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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

D02813

United Nations Industrial Development Organization

Distr.
LIMITED

ID/WG.21/8
23 August 1968

ORIGINAL: ENGLISH

Expert Working Group Meeting
on Modernization and
Mechanization of the Salt Industries,
based on Sea Water in the Developing Countries

Rome, Italy - 25-29 September 1968

Introductory statement

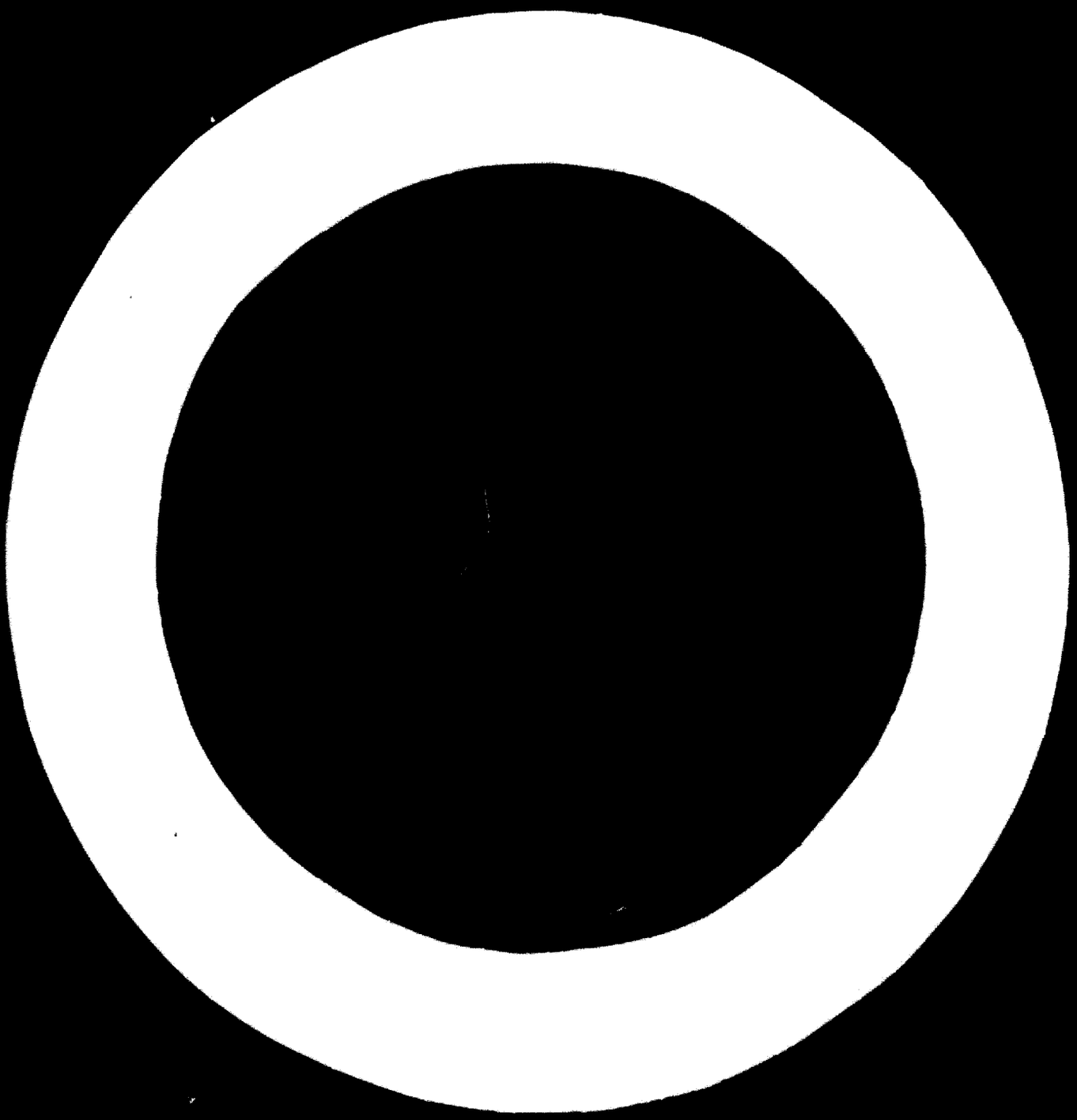
by

Paul M. Terlizzi
Industrial Development Officer
United Nations Industrial Development Organization

1. One of the functions of the Industrial Technology Division of the United Nations Industrial Development Organization concerns providing the developing countries, at their request, with assistance in the formulation of plans to assess the economic merits and technological requirements for establishing basic chemical industries, using materials available to them.

