

(3 c)

1:
2:
3:

VI).

(IPBES/2/17,

IPBES/4/INF/3/Rev.1.

« »
: i)
, ii) iii)
« »

•

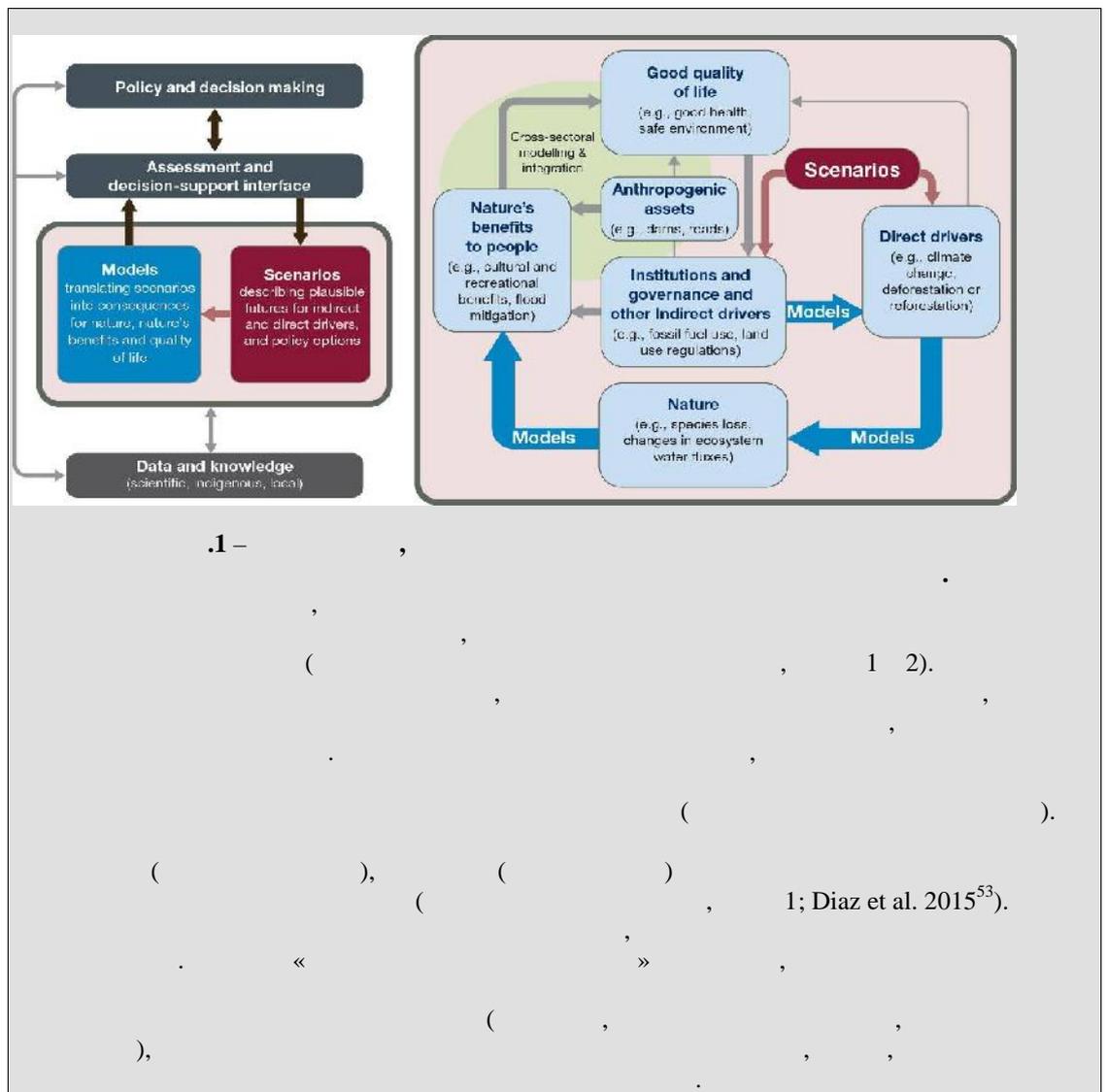
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•

1:

1.1:

(1).
 { 1.2, 1.3, 1.4, 2.1, 2.5 }



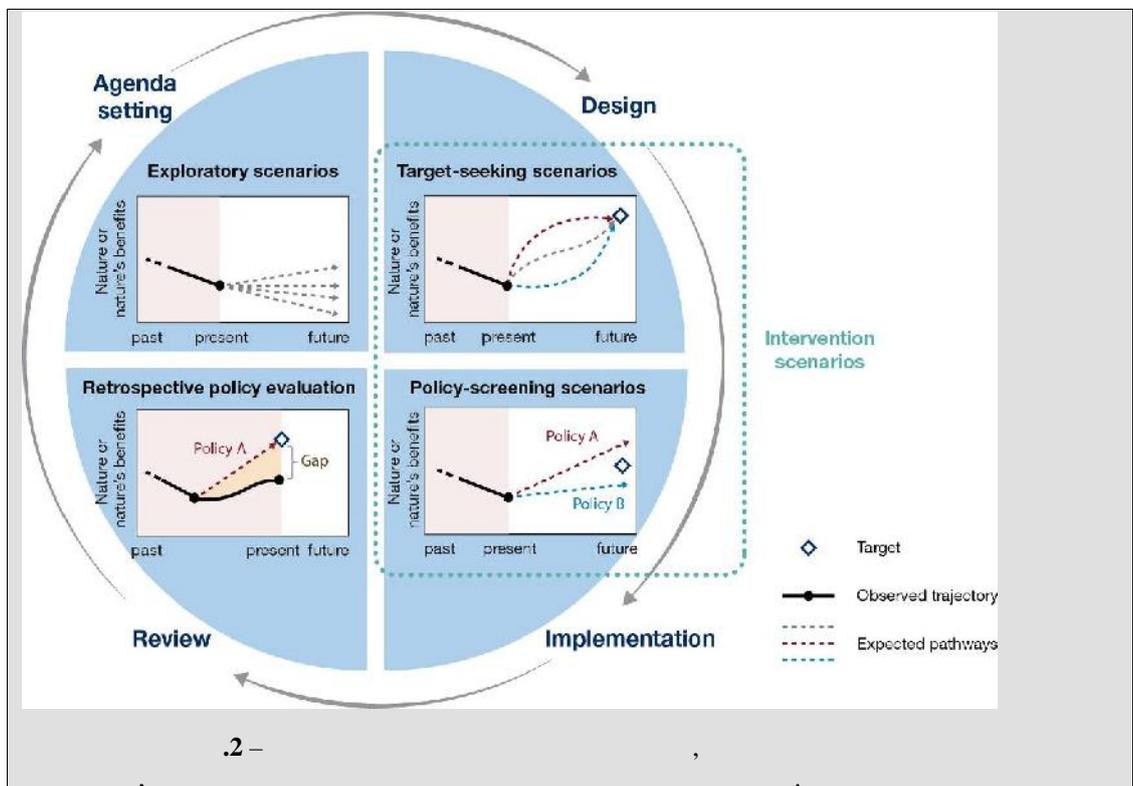
AI:	
Policy and decision making	
Assessment and decision-support interface	
Models	

