Journey towards Sustainable Jamshedpur

About JUSCO

Jamshedpur Utilities and Services Company (Jusco), India's only comprehensive urban infrastructure service provider was carved out of Tata Steel's Town Services Division, which was responsible for managing municipal services and provide civic amenities in Jamshedpur, in 2004. The company wanted JUSCO to develop into a customer-focused sustainable corporate entity.

Jusco's core competency is "creation and subsequent operation and maintenance of urban infrastructure and services".

Areas of business

- Engineering procurement and construction: Planning, development and maintenance of township infrastructure.
- Power services division: Operation and maintenance of power infrastructure and distribution of power.
- Integrated township management: Providing civic and municipal services in an integrated manner in a full-fledged municipal area.

Jamshedpur, though not on the official list of cities selected by the government of India under Smart-Cities mission, is being transformed by JUSCO towards becoming one.

The company has always taken steps to use technology to provide better services to people, starting with a call center, JUSCO Sahyog Kendra, to address citizen's issues around 10 years back. The company was among the first to start e-billing, e-payments etc.

In its aim towards becoming a smart city, JUSCO is working with Tata Communications Ltd. to install specialized communication networks called LoRaWAN's. This network is intended for wireless battery operated devices and enables secure bi-directional communication and localization and mobility services.

Data through various sensors would be received at a centralized command and control (C&C) center. Using LoRa network, JUSCO is doing Proof of Concept for smart street lights and many other such projects. Real time data transfer using IoT can help the city with floodwater monitoring, water QC and various similar services where real time data monitoring would enable faster decision making.

Many ongoing smart city projects of JUSCO are in the 'Proof of Concept' stage with a plan to analyze the data and working after first stage of deployment.

Jusco's step towards sustainability

Jusco's span of operations strives towards providing comprehensive and sustainable solutions for urban infrastructure needs namely power distribution, municipal solid waste management, and engineering and construction. Jusco is the only utility services company in the world to have been conferred the Total Productive Maintenance (TPM) Excellence Award 2008 by the Kyoto-based Japan Institute of Plant Maintenance. It is also the first Indian water utility to have bagged a High Commendation Award from Global Water Intelligence at London and the 5th Asia Water Management Excellence Award at Kuala Lumpur for its contribution towards the water sector in the Indian subcontinent and Asia.

Some of the feats achieved by JUSCO towards sustainability are:

Water:

In Jamshedpur, one can drink water directly from the tap

S. No.	Key Performance Indicators	Current Status
1	Number of connections (including bulk)	60,000 nos.
2	Drinking water availability	10 (hrs/day)
3	Compliance to water quality norms of BIS & WHO	100%
4	Non-Revenue Water (NRW)	6.64%
5	Piped water service coverage	91%
6	Treated sewage – recycled/reused	100%

Implementation of ZLD: **Z**ero **L**iquid **D**ischarge is a process that recycles and purifies all the wastewater leaves no net effluent, or discharge. ZLD systems employ the most advanced wastewater treatment technologies to purify and recycle virtually all of the wastewater produced.

Refer **Exhibit no**. **1** for ZLD

Packaged Sewage Treatment Plant: The packaged sewage treatment plant are pre-fabricated solutions, ready to install as Plug & Play and ready use. These plants have helped in the decentralization of the sewage treatment facility and the plants can be tweaked as per the area's requirement being served by the plant like some areas may have more of organic waste while others more of chemical waste.

Electricity and Network:

Some salient features of the power distribution network for the city of Jamshedpur are:

- 12000 km power distribution network
- N-1 design, Underground distribution network
- GIS (Geographic Information System) mapping of all underground utilities
- 100% metered connections

S. No.	Key Performance Indicators	Current Status
1	Power connections (including bulk)	60,000 nos.
2	Power availability	99.9%
3	T&D Loss (country's benchmark)	~4%
4	SAIDI (Minutes/Consumer/Year)	351
5	SAIFI (Nos./Consumer/Year)	1.73
6	LT breakdown (Nos/ Year)	32
7	Street Light Availability	99%

Refer **Exhibit no**. **2** for conservation through Automated LED street lights

LoRaWAN: Long Range Wide Area Network is a media access control (MAC) protocol for wide area networks. It is designed to allow low-powered devices to communicate with Internet-connected applications over long range wireless connections. It is a better fit for public, wide-area networks, because with LoRaWAN, all of the channels are tuned to the same frequencies, and it is better to have only one network operating in a single area in order to avoid collision problems.

