समाचार पत्रों से चयित अंश
Newspapers Clippings

दैनिक सामयिक अभिज्ञता सेवा

A Daily Current Awareness Service

रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केन्द्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाऊस, दिल्ली 110054
Metcalfe House, Delhi-110054

Business Standard **02 December 2015**

New missile adds teeth to Navy

The Long Range Surface to Air Missile jointly being developed by India and Israel is an answer to potential threats from Pakistan's Harpoon

Ajai Shukla

A successful missile test on Thursday, in the Mediterranean Sea off the Israeli port of Haifa, is potentially a giant capability leap for Indian and Israeli warships. Developed jointly by both countries, Israelis refer to the new missile system as the Barak 8, while Indians call it theLong Range Surface to Air Missile (LR-SAM). It protects warships from the weapon that their captains most fear: anti-ship missiles, launched from submarines, ships or aircraft up to 150 kilometres away. A modern, anti-ship missile like the Harpoon II, which costs less than $2 million, can scuttle a warship worth several hundred million dollars. The Indian Navy's answer to this is the LR-SAM, which has been described as "an anti-aircraft, anti-missile missile". Its origins lie in the Kargil crisis of 1999, when the navy realised its vulnerability to the Harpoon anti-ship missiles that America had supplied to the otherwise outgunned Pakistan Navy. To counter the Harpoon, New Delhi approached Tel Aviv for an emergency procurement of its newly developed Barak missiles, which could shoot down incoming Harpoons at a range of ten kilometres. While impressed with the Barak, the admirals wanted longer-range protection, given the navy's "blue water" ambitions of controlling wide swathes of ocean. Operating as a part of a widely dispersed flotilla, a capital warship (destroyer, frigate or corvette) needed to not just protect itself but to also create a protective "air defence bubble" for smaller accompanying warships. In January 2006, New Delhi and Tel Aviv agreed to develop a longer-range Barak that could counter anti-ship missiles of the future. New Delhi allocated Rs 2,606 crore to this project, which would enhance engagement ranges seven-fold, to 70 kilometres. Enemy fighter aircraft, which presented significantly larger targets than anti-ship missiles, could be detected and destroyed at longer ranges. It was agreed that India's Defence R&D Organisation (DRDO) would develop the missile's solid-fuel, two-pulse propulsion motors - 30 per cent of the work share-, while Israel Aerospace Industries would build the rest of the LR-SAM. Of this, Rs 1,700 crore were for three LR-SAM systems for the new Kolkata-class destroyers that India was building. Meanwhile, Israel planned to fit three systems on its Sa'ar 5 corvettes, its biggest and most advanced warships. It was one of these corvettes, the Israeli Naval Ship Lahav, which conducted the test on Thursday. This was the first time the LR-SAM was tested on a warship, fully deployed in "combat configuration". The anti-ship missile was simulated by a "pilotless target aircraft" that was racing towards the ship at 500-550 kilometres per hour. This is slower than the Harpoon anti-ship missile which travels at about 865 kmph, and barely half the 1,150 kmph speed of the Exocet anti-ship missile. A senior defence ministry official described the test to Business Standard. As the pilotless target aircraft flew toward the Lahav, the corvette's MF-STAR radar, the heart of the LR-SAM system, quickly detected it. The MF-STAR (multi-function surveillance, tracking and acquisition radar) can detect targets up to 200 kilometres away, but the actual range at which this test was conducted remains secret.

Contd...

part-2

New missile adds teeth to Navy

Contd...

