Towards a Green Job Enabling Ecosystem

Laveesh Bhandari♠

Version: May 21, 2020

Abstract

Building a more environmentally sustainable economy would depend upon creating an ecosystem that supports and incentivizes it. Green jobs are an outcome of a green economic policy structure than enables the coming together of skills, funds and entrepreneurship so that innovative products, services and practices receive adequate support for them to survive and prosper. However, one critical problem with the term 'green' is achieving a workable definition that is universally valid. While conceptual definitions exist, the problem of a working definition can also be addressed if an empowered group can rate different activities, jobs and perhaps even organizations as green or in degrees of green. In parallel key policy movements related to skills, funds and entrepreneurship are discussed in detail to help build a green ecosystem for enabling green jobs.

Category	Issues	Solution
A. Ambiguity in defining **Green Jobs**	i) Current definitions are conceptual; need a working definition that helps differentiate between different activities/jobs ii). There are many gray areas and not clear how activities/jobs that are partially green can be addressed	1. Set up a group or institution tasked with identifying and certifying different activities, jobs and even organizations as green [CG, Niti] 2. Need to assign a value to each activity or job that reflects degree of green rather than a discrete value of green or not green. [CG, Niti]
B. Improved **Incentives**	i) How can one level the playing field or provide extra benefits to environmentally less harmful or beneficent activities. ii) Incentives work better in the presence of well-functioning ecosystem iii) Lack of coordination at different levels of government.	1. Comprehensive green plan to be developed and structured for specific actions for national, state and local governments. [Niti] 2. Develop an ecosystem thru incentives, skills and entrepreneurship. [CG, SG, MG] 3. Green activities should be incentivized both through monetary and non-monetary mechanisms as per A2 above [CG, SG, MG] 4. More environmentally harmful activities need to pay higher cess or tax as per A2 above [CG, SG. MG]
C. **Skilled** Labor	i) Lack of labor force with the required green skill sets. ii) Inability of managers to identify efficient and skilled workers due to nascent sector, lack of experience, and remote locations.	1. Training and certification of required skills for specific green activities in manufacturing, services and agriculture [MoSD, MoEFCC] 2. Linked with an industry feedback mechanism to ensure regular up gradation. [Green Industry and Associations] 3. Green projects to be integrated with training programs to build a set of employees as per the requirement of the project. [Green Industry, MoSD, MoEFCC] 4. All new green projects must have inbuilt maintenance contracts. [Green Industry] 5. Use of latest communications technologies to guide staff with repair and maintenance remotely [Green Industry]
D. Green **Entrepreneurship**	1. Inadequate focus on green entrepreneurship by policymakers 2. Low demand for green products and services	1. Preferential or assured purchases of green products and services by government can boost even private demand for such businesses [CG, Niti] 2. Funding of green start-ups and classification of green businesses as priority sector will boost this sector even further [CG, MoF]

Participants of the Inter-Disciplinary Environment Agenda (IDEA) Roundtable, 28th March 2020, conducted virtually. In alphabetical order.

Amaresh Dubey, Jawaharlal Nehru University

Jui Joshi, Climate Collective

Kelvin Sergeant, International Labour Organisation (ILO)

Laveesh Bhandari, Indicus Foundation

Madhura Joshi, Natural Resources Defense Council (NRDC)

Nikhil Dhar, Artemisia

Nivedita Khandekar, Independent Environment Journalist

Ruchika Singh, World Resources Institute India (WRI India)

Sabina Dewan, JustJobs Network

Sachinanand Shukla, Mahindra Group

Sarah Alexander, SELCO Foundation

Shobha Ananda Reddy, Indian Institute of Human Settlements (IIHS)

Shubhi Kesarwani, Gurujal Gurugram

Swati Vira, Indicus Foundation

Vandana Verma, IKEA Foundation

Contents

CG	Central Government
GM	Genetically Modified
L1	Lowest Tender
MG	Municipal Governments
MoEFCC	Ministry of Environment, Forests and Climate Change
MoF	Ministry of Finance
MoSD	Ministry of Skill Development
Niti	Niti Aayog
SG	State Governments
VC	Venture Capitalist

1. Introduction

While greater environmental sustainability has been attracting mainstream attention for some time, there is undoubtedly a gathering momentum towards a shift in humanity's preferences from unhindered growth of economic wealth to that of sustainability. In this new world, the role of environmentally sustainable practices is becoming increasingly important.

