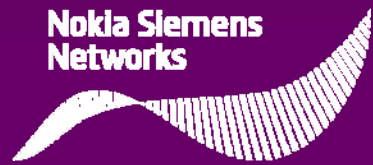


**THE PANEL OF THE UNITED NATIONS COMMISSION ON
SCIENCE AND TECHNOLOGY FOR DEVELOPMENT**

**9-11 November 2009
Geneva**

Nokia Siemens Networks Sustainable Energy Solutions
by
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Corporate Affairs, Nokia Siemens Networks

The views presented here are the participants' and do not necessarily reflect the views and the position of the United Nations or the United Nations Conference on Trade and Development



Nokia Siemens Networks Sustainable Energy Solutions

Peter H. Hellmonds

Corporate Affairs, Nokia Siemens Networks

United Nations Commission on Science and Technology for
Development (CSTD)

Geneva, 10 November 2009

Agenda

A

Business Environment

B

How we help CSPs

C

Customer cases

D

Summary

Business Environment

Environmental issues are center stage

Companies



Investment community increased interest



Customer expectations



Leaders capitalize the value



Demands of rural connectivity



Climate change resource scarcity

Increasingly tight laws and regulations



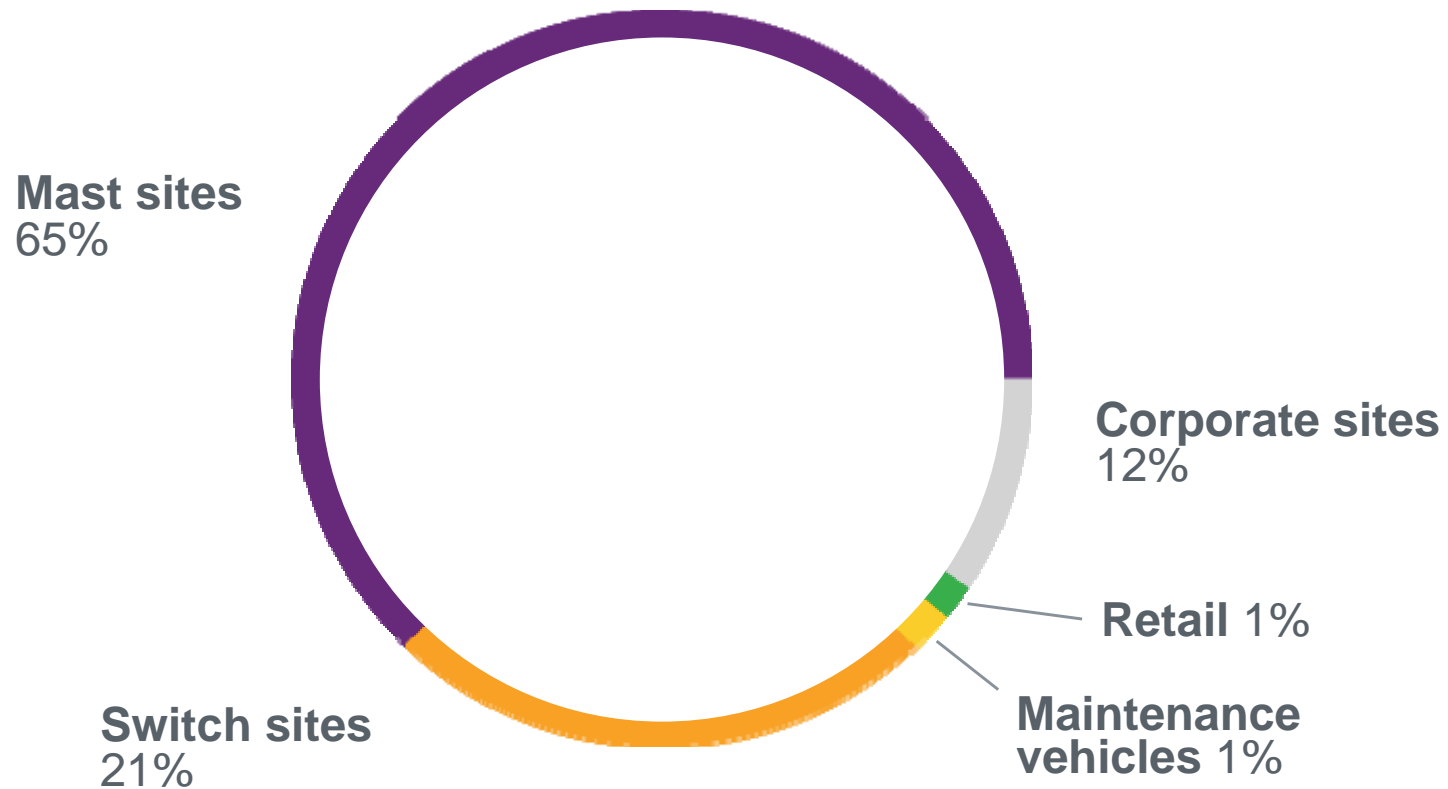
Increasing pressure from NGOs



Operators (CSPs) energy use is in the network...

Communications Service Providers (CSP)

~ 86% of a CSP's energy is used by the Network



Source: ABI Research

...So CSPs are announcing environmental targets



Reduce intensity of GHG emissions by 15%, by 2012