How it unfolded - Strategic affairs website DefenseNews quoted an Israeli official telling reporters that the target was acquired "at a range of more than 20 kilometres but less than 120 kilometres." Automatically, the MF-STAR began tracking the target, displaying in real time its distance, altitude, direction and velocity on a multi-function display in the ship's operations room - on the LR-SAM's command system. Meanwhile, an interceptor missile, housed in a canister in the warship, began its pre-launch checks. Within seconds, the LR-SAM's command system had computed engagement scenarios and calculated the impact point, where the outgoing missile would meet and destroy the incoming aircraft - a bullet hitting a bullet. At the designated nanosecond, the interceptor missile roared out of its canister, engulfing the Lahav's deck in a ball of fire. Quickly gaining supersonic speed, it levelled out and streaked towards the incoming missile, guided by continuous target updates transmitted by the MF-STAR over a data link. Seven kilometres short of the target, a seeker on-board the missile switched on; now the missile was itself locked onto the target, tracking its manoeuvres. The dual-pulse motor fired again, accelerating the missile that was, by now, merely "coasting". This increased velocity allowed the missile to manoeuvre sharply, keeping up with the target's evasive zigzags - termed "target dynamics". As the interceptor arrived a few metres from the target, a proximity fuse detonated its 23-kilo high-explosive warhead. This aims to destroy the target or damage it enough to prevent it reaching the mother warship. In Thursday's test, the Israelis claim the proximity fuse was irrelevant, since the interceptor missile directly hit the simulated target. "It was metal on metal," says an Israeli source. "All the subsystems of the missile performed as predicted and achieved the desired goal of hitting the incoming target," an Indian defence ministry statement corroborated on Friday.

The next step - The ministry says the next test will involve the LR-SAM being fired from INS Kolkata. After it is validated in at least three tests, the LR-SAM will be deployed in all the three Kolkata-class destroyers (Project 15-A); four Project 15-B destroyers being constructed in Mazagon Docks; and seven frigates that will soon begin construction in Mazagon and Garden Reach Shipbuilders & Engineers, Kolkata. The LR-SAM will also be installed on INS Vikrant, the indigenous aircraft carrier being built in Kochi. The Israeli navy, meanwhile, will install the Barak 8 on all three of its Sa'ar 5 corvettes, and four new Sa'ar 6 corvettes that are being built in Germany. Senior DRDO sources describe working with the Israelis in developing the LR-SAM as "a lesson in professionalism and capable project management". The LR-SAM, which was to be operationalised in October 2012, is running three years late, but DRDO admits this is because of Indian delays in developing the dual-pulse motors, which required developing an entirely new propellant. Meanwhile, the Indian Air Force, which faces a dire shortfall of capable missile systems to defend Indian airspace, is plugging this gap, courtesy the LR-SAM. In March 2009, it signed a Rs 10,075-crore contract with DRDO for a ground-based version called the Medium Range Surface to Air Missile (MR-SAM). The contract is for 18 fire units (each equipped with 24 missiles) to be delivered by October 2016. Each fire unit includes radar, three missile launchers, and a command system. "There is 90 per cent commonality between the LR-SAM and the MR-SAM. We are on track to conduct the first full MR-SAM test in the first half of 2016," says a senior DRDO official. With development of this new generation missile almost complete, the production chain has begun to roll. The missiles are being integrated at state-owned Bharat Dynamics. Several private sector companies, such as Godrej & Boyce and SEC, are parts of the production chain. "We are doing concurrent production, and have placed orders for sub-systems. A large part of the LR-SAM will be built in India, bringing down costs and increasing our capabilities," says a DRDO official. This missile production chain is assured of orders for at least the next two to three decades. A missile has a limited shelf life of seven to nine years and, as they complete their service lives and are consumed in training, replacement orders are guaranteed.

Proposed criteria to shut out most Indian pvt defence manufacturers

By entering into a strategic partnership with chosen Indian private firms, the government will give them a firm commitment and do away with the system of awarding contracts to lowest bidder for these military platforms.

