Recommendations to the High Level Expert Group (HLEG) by
The JRC workshop on aggregation and measurement of sustainable and inclusive wellbeing (SIW)

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The Need to Move Beyond GDP

It is clear that the time has come to move beyond GDP to a broader metric of sustainable and inclusive wellbeing (SIW) (Costanza et al., 2025). The UN High Level Expert Group (HLEG) on beyond GDP was established to help achieve this goal. Key questions that the HLEG must address include (1) how to determine the dashboard of indicators that are needed to assess SIW; (2) how to aggregate the dashboard into indices that can plot overall progress and allow comparisons among countries and regions; (3) how to assess the relative contributions of each indicator to SIW to guide investments; and (4) how to measure the full suite of indicators and SIW globally in a spatially explicit way over time.

We, the undersigned group of experts and practitioners, met at a workshop at the JRC offices in Ispra, Italy from Feb. 13-16, 2026 to address these questions. We are working on these 4 research areas to explore these questions in more detail, but in the meantime, we developed the following set of recommendations for the HLEG.

1. Reducing the number of indicators in a dashboard

There are a very large number of indicators that are related to SIW, but a smaller number is required for practical purposes. A key challenge is how to reduce the large number to something more manageable while losing as little information as possible (Kubiszewski et al., 2025; Wani, 2025). For example the European Commission/JRC started from a 140-variable, comprehensive and balanced subset and used a data quality assessment process to create a final list of 50 indicators. It was not possible, however, to assess whether and by how much the smaller dashboard remained representative of the larger one.

The HLEG are facing a similar issue: it may be relatively easy to agree on a dashboard of 50 or 100 indicators for all dimensions, but more difficult to agree on a small dashboard of at most 20 key metrics. We explored two approaches to assess whether and by how much the smaller dashboard remained representative of the larger one:

1. *An "indicator" perspective*: how much of the internal variation is captured when using the subset instead of the full set, not for a specific LHS variable, but for a broader, even if not fully general set of LHS variables? Possible methods include:
    - Regress the first or first n Principal Components of the full set on the subset of variables
    - Compare the space spanned by the subset of the variables and the full set.
    - Obtain the first (or first n) latent factors of the full set, and assess how close one can get to these factors with the indicators in the subset, one by one or together in a multivariate sense.
2. *An "observation" perspective*: how similar are the observations if one uses all of their attributes (the full set of indicators) versus the subset only? Methods include:

- Create the similarity matrix of all observations using the full set and the subset, and compare the two matrices.
- Select a specific clustering technique, apply it to the observations using the full or the partial set of indicators (attributes), and compare the two clustering outcomes to each other.

We could produce examples of these two approaches for the dashboards being considered by the HLEG for further consideration in the short term. Ultimately a broader consensus on this issue would be possible with further work, including the analysis we are working on and/or work convened at a joint JRC/OECD Knowledge Centre.

2 Aggregating dashboards to produce indices

A composite index is important to plot overall progress, to assess the relative contributions of the various components, and to allow comparisons among countries and regions. Conventional approaches either use linear weighted or unweighted averages to combine normalized factors into a single number (Laguera Gonzalez et al., 2024), or they define SIW *a priori* as subjective wellbeing from life satisfaction surveys and use multiple regression modelling to assess the weights for contributing factors (Helliwell et al., 2021).

A large body of research shows that SIW depends on many determinants, spanning subjective components (e.g., life satisfaction and related self-reports) and objective conditions (e.g., health, education, material security, social conditions, and environmental quality) (Kubiszewski et al., 2025). Importantly, the relationship between these determinants and SIW is rarely linear. Many contributors display non-linear diminishing returns, limiting factor relationships, and sometimes threshold or optimum effects. As a result, simple linear aggregation may misrepresent the way determinants jointly "produce" wellbeing and can generate country rankings that are highly sensitive to methodological choices.

However, it is possible to create indices combining multiple dashboard components that go beyond weighted or unweighted averaging (Biggeri and Ferrone, 2022; Mazziotta and Pareto, 2025) . For example, Mazziotta and Pareto (2016) produced a generalized partially compensatory composite index that incorporates limiting factor effects that penalizes variability between dashboard components. Costanza et al. (2016) suggested a Sustainable Wellbeing Index that used a non-linear, limiting factor formulation combining economic, social, and environmental components.

