

EXECUTIVE SUMMARY

Sekong, Sesan & Srepok Basin:

An assessment of freshwater ecosystem health in the Lower Mekong

Supporting a population of about 3.4 million people, the Sesan, Srepok and Sekong (3S) Rivers form an important sub-catchment of the lower Mekong and represent a microcosm of the challenges faced by the entire Mekong River basin. Covering just 10% of the Mekong Basin, the 3S rivers provide almost a quarter of the Mekong's total discharge and nearly 15% of the river's suspended sediment — which, in turn, provides nutrients to the Tonle Sap Lake and inland fishery as well as the Mekong Delta, Vietnam's rice bowl. More than 65 dams, most used to generate electricity, are currently operational in the 3S system, impacting seasonal flows, sediment transport and fish migration. Expansion of the agriculture sector in the 3S has the potential to increase water demand for irrigation, particularly in the dry season, placing additional pressure on water resources.

To help decision-makers assess trade-offs and set priorities for the 3S basin's future, a consortium led by Conservation International applied the Freshwater Health Index (FHI), a pioneering tool for assessing basin health in three components: ecosystems, water services and governance. Working in collaboration with government officials and non-profits from Lao PDR, Cambodia and Vietnam in partnership with the IUCN BRIDGE network, a team of experts measured 11 key indicators, with 25 sub-indicators, all scaled from 0-100 for ease of interpretation. Stakeholders representing ministries, national Mekong committees, academia and civil society provided input into the process and helped identify top priorities. This first ever comprehensive look at freshwater health in the 3S basin provides several insights for further analysis or possible policy action.

KEY RESULTS

- The 3S basin received a score of 66 for Ecosystem Vitality, indicating that the ecosystem itself is moderately healthy. Looking more closely, however, shows that, while natural land cover and water quality scored relatively high, signs of stress are revealed by the high number of threatened and invasive aquatic species.

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**FRESHWATER
HEALTH INDEX**

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- The score of 80 for Ecosystem Services suggests that the basin is generally meeting the needs of the people who depend on it, though there is some variation among the types of services — provision of water and biomass scored highly, but regulating services scored considerably lower.
- The overall score for the Governance & Stakeholders component was 43, with little variation among the major indicators that fall within it. This is the lowest performing component for the basin, and improving this score should be a top priority for decision-makers in all three countries.
- The major current pressure on the ecosystem is dam operation, which substantially modifies the natural water flow and decreases sediment flows. Water is retained in the wet season and released during the dry season, and significant amounts of sediment that naturally nourish agricultural land and fisheries downstream are instead being retained within reservoirs.
- Stakeholder Engagement in the 3S basin received a score of 46 and was weighted highest (along with Enabling Environment) by stakeholders. Information Access scored particularly low here (41), and stakeholders noted a lack of access among different agencies within the same country as well as across countries.