by Sushant Singh

The recommendations of a Defence Ministry task force, set up to identify Indian private companies as strategic partners for development of critical military platforms such as aircraft, warships and armoured fighting vehicles, are likely to be contentious. The Aatre task force, expected to submit its report this week, has proposed weightages and assets criteria which allow only a few Indian private defence manufacturers to qualify for strategic partnerships. The financial criteria finalised by the task force will shut out a large number of other manufacturers. By entering into a strategic partnership with chosen Indian private firms, the government will give them a firm commitment and do away with the system of awarding contracts to lowest bidder for these military platforms. Headed by the former chief of DRDO, V K Aatre, this task force was set up in September by the Defence Ministry as per the recommendations of the Dhirendra Singh committee on changes to the Defence Procurement Procedure (DPP). The Dhirendra Singh committee suggested that a designated task force should select an Indian strategic partner for the development of a particular platform, and each strategic partner should be restricted to only one platform to allow for development of structured capabilities in the Indian industry. "We are on course to submit the report to the defence ministry in the next few days. It is up to the defence ministry when and how it releases our recommendations," V K Aatre told The Indian Express. According to sources, the Aatre task force has recommended that there should be 15 strategic partners selected for defence manufacturing. The Dhirendra Singh committee had identified six areas for strategic partnership - aircraft, warships, submarines, armoured fighting vehicles, complex weapons that rely on guidance system, C4ISTR and critical materials - but the Aatre task force has further divided these six areas into 15 sub-segments. Each sub-segment will have one strategic partner from Defence PSUs and private businesses. It has recommended formation of two committees to evaluate the private companies for strategic partnership: an evaluation committee and an on-site committee. The evaluation committee will evaluate a private company on three criteria, each with different weightages: 50 per cent on technical criteria, 30 per cent on financial criteria and 20 per cent on platform specific criteria. The most contentious among these is the financial criteria, where the task force has recommended that the foreign holding for listed companies should be less than 5 per cent, while no foreign holding should be allowed in an unlisted company. To qualify for strategic partnership, a listed company should have annual assets worth at least Rs 750 crore during the last three years while the corresponding figure for a unlisted company is Rs 250-500 crore. The annual turnover during the last three years for a listed company has been recommended at Rs 4,000 crore for a listed company and Rs 1,000 crore for an unlisted company. "A 5 per cent foreign holding for strategic partnership goes contrary to the government's FDI policy of 49 per cent in defence production. This implies that only transfer of technology will be allowed, which is not very encouraging," said the vice president of a private Indian defence company which is hoping to become a strategic partner. Among other conditions recommended by the task force, a listed company should have an "A" CRISIL rating, capital assets of Rs 2,000 crore and a revenue growth of five per cent annually during the last three years. The total outside debt to net worth ratio has been recommended to be capped at 1:1. The task force has also suggested that no cross-holding should be permitted between strategic partners and the original equipment manufacturer should not be allowed to hold any FDI in the Indian strategic partner company. Sources said the task force has also recommended that the management of the company, i.e., board members, CEO, Director etc., should be only of Indian citizens. In case of default, the task force has opined that the Intellectual Property Rights of the strategic partner should be taken over by the government, thus enabling the government to be the sole owner of the company. Defence ministry sources say that while recommendations of the Aatre task force are expected to be a highlight of DPP-2015, the ministry will take a final call on whether to accept its recommendations either fully or partially. On Saturday, Defence Minister Manohar Parrikar had announced that the new DPP-2015 will be released by his ministry by middle of December.

The Tribune **02 December 2015**

India unsure on defence pact with US

Ajay Banerjee

Notwithstanding the growing defence ties between India and the US, New Delhi has yet again expressed reservations on signing all three US-suggested defence agreements. Sources told The Tribune that Defence Minister Manohar Parrikar, who will be on a seven-day visit to the US starting December 4, will convey to his counterpart Ashton Carter India's reservations on one of agreements. In other words there could be progress on the other two. Apart from this, the key agenda of Parrikar will be to question the US military and foreign policy towards Pakistan, sources said. The US and Pakistan are allies since the Cold War (1945 to 1991). The US had declared several Pakistan-based organisations as terror organisations but has string relationship with its military. On the US-trip Parrikar will make history of sorts. He will become the first Indian Defence Minister to visit the Hawaii-based headquarters of the US Pacific Command (PACOM). The head of the PACOM is the most powerful military commander on earth, commanding almost 60 per cent of the US Navy - including six sea-borne aircraft carriers. As per US demarcations, it oversees 52 per cent of the planet and is in touch with 36 countries, including China, Japan, India, South Korea, Australia, Vietnam, among others. The issue of defence agreements was raised again by the US on February 26 after a lapse of three years when Washington made clear the importance of signing three "foundational agreements" on defence between the two countries, saying this will come in "handy" when transferring technology to India. Senior Pentagon official Frank Kendall, the US-appointed pointsman for the much-talked-about Defence Technology and Trade Initiative (DTTI), was in New Delhi to meet his counterpart, G Mohan Kumar, secretary, Defence Production. Kumar is now the Defence Secretary. The agreements are: Communications interoperability and security memorandum of agreement (CISMOA), basic exchange and cooperation agreement for geo-spatial cooperation (BECA) and the logistics support agreement (LSA). In the US, around the same time, Kenneth Handelman, Deputy Assistant Secretary (Defence Trade Controls) in the US State Department, said these were necessary. "DTTI has progressed in the absence of the foundational agreements... but at some point, the foundational agreements are going to be an issue". In 2010, then Defence Minister AK Antony had rejected outright the signing of these three agreements and even termed these "intrusive".