There is no doubt a critical need for some understanding of green jobs. And this need is for purposes ranging from policy, funds allocation, benchmarking, or simply creating a systematic mechanism of rewards and punishments for activities that are in sync with sustainability objectives. A larger movement is required which would potentially include a shift in processes, practices, rules, regulations and policies. The need is to transition rapidly to a more environmentally sensitive economic structure that rests more on green practices, activities and organisations.

In other words, there is a great need to directly and strongly link environmental considerations to sustainable livelihoods. That link can then form the underlying basis for a structural transformation of the economy. Once a clear delineation is possible it would be easier to develop policy measures around the objective of supporting green jobs.

However, the definitions currently in use tend to be more conceptual and do not enable a clear demarcation of what could be a green job and what may not be.[1] The lack of a universally accepted working definition impacts both policy and prioritization.

This monograph derives a working definition of the term 'green' and sets the broad contours of a framework to help define appropriate policy.

---

[1] ILO/UNEP (2008) broadly defines a green job as any decent job that contributes to preserving or restoring the quality of the environment whether it is in agriculture, industry, services or administration. See *Green Jobs: Towards Decent Work in a Sustainable Low Carbon World, Geneva/Washington,* 2008

2. What is 'Green' and What is Not

Consider the example of agriculture. There are different kinds of activities that together make up crop-farming, very broadly they include tilling, sowing, irrigating, adding nutrients and protective inputs, harvesting and threshing. Post that there is the task of selling the produce. In other words, the occupation of farming involves many activities and each of those may be done in a manner that is less or more environmentally damaging. Hence, it is important to note that it is the practices that matter not the occupation itself.

Moreover, some forms of agriculture may not require some activities at all, for instance food forests do not require tilling. And finally, there may be some other methods of growing food that may not require soil-based agriculture at all, for example hydroponics. So then how could farming be categorized? Is farming a green occupation? Is organic farming necessarily green? The process of tilling does cause some damage to the natural ecosystem, as it substitutes crops for natural flora and fauna. And so, an argument could be made against unambiguously categorizing organic as green.

In other words, each occupation comprises of a collection of activities which can be conducted in different ways, and each of these methods may have different levels of environmental impact. The term 'green' therefore cannot or rather should not, be seen as a 'normative' classification. Each activity may be more or less green than another depending upon the practices followed in undertaking that activity.

The table below lists different forms of agriculture and maps each method against various inputs

Type of Cultivation	Activities and Practices		
	Tilling and harvesting	**Nutrients etc.**	**Seeds sowed**
GM cultivation	Mostly large scale and mechanized	Mostly chemical fertilizers and pesticides etc	Genetically modified seeds
Hybrid cultivation	Mostly large scale and mechanized	Mostly chemical fertilizers and pesticides etc	Mostly use hybrid and non-native seeds
Organic farming	May be mechanized	Only organic inputs	Tend to use traditional seeds
Food forests	Little or no tilling and generally manual harvesting	Only organic inputs	Traditional and native seeds

The above table reveals that while GM cultivation can potentially use less of chemical inputs, but the very nature of GM seeds would create a greater environmental footprint. Conventional cultivation even if non-GM in character would create a relatively greater environmental footprint due to its need for chemical inputs. Organic farming would be less so, but even that has some environmental impact. And food forests that neither till nor harvest using mechanized means may be superior, but here as well food forests would be much less intrusive on the local ecosystem. What is therefore evident is that the closer are the productive activities to nature-based solutions, the more we can consider them to be green.

However even organic farming that is conducted in an environmentally sensitive area, or food forests that fly the produce to consumers in different parts of the globe will not be seen as green by many. The transport required to global or national markets and demand centers create their own environmental impact, much more than that by locally grown and consumed varieties.

Consider the following conceptual delineations of activity, job and organization. An activity can be classified as green if it is less destructive to the environment than the conventional practice.   A green job is one where the most of the activities undertaken are classified as green. And a green organization is one where the bulk of the value added is achieved by green activities and jobs.

Take for example the case of an ultra-smooth highway which leads to greater fuel efficiency and also reduces transport distance between two points. Can it be classified as green? While the activity of constructing a smoother highway itself may be green, the job of building the highway is not because the smooth upper layer is only one element of the highway. Arguably, the organization that builds that highway would also not be green because of the probable destruction of the ecosystem in building it, the use of polluting and greenhouse gas emitting inputs, and the lifetime of automobiles exhaust that would contribute to pollution and global warming. Overall, therefore this would not necessarily be green even though the highway it builds is greener than a conventional highway.

