

Tackling Global Climate Change with High-level Skills in Renewable Energy Technologies



Frank Duyker

Victorian Government (TAFE)/ISS Institute Fellowship

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ISS Institute

Suite 101
685 Burke Road
Camberwell Vic
AUSTRALIA 3124

Telephone

03 9882 0055

Facsimile

03 9882 9866

Email

issi.ceo@pacific.net.au

Web

www.issinstitute.org.au

Published by International Specialised Skills Institute, Melbourne.

ISS Institute
101/685 Burke Road
Camberwell 3124
AUSTRALIA

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Executive Summary

The Renewable Energy Industry in Australia is rapidly growing and diverse. It has enormous potential and it is the Fellow's belief that it is set to become one of Australia's biggest industries. A large range of renewable energy products are manufactured in Australia for local and export markets. In addition to this, many products and components are imported into Australia and the overall market is significant. The need for skilled personnel to design, install, test and maintain such equipment is growing rapidly.

Currently the industry is poised to deliver:

- reductions in greenhouse gas emissions
- reductions in energy costs to Victorians
- employment opportunities
- export revenues.

The issue of renewable energy resources has significant currency within discourse surrounding issues of environmental protection and control. The Victorian and Federal Governments are backing the adoption of renewable energies, offering research and development grants and rebates for equipment installations in an attempt to reduce energy costs and reduce greenhouse gases. In addition, the Commonwealth Government, in consultation with industry, developed the Renewable Energy Action Agenda (REAA). This Agenda aims to achieve a sustainable and internationally competitive renewable energy industry with annual sales of \$4 billion by 2010.

The aim of the Fellowship is to develop higher-level skills and knowledge of renewable energy technologies, components, materials and systems. This will enable information, skills and techniques (using the latest technologies and tools) to be passed on to tradespeople, technicians and engineers. It will also equip newly trained people to use the latest technology and tools, and to design, install, test and maintain renewable energy systems. Technologies and techniques to be investigated included Photovoltaic (PV) panels, regulators and inverters, solar thermal systems and wind generators.

Addressing skills deficiencies is essential to the Renewable Energy Industry and to the economy and environment of the State of Victoria. This will:

- Assist in countering the affects of global climate change, arguably one of the most serious problems ever to face Victorians and the rest of the world.
- Allow skills to be passed on to people involved in designing, installing and maintaining PV grid-connect systems, solar thermal systems, wind systems and biomass systems.
- Instil the concept of sustainability in graduates from all levels of electronics, Shared Technology, building, plumbing and electrical courses at the relevant Technical and Further Education (TAFE) Institutes in Victoria.
- Provide appropriate training for technicians, tradespeople and Do it yourself (DIY) people alike via certificate, diploma, short and hobby courses in renewable energy.
- Encourage innovation in the renewable energy products industry by providing inspiration and skills to course participants.

Executive Summary

The entire research tour took place in Germany, which was chosen for the following reasons:

- It is one of the world's largest users of renewable energy.
- It is a large designer and manufacturer of renewable energy products and equipment, and has more than 40,000 people working in the Photovoltaic (PV) industry alone.
- It has a reputation for high quality engineering.

Key destinations included Munich, Kassel, Berlin, 'Solar Valley' near Leipzig, Stuttgart, Ulm and Freiburg.

The overall research tour was a resounding success. Significant knowledge was obtained regarding solar thermal systems, solar voltaic systems, building integrated PV panels, fuel cell technologies, battery technologies, wind power and other technologies. The knowledge and skills obtained will be used to set up new courses at TAFE colleges in Victoria. It will enable up-to-date technologies to be taught to technicians and trades people so that industry will not lag behind the leaders in the field.

The following report provides an overview of the Fellowship experience and suggestions for engaging in knowledge transfer activities. In addition, the report concludes with a series of recommendations for government, Industry, the business sector, professional associations, education and training providers, the community and the ISS Institute.