Islamic Republic of Iran
Ministry of Agriculture-Jahad
National Poplar and Fast-growing Trees Commission of Iran

Country Report on Poplars and Other Fast-Growing Trees Sustaining People and the Environment

Period: 2020 to 2023

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and

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I. POLICY AND LEGAL FRAMEWORK

Regarding the legal framework, Iran's forest management and forest resources are affiliated with the Ministry of Agricultural-Jihad (MAJ) and have two vices: 1. Executive deputy and 2. Education, Research and Promotion deputy.

The executive deputy of forest management is the Natural Resources and Watershed Management Organization (NRWO). Its tasks are:

- Sustainable protection of forest resources,
- Implementing the forest protection management program and the quantitative and qualitative improvement of forests
- Developing and restoring forest resources with a close-to-nature forestry approach and protecting forest areas against biotic and abiotic dangers.

Also, the development of planting trees (wood cultivation) outside the natural forest areas to meet the needs of raw materials for the wood and paper industries, help local communities, create jobs, and reduce wood imports.

The Agricultural Research Education and Extension Organization (AREEO) is responsible for training experts and conducting operators, applied research in the field of agriculture and natural resources, and promoting research findings. This organization has over 20 research institutes, including the Research Institute of Forests and Rangelands (RIFR).

The Research Institute of Forests and Rangelands (RIFR) is one of the research institutes that was established in 1968. Its task is to provide education and applied research related to natural resources, including forests and Rangelands, as well as promote research achievements, carry out research activities related to forestry and the development of wood cultivation with fast-growing tree species, as well as provide technical assistance to the private and public sectors to increase wood production from non-forest sources throughout the country.

In 2013, due to various environmental reasons, the government stopped the exploitation of wood from natural forests, and planning and policies to play the role of environmental services were prioritized instead of wood production. On the other hand, the need of the country's large wood industries for wood raw materials increased. The demand for raw wood caused the price of wood to increase, and most of the poplar planters and wood and paper industries established poplar and eucalypt plantations in their private lands. Therefore, the production of wood outside of natural forest lands or wood cultivation was prioritized, and one person was selected as the coordinator of the national wood production plan.

Currently, the activities of the National Poplar Commission (NCP) in Iran are under the supervision of the Ministry of Agricultural-Jihad with the aim of policy making and macro planning to potentials and capacities for the development and expansion of wood cultivation in order to achieve self-sufficiency in wood production and reduce the pressure on the natural forests.

Due to climate changes and the reduction of tree cover per capita in the country, People's movement to plant a billion trees has started in 2023 for four years, and it is expected that 30% of these trees will be fast-growing trees (poplar, eucalypt, etc.) to produce wood.

Actions and policies of the wood farming program

a) **Increase of the cultivation area:** Use of the margin of permanent rivers provided that the ownership dispute between the Forests, Rangelands, and Watershed Management Organization and the Ministry of Energy is resolved), lands owned by government agencies, organs, and organizations, the lands of industrial estates, suburban lands using wastewater, the margins of farms, windbreaks, and private farmland.
b) **Increase of production per area unit:** Use of Poplar species and fast-growing trees with high yield and acclimation, considering the technical principles of planting through training and promotion.
c) **Encouragement support requirements:** Upgrade of organizational structure, the formation of wood farmers' cooperatives, offer of long-term facilities with low-interest via the government, providing free plant breeding for farmers, concluding contracts between wood producers and industries of wood and paper, insurance coverage of products through subsidies of Government, supporting of applied research projects to improve the productivity of wood cultivation by the owners of wood and paper industries.

II. TECHNICAL INFORMATION

1. Taxonomy, Nomenclature and Registration

Nomenclature of poplar clones is first are being conducted in the experimental nurseries belonging to the RIFR and then are evaluated at different intervals planting in different climatic regions of the country with the designated set of criterias. Successful poplar clones are selected in terms of wood production performance, its resistance to pests and diseases, and wood technology properties.

