

Dutch Polymer Institute - Annual Meeting 2008 – November 25, 26
Brainstorm: What could polymers mean for the Bottom of the Pyramid?




Water

In many bottom-of-the-pyramid countries, there is a shortage of water or there is heavily seasonal rainfall. Seasonal rain falling on land which is heavily treated with pesticides may cause contamination of water that cannot then be used as drinking water. In many areas access to potable water is highly limited. Another focal point is the lack of in-home mains water for drinking, washing or sanitation.

High temperatures cause the rapid spread of disease in water. Due to a shortage of clean drinking water, about 6,000 people die each day worldwide. One of the millennium targets requires that an additional 1.5 billion people gain access to some form of treated water supply by 2015.

Do you have any innovative ideas to get people access to potable water in a cheap, easy, eco-friendly way?

ONE STOP WATER SHOP 15



Water Cleaning Station

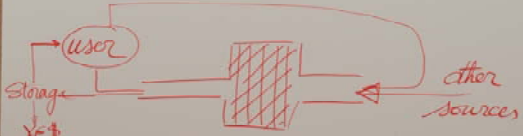
- Community Center - Education
- Toilet
- Shop

① UV Catalytic coating 'Waterpipe'

The Nexus: Where Science Meets Society

Integrated H₂O system 6

- Filtration/centrifugation/oxidation
- Sensing - yes/no
- Transportation: dirty → clean
- Storage

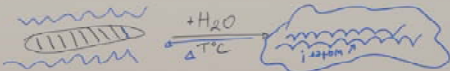


HOW

- * place a layer of hydrogel on desert or nearby the sea & absorb the polluted water
- * DIY technology → poor/family

①

HYDROGELS



WHY

- * water/moisture uptake/release depending on ΔT°C
- * easy to synthesize & collects huge amount of water
- * environmentally friendly

Energy

Around 1.6 billion people in developing countries are not connected to energy services. Energy is needed to generate electricity and heat as well as fuel transportation. New means of transport are needed to improve the distribution of perishable goods. By being able to transport goods faster over a longer distance, more jobs will be created and thus contribute to economic growth.

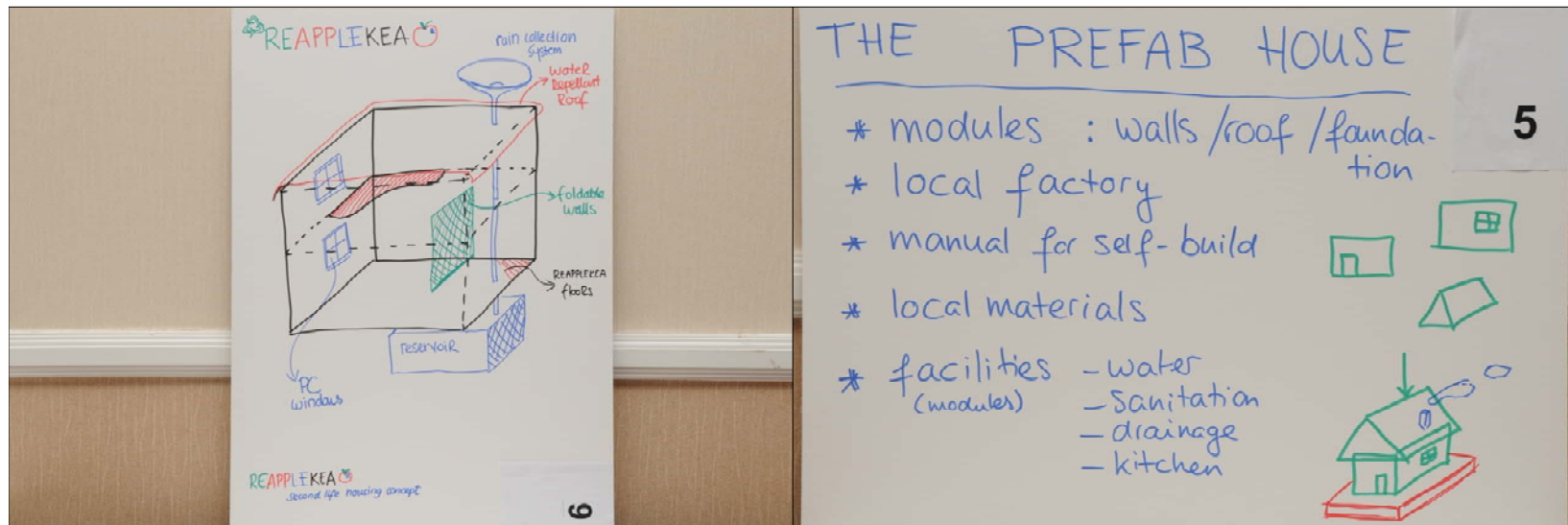
Can you come up with innovative ideas to obtain cheap, eco-friendly energy both easily and locally? Or can you come up with innovative ideas to make transportation cleaner, more eco-friendly and more cost efficient?