Similar arguments can be made for 'green construction'. The use of concrete, iron, construction chemicals, paints, etc. all will harm the environment even if overall the building is more energy efficient than a regular building. On what basis can we delineate green construction as environmentally harmful or beneficent? While it is relatively less harmful, overall, even a green construction using conventional technologies is harming the environment.

Left to themselves different classification entities are likely to come up with different classifications due to the complexity of the definitional process discussed above. What is therefore required is a single entity whose task is to classify activities, jobs and even organizations as green. In other words, there are too many grey areas and while a conceptual definition is possible, a working definition will be workable only when the eventual categorization of activities, jobs and employment is unambiguous.

This is the conundrum that makes it difficult to find a workable definition of green jobs. The potential solution lies in the measurement of each activity and how much environmental destruction it creates. Even if this were possible, it would be extremely difficult to implement as there are too many idiosyncratic factors at play. For instance, surface water irrigation when water is drawn from a river with enough surplus water would be less environmentally harmful than one done using water from a river with limited water.

We therefore come to two conclusions:

- One, rather than a discrete method where different activities are mapped as green or not-green, there needs to be a rating of different activities, some being more 'green' than others.
- Two, these practical difficulties in measurement will tend to get in the way of automatic categorizing jobs as being more or less green.

To sum up the discussion, it may not be possible to cleanly classify entire occupations as green based on their inherent characteristics. However, it could be possible to *broadly* classify certain activities within occupations as green as long as the practices followed in undertaking those activities cause minimal environment damage. But it is difficult to come up with standard methods for doing so as there are many idiosyncratic factors that come into play.

3. Classifying or Rating Green Activities, Jobs and Organizations

While we find little consensus on these terms in the available literature, for a workable definition, there does exist a common space in the broad direction of what green jobs are. Under this broad direction a nodal agency at the national and or international agency can take up the task for categorizing specific activities as green. This section talks about that and related issues.

The classification or even rating of jobs would help provide a structure for policy making, coordination, and prioritization. Moreover, it helps ensure broader alignment with sustainable trajectories. Currently, since jobs or even activities are not rated on the basis of their green quotient, it has become difficult to create polices or even allocate funds for green activities in a coherent manner. And without this differentiation between conventional and environmentally more beneficent (or green) activities, appropriate fund allocation is being impacted. In other words, policy focus is more difficult, and therefore the speed of change towards a sustainable world is slower.

The objective is clear. A common language on what is green will help in coordination of activities. It will help enable incorporation of sustainable practices in existing business, keeping in mind the sustainability of the core business in mind in the long run. This is best possible when policy is able to reward those who increase the 'green quotient' of the activities by using greater green practices.

> **It is therefore critical to come together for a comprehensive classification mechanism through an empowered organization or group focusing and accountable for only this objective. While international organizations, think tanks, and academia would have an important role to play in enabling such an entity, it is the national governments and associated think tanks such as Niti Aayog in India who will need to set it up.**
>
> **Such an entity tasked with classification of activities, jobs and organizations will need to undertake an audit of various activities and technologies before it is able to classify them. Only after that is achieved would it be possible to build a comprehensive certification mechanism by which organizations, jobs and activities can be certified as green. Moreover, such a body could also contribute to a national strategy for faster movement towards a green economy. The objective is to evolve a process that works continuously at enabling towards greater sustainability in all activities.**

Given that the above would require some time to come up, and there is nothing on the horizon yet, how should governments and private entities support a more environmentally friendly or green economy? How will environmentally supportive policy be implemented without a workable definition? How will funds be reserved and allocated to green activities and jobs?

In the interim therefore environment policies will be forced to circumvent the definitional problem and find second best solutions through a non-definitional approach. And there are some possibilities that are out there. Three of which are discussed below.

1. *Circular Economy:* Broadly, a circular economy is one which seeks to eliminate wastage of all tangible inputs. This requires greater focus on fuel efficiency, renewable energy, recycling and reuse. Any activity therefore that helps in the sustenance or growth of the circular economy can therefore receive additional support through policy or market mechanisms. Reduce, reuse, recycle etc therefore form the key attributes for support. Handicraft makers using local recyclable or natural or bio-degradable inputs would therefore be an example of those conforming to the circular economy model.

