



# Greening of GIP Jadcherla, Telangana

March, 2015

Prepared by



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**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

## About GIZ

GIZ has been implementing Indo-German co-operation for over 60 years. It supports change processes for sustainable development, mutually agreed by the two Governments and other funding partners. GIZ uses a bouquet of customised, innovative solutions, backed by tested German methods. GIZ India has staff strength of over 300 people, and handles an annual business volume of about € 50 million (INR 400 crores).

India belongs to the G20 and BRICS, and is fast emerging as an industrial and nuclear power. Despite the country's rapidly growing economy; poverty and social issues remain a challenge. The burgeoning population and accelerated urbanisation in the country has resulted in an environment that is at risk, and greenhouse gas emissions that continue to spiral upwards. India aspires for sustainable and inclusive growth.

GIZ India is studying how it can participate in new initiatives of the Government of India, e.g. Rejuvenation of Ganga, Clean India, Skill Development, or Agricultural Innovation. GIZ currently works in areas where needs and strengths of India and Germany are in alignment.

- Energy efficiency and renewable energies: introduce German technologies and reform institutional set ups
  - mitigation of greenhouse gas emission
  - more efficient power generation and industrial production
  - propagation of new business models for solar energy and improved cook stoves
  - green energy corridors for power distribution
- Environment:
  - support green cities and industries
  - strengthen resilience to climate change
  - enhance productivity in agriculture
  - protect green spaces and biological diversity
  - support sustainable forests
  - introduce economic incentives for a green economy
- Sustainable economic development:
  - access to rural finance
  - social security and insurance for the poor
  - small and medium enterprises
  - responsible business management
  - vocational training and skill development based on the German model

Our funding partners are the German Federal Ministry for Economic Cooperation and Development (BMZ), the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), and Indian public sector clients, multilateral organisations (e.g. EU), Foundations, and Non-governmental organisations.

## About IGEP

The Indo-German Environment Partnership (IGEP) Programme focuses on pilot measures and policy decisions of national level relevance for the enhancement of resource efficiency, reduction of environmental stress, improved service delivery in urban infrastructure services and mitigation of greenhouse gas emissions. The programme aims at responding to some key challenges identified in the policy framework of the Ministry of Environment and Forests, Government of India. The overall objective of IGEP is that the decision makers at national, state and local level use innovative solutions for the improvement of urban and industrial environmental management and for the development of an environment and climate policy that targets inclusive economic growth de-coupled from resource consumption.

# Foreword



Dr. Dieter Mutz  
Director  
Indo German Environment Partnership (IGEP) Programme  
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH  
New Delhi

The industry sector plays a very important role in Telangana state's economy. Telangana has more than 120 Industrial parks, in varied sizes, with Hyderabad being hub of the industrial and business activity. The State has several existing industrial parks housing thousands of industries. These industrial parks, particularly the very old ones, need improvements with cost effective infrastructure to support the industries housed in the industrial parks as well as to deal with negative environmental impacts. The existing industrial parks as well as the new Industrial Parks and Investment Zones have great potential for technological progress.

The main difference between a 'Green industrial park' and a conventional industrial area can be understood in terms of a sustainable layout design, facilities for companies and employees, environmental and technological infrastructures and integrated site management. The Site Master Plan is not just a layout plan but has much greater complexity and value. It is a comprehensive document that sets out an overall strategy for development of the industrial estate including various thematic layers, standards and management concepts for operation of Industrial Park.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH has prepared this report on 'Greening of GIP Jadcherla', which is an in-depth study of partially developed GIP Jadcherla and strategy to make it 'Green; through replanning and provision of necessary infrastructure. This report also has a section on standards, benchmarks and rating systems internationally followed for 'Green Industrial Parks'. Various thematic maps have been included for showcasing the pragmatic zoning, optimal land use, hierarchical circulation pattern, environmental infrastructure, technical infrastructure as well as social infrastructure.

A team of national and international experts with several years of standing experience in applied research and collaboration services were brought together for this task. We are sure, with the industrial corporation taking forward the initiative of environment friendly site master planning and development; the cumulative results will go a long way in sustainable development of the state and the whole nation.