In 2021, the RIFR introduced the *P.nigra* clone "*Salari*" with its adaptability and high wood volume production performance for the central, northern, western and northwestern regions of the country. The average wood production is up to 32 m3/ha/yr, as well as the resistance against the poplar woolly aphid (*Phloeomyzus passerinii*) and poplar lace bug (*Monosteria unicostata*) are the characteristics of the "*Salari*" clone.

2. Domestication and Breeding and Selection of Genetic Resources

The fast-growing tree species culturing for wood production are mainly Poplar and Eucalypt species supplied through the private sector. About 30% of the Poplar plantation area was located in the North of the country along the coastal plain of the Caspian Sea that included clones of Eastern cottonwood (*P. deltoides*) and hybrids (*P.X canadensis*). The rest of it was located in arid and semi-arid climates with clones of Black poplar (*P. nigra*) and White poplar (*P.alba*).

Evaluation of poplar clones and other fast-growing species in the research stations affiliated with the RIFR is being done according to the set of criteria. The result of adaptation studies on Eastern cottonwood (*P. deltoides*) clones "68/10", "68/8", " 69/55", "77/51", 92/258", "Marquetti" , "" and hybrid (*P.X canadensis*) clones "triplo", "I-214", " 561/41", "I-488", "I-154", "I-455", "costanzo", "Pacher" according to the results of compatibility tests in terms of wood production, resistance to pests and diseases as well The technological properties of wood were introduced as the best clones for planting in the Northern provinces along the coastal plain of the Caspian Sea.

"*Eucalyptus camaldulensis*" is a species planted in tropical regions like Khuzestan, Hormozgan and Bushehr provinces. These provinces are suitable for planting and developing some *Eucalyptus* species. Recently, suitable regions for wood farming with *Eucalyptus camaldulensis* have been identified in Khuzestan province (about 100,000 hectares).
The RIFR has collected the different genotypes of the white Poplar (*Populus caspica*) from the natural habitats in the Coastal strip of Hyrcanian forests, as well as the genotypes of the Euphrat Poplar (*Populus euphratica*) from the hot and dry regions of different provinces of the country. These genotypes are kept as germplasm collections in research stations.
Considering the climate changes and the decrease in rainfall in the country, it is important to use poplar clones more resistant to water stress. White poplar (*P. alba*) clones are more tolerant to heat stress and irrigation periods than exotic clones. Therefore, it is a priority to plant them in arid and semi-arid areas for wood production and windbreaks at the edge of fields. Strengthening the *P. alba* collection by collecting different genotypes from poplar plantations in different provinces is being implemented.
The Biotechnology Research Department of the RIFR has conducted chromosomal investigations of native and exotic poplar clones for inter- and intra-crossing between successful and introduced clones.

3. Plant Health, Resilience to Threat and Climate Change

Iran is located in the arid belt, and climate change, global warming, and water levels are severe challenges to the development of wood farming, especially in arid and semi-arid regions. Due to water restrictions, the production of Poplar and fast-growing tree species with drip irrigation systems is expanding, and the government is supporting this type of irrigation system to increase water efficiency. Since poplar clones (especially *P. deltoides*, *P.X canadensis* and *P. nigra*) have high adaptation in climatic conditions with less moisture and rainfall and also have a high yield of wood production, they are the main priority.
Due to climate change and the emergence of new pests and diseases, pest and disease monitoring in poplar plantations and natural willow habitats has begun in the country and information is recorded in the database.

4. Production systems for the bioeconomy

The research results on different poplar clones in the Northern provinces' climatic conditions along the Caspian Sea's coastal plain and outside the Northern provinces in arid and semi-arid climates showed that some poplar clones had acceptable adaptation and wood production. These poplar clones were considered for propagation and production of cuttings on about 30 hectares in the research stations affiliated with the RIFR. From 2020 to 2023, the RIFR produced about 10 million cuttings of successful poplar clones and supplied them to public and private nurseries.
During the last four years, the share of poplar and eucalypt seedling production in private sector nurseries related to large wood and paper industries has increased significantly, along with government nurseries, and a large number of seedlings are produced by these nurseries.
The statistics for 2023 show that there are some fast-growing natural species in the northern regions (coastal plains of the Caspian Sea and Hyrcanian forests) and outside the Hyrcanian regions. The White poplar species (*Populus capsica* Bornm.) is naturally scattered in the

