

Submission to the Ad-hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA)

1 In response to the invitation of the Ad-hoc Working Group on Long-term Cooperative Action (AWG-LCA) to all Parties, Singapore had in July 2008 put forward its submissions on the elements contained in para 1 of the Bali Action Plan, namely, a) shared vision; b) mitigation; and c) adaptation. At the 3rd session of AWG-LCA in August 2008 in Accra, the AWG-LCA Chair was requested to prepare a document assembling ideas and proposals presented by Parties on the elements of the Bali Action Plan at the first three sessions of the AWG-LCA¹. This submission aims to supplement Singapore's three earlier submissions in providing the AWG-LCA Chair with further input for the above-mentioned document.

Alternative Energy-Disadvantaged Countries

2 Addressing climate change requires a collective and comprehensive global solution which must give sufficient consideration to the vital importance of economic growth to all countries, especially the developing nations. It is thus imperative that the AWG-LCA in its work fully respects the principle of "Common but Differentiated Responsibilities" (CBDR), as enshrined in Article 4(1) of the UNFCCC. In particular, the diverse and unique individual circumstances of developing countries must be taken into account to ensure that any mitigation actions imposed will not lead to a slowdown in economic growth or affect national efforts to alleviate poverty.

3 The mitigation of climate change and the reduction of emissions must entail the replacement of fossil fuels with non-carbon dioxide emitting alternative sources of energy. This is the central challenge in climate change. The extent to which a country is able to switch to non-fossil fuel alternatives will determine its capability to reduce carbon dioxide emissions. Many developed countries, particularly the larger ones, have the means and option of switching to renewable sources of energy, as well as nuclear power, for the generation of their electricity. This allows them to reduce emissions and contribute to efforts to address climate change, without excessive loss of economic growth.

¹ As stated in FCCC/AWGLCA/2008/L.7

4 On the other hand, developing countries in general will not find it easy to switch away from fossil fuels as they often do not have the economic, financial or technological means to do so. Electricity generation by alternative energy sources is more expensive than with fossil fuels, and often requires the construction of new infrastructure and facilities and investment in storage technologies and backup generation. The financial and technological assistance from developed countries are essential to help developing countries make the switch over to alternative energy sources.

5 Among the developing countries there are some which even if they possess the financial and technological means will find it difficult to move out of fossil fuels because of constraints such as size and other physical and geographical limitations. These are the "alternative energy-disadvantaged" countries whose dependence on fossil fuels and inability to switch over to alternative energy sources are recognised in the UNFCCC under Articles 4.8(h) and 4.10. Any global effort to collectively mitigate the effects of climate change must therefore take into consideration the limitations faced by such alternative energy disadvantaged countries.

6 It should also be noted that many "alternative energy-disadvantaged" countries have small populations. Their per capita GDP and per capita emissions are consequently often inflated and do not accurately reflect the state of their economic development or contribution to global GHG emissions. In absolute terms, the gross GDP and total emissions of these countries are insignificant when compared to those of the developed Annex 1 Parties. The use of per capita GDP or per capita emissions to assess climate change responsibilities would thus only further penalise those countries that are "alternative energy-disadvantaged".

Singapore's "Alternative Energy-Disadvantaged" Situation

7 Singapore exemplifies the "alternative energy-disadvantaged" country. It lacks the natural endowments necessary to make use of non-fossil alternatives. Singapore's greatest limitation in switching from fossil fuels to alternative sources of energy is its small physical size and high population density. As an island city-state of only 700 square kilometres with no hinterland, Singapore is smaller than Lake Geneva in Switzerland and about

one-fifth the size of Long Island in New York. Even cities like Tokyo, London and Sydney are two to three times larger than Singapore. As home to 4.8 million, it is in fact the second most densely populated country in the world. The shortage of land constrains the use of renewable energy sources and nuclear power in Singapore.