Parrikar visit from Dec 4

* Manohar Parrikar is slated to leave for a seven-day visit to the US on December 4
* He will be India's first Defence Minister to visit Hawaii-based headquarters of the US Pacific Command (PACOM)
* PACOM is the most powerful military command in the world with almost 60% of the US Navy under its control
* It oversees 52% of the planet and is in touch with 36 countries, including China, Japan, India, South Korea, Australia, Vietnam

Mail Today **02 December 2015**

IAF safety boss

Air Marshal Harjit Singh Arora is the IAF's new air safety boss. He has been a Mig-21 and Mig-29 pilot with over 2600 hours of operational flying. As the new director general (inspection and safety), he would be responsible in ensuring an accident-free run for the fleet. He has also served as directing staff at the prestigious "Tactics and Air Combat Development Establishment" (TACDE) and as a flying inspector in the Directorate of Air Staff Inspection (DASI).

The Economic Times **02 December 2015**

Russia, India to hold naval drills in early December

The two countries' Navies hold their Indra series of naval wargames once a year.

Russian ships will arrive at Visakhapatnam port on the southeast coast of India in the state of Andhra Pradesh on December 6 to take part in the Indra joint naval maneuvers, a source close to the Indian Ministry of Defense told TASS on Tuesday. "The exercise will be held from December 7 to 12 this year; the welcoming ceremony for the detachment of the Russian Navy ships is planned for December 6," he said. According to him, taking part in the drills from the Russian side will be a missile cruiser, a destroyer, a large sea tanker, a tugboat and two naval helicopters, and from the Indian side - a multipurpose frigate, a destroyer, an anti-submarine plane, a Coast Guard plane, two training planes and a helicopter. "The maneuvers will focus on drilling antisubmarine defense of ships, gun practice on surface and air targets. Also, it is planned to conduct anti-terrorist operation drills to rescue a ship seized by hypothetical terrorists in which assault teams, supported by helicopters will be landed on board the ship," he added. Earlier this month, the Indra joint exercise of ground troops that involved more than 500 soldiers from both sides was held in the north-western Indian state of Rajasthan. The exercise focused on drilling joint actions within a combined peacekeeping battalion, including blocking of a hypothetical conflict area and neutralisation of illegal armed groups. The troops also drilled defusing explosive objects and improvised explosive devices, as well as rendering first aid. Russia has been India's largest defense supplier for long, increasing military sales worth over $45 billion since the 1960s, but their armed forces do not exercise much together. While the first Indra exercise was held at the Mahajan ranges in Rajasthan in 2005, the second was conducted at Pskov in Russia in 2007 and the third at Chaubattia near Ranikhet in Uttarakhand in 2009. Thereafter, the Indra exercise has been held once every year between the two armies. The two countries' Navies now also hold their Indra series of naval wargames once a year. Indian and Russian air forces held their air combat exercise, Ex Avia Indra, for the first time at the Astrakhan region near the Caspian Sea in August-September last year. In sharp contrast, India and the United States have held more than 80 joint combat exercises over the last decade.