coastal strip of the Caspian Sea, where about 700 hectares form a community. Euphrat poplar (*P. euphratica*) is naturally distributed in most arid and semi-arid areas with saline and alkaline soil on the banks of the rivers. It covers an area of about 24500 hectares. More than 70% of the area of this species is located on the banks of the large rivers (Dez, Karoon, Karkheh) of Khuzestan province.

Alder is one of the native trees of Hyrcanian forests. The two native species of Alder (*Alnus glutinosa* and A*lnus subcordata*) naturally (25700 hectares), and the planted (154700 hectares) pure or mixed with other forest species such as Oak, Maple, Elm, Hornbeam, and Honey locust trees are planted for the restoration of the lowlands Hyrcanian forests. As a nurse tree, Alder plays a vital role in establishing other forest species and causes the regeneration of natural forests over a long time. Therefore, exploiting this species is prohibited in the Hyrcanian forest lands, and the Alder-planted trees are protected. Also, *Populus capsica* and *Populus euphratica* are protected, and their exploitation is legally prohibited.

Willow species, including *S. excelsa, S. alba*، *S. acmophylla* ، *S. caramanica* ، *S. caprea* ، *S. aegyptiaca*, etc. that grow naturally in the margin of permanent rivers of the country and they play an essential role in protecting the river's banks. The Pussy willow (*S. aegyptiaca*) is generally cultivated in some provinces of Iran for hedge and ornamental purposes. The distillate obtained from the inflorescence of plants, with the common local name "Araghe Bidmashk," has been used and sold in most parts of Iran for a long time. Unfortunately, in recent years, willow trees have been illegally harvested in natural habitats for using wood. However, the Natural Resources and Watershed Management Organization (NRWO) guards are working hard to prevent this.

In 2023, the country will have about 73000 hectares of plantations. There are about 68300 hectares of poplar plantations, including Poplar clones of Eastern cottonwood (*P. deltoides*), Hybrids (*P.X canadensis*) in the coastal lands of the Caspian Sea and Black poplar (*P. nigra*), White poplar (*P.alba*), often in the regions North, northwest, center and west of the country. Also, about 9500 hectares of *eucalyptus camaldulensis* are cultivated in the tropical regions of the southern provinces such as Khuzestan, Hormozgan and Bushehr provinces, where suitable conditions for planting and development exist. Wood production from fast-growing tree species, specifically poplar and eucalypt in Iran, is estimated at 1.85 m3/yr. The consumption of wood and paper industries is estimated at 10 million m3/yr. That is provided through wood farming, other lignocellulose sources (such as garden pruning) and wood necessary. However, the wood and paper industries need help supplying their wooden raw materials. The government has provided facilities for imports of raw wooden materials, but the primary policy to compensate for the wood shortage is the establishment of industrial fast-growing tree plantations.

To develop green spaces, fast-growing trees (Poplar, willow, and eucalypt) are planted in urban areas and on roadsides. Eastern cottonwood (*P. deltoides*), Hybrids (*P.X canadensis*) are planted in urban areas, and roadsides of northern provinces, Black poplar (*P. nigra*) and White poplar (*P. alba*) are planted in Urban areas of provinces outside the north with arid and semi-arid conditions. Euphrat poplar (*P. euphratica*) is planted in the urban areas of central provinces with tropical and dry climate conditions. Eucalyptus species are planted along

roads around cities and inside parks to develop green spaces in tropical arid and semi-arid regions that do not have the limitations of winter cold stress.

