



GROUP ON
EARTH OBSERVATIONS

GEO-IV

28-29 November 2007

GEOSS Outcome Performance Indicators

Document 26

This document is submitted to GEO-IV for information.

GEOSS Outcome Performance Indicators Generic Framework

(DRAFT October 5, 2007)

1 BACKGROUND AND CHARGE

At the GEO-III Plenary (November 27-29, 2006), several GEO members (e.g., Italy, Brazil, Canada) expressed a need to articulate performance indicators that focus on the outcomes and impacts from GEO and GEOSS. In addition, **Section 7.2 Performance Indicators** of the GEOSS 10-Year Implementation Plan states that “GEO will develop performance indicators for GEOSS.” The 2007-2009 Work Plan identifies **Performance Indicators** in Section 16; however, GEO members pointed out that these indicators are focused on process and outputs. Reference is also made in the 2007-2009 Work Plan to the material in Chapter 9 **Performance Indicators** of the GEOSS Reference Document. GEO members also noted that, given the upcoming November 30, 2007, Earth Observation Summit IV Ministerial meeting, GEO members need some indicators of the societal value and benefits, which are expected to be enabled by and could be attributed to GEO and its membership activities (i.e., “outcomes” and “impacts” in performance evaluation parlance). During the specific discussion on the 2007-2009 Work Plan, the United States volunteered to lead an effort to identify performance indicators addressing outcomes and impacts from GEO and GEOSS. Canada and other GEO Members offered to support the United States in this endeavor.

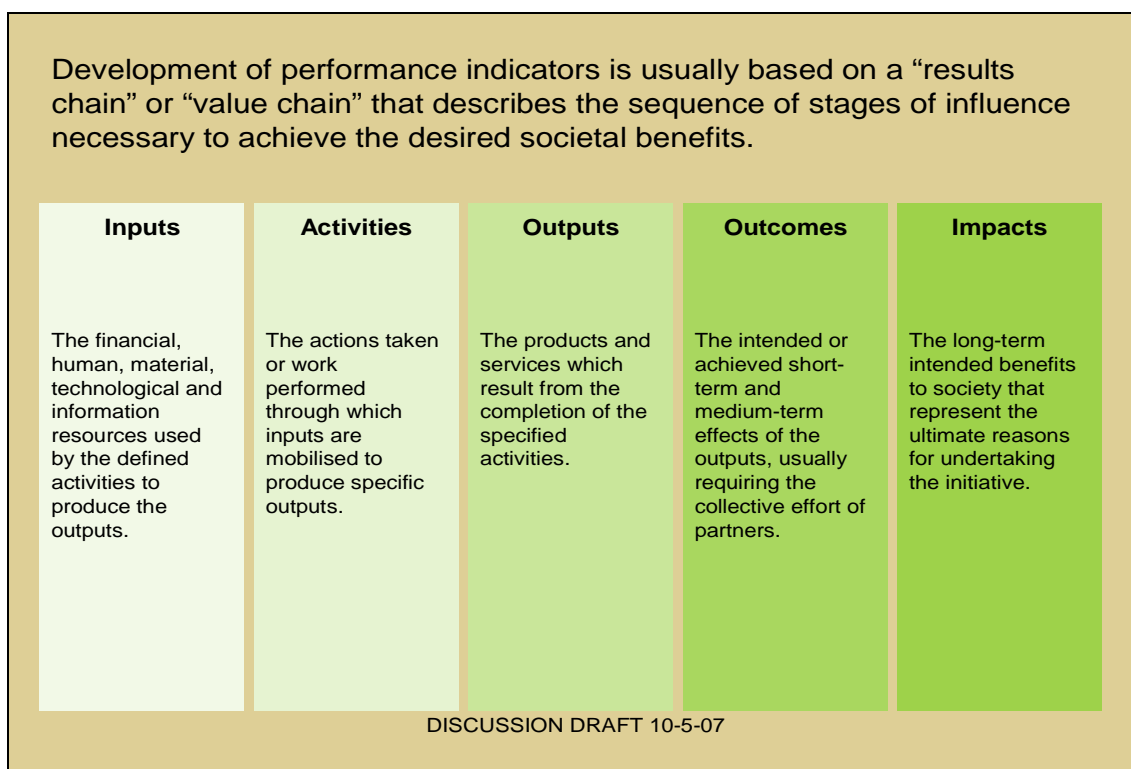
The Canadian GEO Secretariat offered to host an “Outcome Performance Indicators Planning Workshop” February 13-14, 2007, in Montreal, Canada. GEO Secretariat sent a workshop invitation to GEO Principals and the United States GEO Secretariat developed workshop materials (i.e., preliminary agenda, “concept document,” illustrative examples), which were circulated to GEO membership for comment prior to the workshop. Aside from representatives for the World Meteorological Organization, the United Nations Environment Programme – Division of Early Warning & Assessment – North America, and GEO Secretariat, the workshop was *de facto* bi-national (United States-Canada), and it was decided that the United States and Canada would continue to jointly develop and refine the “concept document” to a point where it would then be more widely shared with GEO membership.

This information document describes a generic framework for performance evaluation, which includes existing GEO performance reporting, as well as proposed performance indicators for outcomes and impacts from GEO and GEOSS.

