



Supporting a Vision for a
Centre of Excellence in Tropical Design
(Sustainability and Innovation)

"Engineers Visioning a Sustainable Future"

In April 2005, Hunter Lovins presented a talk to local Engineers, followed by a facilitated workshop. This workshop gave Engineers the opportunity to "Vision a Future" through an accelerated sustainability model based upon **Working Five Years In The Future As If 30 Years Have Passed**.

Five groups were formed:

- Landscape Ecology
- Water and Wastewater
- Construction
- Energy
- Engineering Design

Each group examined the barriers and developed solutions to some of the problems facing the implementation of sustainable engineering practices today as well as their vision for Engineering in the year 2010.

These are the results of the workshop:

**Visioning a future - Working five years in the future as if 30 years have passed
(accelerated sustainability)**

LANDSCAPE ECOLOGY

Barriers:

- Money
- Attitude
- Ecological market
- Lack of knowledge/understanding regarding ecological importance and values
- No holistic approach
- Silo/segmented mentalities
- Separation of delivery & maintenance
- Cost
- Education
- Ecology not considered an asset

Solutions and Actions:

- Education for "end user"
- Quantify & compare costs – sustainable is cheaper
- Holistic approach across all the sectors/parties from the start
- Multi-skilled professionals
- Thinking outside of the box
- Incorporating the natural environment into the urban environment
- Encourage urban density
- Maintain community integrated planning
- Acknowledge the natural landscape

VISION 2010:

Appropriately attract fauna. Build nature's function into landscape – biomimicry. Retain authenticity of area. Have low maintenance areas, guidelines/performance indicators incorporating ecology solutions into engineering approaches.

Natural landscape features valued as assets. All engineers having ecological training. Design & construct looking for opportunities to preserve, retain & enhance the natural environment.

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WATER AND WASTEWATER

Barriers:

- Introduced species crowding natural systems
- Nutrient runoff
- Community attitudes to recycled water use
- Current technology limitations & health implications/standards
- Cost/pricing infrastructure constraints
- Current investment in infrastructure/duplication of infrastructure/insular provision of services
- Resources undervalued – too cheap to exploit
- Waste of drinking water on irrigation
- Political terms
- Public health issues – perceptions
- Cost
- Dissemination of information

Solutions and Actions:

- Community education – plant species selection in gardens
- Small catchment collections → household rainwater tanks
- Innovative retrofitting of existing infrastructure
- More reflective pricing policies/price incentives
- Technological Innovation → irrigation/wastewater treatment
- Partnerships across resource providers to overcome the insular provision & pricing of water & wastewater management
- Rationalisation of regional infrastructure for more efficient use
- Adopt a more holistic approach
- Desalination
- Innovation design – buildings to catch water & use for insulation/cooling
- Education on alternatives (tanks)
- Have 2 water standards – potable & irrigation
- Recovering and re-using waste water
- Understand our local conditions – soils, climate etc.
- Efficient use of water saving devices

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CONSTRUCTION

Barriers:

- Cost
- Regulations (WH&S, EPA, LGs, Stat. Orgs)
- Resistance to change (stakeholders, law, construction methods, "business as usual", regulatory resistance)

Solutions and Actions:

- Education at all levels and through all sectors
- Promotions and marketing
- Effective & strategic measurement of sustainability indicators
- Research & development – for sustainable products/services & practices
- Realistic regulations
- Timely approvals
- Partnerships/communication with industry
- Effective one-stop-shop
- Communication
- Implement reward & recognition system
- Adopt best practice

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ENERGY

Barriers:

- Energy too cheap
- No encouragement for efficiency
- Inverted tariff structure
- International competitiveness
- Costs of green power
- Some technological restrictions
- People's expectations of uninterrupted power
- Consumerism
- Building costs
- Limited knowledge of options
- Oil prices
- Local monopoly of energy production
- Inefficient designs of constructions
- Ignorance of public re: energy use/demand
- Historical processes & decisions → traditional ideas, public, industry, gov.
- Cost of change

Solutions and Actions:

- Local content/solutions re-building costs/regulations
- Energy storage to support regeneration
- Whole systems approach
- Re-structure of energy sector/tariffs/prices to reflect true costs
- Energy services approach
- Demand side management as first step
- Much more distributed/embedded generation (support distribution network)
- Use less energy/recycle
- Cultural change
- Education of public
- Educate . . . Educate . . Educate
- Provide alternative designs, behaviours – examples
- Alternative energy sources need to be used

VISION 2010:

Restructured energy sector that reflects real costs → DSM & use of renewables mainstream → tax & trading scheme with energy meeting all people's needs (not necessarily wants).

Centralised management systems in Townsville.

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ENGINEERING DESIGN

Barriers:

- Budgets
- Timeframes
- Politics
- Attitudes
- Lack of awareness
- What is sustainability?
- Lack of information

Solutions and Actions:

- Obtain and produce a sustainable product register or library
- Australian standards for sustainable city
- Education (schooling → post-grad)
- Example of sustainable engineering design
- Stakeholder education
- Triple bottom-line assessment of all engineering design
- Quantification of and comparison of sustainability initiatives in designs
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VISION 2010:

Integration of sustainability into all facets of engineering design principles.

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