The Statesman **02 December 2015**

North Korea Tests Submarine Missile in Direct Violation of UN Resolution

North Korea tested a submarine-launched ballistic missile (SLBM), which disintegrated shortly after launch. "Under U.N. resolutions, North Korea is prohibited from developing or testing any kind of ballistic missile," said South Korean Defense Ministry spokesman Kim Min-Seok. The test, carried out in the Sea of Japan, is the latest provocation from the hermit nation. The event is the second test of an SLBM this year which the U.S. claims was faked, hinting that North Korea is actively pursuing an underwater nuclear capability. The test comes at a precarious time, as rumors of a North Korean leadership purge were reported in mid-November. North Korea's army is largely centered on the potential for reigniting its currently stalemated land war with South Korea, however SLBM capability will allow North Korea to become a threat to a significant portion of the Asia-Pacific region. While North Korean submarines are hardly state of the art,according to Joe Bermudez of North Korea analysis site 38 North, keeping track of a nuclear-armed SLBM is significantly more difficult than traditional missile platforms. In order to successfully mount a nuclear warhead on a SLBM (or any other missile), North Korea will need to successfully miniaturize a nuclear weapon. Though a highly technical feat, North Korea claimed in May of this year it has accomplished the ability to miniaturize. National Security Council spokesman Patrick Ventrell expressed doubt that North Korea has the capability.

Russia breaches nuclear missile treaty; US seeks response

Washington, United States - Faced with rising pressure from Congress, a U.S. defense official said Tuesday that the Obama administration is pursuing ways to counter Russia's violation of a key arms control treaty, but actions will be rolled into a broader response to Kremlin aggression in Ukraine and other parts of the world. The U.S. announced last year that Russia is in violation of the Intermediate-Range Nuclear Forces Treaty that President Ronald Reagan signed with Soviet leader Mikhail Gorbachev in 1987. Russia has not acknowledged the violation, which dates to as early as 2008, or addressed concerns that U.S. officials have been raising with Moscow since 2013. The treaty says the U.S. and Russia cannot possess, produce or test-fly a ground-launched cruise missile with a range of 300 to 3,400 miles (500 to 5,500 kilometers). Possessing or producing launchers of these type of missiles also is banned under the treaty, which helps protect the security of the U.S. and its allies in Europe and the Far East. "The evidence is conclusive," Brian McKeon, principal deputy undersecretary of defense for policy, told members of a subcommittee of the House Armed Services Committee. "Russia has tested this ground-based system well into the ranges covered by the INF treaty. We are talking about a real system and not a potential capability." Rep. Ted Poe said he has long asked the administration about how it would respond to the treaty violation. "How are we going to convince the Russians that we do mean business, if we do mean business? What's the administration going to do to hold the Russians' feet to the fire and hold them accountable?" McKeon said the Joint Chiefs of Staff has conducted a military assessment of the threat posed to the U.S. or its allies if Russia were to deploy one of these cruise missiles in Europe or the Asia-Pacific region. Since then, defense officials have reviewed a range of military options. That review, he said, comes at a time when Russia is modernizing its military systems, destabilizing European security through its annexation of Crimea, battling Ukraine forces in eastern Ukraine and conducting airstrikes against U.S.-backed forces fighting against forces loyal to Syrian President Bashar Assad. The goal, McKeon said, is not to make Russia an enemy, but to make sure its treaty violations do not leave Moscow with a military advantage over the U.S. or its allies. But he said that in light of recent aggressive behavior by Russia, the U.S. response cannot be solely focused on the treaty violation. That provoked a response from Rep. Mike Rogers. "My fear is that this set of responses that have been prepared a year ago for consideration are now going to get just blended into the new challenges that we have to face," Rogers said. "And we're going to get no action on the violations of the INF treaty. That is a longstanding violation that needs an appropriate response by this nation." McKeon offered only a broad outline of what new actions the Obama administration is pursuing and what additional activities it will seek congressional funding to implement. McKeon, who testified with Rose Gottemoeller, undersecretary of state for arms control and international security, promised to share more details with the lawmakers in a classified session that followed the public hearing.