2 A FEW DEFINITIONS

The slide below shows a basic approach used in many domains and by many governments. Definitions are adapted from the Organisation for Economic Cooperation and Development (OECD) document “Glossary of Key Terms in Evaluation and Results Based Management.” (2002); please refer to this document for commonly used performance evaluation terms.

www.oecd.org/LongAbstract/0,3425,en_2649_34435_2754794_119678_1_1_1,00.html



“Results Chain – The causal sequence for a development intervention that stipulates the necessary sequence to achieve desired objectives – beginning with inputs, moving through activities and outputs, and culminating in outcomes, impacts, and feedback. In some agencies, reach is part of the results chain.”

Results chain, value chain, or logic model - all are simplified representations of the expected causal linkages and key assumptions underlying a program, initiative, or intervention. They are similar to a “logical framework,” but are generally applied at a more strategic level as opposed to a project-specific level.

“Attribution – The ascription of a causal link between observed (or expected to be observed) changes and a specific intervention. Note: Attribution refers to that which is to be credited for the observed changes or results achieved. ...”

“Indicator – Quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor.”

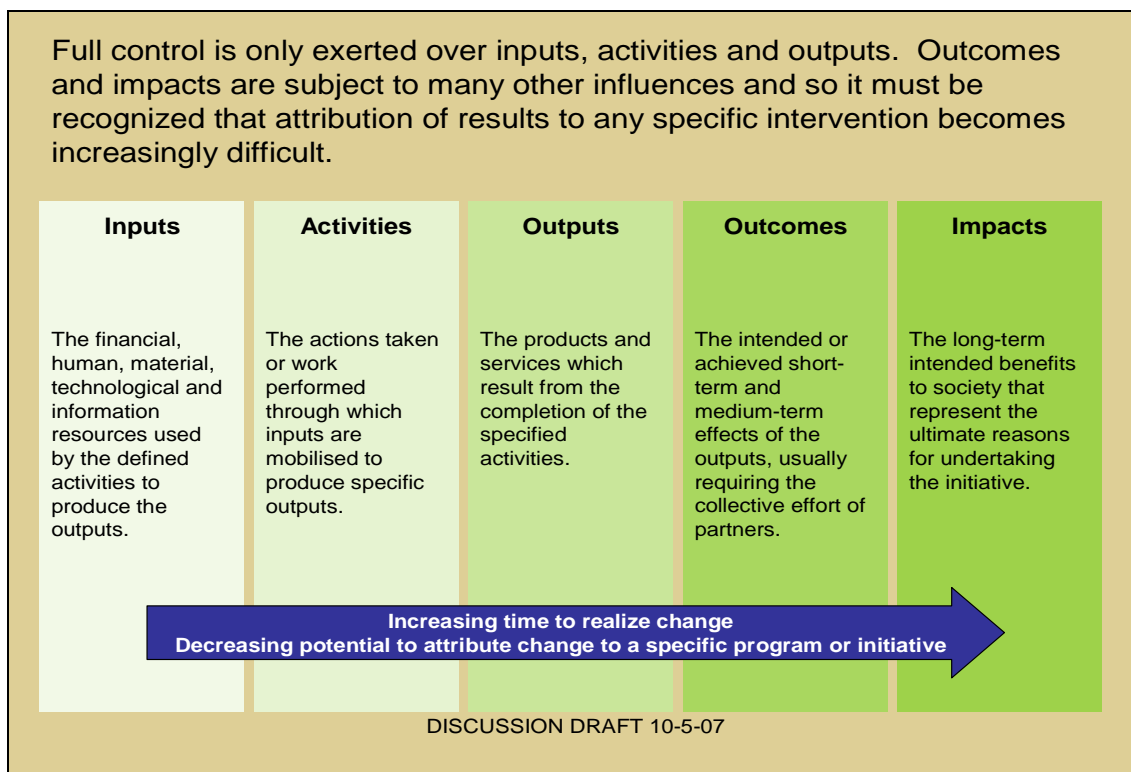
Criteria for performance indicators include, but are not limited to: 1) intuitively obvious (i.e., simple and uncomplicated); 2) easy to obtain (i.e., low cost and little time involved); 3) easy to verify (i.e., accuracy check or methodology is well accepted).

“Outcome – The likely or achieved short-term and medium term effects of an intervention’s outputs.”

“Impacts – Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.”

As shown in the slide below, full control is not exerted beyond outputs, and therefore one should understand that outcomes/impacts performance is subject to wider influences affecting results. The farther away from outputs (i.e., medium-term outcomes and impacts), the longer time it may take to realize the changes expected, and the more difficult it may be to attribute changes to a specific program (e.g., GEOSS) or intervention. Nevertheless, it is essential to make explicit *a priori* intended

outcomes and impacts in order to provide a common starting point in developing indicators of outcome progress.

