



SHELL'S JOURNEY TOWARDS A SUSTAINABLE BIOFUEL SUPPLY CHAIN

30 October 2012
RT10, Singapore

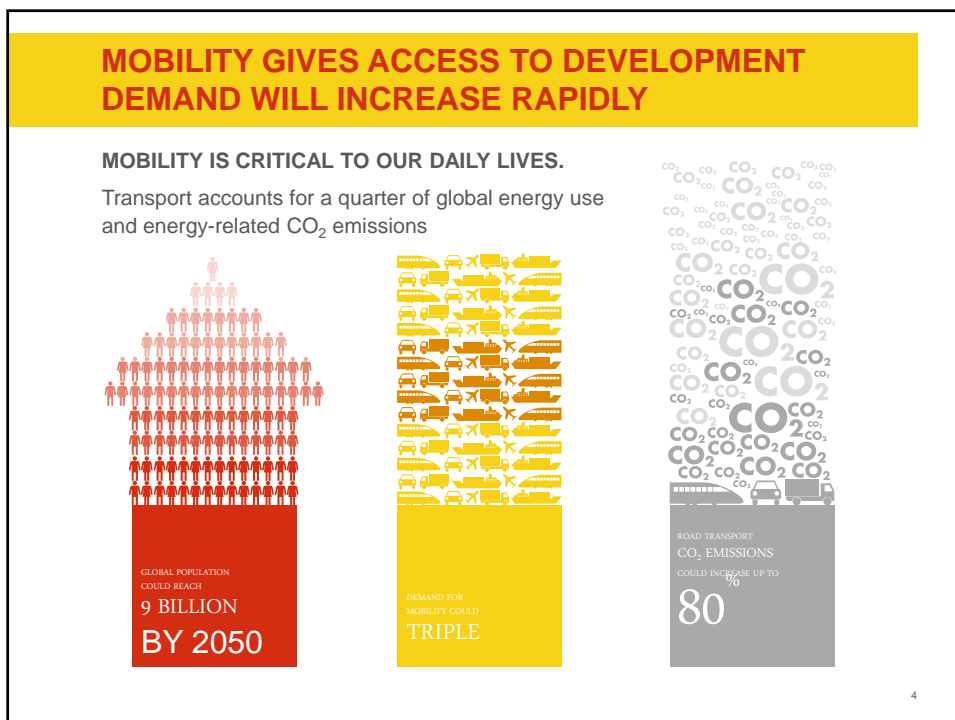
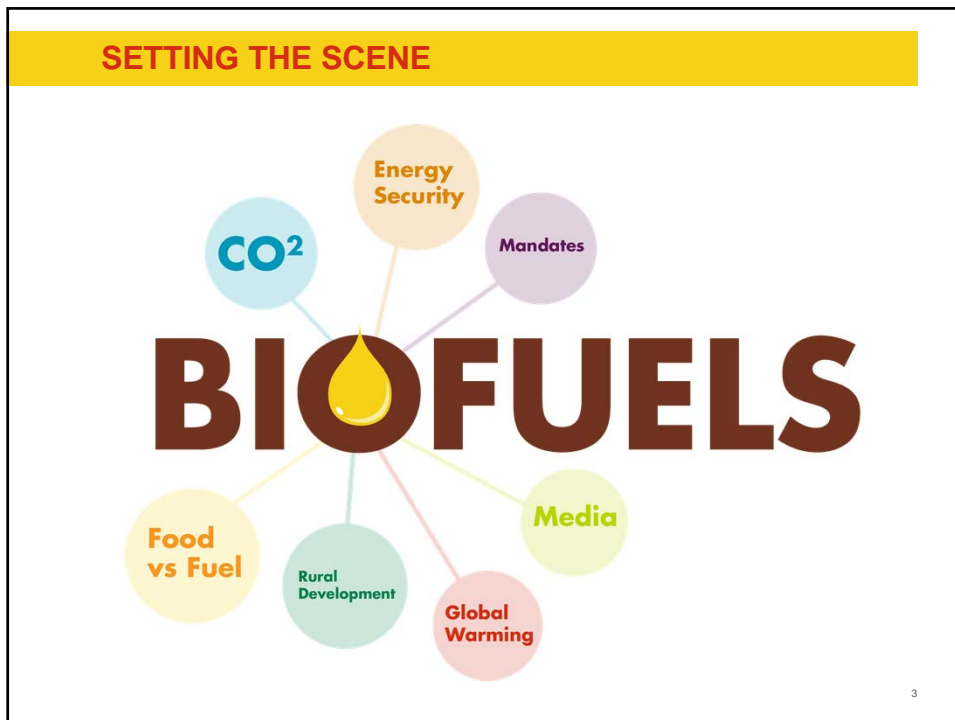
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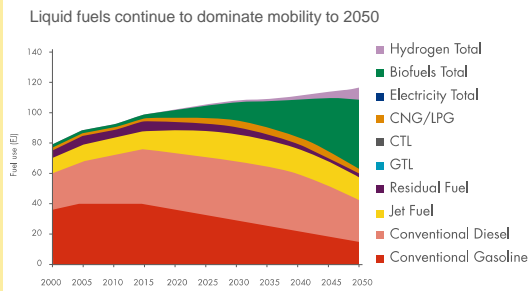
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LIQUID FUELS WILL CONTINUE TO DOMINATE