The Asian Age 02 December 2015

Unexpected activity on moon measured

The lunar space environment is much more active than previously assumed, say scientists who measured a strong and varied interaction between the Moon and solar wind. Researchers at the Swedish Institute of Space Physics and Umea University in Sweden made use of the particle instrument SARA (Sub-keV Atoms Reflecting Analyser) that travelled to the Moon on board the Indian satellite Chandrayaan-1 in 2008. The solar wind is a continuous flow of plasma from the Sun which affects the planets in the Solar System and contributes to causing aurora on Earth. The lunar atmosphere, on the other hand, is too thin to show the same phenomenon and the Moon also lacks a global magnetic field to regulate the solar wind. It has long been believed that the Moon passively absorbs solar wind without noticeably affecting its surroundings. However, the researchers found evidence that the surface of the Moon, and also local magnetic fields of the lunar crust, reflect some of the solar wind. "This knowledge is of great importance to the lunar space environment which is affected both on the lunar dayside and nightside surfaces," said Charles Lue, a researcher at Swedish Institute of Space Physics. The reflected solar wind ions move in spiralling tracks that can take them from the lunar dayside, where the solar wind strikes first, to the nightside of the Moon. In local areas with strong magnetism, the solar wind flow is restricted on the surface at the same time as adjacent areas receive an increased flow.

Deccan Herald **02 December 2015**

Mountain ranges respond to Earth's climate

Mountain ranges actively evolve with and respond to the Earth's climate rather than being static, unyielding parts of the landscape, a new study has found. Erosion caused by glaciation during ice ages can, in the right circumstances, wear down mountains faster than plate tectonics can build them, the researchers said. The study has given an insight into how climate and tectonic forces influence mountain building over a prolonged period of time. The study, conducted by a team of scientists from 10 countries including the University of Exeter in UK, attempted to measure all the material that left and entered the St Elias Mountain range, on the Alaskan coast, over the past five million years, using seismic imaging equipment and marine coring. The researchers imaged and mapped a huge fan of sediment in the deep sea. They then determined when and how fast the fan accumulated by dating nearly four kilometres of marine cores collected from the gulf and the Alaskan continental shelf. They found that erosion accelerated sharply when global climate cooling triggered stronger and more persistent ice ages about one million years ago. The new research, which is the product of the culmination more than a decade of field work, has shown that mountain ranges actively evolve with, and respond to, Earth's climate, rather than being static, unyielding parts of the landscape. "It turned out most sediments were younger than we anticipated, and most rates of sediment production and thus erosion were higher than we anticipated," said Sean Gulick, co-chief scientist from the University of Texas. "Since the big climate change during the mid-Pleistocene transition when we switched from short (about 40,000-year) ice ages to super long (about 100,000-year) ice ages, erosion became much greater. In fact, there was more erosion than tectonics has replaced," he added. Mountain ranges form when tectonic plates thrust into one another over millions of years and scrunch up Earth's outer crust. But even as mountains are built by these titanic forces, other agents - some combination of tectonic and climate processes - work to remove the accumulating crust. The study highlights the pivotal role climate fluctuations play in shaping Earth's landforms. The findings were published in the journal Proceedings of the National Academy of Sciences.

The Asian Age **02 December 2015**

Camera to measure greenhouse gases in air

Scientists have developed a highly sensitive camera that can photograph and film methane in the air, providing a new way to measure and monitor greenhouse gases. There are several questions surrounding the powerful greenhouse gas methane. Its rapid but irregular increase in the atmosphere has puzzled researchers. There is also a high degree of uncertainty with regard to the sources and sinks of methane in the landscape. The new camera developed by Linkoping University and Stockholm University in Sweden can help to address these issues. "The camera is very sensitive, which means that the methane is both visible and measurable close to ground level, with much higher resolution than previously. Being able to measure on a small scale is crucial," said Magnus Galfalk, Assistant Professor at the Linkoping University, who led the study. The advanced hyperspectral infrared camera weighs 35 kilogrammes and measures 50x45x25 centimetres. It is optimised to measure the same radiation that methane absorbs and which makes methane such a powerful greenhouse gas. The camera can be used to measure emissions from many environments including sewage sludge deposits, combustion processes, animal husbandry and lakes. For each pixel in the image the camera records a high-resolution spectrum, which makes it possible to quantify the methane separately from the other gases. "This gives us new possibilities for mapping and monitoring methane sources and sinks, and it will help us understand how methane emissions are regulated and how we can reduce emissions," said principal investigator David Bastviken, professor at Linkoping University.