By 2020, reduce worldwide CO₂ emissions per unit of BT's contribution to GDP by 80% from 1996 levels



Reduce CO₂ emissions for Deutsche Telekom Group by 20% below 2006 levels by 2020



Reduce CO₂ emissions for FT Group by 20% below 2006 levels by 2020



30% increase (vs 2007) of the eco-efficiency indicator for 2008: the objective for 2008 is 1,130 Bit/Joule (the value for 2007 is 873 B/J)



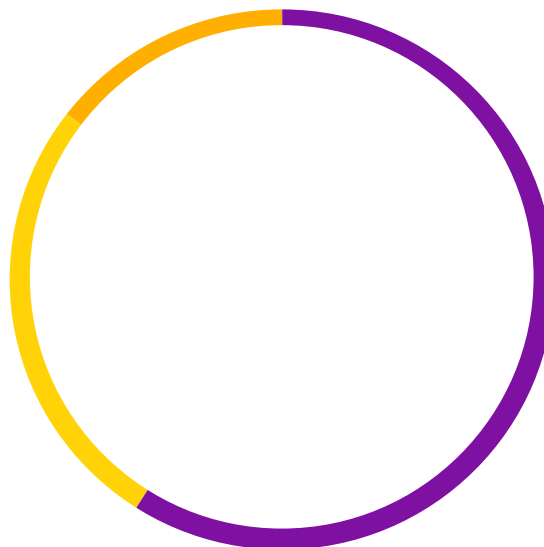
Reduce absolute CO₂ emissions by 50% against the 2006/07 footprint baseline, by 2020

Source: GeSI report SMART2020



4 key drivers in the market

Accessible Market Estimate (multi B€)



- Infrastructure (Installed base)
- Infrastructure (New deployments)
- OPEX (Energy relevant)

Reduction of CO₂ emissions to preserve environment

Increased need to reduce the OPEX of telecom sites

Major thrust to cover new potential markets in rural and remote areas

Grid connectivity in existing and new areas

3 reasons why energy efficiency matters

Energy efficiency = OPEX efficiency

- In mature markets, up to 10% of network OPEX is used on energy
- In developing markets, it can be from approx. 15% up to even 30% of networks OPEX for energy
- Fossil fuel prices remain volatile with high dependency

Lack of electricity supply

- Networks are expanding into rural and suburban areas – grid availability and/or quality is challenging
- 1.6bn people lack access to grid electricity (“off-grid”)
- An additional 1bn people have unreliable access (“bad-grid”)

