WISSENSCHAFTSRAT

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# Summary
# Recommendations on a New Deep-Sea Research Vessel (Successor of RV "Sonne")

**["Stellungnahme zu einer umfangreichen Forschungsinfrastruktur für die Grundlagenforschung: Tiefseeforschungsschiff (Nachfolge Forschungsschiff ‚Sonne')"]**


Research vessel (RV) "Sonne", built in 1968, will go out of service by 2013, at the latest. By then, the craft will have been engaged in research activities mainly in the Indian and Pacific Oceans for more than 40 years. RV "Sonne" is one of seven German research vessels that can be deployed for basic marine research outside German coastal waters. Once she is decommissioned, the remaining fleet capacities would be inadequate for the continued exploration of the geographic areas and the fields of science where RV "Sonne" is active. In an expert assessment report, much of the proposal-based research carried out on the "Sonne" was rated excellent: it contributed essentially to new insights and advances in the fields of climate change, marine resources and deep-sea biodiversity as well as geodynamics and geo risks.

The planned new deep-sea research vessel will carry on the work of RV "Sonne". The above-mentioned research fields offer significant scientific potential, with two fields of general societal relevance standing out particularly: (1) Climate change and human-induced pressures on the Earth's ecosystems present huge challenges for society that give rise to an increasing need to study the role of the oceans in the climate system. The service period of the new research platform will coincide with a time of major climate changes. Many biogeochemical processes, the Earth climate and the global ecosystems can be understood only through further knowledge about the Indo-Pacific region. For instance, there are biological, physical, chemical and geological formations that are unique to that region or can be found only there in a specific form. The second focus area (2) is the investigation and exploration of marine resources. The oceans hold minerals, oil and natural gases that wait to be exploited in a sustainable manner. In addition, there is an enormous and largely unknown diversity of habitats and species in the deep sea with potential relevance for the "blue technology" left to be explored.

The presence of European research vessels on in the Indo-Pacific region is relatively poor. Currently, the “Sonne“ is the only European research vessel to carry out continuous and regular research in this region. Her planned successor, too, will be the only European research vessel on permanent duty in the Indian and Pacific Oceans. This will make the “Sonne”-successor the most important research platform for all scientists that are active in the above-mentioned fields. It is not only important for German basic marine research, but will be an asset for European and global marine research also.

The successor of RV “Sonne” will be a multidisciplinary, technically highly advanced, globally operating deep-sea research vessel of outstanding performance and flexibility. This concept allows a wide spectrum of technical applications and deployment options not offered to the same extent by other German research vessels. In terms of its capability, the new vessel will be far superior to its predecessor as recent technological advancements and innovations require the vessel replacement to meet certain design requirements so it remains state-of-the-art in the decades to come. Moreover, the planned deep-sea research vessel will be equipped in such a way that it will be compatible with technologies and large gear developed in other European countries.

There are no fundamental obstacles against the construction of the successor for RV “Sonne”. The required technical design and technologies envisaged for the project are available. The societal and scientific relevance of the above-mentioned research fields, in which the vessel will be active, is beyond doubt. Because of the impending retirement of RV “Sonne”, the construction of her successor is of high priority.

The Wissenschaftsrat rates the planned new deep-sea research vessel (successor of RV “Sonne”) as unconditionally ready for funding.