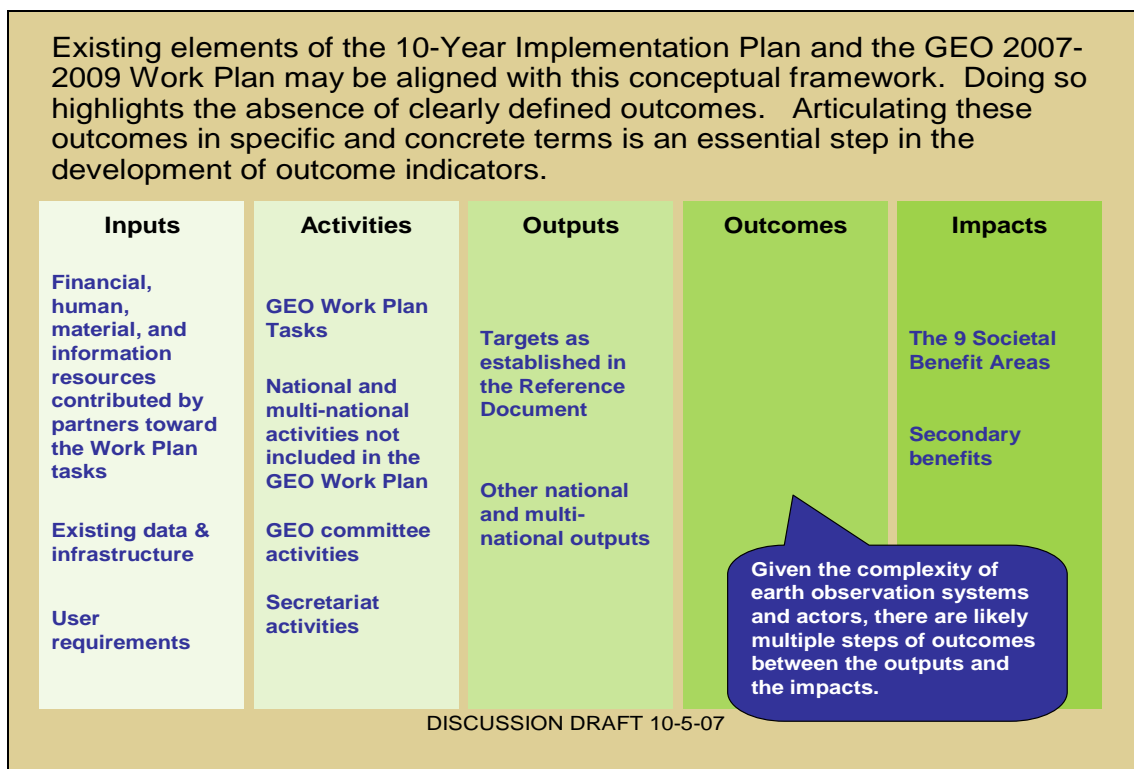


3 ALIGNMENT OF EXISTING GEO ELEMENTS WITH THIS “RESULTS CHAIN”

Align the existing state of documentation for GEOSS and GEO (and its existing four-part system of performance indicators) with this results chain.

The GEOSS Reference Document’s four-part system of indicators follows --

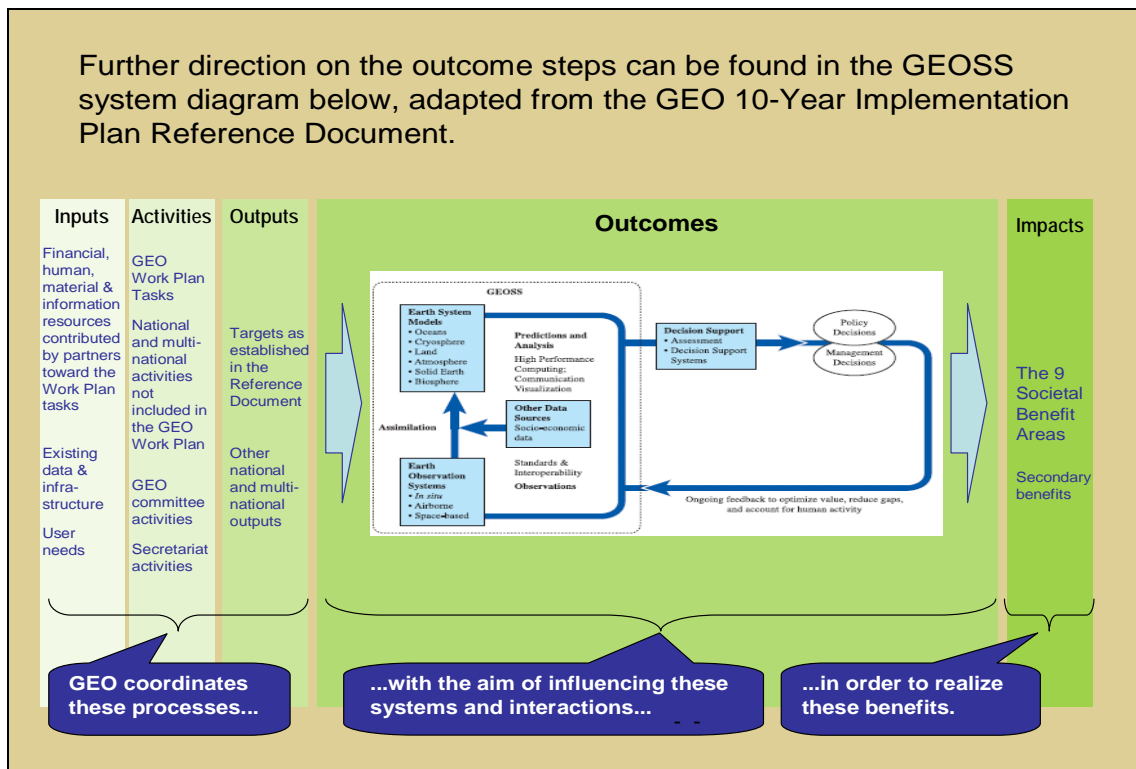
- **Input Indicators** – “quantify the effort and resources committed to the GEOSS implementation”
- **Output Indicators** – quantitatively and qualitatively measure data collection efforts and prediction products/tools (“quantify the auditable products delivered”)
- **Outcome Indicators** – quantitatively and qualitatively “measure effectiveness of the GEOSS process in terms of the improvements to the Earth observing system.”
- **Potential Impacts** – are an “assessment of whether the activities of GEOSS have led to significant improvements in human well-being within the societal benefit areas”