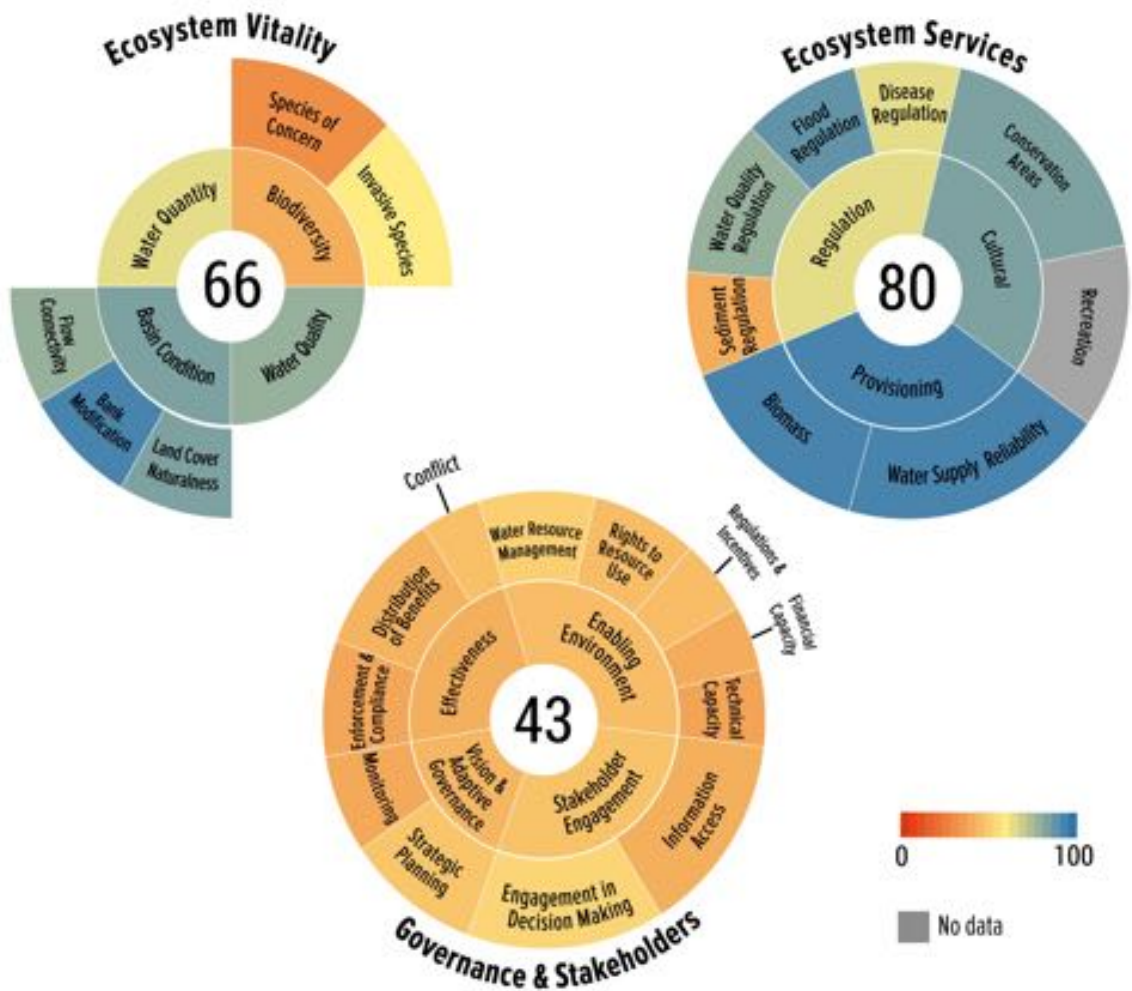
CONCLUSIONS & NEXT STEPS

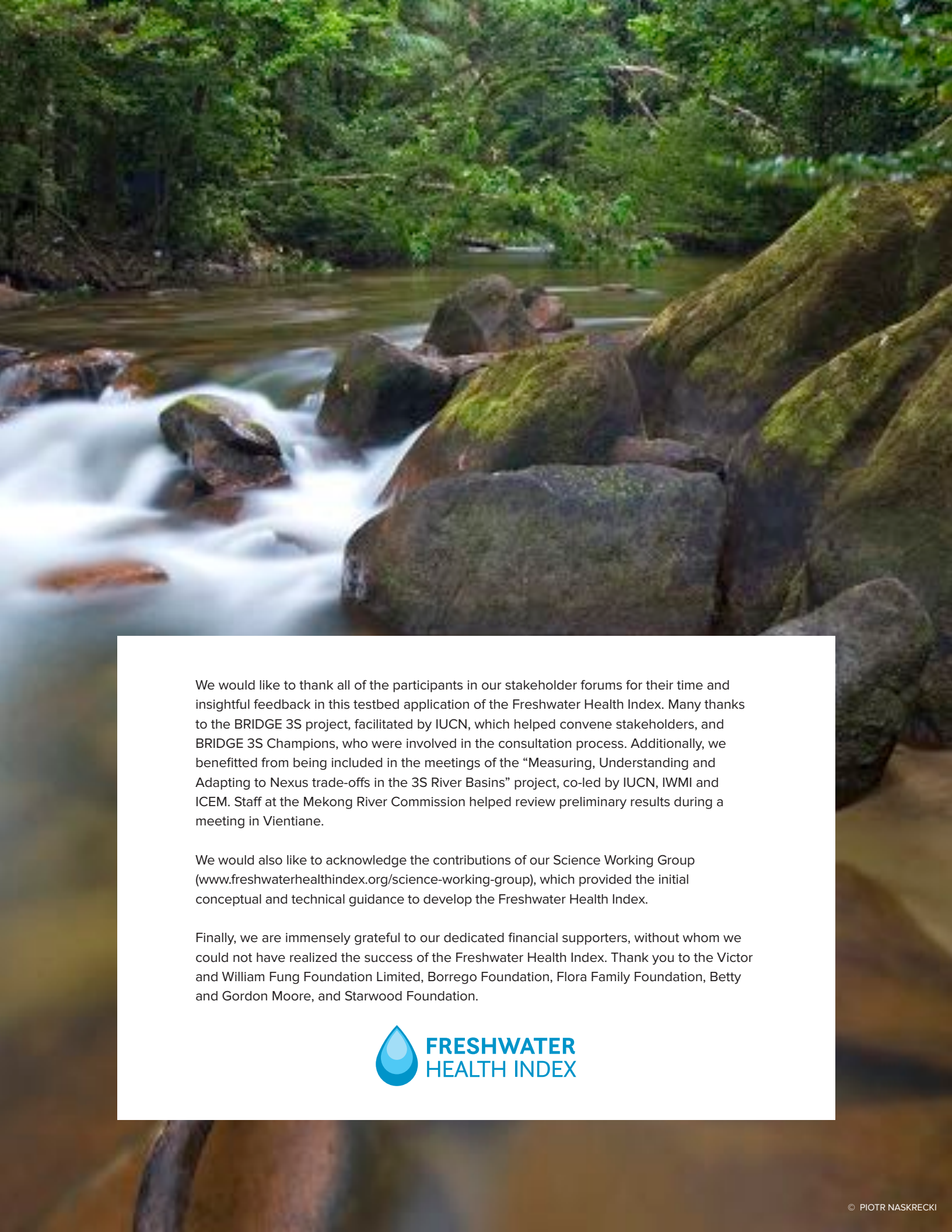
Overall, the results for the 3S basin assessment matched expectations of a basin meeting present needs but showing signs of ecological stress, and with a governance system in place that will need to substantially improve to ensure that further economic development does not undermine the basin's sustainability. This first Freshwater Health Index assessment provides the basin's river managers and stakeholders with a set of transparent and justifiable metrics that can be used to develop a shared vision of water resource management. As the 3S basin is rapidly developing, with numerous hydropower dams being constructed in Lao PDR and Cambodia, frequent updates to the FHI metrics will be required to track the inevitable changes in basin health. The Index can provide guidance on future basin development by applying a range of scenarios; for example, the impact of selected dam cascades and re-calculating relevant metrics.