2. It can be seen, therefore, that the potential utility of sea-water, which contains practically every known element, is of considerable industrial and economic interest to those developing countries, that have access to this abundant natural resource.

3. Our specific and fundamental concern is to assist developing countries in modernizing and/or mechanizing their present solar salt-producing facilities and production techniques so that the fruits of their labour, the risk of their capital and, more importantly, their time spent may result in the early realization of economic improvements.



4. The terms "modernization" and "mechanization" are not synonymous. Many salt plants today still use much manual labour or, as often referred to in the salt industry, "primitive methods", in the harvesting of sea-salt. If such outmoded operations can be up-graded to a significant degree by the use of machines, even simple ones, then the term "mechanization" is valid in our study.

5. On the other hand, many developing countries are already using machines. However, the equipment may be quite basic, for example, a hand cart moved on a track, a portable conveyor belt that must be guided constantly; lifting devices for handling bagged salt that use pulleys, or scrapers that often damage salt beds because they lack levelling devices or other controls. Mechanization, in these cases, could cover the use of motorized vehicles, fork lift trucks for storage, improved scraper accessories and the like.

6. Modernization is the next step to be considered. Machines based on old principles, although usable, can perhaps be replaced with ones that are more advanced, not necessarily in terms of degree of sophistication, but in terms of readily realizable improvements to the present techniques used, and ones which can be adopted with a minimum of cost and within the existing technological framework of a country. For example, salt could be conveyed from salt fields directly to the processing facilities by long conveyor belts, powered by energy available from power transmission lines, wind mills or steam or internal combustion engines. Salt could be graded for physical quality by the establishment of simple control tests and adherence to specifications. It can be weighed and bagged automatically. Salt ponds and crystallizing beds could be made more leak-proof, thereby saving material, and new techniques could be incorporated to increase the capacity and improve the life of such beds. Chemical quality-control procedures could be adopted to reduce the production of low-quality salt and to increase the varieties of salt that could be made. More corrosion-resistant construction materials could be recommended to reduce replacement periods. These all fall under the category of "modernization".

7. Each recommended change should be considered in the light of the cost of labour as compared with cost of mechanization or modernization in a particular country. In other words, to what degree can the industry in a selected country be considered capital intensive or labour intensive?

8. An important aim of the work of this group is the effective translation of experiences and ideas to the formulation of a plan of recommended action for selected developing countries to consider. In our discussions, we plan to analyse the cases of several individual countries.

9. In addition to the production of consumer salt, developing countries require assistance in the production of salt products useful for the cheese, dairy, canning, baking and other food-processing industries. Should these countries develop their salt-producing capabilities to a point where they could provide a broad spectrum of products, they could branch out into the supply of salt of various grades to industries that produce chlorine, caustic soda, pulp and paper, metal products, ceramics, rubber, oil and soap, as well as textile dyeing and ice manufacturing and water conditioning to name only a few.

10. One field for salt utilization of prime importance to developing countries is agriculture. As grazing lands become scarce and food values in the soil diminish, higher volumes of feed are required for the greater number of livestock to be raised. Salt is an important ingredient in feed mixes, so it can become an important agricultural chemical in less developed countries.

