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Environmental icon Marina Silva may struggle to advance her environment agenda if elected president.

ELECTIONS

Brazil warming to 'green' policies

Activist Marina Silva is gaining ground in presidential polls.

BY JEFF TOLLEFSON

Marina Silva rose from poverty deep in the Amazon jungle to become a prominent politician and the advocate who kick-started Brazil's battle against deforestation. Now she is clashing with an old foe, President Dilma Rousseff, in a wild election that could reshape the nation's environmental policy.

Silva's sudden ascent is almost as shocking as the event that prompted it: a plane crash on 13 August that killed presidential candidate Eduardo Campos. That pushed Silva, his running mate, to the top of the centre-left Brazilian

Socialist Party. Although the Campos-Silva ticket had struggled to gain traction, Silva is now in a statistical dead heat with Rousseff going into the election on 5 October; the two women are expected to face off in a runoff vote three weeks later.

As a third-party contender, Silva has promised a break from traditional politics amid growing anger over Brazil's stagnant economy and political corruption that has tainted the Workers' Party led by former president Luiz Inácio 'Lula' da Silva and his successor, Rousseff. But the campaign has also shown that Silva's grassroots 'socio-environmentalism' has wider appeal than many once believed.

Almost one-fifth of Brazilians supported Silva when she ran for president under the Green Party banner in 2010, but she seemed destined to remain a protest vote. After briefly trying to form her own party, she joined forces this year with Campos, a popular governor from the northeastern state of Pernambuco and Lula's former science minister.

"There has been a sea change in the political culture in Brazil, and Marina is one of the people who has brought it about," says Steve Schwartzman, an anthropologist with the Environmental Defense Fund, a non-profit advocacy group in New York, who began working with Silva in the 1980s.

Silva's impoverished childhood stands in stark contrast to that of Rousseff, an economist who grew up in a well-off family and received a solid education. Born into a poor forest community in 1958, Silva suffered mercury poisoning, hepatitis and malaria as a child and moved to the city of Rio Branco to receive hepatitis treatment at the age of 16. There she began her education at a Catholic convent and went on to earn a degree in history.

DEFORESTATION CAMPAIGNER

In 1984, she joined forces with environmentalist Chico Mendes, a rubber tapper whose 1988 murder helped to put the destruction of the Amazon rainforest onto the geopolitical map.

Silva was elected to the Brazilian Senate in 1994, at the age of 36, as a member of the Workers' Party. Lula appointed her as environment minister when he took office in 2003, and Silva quickly transformed Brazil's governance of the Amazon, pulling multiple government branches into a new enforcement regime that has helped to drive a 79% decrease in deforestation over the past decade.

"She was always directly engaged, very smart, and she listens a lot," says Thelma Krug, who served as Silva's chief climate-change adviser and is now assistant director at the National Institute for Space Research in São José dos Campos.

A devout evangelical, Silva speaks softly but commands attention. She is not afraid to stand up for her goals and values: she resigned as environment minister in 2008, feeling her agenda had been ignored in repeated battles over dams and development plans with other administration officials, Rousseff included. Krug's only concern is how Silva will cope with the harsh political realities in ►

► Brasília. “Marina does not negotiate on principles,” she says.

Others go a step farther. “I think she is a little too radical,” says Pedro Alves Vieira, a geologist at the State University of Goiás and environment secretary for the municipality of Goiás. Although Silva has hewed to the centre during the campaign, Vieira fears that she may be too focused on the environment, too religious and too rigid for the presidency.

“I think it’s time for a change.”

But some of Silva’s major stances have evolved. As environment minister, she opposed the introduction of genetically modified soya beans, but has since sought to mend fences with the powerful agribusiness industry — stressing that modern agriculture, practised legally, is not at odds with forest protection.

Her plan for sustainable development focuses on stemming Brazil’s gradual shift toward fossil fuels: renewable energy fell from 95% of the nation’s energy mix in the 1990s to 78% in 2013, according to her campaign. To reverse that trend, she is calling for the installation of solar panels on 1 million homes and the revitalization of the sugarcane ethanol sector, which has struggled to compete with heavily subsidized petrol. She is also pushing for sustainable forest concessions geared toward biomass energy.

By contrast, Rousseff has put more emphasis on dozens of large-scale hydroelectric dams that would increase development pressure on the Amazon rainforest. “We need more energy, but Brazil’s current strategy is really based on big infrastructure,” says Mercedes Bustamante, an ecologist at the University of Brasília who spent two years at the science ministry under Rousseff. “I think it’s time for a change.”

Science policy has received little attention in the presidential campaign, although Silva has called for federal and private investments in research and development to expand from 1.1% of Brazil’s gross domestic product to 2%. The government’s science spending has increased over the past decade, but researchers say that it has also been spread thin by new programmes.

Even if she takes the helm, Silva will have to tackle shifting political winds in Brasília. In 2012, the nation’s congress voted to weaken the country’s forest law, and some lawmakers are now pushing to scale back protected lands to allow mining and energy development.

But Schwartzman warns against underestimating Silva’s political skills should she win. “She and the others who worked with Chico Mendes in Acre really came through a crucible,” he says. “In some ways, looking back on that experience, I’m not surprised that she is where she is now.” ■

The Chinese Academy of Sciences, which employs 60,000 people, opens its 2014 congress in Beijing.

POLICY

Chinese science gets mass transformation

Teamwork at centre of Chinese Academy of Sciences reform.

BY DAVID CYRANOSKI IN BEIJING

Change is coming to the institute that has been at the heart of China’s scientific development since the communist state began. The Chinese Academy of Sciences (CAS) is making unprecedented structural reforms to foster collaboration and turbocharge research. Proponents say that the initiative will make China a world leader in areas from neuroscience to particle physics; detractors question whether modern China needs such a sprawling organization at all.

The CAS, headquartered in Beijing, employs 60,000 people, and has 104 research institutes and a budget of roughly 42 billion renminbi (US\$6.8 billion). Just under half comes from the government, to cover overhead costs and salaries; the rest comes from competitive government grants. It is “the biggest reform in the academy’s history”, CAS president Chunli Bai told *Nature*’s news team in an interview on 22 September.

The initiative — which was designed by Bai — follows an appeal by Chinese president Xi Jinping in July 2013 for the CAS to become a world leader in science. Although China’s spending on science now outpaces that of all countries except the United States, many agree that the country is not getting a good return on its investment, in terms

of both basic-science breakthroughs and commercialization of those findings.

Some underperformance might result from low salaries for scientists — including those at the CAS, says Bai — who scramble to supplement their incomes with multiple grants. “Their research becomes very fragmented,” he said.

Scientists also shy away from collaborations because co-authorship dilutes their achievements in the eyes of grant committees. At a conference in 2012, Bai discovered that researchers across 20 different CAS institutes were working on related projects, but often did not know each other — duplicating work and missing opportunities to share knowledge. He also notes that they had little interest in discussing applications with industry representatives.

To deal with these issues, Bai has grouped research into four categories, and promising CAS scientists are being selected to work together under them. They will see their salaries jump, relying on grants for only 30% of their income, rather than for 70%. The idea is to encourage scientists to collaborate on fewer, large problems, rather than to churn out marginal advances in disparate projects that can be used to seek multiple grants. “Teamwork is the key word,” says Mu-Ming Poo, director of the CAS Institute of Neuroscience in Shanghai.

The first category is devoted to establishing centres of excellence focused on basic science,

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