Figure 1: Conventional versus Circular Economy
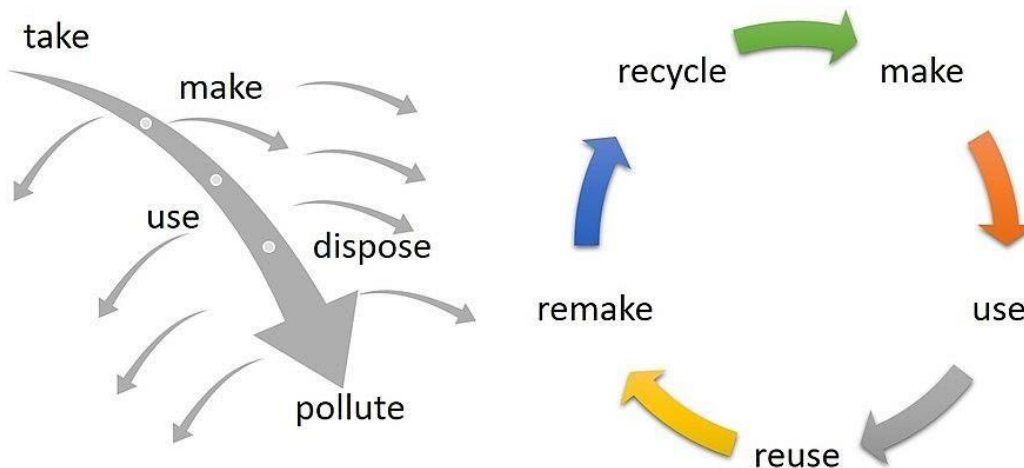
CC 3.0 Catherine Weetman 2016

Source: Catherine Weetman, CC BY-SA 4.0

2. *Carbon Taxation:* A carbon tax is a tax that applies on anything that releases carbon emissions, activities that require the burning of fossil fuels therefore would be taxed disproportionately. While carbon taxes typically apply only to use of fossil fuels the same principle could also conceptually be extended to other environmentally harmful materials like non-degradable plastics or even destructive agriculture inputs. The impact of carbon taxes can be massive for many reasons. By increasing costs of energy and transportation it will automatically accelerate the push towards renewable and also support localization. Since many chemicals are also fossil fuel based, it will also create the incentive for firms to move towards natural and less harmful products.

3.   **Improvements approach:** In this approach any activity that improves upon the conventional receives a one-time support, and further support is dependent on further improvements. This could apply to all activities, and organizations. While improvement could be determined on basis of use of fossil fuels and environmentally harmful inputs, the process of certification of each activity would be cumbersome and expensive.

Each of the three above are mutually exclusive and can be implemented independently or simultaneously. There could be other approaches as well, but whatever be the approach chosen there would be certain commonalities in all. An ecosystem that supports environmentally beneficent activities needs to be created. The next section discusses the same.

4. Developing a Green Ecosystem

An economic ecosystem that will be in sync with humanity's environmental and ecological objectives will be built around incentives, skills and entrepreneurship. It will necessarily require innovation both at the research level and also at the entrepreneurial level. New activities, products and services will be the key components of a process of creative destruction, where the harmful conventional production and consumption processes rapidly gives way to a less harmful or beneficent production and consumption practices. While a long checklist can be made on how to develop such an ecosystem. We focus on three key elements – incentives, skills and entrepreneurship.

4a. Incentives

Incentives or government support to the green economy can take three broad forms. The first is various forms of subsidies where a public entity is able to reduce the costs borne by the green activity. The second is additional taxation of non-green activities, so that the producer or consumer is incentivized to shift towards the green. The third are the non-monetary incentives that earmark certain areas only for green activities.

All three tiers of government - national, state or local need to do an audit on what all is possible within their domains. A carbon tax for instance is only possible to be conducted at the national level. Many incentives for setting up green units are available both at the national as well as state level. Both state and local governments are involved in allocating certain areas only for specific types of manufacturing units. At the same time support to microentrepreneurs takes the form of space allocation for selling their produce (especially in the informal sector) and such activities are best supported by local governments.

Each government would need to ascertain which areas are under its ambit which can be used to evolve the green ecosystem. This can best be done by creating a system of incentives that support the green ecosystem and also help create new employment opportunities for a greener economy.

4b. Skills

As new technologies come up, skills to construct, operate and maintain are required. Three key challenges are related to the skill issue.

Availability across the country

As new avenues such as organic farming, green construction, rooftop solar power etc. come up, there will be an increasing need for skills. Unlike in other sunrise sectors, which tend to be concentrated in some locations, the green economy is highly spread out. Skills are required in rural areas, mountainous regions and in the hinterlands far away from the major economic centers. It is difficult to access skills both to construct as well as to maintain, and operate.