As shown in the slide above, we are able to accommodate all existing elements of the GEOSS Implementation Plan and GEO Work Plan within this basic results chain. The absence of elements under the Outcomes heading serves to support the expressed need at GEO-III Plenary to articulate real “outcome performance indicators” of GEOSS. If this outcome gap is indeed real, and noting the complexity of GEOSS and its implementation, filling this outcome gap may involve multiple steps of outcomes. At this point the GEO/GEOSS-adapted results chain becomes a generic framework that serves as a guide for overall performance evaluation, while also providing context for this apparent outcome gap, and also serving to guide the exploration and definition of outcome steps to fill this outcome gap.

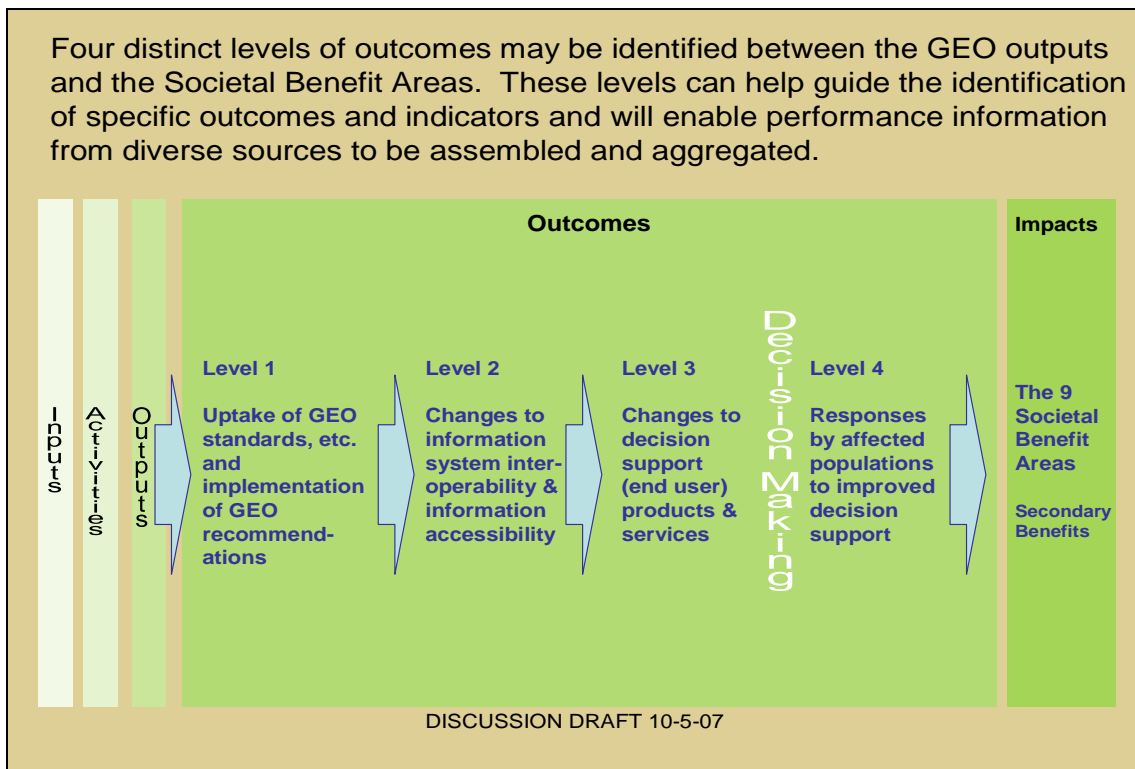
As shown on the slide below, the diagram (Fig. 2.1 on page 15 of the 10-Year Implementation Plan Reference Document -- “The scope and focus of GEOSS, as implemented by its component systems, is illustrated in Figure 2.1”) serves to guide the development of these outcome steps. In addition to scope and focus, this diagram acknowledges the boundary between the primary focus of GEOSS and the policy and management decision making by GEO membership, which is informed by GEOSS. This boundary is a crucial coordination and transition zone (or trans-jurisdictional junction), which makes it a natural focus point for the development of generic outcome performance indicators and feedback loops to complete the results chain pathway from outputs to impacts.

Further direction on the outcome steps can be found in the GEOSS system diagram below, adapted from the GEO 10-Year Implementation Plan Reference Document.

