

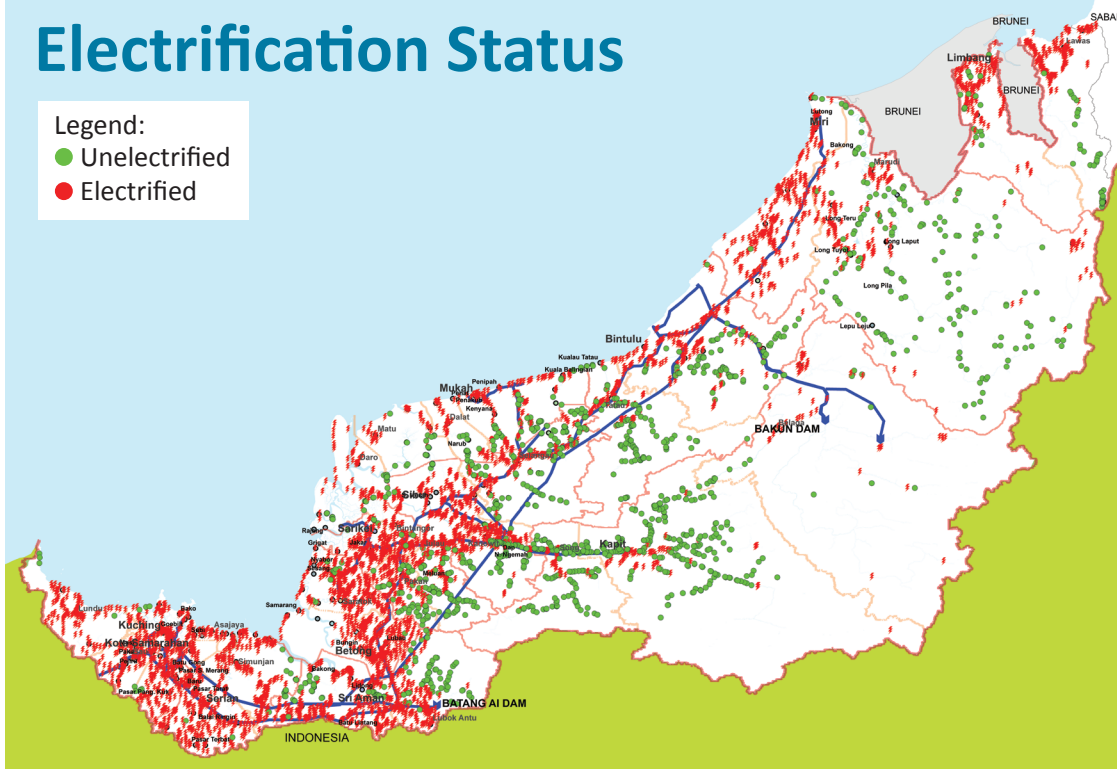
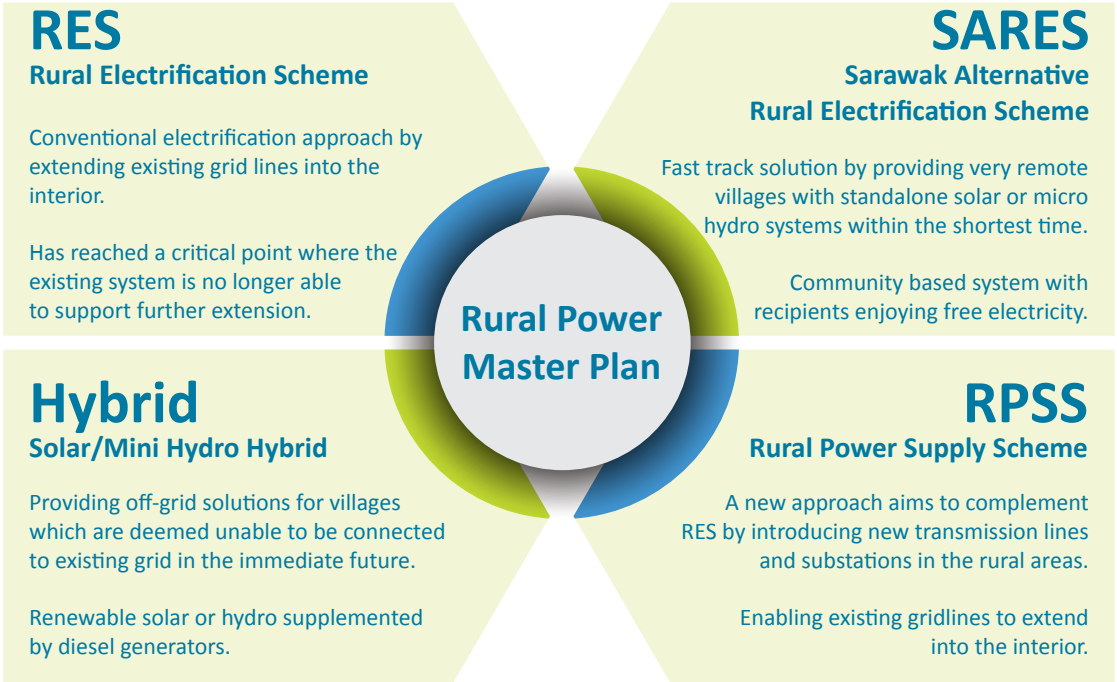


