

GOVERNMENT OF INDIA  
MINISTRY OF HOUSING AND URBAN AFFAIRS

LOK SABHA  
UNSTARRED QUESTION NO. 2123

TO BE ANSWERED ON JULY 31, 2018

INNOVATIVE TECHNOLOGIES FOR HOUSING PROJECTS

No. 2123. SHRI C. MAHENDRAN:

Will the Minister of HOUSING AND URBAN AFFAIRS be pleased to state:

- (a) whether the Government has any mechanism to invite ideas for innovative technologies for mass housing projects that can help build houses faster, cheaper and of better quality with sustainable green materials;
- (b) if so, the details thereof;
- (c) whether the selected technologies are likely to be tried and tested to be found suitable to geographical conditions of six different urban areas selected across the country; and
- (d) if so, the details thereof?

ANSWER

THE MINISTER OF STATE (INDEPENDENT CHARGE) OF THE  
MINISTRY OF HOUSING AND URBAN AFFAIRS  
(SHRI HARDEEP SINGH PURI)

(a) & (b): The Building Materials and Technology Promotion Council (BMTPC) under the aegis of the Ministry of Housing and Urban Affairs (MoHUA), has been authorized to operate the Performance Appraisal Certification Scheme (PACS) at national level for certification of innovative building materials, components, products, units, elements of construction and assemblies, systems and sub-systems giving independent opinion of the fitness of their intended use in the form of

Performance Appraisal Certificates (PACs). Under Technology Submission (TSM) set up within the ambit of the overarching Pradhan Mantri Awas Yojana (Urban) {PMAY(U)}, the BMTPC is identifying, evaluating and certifying innovative technologies for mass housing projects to build faster, cost effective, quality houses through PACS. The BMTPC has so far identified and evaluated 24 emerging construction systems for mass housing. A list of the same is enclosed at Annexure-I.

The Central Public Works Department (CPWD) has come out with Schedule of Rates (SoRs) for these construction systems for adoption by the masses and the Bureau of Indian Standards (BIS) has already included these innovative construction systems in the recently published National Building Code 2016. A Technology Park has also been set up in the campus of the Hindustan Prefab Ltd. (HPL) at Jangpura, New Delhi to showcase these technologies through prototypes.

(c) & (d): For facilitating adoption of modern, innovative and green building materials and technologies for rapid construction of quality houses, the MoHUA through the BMTPC is constructing Demonstration Housing Projects (DHPs) using these technologies in different parts of the country. The BMTPC has so far constructed demonstration houses at Nellore, Andhra Pradesh and Bhubaneswar, Odisha. Three other projects at Lucknow (Uttar Pradesh), Bihar Sharif (Bihar) and Hyderabad (Telangana) using innovative technologies are under progress. Various Government Departments and State Governments are adopting these innovative technologies for construction of their mass housing projects.

Nearly 8.69 lakh houses are under construction in various States using emerging technologies. A State-wise list of the same is enclosed at Annexure-II.

Referred to Lok Sabha Unstarred Question No. 2123 for answer on 31.07.2018

24 New Technology

I. Formwork Systems

(a) Engineered Formwork Systems

1. Monolithic Concrete Construction System using Aluminium, Plastic-Aluminium or Composite formwork
2. Modular Tunnel Form

(b) Stay-in-Place Formwork Systems

3. Sismo Building Technology
4. Insulating Concrete Forms
5. Monolithic Insulated Concrete System
6. Structural Stay-in-place formwork system (Coffor)
7. Lost-in-place formwork system- Plaswall Panel system
8. Plasmolite Wall Panels

II. Precast Sandwich Panel Systems

(a) EPS based Systems

9. Advanced Building System - Emmedue
10. Rapid Panels
11. Reinforced EPS Core Panel System
12. QuickBuild 3D Panels
13. Concrewall Panel System

(b) Others

14. Glass Fibre Reinforced Gypsum Panel System
15. Prefabricated Fibre Reinforced Sandwich Panels
16. Rising EPS (Beads) Cement Panels

III. Light Gauge Steel Structural Systems

17. Light Gauge Steel Framed Structure (LGSFS)
18. Light Gauge Steel Framed Structure with Infill Concrete Panel Technology

IV. Steel Structural Systems

19. Factory Made Fast Track Modular Building System
20. Speedfloor System

V. Precast Concrete Construction Systems

21. SRPL Building System (Waffle-Crete)
22. Precast Large Concrete Panel System
23. Industrialized 3-S System using Precast RCC Columns, Beams & Cellular light weight concrete Precast RCC Slabs
24. Walltec Hollowcore Concrete Panel

