

SANBI

Biodiversity for Life

South African National Biodiversity Institute



Monitoring Framework for Genetically Modified (GM) crops released into the environment of South Africa



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Biodiversity Research & Evidence Indaba; 17/08/2017

SANBI's GMO programme

Main objective is mandate driven:

Monitor and report on the environmental impacts of GMO's released into the environment (all categories of GMOs; based on research that identifies and evaluates risks)

National Biodiversity Research & Evidence Strategy (NBRES)

Objective 3 (3.2) - Opportunities for mainstreaming biodiversity considerations into other sectors are identified and understood

Priority to address - Agriculture: genetically modified organisms (GMOs), biotech, synthetic biology, geo engineering: 2-5 yr. period

National Development Plan (NDP)

Chapter 5 - Environmental sustainability and resilience

Objective - Increased investment in new agricultural technologies, research and...; and expansion of commercial agriculture.

Action - Channel public investment into research, new agricultural technologies for commercial farming...

Sustainable Development Goals (SDGs)

2 ZERO HUNGER



15 LIFE ON LAND



Monitoring framework rationale

“South Africa has adopted this technology within a risk assessment framework in which GMO’s are strictly regulated and are subjected to a risk assessment prior to release into the environment. The environmental sector is included in the risk assessment process and we need evidence to support inputs regarding risks to biodiversity. In addition, **SANBI is mandated to monitor and report on any impacts of GMOs after their release into the environment and research is required to support this function**” - NBRES

- **Monitoring to detect potential adverse effects of GMOs and their impact (intended vs unintended & positive vs negative);**
 - A monitoring framework must be based on reliable data and should be implemented in all receiving environments that might be affected by GMOs (assessment or research based)
- **Advice on policy and regulations for GMOs released into the environment**

General question to address:

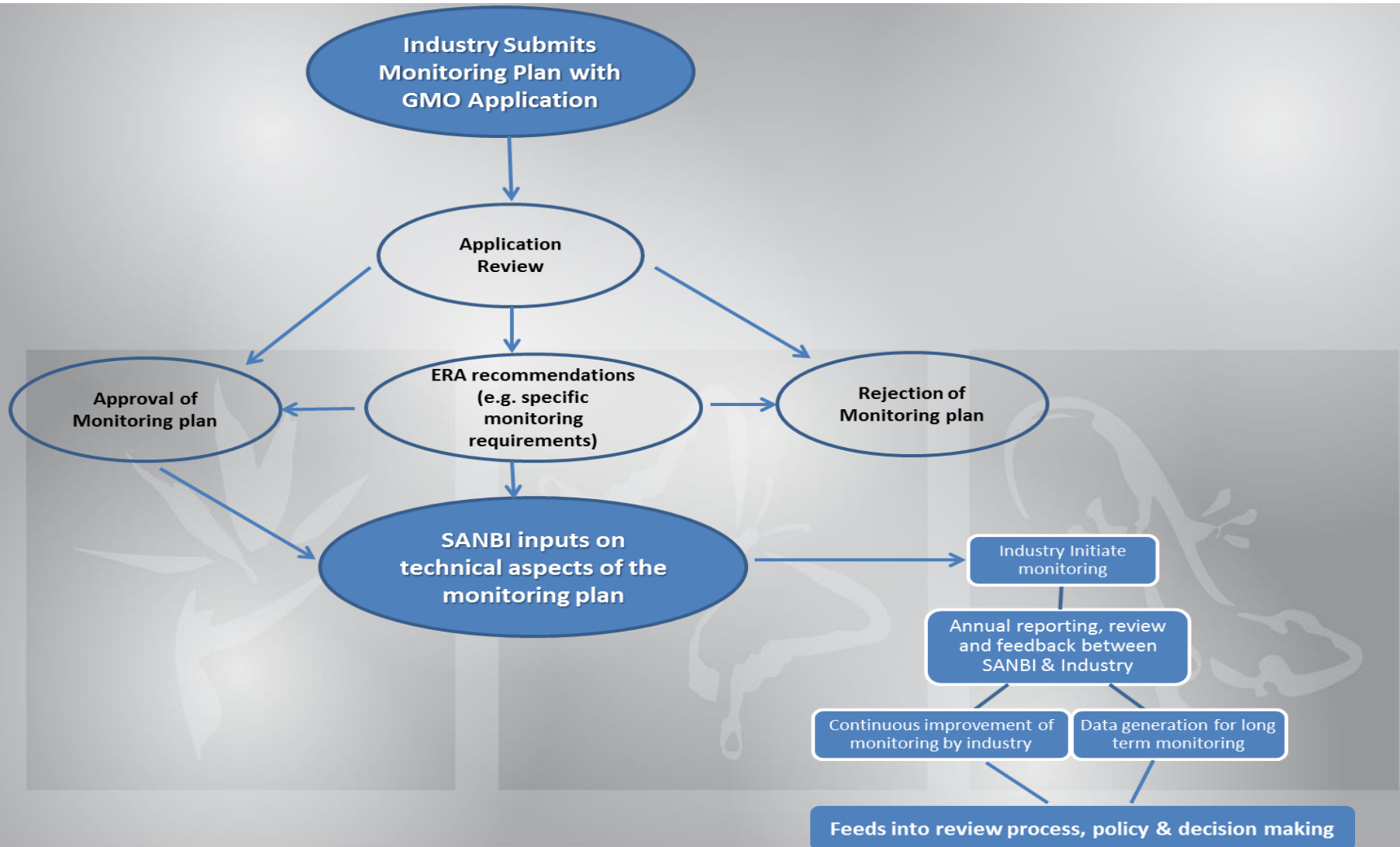
Are the GMOs released into the environment doing what they are supposed to do?