In 2009, the overall state domestic coverage was 79% with rural population electricity coverage at only 56%. Today, the rural population electricity coverage is about 90%, increasing the overall coverage to about 95%. This rapid growth was made possible due to the concerted effort, cooperation and commitment to provide electricity to all Sarawakians by the relevant agencies.

The Ministry of Utilities Sarawak (MoU), in collaboration with Sarawak Energy, is aiming to connect more than 30,000 remaining rural households towards achieving full electrification by 2025. Almost half of Sarawak's population is rural-based, living in townships, bazaars, villages and longhouses spread across the state's vast geographical landscape, winding rivers, dense rainforests and rugged terrain.

The State Government's vision is to ensure all rural communities including the most remote and inaccessible upriver communities are connected to constant 24-hour electricity supply. The focus of rural electrification is to extend the grid to reachable areas while standalone systems employing alternative electricity sources are used for regions too remote for grid connection so communities can do away with expensive and noisy diesel generators.

Rural electrification in Malaysia began to accelerate in 2009 when it was made a National Key Result Area (NKRA) by the Federal Government. In Sarawak, RM3.5bil has been spent under the Rural Electrification Scheme (RES) to electrify approximately 102,000 households up to 2016 and 110,000 households in about 4,000 scattered villages as of September 2017.



Rural Electrification Scheme (RES)

RES is a strategy to extend the existing State Grid through the construction of electrical distribution poles and supply lines to un-electrified areas.

Rural customers can apply for RES from their respective Resident and District offices. The Ministry of Utilities is the coordinator with Sarawak Energy providing technical support, supervising government-appointed contractors in the construction, testing and commissioning of the installations before taking over operations and maintenance.

RES projects normally take 10-18 months to complete. However, this may take longer if there are wayleave issues or challenging terrain conditions. To facilitate the implementation, dialogue sessions are held with communities to provide clarity on the project's scope of works and the necessary process and procedure to receive electricity supply.

Power to Grow
www.sarawakenergy.com.my



Sarawak's vast geographical landscape includes winding rivers, dense rainforests and rugged terrain



Among the logistical challenges faced by the Rural Electrification team to light up remote communities

Strategising for Full Rural Electrification Coverage

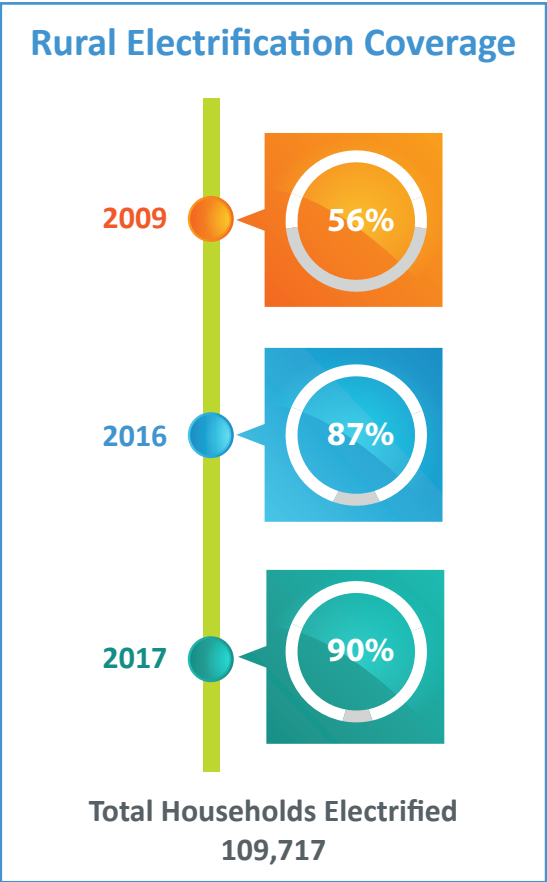
A strategy to electrify the remaining rural households was formulated in 2015 under the Rural Power Master Plan, following which an intense and structured effort was undertaken for implementation.

