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Government of India
Ministry of Drinking Water and Sanitation
(Water Quality Section)

Pt. Deendayal Antyodaya Bhawan,
4th Floor, CGO Complex,
Lodhi Road, New Delhi – 110003.

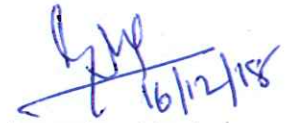
, Dated: 16th February, 2018.

OFFICE MEMORANDUM

Subject: Minutes of 9th Meeting of Dr. R.A. Mashelkar Committee held on 23rd January, 2018.

The Minutes of 9th high level technical committee meeting held on 23rd January, 2018 under the chairpersonship of Dr. R.A. Mashelkar to examine and recommend innovative technologies in Sanitation and Drinking Water Sector are enclosed herewith for kind information and necessary action. Approved technologies will be uploaded on to innovation portal of this Ministry.

Encl: as above


16/2/18

(D. Rajasekhar)
Dy. Adviser (WQ)
Tel No: 011-24361656

For distribution to:

1. All the members of the Committee
2. PS to Hon'ble Minister, DWS / PS to Hon'ble Minister of State, DWS / PPS to Secretary, DWS
3. All technology providers applied for the meeting as per Enclosure.
4. All Category-II technology providers as per Annexure-B – for information of point (9) of the Minutes.
5. Principal Secretary/Secretary-in-charge of Rural Water Supply Departments of all States/UTs – for kind information of approved technologies.
6. Sr. Programmer, NIC – with request to upload minutes and the approved technologies on to innovation portal.

MINUTES OF THE 9TH HIGH LEVEL TECHNICAL COMMITTEE (HLTC)

HELD ON 23RD JANUARY, 2018

The High Level Technical Committee (HLTC) which is also the Standing Committee was constituted by the Ministry of Drinking Water and Sanitation for recommendation of innovative, scalable, sustainable, affordable and socially acceptable technologies in water and sanitation under the Chairmanship of Dr. R. A. Mashelkar.

2. The 9th meeting of this Committee was held on 23rd January, 2018 at Conference Hall, 4th Floor, Pt. Deendayal 'Antyodaya Bhawan', C.G.O. Complex. The list of Member/Invitees present is given at **Annexure-A**.

3. The Agenda proposed for the 9th High Level Technical Committee is as follows:

Agenda I: Confirmation of Minutes of the 8th Meeting held on 03rd July, 2017.

Agenda II: Discussion on New Expression of Interests in Drinking Water Sector.

Agenda III: Discussion on New Expression of Interests in Sanitation Sector.

Agenda IV: Discussion on Category-II Technologies in Drinking Water and Sanitation Sector wherein additional information submitted.

Agenda V: Discussion on remaining Category-II Technologies in Drinking Water and Sanitation Sector.

4. At the outset, Deputy Advisor, Water Quality welcomed all the members for the 8th HLTC meeting and explained the methodology of categorization being adopted by the committee as follows:

Category I	Technology Approved/recommended
Category II	In Principal Cleared but some more information is required
Category III	Existing Proven Technology
Category IV	Technology Not recommended

5. **Agenda I:** Confirmation of Minutes of the 8th Meeting held on 03rd July, 2017:-

Since there were no comments on the minutes of the previous meeting held on 03rd July, 2017, the same were confirmed.

6. **Agenda II:** Discussion on New Expression of Interests in Drinking Water Sector:-

The gist of the presentations and the Committee observations on Water technologies is as given below:

Table 1: New Technologies related to Rural Drinking Water

S.No	EOI No	Technology	Observations	Recommended Category
1.	W-107	MSR Community Chlorine Maker	- No representation	IV

2.	W-108	Low cost Non-Electric Water Purifier for Arsenic removal	<ul style="list-style-type: none"> - Technology found suitable in all aspects - Good for use at Schools & Anganwadis - Provider may submit 2000 /5000/10000 liter capacity designs with cost calculations. 	I
3.	W-109	WME GmbH – Mechanical Compression vapor desalination	<ul style="list-style-type: none"> - High Capex 	IV
4.	W-110	Patented CB Tech Nanomesh Carbon Block Water Purification	<ul style="list-style-type: none"> - Provider may come back with a specific product 	II
5.	W-111	Converting Swachh Bharat Mission to a Profit Center	<ul style="list-style-type: none"> - Since this was not a specific technology proposal but a broader level policy issue of great national importance with potential national benefits, the proposal will be referred to Secretary to take Policy level decision at the Ministry Level 	-
6.	W-112	IYSERT Aqua – Air to Water Generator (pure drinking water)	<ul style="list-style-type: none"> - High CapEx - May come back at some future time with enough field experience along with feedback of plants already installed. 	IV
7.	W-113	Same as EoI-W- 118		
8.	W-114	SCS 10K Disinfection	<ul style="list-style-type: none"> - Technology found suitable 	I