New Delhi  
March, 2015

**(Dr. Dieter Mutz)**  
Director, GIZ (IGEP)

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# Chapter 01

## About GIP Jadcherla

### A. About the Site

The site is located approximately 83 km from the city of Hyderabad in the South Indian state of Telangana. The total area of the site is 3.86 km<sup>2</sup> (954.23 acres) with certain areas already under development. The development of the Green Industrial Park (GIP) at Jadcherla had commenced in 2007. The allotment of plots and road construction was already undertaken partially. The GIP Jadcherla is located at survey nos. 408 to 412, 418 to 435, 437 to 445, 452 to 459 of Polepally Village, Jadcherla Mandal, and survey nos. 588 to 630 of Rajapur Village, Balanager Mandal of Mahboobnagar District. (Refer image no. 1-1).



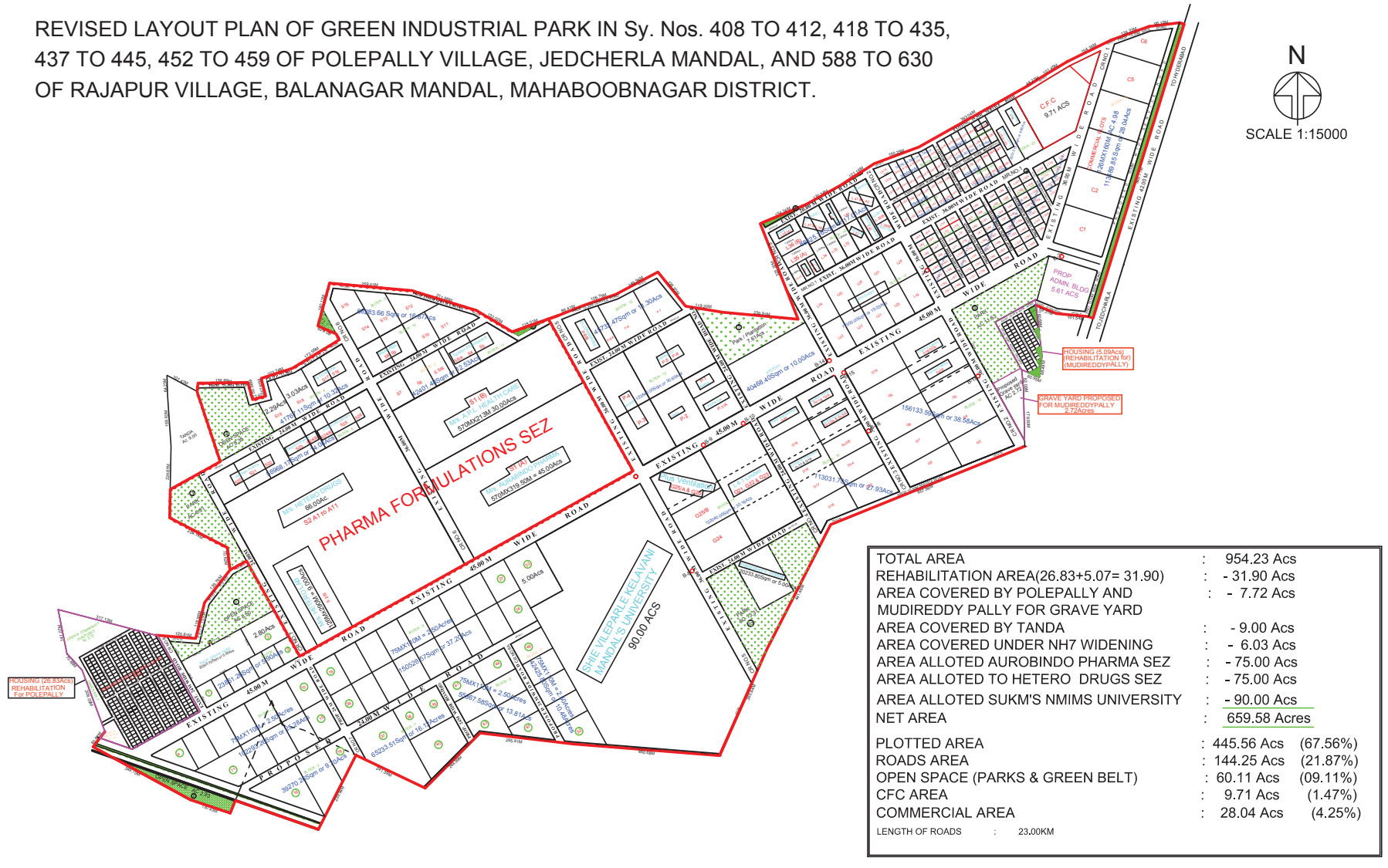
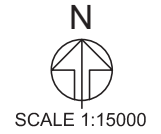
Image no. 1-1: Location of site in Telangana