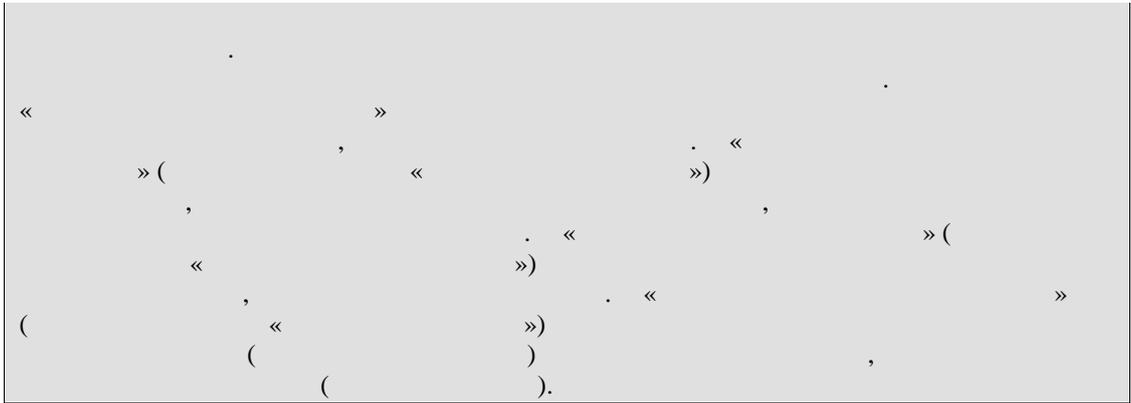
⁵³ Díaz, S., Demissew, S., Joly, C., Lonsdale, W.M. and Larigauderie, A., 2015: A Rosetta Stone for nature's benefits to people. PLoS Biology 13(1): e1002040.

translating scenarios into consequences for nature, nature's benefits and quality of life	
Scenarios describing plausible futures for indirect and direct drivers and policy options	
Data and knowledge (scientific, indigenous, local)	(,)
IPBES conceptual framework	
Good quality of life	
Cross-sectoral modeling and integration	
Anthropogenic assets	
Nature's benefits to people	
Institutions and governance and other indirect drivers	
Nature	
Scenarios	
Models	
Direct drivers	

1.2:

iii) .1). « , iv) », (, ii) .2, 3 4; (, -) - (,) - . « - , , » , « » - (.3, .1), (.4, .1) {1.3.2, 2.1.1, 3.2.2}.





Agenda setting	
Design	
Implementation	
Review	
Exploratory scenarios	
Nature or nature's benefits	
Past, present, future	
Retrospective policy evaluation	
Target-seeking scenarios	
Policy-screening scenarios	
Intervention scenarios	
Target	
Observed trajectory	
Expected pathways	

1.3:

.1). (.1, 3 4;

: i) , ;

ii) , ; iii) , (

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: a) , ;

; b) , ;

; c) ,

. {1.2.2, 1.3.1, 3.2.3, 4, 5.4}

1.4:

: i)

; ii)