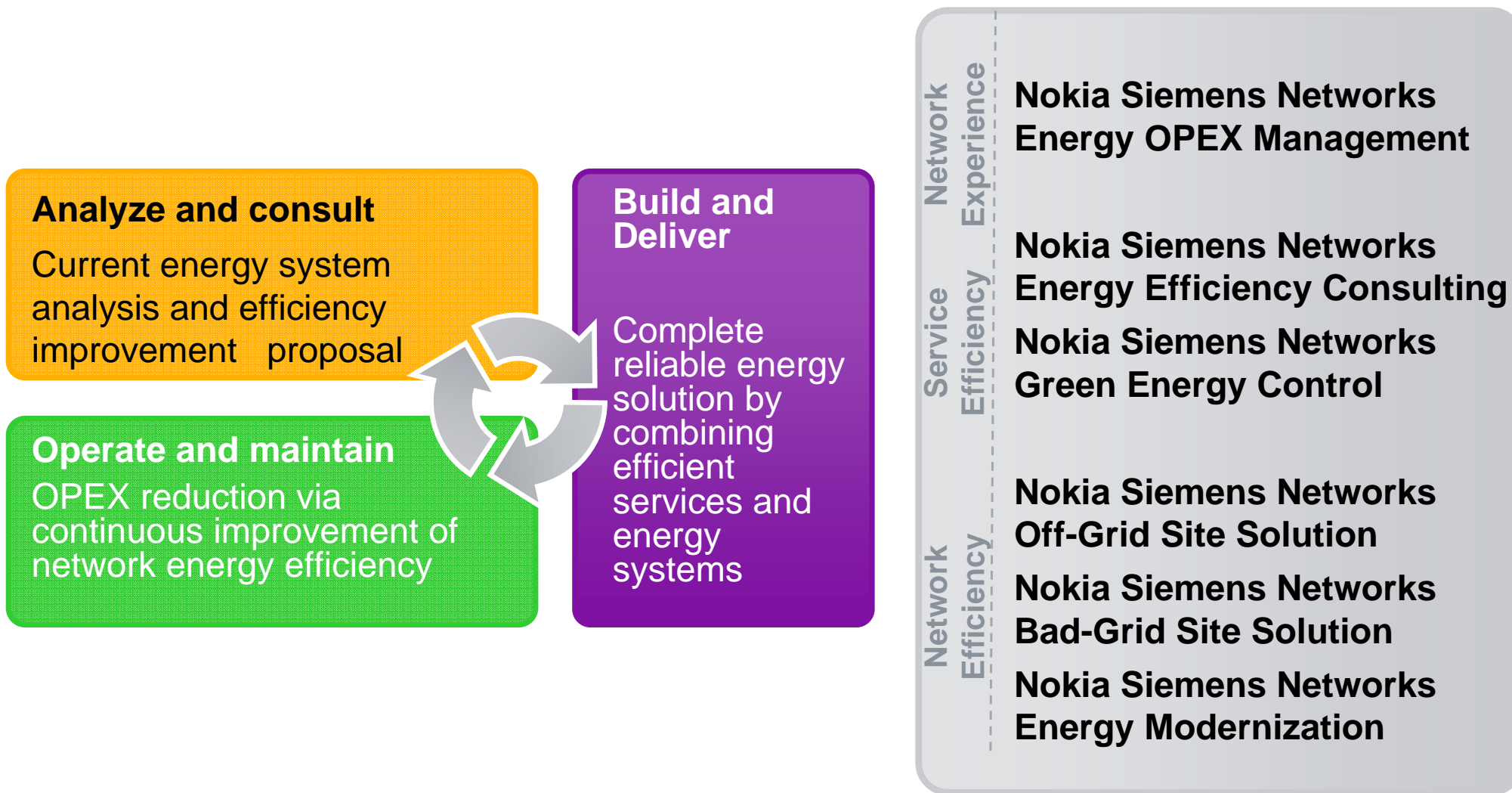
Climate change

- Average temperature is increasing annually
- Carbon emissions remain the second largest contributor to green house gas emissions after methane
- Ethical purchasing behavior among consumers becoming mainstream