Monitoring framework approach

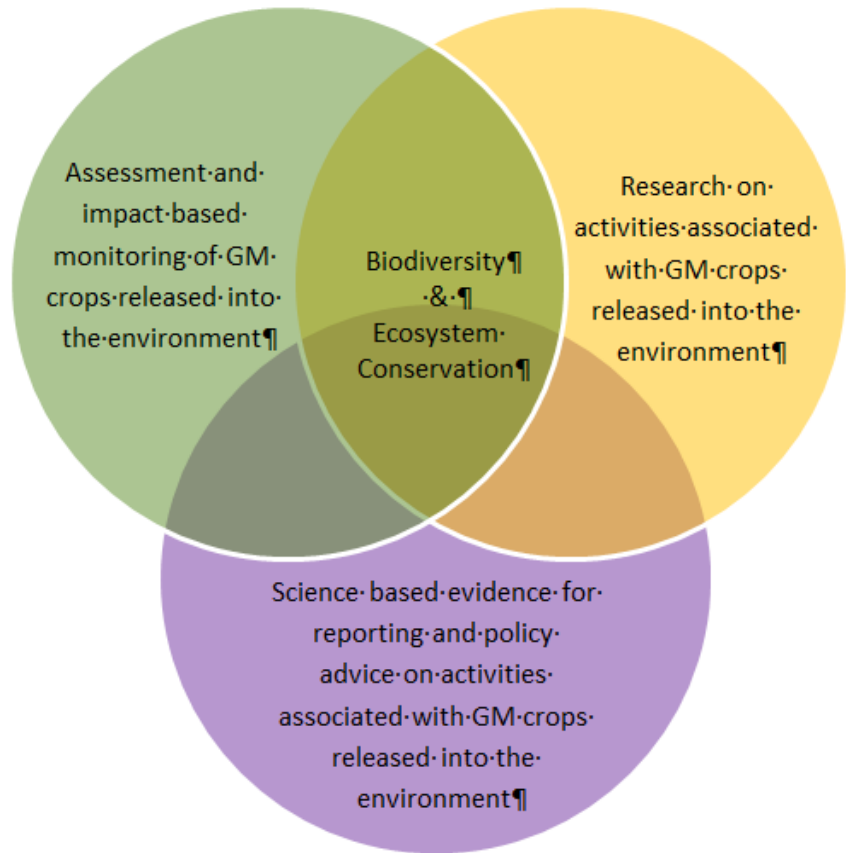
Impact based:

- Positives
 - E.g. Insect-resistant GM plants: To provide a highly efficient and targeted pest control.(less to no use of insecticides....?)
- Negatives
 - E.g. The insecticidal protein is toxic to valued non-target arthropods at the concentration present in the field, results in ecological function being reduced.
- Considers basis of problem formulation:
 - What must be protected, elements of biodiversity? = Protection goals (NEMA, NEMBA, ERA for GMOs) & Assessment end points.
 - Context & Scope
 - Can we identify/foresee a way in which they could be harmed? = mode/pathway to harm
 - Hypotheses driven test/research approach.
- Accommodative of various types of monitoring:
 - General surveillance; Case by Case; Target monitoring; Meta-Analysis monitoring; Information and Data from existing networks. (similar approach to that of the NBA)

Integrated approach: SANBI & Applicant monitoring



Implementation & long term goal



Land use change
Pesticides application
Effects on Non Target Organisms (NTOs)
Climate change mitigation & response
Gene flow & potential for weediness

Current score board

- Reports:
 - Land use patterns; information on pesticide use; baseline datasets.
- Challenges & lessons learned:
 - SANBI mandate – too broad.
 - DEA vs SANBI priorities
 - Capacity
 - Financial implications
 - Co-operation and co-ordination; data (availability & accessibility).
- Future activities:
 - Development of information portal on GM crops
 - Project on weed profiling and herbicide application in GM maize
 - Biotech/GMOs and environmental issues (public communication) – Lead by BiosafetySA

To consider: Science-Policy interface

- Information/data ownership
 - Agri-Industries
- Reactive vs pro-active assessment, monitoring or research
 - Needs vs wants vs funding (e.g. wild crop relatives)
 - Priorities: case by case monitoring vs general surveillance
 - Development of an assessment or status report (cycle based)

Thank You!



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