The Asian Age **02 December 2015**

In Paris, Modi launches Global Solar Alliance

India offers $30 million funding

India has launched an ambitious alliance of 121 developed and developing sun-drenched countries and announced an assistance of $30 million to dramatically boost the use of clean solar energy and reduce global carbon emissions. The International Solar Alliance was launched by Prime Minister Narendra Modi along with French President Francois Hollande on Monday on the sidelines of the 195-nation United Nations climate summit here to tackle climate change. The alliance from both developed and developing countries aims to mobilise $1 trillion by 2030 to be invested in the generation of clean solar energy. Mr Modi also announced that India will host the initiative in the premises of the National Institute of Solar Energy in Gurgaon. "The vast majority of humanity is blessed with generous sunlight round the year. Yet many are also without any source of power. We want to bring solar energy into our lives and homes by making it cheaper, more reliable and easier to connect to grid," Mr Modi told members of the alliance. He said that India will provide land and contribute about $30 million to build the Secretariat infrastructure of the initiative and support its operation for the next five years until 2021.

The Asian Age **02 December 2015**

Race on to seal global climate deal

Obama: Global warming economic, security threat

Negotiators tasked with saving Earth's climate system embarked on Tuesday on an 11-day race to overcome decades-long disputes as experts pointed to a towering threat from coal. A day after world leaders pledged to tame global warming, bureaucrats from 195 nations scrambled to shape a labyrinthine 54-page text into a blueprint that can be approved by December 11. US President Barack Obama said on Tuesday that global warming posed economic and security risks that had to be tackled immediately, and insisted the climate problem could be solved. If global warming continues, "then before long we are going to have to devote more and more of our economic and military resources not to growing opportunity for our people but to adapting to the various consequences of a changing planet," Mr Obama said. "Climate change is a massive problem, it's a generational problem," Mr Obama said on the sidelines of the UN conference. The goal - endorsed ringingly by around 150 heads of state and government at the start of the talks on Monday - is to commit every nation to a post-2020 pact to roll back emissions of carbon gases. Scientists have long warned that time is short for weaning humanity off its dependence on burning fossil fuels, the backbone of the world's energy supply and biggest source of these heat-trapping emissions. But, heaping pressure on negotiators, researchers for the respected group Climate Action Tracker said on Tuesday the clock was now ticking even faster than before. If planned new coal-fired plants come online, they said, the added emissions would wreck hopes of meeting the UN target of curbing warming to two degrees Celsius from pre-Industrial Revolution levels. "There is a solution to this issue of too many coal plants on the books: cancel them," said Pieter Van Breevoort of Ecofys, an energy research organisation which is part of Climate Action Tracker. "Renewable energy and stricter pollution standards are making coal plants obsolete around the world, and the earlier a coal plant is taken out of the planning process, the less it will cost."

The talks, taking place a heavily secured conference centre at Le Bourget on the northern outskirts of Paris, headed into the detail phase after the verbal flourishes of Monday, when around 150 leaders gathered for the biggest one-day summit in UN history. "Never have the stakes of an international meeting been so high, because it concerns the future of the planet, the future of life," French President Francois Hollande said. "The hope of all of humanity rests on all of your shoulders." Mr Obama on Tuesday met with the heads of small-island states, who are among the nations most at threat from climate change. "Some of their nations could disappear entirely and as weather patterns change," said Mr Obama. "We might deal with tens of millions of climate refugees in the Asia Pacific region."