- ❑ Electric and H2 vehicles to increase
- ❑ Most vehicles will continue to use internal combustion engines
- ❑ Light duty sector will experience greatest level of change
- ❑ Heavy duty remains reliant on liquid



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BIOFUELS ARE NEEDED AS PART OF THE FUTURE ENERGY MIX

BIOFUELS ARE THE MOST REALISTIC COMMERCIAL SOLUTION

They offer:

- ❑ CO₂ Emissions Reductions
- ❑ Diversification and Energy Security
- ❑ Integration with existing infrastructure
- ❑ Rural Development Opportunities

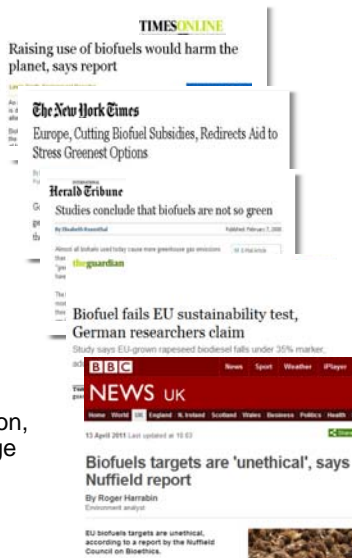


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TACKLING CO₂ AND SUSTAINABILITY CONCERNS

A number of CO₂ and sustainability issues have been linked to the production of ethanol and FAME:

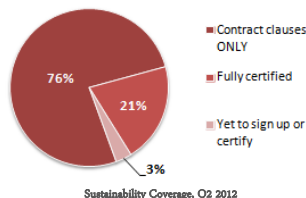
- ❑ Wide range of 'Well-to-wheel' CO₂ performance
- ❑ Agricultural social issues get linked to biofuels (e.g. workers' rights, local community land rights)
- ❑ Environmental issues in agriculture such as rare habitats and species, direct/indirect land use change, air+ water pollution, soil erosion
- ❑ Food security issues now linked by some to Biofuels
- ❑ Population increase, increasing meat consumption, a slowing down of yield increases, climate change pressure on arable land



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SHELL'S APPROACH

- ❑ **Internal Governance:** Rules and practices to help assess risks in biofuels supply chain, implement controls, monitor compliance and report our progress
- ❑ **Shell's sustainability clauses:** Request that suppliers to sign up to Shell's sustainability clauses in new and renewed contracts
- ❑ **Certification:** Engaging industry, governments, intergovernmental agencies and policy makers to encourage sustainability standards in the biofuels

