

#### A better way forward in clean energy

The environmental case for nuclear power.

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The 51<sup>st</sup> JAIF Annual Conference April 9 2018 Tokyo, Japan





Ben and Abigail (Australia)



Ainul, Lazina and family (Bangladesh) (Image from Plan International

#### bright<sup>®</sup> new world

## **Population growth rate**





### Fertility in selected nations and regions





# Per-capita energy consumption- global average and Sub-Saharan Africa





## **Global Demand Forecasts**

1500consumption (EJ year-1) IPCC SRES A1E 1400 IPCC SRES A1T PCC RCP8 5 WETO Ref (2006) PCC SRES A12 1300 IPCC SRES B2 WETO Hydrogen Economy (2006) WETO Carbon Constraint (2006) IPCC SRES B1 1200 IPCC RCP4.5 IPCC RCP6 IPCC RCP2.6 1100 CCSP MINICAM RFF CCSP IGSM1 1000 CCSP IGSM2 CCSP IGSM3 CCSP IGSM4 CCSP MERGE 900 Global primary energy CCSP MERGE4 800 CCSP MINICAM 2 CCSP MINICAM 3 CCSP MINICAM 4 700 MEDIAN NON-ENGO Greenpeace [r]evolution 600 WWF scenario **BP** Actual 500-400 1990 2000 2010 2020 2030 2040 2050 Year

**Fig. 2** Comparison of scenarios for global primary energy from Intergovernmental Panel on Climate Change (IPCC), Climate Change Science Program (CCSP), World Energy Technology Organisation (WETO), BP Statistical Review, Greenpeace and World Wildlife Fund (WWF). Sources: US Energy Information Administration<sup>56</sup>; Intergovernmental Panel on Climate Change<sup>106</sup>; Jeffries *at al.*<sup>104</sup> Teske *et al.*<sup>20</sup>; European Commission<sup>107</sup>; van Vuuren *et al.*<sup>11</sup> All WETO values are converted from million tonnes oil-equivalent. All EIA values are converted from quadrillion British Thermal Units. All Greenpeace values are converted from petajoules. All WWF values were published as final energy only and are converted from final energy to primary energy based on the ratio of primary to final energy provided in the Greenpeace scenario.



## Contraction in primary energy



**Fig. 3** Summary of percentage changes in total primary energy (TPE) from baseline years across nine scenarios of 100 % renewable energy. Baseline years vary between scenarios.<sup>16,21,24,29-33,110</sup>



#### Another big problem is

# It's a sustainability disaster with hydro and biomass







Facility	Guaranteed Power (MW)	Area (km²)	Land Efficiency (MW km <sup>2</sup> - <sup>1</sup> )	Comparison	Nearest major city
Teles Pires	915	95.0	9.6	63	Brasillia (1,200 km)
Attucha I&II	822	1.4	604	1	Buenos Aires (100 km)

Sources: WNA (2015) Nuclear Power in Argentina; Neoenergia (retrieved 5 Sept 2015), Hidreletricia Teles Pires Matto Grosso







#### Deaths and illness from nuclear are small.

#### Pollution is a massive killer.





#### Back end barrier – no service for a responsible decision

Nuclear technologies use super-dense fuels, then hold the waste for responsible management.

We then penalize the nuclear option by failing to provide a solution.

That makes it easier, cheaper and less hassle to pollute with fossil fuels.

Even when using nuclear technologies saves millions of lives by cutting pollution.

A service isn't just needed now, it was needed yesterday.

A used fuel management service would makes clean energy the easier decision.

#### 3. Global barriers



When we penalize nuclear responsibility ...



...we promote fossil pollution.











