GPI GLOBAL PHOSPHORUS INSTITUTE

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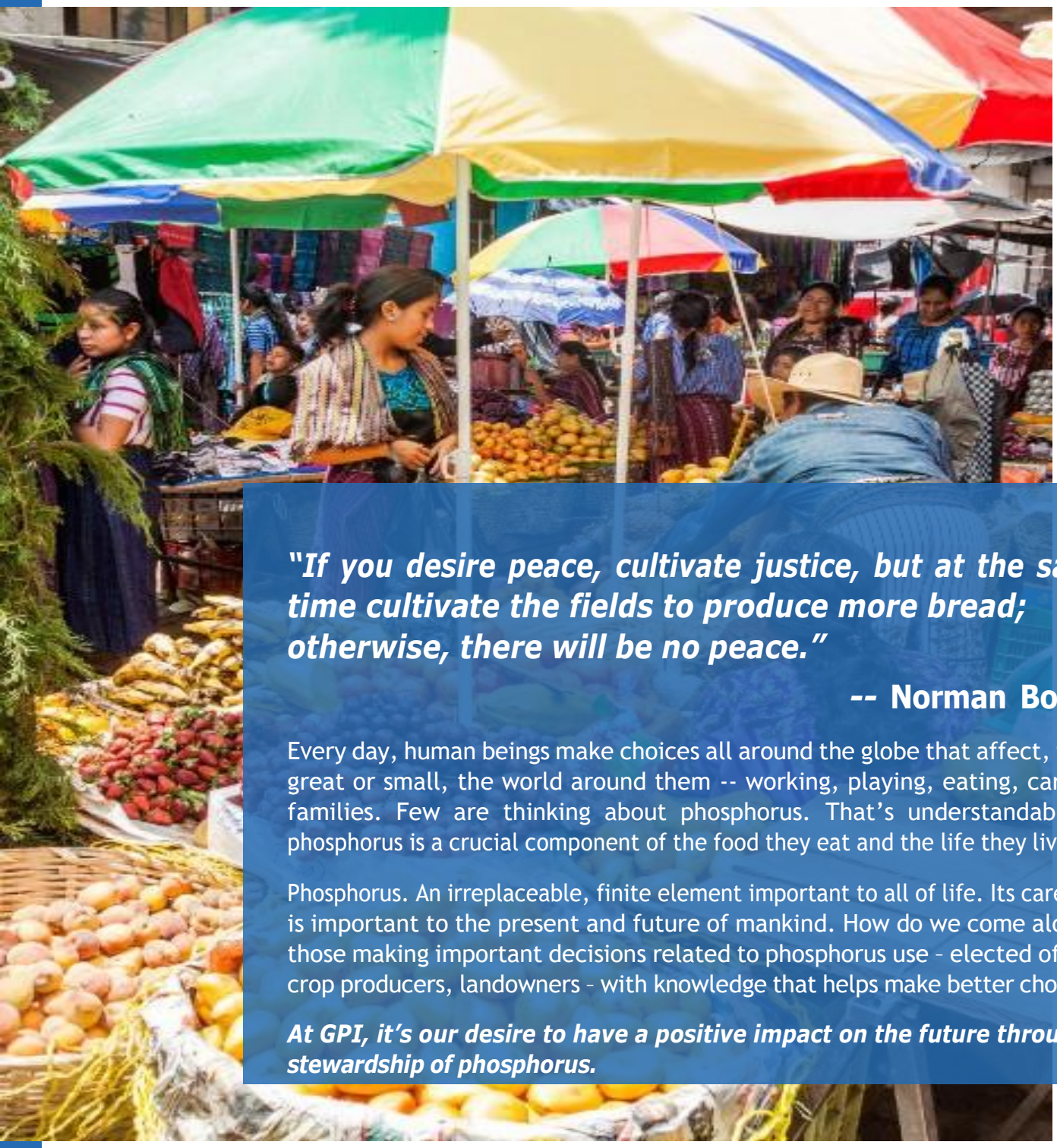
Strategic Plan (Draft-work in progress)

Executive Summary



"If you desire peace, cultivate justice, but at the same time cultivate the fields to produce more bread; otherwise, there will be no peace."

-- Norman Borlaug

Every day, human beings make choices all around the globe that affect, in ways great or small, the world around them -- working, playing, eating, caring for families. Few are thinking about phosphorus. That's understandable, yet phosphorus is a crucial component of the food they eat and the life they live.

Phosphorus. An irreplaceable, finite element important to all of life. Its careful use is important to the present and future of mankind. How do we come alongside those making important decisions related to phosphorus use - elected officials, crop producers, landowners - with knowledge that helps make better choices?

At GPI, it's our desire to have a positive impact on the future through the stewardship of phosphorus.

Vision:

Through excellence in collaboration, sharing knowledge, and innovative research, GPI will spark new, phosphorus-related solutions to feed our world and enhance the environment.

Mission:

To serve as the global hub for all things phosphorus to strengthen collaborations, boost research and share knowledge in order to:

- **Address human and animal nutritional requirements,**
- **Promote climate-smart and nutrition-sensitive agricultural programs,**
- **Improve supply-demand chain efficiencies,**
- **Support equity issues.**
- **Ensure stewardship and sustainable use of this finite, essential resource.**

Phosphorus: Essential to Life

Phosphorus is an essential element for all living things.

