UNU project targets environmental hazards of silicon production

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The UNU's Institute of Advanced Studies recently launched a project to reduce the environmental damage brought about when quartz is turned into electronics-grade silicon required by high-tech industries.

Vast tracts of forest are destroyed to make the charcoal which is used to induce a reaction that converts quartz to metallic silicon. Furthermore, wastes produced during the procedure are often dumped into water systems and the atmosphere.

The project is called QITS, which stands for quartz industrial trade system. QITS aims to restructure the way silicon is made so that the process becomes environmentally sustainable.

The project's first workshop was held from 2 to 4 March at the State University of Campinas in Brazil. Much of the world's silicon comes from Brazil, as the country is one of the few places where high-grade quartz deposits are large enough to be mined for commercial use.

According to Takaya Kawabe, the project's coordinator, the workshop was "a big success." More than 100 representatives from government, industry, and universities attended the three-day event. "We were able to see each step in the quartz processing system, from mining to its refinement into silicon," said Prof. Kawabe.

One of Prof. Kawabe's goals is to get the industry to start using plasma technology as an alternative to charcoal. "Plasma can be produced by passing an electrical discharge through hydrogen gas, which is then injected into quartz. A chemical reaction with the hydrogen plasma separates the oxygen from the quartz," he explained. "If it is feasible economically, this alternative method is much better than using charcoal, because it doesn't involve chopping down a lot of trees, and there is no carbon dioxide or carbon monoxide emitted during the procedure."

By the end of the workshop, a four-year work plan had been prepared that outlines three main tasks: finding ways to make the quartz trade environmentally sustainable, exploring options for transferring the technology needed to clean up the industry, and preparing policy alternatives that can be incorporated into new industrial standards. The project's second workshop will be held in

Tokyo in October.

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Nautilus Institute
608 San Miguel Ave., Berkeley, CA 94707-1535 | Phone: (510) 423-0372 | Email: nautilus@nautilus.org