There is a significant issue related to any new technology and more so for green technologies as experiments and pilots tend to be spread across the country, including rural areas and hinterlands. Such locations rarely have available skills. In many cases, it has been found that perfectly well functioning projects stopped midway because of lack of availability of staff to operate, maintain or repair them. The solutions include the following.[2]

(a) **Maintenance contracts**: All new projects need to have a medium to long term maintenance contracts as an integral part of the project.
The manufacturer/provider will need to build-in these costs into its overall project costs.

(b) **Tele-servicing:** Even if well-trained staff are not available, it should be possible to use new communication technologies to direct repair and maintenance remotely. Such a service could be made available by providers or their associations.

(c) **Integrated Training Protocols:** Training programs need to go hand in hand with every new project, so that not only those involved in the project, but also other support services in the vicinity receive free or subsidized training. Training can be both face-to-face and also remotely. This will help build the ecosystem in that whole area.

Attracting, identification and hiring of skilled workers

How can good quality staff be identified and attracted towards specific green jobs? A critical issue is the inability of managers to identify who has superior skills. Since the mangers have themselves had little exposure to green technologies, they are many times not aware of what skills or expertise are required in new technologies, and therefore they are unable to choose between different potential hires.

One solution is certification (see below) but over and above that, green units could use support in identifying and hiring potential staff. Funders need to take special care that not only are project managers chosen with care, they are provided necessary hiring support.

---

[2]Also see:
Filling the Skill Gap in India's Clean Energy Market: Solar Energy Focus, National Resources Defence Council, 2016, https://www.nrdc.org/sites/default/files/renewable-energy-solar-skill-gap.pdf
Skill Trends for Green Jobs in the Steel Industry in India, International Labour Organisation, 2014, https://www.ilo.org/asia/publications/WCMS_240450/lang--en/index.htm
Skills for Green Jobs: A Global View, International Labour Organisation, https://www.ilo.org/skills/projects/WCMS_115959/lang--en/index.htm
Greening the Global Economy: The Skills Challenge, International Labour Office, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_164630.pdf
Skill Gap Report for Solar, Wind and Small Hydro Sector, Skill Council for Green Jobs, 2016, http://sscgj.in/wp-content/uploads/2016/06/SCGJ-skill-gap-report.pdf

Moreover, typically, those employed in remote areas tend to receive lower remuneration than those in major centers. This creates a natural screen that filters out the better trained from remote areas where they are needed the most. One solution to this could be a special add-on compensation for working in remote areas built into project costs.

Training and certification

While training and certification is critical, that ecosystem is itself at a nascent stage. Sunrise technologies naturally have lesser numbers in the initial phases, and that makes many key training modules economically infeasible. Moreover, there is a mistaken notion that those working in green sectors may be ready for lower remuneration. This naturally also affects the economic feasibility of those who could be willing to provide such training and certification courses.

Those interested in developing the ecosystem need to support such training and certification programs including using the latest remote communication and education technologies for training that can also be certified.

Another important component of such a training ecosystem is a feedback loop from industry itself. Such a feedback loop will be able to provide insights into missing skills and filling in the gaps through new courses, improving course content, apprenticeships and on the job training, etc. The German apprenticeship model is well known to both help train potential staff better, but also provide a feedback loop to the trainers into course and domain-specific best practices.

4c. Entrepreneurship

While India has one of the most dynamic start-up ecosystems in the world and while it receives significant support from many government programs as well as global foundations and institutions, there is still much to be done especially in the green space.

As discussed in previous sections, the formal recognition of what activity, product or service classifies as green can help governments prioritize and direct both funds as well as non-monetary policy support to specific businesses and sectors. Such a recognition can best be done at the central government level by the Niti Aayog or relevant departments.

But such recognition and consequent funding support is only one step, green entrepreneurship is also about finding the right revenue stream for the activity under consideration. Many green solutions seek to address the market failure problem. In other words, in many green domains the beneficiary is the larger society which the start-up would not be able to provide to and charge from. The government therefore can best address many revenues issues of the green economy by acting as the mediator between society and the entrepreneur. Three critical ones are discussed below.

