

Environment

'Behavior not predictable'

Venice tide barriers pass test but skeptics remain

VENICE, Italy, Dec 8, (AP): Floated along by barge, one of the 10-ton barriers designed to relieve Venice's perennial flooding looks like a giant plaything: an oversized hinged yellow Lego.

Central to the plan to protect the city, some or all of the 78 barriers will one day be raised when the sea rises more than 110 centimeters (43 inches), to prevent damaging high tides from pushing into the lagoon city, a world heritage site built picturesquely – but somewhat precariously – upon more than 120 islands. Concerns that high tides are becoming more frequent because of climate change have increased the urgency.

While the concept is simple, its realization has been anything but.

The system of movable underwater barriers, dubbed Moses, has been beset by corruption, cost overruns and delays. Projected at 1.8 billion euros (\$2 billion) and meant to be completed by 2011, the project has so far cost 5.5 billion euros and is running a decade behind schedule.

In the wake of last month's flooding of Venice, the worst in 53 years, the consortium that oversees construction of Moses is eager to demonstrate that the project – after years of bad news – is on track and will be fully operational by the end of 2021.

Venetians say they cannot afford to be wrong. Skeptics and critics say they may be.

A recent test of the deepest expanse of barriers – at the Malamocco entrance to the lagoon – was declared a success by the New Venice Consortium.

It was the last of the four sections of barriers to be completely raised – but so far only in calm seas. The real test will come when all four are raised at once, and not only in serene waters, but under flood conditions. That isn't scheduled to take place until the end of next year.

It took six years to test each of the four movable sea walls covering the three openings to the lagoon, partly because work was slowed by a 2014 corruption scandal that implicated the



Conte

Control

Work is continuing largely with the original subcontractors now contracting directly with the consortium, which itself has been placed under government control as a result of the scandal.

The fact that the barriers have not yet been physically tested in rough seas is a concern to critics.

Paolo Vielmo, an offshore marine engineer who has long criticized the project, said that tests carried out in a laboratory in The Netherlands in the 1990s indicated that the barriers, under certain conditions, would oscillate out of control – possibly even breaking apart.

"Its behavior is not predictable," Vielmo said. He said that the trials so far declared successful have been under only modest sea conditions that fail to represent anywhere near the threat of the phenomenon of extreme oscillation called sub-harmonic resonance.

Vielmo and two other offshore engineers have compiled a report for the Codacons consumer and environment protection advocacy group, which is asking officials to run additional calculations to see if the project is indeed viable.

And if it is not, Codacons says Moses should be stopped.

"We don't want to delay by one minute the possibility to make Moses operational. But we say we cannot make it operational until we are sure it will work," said Franco Conte, president of Codacons in Venice. "Naturally, the Venetian community is exasperated and they say, 'If we did 95%, let's do 100% and see if that works.' But that is unconscionable. If we don't know if it works, we cannot experiment."

The barrier system is made up of giant flood gates, each 20 meters (66 feet) long. The gates are attached by hinges to giant cement blocks placed on the seabed along the three openings from the sea into the lagoon, Malamocco, Chioggia and the Lido. The gates can be lifted to create a temporary barrier in high tides. Once the water has receded, they can be lowered again – allowing shipping traffic to continue and for the tidal system to flush out the lagoon.

The idea behind the project was to create a mobile system that would not impede views of the unique and protected landscape. But Moses has suffered criticism from the start that there were simpler, cheaper systems that could have been deployed.

Venetians have been waiting since the record 1.94-meter (6.36-foot) flood of 1966 for a system to protect them from regular inundations. The flooding in November, the second-worst recorded, proved the urgency.



A Falcon 9 SpaceX rocket on a resupply mission to the International Space Station lifts off from Space Launch Complex 40 at Cape Canaveral Air Force Station in Cape Canaveral, Fla on Dec 5. (AP)

SpaceX delivers 'mighty mice', worms, robot to space station

A SpaceX cargo ship arrived at the International Space Station on Sunday, delivering super muscular "mighty mice", worms and a smart, empathetic robot.

The station commander, Italy's Luca Parmitano, used a large robot arm to grab onto the Dragon three days after its launch from Cape Ca-

naval. The two spacecraft soared 260 miles (420 kilometers) above the South Pacific at the time of capture.

"Whenever we welcome a new vehicle on board, we take on board also a little bit of the soul of everybody that contributed to the project, so welcome on board," Parmitano told Mission

Control.

The capsule holds 3 tons (2,720 kilograms) of supplies, including 40 mice for a muscle and bone experiment. Eight of them are genetically engineered with twice the normal muscle mass – and so are considered "mighty mice". There also are 120,000 roundworms, or nematodes of a ben-

eficial variety that are part of an agricultural study.

