

Abstract

SPECIAL EVENTS:

Technical and Policy Workshop
on Sustainable Nutrient
Management in Support of the
Asian Platform of Global
Partnership on Nutrient
Management

The Nutrient Challenge in the Global Context

Christopher Cox

Programme Officer
United Nations Environment Programme
Global Programme of Action for the Protection of the
Marine Environment from Land-Based Activities (GPA)
Nairobi, Kenya



Nitrogen and phosphorus are key nutrients for assuring global food security. It is estimated that some 120 m tons of reactive nitrogen are generated annually through anthropocentric processes, along with the mining of approximately 20 m tons of phosphorus every year. Roughly 20% of the nitrogen generated is lost from productive use through run-off and leaching into surface and groundwater bodies, while a volume of phosphorous, equivalent to half that extracted at source, enters the world's oceans, approximating eight times the natural influx rate. Globally, synthetic fertilizer and agricultural crops account for 12% of total ammonia emissions and FAO forecasts suggest that global N₂O emission from fertilizers will increase between 35 and 60% by 2030.

Poor nutrient management and associated challenges, the “nutrient challenge” are consequence of how nutrient inflows from fertilizers and manures are managed by crop and livestock producers, and how wastewater discharges from domestic, commercial, industrial wastewater generators are managed. In the context of crop production for example, in parts of Europe, China and India the challenge is mainly associated with excess fertilizer application to maximize yields, while in parts of the developing world, notably parts of Africa, the challenge is in respect to nutrient mining or depletion. The nutrient challenge is manifested in five key threats; the ‘WAGES’ of poor nutrient management, namely (1) water quality, (2) air quality, (3) greenhouse balance, (4) ecosystems and (5) soil quality threats.

Enhancing sustainable nutrient management constitutes a nexus that unites many global resource management concerns. Improved management of nutrients can simultaneously make quantified contributions toward meeting existing global commitments for improving/protecting water, air, soil, climate and biodiversity. At the same time it would deliver consequent contributions to food and energy security with major net social and economic benefits. This paper will provide an overview of the nutrient challenge and strategic directions to address the challenge through the Global Partnership on Nutrient Management (GPNM).



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About Christopher Cox:

Dr. Christopher Cox is a Programme Officer attached to the United Nations Environment Programme's Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (UNEP-GPA), taking up the position in December 2014. His main area of focus within the GPA is on the improved management of nutrients and minimization of nutrient pollution in fresh and coastal waters. He worked previously in the Caribbean with the Saint Lucia Forestry Department, the Saint Lucia Ministry of Agriculture, and the Caribbean Environmental Health Institute (CEHI), later to become the Environmental Health and Sustainable Development Department of the Caribbean Public Health Agency (CARPHA). He holds a BSc in Forest Resources Management from the University of New Brunswick, Canada (1992), and MSc (1997) and PhD (2003) degrees from the Department of Agricultural and Biosystems Engineering of McGill University, Montreal, Canada where his research focus was on integrated watershed management in the context of erosion and hydrological relationships, and the formulation of GIS decision-support approaches for sustainable land management for Saint Lucia. He has authored several peer-reviewed and other articles on the subject of his research.