Refer **Exhibit no**. **3** for diagrammatic representation of LoRaWAN

Internet of Things (IOT)

- Digital Smart Bins
- Automated street lights
- Workforce Tracking System
- GPS tracking of fleet

Solid Waste Management:

Salient features of Solid Waste Management in Jamshedpur are:

S. No.	Key Performance Indicators	Current Status
1	Solid Waste (SW) collected per day	250 MT
2	Collection to generation ratio	92%
3	SW haulage compliance	96%
4	SW transportation vehicles availability	90%
5	Garbage removal compliance in town	88%
6	SW composted	50 tpd
7	GPS tracking of conservancy fleet vehicles	100%

Green Management:

Some salient features are:

- Highest green cover in Indian Cities — 37.2%

- Over 1.2 million trees planted across the town in last 10 years with 90% survival rate
- 40 big and small community parks covering an area over 7 lakh m^2

Jugsalai Slag Dump

Tata steel converted its slag dumping area into an eco-park with 10000 tree plantations, 5000 m^2 of water bodies, 2000 m^2 of medicinal plants and Bio gas plants.

Refer **Exhibit no**. **4**

SDG

In one of the largest gathering of world leaders in history, eight international development goals were established in the year 2000. The meeting was known as millennium summit. The purpose of the summit was to understand the United Nations' role at the turn of 21st century. In this summit, 191 member states of the UN and at least 22 international organizations agreed to help the inhabitants of the world's poorest nations to achieve a better life by 2015. The framework for this progress is outlined in the Millennium Development Goals. The 8 MDG's are as follows

1. To eradicate extreme poverty and hunger
2. To achieve universal primary education
3. To promote gender equality and empower women
4. To reduce child mortality
5. To improve maternal health
6. To combat HIV/AIDS, malaria, and other diseases
7. To ensure environmental sustainability
8. To develop a global partnership for development

All MDGs are interdependent and they have their own specific targets and indicators. The MDG framework created unprecedented momentum in development in various sectors and was instrumental for significant progress around the world. Some of the key MDG achievements are

- More than 1 billion people have been lifted out of extreme poverty (since 1990)
- Child mortality dropped by more than half (since 1990)
- The number of out of school children has dropped by more than half (since 1990)
- HIV/AIDS infections fell by almost 40 percent (since 2000)

India's MDG framework was designed as per the UNDG's 2003 framework for monitoring the 8 MDG's. Out of 18 targets, 12 targets relevant for India were chosen. India did fairly well in achieving some of the targets (see exhibit 5)

Despite the fact that there has been real headways and changes accomplishing a portion of the MDGs even before the due date of 2015, the advance has been uneven between the nations. But as 2015 drew closer, The UN started strategizing of the post 2015. Ban Ki-moon, the United Nations Secretary-General from 2007 to 2016, has stated that: "We don't have plan B because there is no planet B." This idea drove the wheels. Post 2015 agenda were discussed and finalized by august 2015. On 25 September 2015, the 193 countries of the UN General Assembly adopted the 2030 Development Agenda

titled "**Transforming our world: the 2030 Agenda for Sustainable Development**". The goals finalized are known as sustainable development goals (See exhibit 6). The goals include

Goal 1 End poverty in all its forms everywhere

Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Goal 3 Ensure healthy lives and promote well-being for all at all ages

Goal 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Goal 5 Achieve gender equality and empower all women and girls

Goal 6 Ensure availability and sustainable management of water and sanitation for all

