



# SERInews

Vol. 8, No.10, June, 2014

*With you in Pursuit of Sustainable  
Management of Finite Water Resources*

**Chief Editor**  
Sayali Joshi, CEO

**Editorial Board**  
Dr. Pramod Salaskar  
Pallavi Patil  
Pradnyesh Agre

**Contact:** Executive Editor, Shrishti Eco-Research Institute, B-106, Devgiri,  
Opp. P. L. Deshpande Garden, Near Ganesh Mala, Pune - 411 030. India.  
Phone: 91-20-24253773 /Telefax: 91-20-66206539

Website: [www.seriecotech.com](http://www.seriecotech.com) Email: [seri\\_news@yahoo.co.in](mailto:seri_news@yahoo.co.in)

**Point for discussion this month** **National Environmental Regulator**

(For private circulation only) Pl. note that the ownership of views expressed by the author lies with him / her only. SERI's management does not endorse or own them.

**Executive Editor, Design**  
Susmit

**Advisors**  
Vidyavilas Pathak  
Dr. Jayant Mandlik  
Dr. Suresh Karkhanis  
Dr. Bikash Aich

## Eternal Words

The 1990s were the decade of decision for our species, and we didn't take the steps necessary to ensure our survival.

-- Gar Smith, editor of Earth Island Journal

If it had been the purpose of human activity to bring the planet to the edge of ruin, no more efficient mechanism could have been invented than the market economy.

-- Jeremy Seabrook.

The struggle to save the global environment is in one way much more difficult than the struggle to vanquish Hitler, for this time the war is with ourselves. We are the enemy, just as we have only ourselves as allies.

~Al Gore

## Round table on Environment regulator Structure and Function of National Environmental Regulator of India

The green bench headed by Justice A K Patnaik on 6 January 2014, directed government on court's 2011 decision for setting up of a national environmental regulator in granting environmental clearances to the projects. Centre to set up a national regulator that would take up comprehensive and independent Environmental Impact Assessment (EIA) of projects, enforce conditions for approvals and impose penalties on polluters. What is required is a regulator at the national level having its offices in all states which can carry out independent, objective and transparent appraisal and approval of projects for environmental clearances and which can also monitor implementation of the conditions laid down in environmental clearances.

With reference to above decision, a round table was organized on 21<sup>st</sup> may 2014 in the premises of All India Institute of Local Self Government (AIILSG), Pune, on the topic of “**Structure and Function of National Environmental Regulator of India**” by some of the leading organizations in Pune, working in the field of environmental conservation namely Shrishti Environment and Sustainability Society (SESS), SEERAM and AIILSG. The theme of the Round table was to discuss the effective structure and functions of Environment Regulator and necessary steps to nullify loopholes in existing Environment clearances practices. Dignitaries from various sections of the society were present at the conference and actively participated in the discussion.

Impact assessment has become a legal whip to thrash the proponents of projects and squeeze them for non-sustainable, immoral practices of economy. This is again an exploitation of ecology to concentrate economy for few. Most of the nations have legalized impact assessment as a tool to balance the development with environment. But the impact assessment has become “done” approach has its very essence lost in the current governance system. It is being perceived as a hurdle by project proponents rather than handy tool for sustainable project implementation and operations. Oppressive, repressive approach of administrative bodies aggravates their repulsive responses to the clearance processes and procedures because of obstinate rulings and delays.

It will be imperative that good officials sitting in the project office or government committees keenly implement the impact assessment in true spirit. It will be evident in their documentation, studies, observations, mitigation plans, rehabilitation and restoration schemes, monitoring and review schedules.

Judicious, sensible, and careful impact assessment serves the purpose of maintaining the harmony between economy and ecology of the region. Impact assessment is just not for compliance but to reverse the negative impacts on

Dear Readers,

It's almost end of June and India is still waiting for good rains, monsoon showers to beat the heat. Generally by this time half of country gets soaked in the rain showers but this year it seems tough for the farmers to get good monsoon crop. The rain pattern in India is changing every year and it's a challenge for the agriculture based economy of the country. Need of the hour is to think on different crop pattern and most importantly focus on availability of water for irrigation and drinking throughout the year irrespective of the amount of rain fall. Can privatization in water sector be able to give sustainable solution?