The Asian Age 02 December 2015

China scientist ‘ready’ to clone humans

Rebecca Davis

The Chinese scientist behind the world's biggest cloning factory has technology advanced enough to replicate humans, he said, and is only holding off for fear of the public reaction. Boyalife Group and its partners are building the giant plant in the northern Chinese port of Tianjin, where it is due to go into production within the next seven months and aims for an output of one million cloned cows a year by 2020. But cattle are only the beginning of chief executive Xu Xiaochun's ambitions. In the factory pipeline are also thoroughbred racehorses, as well as pet and police dogs, specialised in searching and sniffing. Boyalife is already working with its South Korean partner Sooam and the Chinese Academy of Sciences to improve primate cloning capacity to create better test animals for disease research. And it is a short biological step from monkeys to humans, potentially raising a host of moral and ethical controversies. "The technology is already there," Xu said. "If this is allowed, I don't think there are other companies better than Boyalife that make better technology." The firm does not currently engage in human cloning activities, Xu said, adding that it has to be "self-restrained" because of possible adverse reaction. But social values can change, he pointed out, citing changing views of homosexuality and suggesting that in time humans could have more choices about their own reproduction. "Unfortun-ately, currently, the only way to have a child is to have it be half its mum, half its dad," he said. "Maybe in the future you have three choices instead of one," he went on. "You either have fifty-fifty, or you have a choice of having the genetics 100 per cent from daddy or 100 per cent from mummy. This is only a choice." Xu, 44, went to university in Canada and the US, and has previously worked for US pharmaceutical giant Pfizer, and in drug development. Presenting cloning as a safeguard of biodiversity, the Tianjin facility will house a gene bank capable of holding up to approximately five million cell samples frozen in liquid nitrogen, a catalogue of the world's endangered species for future regeneration. Boyalife's South Korean partner Sooam is already working on a project to bring the woolly mammoth back from extinction by cloning cells preserved for thousands of years in the Siberian permafrost. Sooam also serves a niche market recreating customers' dead pet dogs, reportedly for $100,000 a time. Sooam founder Hwang Woo-Suk was a national hero with his own postage stamp before being embroiled in controversy a decade ago after his claims to be the first in the world to clone a human embryo were discredited. Hwang, who created Snuppy, the world's first cloned dog, in 2005, lost his university position, had two major papers retracted, and was accused of crimes ranging from violation of bioethics laws to embezzling research funds. Earlier this year, he was quoted in South Korea's Dong-A Ilbo newspaper saying that his firm was planning a cloning joint venture in China "because of South Korea's bioethics law that prohibits the use of human eggs". "We have decided to locate the facilities in China in case we enter the phase of applying the technology to human bodies," he was quoted as saying. For now, Xu seeks to become the world's first purveyor of "cloned" beef, breeding genetically identical super-cattle that he promises will taste like Kobe and allow butchers to "slaughter less and produce more" to meet the demands of China's booming middle class. Cloning differs from genetic modification, but its application to animals would enable the firm to homogenise its output.

Boyalife Group shows three cloned puppies in an incubator at a facility in Tianjin, China.

ISRO to Test Electric Propulsion on Satellites

The Indian Space Research Organisation (ISRO) is all set to try out electric propulsion on its satellites. The project, if successful, will increase the life and payload capability of satellites. The technology, being developed by various ISRO units, will soon be tested first in a GSAT communication satellite, ISRO officials said. "Our plan is to experiment it on the GSAT-9 communication satellite during March-April 2017. Initially, electric propulsion will be used only for the station-keeping of the satellite, which include adjusting the satellite's orbit," Dr K Sivan, director of Vikram Sarabhai Space Centre (VSSC), which is one of the ISRO centres involved in the project, said. At present, satellites carry on board liquid fuel and oxidiser to power their thrusters for adjusting the orbits and other station-keeping purposes. This fuel accounts for 40-50 per cent of the mass of a satellite. The idea is to develop a satellite which fully replaces liquid fuel with electric propulsion. "This will enable us to increase the life of the satellite by at least four years and to have more applications aboard a satellite. At present, the life of a 2,000-2,500 kg communication satellite of the GSAT class is 10-12 years," Sivan said. ISRO units ISRO Satellite Centre (ISAC), Liquid Propulsion Systems Centre (LPSC) and VSSC are mainly involved in the project. The 75 mN thrusters needed for the project have been designed. The satellite which will use electric propulsion for station-keeping will, in future, be followed by an all-electric propulsion one. A satellite becomes defunct when the on-board fuel runs out and it starts drifting away from its orbit. Then it is classified as 'space junk', becoming a potential threat to other satellites. GSAT-9 is slated to be put in orbit by a Mk-II version of the Geosynchronous Satellite Launch Vehicle (GSLV).