Poplar trees are planted around farmlands with a mainstream for irrigation, windbreak, and wood production. So, in addition to a protective role, the poplar trees provide wood and increase the farmer's income. In small lands of the country's northern, northwestern and western parts, poplar and fast-growing tree species were planted to produce wood. According to the characteristics of poplar trees, in Iran, an integrated farming system (agroforestry) is an ideal approach for developing wood farming and improving farmers' economic efficiency and livelihood conditions.

In different parts of the country, in the early years of tree cultivation, crops such as alfalfa are planted in the space between the trees before their crowns expand. Since alfalfa is a perennial plant and does not require annual plowing, replanting or soil fertilization, most farmers in the west and northwest regions are interested in growing it between poplar trees.

Due to the presence of fossil fuels in Iran, the wood of fast-growing trees is not used as bioenergy. So, most of the wood is used in wood factories (such as MDF and paper pulp), specifically located in the northern provinces (Gilan and Mazandaran), and some wood is also used by local workshops, such as pallet making and furniture, etc.

5. Environmental and Ecosystem Services

Because of climate change and decreasing water resources, the use of wastewater (surface runoff and sewage water from refineries) in large cities is one policy of the national wood farming development program.

The RIFR identified suitable lands around big cities for wood farming based on the water volume of sewage water from refineries and the water requirement of fast-growing trees such as poplar and eucalypt. Ten big cities were studied in the first phase, and 70,000 hectares of land were identified. In the second phase, the study of identifying suitable lands for other big cities using sewage water is being implemented.

Because irrigation with sewage for planting and producing crops for human consumption is legally prohibited, in the national program for the development of wood farming, changing the cultivation pattern from crop production to wood production with the cooperation of other related organizations was put on the agenda.

III. GENERAL INFORMATION

1. Administration and Operation of the National Poplar Commission or equivalent Organization covering other fast-growing trees

From 2020 to 2023, the National Poplar and Fast-growing Trees Commission, consisting of representatives from government organizations, wood users, banks, wood and paper industries, promotion and experts from universities and research institutes, held at least two sessions a year. The topics related to wood production with poplar and fast-growing trees and the development of wood cultivation to protect natural forests were investigated.

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IV. SUMMARY STATISTICS (Questionnaire)

Country	Iran
Contact person	Mohsen Calagari
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Question 1: Total area 2023, and area planted from 2020 to 2023 (area change over the last 4 years)

Land Use Category		**Total Area 2023 (ha)**	**Total area by forest function in %**				**Area planted from 2020-2023 (ha)**
			Production		**Protection**	**Other**	
			Industrial roundwood (%)	**Fuelwood biomass (%)**	**(%)**	**(%)**	
Naturally Regeneration Forest							
	Poplar	25200	0	0	100	0	0
	Willows	12000	0	5	100	0	0
	Mix of P&W	Data not available					
	OFGS*						
	Alder	25700	0	0	100	0	0
Planted forest							
	Poplars						
	Willows						
	Mix of P&W						
	OFGS*						
	Alder	154700	0	0	100	0	800
Plantation							
	Poplars	63800	100	0	0	0	49300
	Willows	Data not available					
	Mix of P&W	Data not available					
	OFGS*						
	Eucalypt	9500	100	0	0	0	4500

Other planted forest							
	Poplars						
	Willows						
	Mix of P&W						
	OFGS*						
Other Land with Tree Cover							
Agroforestry	**Poplars**	Data not available					
	Willows	Data not available					
	Mix of P&W	Data not available					
	OFGS*						
Trees in urban setting	**Poplars**	1000	0	0	100	0	500
	Willows	Data not available					
	Mix of P&W	Data not available					
	OFGS*						
	Eucalypt	1200	0	0	100	0	800
Grand Total		**293100**					**55900**

<u>Question 2:</u> Wood removals in 2023

Forest category and species, cultivar or clone		**Wood removals 2023 in m^3**				
Naturally Regeneration Forest		**Total removals**	**for industrial roundwood**			**for fuelwood, wood chips**
			Veneer/plywood	Pulpwood	Sawnwood	
	Poplars	0	0	0	0	0
	Willows	0	0	0	0	0
	Mix of P&W	0	0	0	0	0
	OFGS*					
	Alder	0	0	0	0	0
Planted forest						
	Poplars	150000	Data not available			
	Willows	0	0	0	0	0
	Mix of P&W	Data not available				
	OFGS*					
	Alder	0	0	0	0	0
	Eucalypt	350000	Data not available			
Other Land with Tree Cover						