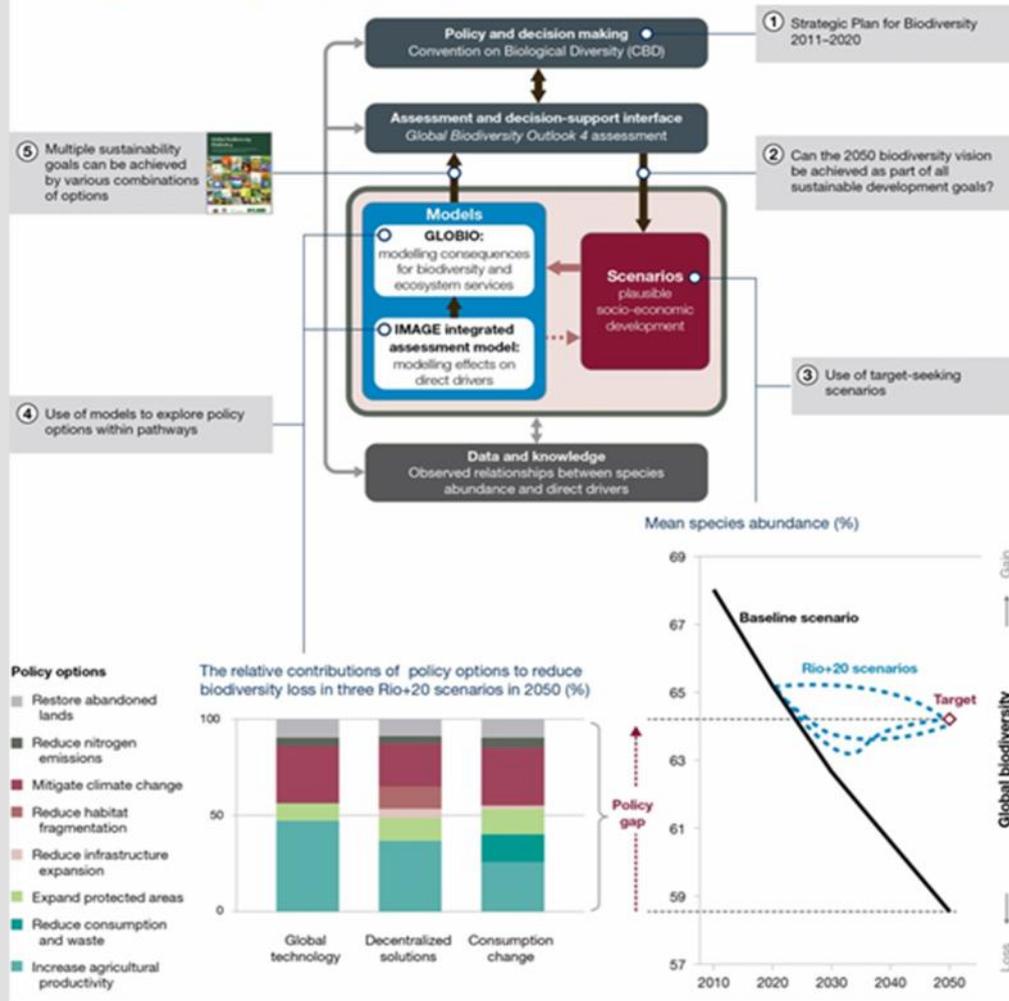
; iii)

iv)

; v)

. {1.6, 2.6, 4.3.2, 4.6, 7.1.2, 8.2}

Global agenda setting and policy design



.3 -

-4>

2011-2020 (1).

-4>

2050

2°

2050

2011-2020

(2).

(3).

» (<http://themasites.pbl.nl/models/image>)

-3 (<http://www.globio.info/>).

2050

(4).

-4>

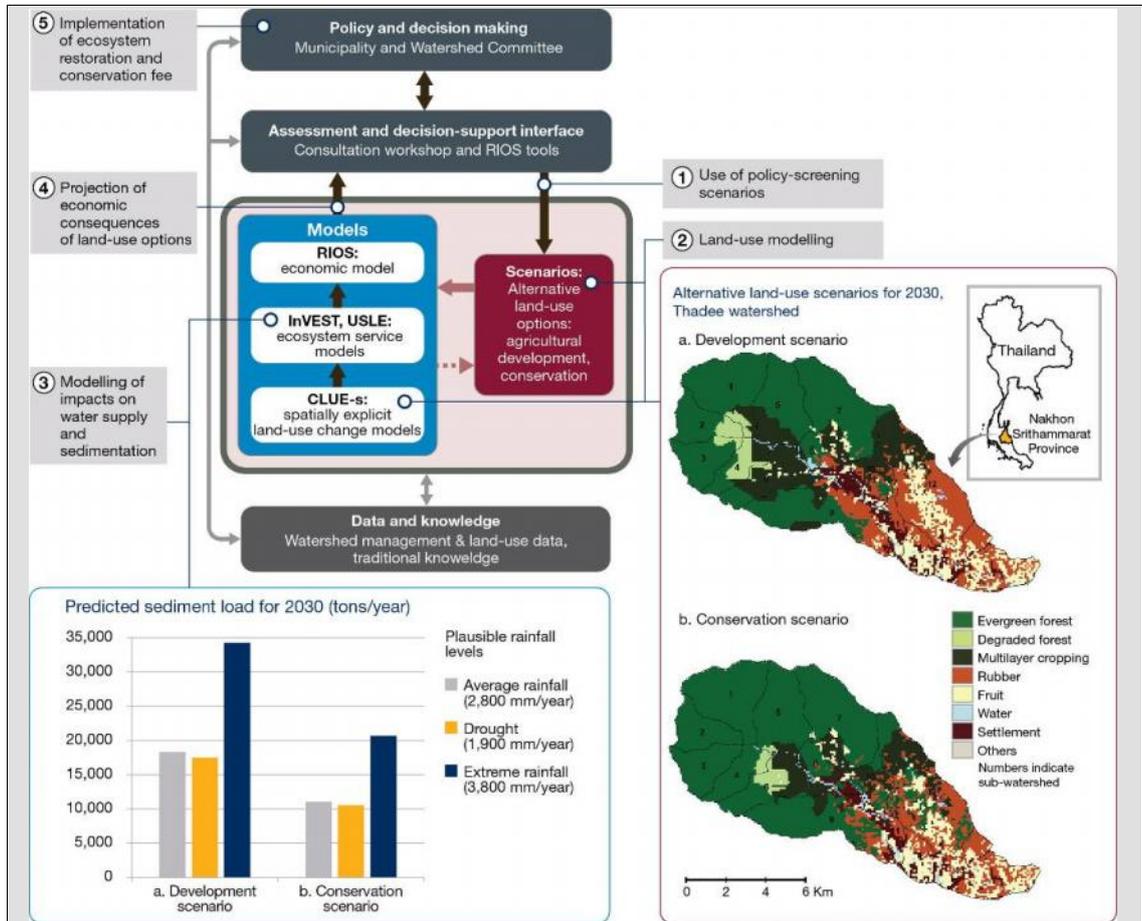
12-

(5).

1.1

1.

