

Agro residue resource availability in Andaman & Nicobar (A&N)

The biomass information for Andaman and Nicobar (A&N) is compiled from published literature¹ on biomass resource assessment in the island.

A&N island is a group of 572 islands having an area of 8,073 km². These islands are divided into two groups namely Andaman group and Nicobar group. The North Andaman, Middle Andaman, South Andaman and Little Andaman are the major islands of Andaman group while Car Nicobar, Katchal, Teressa, Chawra, Kamorta and Great Nicobar are the major islands of Nicobar group.

Availability of agro-residue

Coconut and Arecanut are the major crops of the island. Other available crops include cashewnut, cereals like paddy and maize, pulses, oil seeds, spices such as black pepper, clove, cinnamon, ginger, chilli and turmeric, fruits such as mango, banana, citrus fruits, papaya, pineapple, sapota, etc. and root crops. Table 1 presents the major agricultural crops of Andaman & Nicobar islands.

Table 1: Major agricultural crops in Andaman and Nicobar islands

Andaman Group			
		Rutland	Paddy, vegetables, coconut, arecanut, ginger, sugarcane
Narcondum	Coconut	North Sentinel	Nil
East Island	Coconut, arecanut	Little Andaman	Paddy, red oil palm, vegetables, coconut, arecanut, fruits
North Andaman	Paddy, pulses, oilseeds, vegetables, coconut, arecanut, fruits, spices	Flat Bay	Vegetables, coconut, arecanut, spices
Smith	Paddy, coconut, arecanut, fruits	Viper	Coconut
Stewart	Coconut	Chatham	Not available
Curlew	Nil	Nicobar Group	
Aves	Coconut	Car Nicobar	Coconut, arecanut, fruits, tuber crops, vegetables
Interview	Coconut, arecanut	Chowra	Coconut, tuber crops
Middle Andaman	Paddy, vegetables, coconut, arecanut	Teressa	Coconut, arecanut, cashew, fruits, tuber crops
Porlob	Coconut	Bampooka	Coconut, tuber crops
Long	Paddy, pulses, oilseeds, vegetables, coconut, arecanut, fruits, spices	Katchal	Paddy, red oil palm, vegetables, coconut, arecanut, spices
North Passage	Coconut, arecanut	Nancowry	Coconut, arecanut, fruits, tuber crops
Strait	Vegetables, coconut, fruits	Kamorta	Coconut, arecanut, cashewnut, banana
Baratang	Paddy, vegetables, coconut, horticulture crops, spices	Trinket	Coconut
Peel	Nil	Little Nicobar	Coconut, arecanut,

¹ Biomass assessment study report for 2.28 MW biomass based power project at Andaman & Nicobar Islands prepared for Suryachakra Green Fuels Pvt Ltd
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			colocasia, dioscoria
Havelock	Paddy, vegetables, coconut, arecanut, fruits, root crops	Pilomilo	Coconut, colocasia
John Lawrence	Nil	Kondul	Dioscoria
Neil	Paddy, pulses, oilseeds, vegetables, coconut, arecanut, fruits, root crops	Great Nicobar	Paddy, vegetables, coconut, arecanut, fruits
South Andaman	Paddy, vegetables, coconut, arecanut, fruits, spices, sugarcane	Thillachong	Nil

From the above table it is clearly evident that paddy, coconut and arecanut are the major resource that can be used for power generation in the A&N islands.

a) Paddy: The paddy production for the year 2004-05 was 29,192 metric tonnes. With a CRR of 20% for rice husk, the total husk generation comes to about 5,832 metric tonnes per year.

b) Coconut: The total area under coconut cultivation was 25,160 hectares in 2004-05 and nut production was 89 million. The average productivity is about 3,500 nuts per hectare. The biomass residues from coconut plantations are mainly from fronds, husk, shells, etc.

i. **Fronds:** On an average a coconut sheds 10 to 12 fronds per year. The average weight of dried frond is about 2.5 to 3.0 kg. Every hectare of plantation would produce average 4.5 ton dry fronds. Thus, 1,13,220 metric tonnes of fronds are available per year. The fronds from coconut plantation are left in the field itself and therefore can be used for power production. Since the collections of fronds require extra efforts, considering the collection efficiency of 50% for estimating the potential, the total biomass resource available is about 56,610 metric tonnes.

ii. **Husk:** The average weight of sun dried coconut husk is about 450 grams. Therefore the total production of husk from 89 million coconut nuts would be about 40,000 metric tonnes per year.

iii. **Shells:** The average weight of shells of one coconut is about 200 grams. These shells are used for drying in converting the coconuts to copra in kilns (Bhattis). During this process, 40% of the shells produced are utilised. Therefore, the remaining 60% can be used as biomass for the power generation. About 17,800 metric tonnes of shell can be generated from 89 million coconut nuts per year. After deducting the amount of shell use for drying, the available resource would be 10,680 metric tonnes per year.

c) Arecanut plantation: Husk is the major waste source from the arecanut. The average weight of husk from one areca nut is 5 grams. A palm plant produces about 120 nuts a year. Every hectare has about 1,150 to 1,250 palms. The total area under arecanut cultivation was 3,596 hectares in 2004-05 and total nuts produced in the islands were about 517.8 million. Thus, the total husk available is about 2,589 metric tonnes per year.

Table 2: Agro-residue production in Andaman & Nicobar islands*

S. No.	Crop	Area (hectares)	Crop production (metric tonnes)	Type of residue	Residue production (metric tonnes)
1	Paddy	10,734.92	29,192.23	Husk	5,783
2	Coconut (no. of units)	25,551.40	8,71,30,000	Fronnd	56,610
				Husk	40,000
				Shell	10,680
3	Arecanut	44,425.37	4,781.05	Husk	2,589
Total					1,15,662

*Agricultural production data is taken for the year 2004-05.

Power potential from agro-residue

The study considered the average specific fuel consumption of 1.2-1.3 kg of biomass to convert into 1 unit of power. Therefore, the available biomass from paddy, coconut and arecanut crops of 1,15,662 metric tonnes can generate power potential of about 17.5 MW.