8 Singapore's small size, geographical location and other physical attributes leaves it with virtually no access to clean energy sources. Without a major river system, the option of hydroelectric power is completely unavailable. Singapore also does not have access to sources of geothermal energy. Its relatively calm seas mean that Singapore cannot harness tidal energy. Biomass, which is used by many countries as an alternative to fossil fuels, is also not viable for Singapore. Singapore already combusts much of its waste – providing about 2% of its electricity needs – but again due its small size, it does not have the necessary land space to cultivate biomass on the scale required for an energy source.

9 While nuclear energy is a source of low-carbon electricity², it poses considerable challenges in safety and waste disposal. As Singapore is a small densely populated city-state, any nuclear accident would have a catastrophic effect. This is unlike the situation in larger countries where land, often larger than the entire island of Singapore, can be set aside as safety buffer zones around nuclear reactors.

10 There is limited potential for wind energy in Singapore. The average wind speed in Singapore is 2 metres per second (m/s) which is way below that of countries where wind power is a significant source of energy. Furthermore, in a densely populated city-state like Singapore, the lack of space makes the installation of wind turbines unfeasible. The adverse effects of wind farms such as noise would also be amplified, presenting a hazard to the health of its population.

11 The Straits of Singapore is one of the busiest international shipping channels in the world. Approximately a third of world trade and half of the world's oil supply passes through it. Each year 90,000 vessels pass through the Straits of Singapore of which more than 7300 are Very Large Crude

² Nuclear power generation emits only 3-24 grams of carbon dioxide per kilowatt-hour, as compared to fossil fuels for which the figure is in the hundreds.

Carriers (VLCC). At its narrowest width, the Straits of Singapore measures a mere 1106 metres, about twenty times narrower than the narrowest point of the Straits of Malacca. The installation of offshore wind turbines in the Straits of Singapore would obstruct the safe passage of vessels and curtail the flow of international trade.

12 Solar energy is thus far the only renewable energy source available to Singapore. Even here the severe restriction of physical size limits its use. Preliminary studies indicate that even with current technologies, compact solar photovoltaic panels installed on all suitable rooftop space, only a small proportion of Singapore's total energy needs will be met by 2020. Further research and development of solar technology will be required before small countries can exploit solar energy in a significant way. In this regard, Singapore has invested considerable resources into solar development, and has also offered itself as a site for test-bedding solar technologies.

Limitations in Other Efforts to Reduce Emissions

13 The Association of Southeast Asian Nations (ASEAN) has been seriously considering the possibility of an ASEAN Power Grid. This initiative was first mooted in 1997 and has not been completed. The viability of a common power grid will depend on the ability of ASEAN countries to generate electricity in excess of their own domestic needs. Care must however be taken that the power grid does not lead to an overall increase in carbon emissions in the region due to an increased combustion of fossil fuels to produce surplus electricity for distribution to the grid.

14 Carbon capture and sequestration (CCS) is another option for reducing GHG emissions which is still at the experimental stage. However, even if it becomes commercially viable on a large scale in the future, it will be of limited utility for Singapore as it lacks the geological structure³ necessary to serve as reservoirs for the sequestration of carbon dioxide.

Conclusion

15 Despite its “alternative energy-disadvantaged” status, the Prime

³ These include depleted oil or gas fields, coal seams and specific basalt formations.

Minister of Singapore had announced previously that Singapore will play its part in a realistic, workable global solution, if there is international consensus for all countries to do so.

16 In arriving at a globally effective and equitable solution to address the effects of climate change, the relative capabilities of individual countries to reduce emissions must be considered in apportioning responsibility. Every country must be encouraged to do as much as they are individually able to, taking into account their own unique circumstances. To this end, countries should be permitted to make voluntary but binding commitments that reflect their own abilities and circumstances. This will accord countries the flexibility to implement practical and effective measures to reduce emissions without curbing growth. Only such a realistic solution will command global consensus and encourage all countries to play a constructive role in the common effort to confront climate change.

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