		Chemical of 7,000 PPM and 10,000 PPM	<p>in all aspects</p> <ul style="list-style-type: none"> - Caution may be taken while using the chemical 	
9.	W-115	Water to Water Production Membrane Distillation technology by Aquastill	<ul style="list-style-type: none"> - More suitable for industrial use than for drinking water purposes - May come back with feedback after gaining experience 	II
10.	W-116	Air to water Production Technology – Rainmaker Worldwide inc	<ul style="list-style-type: none"> - Provider is adopting this technology in India - May come back after gaining some experience. 	II
11.	W-117	Same as EoI-W- 118		
12.	W-118	Bharti Nano Fluoride Removal Technology by Online dosing SKF-281164 (A) & SKF-281164 (B)	<ul style="list-style-type: none"> - Technology found suitable in all aspects 	I
13.	W-119	GEH 102 Granular Ferric Hydroxide	<ul style="list-style-type: none"> - Technology found suitable in all aspects - NEERI Team may assess functionality and sustainability of this technology. 	I
14.	W-120	CAT wizard: Online database for Drinking Water Pipeline Condition Assessment tools	<ul style="list-style-type: none"> - No representation 	IV
15.	W-121	Aguaer	<ul style="list-style-type: none"> - No representation 	IV
16.	W-122	"Pi-Lo" Smart Water ATM	<ul style="list-style-type: none"> - Business model innovation - Technology found suitable in all aspects 	I

17.	W-123	Mobile Water Treatment Vehicle	- No representation	IV
18.	W-124	G&R Smart Water Technology	- Certification details for the quality of discarded hemodialysis membrane required.	II

7. **Agenda III: Discussion on New Expression of Interests in Sanitation Sector:-**

The gist of the presentations and the Committee observations on Sanitation technologies is as given below:

Table 2: New Technologies related to Rural Sanitation

S. No.	EOI No.	Title	Observations and Recommendations	Recommended Category
1	S- 68	Sewage CARE Anaerobic septic tank treatment for fast decay of fecal matter	- Technology found suitable in all aspects	I
2	S- 69	Smart Sanitary Waste Management System	- No representation	IV
3	S- 70	naturesani - Waterless, Odourless and Hygienic Urinal Commode	- Technology found suitable in all aspects - Feedback may be shared after reviewing its use after three months.	I
4	S- 71	URITO-Cleaner	- No representation	IV
5	S- 72	Swachh Jagrukta Box	- No representation	IV
6	S- 73	Waterless Bi-Toilets	- No representation	IV
7	S- 74	Chamber for soak pit toilet	- Techno-economically not suitable	IV
8	S- 75	Easy and safe disposal of menstrual waste	- Still at lab scale - May come back at some time in future after further developing the technology along with feedback from	IV

			its usage.	
9	S- 76	Mr.Dharmesh D Makwana	<ul style="list-style-type: none"> - It's a prototype in progress - May come back at some time in future after further developing the technology along with feedback from its usage. 	IV
10	S- 77	GARBIKLEEN- Unique Household Wet Garbage Processing Unit based on Vermiculture	<ul style="list-style-type: none"> - No innovation in the technology for composting 	IV
11	S- 78	Sawach Bharat Pakhwara P.S. Hazrat Nizamuddin, South East District. New Delhi	<ul style="list-style-type: none"> - No representation 	IV
12	S- 79	DrySan Hygienic Rural Toilet	<ul style="list-style-type: none"> - Unit cost is high. - Flap may be integrated. 	IV
13	S- 80	SATO™ Generation 2 Flushing System and V-Trap Waste Diversion Mechanism For Twin Pit Pour Flush (TPPF) latrine	<ul style="list-style-type: none"> - Provider may share the details regarding patent rights for commercial use of the technology as it is also funded by the Bill & Melinda Gates Foundation. 	II

8. **Agenda IV:** Discussion on Category-II Technologies in Drinking Water and Sanitation Sector wherein additional information submitted:-

The gist of the presentations and the Committee observations on these technologies is as given below:

Table 3: Category-II Technologies related to Drinking Water & Sanitation wherein additional information submitted