<p>ENERGY</p> <p>20</p>	<p><u>Phase Change Materials</u> ^{Energy}</p> <ul style="list-style-type: none"> • energy conservation and storage 14 • REUSABLE / USE sunlight to heat material • cheap / local <p>e.g. → hand WARMERS</p> <p><u>Applications:</u></p> <ul style="list-style-type: none"> • heating of food • isolation of houses. 	<p><u>ENERGY</u> <u>SOLUTIONS</u> 16</p> <ol style="list-style-type: none"> 1. USING MICRO-ORGANISM to produce hydrogen → energy 2. use tidal & wave energy 3. build better roads with (waste)plastic
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Housing

Around 1.1 billion people are currently living in inadequate housing conditions in urban areas - a figure that is expected to double by 2030. Approximately 35 million new housing units are required each year in developing countries to accommodate growth in the number of households in the next few years. Moreover, around 100 million people are homeless around the world, an increasing number women and children, and a billion people live in slums. Many households are not connected to mains water. Only few cities in the developing worlds have their wastewater treated and much solid waste is disposed of in open dumps.

Can you come up with innovative ideas to build cheap housing or basic facilities, with local materials to meet health and safety standards such as safe drinking water, sanitation and electricity?



Health

Life expectancy in developing countries is around 36 years. Houses in bottom-of-the-pyramid countries have no sanitation (toilets and bathroom) nor is there mains water or electricity in houses, worsening health conditions. Poverty is the single biggest barrier to improving healthcare. In many countries, people do not have access to a clean water supply nor is there a hospital or clinic to provide treatment.


Can you come up with innovative ideas (to meet health and safety standards) for sanitation, with local materials, easy to construct, cheap, eco-friendly and ready for use?

<p>12</p> <p>public sanitation house</p> <ul style="list-style-type: none"> collection & filtering (energy) toilets (locally made) - cleaning & flush waste collection water cooking soap making energy generation <p>Labels: rain, sponsored by SDP, solar cell option, pumping, Major: jatropha plants, for soap/fod/fertiliser</p>	<p>10</p> <p>rain water</p> <p>light</p> <p>water</p> <p>microbial filters (clay, sand, pastilles)</p> <p>washing water</p> <p>storing container</p> <p>potable water</p> <p>roof house</p>	<p>4</p> <p>Health</p> <p>idea: Herbal treatment from local plants.</p> <p>Scouting for local plants to treat diseases</p> <p>Why innovative: potential cures for curably untreatable diseases</p> <p>Why feasible: Huge access to forest/plants</p> <p>Benefits: cheap; access for people; sustainable</p>
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Environment

In most bottom-of-the-pyramid countries, households are lacking ways to dispose of solid waste so there is a basic need for waste collection and appropriate disposal techniques. Today, solid waste is dumped at many undesigned sites, creating serious health and environmental problems. Burning of waste in the open air causes pollution and health problems as well. The direct discharge of industrial waste water into rivers and lakes causes substantial contamination of surface water, which has a direct impact on the quality of the drinking water.

Do you have innovative ideas for sustainable waste recycling that can contribute to a better of the environment and/or the generation of renewable energy?

<p style="text-align: right;">(17)</p> <p>... Recycling</p> <p>... How to separate - Education</p> <ul style="list-style-type: none">- Set up recycling companies- Employment <p>... New materials - Biodegradable</p> <ul style="list-style-type: none">- less components	<p style="text-align: right;">Environment (13)</p> <p>only new <u>clean</u> production sites in the 3rd world</p> <p>With</p> <ul style="list-style-type: none">- energy saving (sun, wind, water)- resources can be re-used- work for everyone- legislation & regulations- clean processes- education for everyone 
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