The plan aims to accelerate rural electrification through a variety of programmes with government funding. This plan will see the expansion of high voltage distribution network from the existing grid under RES; RPSS in extending Extra High Voltage (EHV) transmission network into rural areas; and Hybrids and Sarawak Alternative Rural Electrification Scheme (SARES) for standalone renewable alternative systems for the most remote inaccessible areas.

The simultaneous implementation of these programmes will speed up the government's electrification plan, catalysing rural development to close the gap between rural and urban communities, enabling the State's digital economy agenda to reach our rural communities to help realise Sarawak's vision to become a developed state by 2030.

About 5,000 rural households with ready road access and/or are close to the State Grid will be connected under RES. A further 18,000 households can only be connected once there is accessibility to these villages.

Finally, for the remaining households located at remote corners of the state, the community-based SARES initiative aims to accelerate full coverage to the remotest communities in the state. This RM500mil scheme, which will electrify 8,700 households between the period 2016-2020, involves the construction of standalone alternative systems, utilising micro-hydro or solar technologies. Since launching, about 1,400 households have been electrified through this scheme.



Giving our children a brighter future, by ensuring they have access to reliable 24-hour electricity supply

Powering the Interior – Standalone Solar Hybrid Power Stations

There are currently 24 solar hybrid power stations in operation throughout the interior of Sarawak, including 4 recently commissioned in 2017 benefiting 870 households in Marudi, Tatau and Belaga. Another 15 stations in various stages of implementation are expected to be commissioned within the next two to three years.

Sarawak Energy through the Rural Off-Grid Operation Division has been appointed by the government to undertake the operation and maintenance of these solar hybrid stations.



More rural communities can now enjoy reliable and renewable electricity, 24 hours a day

Sarawak Alternative Rural Electrification Scheme (SARES)



SARES is an innovative government-community partnership model. An integrated initiative of the State Government, it aims to provide 24-hour electricity supply to remote communities where it is not feasible for connection to the State Grid.

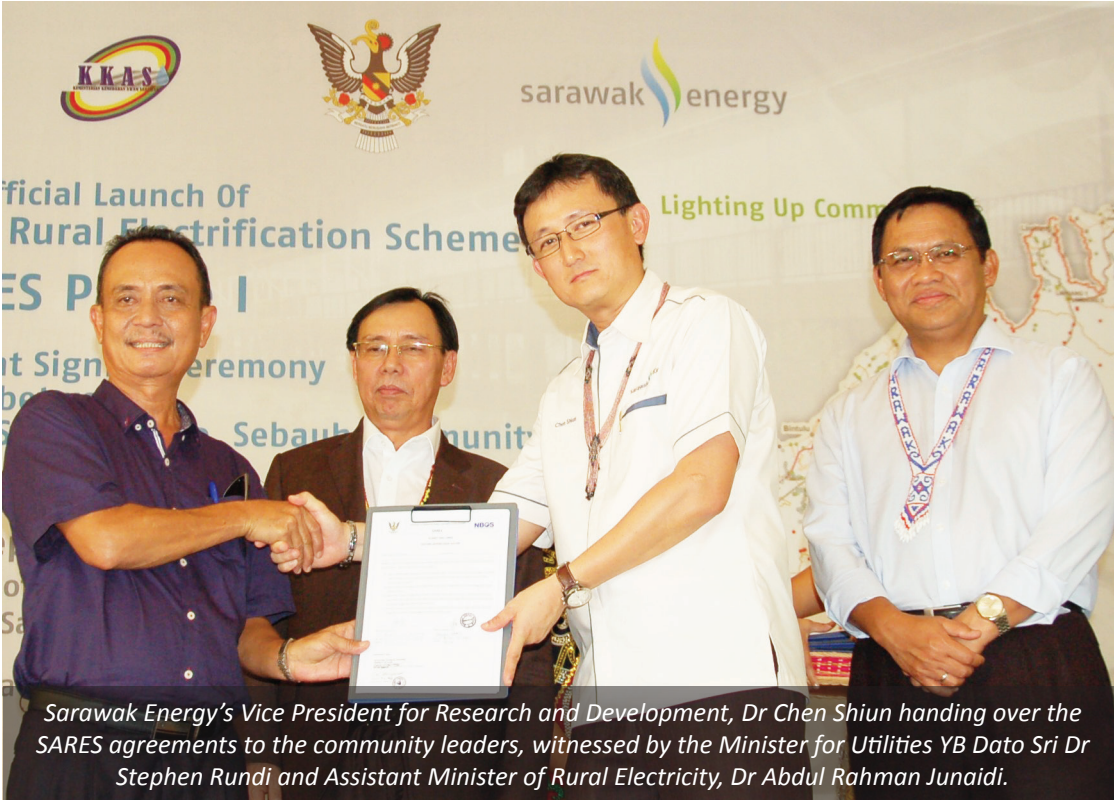
The scheme mobilises government machinery and agencies to help villagers build and subsequently own and operate more sustainable and affordable electricity generating systems.