The capsule also has a large, round robot head with artificial intelligence and the ability to sense astronauts' emotions. Named Cimon, it's an improved version of what flew up last year to be tested as an astronaut's helper. (AP)



A firefighter controls a backburn near Mangrove Mountain, north of Sydney, Australia on Dec 8. Hot dry conditions have brought an early start to the fire season. (AP)

Climate

'No escaping Earth'

Face up to climate change: Nobel laureate

STOCKHOLM, Dec 8, (AP): An astronomer who shares this year's Nobel Physics prize for discovering a planet outside the Earth's solar system is taking issue with people who shrug off climate change on the grounds that humans will eventually leave for distant planets.

Didier Queloz was one of several Nobel laureates who spoke about climate change at a news conference Saturday in Stockholm.

"I think this is just irresponsible, because the stars are so far away I think we should not have any serious hope to escape the Earth," Queloz said.

"Also keep in mind that we are a species that has evolved and developed for this planet.

"We're not built to survive on any other planet than this one," he said. "We'd better spend our time and energy trying to fix it."

Several other Nobel winners also urged that climate change be taken seriously. The remarks came as a two-week global summit on climate change is taking place in Madrid.

Esther Duflo, one of the Nobel Economics laureates, cautioned that dealing with climate change "will require a

change in behavior, particularly in the rich countries" that are heavy consumers of goods and energy.

She disagreed with those who believe there is no need to consume less as long as that consumption is fueled by renewable energy.

"It would be great if that were the case but I don't think we can count on it necessarily," Duflo said.

M. Stanley Whittingham, who shared this year's Nobel Chemistry award for helping to develop lithium-ion batteries, said "to help solve the climate issue, the time is right now, but we have to be pragmatic. ... We can't just turn off all the CO2."

Canadian-American James Peebles, who won half of this year's 9-million-kronor (\$948,000) Nobel Physics prize for studying what happened soon after the Big Bang, later told The Associated Press that he is excited about the current wave of youthful climate change protesters.

"I see these people in Princeton, my hometown, as they go marching for control of climate. It is a wonderful thing. I love their enthusiasm, their energy, their devotion to something very worthwhile," he said.

Whittingham also told the AP that he believed the climate protests would produce results.

"Maybe some of the young folks don't realize how long it takes. But I go back to the Vietnam War era and the United States, where it was really the young people that pushed the politicians to get out and stop that nonsense," he said.

The Nobel prizes in Physics, Chemistry, Medicine, Economics and Literature are being presented Tuesday in the Swedish capital.

In other news, French environmental activists brandished stolen portraits of President Emmanuel Macron at a protest Sunday near the Eiffel Tower to try to push the government to do more to fight climate change.

The protest is part of an unusual climate movement that has taken root around France this year, in which activists have stolen more than 130 portraits of Macron from town halls from the Alps to the Atlantic.

They feel the centrist, business-friendly Macron isn't doing enough to reduce France's emissions, even though he portrays himself on the global stage as Mr Climate.

Discovery

'Brazil needs support': Brazil can't stop deforestation in the Amazon without the help of rich countries, the country's Environment Minister said at the United Nations' two-week climate change conference.

Ricardo Salles, who declined to set a target for limiting deforestation in the coming year, said in an interview Saturday with The Associated Press that his country is committed to reducing illegal activity, but needs the support of developed nations.

"We are willing to do whatever is necessary to do so, but we need that back up," Salles said. "That back up was promised many years ago and we're still expecting the rich countries to participate in a proper way. Proportional funds are really are what are going to be needed for that task."

While participating in the climate conference known as COP25, Salles is working to assure others of the environmental policies of Brazil's far-right President, Jair Bolsonaro.

Bolsonaro has squabbled with some European leaders this year over his commitment to protecting the Amazon. He has worried environmental activists and others by criticizing Brazil's environment regulator and by calling for more development in the Amazon region. He also accused activists groups, without evidence, of having set fires in that region to undermine his administration.

Deforestation in the 12 months through July reached the highest annual rate in 11 years. Brazil's annual deforestation report released in November showed a nearly 30% jump from the prior year in the Amazon, which lost 3,769 square miles (9,760

square kilometers) of forest.

Salles said developed nations should help Brazil on the basis of Article 6 of the Paris Agreement signed in 2015 on tackling the effects of climate change. The article says monetary compensation mechanisms must be created to help developing countries.

Brazil already receives money from wealthy nations, namely Germany and Norway, to fight deforestation in the vast Amazon rain-forest. Norway alone has do-



Bolsonaro



Salles

nated \$1.2 billion to Brazil's Amazon Fund since its creation in 2008.

However, both European nations have suspended contributions, citing the continued deforestation and questioning whether the government wants to stop it. The Brazilian newspaper O Globo reported this past week that the fund's disbursements this year were the smallest since 2013 and said zero projects were approved despite the fact the fund has 2.2 billion reais (\$530 million) available. (AP)

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