Global agenda setting and policy design	
Strategic Plan for Biodiversity 2011-2020	2011-2020
Can the 2050 biodiversity vision be achieved as part of all sustainable development goals?	2050
	?
Use of target-seeking scenarios	
Use of models to explore policy options within pathways	
Multiple sustainability goals can be achieved by various combinations of options	
Policy and decision making Convention on Biological Diversity (CBD)	()
Assessment and decision-support interface Global Biodiversity Outlook 4 assessment	4 -
Models	
GLOBIO: modeling consequences for biodiversity and ecosystem services	:
IMAGE integrated assessment model: modeling effects on direct drivers	« »:
Scenarios plausible socio-economic development	-
Data and knowledge Observed relationships between species abundance and direct drivers	
Mean species abundance (%)	(%)
Baseline scenario	
Rio+20 scenarios	+20
Target	
Policy gap	
Global biodiversity	
Loss	
Gain	
The relative contributions of policy options to reduce biodiversity loss in three Rio+20 scenarios in 2050 (%)	+20 2050 (%)
Global technology	
Decentralized solutions	
Consumption change	
Policy options	
Restore abandoned lands	
Reduce nitrogen emissions	
Mitigate climate change	
Reduce habitat fragmentation	
Reduce infrastructure expansion	
Expand protected areas	
Reduce consumption and waste	
Increase agricultural productivity	



.4 -

(1),

(2).

(3).

« »

(4).

« »

(5).

Trisurat (2013)⁵⁴.

∴

<http://www.naturalcapitalproject.org/invest/>
<http://www.naturalcapitalproject.org/software/#rios>
<http://www.ivm.vu.nl/en/Organisation/departments/spatial-analysis-decision-support/Clue/index.aspx>

Local policy design and implementation	
Use of policy-screening scenarios	
Land-use modeling	

⁵⁴ Trisurat, Y., 2013: *Ecological Assessment: Assessing Conditions and Trends of Ecosystem Services of Thadee watershed, Nakhon Si Thammarat Province (in Thai with English abstract). Final Report submitted to the ECO-BEST Project.* Bangkok, Faculty of Forestry, Kasetsart University.

Modeling of impacts on water supply and sedimentation	
Projection of economic consequences of land-use options	
Implementation of ecosystem restoration and conservation fee	
Policy and decision making Municipality and Watershed Committee	
Assessment and decision-support interface Consultation workshop and RIOS tools	« »
Models RIOS: economic model InVEST, USLE: ecosystem service models CLUE-s: spatially explicit land-use change models	« »: «InVEST», «USLE»: «CLUE-s»:
Data and knowledge Watershed management & land-use data, traditional knowledge	
Predicted sediment load for 2030 (tons/year)	(/)
a. Development scenario	.
b. Conservation scenario	.
Plausible rainfall levels Average rainfall (2,800 mm/year) Drought (1,900 mm/year) Extreme rainfall (3,800 mm/year)	(2 800 /) (1 900 /) (3 800 /)
Alternative land-use scenarios for 2030, Thadee watershed	2030 ,
a. Development scenario	.
b. Conservation scenario	.
Thailand Nakhon Srithammarat Province	
Evergreen forest	
Degraded forest	
Multilayer cropping	
Rubber	
Fruit	
Water	
Settlement	
Others	
Numbers indicate sub-watershed	

.1 –						
(, 1.1, 1)						
	(2014) -4	(2014) II III	(2005)	(2011)		
				:	:	:
	2020, 2050 –	2050, 2090	2050	2060	2030	2034 – 2-4
	,					
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	,			,		
	2020 ?	,	?	50	,	
	2050 ?					
	2020 * (« 2050 +20», .3)	()*	* (« »*)	*		
	2020 *	()*	(,)	()	,	(,)

.1 –						
(, 1.1, 1)						
	(2014) -4	(2014) II III	(2005)	(2011)		
			(,) « »			
				« »		
					(. 2)	(. 2)
	2014	2015			11	
				()		()
	Kok et al. (2014), Leadley et al. (2014), Tittensor et al. (2014)	(2014) II (2014) III	(2005)	(2011), Watson (2012), Bateman et al. (2013).	(2010), 2 ngm.nationalgeographic.com/2015/05/mekong-dams/nijhuis-text	Plaganyi et al. (2007), Rademeyer (2014), 2
	*	*	*	*		
	-4					

2:

2.1:

{1.4.2, 2.4, 2.6, 3.2.1.2, 4.3.2, 5.5.3, 7.4, 7.5, 7.6.2, 8.4}.

2



.5 –

8.4.1. 8.1 8. PBL Netherlands
 Environmental Assessment Agency, Thinkstock, KK Davies IISD/ENB
 (<http://www.iisd.ca/ipbes/ipbes3/12jan.htm>).

Policy review	
Engaging policymakers, stakeholders & scientists	
Linking policy options to scenarios	

Communicating results	
From scenarios to decision-making	
Data Models	
Steps Information flow Influence	

2.2:

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(.6; .1 .2).

{1.5, 2.2, 2.3, 2.4, 3.2.2, 3.2.3.2, 3.5, 4.2, 4.3, 5.3, 6.1.2}.

1 «

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.2 –						
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. « »						
, « »						
5.						
			-	-		
« »		,				Stehfest et al. 2014
«EcoPath» «EcoSim»		,				Christensen et al. 2005
« »		,				Villa et al. 2014
«InVEST»		,				Sharp et al. 2014
«TESSA»		,				Boumans et al. 2014

2.3:

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,
(.6; .2).
(2050)
()
()

{1.5, 2.2, 2.4, 3.2.2, 3.2.3.2, 3.5, 4.2, 4.3, 5.4.6, 6.4.1,

8.4.2).