It has no substitute. No other element can contribute what it provides. In fact, phosphorus is a cornerstone of the basic building block of life—DNA which consists of carbon, hydrogen, oxygen, nitrogen and phosphorus. A minimum amount of phosphorus in human diets is essential for DNA, energy metabolism, bones, teeth, and many other functions. The recommended daily intake of Phosphorus is 700mg for an adult and 500-1250 mg for children and youth. Phosphorus is highly reactive and not found as a free element in nature. The source of phosphorus is almost always phosphate rock that is a finite resource. Nearly 80% of mined phosphates is used for agriculture and along with nitrogen and potash are three primary nutrients crucially needed by plants. The other 20 % of phosphates are used in other sectors of the global economy including animal feed, beverages, detergents, metal processing, electronics, and energy.

By 2050, the world population could increase by more than 30% to 9.8 billion people. This estimate reflects more than a tripling of the population since 1960. With this increase in population growth, and changing needs particularly dietary, world phosphorus demand and management will be challenged in the coming decades, given that phosphorus is an irreplaceable cornerstone of food production. But Phosphorus can be a cause of global water quality degradation, with much of it from agricultural losses. But Phosphorus is critically important to achieving the 2030 Agenda for Sustainable Development goals of creating a prosperous and productive life for all human beings. While the achievement of all the UN Sustainable Development Goals is important, GPI sees two goals are of overarching importance to nearly a billion human beings in low-income countries:

SDG #1: End poverty in all its forms everywhere.
SDG #2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Focus and Approach

It's our intent at GPI to address all aspects related to phosphorus from the time it's discovered and mined through its end-use to the implications of its dissipation through change management. A key determinant of initiating change is making knowledge available to all participants in accessible and relevant format for their beneficial adoption. GPI plans to address these issues, and others, through development of knowledge and transfer to partners and stakeholders.
So, GPI's strategic focus areas are:

- Knowledge Mining and Generation
- Knowledge Packaging and Delivery
- Knowledge Adoption

Knowledge Mining and Generation is the arena where research and innovation will be the primary to trigger innovation and support on-going research in the food, fertilizer, non-fertilizer, and raw material sectors. The direction of research will be into sustainability, understanding reserves/ resources, increasing reserve efficiency, understanding phosphorus fertilizer use efficiency and management, improving recycling of phosphorus through the entire food supply chain, and reducing losses, thereby improving the environmental footprint of the phosphate sector.

Knowledge Packaging and Delivery is the presentation of any resulting knowledge in appropriate and easily digestible forms. To this effect GPI will devote its resources and expertise to develop a toolkit for policymakers and practitioners to enable them to take an innovative and adaptive approach to respond to challenges of food security and contribute to prosperous agriculture and environmental dimension of sustainable development. This will be done through synthesizing knowledge and production of series of paper under two categories: Policy briefs and technical paper/communications.

Knowledge Adoption is critical toward achieving the stated goal of sustainable phosphorus management. To this end, specific activities will be to hold dialogues for consensus building and defining agenda for actions and supporting the stakeholders to play their roles in building and/or restructuring institutional arrangements that are critical for adopting innovative approaches and practices to address the phosphorus challenge at multiple levels. GPI will partner with committed governments and agencies to augment their efforts through workshops and trainings.

Phosphorus 101

One of the Big Three

Phosphorus is a key member in the "big three" primary nutrients. It's the "P" in NPK. Nitrogen (N), Phosphorus (P) and potassium (K) are considered primary essential nutrients because larger volumes of NPK are needed for plant development than secondary nutrients such as sulfur or micronutrients including molybdenum or zinc.

Sunlight Converter

Phosphorus is involved in many processes critical to plant development. Key among them is photosynthesis, where plants convert sunlight to energy. Phosphorus also important to respiration, cell enlargement, cell division, protein synthesis energy storage and energy transfer.

A Key Player

Although phosphorus may be common in the soil, most of it is inherently unavailable to plants. Only about 4.5 kilograms per hectare is an available form in most soil types. Farmers must make up the rest of a crop's need for phosphorus with fertilizer.

It's Natural

The phosphorus in most commercial fertilizers comes from phosphate rock, found in fossil remains laid down beneath the oceans and later lifted with the land masses. Fertilizer manufacturers mine deposits of phosphate rock to provide phosphorus for a variety of uses.

Bearing Beautiful Fruit

As plants mature, phosphorus moves into the seed and fruit, helping the cells divide and grow in a regular and healthy manner. Cell enlargement and division directly affect crop size and weight (yield) and crop quality in the form of its shape and appearance, especially in the fresh produce market for fruits.

Principles and Values

At GPI, our Principles and Values are cornerstones for transparent and inclusive decision making and building/ maintaining trust among all partners and stakeholders. At GPI, it is our intention to create an open and honest space of integrity where all voices may be heard in delivering credible science for policy-making that best addresses the challenges of food security, human wellbeing and environmental sustainability.

Principles of Engagement

Science-Backed Innovation - GPI will promote new and existing discoveries and deliver scientific evidence that will be the foundation for adaptation of new knowledge andresponsible scaling of technologies and innovations.

Stakeholder Engagement - GPI realizes that, on its own, it is a single actor, and can have a limited impact on the solution of complex issues. and thus, believes that an engaged stakeholder to sustainable phosphorus management is essential. GPI will prioritize building stakeholder capacities and facilitate partnership development.

Institutional Values

Inclusivity - GPI will focus on creating a collegial and inclusive environment that fosters knowledge and opinion sharing, for the development of innovative solutions to the challenges to developing sustainable phosphorus management options.

Transparency - GPI will emphasize the highest standardof integrity and honesty to efficiently use both public and private funds entrusted to it and report scientifically validated results in a transparent manner.

Efficiency - GPI staff will work as a team in support of GPI's Vision and Mission to efficiently and sustainably manage and conserve phosphorus, a vital element for all life on earth, for the future generations.

"I cannot overemphasize the importance of phosphorus, not only to agriculture and soil conservation, but also to the physical health and economic security of the people."

– Franklin D. Roosevelt, May 20, 1938

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