A budgetary call to arms

Japan's new frugal political leadership serves as a threat and an opportunity for Japanese scientists.

Last autumn, the Democratic Party of Japan (DPJ) replaced the Liberal Democratic Power, which had been in power since 1955. The DPJ promised to be more responsive and transparent, and less wasteful with overall spending. It appointed subcommittees of lay people to rifle through governmental big-ticket items, interview bureaucrats and propose whatever cuts they deemed necessary, in a process called *jigyo shiwake*.

The interviews were broadcast live on the internet, an astonishing degree of openness in any country, and especially in Japan. Representatives often did not defend their projects well, and the subcommittees recommended that some, such as Japan's supercomputer currently under construction, be terminated (http://go.nature.com/TgKGbc).

Japan's scientific community convulsed. Scientists wrote petitions, circulated letters and appealed to bureaucrats and other government officials either directly or in messages posted on homepages. Four Nobel Prize winners, including chemist Ryoji Noyori and physicist Reona Esaki, held a symposium in which they warned of Japan's demise were science not supported. The Japanese scientific community has never risen in arms in quite this way before (http://go.nature.com/8WUjEV).

The response seems to have hit the mark. The *jigyo shiwake* was criticized for its hasty judgments, made after a one hour interview. The Council for Science and Technology Policy, the customary arbiter of Japan's science budget, weighed in with support for most ongoing projects. Doomsday scenarios faded. Even the supercomputer will survive, albeit with delays, and the SPring-8 synchrotron faces only a 2% cut — not the recommended 'one-third to one-half'. The overall research budget, which goes into effect on 1 April, will probably increase.

Big projects in nanotechnology and material sciences were never threatened by the rough blade of *jigyo shiwake*. The budget for Japan's ongoing Nanotechnology Network, whose 26 member institutions try to create public–private–academia partnerships to develop cutting-edge devices for nanoscale measurement and analysis, and molecular and materials processing, is slated to rise from ¥1.305 billion ($14.45 million) to ¥1.328 billion ($14.70 million). A 'green' nanotechnology initiative promoting research on photocatalysis for hydrogen generation, fuel cells and other environment-saving technologies, which began last year, will see its budget double from ¥205 million to ¥410 million. Construction of Japan's free-electron laser will continue apace. Upward trends in overall spending on nanotechnology and materials as well as targeted government projects will continue.

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Japanese Prime Minister Yukio Hatoyama's cost-cutting exercise (*jigyo shiwake*) has been popular, but many scientists criticize the way it has been executed.

With very tangible practical applications, materials science as a field is fortunate. The committees wanted demonstrations of social or economic contributions, and materials science has that in spades. If called upon, the network could, for example, point to the 62 patent applications filed in 2008 as proof of its utility. And with the DPJ promising large budgets for clean energy and environment, materials scientists should feel safe.

But many do not, and for good reason. The general concept behind *jigyo shiwake* — to shift spending to clear-cut, short-term social benefits, such as direct stipends to families for each child — will lead towards neglect of the long-term vision needed to support fundamental research. Discovery of materials boasting practical application is often based on fundamental experiments and extensive trial and error. Researchers in nanotechnology and materials, like those in any field, need breathing space, and they might lose this if the trend towards grant applications promising applicability in five years continues. The big top-down projects can state this case most convincingly. But if too much money is concentrated there, the diversity that has made Japan's materials research strong will be threatened.

Excessive focus on practical targets will be exacerbated by cuts in support for young scientists resulting from *jigyo shiwake*. Japan's Global Centres of Excellence, which funnel roughly half their money to support doctoral students — a sorely needed form of support in Japan, where normal government grants cannot be used to support students — will probably face up to 20% decreases. One of the most generous grant programmes from the Japan Society for the Promotion of Science, which helps promising young researchers to get established, faces even deeper cuts. These programmes help to spread the wealth to the pockets of strong research outside of the established groups, ensuring more diversity and a future generation of scientists.

Many scientists welcome *jigyo shiwake* as an opportunity to re-evaluate research priorities and ensure that funding is not being wasted. It is indeed. But it needs to be done with more care than this first round has shown. The DPJ is already proposing another round of *jigyo shiwake* to take place this summer. Let's hope the DPJ responds not only to the needs of the broader society but also to the scientific community.

Japanese researchers need to accept the challenge. Too long assured of budgets through cosy links with bureaucrats, they must be able to defend their research, whether that be geared towards short-term applications or longer-term vision. The flurry of self-justification and self-reflection brought about by *jigyo shiwake* should be considered by scientists not just when there is a historic political change, but also in their daily work. It would probably help not only their funding situation, but their science as well. ❐

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