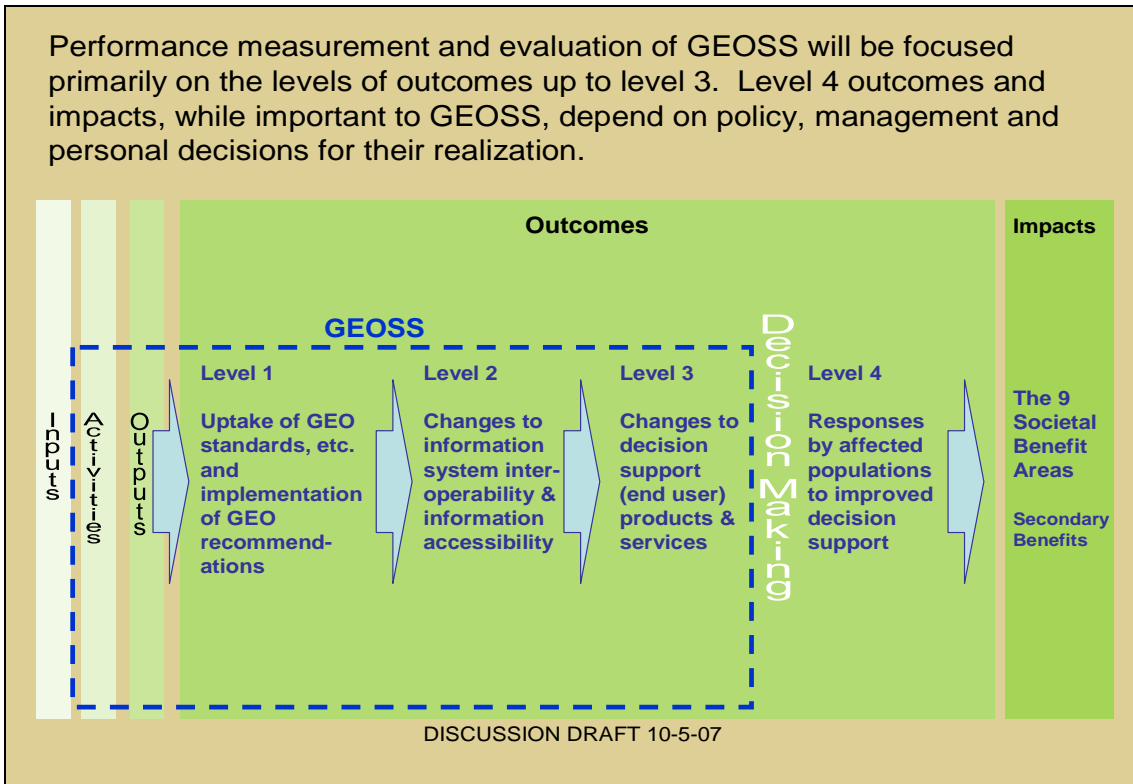


4 PERFORMANCE EVALUATION FRAMEWORK AND OUTCOME PERFORMANCE INDICATORS

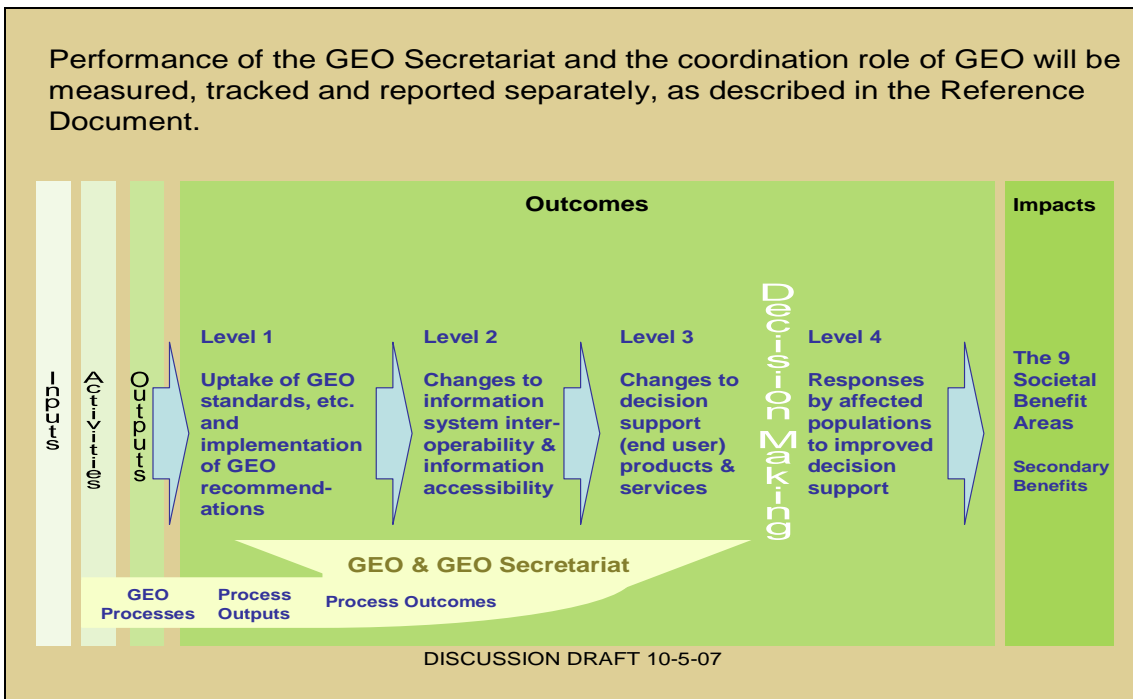
As shown on the slide below, four critical and distinct outcome steps, or outcome levels, serve as generic outcome indicators of the maturation of GEOSS between outputs and impacts. One may think of these four key transition points (growth or developmental stages), as evidence of further maturation of GEOSS towards the intended benefits for stakeholders. These four generic indicators (four levels of outcomes) serve to guide the development of specific indicators, as well as enable performance information from diverse sources to be assembled and comparably aggregated for analysis.