Nokia Siemens Networks Energy Solutions

How we are helping CSPs achieve their business & environmental targets

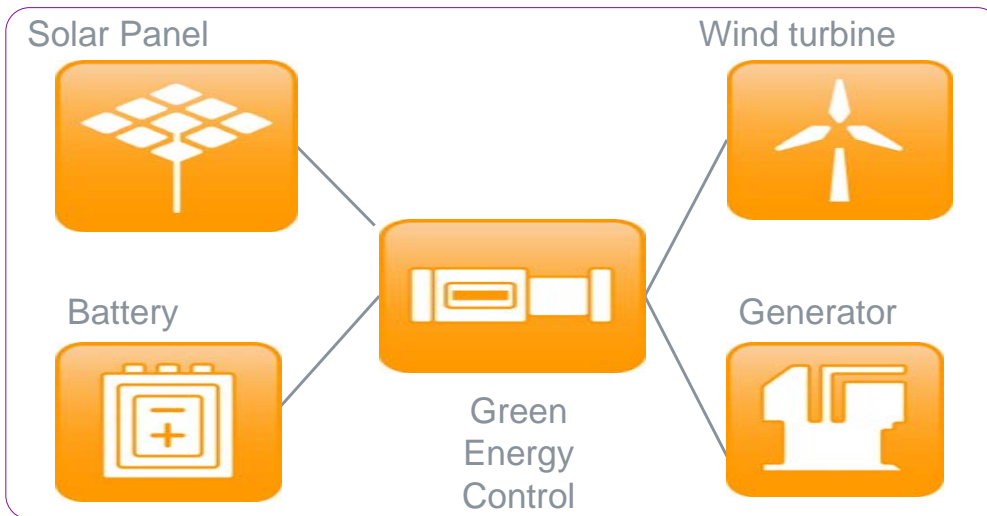
Nokia Siemens Networks Energy Solutions: an innovative combination of services and systems



Off-Grid Site Solution

CSPs' opportunities:
cover new potential markets in rural and remote areas

- Reduces generator runtime up to 9/10th (solar hybrid)
- Saves up to 20,000 liters per year on a typical off-grid site
- Provides connectivity to rural/remote areas



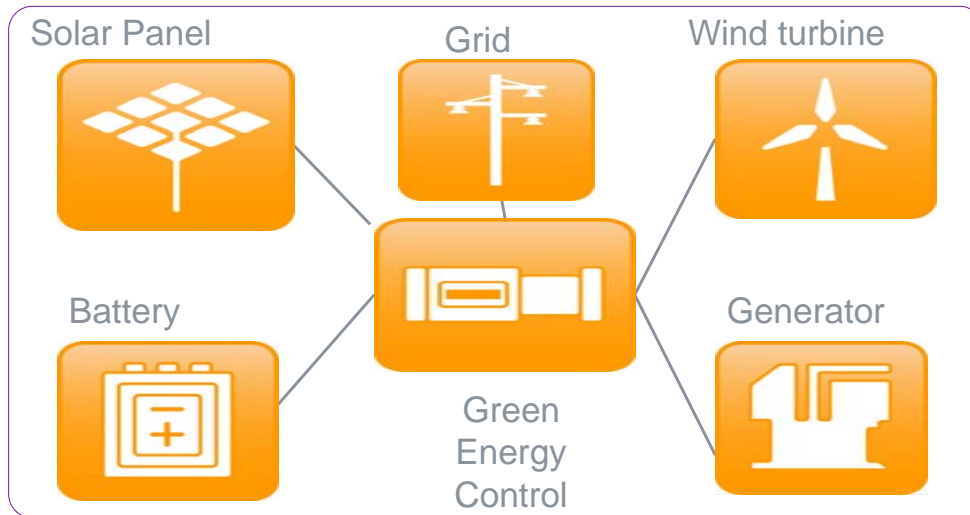
Renewable energy sources and green energy control to manage the site



Bad-Grid Site Solution

CSPs' opportunities:
improve network availability and carbon foot print reduction