Government purchases: Government purchase mechanisms are designed for the lowest price (L1) contract. However innovative new technologies and those where the entrepreneurs are providing innovative goods and services cannot go through the L1 route. Special leeway needs to be provided to decisionmakers in the technocracy and bureaucracy to enable purchases of output of innovative green technologies without having to go through the standard processes. Moreover, the power of a robust government contract provides recognition and enables entrepreneurs to access funds and expertise in the marketplace. This catalyzes green activity unlike any other support.

Public private partnerships: Public private partnerships enable the organs of the government to work with innovative entrepreneurs. However, since green start-ups are by definition in a nascent stage in a nascent sector, their sustenance is very fragile. Typical bureaucratic processes and uncertainties can extinguish perfectly feasible innovations. Processes within the government need to be defined in such a manner that there is greater flexibility and accountability of the bureaucracy and technocracy responsible for the success of such partnerships.

Supporting Start-ups: Start-ups are already supported in many different ways by the government in India. Moreover, angel investors, seed investors, VCs, etc. and a very rich advisory ecosystem already exists. Green activities can however be given further fillip if they are defined as a priority sector. This will enable greater flow of debt from the banking sector as also access to low-cost funds.

5. Conclusion

This note puts together the core issues that go into evolving a comprehensive framework for developing a green policy. Such a green orientation of all government policy is now extremely important for sustainability reasons that are becoming more and more important with every passing day.

The government needs to work parallelly. On the one hand it needs to set up an empowered group of organization that will help rate and map activities that can be considered to be greener than others. On the other it needs to build an ecosystem where skills, entrepreneurship and funds can come together rapidly for green innovations to prosper. At the same time some incentives would help accelerate the process, without an ecosystemic approach and without a mapping or rating of activities, there is a fear of adhoc-ism and flawed prioritization.

Finally, the term 'green jobs' has existed for long. While no one can doubt its importance, it is even more important to recognize that green jobs themselves are an outcome of a green economic and policy environment. And that green economic environment can best be evolved if various stakeholders are able to come together under a single roof. The foremost role of the government will be to create that roof under which a common meeting ground is created for experts and stakeholders of all domains.

References

Circular Economy Concept in the Context of Economic Development in EU Countries, Zvonimira Sverko Grdic, Marinela Krstinic Nizic, Elena Rudan, University of Rijeka, 2020

Circular Economy Strategies for Lao PDR: A metabolic approach to redefine resource efficient and low-carbon development, Jelmer Hoogzaad, United Nations Development Programme, Energy and Mines, 2017

Circular Jobs, Understanding Employment in in the Circular Economy in the Netherlands, Circle Economy, Erasmus Happiness Economics Research Organisation

Doing the (Green) Job Right, Anjali Jaiswal, Madhura Joshi, Natural Resources Defense Council, 2015

Economic Development in EU Countries, Zvonimira Sverko Grdic, Marinela Krstinic Nizic and Elena Rudan, Sustainability, 2020

Greening India's Workforce: Gearing Up for Expansion of Solar and Wind Power in India, Council on Energy, Environment and Water, Natural Resources Defense Council, Issue Paper, 2017

Harnessing India's Productive Potential Through Renewables and Jobs, Sabina Dewan, JustJobs Network, 2014

Landscape Restoration for Climate and Communities: Key Findings from an Opportunity Assessment in Sidhi District, Madhya Pradesh, World Resources Institute, India

Powering Jobs Growth with Green Energy, Neeraj Kuldeep, Madhura Joshi, Akanksha Tyagi, Tanmay Bishnoi, Sameer Kwatra, Anjali Jaiswal, and Praveen Saxena, Council on Energy, Environment and Water, Natural Resources Defense Council, and Skill Council for Green Jobs, 2019

Restoration Opportunities Atlas: Building Information Bridges For People, Forests and Landscapes, World Resources Institute India

Sectoral Approaches to Skill for Green Jobs in India

State of Working India, Amit Basole, Centre for Sustainable Employment, Azim Premji University, 2019,

Sustainable Energy and Livelihoods: A Collection of 65 livelihood applications, SELCO Foundation

Sustainable Financing For Urban Karnataka, Anuttama Dasgupta, Pooja Vincia D'Souza, Shobha Ananada Reddy, Swastik Harish, Indian Institute of Human Settlements, 2018,

The Changing Climate of Livelihoods, JustJobs Network

The Changing Climate of Livelihoods: Case Studies from Bangladesh, India and Indonesia, JustJobs Network, 2015

The Circular Diary Economy: Exploring the Business Case for a farmer led, 'net-positive' circular diary sector, Friesland Campina and Circle Economy, 2016

The Land Accelerator South Asia, World Resources Institute