

In summary

Please be advised that connection to the national grid from any of these renewable energy installations requires prior approval from Tenaga Nasional Berhad and SEDA. Visit www.seda.gov.my for more information.

www.tnb.com.my

A basic guide to renewable energy





Introduction

This leaflet provides information on the types of renewable energy that can be used to generate electricity under the Government's Feed-in Tariff Scheme.*

The primary goal of this scheme is to help reduce the nation's dependency on fossil-fuels (coal, oil and gas) with a view to offsetting (in some small way) the impact of climate change in the long-term.

**Subject to eligibility and approval by SEDA (Sustainable Energy Development Authority) & TNB (Tenaga Nasional Berhad).*

What is renewable energy?

Renewable energy is generated from a diverse range of replenishable sources inclusive of: solar, wind, wave, tidal, hydropower, biogas and biomass. They are secure, inexhaustible and generally cause little or no pollution unlike fossil-fuels.

With specific regard to the Feed-in Tariff Scheme, solar, biomass, biogas and hydropower have been identified as the most ideal sources of small-scale energy generation.



What is solar?

The energy generated by the sun is called solar energy. It is the cleanest and most abundant renewable energy source available and is captured with photovoltaic (PV) panels to generate electricity.

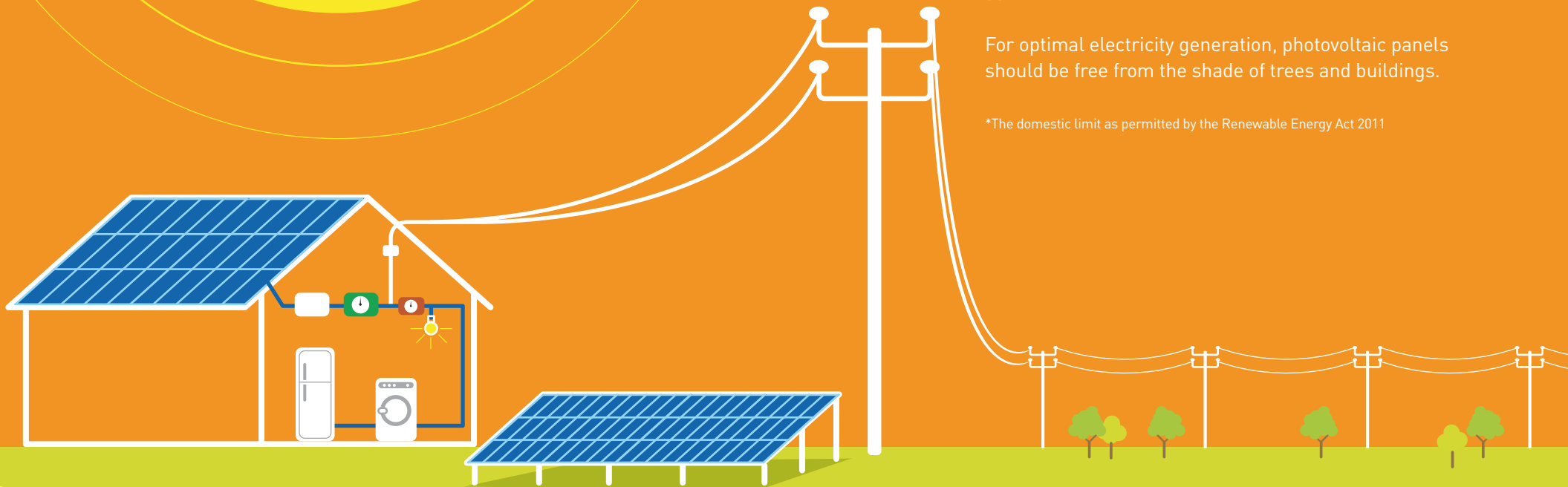
What is a photovoltaic panel?

Photovoltaics is a method of generating an electric current by exposing semiconducting material to sunlight. Long established as eco-friendly, photovoltaic panels work without moving parts or environmental emissions and, if installed correctly, require next to no maintenance. They even work on cloudy days.

There are many types of photovoltaic panels such as crystalline cells, thin-film and hybrid. While they vary in size, they can be connected together to form both roof and ground-mounted arrays that may cover anything from several to hundreds of square meters; a domestic roof-mounted array can generate as much as 12kW.*

For optimal electricity generation, photovoltaic panels should be free from the shade of trees and buildings.

*The domestic limit as permitted by the Renewable Energy Act 2011



What is biomass?

