



PUM experts possess extensive knowledge of energy generation and conversion technologies. They give advice on energy efficiency measures aimed at conserving energy in various sectors. Through their projects, our Energy experts contribute to Sustainable Development Goal 7, Energy for a sustainable society.

Energy

Affordable and reliable energy is often essential for further development and improving living conditions. At the same time, the impact of fossil fuels on global warming drives the urgent need to transition to renewable sources. In the coming decades, fossil fuels will increasingly be replaced by solar, hydropower, wind, biomass and geothermal energy especially in tropical regions where solar energy is abundant.

In sectors where energy costs form a large part of operational expenses, even modest energy-saving measures can reduce consumption by 20% or more. This not only cuts emissions but also significantly boosts profitability.

In many countries where firewood and charcoal are commonly used for cooking or heating, the shift to sustainable energy carries another major benefit: reducing the pressure on forests and preventing serious deforestation.

PUM experts support businesses and organisations in identifying opportunities for renewable energy and implementing energy-saving measures. Their advice contributes to both economic resilience and environmental protection—supporting a more sustainable energy future.

PUM experts have vast know-how of technologies to generate and convert energy but also on energy efficiency measures to save energy, in industry and other commercial enterprises as well as in consumer applications. They have knowledge of the latest developments and share a network in Dutch and European companies active in the energy sector. They are well equipped to transfer their knowledge and experience in trainings and seminars. Also the environmental effects of energy generation/conversion/consumption (like air pollution and waste materials) are covered by PUM's energy experts.

What can the PUM expert do for you?

The PUM expert will look at your specific situation and give recommendations that provide you with the best result at the lowest possible costs. We can calculate what the best drying conditions are, what air flow and temperature you need to dry your products. We can help you to design the dimensions of your drying system or greenhouse. The materials required for the construction of a drying system are usually simple materials and low-cost. They can be made locally and installed at your premises.



Roméo Gobou

Director CFPP-IRETI N'LA, Benin

“As a result of the improved solar panel course, we are confident that more students will register, providing us with more income to invest in our own building in the future. Last but not least, a larger number of educated solar specialists will have an impact on the entire population of Benin, in social, economic, and ecological fields.”



Areas of expertise

Distributed energy generation from renewable sources

- Solar electricity generation and storage, both in offgrid systems and grid connected systems.
- Thermal solar systems, including hot water systems (hotels, hospitals) and solar dryers (food processing).
- Solar driven pumping systems for fresh water and irrigation.
- Hydropower generation.
- Biomass (combustion, gasification, fermentation)
- Biogas, biofuels (conversion of waste oils).
- Geothermal energy generation.
- Application of wind turbines.
- (e-) Training: at site, online or hybrid format

Distribution (networks) & conversion of energy

Not only the generation, but also the distribution needs to be taken care of in a reliable and safe fashion.

Efficient use of traditional energy sources (fire wood, (liquefied) gas), energy savings

Where still traditional sources are applied, one should take care that they are handled in an (energy) efficient way.

Co-generation of heat & power (CHP-systems)

Efficiency can be greatly boosted when heat and electricity are generated in combination.

- The avoidance of harmful effects of energy processes.
- The economy and marketing of energy operations.

Solar Drying

Do you want to improve the quality or increase the capacity of your dried products? Are moisture levels too high, affecting shelf life and preservation? PUM can help you implement more efficient solar drying systems, such as greenhouses or dedicated drying rooms.

Common Challenges

Drying is essential for products like fruit, grains, and fish—but in tropical regions, high humidity can make this difficult. Drying in open air risks rain, contamination by animals, and mould formation due to slow drying and poor moisture control.

Effective Solutions

Drying indoors, for example in a greenhouse, offers clear benefits:

- Protection from rain
- No contamination by animals
- Higher temperatures and better evaporation

Client examples

Solar energy savings in hotels

Our experts have executed energy audits resulting in advice on energy saving measures. A chain of eco-hotels faced fast growing electricity bills. Following a well-structured checklist simple energy savings of about 25% could be identified. With the application of solar PV and Solar Hot Water and improved control of energy functions (airco, lighting, cooking, etc.) additional saving of 30 % could be proposed, with a return on investments of less than four years.

Bio energy from farms

Huge energy generation is feasible turning animal manure into biogas (using the residues as fertilizer). In several cases high volumes of biogas were obtained from poultry waste. Other applications range from sugar cane bagasse and other crop waste to be turned into biogas (methane) or biofuel (methanol).

Solar pumps for irrigation

In co-operation with the PUM sectors “Water, waste & environment” and “Agriculture” we advised the replacement of diesel driven pumps with (submergible) pumps run on solar electricity. Such pumps avoid expensive fuel for the diesel pumps and with a water storage bin allow for controlled irrigation at selected periods. Combined with a water saving system of drip irrigation and appropriate fertilisers the harvest was doubled. Environmental benefits are less noise and air pollution and reduction of CO₂ emissions. Return on investment is as low as about three years.

Still, conditions inside the greenhouse must be right. Temperature and airflow are crucial. Thermal solar panels can further improve performance by heating incoming air, allowing more control and increased drying capacity. Natural convection can drive airflow, or ventilators can be added for even better results.

PUM experts have extensive knowledge in solar drying technologies and can support you in designing and optimising systems that improve product quality, reduce waste, and keep energy costs low.

Professional people for positive impact



PUM collaborates with businesses and organisations to grow sustainably and build a brighter future for their community. Check [PUM.nl](https://www.pum.nl) for more information and criteria, and apply for advice.