

## **Link between Management, Monitoring and TPC's in Kruger**

The KNP follows an adaptive decision-making process from setting strategic objectives through to following up management actions on the ground. Figure 1 illustrates how this process works in the KNP.

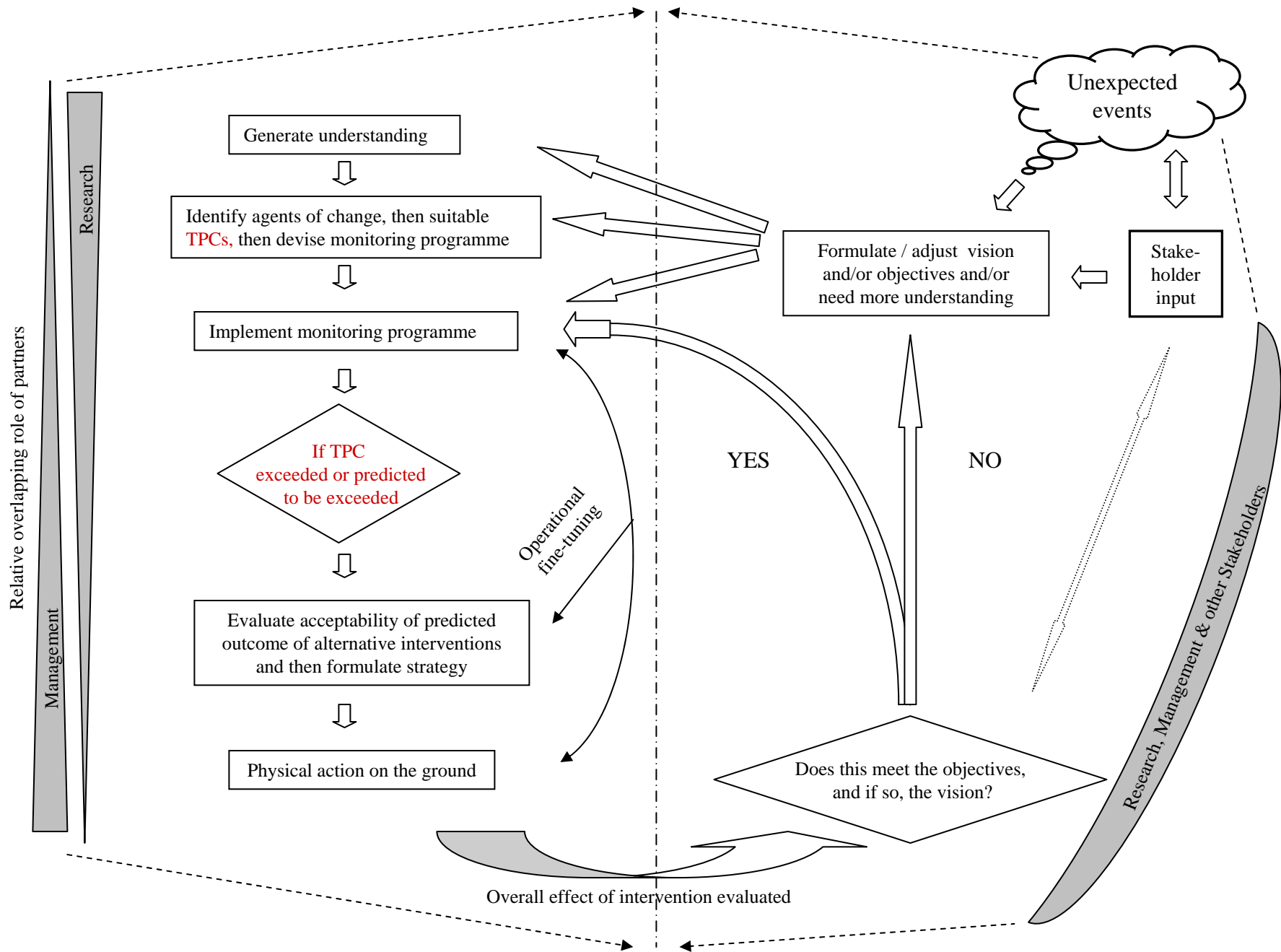
In order to make an explicit link between the KNP's objectives and management actions, thresholds of potential concern (TPCs) have been set to help define the set of (varying) conditions that define the desired ecosystem state we are managing for. These TPCs are set in such a way that ecosystem flux is accommodated, but that warning bells are turned on when the system approaches an undesirable change of state. The setting of TPC's then determine the format and focus of the KNPs monitoring programs, although in certain instances, background data is also collected (e.g. weather data) to enable later interpretation of ecosystem trends.

Data derived from monitoring programmes are then used to test the TPC hypotheses. If a TPC has been exceeded, or is predicted with some certainty to be exceeded, the available suite of management options and actions are considered and the most appropriate one implemented (this could also be the "no action" option). Once this action has been taken, outcomes are evaluated against the objectives and vision. This could then lead to one of four responses, namely (1) the vision/objectives are adjusted in the light of new understanding gained through the testing of the TPC hypothesis, (2) the increased understanding leads to a refinement of the TPC itself, based on the better knowledge and understanding of the system responses, (3) it is recognized that more understanding is required before either the objectives or TPCs can be adjusted, or (4) if the management action has met the objectives/vision the loop feeds back and monitoring continues.