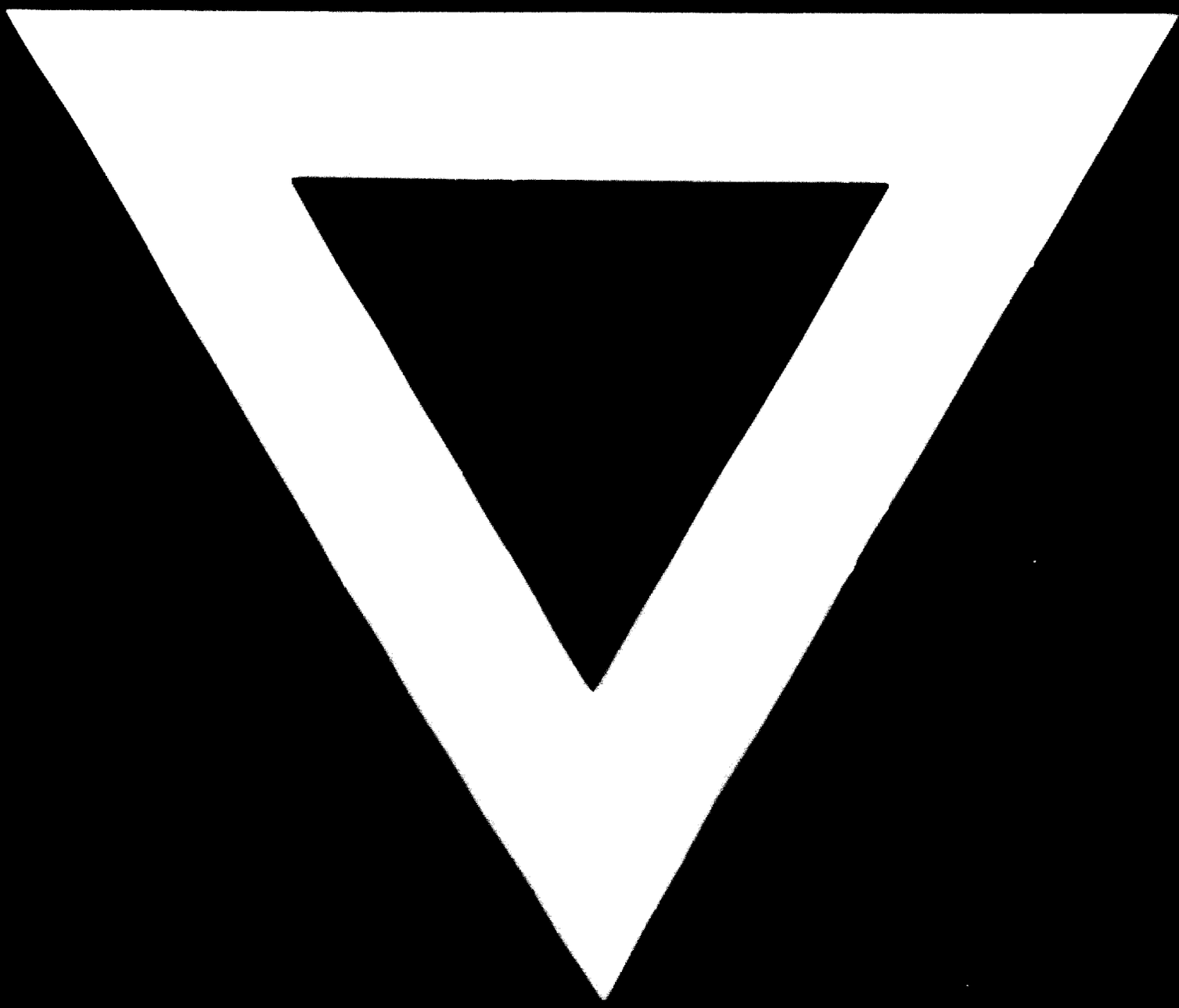
11. UNIDO, in planning for this Expert Working Group Meeting, requested all countries having access to sea-water to provide information as to the status of the salt industries in their respective areas. In addition to the papers that will be presented, we have received summaries from China (Taiwan), Cuba, Brazil, Peru, Turkey and the Sudan. All of these will be included in the final conference report. Countries that have replied but that were not in a position to contribute papers at this time include: Greece, Colombia, Australia, Guyana, Morocco, Ghana, Jordan, Togo, Jamaica, Liberia, the Netherlands, Nigeria, Argentina, the United Kingdom, Nicaragua, Germany, El Salvador, and Algeria.

12. Some of these countries have marginal salt fields, operated mostly by family units, others import significant quantities rather than utilize their own resources and others have found that their rock salt deposits are easier to work, while others have never seriously considered developing their salt industry, either because of lack of industrial uses for such raw material in their own country, or because their climatic conditions are not suited for salt production.

13. However, all of them are interested in the results of this meeting, and many will request assitance from UNIDO to initiate segments of this industry.

14. The UNIDO budget for 1969 and 1970 includes plans for providing funds for salt industry developments in Africa, Asia and the Far East, Europe and the Middle East and the Americas. Countries in all of these areas are expected to request assitance from UNIDO to have experts survey their present facilities, make recommendations as to how to improve their productivity and request fellowships for the training of selected personnel in new methods of production and quality control.

15. UNIDO hopes to call upon members of this Working Group to assist these countries as experts when such requirements arise. Collectively, the results of this Expert Working Group Meeting should go far in opening up new opportunities technically, industrially and economically for those developing countries where salt production can be a vitally important sector of their industrialization.



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