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## **Energy consumption challenges in clustered cognitive radio sensor networks: A review**

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### **Abstract**

Cognitive radio sensor networks (CRSNs) employed clustering topology to help sensor nodes operate autonomously improve energy consumption, provide quality of service without causing any uncontrollable interference. Albeit, clustering topology is difficult to implement, appropriate implementation can reduce the network complexities and achieve the desired results. Presently, several approaches have been proposed and developed over the years with each having its own strengths and weaknesses. This paper therefore, surveys clustering topologies in CRSNs with a focus on energy consumption using twelve (12) articles. The analysis shows that different cluster schemes are deployed for different objectives, and their adoption increased significantly due to better resource management. Moreover, being known for network partitioning into sub-networks, they are appropriate for heterogeneous systems, homogeneous systems or even both. Despite the promising performance of existing schemes, with proper management of clusters, elevation of energy efficiency can be achieved cost-effectively.