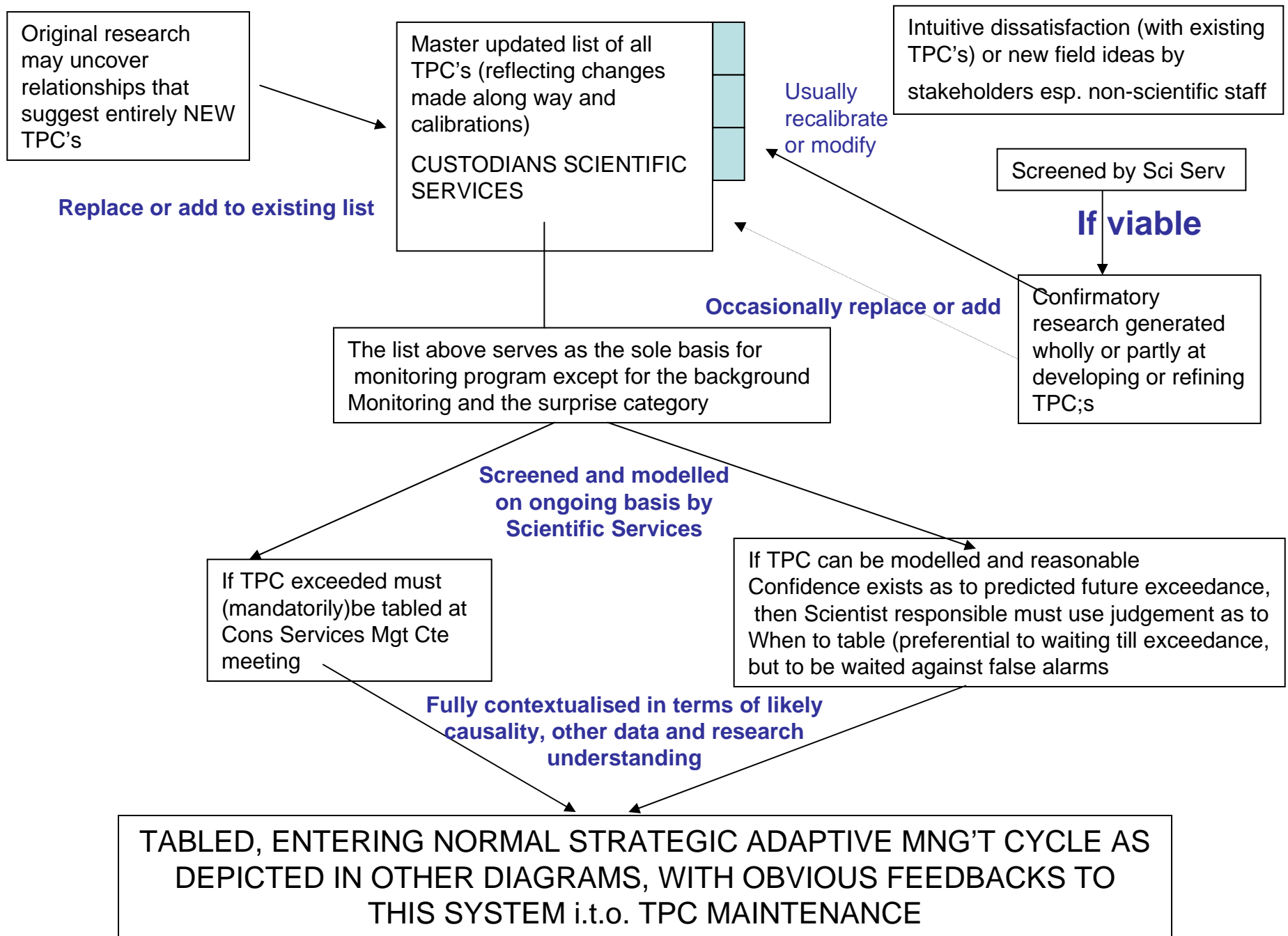
The success of this science-management system depends on the TPC maintenance cycle (Figure 2) which allows for challenges and dynamic interactions at various stages. The most important aspects in this cycle are the recalibration and/or challenging of existing TPC's:

- a. TPC's can be challenged and or recalibrated at any time in the process except once they have been exceeded. When they have been exceeded or predicted to be exceeded the adaptive cycle has to be completed before you can recalibrate the TPC.
- b. The system is open to having TPC's challenged by either internal or external stakeholders

It must be recognized that TPCs outline hypotheses based on best available understanding and knowledge and are thus instrumental in ensuring that adaptive management is practiced in the KNP through an ongoing process of 'learning by doing'. This should enable us to manage a complex adaptive system in Kruger.



**Figure 1.** Strategic adaptive management processes, reflecting how science and management interact with environmental changes and societal values. (Biggs, H.C. and Rogers, K.H 2003)



**Figure 2.** TPC maintenance cycle