Due to fast urbanization infrastructure development in India is at its peak. To guide and regulate this development towards sustainability India needs National Environmental Regulator. This development wave should not engulf environment rather both should go hand in hand. Present structure of Impact assessment rules and clearances by Ministry is unable to play the role of Regulator effectively. So, the Hon. Supreme Court of India in 2011 and The Green Bench in 2014 directed government for setting up of a National Environmental Regulator. You can read the detail outcome of round table on “Structure and Function of National Environmental Regulator for India” organized by Shrishti Environment & Sustainability Society (SESS), SEERAM and AIILSG in Pune. The complete report is available on <http://www.seriecotech.com/articles-reports/file/118-proceedings-of-round-table-discussion-on-national-environmental-regulator-of-india-may-2014.html>. Mr. Sandeep Joshi of SERI has already discussed the importance of National Environmental Regulator in his article “Impact assessment charter to sustainable development” published in the year 2010 in SERInews issue.

Ambient temperature in urban areas is showing considerable rise over a period due to modernization of civil engineering structures. These urban structures responsible for rise in temperature are acting as Heat Islands. In this issue you can read one article written by Mr. Vivek Chaudhary, M-Tech student from Walchand College of Engineering, Sangli who is currently working on this concept as an internee in SERI.

Thank you,  
Chief Editor

environmental processes also, in turn affecting the livelihood of the population in time and space. Impact assessment should lead to cautious developmental processes to benefit the on-site population and also off-site population.

So, the socio-economical and ecological (SEE) should be the environmental planner's approach in crafting the impact checklists, statements, footprints, mitigation measures, internalization and weighing of long term ecological costs with project benefits. This needs rational and experienced thinkers (specialists, connoisseurs). For better development of India, our nation needs good, visionary "Environment Impact Analysts" who can help and guide decision-makers and monitor and review continuously the impacts of project construction and operational phases to minimize the negative effects of project. It is evident from many cases that a good Environment Impact Analyst – A Physician of Environment - Development Process (EDP) can contribute a lot for continued success of a project.

The discussions of the above Round Table can be summarized as below:

National Environmental Regulator of India is the need of the hour and it shall be an autonomous professional platform of specialists, analysts and connoisseurs ratified by all stake holders including Government with Constitutional, statutory identity. It should have immunity from politico-administrative influences, delays and biases.

- It shall be responsible for review, assessment, certification, accreditation, and continual life time monitoring of environmental compliance as per the law of the land by infrastructure, power, industrial, commercial and township projects.
- The structures and functions shall be tailored to conserve, protect and preserve the environmental integrity of the region / site of the proposed project.
- It shall be solely funded by Central/State Government through non voted grants.
- As major aspects such as water and land are under state subject list, it should have communication express-way with both State as well as Centre.
- It shall prepare standard – named as National Environmental Quality System (NEQS) so as to achieve transparency for prompt and early accreditation.

The expectations from the Environment Regulator can be abridged as follows:

### **1. Carving out a patent authorization for an Environmental Regulator**

Before setting up a new regulatory organization, adequate thought should go into the need for such an organization, the ability to man that organization appropriately and to invest it with functional autonomy.

### **2. Appointment**

To man the regulator in transparent, responsible, accountable manner, representations of connoisseurs, specialists and experts in thematic areas are to be supported by administration for logistics and communication. These should be

backed up by full-time thematic teams and subject matter divisions such as monitoring and compliance, specialized divisions on database management, economic costs, survey and research, legal and support services.

### **3. Autonomy**

Genuine functional autonomy would also have to be ensured with financial autonomy to alleviate dependency on government departments for financial support by way of handouts.

### **4. Review of laws and regulations, integration of views and opinions**

The Environment Regulator should suggest modifications or revisions in the current environmental laws to make more comprehensive to reflect the concerns of the environment of the present by reviewing the various laws and legislations since the colonial era.

Integration of different views, decisions, expressions, interpretations of rules and regulations governing identical activities is to be done to avoid confusion of directions, norms and compliance in the given regulated space.

### **5. Arbitration**

The Environment Regulator should encourage arbitration to resolve compliance disputes and ensure the rights of the ecologically and economically deprived.

### **6. Self evaluation by regulatory organizations**

The Committee recommends that each regulatory organization should undertake a self-evaluation of itself once in three years, and put-out the conclusions in the public domain for informed discussion and debate.

### **7. Drafting regulation**

It is necessary to ensure that simplicity and clarity should inform the content of regulation, leaving no part of it open to different interpretations by different persons.