As shown in the slide below, outcome levels 1 through 3 are primarily GEOSS (per Fig. 2.1), whereas level 4 outcomes, while important to realizing the full potential of GEOSS, depend upon the jurisdictional authorities and decision makers in policy, management, and personal contexts. The level 4 outcomes rely on the authority of each GEO membership; for a GEO member country to realize the expected benefits, this outcome level merits special attention by that GEO member country. The decision making transition point is a critical outcome step to the success of GEOSS, but as shown before, this outcome step is dependent on the three prior outcome steps, the GEO membership authorities, and other, sometimes uncontrollable, factors, in attempting to attribute specific beneficial impacts to the GEOSS approach.

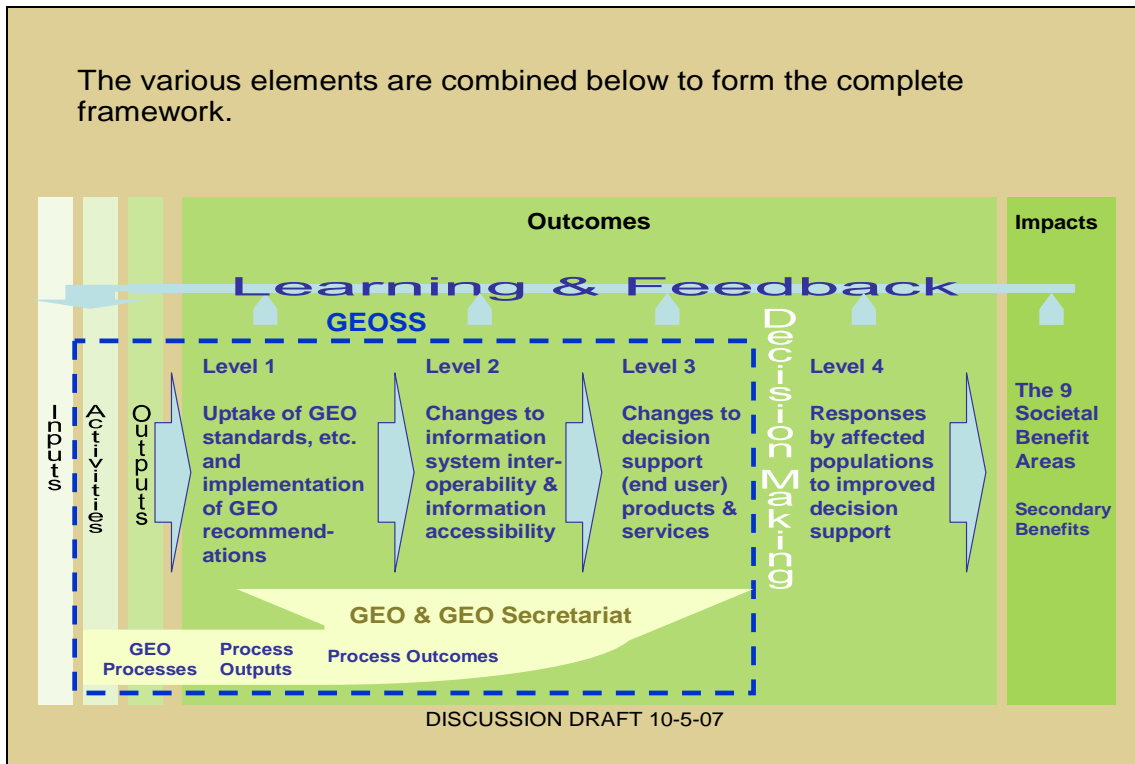
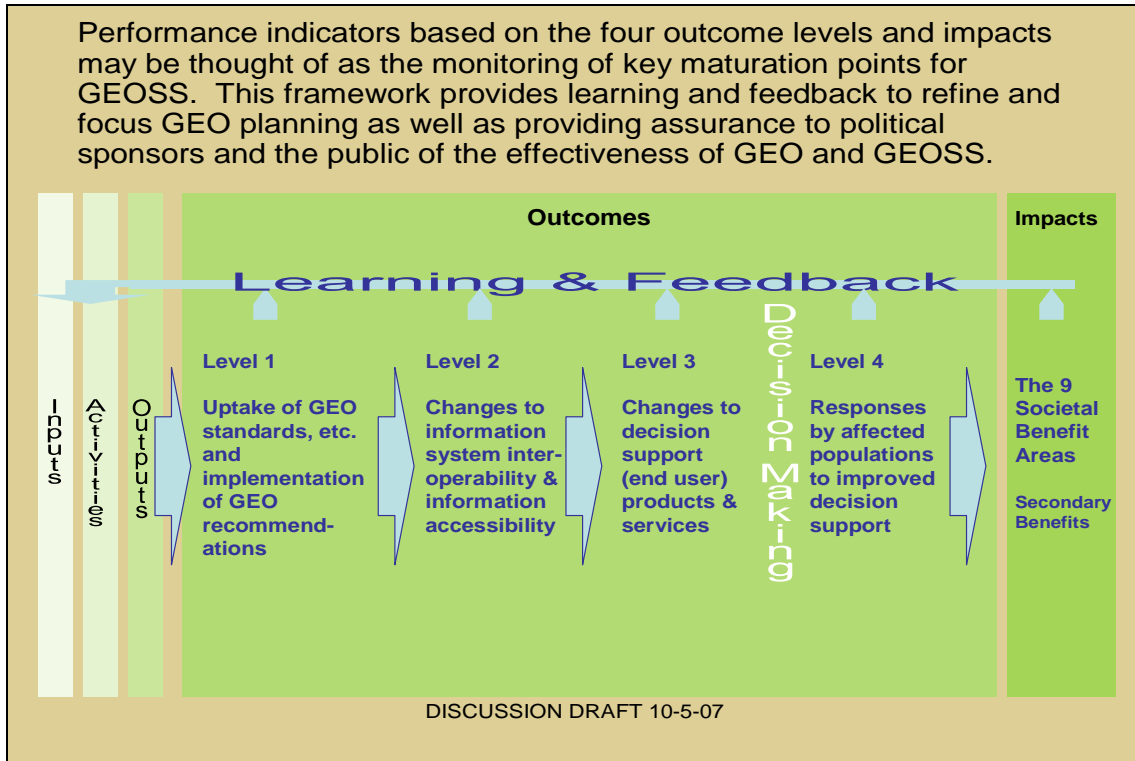