«

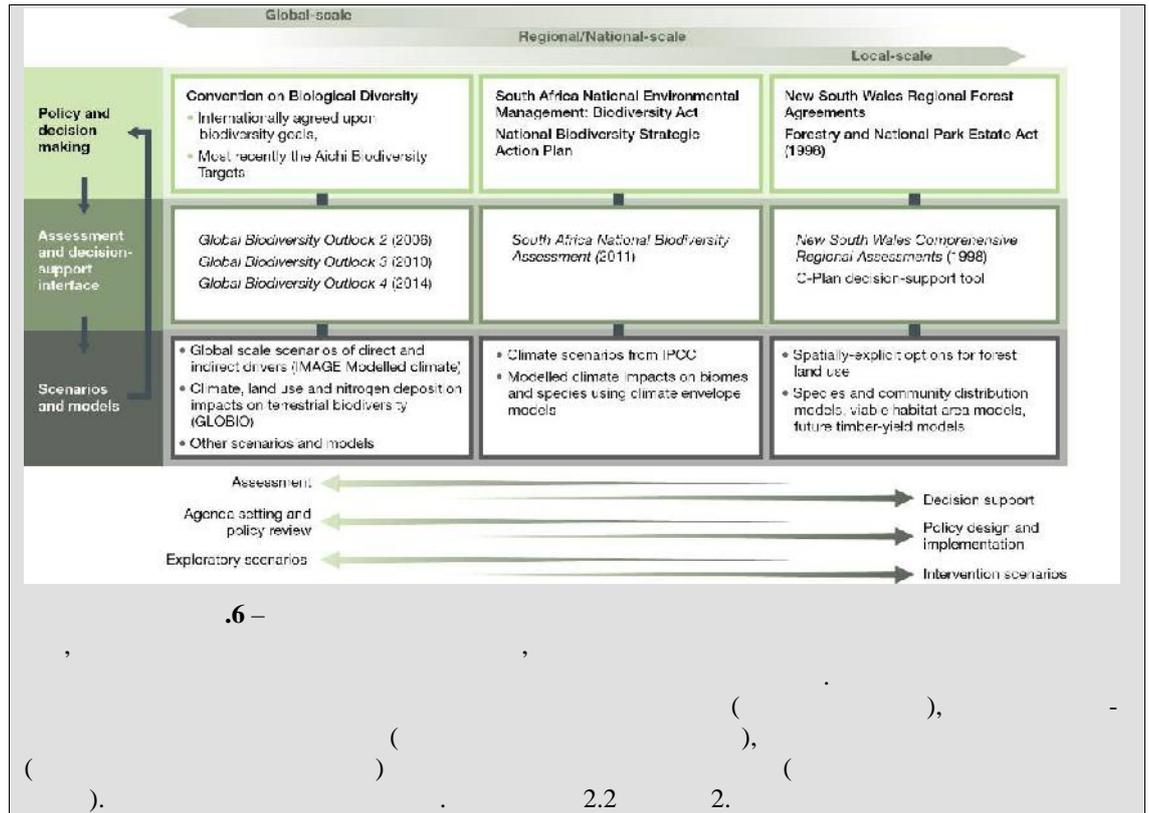
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2

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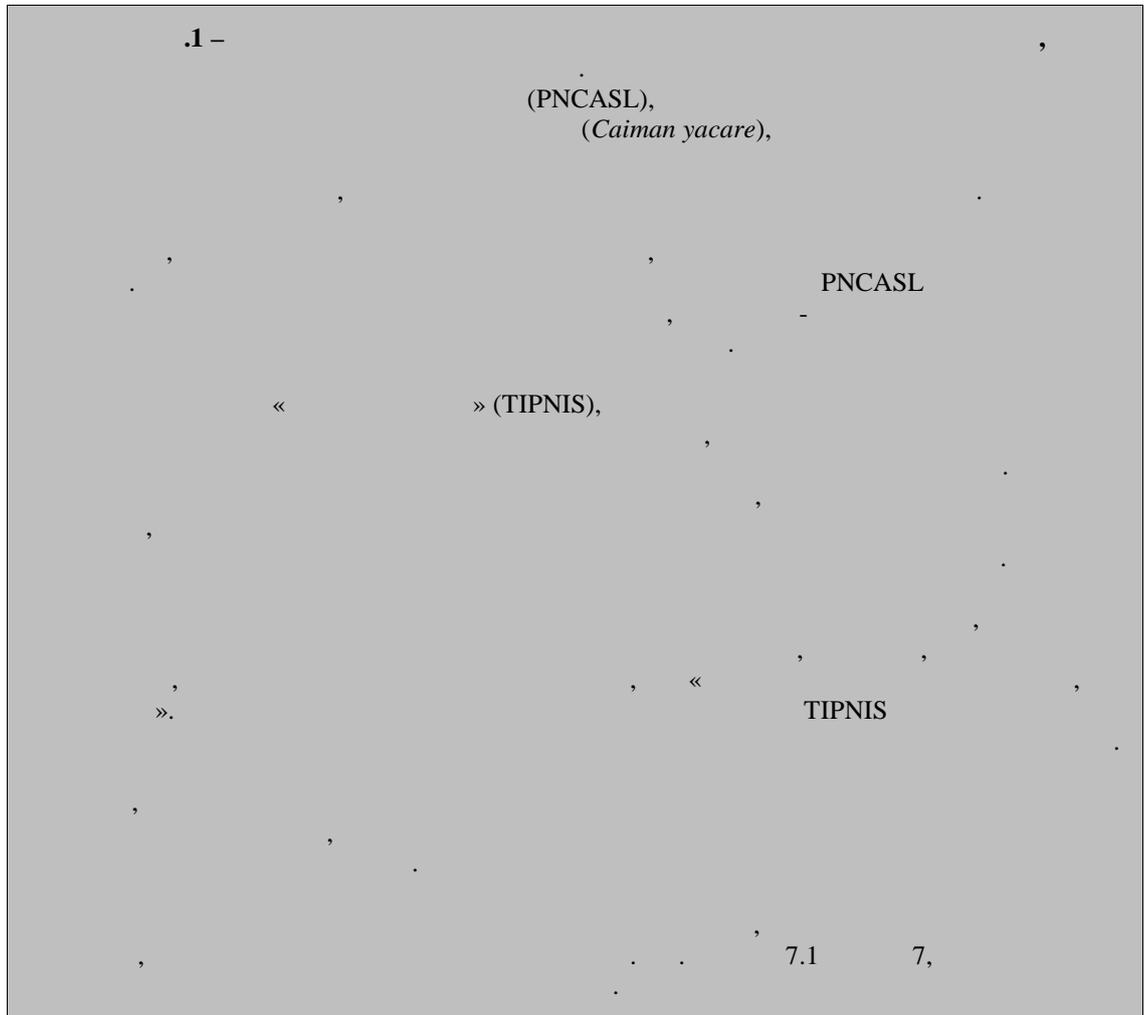


