

**Missing piece: The Consumer**

**Tell the kids in school**

**Renew the cooperation model Industry - Government**

**(Important) Role of Transition Policy**

**Radical idea to build integrated local energy systems**

**Need to rethink the use of coal**

**...IMAGINE !  
YOUR (RADICAL)  
IDEAS  
TOWARDS SMART USE OF  
ENERGY RESOURCES?**

**Revitalize agendas on sustainable production (SP) & consumption (SC)**

**Greening of production natural resources**

**Brokerage idea: connecting students to real-life problems**

**Think Radical**

***'Betting the right horse'***

**Think Global and Act**

**Biomass supply / include the African perspective**

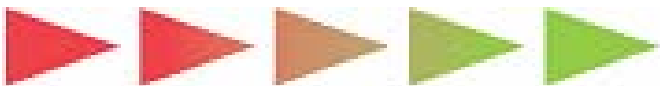
**Heating**



**PRACTICE MAKES PROGRESS**  
the smart use of resources

## ...IMAGINE !

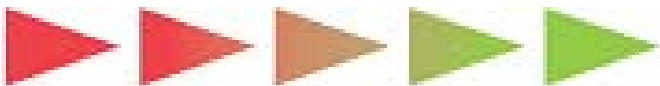
- Missing piece: the consumer
  - Tell the kids in school
  - Renew cooperation model  
Industry - Government
  - (Important) Role of Transition  
Policy
  - Radical idea to build integr. local  
energy systems
  - Need to rethink - use of coal
  - Revitalize agendas on sustainable  
production (SP) & consumption  
(SC)
- Greening of production - natural  
resources
  - Brokerage idea: connecting  
students to real-life problems
  - Think Radical
  - 'Betting the right horse'
  - Think Global and Act
  - Biomass supply - include the  
African perspective
  - Heating



## Missing piece: The Consumer

» *K. Callahan / Alliance to Safe Energy*

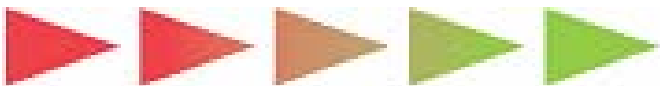
- Challenge is to make consumers more efficient?
  - Lack of awareness
  - Need to change behaviour
- Need to connect to perspective of daily life of consumers
  - 'show me' - how can I make a difference
  - offering clear alternatives
- Education is crucial
  - Key role for industries
    - » product-based information
  - Key role for governments
  - include all ages
- This idea was selected by one of the frontbenchers
  - Supported by over 60% of the participants



## Tell the kids in school

» *Harry van den Akker / Onderzoeksschool  
Procestechologie*

- Stimulate to become an engineer / scientist!
- Create engagement en enthusiasm
- Increasing susceptibility to change attitude
- Education is crucial
  - Key role for governments
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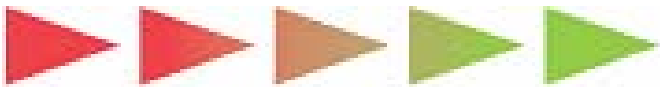


# Renew the cooperation model Industry - Government



» *H. Grünfeld / Chairman of VEMW*

- Intensified cooperation is needed between Industry and Government
- Synergy can be created
  - long-term planning and action



# Important role of Transition Policy

» *G.J. Lankhorst / Ministry of Econ. Affairs*

- Need for co-operation towards stable climate
  - How to deal with complexity?
  - Solving Chicken-egg problem
- Transition management is promising steering concept
  - Multi-level and fundamental changes of societal (sub)systems
  - Min.EZ is satisfied with Energy Transition process
  - Top-management (still) has to get involved
- Long-term process
  - Relies on creating critical mass
    - » Bring together all parties
    - » Taskforce
  - Collecting potential routes: best ideas in spotlight
  - Combine ideas
  - Making selection together (roadmaps)

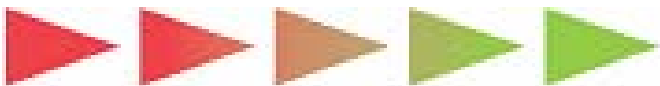


# Radical idea to build integrated local energy systems



» *N. van Andel / Private development business  
(Former position at corporate Research Akzo)*

- Connecting heat and power generation, aerobic digestion and dwelling heating
- System redesign
  - High efficiency potential (30%)
  - System per HA service 100 homes
  - All heat cycles included
    - » Rethink energy cycles: Use of outputs as inputs
- Context
  - Opportunity driven
  - Make use of innovative technologies that can unlock new mass markets
  - Netherlands has strong position in development of greenhouses
- This idea was selected by one of the frontbenchers
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## Need to rethink the use of coal