The UN itself has used combined linear and non-linear aggregation approaches. For example, the planetary adjusted HDI (PHDI) multiplies the HDI (which is the geometric average of GDP/capita, health, and the simple average of two measures of education) by 1- Planetary Pressure (which is the simple average of carbon emissions/capita and material footprint/capita). This recognizes the non-substitutability of human and environmental inputs, while recognizing the substitutability among the human and environmental factors.

Further work on this issue is warranted but several options already exist that address the non-linear, diminishing returns, and limiting factor relationships that exist among the dashboard indicators and others could be developed, perhaps based on new machine learning and AI techniques. Advancements in data, hierarchical modelling and computational power

should enable the development of dynamic, nuanced models of wellbeing that incorporate variability between countries and demographic groups as well as the inclusion of inequity and limiting factors. Such models can form the foundation for a more nuanced and accurate aggregation of domains into a single indicator of SIW.

We recommend that the HLEG not be dissuaded from developing an overall index of SIW due to the current lack of consensus on how this can best be done or the limitations of simple averaging methods. We recommend further work (perhaps convened at a joint JRC/OECD Knowledge Centre) to explore all the emerging options and build a consensus on the best approach.

3 Measuring SIW efficiency

SIW efficiency computes how well available means are transformed into SIW. It thus allows societies to shift from a paradigm of growth (more is better) to one of true development, which focuses on the level of SIW that can be achieved with different sustainable combinations of economic, social, and environmental resources. It recognizes that there are various ways to achieve SIW, and we should be able to evaluate the trade-offs between such alternatives.

If one uses Life Satisfaction from the World Happiness Report (Helliwell et al., 2021) as a proxy for SIW then it is possible to estimate wellbeing efficiency globally for 126 countries (Sarracino and O'Connor, 2022). This analysis clearly shows that wellbeing efficiency is not correlated with economic efficiency. However, a more comprehensive measure of SIW, as discussed above, would allow a more comprehensive measure of SIW efficiency able to guide investments to those producing the highest improvement in SIW.

We recommend that measures chosen by the HLEG enable the estimation of SIW efficiency that also account for international spillovers affecting national well-being. It would be desirable to be able to compute SIW efficiency for different demographics and socio-economic groups, and geographic regions. SIW efficiency and sustainability should be evaluated separately, and they should be evaluated for the entire portfolio of economic, social and environmental resources (from domestic and global sources to account for spillovers), taking into account differences in institutional arrangements (governance). The evaluation may have to account for limiting factors, for example deprivation where it concerns current well-being and inequities and planetary overshoot for future well-being. Global geospatial mapping of SIW would allow these estimations.

4 Global Geospatial Mapping

It is possible with existing technology and teams to generate spatially explicit estimates globally for all the wellbeing indicators on a dashboard at regular intervals along with an overall SIW index. An example of these capabilities using the HDI as a proxy for SIW showed truly remarkable results (Sherman et al., 2026).

We strongly encourage the HLEG to advocate for the use and standardization of new geospatial data and Machine Learning methods to estimate both the components of the chosen dashboard and SIW globally at high spatial resolution and temporal frequency. This would enable both national and subnational estimates over time of both the chosen dashboard and the SIW index.

There are three important issues that this approach can solve: (1) globally, data gaps of SIW exist at the national and subnational scale which can be addressed; (2) SIW can be updated globally more frequently; (3) national-level distributions and sub-national patterns and inequalities can be mapped. These capabilities would take assessment of SIW to a new level and would challenge GDP in terms of rigor, timeliness, and relevance.

There are existing geospatial data groups at the UNDP and JRC which have traditions of collecting, modelling and distributing open and free data that can contribute to this effort. An experimental global spatial information system can be established to report on the indicators defined by the HLEG and the SIW index. A subgroup has been started by UNCTAD, UNDP, JRC and independent researchers, to advance this process for the benefit of National Statistics Offices. We suggest expanding this group to DESA and other entities and consider creating a Knowledge Center at the JRC (jointly with OECD) on Global Geospatial Mapping of SIW combined with the other initiatives listed above.

This initiative does not replace National Statistical Offices, but offers an auxiliary tool to support data collection, integrate and spatially distribute results, and offer solutions to global limitations around coverage, funding, and global standardization, especially in the Global South. Geospatial data also has specific applications to the calculation, tracking, and forecasting of natural capital at a national and subnational level, which can link with SEEA recommendations.

Overall, this is a possibility that has not existed until recently. In combination with the other recommendations of our workshop, it offers new possibilities that can take SIW assessment and management to a new level. It can truly help improve the sustainable and inclusive wellbeing of our people and planet.

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