As shown in the slide below, the role of the GEO Secretariat is highlighted in a light yellow band at the bottom of the slide, as foundational and enabling coordination of GEO processes. Its performance indicators are already described in existing GEOSS documentation.



In thinking of the four outcome levels as key maturation points towards the expected beneficial impacts of GEOSS, then in the slide below, learning and feedback loops are added to the framework to

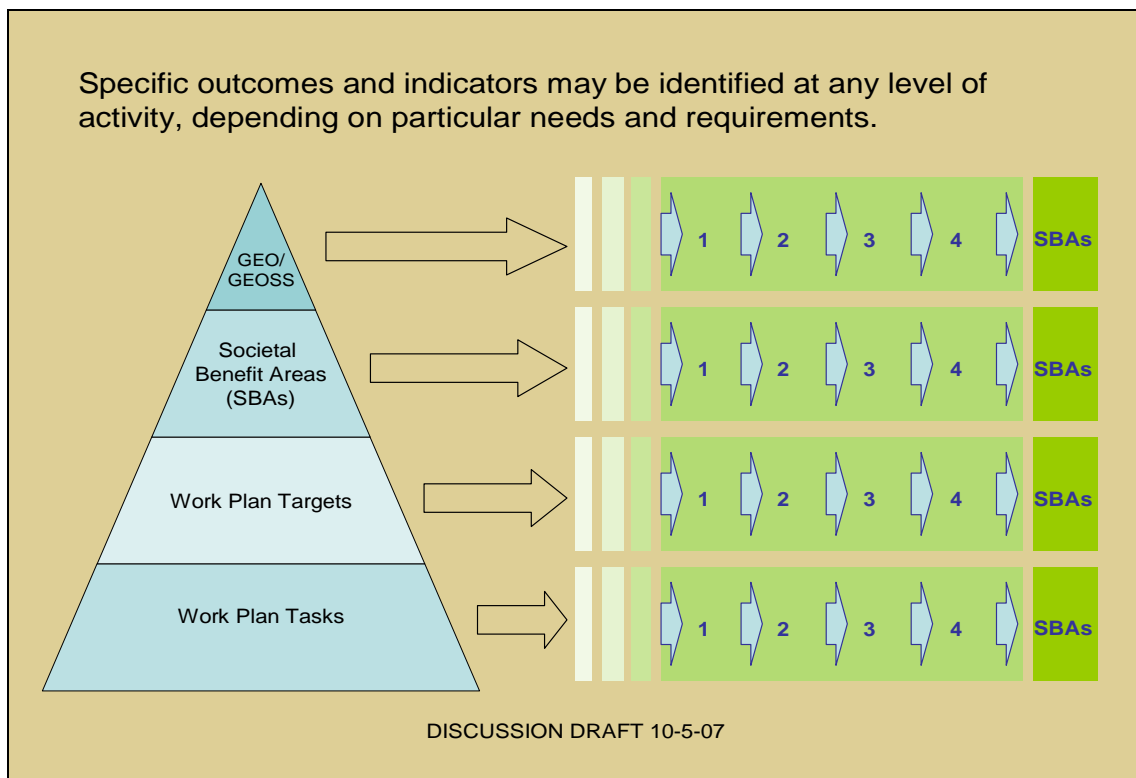
emphasize that the GEOSS approach will grow and adapt, as a practicing, learning, and continuously improving experience that completes and refines the results chain.