### **8. Policy and process of coordination with project proponents and MSMEs**

Coordination in terms of policy formulation and statutory enforcements among various Central and State Governments, an overarching body can be set up at the highest level to identify and address key issues impeding business facilitation and to interface with relevant Ministries and Departments in order to address identified key impediments in a time-bound manner.

### **9. Information facilitation through nodal point**

It is recommended to appoint a nodal person/s and a nodal office, which can be the single point contact for persons intending to obtain information on the procedural and substantive conditions to be fulfilled for setting up a business with environmental certification.

### **10. Timely decision making**

The granting of permissions or the decision not to grant permissions should be taken within a prescribed time period based monitoring, analysis, and review of impact scale, there should be clear and precise guiding principles about why permissions are given or not.

### 11. Credible impact studies

A system should be created where in the regulator harness the services of connoisseurs, specialists and experts for environmental adequacy of proposal submitted for environmental certification based on its regional ecological and economical attributes. Regulator shall be provided with requisite data, information, maps, rules, guidelines from governmental departments and agencies like IMD, GSDA, WRD, CPCB/SPCBs, forest, revenue, agriculture, public health, Industry etc.

### 12. Establishing a continuous monitoring system

It was suggested that instead of giving 'Environmental Clearance' to any project there should be an 'Accreditation Assessment and Certification' for projects as this would enable a continuous monitoring and so ensure compliance. Project monitoring is the only way of ensuring compliance and pro-activeness rather than firefighting and corrective measures. It is also suggested that there should be social audits of the compliance by projects that are cleared.

### 13. Maintenance of a good database

A good database of all the projects if well maintained will help to disseminate the knowledge of good environmental practices, and help to establish better guidelines



## Heat Islands

Vivek Chaudhary

Heat island is phenomenon occurs in urban areas when the natural landscape replaced by building and roads. Due to the replacement of plants and trees with the buildings and roads the temperature of city rises as the properties like solar reflection, thermal emissivity and heat capacity of material utilized in city are different. Hot air remains inside the city because high and tall building does not let the air to escape from the city, results into increase in ambient temperature. Annual mean temperature of a city may be 1 -3<sup>0</sup>C higher than the surrounding and in the night time difference may goes up to 12<sup>0</sup>C.

### Surface and atmospheric heat island

Surfaces are more warmer then the surrounding atmosphere. In the day time the difference in the air temperature and surface temperature is higher than the night time. This effect changes with weather conditions, in clear and sunny sky the heat island effect will be more compared to cloudy weather.

Surface temperatures have an indirect, but significant, influence on air temperatures, especially in the canopy layer, which is closest to the surface. For example, parks and vegetated areas, which typically have cooler surface temperatures, contribute to cooler air temperatures. Dense, built-up areas, on the other hand, typically lead to warmer air temperatures.

### Factor affecting formation of heat island

**Vegetation:** In the rural areas trees and plants helps in dissipating the ambient temperature by shades and process called evapotranspiration. On the other hand in the urban areas plantation is replaced by building and road surfaces which instead of dissipates the heat they increase it. Surfaces in the rural are permeable due to plantation but in the urban road surface are impermeable and act as barrier for water to percolate.

**Urban material:** Properties of urban materials, in particular solar reflectance, thermal emissivity, and heat capacity, also influence urban heat island development, as they determine how the sun's energy is reflected, emitted, and absorbed. And the materials used in the urban are having high thermal emissivity and heat capacity not only increasing surface temperature but the air temperature also.

**Urban Geometry:** Urban geometry, which refers to the dimensions and spacing of buildings within a city, controls the heat island effect. Urban geometry influences wind flow, energy absorption, and a given surface's ability to emit long-wave radiation back to space. In developed areas, surfaces and structures are often at least partially obstructed by objects, such as neighbouring buildings, and become large thermal masses that cannot release their heat very readily because of these

obstructions. Especially at night, the air above urban centres is typically warmer than air over rural areas.

**Weather:** Two primary weather characteristics affect urban heat island development: wind and cloud cover. In general, urban heat islands form during periods of calm winds and clear skies, because these conditions maximize the amount of solar energy reaching urban surfaces and minimize the amount of heat that can be convected away. Conversely, strong winds and cloud cover suppress urban heat islands.

**Geographic location:** Location of the area on the earth and kind of terrain it has affect the heat island. For example, large bodies of water moderate temperatures and can generate winds that convect heat away from cities.