S. No.	EOI No.	Title	Observations and Recommendations	Recommended Category
1	S- 67	Evapotranspiration toilet	<ul style="list-style-type: none"> - Technology found suitable in all aspects 	I
2	2nd HLTC	Tiger Toilet Technology	<ul style="list-style-type: none"> - Technology found suitable 	I

			in all aspects	
3	S- 61	Aquatron Sewage Separator, UV unit and Drainage Filter Mat	<ul style="list-style-type: none"> - The unit cost of the technology is still high. - Information related to BOD in separated water may be shared with ministry. 	II
4	W-94	Bharti-Senco Iron removal unit for hand pump, tubewell and overhead tanks for water supply scheme	<ul style="list-style-type: none"> - Technology found suitable in all aspects 	I
5	W-95	Bharti-Senco Iron cum Arsenic removal unit for hand pump, tubewell and overhead tanks for water supply scheme	<ul style="list-style-type: none"> - Technology found suitable in all aspects 	I
6	W-96	NON ELECTRICITY BASED DOSATRON DISINFECTION DOSING SYSTEM	<ul style="list-style-type: none"> - No representation 	IV

9. **Agenda V:** Discussion on remaining Category-II Technologies in Drinking Water and Sanitation Sector:-

There are **11** Drinking Water and **10** Sanitation related technologies which are recommended in Category-II in previous meetings of the Committee. They are provided in **Annexure-B**. The committee decided to place these technologies in **Category-IV**. If the providers of these technologies makes improvements/substantiates claims with documentation and feedback as mentioned during their presentation, they may apply for recommendation of the committee in a fresh application.

10. The Committee also deliberated on other related matters in between the presentations and has taken the following decisions:

- a. Technologies more suitable to Urban Drinking Water/Sanitation shall be referred to the MoUD Committee on Technologies.
- b. There shall be a self-declaration by the applicants declaring that their technology in their view satisfies the criteria laid out in the terms of reference of the Committee in order not to encourage frivolous applications.
- c. Recommended technologies may be promoted by taking up as pilot projects by the Ministry.
- d. The Chairman shared the **ASSURED** criteria for evaluating technologies based on interactions with NITI Aayog which shall be the guiding principle while evaluating proposals by the Committee. The criteria is given at **Annexure-C**.

- e. The Committee can recommend eligible proposals to RDAC of this Ministry for further consideration under funding under R&D. In this regard, the possibility of calling proposals exclusively for R&D for consideration in a separate meeting is to be explored.
 - f. Applicants may be encouraged to validate their technologies by neutral organizations like NEERI which have facilities for this purposes.
11. The presentations and discussions on technologies were concluded by 3.30PM.

The meeting ended with thanks to and from chair.

Annexure-A

List of Participants – 9thHLTC Meeting held on 23rd January, 2018

S.No	Name	Organization	Title	Contact
1	Dr. Raghunath Anant Mashelkar	National Research Professor	Chairman	ram@mashelkar.com
2	Shri Arun Baroka	Joint Secretary (SBM), MoDWS	Member	arun.baroka@nic.in
3	Shri Satyabrata Sahu	Joint Secretary (Water), MoDWS	Member	jstm@nic.in
4	Ms. V. Radha	Joint Secretary (Estt. & SBM), MoDWS	Member	radhav@ias.nic.in
5	Dr. Rakesh Kumar	Director, NEERI	Member	r_kumar@neeri.res.in
6	Dr. Makarand Phadke	Senior Vice President, Reliance Innovation Leadership Centre	Member	makarand.phadke@ril.com
7	Shri Anand Shekhar	Team Lead, PMC-SBM-G, MoDWS	Member	anands@nrmc.co
8	Shri G. Vasudeo	Secretary, Vivekanand Kendra, NARDEP	Member	vknardep@gmail.com
9	Dr. H.S. Shankar	Representative from IIT, Mumbai	Member	hss@iitb.ac.in
10	Prof. C.B. Majumdar	Representative from IIT, Roorkee	Member	cbmajumder@gmail.com
11	Shri Dinesh Chand	Additional Adviser, MoDWS	Member	d.chand@gov.in
12	Shri Rajesh Kumar	Director (W), MoDWS	Member	rajeshkumar2.ofb@ofb.gov.in
13	Shri Rohit Kakkar	Deputy Adviser, CPHEEO, MoUD	Member	rohitkakarud@gmail.com
14	Shri D. Rajasekhar	Deputy Adviser (WQ), MoDWS	Member-Secretary	sharathraj2008@gmail.com, ddws_drsekhar@nic.in
15	Shri Ghulam Rasool Zargar	Sr. Consultant, MoDWS	Invitee	
16	Shri Santosh R	Asst. Advisor, MoDWS	Invitee	santosh.r@gov.in