Goal 7 Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

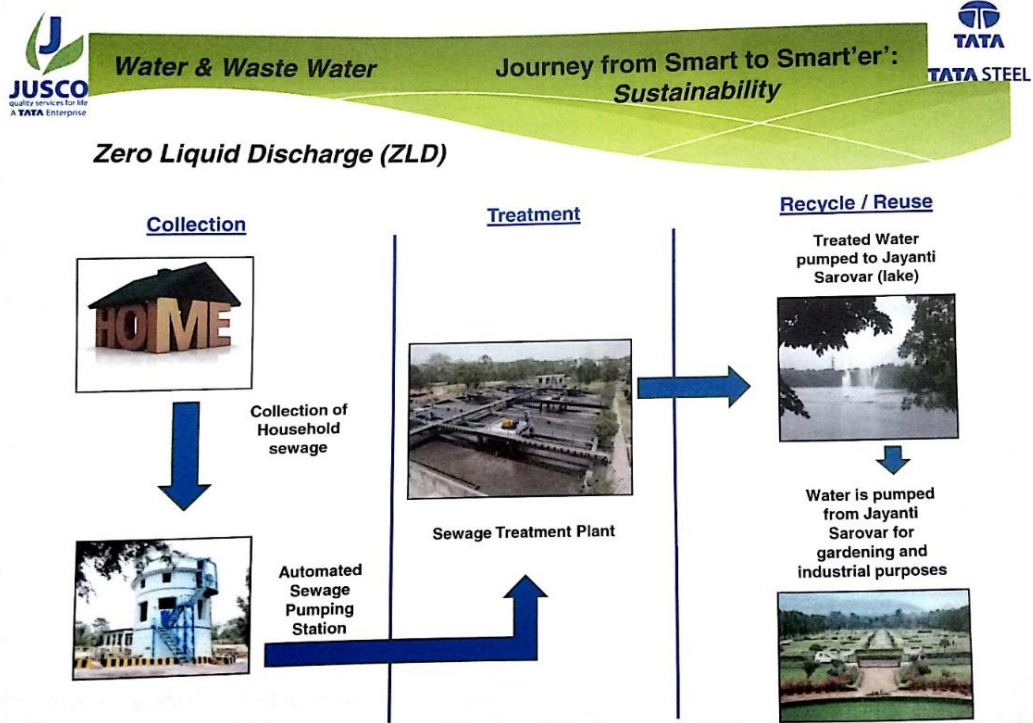**Goal 9** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 10 Reduce inequality within and among countries

Goal 11 Make cities and human settlements inclusive, safe, resilient and sustainable

Goal 12 Ensure sustainable consumption and production patterns

Goal 13 Take urgent action to combat climate change and its impacts*

Goal 14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Goal 16 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Goal 17 Strengthen the means of implementation and revitalize the global partnership for sustainable development

The above 17 goals have 169 targets. Each target has 3 to 4 indicators to measure the progress, making the total to 304. The SDGs work in the spirit of partnership and pragmatism to make the right choices now to improve life, in a sustainable way, for future generations. They provide clear guidelines and targets for all countries to adopt in accordance with their own priorities and the environmental challenges of the world at large. The SDGs are an inclusive agenda.

Every nation's government translate the goals in national legislation and then develop an action plan around it. Then they allocate some budget and look for strong partnership to execute it. The SDG's

has helped many nations to create their own roadmap and provided a tool to measure the achievements. Just like MDG's they are playing an instrumental role in overall global development.

The Way Forward

Jusco has already worked on various initiatives aligned with MDG. Now with updated SDGs, JUSCO is looking for solutions/ideas in line with following SDGs:

Goal 3 Ensure healthy lives and promote well-being for all at all ages

Goal 6 Ensure availability and sustainable management of water and sanitation for all

Goal 7 Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 9 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 11 Make cities and human settlements inclusive, safe, resilient and sustainable

Goal 17 Strengthen the means of implementation and revitalize the global partnership for sustainable development

What do we expect?

1. A solution which is aligned with one or a mix of the 6 SDGs mentioned above.
2. Identify the metrics for Jamshedpur on the website (click on http://open.dataforcities.org/ -> skip tutorial -> select Jamshedpur from the map) which can be improved by your solution. If possible, quantify your improvements.
3. Create a clear implementation roadmap.
4. Provide a clear vision on how a smart city in 2050 will look like. It should include all facets viz people, infrastructure, system etc.

