Policies and Incentives to promote access to fertilizers and more effective application

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Chemicals production and consumption

- More than USD 5 trillion industry in 2017 (incl. pharmaceuticals)
- Sales projected to double by 2030
- Production and consumption shifting to emerging economies
- Production of fertilizers increasing in many regions.

Projected growth in world chemical sales (excl. pharmaceuticals) (CEFIC)
Chemical Industry Global resource flows

- Production of basic inorganics (e.g. fertilizers) relies on the extraction of fuels and minerals
- 1,700 million tonnes (Mt) of feedstocks used to produce 820 Mt of chemical products in 2013
- Around 34% of nitrogen fertilizers
- 815 Mt of secondary products, including 140 Mt of methane and 287 million tonnes of CO2.

Market segments in the chemical industry

- Basic organic and inorganic chemicals represent the largest share
- Agricultural and consumer products account for 8 per cent of global chemical shipments
- Slower growth of chemical shipments between 2011 and 2016
Market for agricultural chemicals

• Fertilizers make up largest share of agricultural chemicals by volume.
• N, P₂O₅ and K₂O consumption at 186.67 million tonnes in 2016.
• Projected to grow by 1.5, 2.2 and 2.4 per cent annually until 2020
• USD 98 billion to be invested between 2018 and 2022 adding 78 MT of production capacity of fertilizers.
• Consumption and fertilizer market growing most rapidly in Asia

MegaTrends

• Digitalization e.g. soil analysis sensors, data-driven fertilizer application
• Food production needs to increase by 60 per cent between 2005/07 and 2050.
• Freshwater pollution may aggravate water scarcity
• Growing global population and more resource-intensive diets
• Global biological crop protection market growing.
Chemical pollution: emissions, releases and wastes

- Total application to soil increasing, application rates decreasing
- Nitrogen-based fertilizer use up from 11 Mt in 1961 to 108 Mt in 2014. Released nitrous oxide an extremely potent GHG.
- Trace elements such e.g. Cadmium, increasing in agricultural soils
- Agrochemicals make up 5% of US hazardous waste

Sources of hazardous waste in the United States by sector, 2011 (per cent of volume) (UNEP and ISWA)

Data challenges and opportunities

- Substantial gaps in release and pollution data.
- Inconsistent at the national or regional levels
- New initiatives could provide models e.g. Global Mercury Observation System and GAPS
- Positive trends in reducing concentrations of chemicals regulated or restricted by governments (e.g. lead) and multilateral treaties (e.g. some POPs and mercury).
Market-based instruments

- Regulatory actions, non-regulatory strategies and voluntary initiatives are drivers
- Market-based instruments (e.g. tax) in agricultural systems can reduce application and risk.
- Can be combined with command and control regulatory measures (e.g. prohibitions or restrictions)
- Reforming subsidy programmes that incentivize use
- Countries with limited capacities face challenging setting up chemicals management programmes

Chemical and non-chemical alternatives

- Regulatory actions, public pressure and voluntary initiatives
- Informed substitution – replacement or technological change
- Substitution as an innovation driver
- Government established mandates for alternatives assessment and substitution
International Conventions and Policy Instruments

- International Code of conduct for the Sustainable Use and Management of Fertilizers
- CBD, UNFCCC, UNCCD, Codex Alimentarius etc.
- UNEA resolution 4/14 on sustainable nitrogen management
- Colombo Declaration on Sustainable Nitrogen Management

International Conventions with potential to influence fertilizer distribution and use

International partnerships

- Soil - Global Soil Partnership
- Nutrient Management - INI, GPNM, INMS project, The Global Phosphorus Research Initiative
- INMS-4 endorsed UNEA-4 proposal.
- Product Initiatives - the International EPD system and WTO agreements
- Pollution & Marine environment - GPA

THE INTERNATIONAL EPD® SYSTEM
Regional conventions and Policy Instruments

- Prioritization - developing countries face other challenges including food insecurity and poverty.
- Regional partnerships can be part of international initiatives e.g. INI regional centers and 7 Regional Soil Partnerships
- Specific to the region, e.g. ECOWAS regional policies, EU Nitrates Directive, The MERCOSUR environmental policy

National legislation on fertilizers

- Registration with a designated authority usually required
- Fertilizer factory regulations have become more stringent
- Policies encourage private sector involvement to reduce costs
- Policies sometimes outdated and not specific to fertilizers. Enforcement also a challenge, poor inspection capacity.

Amounts of fertilizer consumed in selected African countries from, and not from subsidized programs (AFAP, IFDC, UNECA and AfDB)
Types of incentives

- Subsidies - market distortions and nutrient use imbalances
- Code of practice on handling of fertilizers
- Regulations on manure - challenges in developing countries
- National Nutrient platforms
- Water and Air regulations and Carbon tax schemes

Corporate responsibility and stewardship

- The 4R Nutrient Stewardship: framework for increasing crop yields while protecting the environment.
- Use 4R practices along with agronomic practices for efficiency
- 4R Research Fund sustainability indicators and environmental impact data
- The SAI Platform offers capacity building and communication support
- The Sustainability consortium – sustainable products and best practices.
- Fertilizer Europe Stewardship Program specifies best practices and issues advice.

The 4R Nutrient Stewardship concept (Johnsons and Bruulsema 2014)
Thank you for your attention

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