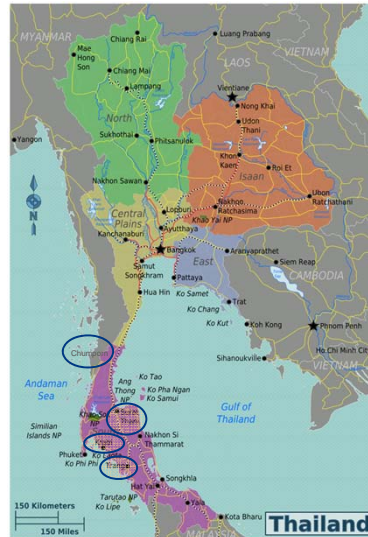


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SHELL-PATUM SMALLHOLDER DEVELOPMENT PROJECT



- ❑ Joint project between Shell Thailand and Patum Vegetable Oil Co. Ltd
- ❑ Kicked-off August 2012
- ❑ Objective: Drive sustainable palm oil production in Thailand
- ❑ Support/prepare CPO suppliers + associated smallholder groups in achieving RSPO certification



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PALM OIL PRODUCTIVITY POTENTIAL

- ❑ Oil Palm Industry in Thailand:
 - Third largest producer globally (1.8 mill t CPO in 2011)
 - >70% of the area planted with palm oil is managed by smallholders
 - 25-30% of yearly production exported (avg. last 10 years)
 - 30-35% of CPO used for biodiesel (avg. last 5 years)

- ❑ Significant Yield Increase Potential:

	2009	Mid-term potential
FFB yield (t/ ha)	16	19
OER (%)	17	20
CPO Production (t)	1,400,000	1,900,000

- Potential to increase by 36%

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SMALLHOLDER ISSUES

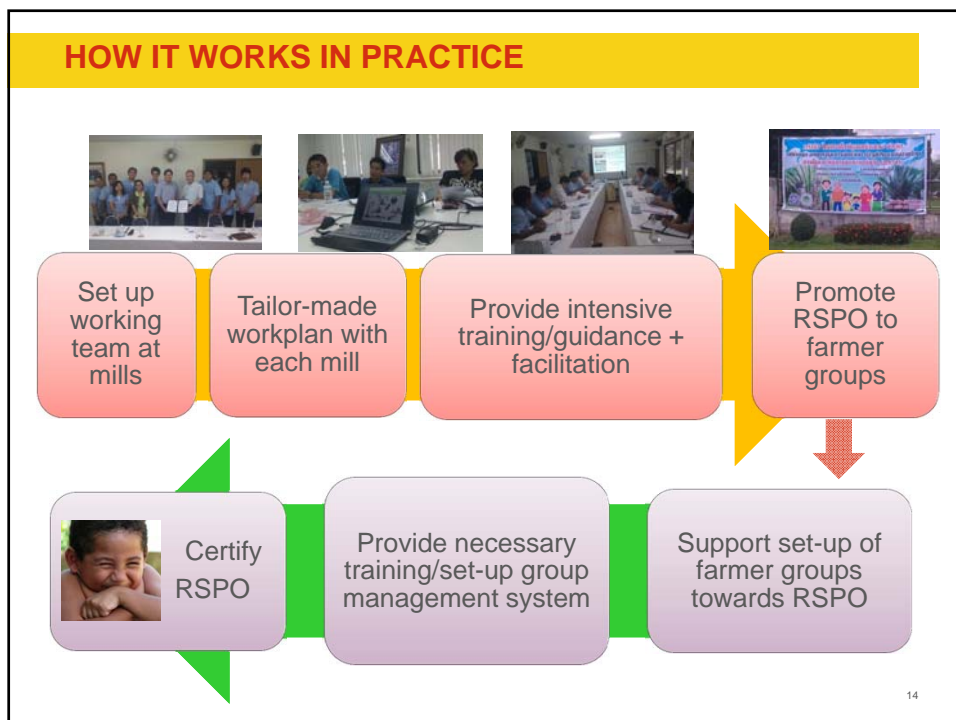
- ❑ Limited knowledge
 - Nutrient requirements, fertilizer application, soil fertility
- ❑ Limited professional farm management
 - Record keeping, clear procedures, training and improvement, managing labor and transportation
- ❑ Limited financing
 - Insufficient fertilization, low quality seedlings
- ❑ Lack of incentives for quality
 - Sellers market, no quality pricing and little incentive to harvest ripe FFB

