

Conclusions and Recommendations

The ***Senior Expert Group Meeting on Sustainable Development of Lithium Resources in Latin America: Emerging Issues and Opportunities*** was co-organized by the United Nations Department of Economic and Social Affairs (DESA) and the United Nations Economic Commission for Latin America and the Caribbean (ECLAC/CEPAL) and held at the ECLAC/CEPAL Raul Prebisch Hall on 10-11 November 2010.

The Meeting was attended by 55 experts of the Latin American region and other countries, including representatives of concerned national governments, private sectors, business associations, para-statal authorities, research institutes, academia, international organizations, as well as civil society groups.

The Meeting heard and discussed 21 expert presentations, including

- (i) sectoral overviews assessing major issues and trends in the supply of and in the demand for lithium carbonate, in particular for electric mobility;
- (ii) country reports presented by experts from Argentina, Bolivia, Chile and Mexico;
- (iii) selected issue papers and presentations reflecting on perspectives for enhancing the sustainability in the production of lithium carbonate in Latin America, including through greater benefit sharing and empowering local socio-economic development; and
- (iv) national experiences, suggestions and proposals for enhancing national, regional and international cooperation in lithium resource development.

After discussion, participants took note of a number of general conclusion and recommendations, including the following:

- (i) Lithium can be extracted from various geological formations employing different types of processes. At the global level, there is a relative abundance of existing and potential future lithium supplies. However, optimal extraction processes and related costs can vary considerably between sites. Lithium carbonate production based on the extraction of lithium chloride brine from salt flats tends to be more economical and more environmentally benign than lithium extracted from pegmatite or other sources.
- (ii) In 2009, sales and prices of lithium carbonate declined as a result of weak demand and the global financial and economic crises. However, in the intermediate and long term, global demand and prices for lithium are widely expected to continue to increase, creating new opportunities for investment in the expansion of lithium production capacities. Many of the speakers believe that the demand for lithium will at least double in the next ten years.
- (iii) Several of the salt flats located in the Andean mountain region contain large amounts of lithium which can be extracted from brines in commercially viable and environmentally sound ways. Together, the countries of the “lithium triangle”, including Argentina, Bolivia and Chile, hold the world’s largest proven reserves of lithium.

- (iv) It is widely projected that mobility and the number of motor vehicles will continue to increase worldwide, in particular in the developing countries. Many vehicle manufacturers have announced plans to produce hybrid and/or plug-in electric vehicles (HEVs and EVs) with lithium-ion batteries, and to significantly increase their market share in the future.
- (v) Given the large proven reserves of lithium resources in the Latin American region, there may be no constraints in terms of resource potentials that could pose obstacles to the widely expected rapid expansion of lithium-ion battery based electric mobility, or to the continued and expanded use of lithium batteries in IT or other electronic products.
- (vi) In spite of the above it is essential for long-term sustainable development that countries that produce lithium batteries also develop and test, plan for and introduce lithium battery recycling technologies. Initial efforts are under way to enhance necessary standardization and the required regulatory framework.
- (vii) Efforts to successfully commercialize electric vehicles will depend, among other factors, on retail prices and on the relative costs for electric vehicle batteries, which thus far have remained relatively high. Participants noted that relative to the high costs of lithium-ion batteries, the costs of lithium carbonate and the costs of lithium contained in such batteries is actually very low (less than 5 per cent).
- (viii) The countries of Latin America exercise their sovereign rights in natural resource development and are presently reviewing the applicable national legislation and investment promotion strategies with a view to enhance productivity, employment opportunities, incomes and export revenues from lithium mines for inclusive national socio-economic development.
- (ix) Institutions and companies engaged in the commercial development and extraction of minerals from salt flats often simultaneously produce a variety of useful products, including potassium, lithium, as well as magnesium, nitrates, iodine, or other minerals. Co-production of various products offers essential opportunities for business, marketing and customer diversification.
- (x) The extraction of lithium through evaporation of brines in salt flats can have significant impacts on the often delicate balance of limited fresh and/or ground water supplies. Comprehensive environmental impact assessment studies and monitoring is crucial to prevent, minimize and mitigate any negative impacts on the flora, fauna and ecosystems in the salars and the adjacent areas.
- (xi) There is a range of new lithium extraction technologies that could go beyond the use of solar energy for evaporation, evaporation itself and solar energy as such, and that could contribute to enhance lithium production in the future.
- (xii) Comprehensive periodical reporting by concerned companies and other stakeholders is an essential precondition for effective information sharing, transparency and public participation in decision making.

- (xiii) Large-scale mining for world markets often relies on imported equipment and temporary migrants with the required skills, offering only very limited opportunities for sustained local value-added or socio-economic development. Greater efforts are needed in many regions to further enhance local benefit-sharing and the diversification of economic activities in local communities, including indigenous people.
- (xiv) In order to avoid or reduce potential social conflicts it is essential to ensure a broad based public participation process starting at the project planning stage, including the involvement of indigenous people and communities.
- (xv) Facilities for extraction and processing of lithium are commonly projected to have a long operational lifetime. However, the application of the precautionary principle would suggest a timely provision of measures that can ensure the necessary financial resources for the eventual post-mining site rehabilitation.
- (xvi) The countries, institutions and companies engaged in the production of lithium carbonate in Latin America potentially share various common interests and may be able to further explore opportunities for deeper regional cooperation and information exchange that could lead to substantial mutual benefits.
- (xvii) Greater international cooperation at various levels, including scientific, technological and financial cooperation, should support the efforts of the developing countries of the Latin American region to enhance national and regional sustainable development, including in the mining sectors.

The participants expressed their thanks to the co-organizers for their effective cooperation in jointly preparing and co-hosting the **Senior Expert Group Meeting on Sustainable Development of Lithium Resources in Latin America**, and they expressed their appreciation of the generous technical and financial support of the Government of the Republic of Korea for this event.