Agroforestry						
	Poplars	Data not available				
	Willows	Data not available				
	Mix of P&W	Data not available				
	OFGS*					
Grand Total		**1850000**				

<u>Question 3:</u> Forest products from poplars and willows 2023

There are no data on wood products based on the type of species, but there are data on the total amount of wood raw materials used in each wood product.

Forest category		**Fuelwood**	**Chips**	**Industrial roundwood (logs, pulpwood)**	**Wood-pulp (mech. or chem.)**	**Particleboard fibreboard (MDF, (hardboard)**	**Veneer sheets**	**Plywood**	**Sawnwood**
		'000 m^3 (r)							
Naturally Regeneration Forest									
	Poplars	0	0	0	0	0	0	0	0
	Willows	0	0	0	0	0	0	0	0
	Mix of P&W	0	0	0	0	0	0	0	0
	OFGS*								
	Alder	0	0	0	0	0	0	0	0
Planted									
	Poplars	Data not available							
	Willows	Data not available							
	Mix of P&W	Data not available							
	OFGS*								
	Alder								
	Eucalypt	Data not availble							
Agroforestry									
	Poplars	Data not available							
	Willows	Data not available							
	Mix of P&W	Data not available							
	OFGS*								
Grand Total									

Question 4: Please reflect on the prevailing trends until 2030 in the development of poplars other fast-growing trees in your country!

What is your opinion on the following issues?

	increase	decrease	remain as it is	no comment
1a. The conversion of **naturally regenerating** forests of poplar to other land uses will...		X		
1b. The conversion **of naturally regenerating** forests of willow to other land uses will...	X			
1c. The conversion of **naturally regenerating** forests of other fast-growing species to other land uses will...		X		
2a. The conversion of **planted** forests of poplar to other land uses will...		X		
2b. The conversion of **planted** forests of willow to other land uses will...			X	
2c. The conversion of **planted** forests of other fast-growing species to other land uses will...		X		
3a. The conversion of **planted** forests of poplar to other species will...		X		
3b. The conversion of **planted** forests of willow to other species will...		X		
4a. The area of poplar for bioenergy plantations will…		X		
4b. The area of willows for bioenergy plantations will…		X		
4c. The area of other fast-growing trees for bioenergy plantations will…		X		
5a. Government investments in poplars will …	X			
5b. Government investments in willows will ...		X		
5c. Government investments in other fast-growing trees will ...	X			
6a. Private sector investments in poplars will ...	X			
6b. Private sector investments in willows will ...		X		
6c. Private sector investments in other fast-growing trees will ...	X			
7a. The significance of poplars for **productive** purposes will ...	X			
7b. The significance of willows for **productive** purposes will ...		X		
7c. The significance of other fast-growing species for **productive** purposes will ...	X			
8a. The significance of poplars for **environmental protection** purposes will ...	X			
8b. The significance of willows for **environmental protection** purposes will ...	X			
8c. The significance of other fast-growing species for **environmental protection** purposes will ...	X			
9a. The rejection by environmental groups of poplars will...		X		

9b. The rejection by environmental groups of willows will...		X		
9c. The rejection by environmental groups of other fast-growing trees will...		X		
10a. The **acceptance** by the general public of poplars as important natural resources will.....	X			
10b. The **acceptance** by the general public of willows as important natural resources will.....	X			
10c. The **acceptance** by the general public of other fast-growing trees as important natural resources will.....	X			
11a. The introduction of poplars in **agroforestry systems** will ….	X			
11b. The introduction of willows in **agroforestry systems** will ….			X	
11c. The introduction of other fast-growing trees in **agroforestry systems** will ….			X	

---END OF QUESTIONNAIRE---