensitive food system aims at providing not only enough energy and proteins, but also micronutrients, thus preventing both underweight, malnutrition and the double burden of disease. Although fish is a cheap and nutritious food, there are several food safety issues that might counteract its nutritional value. These issues can occur along the entire value chain and include chemical adulteration, contamination with potentially pathogenic microorganisms, heavy metals, pesticide residues, toxins, polycyclic aromatic hydrocarbons, accumulation of pollutants etc. Consequently, it is a multidimensional challenge to enable food and nutrition security by supplying access to sufficient, safe and nutritious food, by meeting the dietary needs and food preferences of the respective target groups. Presently, there are very scarce data on nutrients and safety issues along the value chains of small fish in low and middle income countries. We aim at assessing the nutrient contents of small fish along the value chain and identify critical points for losses in food quality and safety. Applicable mitigation strategies shall be developed to improve the quality and safety of small fish.

**From feeding the billions to nourishing nations: reconstructing the narrative of fish as food.**
*Joeri Scholtens, Shakuntala H. Thilsted, Eddie Allison, Jeppe Kolding, Derek Johnson, Ragnhild Overa, Maria Jose Palladines Barragan, Marloes Kraan, Maarten Bavinck.*

This paper aims to undertake a novel exploration to understand the unmet potential of fish to contribute to nourishing people across the world. While this potential is increasingly recognized in academic circles and international organizations, it tends to be poorly acted upon in national and global food and nutrition security strategies. We argue that this frequent ignorance of fish as food is partially resulting from a set of global powerful narratives that dominate thinking about fisheries and oceans in scientific and policy circles. These narratives include “too many fishers chasing too few fish”, “oceans as spaces for biodiversity conservation”, “danger of indiscriminate fishing”, “don’t catch the small fish”, “threat of IUU-fishing”, “the promise of the blue economy”, “fish as risky food”, and “aquaculture as saviour for stagnating capture fisheries”. We aim to deconstruct these narratives, and understand how they make trade-offs that affect – often indirectly or implicitly - the potential of fish to contribute to food and nutrition security, especially for poor people. While these narratives typically have their merit in certain cases and contexts, their transposition to other contexts, ideological endorsement and connection with powerful interests make them resistant to criticism and change. We conclude by suggesting five counter narratives that provide the necessary discursive space for capitalizing on the vast potential of fish and fisheries to contribute to livelihoods and nutrition for the global poor.