Exhibit 1: *ZLD*

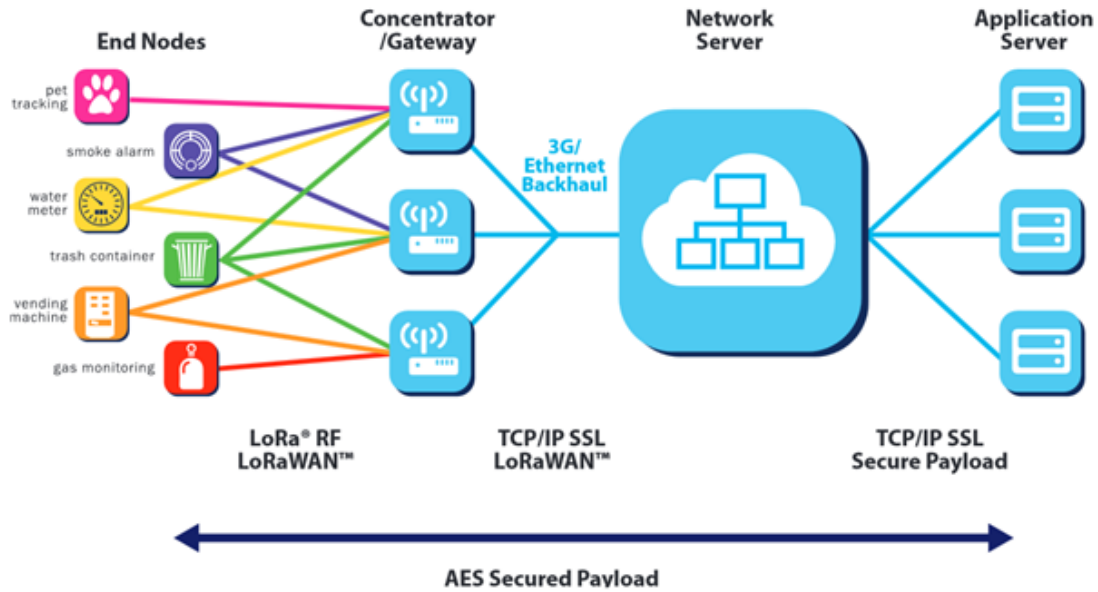**Exhibit 2:** *conservation through Automated LED street lights*

Exhibit 3: *LoRaWAN*

Exhibit 4: *Transformation of Jugsalai Slag Dump*

Exhibit 5: *MDG's and target summary of India – 2017*

MDGs and Targets –Summary of Progress achieved by India	
GOAL 1: ERADICATE EXTREME POVERTY AND HUNGER	
TARGET 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	**Achieved.**
TARGET 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	**In progress.**
MDG 2: ACHIEVE UNIVERSAL PRIMARY EDUCATION	
TARGET 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	**In progress.**
MDG 3: PROMOTE GENDER EQUALITY AND EMPOWER WOMEN	
TARGET 4 : Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015	**Achieved.**
MDG 4: REDUCE CHILD MORTALITY	
TARGET 5 : Reduce by two-thirds, between 1990 and 2015, the Under- Five Morality Rate	**Nearly achieved.**
MDG5 5: IMPROVE MATERNAL HEALTH	
TARGET 6 : Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio	In progress
MDG 6: COMBAT HIV/AIDS, MALARIA AND OTHER DISEASES	
TARGET 7 : Have halted by 2015 and begun to reverse the spread of HIV/AIDS	**Achieved**
TARGET 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases	**Achieved**
MDG 7: ENSURE ENVIRONMENTAL SUSTAINABILITY	
TARGET 9: Integrate the principle of sustainable development into country policies and programs and reverse the loss of environmental resources.	**In progress**
TARGET 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	**Achieved for the indicator of drinking water**. **In progress for the indicator of Sanitation**
TARGET 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	**The pattern not statistically discernible**
MDG 8: DEVELOP A GLOBAL PARTNERSHIP FOR DEVELOPMENT	
TARGET 18 : In cooperation with the private sector, make available the benefits of new technologies, especially information and communications	**Achieved**

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Exhibit 6: *Sustainable Development Goals*