The slide above integrates all elements of the previous slides and represents the complete and coherent framework.

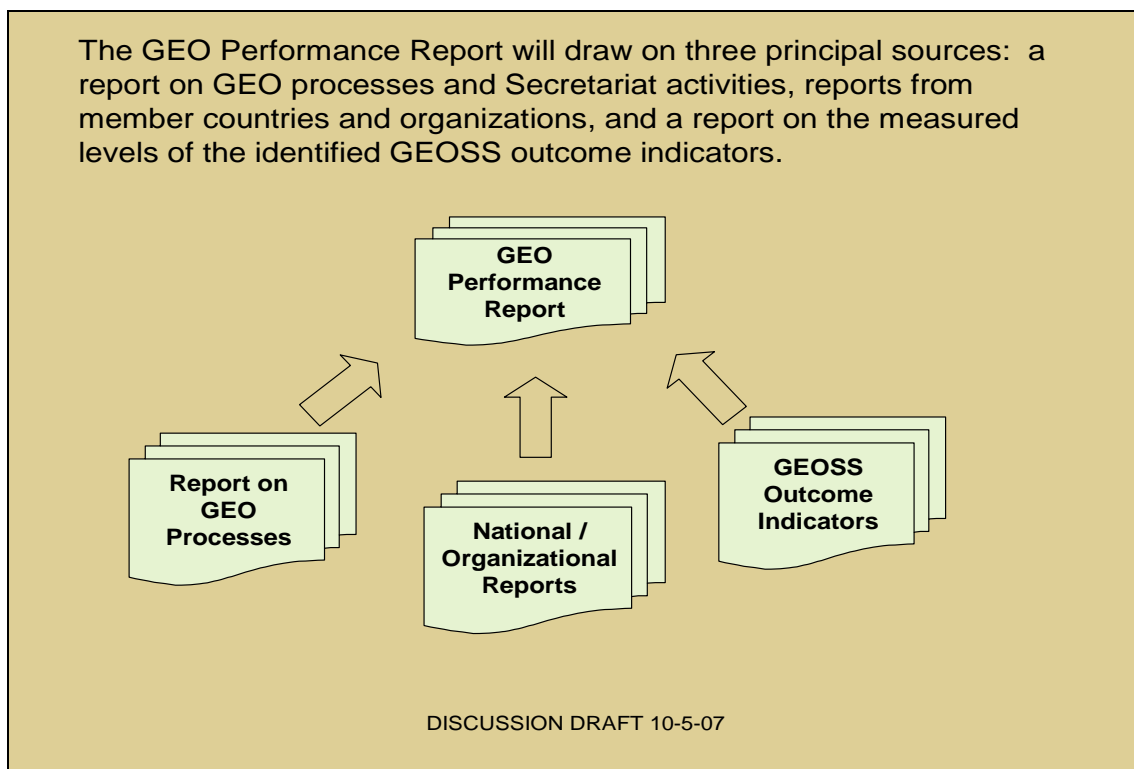
Under “Impacts” note “secondary benefits” -- Although very difficult to anticipate specifically, we assume secondary benefits will be catalyzed by the GEO process/approach, as secondary or novel transverse benefits (cross-cutting or interstitial benefits covering none or multiple Societal Benefit Areas); one might call these secondary benefits an implied hallmark of the GEOSS Implementation Plan.

This entirely filled in “results chain” serves as the overall guiding concept and starting point for future evaluations of GEOSS, i.e., realistic and detailed performance indicator categories within relevant jurisdictions, making as explicit as possible what is expected to be accomplished in the near-and-distant time horizons. The operational level elements aligned in the results chain constitute what we refer to as the Framework. This Framework serves our immediate needs in developing outcome performance indicators, as well as the future needs of evaluations.



As shown in the slide above, adopting this framework enables coordinated tracking across the existing performance indicators and the four outcome performance levels (and potential impacts) for Work Plan Tasks, Work Plan Targets, Societal Benefit Areas, GEO Members, and overall GEOSS.

It is noteworthy to point out – based on some early testing - that in choosing an illustrative example to apply this framework to generate specific outcome performance indicators, even a GEO member’s valued project or program, which is not explicitly mentioned in the GEOSS Implementation Plan or GEO Work Plan, can be applied to this framework. Performance reporting becomes an exercise in comparable information collection and analysis, starting with each GEO member’s outcome indicator performance evidence, per this framework.



The slide above shows the overall GEO Performance Report combines an already established Report on GEO Processes, National/Organizational Reports, and the GEOSS Outcome Indicators reported by GEO membership.

5 PROCESS FORWARD

- Presentation made at GEO User Interface Committee meeting on August 3rd (requested feedback)
- Presentation made at GEO Architecture and Data Committee meeting on September 13th (requested feedback)
- Illustrative examples being worked on are: 1) Canada GEO Secretariat developed the first illustrative example under this framework - Soil Moisture (see Canada GEO Secretariat for more details); 2) United States GEO Secretariat is developing an illustrative example under this framework (AIRNow-International under US GEO's Air Quality Near Term Opportunity) before the GEO IV Plenary.
- Next steps are wider GEO review and testing of this framework. Ownership of the development of outcome performance indicators should be led by each GEO membership.