

# Jatropha Oil as Liquid Energy Storage for a World 100% Renewable Energy Supply by 2050.

## Resources, Financial, Technical and Political Aspects

Dr. Georg Gruber<sup>a</sup>, Bernhard Dalheimer<sup>b</sup>, Hans-Josef Fell<sup>c</sup>

<sup>a</sup> *Vereinigte Werkstätten für Pflanzenöltechnologie Dr. Gruber/Gruber GbR (VWP),  
Am Steigbühl 2, 90584 Allersberg, Germany*

<sup>b</sup> *University of Göttingen, Department for Agricultural Economics and Rural Development,  
Platz der Göttinger Sieben 5, 37073 Göttingen, Germany*

<sup>c</sup> *Energy Watch Group  
Albrechtstraße 22, c/o DWR eco, 10117 Berlin, Germany*

### **Abstract**

This paper sets out to assess the potential contribution of bio fuel retrieved from Jatropha oil to a simulated 100% renewable energy mix to meet global demand. Emphasis is placed on sustainability of production where environmental and social dimensions prevail. GIS tools are used to determine area availability and, productivity parameters are retrieved from the relevant literature to establish technically feasible production quantities. Subsequently, those results are just exposed to energy demand and exposed to labor markets in order to determine income and job potential considering the whole spectrum of Jatropha products and uses. Finally, the full supply chain from the field to the wheels is put in context of social business cycle concepts to determine opportunities for particularly rural areas and small-scale farmers in developing regions around the globe. The results indicate that current resource endowments would enable quite substantial production quantities, although much more moderate in dimension than propagated in the past decades. However, income and labor opportunities are remarkable, especially for the decades to come.

*Keywords:* Jatropha oil, GIS, sustainable biofuels, social business cycles, pure vegetable oils