» *W.C. Turkenburg / University Utrecht*

- Need for transitional technology
  - decreasing oil & gas supplies
  - today's potential of renewable energy sources too limited
  - Need to combine the use of fossils balancing effects on climate change
- Rethink use of coals
  - major effort is needed
  - innovative technological routes are available
    - Low (relative) emissions of power stations
    - Capturing concentrated CO<sub>2</sub>
    - High fuel flexibility - co-feeding of biomass, low cost fuels
  - IGCC is technology 'fit for purpose' for next decades
    - Meet stringent emission requirements (heavy metals, NO<sub>x</sub>, SO<sub>x</sub> and PM)
  - Netherlands can be a champion
    - work upon the technology of Buggenum plant and research
    - IGCC: Clean Coal Technology

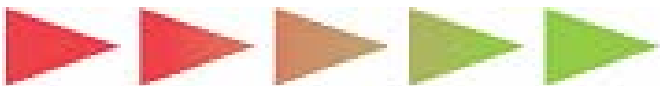


# Revitalize agendas on sustainable production (SP) & consumption (SC)



» *M. Biancini / DOW*

- SP and SC agendas have lost strength in recent years
  - limited progress since 2002/03
- Need for clean & clever consumption
  - Actions by business and citizens critical
  - Need for action at all levels of society, industry and government.
- Revitalize dialogue between policy makers and industry
  - synergise with competitiveness agenda (Lisbon)





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## Greening of production natural resources

» *H. van Bekkum / Delft Technical University*

- Various chemicals can easily be gained from natural sources
- The high price levels of fossil stocks allow for competitive pricing
- Redesign / industrial ecology
  - Process integration / intensification
  - Alternative materials / eco-material selection
  - Energy efficiency
  - Good design practices
  - new recycling
- Include overall effect on resources
  - Avoiding adverse-effects will help to preserve planet's balance and assets

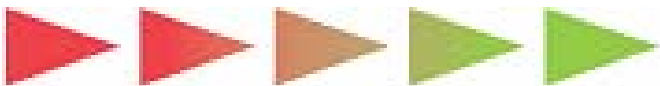


# Brokerage idea: connecting students to real-life problems



» *J.T. Fokkema / Delft University*

- Building a database with students and their profiles
  - Include new concepts of all aspect of Renewable Energy
  - 'Wubbo is doing fine...'
- R&D input is important for tomorrow's answers
- Demand driven cooperation model
  - Universities
  - Industry



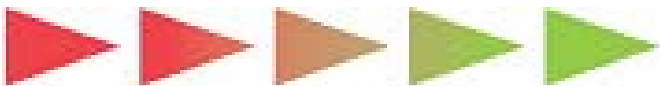


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# Think Radical

» *G. van Harten / DOW*

- 'Man on the moon' thinking
  - coordinated radical change
  - back-casting principle
  - ambitious (shared) goal setting the agenda for research and industry
- Make a commitment to become independent of fossil resources



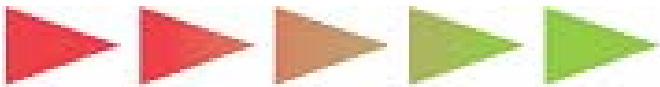


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# 'Betting the right horse'

» *W.P.M. van Swaij / KNAW*

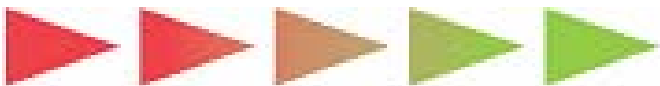
- Clear need for new technologies
- Rethink the fuel consumption for mobility
  - not only traditional biomass / a long-term strategy is needed!
  - create flexible biofuel chemistry
    - » e.g. long term potential for bioethanol (wood/straw)
- Many directions
  - Making the right choices at the right time
    - RTD portefolio management and Roadmapping
  - The oil industry must be more actively involved in research selection and execution
    - They are crucial market players
- Reliable (stable) framework by government is needed
  - Closing today's research - market gap
  - Giving full support in starting phase



# Think Global and Act

» *M. Richard / Alliance to Safe Energy*

- We are responsible for creating, developing and implementing new (energy) systems
  - We (the rich countries) are in the best position to act
  - Many new citizens in rising economies want to copy our high-life standards
    - It is naive to think China will be the key contributor
- Sense of urgency!
  - Pressure on Earth will increase rapidly

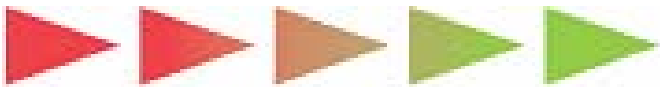


# Biomass supply / include the African perspective



» *D. Russell / DOW*

- Africa could become world's most important production area of renewable biomass
- This could revitalise local economies of Africa
  - If fair trade systems can be implemented.





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# Heating

» *Chiel van R. / DOW Tern.*

- Pump up heated water from 2 a 3 km below earth 90-100 C°.