Referred to Lok Sabha Unstarred Question No. 2123 for answer on 31.07.2018

## New technologies being used/proposed by the States under PMAY(U)

S. NO	STATE/UT	NAME OF TECHNOLOGY	NO.OF HOUSES	STATUS /Agency	Cities/Town
1	Andhra Pradesh	RCC Monolithic Technology	452,654	3.0 Lakhs houses grounded and balance 1.52 lakhs work awarded	Vizianagaram(11837), Vishakapatnam(57499),East Godavari(26802), West
				Being executed by agencies Namely, TPL, L&T, NCC, Shappor ji Paloonji,KMV Projects,Vijay Nirman & SVC,KPC Projects Ltd.	Godavari(44257), Krishna(42961), Guntur(47047), Prakasam(27749), Nellore(58235), Chittoor(20681), YSR Kadapa(19231), Kurnool(36563), Anantapur(50914)
		Total	452654		
2	Chhattisgarh	Precast Technology	3020	Ongoing ( Executed by BSBK Private Limited)	Raipur(2504), Durg (516)
		RCC Monolithic Technology	4586	Ongoing	Raipur(1136), Dhamtari(287), Bhilai(444), Bhilai Charoda (252), Durg(486), Bilaspur (1981)
		Total	7606		
3	Gujarat	Precast Concrete Technology (Wafflecrete )	1264	Completed (executed by KCL - Contracting & Engineering Ltd.& Shaival	Kalol(336), Bharuch(128), Deesa(560), Palanpur(240)

				Reality Pvt.Ltd (JV)	
			4901	Ongoing (executed by KCL - Contracting & Engineering Ltd.& Shaival Reality Pvt.Ltd (JV))	Kalol (2085), Bharuch(384), Deesa(896), Palanpur(1536)
		RCC Monolithic Technology	4934	Completed	Ahmedabad(4518), Borivari(416)
			5504	Ongoing/Partially completed	Ahmedabad (4016), Rajkot(1488)
		Total	16603		
4	Jharkhand	Precast Concrete Technology	40000	The Proposal is under consideration of the Competent Authority of the State	Ranchi, Dhanbad, Jamshedpur, Adityapur, Mango,Gugsai
		Total	40000		
5	Maharashtra	Precast Concrete Technology	18748	Ongoing (executed by M/s B G Shirke)	Khoni(2032), Mhalunge(1268), Shrirampur(296) , Navi Mumbai (15152)
		Fly-Ash Hollow Blocks	864	Ongoing	Badnera, Benoda , Mhasala, Navsari, Nimbhora, Rahatgoan and Tarkheda in Amravati Distt.
		RCC Monolithic Technology	30000	Ongoing	Solapur
		Total	49612		

6	Odisha	Precast Concrete Technology	2662	Construction is likely to start in month of August 2018	Bhubaneswar
		Total	2662		
7	Tamil Nadu	Precast Concrete Technology	1072	Ongoing	Erode
		RCC Monolithic Technology	2112	Ongoing	Kilkathirpur, Kanchipuram
		Total	3184		
8	Telanga na	RCC Monolithic Technology	14584	Awarded	Hyderabad(14040), Bhupalapally(544)
		RCC Monolithic Technology /Precast Concrete Technology	3996	Awarded	Bowrampet II (3996)
		Total	18580		
Total {PMAY(U)}			590901		

New technologies being used/proposed by the States under other schemes

S. No	States/UTs	Name of new technology	No. of houses	Status /Agency	Cities/Town
1	Andhra Pradesh	EPS System	192	Completed	Srikakulam - NTR Colony
		Prefab Technology	2336	Completed	Madhurawada(320), Aganampudi(256), Rathicheruvu(128), Kommadi(192), Chinamushidiwada (256), Madhurawada Sy.No. 55(320)MVP Colony(64), Kommadi(608), Paradesipalem(192)
		Total	2528		
2	Chhattisgarh	RCC Monolithic Technology	192	Ongoing	Raipur
		Total	192		
3	Delhi	Precast Concrete Technology (3S Technology)	81913	Ongoing/Completed  (executed by M/s B G Shirke)	Delhi
		RCC Monolithic Technology	5904	Completed (executed by M/s Sintex)	
		RCC Monolithic Technology	7620	Completed (executed by M/s Sintex)	

		Total	95437		
4	Gujarat	Precast Concrete Technology (Wafflecrete)	788	Completed (executed by KCL - Contracting & Engineering Ltd.& Shaival Reality Pvt.Ltd (JV))	Aanand(308), Dahod(480)
		RCC Monolithic Technology	34928	Completed	Ahmedabad(33,784), Rajkot(1144)
		Total	35716		
5	Himachal Pradesh	Prefabricated Steel Structure	249	Ongoing (executed by M/s Synergy Thrislington)	Solan(96), Dharamshala(153)
		Total	249		
6	Jharkhand	Precast Concrete Technology	40000	The Proposal is under consideration of the Competent Authority of the State	Belgria(5136), Golmara(18080), Lipania(7360), Sapt(9424)
		Total	40000		
7	Karnataka	Precast Concrete Technology	2385	Ongoing (executed by M/s	Bangalore



		(3S technology)		B G Shirke)	
		Total	2385		
8	Maharashtra	Precast Concrete Technology (3S technology)	44326	Completed (executed by M/s B G Shirke)	Mumbai, Nashik, Aurangabad, Solapur, Navi Mumbai, Karad
			55408	Ongoing (executed by M/s B G Shirke)	
		Total	99734		
9	Puducherry	RCC Monolithic Technology	1136	Ongoing (being executed by M/s Sintex Indus.)	Lambert Saravanan Nagar, Reddiarpalayam
		Total	1136		
10	Tamil Nadu	Precast Concrete Technology	960	Completed	Moorthingar Road, Vyasarpadi, Chennai
		Total	960		
Total(Other Schemes)			278337		
Grand Total {PMAY(U) and Other Schemes}			8,69,238		

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