Global-scale	
Regional/National-scale	/
Local-scale	
Policy and decision making	
Assessment and decision-support interface	
Scenarios and models	
Convention on Biological Diversity	
• Internationally agreed upon biodiversity goals	•
• Most recently the Aichi Biodiversity Targets	•
South Africa National Environmental Management: Biodiversity Act National Biodiversity Strategic Plan	:
New South Wales Regional Forest Agreements Forestry and National Park Estate Act (1998)	(1998)
<i>Global Biodiversity Outlook 2 (2006)</i>	-2 (2006)
<i>Global Biodiversity Outlook 3 (2010)</i>	-3 (2010)
<i>Global Biodiversity Outlook 4 (2014)</i>	-4 (2014)
<i>South Africa National Biodiversity Assessment (2011)</i>	(2011)
<i>New South Wales Comprehensive Regional Assessments (1998)</i>	(1998)
C-Plan decision-support tool	C-Plan
• Global scale scenarios of direct and indirect drivers (IMAGE Modelled climate)	• (« »)

<ul style="list-style-type: none"> • Climate, land use and nitrogen deposition impacts on terrestrial biodiversity (GLOBIO) • Other scenarios and models 	<ul style="list-style-type: none"> • (GLOBIO)
<ul style="list-style-type: none"> • Climate scenarios from IPCC • Modelled climate impacts on biomes and species using climate envelope models 	<ul style="list-style-type: none"> • •
<ul style="list-style-type: none"> • Spatially-explicit options for forest land use • Species and community distribution models, viable habitat area models, future timber-yield models 	<ul style="list-style-type: none"> • •
Assessment	
Decision support	
Agenda setting and policy review	
Policy design and implementation	
Exploratory scenarios	
Intervention scenarios	

2.4:

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 .
 (.1). ,
 .
 ,
 ,
 {1.2.2.2, 1.6.2, 2.2.1, 4.2.3.1, 7.4.3, 7.4.4,
 7.5.4, 7.6.3, 7.6.5}.
 4 «
 ».



.1 -

(PNCASL),
(Caiman yacare),

PNCASL

« » (TIPNIS),

TIPNIS

7.1 7,

2.5:

(.1 .2).

2.6, 4.3.2, 4.6, 5.4.6.6, 6.5, 8.4.3}.

4 «
5

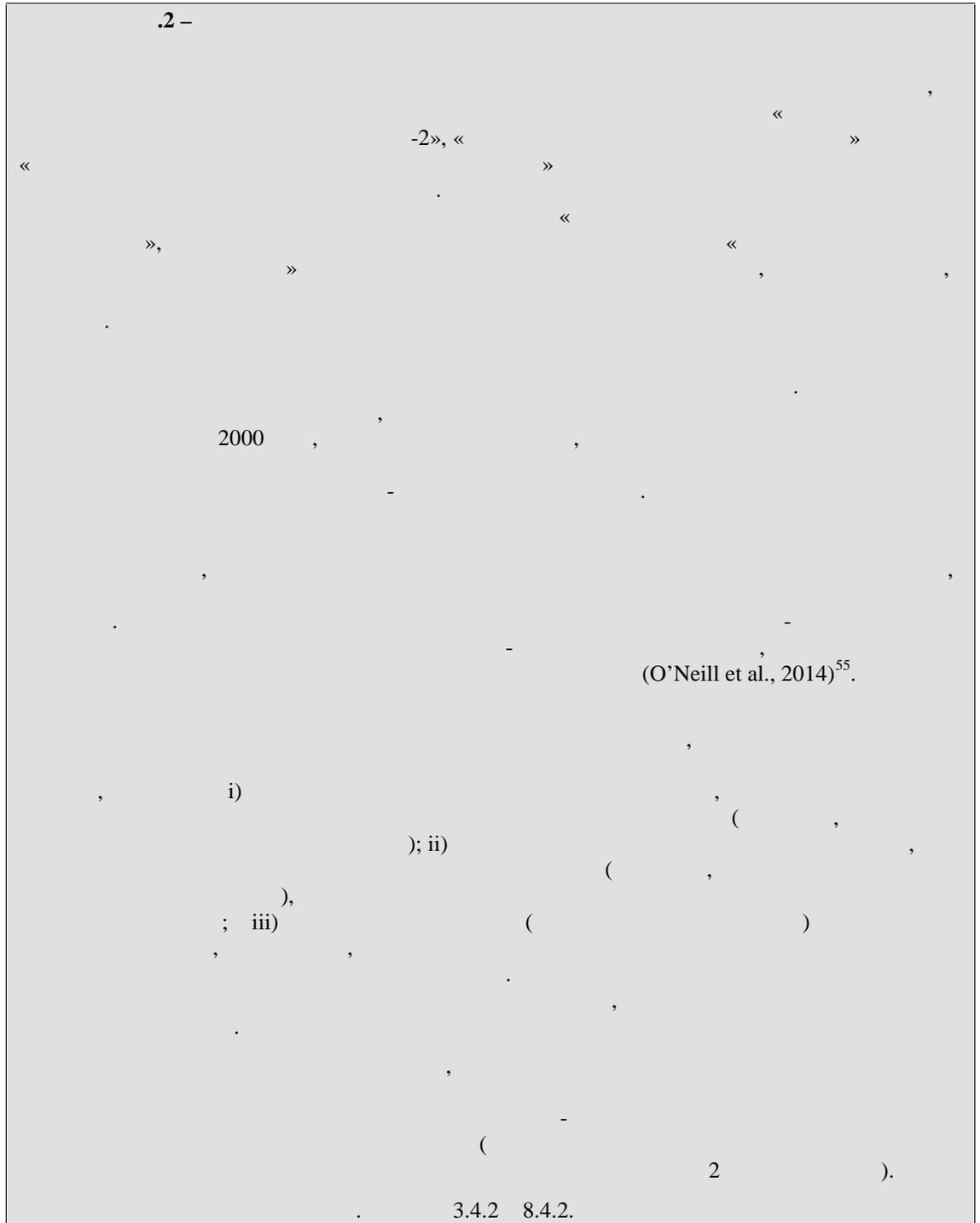
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3:

3.1:

{1.6.1, 3.4.2, 3.5, 8.4.2}

.2.



3.2:

i) , (,) ; ii) , (,) ; iii) , (,) .

⁵⁵ O'Neill, B.C., Kriegler, E., Riahi, K., Ebi, K.L., Hallegatte, S., Carter, T.R., Mathur, R. and van Vuuren, D.P., 2014: A new scenario framework for climate change research: the concept of shared socioeconomic pathways. *Climatic Change*, **122**(3): 387-400.

{1.6.1, 4.2, 4.3, 5.4, 8.3.1}.

3 «

».

3.3:

8.3.1.2}.

«

{1.2.2.1, 1.4.3, 4.2.3.4, 4.3.1.5, 4.4, 5.4, 6.3,

3

».

3.4:

3.5, 4.6, 5.4, 6.5, 7.2.2, 8.3.3, 8.4.3}.

4 «

{1.6.3, 2.3.3, 3.3, 3.4,

».

3.5:

8.2.1, 8.2.2}.

5 «

{1.6.2, 2.6, 5.6, 7.3, 7.6.4,

».

3.6:

{2.6, 4.7, 5.6, 7.2, 7.6.1}.

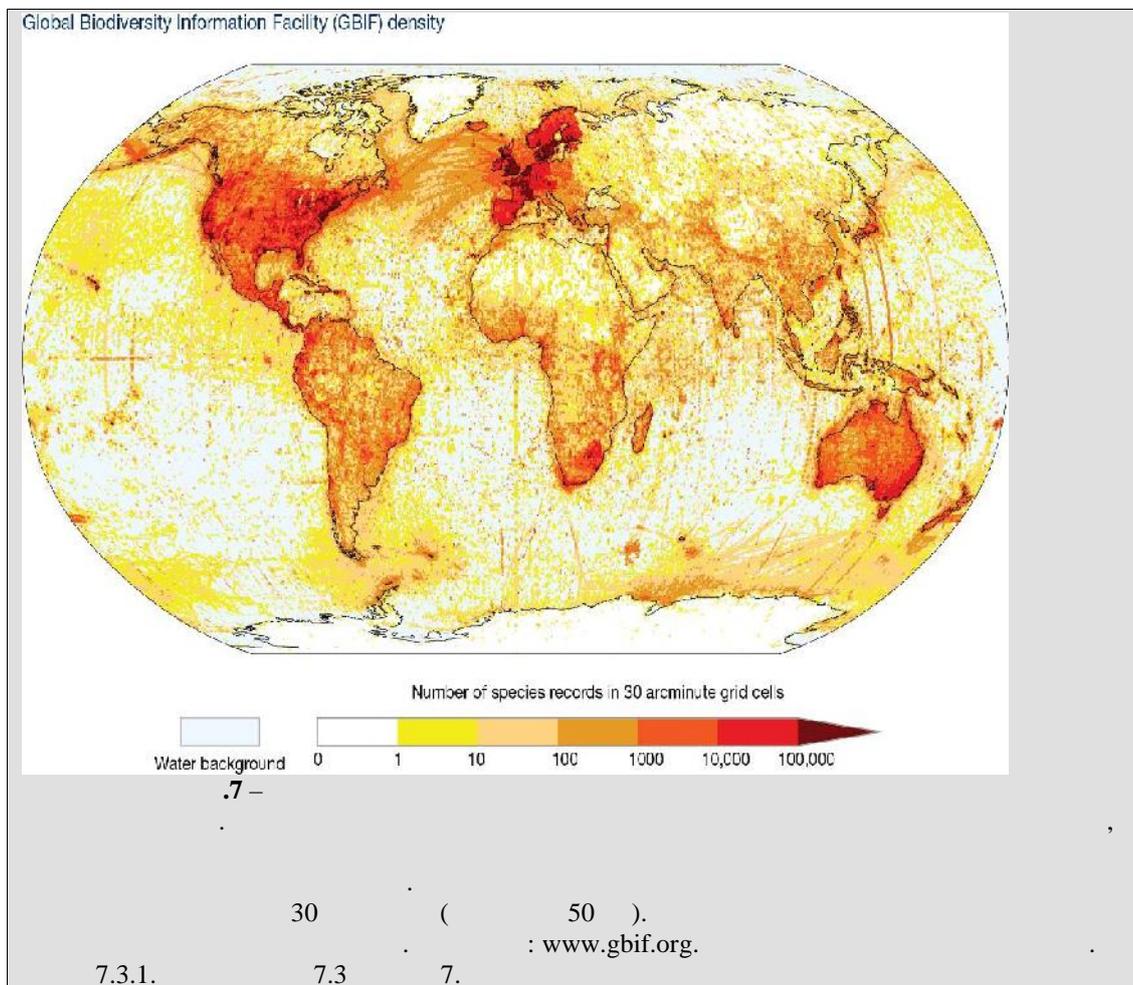
6 «

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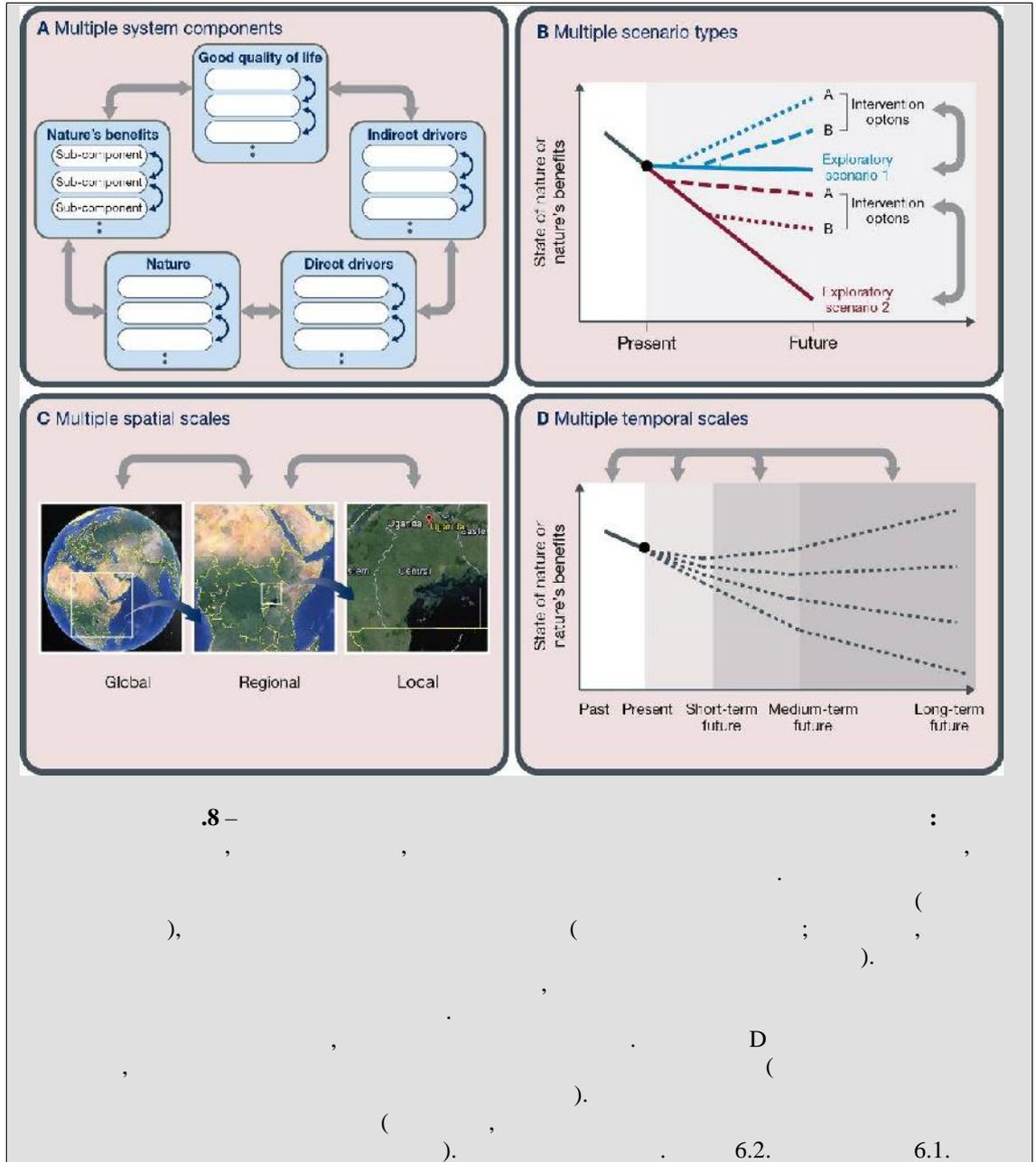
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Global Biodiversity Information Facility (GBIF) density	():