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THE CHALLENGES OF SMALLHOLDER CERTIFICATION

- ❑ Spot market for FFB
 - Weak relationship between farmers and mills
- ❑ Fragmented production area
- ❑ High number of middlemen/collection centers
- ❑ Lack of smallholder groups
- ❑ Challenge for setting up group certification
 - Group formation takes a long time
 - RSPO Group Certification requirements demanding
- ❑ Unclear price incentives for certification
- ❑ High start-up costs (implementation, membership, audits and compliance)
- ❑ Management requirements
- ❑ Limited influence mills on farmers
- ❑ Lack of support for smallholders

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POTENTIAL OUTCOMES

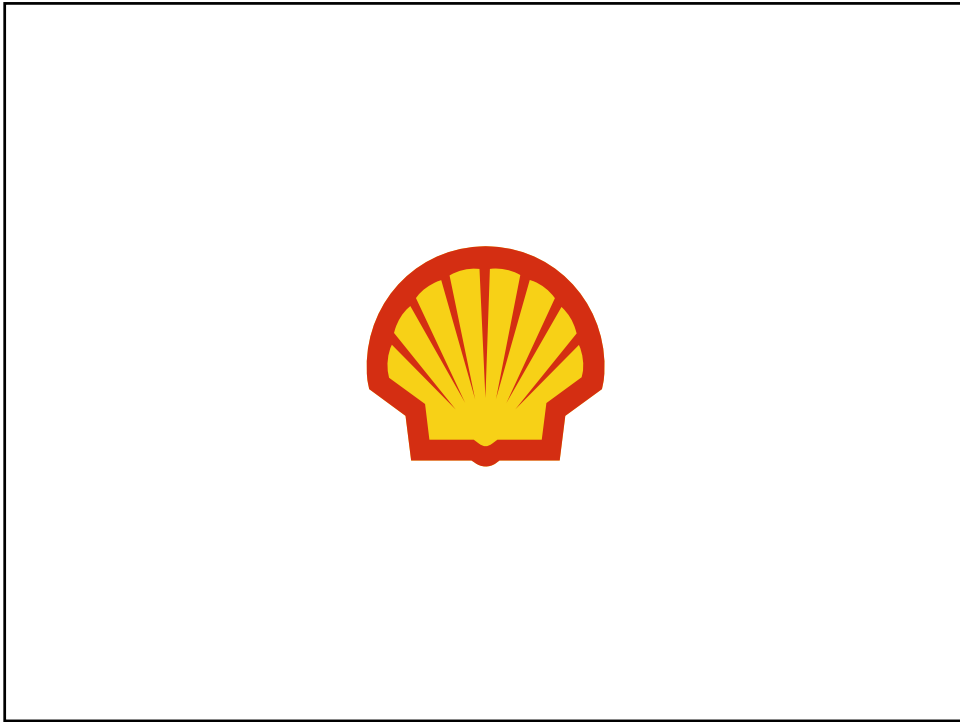
- ❑ Increased yields (c.36%)
- ❑ Access to the market in the long term
 - Markets are changing and farmers need to adapt
- ❑ Improved knowledge and farming practices
 - Capacity building measures are part of the standard
- ❑ Better organisation and management
 - Smallholders need to form groups to join RSPO
 - Sophisticated group management requirements
- ❑ Improved environmental and ecological conditions
- ❑ Avoid conflict and maintain harmony in the communities

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SUMMARY

- ❑ Biofuels
 - Are needed to decarbonise the transport fuel sector
 - Can be produced sustainably, including CO₂ savings
- ❑ Robust multi-stakeholder voluntary schemes are valuable in limiting sustainability risk and improving feedstock performance
- ❑ Downstream companies can effectively support/encourage sustainable production amongst smallholders, e.g. Thai RSPO project
- ❑ What else could the oil industry do to support agriculture in becoming more sustainable?

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BACKUP

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