REMAINING CATEGORY-II DRINKING WATER TECHNOLOGIES

S.No.	Eoi.No	Technology	Meeting
1	EOI-W- 1	point of use water disinfectant - Aqua Salveo	6th (26-May-16)
2	EOI-W- 68	Port-Flex Water Supply Solutions	6th (26-May-16)
3	EOI-W- 69	NANO-TECHNOLOGY WATER PURIFICATION FILTER	7th (27-Jan-17)
4	EOI-W- 71	KATALOX-LIGHT	6th (26-May-16)
5	EOI-W- 78	Air To Water	7th (27-Jan-17)
6	EOI-W- 79	Water TO WATER Desalination & waste water treatment	7th (27-Jan-17)
7	EOI-W- 85	MAGNET ENHANCED ELECTRO ABSORPTION CAPACITIVE DEIONSATION	7th (27-Jan-17)
8	EOI-W- 90	BHARTI HAND PUMP ATTACHMENT IRON REMOVAL UNIT	8th [3-jul-17]
9	EOI-W- 91	Zero Water Wastage Solar Hybrid Water Purification Unit	8th [3-jul-17]
10	EOI-W-102	BHARTI V-WIRE SCREEN HAND PUMP JACKET SCREWED WITH INDIA MARK- II HAND PUMPS CYLINDER	8th [3-jul-17]
11	EOI-W-104	ATMOSPHERIC WATER GENERATOR	8th [3-jul-17]

REMAINING CATEGORY-II SANITATION TECHNOLOGIES

S.No.	Eoi.No	Technology	Meeting
1	2nd HLTC	Sidwal Refrigeration Industries Pvt.Ltd – Sanitation Technology	6th (26-May-16)
2	EOI-S- 6	Integrated solid and liquid waste treatment (ISLWM). The future of waste management is here today.	6th (26-May-16)
3	EOI-S- 25	BIOFIL TOILET SYSTEM	6th (26-May-16)
4	EOI-W- 64	Toilet to Tap	6th (26-May-16)
5	EOI-S- 42	HVMNMP technology for waste disposal and pollution control	6th (26-May-16)
6	EOI-S- 43	Mobile container-type of Sewage Treatment Plant (MSTP)	7th (27-Jan-17)
7	EOI-S- 45	Borgford Octaflame Gasifier BioEnergy System	6th (26-May-16)
8	EOI-S- 52	DG Insta Modular PreFab Toilet	7th (27-Jan-17)
9	EOI-S- 57	Reacto - A technovation by Awatech Solutions	7th (27-Jan-17)
10	EOI-S- 65	Efficient composting of biodegradable solid wastes through Mesophilic Aerobic Rapid Composting (MARC) operated on continuous basis.	8th [3-jul-17]

ASSURED Innovation Policy & Evaluation Standards

Innovation is the key to economic and social development, growth as well as competitiveness. How is India doing in terms of its global standing in innovation?

Look at the Global Innovation Index. India's rank among 140 odd nations went down from 66(2011) to 76(2012) to 86(2013). Why? Not because India was doing worse, but because the other nations were doing better.

But then comes the good news. It has moved up to 66(2016) and now to 60(2017). So India is on the rise. But we have a long way to go to become a top ranking innovation nation.

India needs a new national innovation policy, going beyond the national science, technology and innovation policy that was launched by Government of India in 2011. Such policy can be simply described as ASSURED Innovation Policy with consequent ASSURED measurement, evaluation and monitoring standards.

What does ASSURED stand for?

A (Affordable), S (Scalable), S (Sustainable), U (Universal), R (Rapid), E (Excellent) and D (Distinctive)

A (Affordability) is required to create access for everyone across the economic pyramid, especially at the bottom.

S (Scalability) is required to make real impact by reaching out to every individual in the society, not just a privileged few.

S (Sustainability) is required in many contexts; environmental, economic and societal.

U (Universal) implies user-friendliness, so the innovation can be used irrespective of the skill levels of an individual.

R (Rapid) refers to speed. Inclusive growth cannot be achieved without the speed of our action matching the speed of our innovative thoughts!

E (Excellence) in technology, product quality, and service quality is required, not just for the elite few but for everyone in the society, since the rising aspirations of resource-poor people also need to be fulfilled.

D (Distinctive) innovation is required because there is no use of creating 'me too' products and services.

In recent times, India has witnessed two ASSURED innovations that have been truly game changing, one from government and the other from industry.

JAM – J (Pradhan Mantri Jan Dhan Yojna), A (Aaadhar identification and authentication) and M (mobile telecommunications) created the fastest and largest financial inclusion in the world, with 300 million plus bank accounts opening up in record time.

Another game-changing innovation is Reliance Jio, which has catapulted India from the 155th rank in mobile data transmission globally to the 1st rank today! But importantly it has moved India from a jugaad 'missed call' innovation to 'free voice call' innovations.

Finally, ASSURED can be a 'one word policy statement' for India, helping it achieve accelerated inclusive growth on one hand and global competitiveness on the other.

Ministry should evaluate all the future proposals that it receives by using the ASSURED matrix above, before these are brought before the Mashelkar Committee. New proformae for submission may be designed so that none of the 7 elements in ASSURED matrix are left out.