- Reduces or eliminates the need for generator (fuel consumption reduction from 10,000 liters/year to zero)
- Dramatically reduces power-related network outages
- Improves power stability at site



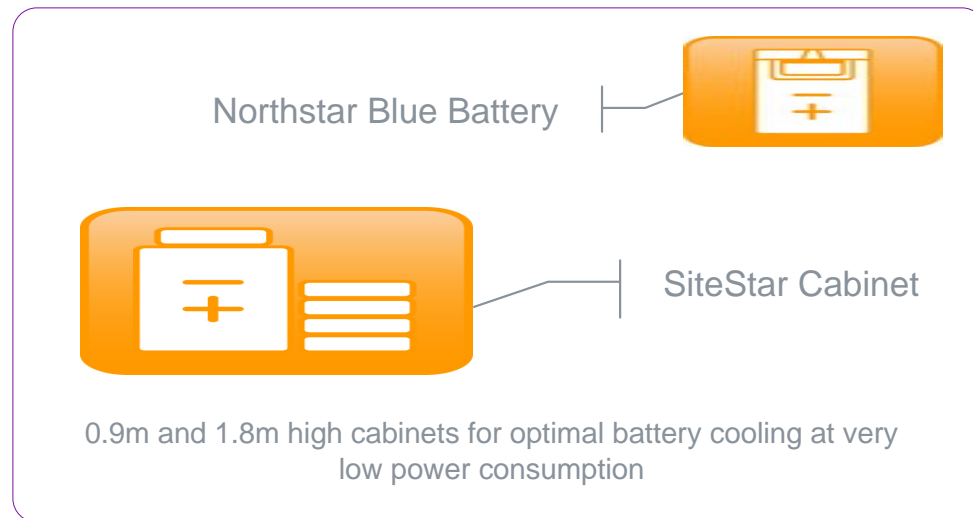
Renewable energy sources and green energy control to manage the site



Energy Modernization

CSPs' opportunities:
energy OPEX reduction with minimum
CAPEX investment

- Doubles battery life from 2.5 to more than 5 years
- Reduces toxic waste (e.g. lead, other chemicals)
- Optimizes energy consumption in cooling and air-conditioning



Improved battery back up solution



Green Energy Control

CSPs' opportunities:
reduce OPEX by remotely managing energy sources

- Allows remote monitoring and controlling of energy consumption at site
- Up to 70% of OPEX savings
- Up to 50% reduction in carbon footprint



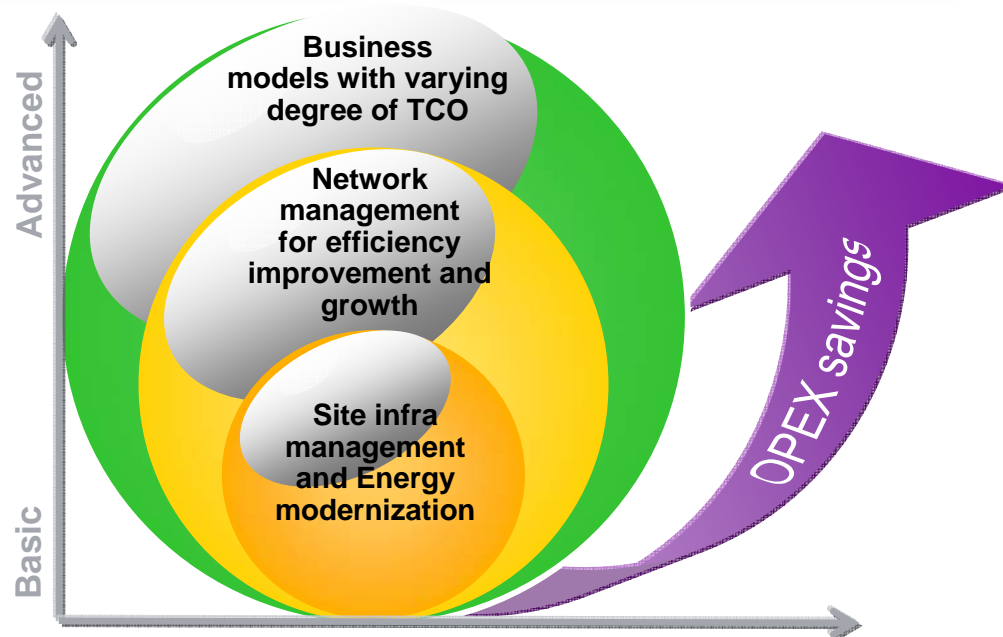
Interfaces all power sources and smartly manages performance remotely