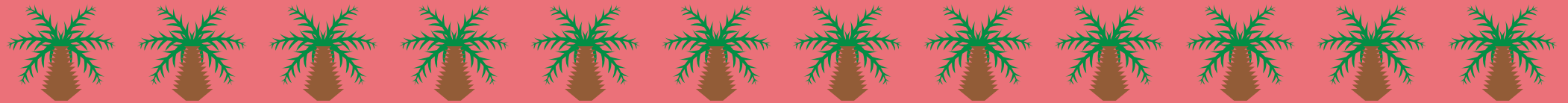
Biomass refers to the energy locked within living or recently living organisms.

Wood is by far the largest biomass resource but other sources include energy crops, grassy and woody plants, by-products of forestry, agriculture and animal husbandry, oil-rich algae as well as biodegradable municipal and industrial waste.

Biomass may come in the form of logs, pellets or chips and is usually burnt in a conventional boiler, a combined heat and power unit or using more advanced thermal conversion technologies to produce heat and/or make steam that drives a turbine to produce electricity.

What is a biomass plant?

Small or community-scale biomass energy plants convert renewable biomass fuels to heat and generate electricity just like fossil-fuel fired power plants. They typically comprise of a boiler, a flue and connecting pipework, a turbine and a generator.



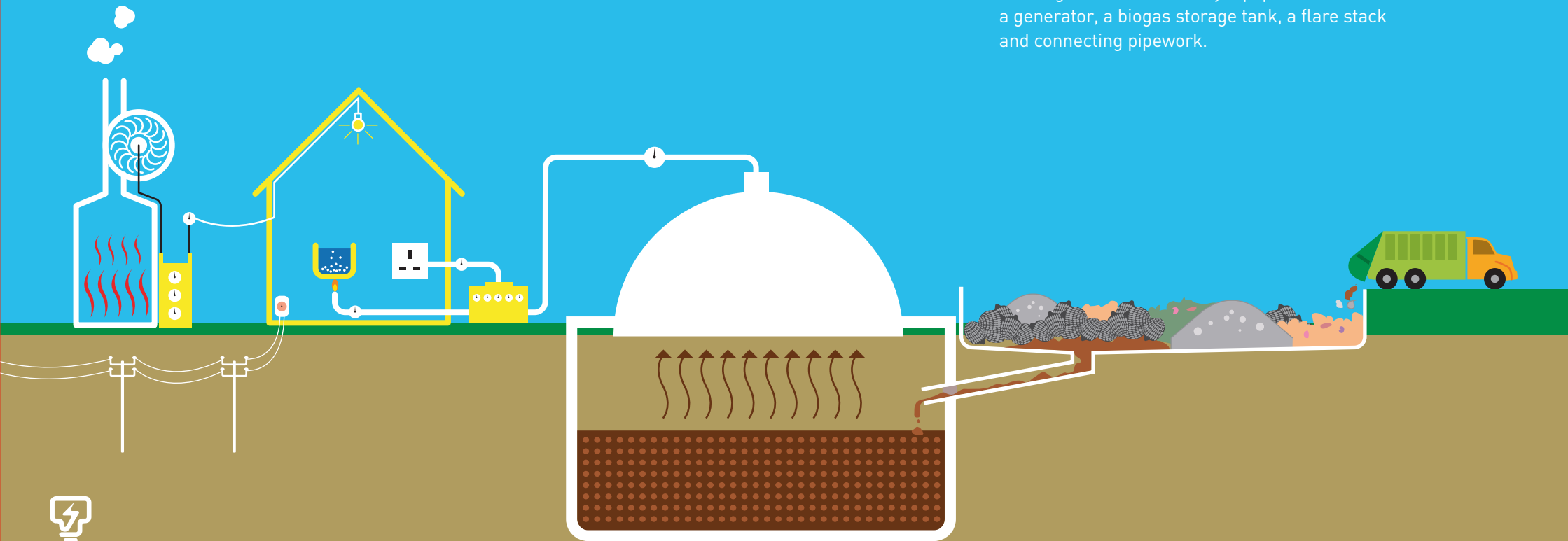
What is biogas?

Biogas is a mixture of gases produced by the breakdown of organic matter in the absence of oxygen. These gases are highly flammable and can be used therefore, to generate electricity via combustion. This method of energy generation is widely used in the agricultural sector.

What is a biogas plant?

A biogas plant uses materials from farming such as manure as well as organic waste materials from both the food industry and agriculture.

Plants typically comprise a digester tank, buildings to house ancillary equipment such as a generator, a biogas storage tank, a flare stack and connecting pipework.



What is hydropower?

Hydropower describes the energy harnessed from falling or running water. Used since ancient times to power mechanical devices such as watermills, sawmills, cranes and lifts, the power of water is used to drive turbines connected to an electrical generator.

What is a mini-hydropower plant?

A mini-hydropower scheme refers to a domestic-based or community-scale plant that uses the energy of flowing water to produce electricity.

The water flows via a channel to a turbine connected to a generator which then converts motion into electrical energy.