Number of species records in 30 arcminute grid cells	30
Water background	



.8	
A Multiple system components	A
Good quality of life	
Indirect drivers	
Direct drivers	
Nature	
Nature's benefits	
Sub-component	
B Multiple scenario types	B
State of nature or nature's benefits	
A B Intervention options	A B
Exploratory scenario 1	1
Exploratory scenario 2	2
Present	
Future	
C Multiple spatial scales	C
Global	
Regional	
Local	
D Multiple temporal scales	D
State of nature or nature's benefits	

3:

7.6.1, 7.6.2}.

{2.6, 3.2.2, 3.2.3, 3.5, 6.1, 7.2, 7.4.1, 7.5.4,

4:

3.5, 6.1, 6.4, 7.4.3, 7.4.4, 7.5.4, 7.6.3, 7.6.5}.

{2.6,

5:

3.2.1.1, 3.2.2, 3.2.3, 3.3, 3.4, 3.5, 4.7, 6.1, 6.3, 6.4, 6.5, 7.2.2, 8.3.1.3}.

{2.6,

6:

3.2.3, 3.5, 6.1, 7.4.2, 7.5.3}.

4-

(, .8. 3.2.1, 3.2.2 3.5.),

		« » « ».
	(10), ()	« -4» (.1).
		« -4» ().
		(.1, .4).
		- (.2)