[Left image: Districts Map of Telangana State (June 2014). In Wikipedia. Retrieved from [http://en.wikipedia.org/wiki/Mahabubnagar\\_district#mediaviewer/File:Telangana\\_Districts\\_Map.png](http://en.wikipedia.org/wiki/Mahabubnagar_district#mediaviewer/File:Telangana_Districts_Map.png), Right image : © Happold Cities]

### B. About the Existing Site Master Plan

A preliminary Site Master Plan of GIP Jadcherla (refer map no.1-1) was prepared by Andhra Pradesh Industrial Infrastructure Corporation Ltd (erstwhile developer of the GIP) taking into consideration the requirements and standards of the Directorate of Country Planning (DTCP), of the Government of Andhra Pradesh. Within GIP Jadcherla, approximately 0.97 km<sup>2</sup> (240 acres) of land was notified as special economic zone while rest of the area was planned for industrial plots, parks and open spaces, roads, commercial zone, rehabilitation zone and common facility centre. The rehabilitation zone was planned by APIIC for 415 plots. (Refer table no. 1-1).

REVISED LAYOUT PLAN OF GREEN INDUSTRIAL PARK IN Sy. Nos. 408 TO 412, 418 TO 435, 437 TO 445, 452 TO 459 OF POLEPALLY VILLAGE, JEDCHERLA MANDAL, AND 588 TO 630 OF RAJAPUR VILLAGE, BALANAGAR MANDAL, MAHABOONAGAR DISTRICT.



Note: ACS means Acres, CFC means Common facility centre, NH7 means National Highway 7

Map no. 1-1: GIP Jadcherla- Previous Master Plan

[Source: APIIC]



Table no. 1-1: GIP Jadcherla: Overview

S. No.	Description	Area (km <sup>2</sup> )	Area (acre)
<b>1</b>	<b>Total area</b>	<b>3.86</b>	<b>954.23</b>
	Rehabilitation area -	0.12	31.90
	Area for grave yard	0.03	7.72
	Area covered by Tanda <sup>1</sup>	0.04	9.00
	Area covered under NH-7 widening	0.02	6.03
	Area allotted to Aurobindo Pharma SEZ	0.30	75.00
	Area allotted to Hetero Drugs SEZ	0.30	75.00
	Area allotted to University	0.36	90.00
<b>2</b>	<b>NET AREA</b>	<b>2.67</b>	<b>659.58</b>
	Plotted area	1.80	445.56
	Roads area	0.58	144.25
	Open space (parks & green belt)	0.24	60.11
	CFC area	0.03	9.71
	Commercial area	0.11	28.04

Source: APIIC

## C. Process Followed for Greening of GIP Jadcherla

A scientific as well as a participatory process was followed for ‘Greening’ the Site Master Plan. The process started with a training workshop with the APIIC team, conducted by GIZ’s international consultants including the German Sustainable Building Council (DGNB) and BuroHappold Engineering, Berlin. The training workshop led to the identification of some of the potentials for ‘Greening’ of the GIZ Site Master Plan, as put forward by the participants from APIIC as well as by the consultants.