**Heat balance:** Heat is continuously coming from the sun; if this energy is not dissipated then earth would be overheated. So this energy ultimately must release in the atmosphere.

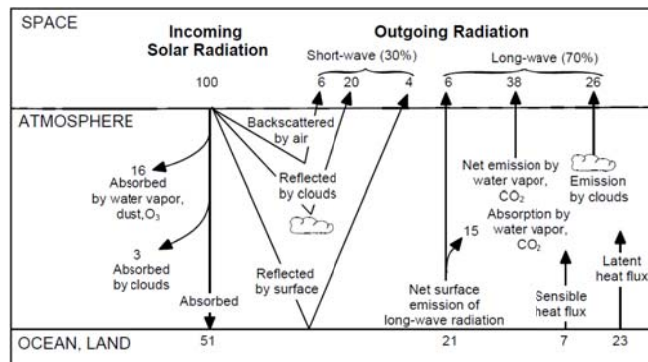


Figure 1 Typical heat balance of earth. (Source: National Academy of Sciences 1975, p. 18.)

**Impacts of heat island**

**Energy consumption:** Energy consumption in the summer season always increases and heat island enhance that process, according to USEPA for every 1° F peak electric demand increase by 1.5-2 %.

**Air quality:** Higher temperatures can increase energy demand, which generally causes higher levels of air pollution and greenhouse gas emissions. Cur-

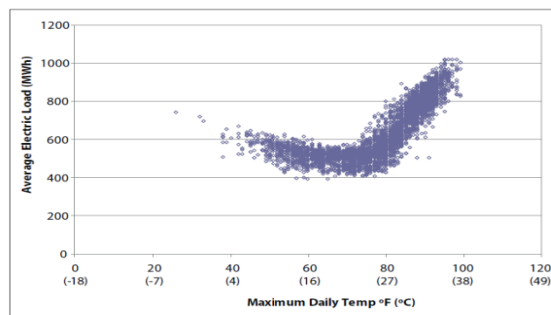


Figure 2 : Increase in demand of electricity with the temperature. (Source: Sailor, 2006, with data courtesy of Entergy)

rently, most electricity globally is produced from combusting fossil fuel. Thus, pollutants from most power plants include sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), carbon monoxide (CO), and mercury (Hg). These pollutants are harmful to human health and contribute to complex air quality problems such as acid rain. Further, fossil-fuel-powered plants emit greenhouse gases, particularly carbon dioxide (CO<sub>2</sub>), which contributes to global climate change.

In addition to increases in air emissions, elevated air temperatures increase the rate of ground-level ozone formation, which is produced when NO<sub>x</sub> and volatile organic compounds (VOCs) react in the presence of sunlight. If all other variables are equal—such as the level of precursor emissions or wind speed and direction—ground-level ozone emissions will be higher in sunnier and hotter weather.

**Water pollution:** Surface urban heat islands degrade water quality, mainly by thermal pollution. Pavement and rooftop surfaces that heats up to 27 to 50°C which is higher than air temperatures, transferring this excess heat to storm water. Field measurements from one study showed that runoff from urban areas was about 11-17°C hotter than runoff from a nearby rural area on summer days when pavement temperatures at midday were 11-19°C above air temperature. When the rain came before the pavement had a chance to heat up, runoff temperatures from the rural and urban areas differed by less than 2°C. This heated storm water generally drains into storm sewers and raises water temperatures of receiving water body. Water temperature affects all aspects of aquatic life, especially the metabolism and reproduction of many aquatic species.

**Remedies to prevent heat island**

**Recreational hubs:** Well planned gardens and park help us to increase the plantation which eventually diminishes the heat island effect with evapotranspiration and shades of trees. Gardens and parks also provide permeable surface for water to percolate and recharge the ground table.

**Use of eco-friendly material:** Green roof, cool roof, cavity roof and cavity wall reduce significantly the energy consumption of building which indirectly prevent heat island and also the embedded utilized will be less .

**Orientation of the building:** Buildings should be design accordance to the geographic condition and should orient in such a way that require less operational energy. For example if two building are to be build say one in Shimla and one in Pune then orientation must be different for both because in one we need to keep warm atmosphere and in other we want to prevail cold atmosphere. In this way the energy consumption can be reduced and eventually heat island effect.

- x - x - x -