Three hundred isolated villages comprising 8,700 households, have been identified for this community-based scheme utilising micro-hydro and solar systems over 2016 to 2020.

Since December 2016, 57 villages in Ulu Skrang, Sebauh, Katibas, Bukit Mabong, Nanga Medamit and Ulu Pelagus have been electrified under SARES.

About 32 villages in Tatau, Sg Pila, Katibas, Sg Gaat, Marudi and Limbang, will be lighted up this year with another 27 villages in Marudi, Telang Usan, Sg Oyan and Julau will be lighted up by July 2018.

The systems cater for basic rural household electricity needs with lighting, fans, a television, freezer and cooker, and are simple in design without compromising on safety. SARES alleviates the burden on villagers by eliminating dependency on costly diesel generators with only limited hours of supply.



Sarawak Energy's Vice President for Research and Development, Dr Chen Shiun handing over the SARES agreements to the community leaders, witnessed by the Minister for Utilities YB Dato Sri Dr Stephen Rundi and Assistant Minister of Rural Electricity, Dr Abdul Rahman Junaidi.



Long Urun Solar Hybrid Power Station

Under this programme, a remote community in Belaga now enjoys 24-hour supply of affordable and renewable electricity through the completion and commissioning of the 689-kilowatt Long Urun Solar Hybrid Power System.

Built at a cost of RM53mil, this federally funded project in Long Urun began in 2015 under Sarawak Energy's supervision and was commissioned in October 2017.

The system currently powers over 245 households in 12 villages: Long Sivau, Long Liten, Long Apok, Uma Pawa, Uma Badeng, Long Dulit, Long Ketuet, Long Balau, Rumah Pera, Long Data Sengelang, Long Tengah 1, Long Tengah 2.



Community-based SARES involves the construction of standalone alternative systems utilising solar technologies



Long Banga micro hydro system

Rural Power Supply Scheme (RPSS)

The Rural Power Supply Scheme (RPSS) aims to connect rural areas to the main transmission grid, by constructing new transmission lines and substations in the rural interior to form part of the integrated transmission system.

Extra high voltage rural transmission substations planned under RPSS include Tatau 275kV, Kanowit 132kV, and Ba'Kelalan 132kV.

All of these will further strengthen supply in their respective areas, supporting future rural economic growth.

The Way Forward #LightingUpCommunities

Sarawak Energy's Research & Development team is focused on accelerating the rate of electrification in the state by looking into various innovations, ideas and technologies.

In order to prevent unnecessary interruption from vegetation and animal contact, Sarawak Energy is replacing normal bare overhead line conductors with PVC covered overhead line conductors. This also reduces the right of way required for the erection of line towers.

Feasibility studies are being conducted on utilising Station Service Voltage Transformers to electrify villages nearby existing EHV infrastructure.

Through intense efforts under the Rural Power Master Plan, the application of technological innovation, creative thinking and multi-agency collaboration, the State's vision to achieving full electricity coverage by 2025 is closer to realisation.



Weir at Long Banga Micro Hydro Station at Ulu Baram