In addition to these identified potentials and suggestions, the GIZ-IGEP team further reviewed the standards, rating systems, guidelines, and bench marks for industrial parks within India as well as those from outside the country. Accordingly, the GIZ-IGEP developed concepts for a revision of the preliminary Site Master Plan and discussed it with APIIC officials through an elaborate workshop to finalize the conceptual plans for the ‘Greening’ of GIP Jadcherla in February 2014.

The next step was to develop to-scale-drawings incorporating the identified ‘Green’ aspects. This required derivation of norms and design concepts to assess land requirements and appropriate placement within the Site Master Plan. The drawing scale and components of the Site Master Plan were fixed as required by the URDPFI<sup>2</sup> and Andhra Pradesh Building Rules 2012<sup>3</sup>. Layers were generated on the Site Master Plan in AutoCAD and a draft Site Master Plan was developed. This was subjected to further scrutiny by APIIC teams to finalize the revised Site Master Plan for GIP Jadcherla.

1 *Tanda* is a Telugu word which means a caravan, horde, troop, encampment or a collection of men or things. In context of GIP Jadcherla, it stands for a settlement of people

2 Ministry of Urban Development, Government of India. (2015). *Urban and Regional Development Plans Formulation and Implementation Guidelines*. New Delhi, India.

3 Andhra Pradesh Building Rules. Retrieved from <http://dtcp.ap.gov.in:9090/webdtcp/G.O.Ms.No.168,Dt.07-4-2012-AP%20Building%20Rules.pdf>

The process followed for ‘Greening of GIP Jadcherla’ is illustrated below:

Oct 2013	• Training Workshop
Jan 2014	• Recommendations by GIZ Consultants (BuroHappold Engineering and DGNB)
Apr 2014	• Compilation of standards, rating systems, guidelines and bench marks, for greening/master planning
Feb 2014	• Conceptual plan preparation (APIIC-GIZ workshop)
Mar 2014	• Derivation of norms and design concepts
Mar 2014	• Consultation with APIIC teams
Mar 2014	• Revised master plan
July 2014	• Meetings were held with the working group to further refine the plan
Aug 2014	• A framework for calculating cost of construction given to the working group
Aug 2014	• Submission of revised master plan to TSIIC for further cost estimations
Sept 2014	• Submission of revised master plan to DGNB for evaluation and rating
Oct 2014	• DGNB’s review of master plan for compliance with ‘Green Industrial park’ standards
Jan 2015	• Finalisation of Site Master plan

Details of the process are given below:

## ■ Training-Workshop of APIIC Officials

Under the IGEP<sup>4</sup> Programme, GIZ organized three training programmes on ‘Planning of New Green Industrial Parks and Investment Zones’ during October 1-11, 2013 in Hyderabad. The training programmes<sup>5</sup> were conducted by Head of Cities-Central Europe, BuroHappold Engineering, GmbH. The three training programmes included an orientation programme for APIIC officials on day 1, a training programme for consultants on day 2, and a training programme for Government officials on day 3 which focused on:

- Planning systems and procedures;
- Green rating systems;
- Suggestions for incorporation of green aspects in the new industrial parks; and
- Case studies.

Details are given below.

## ■ An Orientation Programme for APIIC Officials

A one- day orientation programme was conducted on October 1, 2013, in Hyderabad. About 16 participants from APIIC took part in the orientation programme, which focused on re-planning of Site Master Plans for three industrial parks of APIIC namely,

- i. APSEZ - Vizag;
- ii. MPSEZ - Nellore; and
- iii. GIP - Jedcherla.

The expert from BuroHappold Engineering made relevant presentations and undertook the training. Presentations on the status of the 3 industrial parks were made by the General Manager (EMP) of APIIC. During the orientation programme, three working groups were formed, each of which worked on the missing aspects/infrastructure in the existing industrial parks and on what should be incorporated in the re-planning. (Refer image no. 1-2).