Energy OPEX Management

CSPs' opportunities:
increase profitability while reducing
energy bills and carbon footprint

- Reduces sites visits
- Improves site security
- Reduces network outages due to power source
- Improves infrastructure lifetime
- Enables preventive maintenance

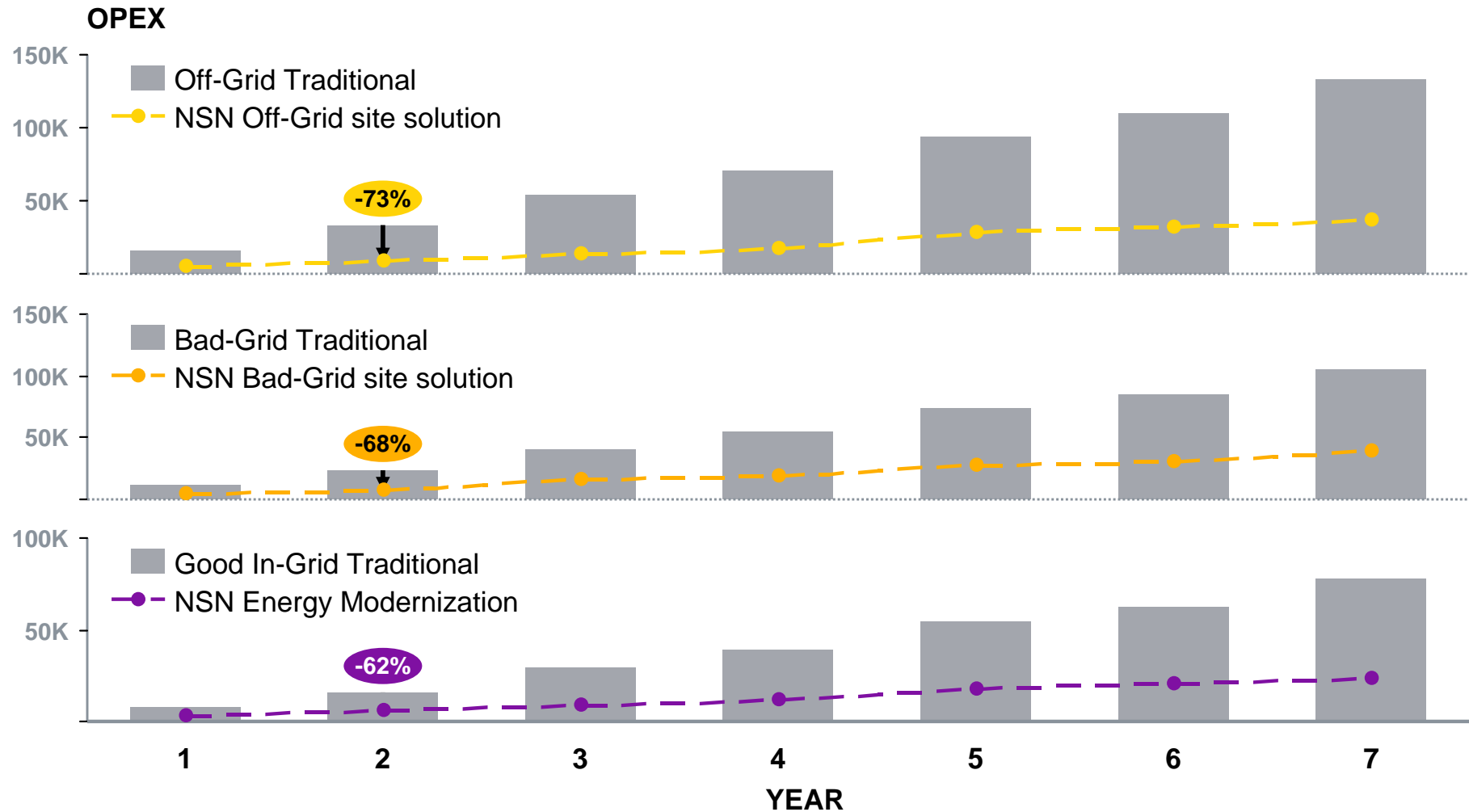


Network Infrastructure Management for efficiency improvement and growth

Nokia Siemens Energy Solutions help CSP's to increase profitability

Knowing how.

Sustainable OPEX savings with pay back within 1-2 years



Emerging market typical site assumed



Ethiopia Telecommunications Corporation (ETC) network powered by renewable energy solutions

Challenges

- Expand into rural areas, no or bad grid
- Use of renewables (wind or solar)
- Total cost of ownership (TCO)

Solution

- 300 sites – 50% in rural areas with no grid
- Bad-Grid Site Solution
- Complete turnkey solution + consulting, planning & project management

Benefits

- Payback in 2 – 4 years
- Low TCO
- Minimal maintenance costs
- Mature technology - Relatively easy and inexpensive to install
- Long lifetime



“The project’s key challenges were electrical power and road access. There are places in Ethiopia where neither road access nor commercial electric power exists.”

Ato Amare Amsalu, CEO of ETC



Softbank achieves 40% savings in site rentals and 60% less power consumption with Flexi BTS

Challenges

- Rapid expansion of subscriber base
- World's most demanding high-speed data services market
- High CAPEX & rental costs for sites
- Stay green & reduce OPEX

Solution

- Increase network capacity with Flexi BTS
- Optimize BTS through unique software features
- Ready for new multimedia with HSDPA & LTE

Benefits

- Softbank met rapid growth in subscriber numbers
- Optimized energy efficiency - reduces CAPEX by up to 15%
