



## **Fragmentation and flow regulation of the world's large river systems**

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We present a global analysis of dam-based impacts on 292 large river systems, all with a mean annual discharge  $>350 \text{ m}^3/\text{s}$ . River systems are classified as unaffected, moderately or strongly impacted, according to the degree of channel fragmentation and flow regulation within the basin. Results show that over half (172 out of 292) of the world's large river systems are either moderately or strongly impacted by dams, including the eight most biogeographically diverse systems. When discharge and catchment area are considered, the proportions of impacted rivers are 83% and 88%, respectively, revealing that most unaffected rivers are comparatively small. Ten of the world's sixteen biomes consist predominantly of impacted basin area. Dam impacted catchments experience higher irrigation pressure and about 25 times as much economic activity per unit of water as unaffected catchments. As demands on water resources increase, these data can help address the ecological risks associated with dams in large river systems.