We identified some data gaps that should be addressed prior to a subsequent assessment. Although the basin is generally water-rich, and scarcity is not a concern, sectoral and spatial data on withdrawals should be collected to better understand seasonal supply reliability, and environmental flow requirements for each river should be established and included in subsequent assessments. Because of the importance of freshwater fisheries in the region, standardized data on fish catches would be useful as well. Similarly, the Mekong basin is one of the world's biodiversity hotspots, and so more frequent regional assessments of aquatic species are needed to track population changes. Recreation services were not measured in this assessment due to a lack of data, but stakeholders noted the potential for developing water-based recreation in parts of the 3S.

Finally, as this was the first attempt to assess governance in the 3S basin, we focused on the governance situation in each of the three countries. However, because the 3S is a transboundary basin, it will also be useful to develop further insights into how well transboundary governance is performing.

With the large number of additional dams in various stages of planning in the 3S, an immediate next step is to continue working with stakeholders to create scenarios for dam development and model their impacts using a sub-set of the FHI indicators. Additional scenario options could consider land-use change (e.g., plantation agriculture development, or reforestation and rehabilitation) as well as potential climate change impacts. All of these will help stakeholders identify undesirable trade-offs and possible synergies, and begin setting quantitative targets for safeguarding the 3S's health.





We would like to thank all of the participants in our stakeholder forums for their time and insightful feedback in this testbed application of the Freshwater Health Index. Many thanks to the BRIDGE 3S project, facilitated by IUCN, which helped convene stakeholders, and BRIDGE 3S Champions, who were involved in the consultation process. Additionally, we benefitted from being included in the meetings of the “Measuring, Understanding and Adapting to Nexus trade-offs in the 3S River Basins” project, co-led by IUCN, IWMI and ICEM. Staff at the Mekong River Commission helped review preliminary results during a meeting in Vientiane.

We would also like to acknowledge the contributions of our Science Working Group (www.freshwaterhealthindex.org/science-working-group), which provided the initial conceptual and technical guidance to develop the Freshwater Health Index.

Finally, we are immensely grateful to our dedicated financial supporters, without whom we could not have realized the success of the Freshwater Health Index. Thank you to the Victor and William Fung Foundation Limited, Borrego Foundation, Flora Family Foundation, Betty and Gordon Moore, and Starwood Foundation.