- 40% savings in site rental costs = Flexi
- 60% less power consumption, CO2 down



“We have built up this relationship of trust with Nokia Siemens Networks, and it is our goal to offer good services that are competitively priced.

Softbank Mobile wishes to continue to work further with Nokia Siemens Networks.”

*Mr. Junichi Miyakawa
EVP, Director & CTO, Softbank Mobile Corp.*



A european operator to cut carbon emissions and reach more rural areas with Off-Grid Site Solution

Challenges

- No access to grid (difficulties to reach rural areas)
- High CO2 footprint (24/7 operation of site with diesel generator-DG)
- Limited traffic to serve, high OPEX

Solution

- Nokia Siemens Networks Off-Grid Site solution to replace diesel generator with hybrid (solar + wind) solution
- Nokia Siemens Networks Green Energy Control

Benefits

- Carbon emission reduction up to **-50 tons**
- Pay-back time for hybrid solution vs. diesel generator **< 2 yrs**
- Reaching rural areas in a more environmental friendly way, while cutting operational costs at the same time



“In our search for improving network efficiency we also kept thinking about the need to protect the environment. We are pleased to have a partner who shares our values and our concerns.

Nokia Siemens Networks has a clear vision of the future and turn it into solutions in which efficiency and ecology go hand in hand.”

Summary



- **Nokia Siemens Networks is committed to help CSPs reduce OPEX in networks while strengthening CSPs image as environmentally responsible corporations**
- **Nokia Siemens Networks offers full end to end energy efficiency solutions with most competitive TCO**
- **Nokia Siemens Networks Green Energy Control is key differentiator in the market place**
- **Renewable energy shall be NSN first choice for all remote base station sites by 2011**