<sup>4</sup> Indo-German Environment Partnership (IGEP) Programme of the Indo German Development Corporation, [www.igep.in](http://www.igep.in)

<sup>5</sup> <http://www.igep.in/e48745/e49028/e56645/#e57644>



Image no. 1-2: Orientation programme for APIIC officials

[Source: GIZ-IGEP]

### ■ Three Day Training Programme for Government Officials

A 3-day training programme was conducted from October 9-11, 2013. The programme concentrated on the development of an industrial park. This was followed by intense discussions among the participants. Three groups were formed to work on GIP Jadcherla. The participants were given the task to analyze the short-comings in the Site Master Plan and to discuss appropriate solutions. (Refer image no. 1-3, 1-4, 1-5, 1-6)

Each team came out with a five year plan for the development of GIP Jadcherla based on the priorities and requirements as assessed by them for the industrial park. The long duration of the workshop and the formation of small groups allowed for a more detailed introduction and discussion of key themes as water, mobility, social inclusion etc. Teams were asked to work on surface water drainage strategies from green roofs to the final settling pond and discharge, and to find the preferred locations for the GIP. The participants were encouraged to find potential opportunities for new thinking and/or technologies to prepare them for discussions with key stakeholders and authorities in real life.



Image no. 1-3: Brainstorming over previous master plan of GIP Jadcherla by group -1

[Source: GIZ-IGEP]



Image no. 1-4: Group-2 marking location of facilities over previous master plan of GIP Jadcherla  
[Source: GIZ-IGEP]



Image no. 1-5: Training participants presenting their concepts for GIP Jadcherla  
[Source: GIZ-IGEP]



Image no. 1-6: Participants of three day training programme

[Source: GIZ-IGEP]

The trainings led to a deeper understanding of the practical issues of the GIP Jadcherla site and produced applicable recommendations from BuroHappold Engineering, DGNB as well as GIZ-IGEP. (Refer map no. 1-2, table no. 1-2)



Map no. 1-2: Outcomes of the working group

[Source: GIZ-IGEP]

The inputs from the participants for improving the Site Master Plan of GIP Jadcherla are shown in the Map no. 1-2.

Table no. 1-2: Inputs by teams during training

S.No.	Plan and components
1.	<b>First year plan</b> <ul style="list-style-type: none"> <li>- Roads</li> <li>- Storm water drains/ Water management</li> <li>- Street lights</li> <li>- Plantations/ Landscaping/ Green buildings</li> <li>- Green building concepts</li> <li>- Administrative building</li> </ul>
2.	<b>Second year plan</b> <ul style="list-style-type: none"> <li>- Public transport</li> <li>- Information kiosk</li> <li>- Recreation areas</li> <li>- CFC-Fire/ Ambulance</li> <li>- Primary health centre</li> <li>- Car /Truck parking</li> <li>- Water supply</li> </ul>
3.	<b>Third year plan</b> <ul style="list-style-type: none"> <li>- STP/ CETP</li> <li>- Solar renewable energy</li> <li>- Cycle track</li> <li>- Solid waste management</li> </ul>

## ■ Rating and finalization Workshop on “Site Master Plan of GIP Jadcherla”

A 2-day workshop was conducted for finalization of the Site Master Plan of the Green Industrial Park, Jadcherla (near Hyderabad in Telangana) on 7-8 October 2014 for the officials of the Telangana State Industrial Infrastructure Corporation Ltd. (TSIIC). The programme was attended by 9 participants from head office as well as zonal office of TSIIC.

A senior consultant of Buro Happold Cities was the principal resource person for this programme. He is a LEED GA (Leadership in Energy & Environmental Design - Green Associate) and DGNB Auditor.

The workshop focused on assessment of the Site Master Plan of GIP Jadcherla as per DGNB rating system taking into consideration provisions such as the basic and technical infrastructure in the Site Master Plan, including:

- Transportation/circulation systems, renewable energy systems
- Rain water, waste water, solid waste management
- Common infrastructure and services

The methodology of the workshop was a mix of interactive presentations. An interactive hands-on exercise was also conducted in which the participants presented their ideas about GIP Jadcherla for further greening the industrial park. (Refer image no. 1-7).



Image no. 1-7: Impressions from two day workshop

[Source: GIZ-IGEP]

As a result of the workshop, the preliminary assessment of the Site Master Plan showed that the site covered several aspects of the DGNB rating system and a formal process of DGNB certification could be initiated targeting silver or higher rating.